

Project No. and Title: [NE1039](#) Changing the Health Trajectory for Older Adults through Effective Diet and Activity Modifications
Period Covered: 10-2010 to 09-2011
Date of Report: 06-Sept-2011
Annual Meeting Dates: 06-Jun-2011 to 07-Jun-2011

Participants

- Nancy Cohen, University of Massachusetts Matthew Delmonico, University of Rhode Island Sarah L. Francis, Iowa State University Prema Ganganna, University District of Columbia, Ingrid Lofgren, University of Rhode Island, William S. Rice III, University District of Columbia, Catherine Violette, University of New Hampshire, Susan Welsh, USDA/NIFA, Gloria Wyche-Moore, University of District of Columbia, Furong Xu, University of Rhode Island, Joanne Celentano-Curran, University of New Hampshire

Brief Summary of Minutes of Annual Meeting

NE 1039 Annual Meeting Minutes Technical Committee Workshop June 6-7, 2011, On The Bay Holiday Inn Portland, Maine

Presiding: Matthew Delmonico, Chair. The Committee initiated the election of a new chair pursuant to the resignation of Mark Kantor. Ingrid Lofgren nominated Matthew Delmonico to be the next chair and was unanimously elected and approved by the technical committee. Ingrid announced the position of the vice-chair and was willing to take on the new role. Ingrid Lofgren was unanimously elected as the vice-chair. Prema Ganganna was designated to continue as the secretary. Matthew welcomed the group and 1:30 meeting started with voting on the minutes of the 2010 Technical committee meeting of 2010.

Some typographical changes were identified in page 4 and 5. Including the date of meeting, deletion of student names and Penny Ralston typed as Rolston. Nancy Cohen moved to approve the minutes as amended and was approved by the committee.

Dr. Gloria-Wyche-Moore welcomed the group as Administrative Advisor and updated on her role as the Dean of the new College of Agriculture, Urban Sustainability and Environmental Sciences at UDC.

The technical Committee meeting proceeded with a report from Dr. Susan Welsh, our NIFA/USDA representative. Susan Welsh welcomed the group and presented the “considerations in planning for Research, Education and Extension programs in Obesity Prevention” and introduced the steps to be included in the new grant and also advised members to review Farm Bill authorization of 2008. Here are some highlights of her presentation:

- Dr. Tom Vilsak the new secretary of Agriculture is very interested in nutrition.
- Dr. Kaheleen Merrigan, Deputy Secretary of Agriculture is from Tufts, first nutritionist and is very interested in improving nutrition.
- Dr. Cathi Oteki, Under Secretary of Research, Education and Economics is the chief scientist for USDA
- Dr. Beachy, Director of NIFA stepped down on 5/20/2011
- Release of Dietary guidelines in January 2011 and stressed the Challenge area of childhood obesity. The new Dietary Guidelines has to pay attention to the age group of 9-14 this year and next year to the age group of 15-19. USDA Received 150 applications for childhood Obesity and funded 10.
- NIFAGrant-strategic plan to for obesity research that will be released soon.
- NIFA 2007-2012 Goals to enhance international competitiveness, food safety and the nation's nutrition and health.
- Healthy People 2020-
- AFRI challenge area is Childhood Obesity prevention for 2011
- Catalogue of NCCOR (National Collaborative on Childhood Obesity Research) Surveillance System, a web tool providing a catalog of surveillance systems that contain data relevant to childhood obesity research.
- NCCOR Measures Registry. Website focuses on behavioral aspects of obesity.
- Announcement of NIFA fellowship program for pre-doctoral advanced candidates. NIFA fellowship awards are separate individual awards and does not cover direct costs to school/University. Multidisciplinary grant- not to exceed \$75,000 including \$18,000 for tuition. No more than 5 awards to a single institution. They can also do extension or educational and research activities. Post doctoral students should be qualified for doctoral program and has completed the qualifying or candidacy exams and should be citizens. June 1st grant announcement was made for graduate scholarship awards for institutions.
- The emphasis on new grants is more on healthy diet and not weight loss. Susan Welsh stressed the emphasis on obesity as part of competitive grants from USDA.

The group continued the discussion of the following issues:

- Losing funding due to state matching conditional grants.
- Ingrid and Sarah discussed the strategies for applying population specific, urban and rural, competitive grants in nutrition.
- Joanne asked Susan to elaborate the success of writing grants. Joanne and Sarah also mentioned that they planned their research to lead to competitive grants and have multiple sites. All the sites plan, collect data together and analyze centrally. Qualifications for the recruitment of new members, is productive, publications.
- Though the researchers are doing a wonderful job of conducting research, the Committee stressed the importance of collaborative group work.
- Dr. Susan Welsh recognized the excellent presentation of Catherine Violette and Mark Kantor at the SNE meeting.
- Dr. Susan mentioned about calcium and Omega-3 fatty acid bench researchers collaborating with extension groups. The groups stay very well connected and continue

communication throughout the year. Excellent website and data storage capability to access and add as the research progresses.

The meeting continued on June 7, 2011

- The problem with the listserv was discussed. Prema mentioned the problem with the current listserv that does not allow dissemination of any attachments. Matthew Delmonico said he would take care of the problem. Susan reminded members to post the annual report on the website of NIMMS. Matthew agreed to do this.
- Preference for one or two day meeting was discussed. Susan suggested a telephone conference to establish cohesiveness among multi-state research group. Joanne suggested to have an agenda prior to the meeting for next year. Joanne brought to the attention of the technical committee that Catherine Violette was not funded from Agriculture Experiment Station this year due to budget cuts and discussed the possibility of future funding. Due to competitive funding policy of the Ag station, Catherine was not funded and cannot complete the project that she was working on. Susan stated that the decision is the responsibility of the Ag station. The committee acknowledged the important research contribution of Catherine on whole grains..
- Ingrid Lofgren discussed the difficulties of recruiting new members to the multistate project. The Committee decided to meet at the University of Rhode Island for the next 2012 meeting and Discussed inviting Jeff Green from URI gerontology dept. to be a guest speaker for the next 2012 meeting. Susan suggested that the committee should establish accountability for projects that are successful and ones are not working.
- Matthew Delmonico suggested using SAKAI at URI to invite everybody to log on and communicate. Catherine suggested to up-date and scale down the listserv with the active members of multistate project. Ingrid proposed to contact prospective researchers for recruitment.
- The committee reviewed each objective of NE-1039 and assessed the status.
- Include objective 1, experiment 2- curriculum development
- Objective 1 and experiment 1 – Nancy Cohen presented on the status of her research project “Environmental Changes to Increase Fruit, Vegetable and Whole Grain Intakes in Older Adults”. UMass researchers collaborated with investigators from Florida State University to examine the role of social support on dietary quality among older adults.
- Experiment 2. The researchers questioned the availability and location of the assessment and curriculum for whole grains due to resignation of Mark Kantor. Catherine Violette stated that any state that is interested can implement and evaluate the data. The curriculum is in the final state. It has pre and post test assessment mode. Curriculum is all done and can be implemented. Nancy stated that she can help in the evaluation stage. It was decided to take Maryland off the list due to the resignation of Mark Kantor.

Objective1, experiment 3:

- Proposed to explore the possibility of other states participating in experiment 3. Joanne mentioned the possibility.
- Experiment 4” Maximizing the benefits of fruits and vegetables”. - Mark from FDA cannot participate in the project. Nancy will communicate with Nadeen at UMD to look at the feasibility of continuing the project. Experiment 4 will continue only if UMD takes the lead.

- Objective 2, experiment 1 Iowa has been added to the experiment. Sarah is officially on the project and there should not be problem in adding a station to the project. The title of Sarah's project is "To develop effective intervention strategies to improve physical performance and reduce CHD risk".

Objective 2, experiment 2A is on-going 2B is questionable.

Outputs

- The project of folic acid has to be dropped as the project was not approved. The last output "analyzed results of food safety" questionable.
- Reviewed the NE- timeline sheet to assess the tasks accomplished as per the timeline. Ingrid wanted to put the lead station for each objective in the timeline.
- UDC will update the tasks for objective 1, experiment 3 and add the tasks completed at the end of year 2.
- Nancy Cohen presented on community and environmental changes
- Nancy adopted the model from Nutrition reviews, 2001. It predicts the psychobiological core, cultural, social enablers choice, behavioral settings, distal leverage points, proximal leverage points and adopted the model to geriatric population.
- (Framework for determinants of physical activity and eating behavior in older adults. Booth et al. Nut reviews 59 (3) 521-536, 2001).
- Ingrid proposed recruiting researchers based on the model and objectives presented by Nancy Cohen.
- Catherine Violette presented on "whole grains, leafy greens biomarkers and Eating Behavior: A Multistate Collaboration on a Healthy Aging Success Story.
- Topics included: What is a multistate project? NE1023 Improving Plant Food 2004-2009; Brief history of NE projects; NE 1023 objective 1, what are nutritional biomarkers; determinants of biomarker levels; biomarkers for age related macular degeneration; spinach cultigens and lutein; bioavailability of lutein and zexanthin in eggs; Dietary patterns and nutritional risk (Penn State).
- NE objective 2: overview; Experiment goals; package information used for older adults; Multi-state experiment objectives; UDC's experiment, major findings of UDC; University of Maine and major findings; University of Massachusetts; University of New Hampshire and u of Rhode Island.
- Susan suggested to the committee to add this to the NIFA's website and on NE's website.
- It was proposed to bring two students next year.
- The next meeting was decided to be in June of 18-20th 2012. The meeting will be organized at the University of Rhode Island.
- The researchers were required to send the annual report and the year -end activity to the secretary who will forward them to the chair of the committee.
- Karen Chaplin , Adriane White and Katherine Tucker North Eastern, Sue Adams, Diane Laroche from UNH will be contacted by Nancy Cohen, Joanne and Sarah.
- Dr. Susan will contact Nutrition Extension Committee for recruitment.
- Matthew oriented the group with Sakai access. Any active member can add and post discussions, or any other relevant information to be shared by the members.
- The committee members will have a teleconference once every three months.
- The meeting adjourned at 2:00 PM

The meeting continued with individual station reports.

Accomplishments

University of Massachusetts, Nancy Cohen

Objective 1, Experiment 1

Environmental changes to increase fruit, vegetable and whole grain intakes in older adults

Researchers in MA are examining perceptions of the community environment as supportive of increased consumption of fresh fruits and vegetables in older adults. Working in collaboration with the Food Bank of Western Massachusetts, UMass investigators developed a survey to assess perceived availability of fresh fruits and vegetables among residents of a limited income neighborhood in Springfield, Massachusetts. Interviews were conducted in English or Spanish with 78 men and women who were on the street in the vicinity of a neighborhood store or bodega, including 30 subjects over age 50 (n=16 over age 60). Preliminary data indicate that the majority of respondents drive themselves to go food shopping, with 10-14 individuals citing taking the bus, walking, or riding with someone else to shop for food. Two-thirds of respondents shopped for fresh fruits and vegetables at a large supermarket, but many purchased fresh produce at small grocery stores (26%), farmers' market (22%), and fruit stands (17%). Few subjects (<8%) shopped for fresh fruits and vegetables at a bodega or corner store, warehouse store or food pantry. When asked where they preferred to get their fruits and vegetables, fewer respondents cited a supermarket or small grocery store, and more cited farmers' market or fruit stand (28% and 29%, respectively). The majority of subjects were not able to walk from home to a place where they can buy affordable, good quality fruits and vegetables. Nevertheless, over half of respondents did consider that it was easy to find good quality and affordable fresh fruits and vegetables in their neighborhood, but over one-third considered it to be difficult to find. Using a brief two-item fruit and vegetable screener, 63% of subjects reporting consuming two or fewer servings of fruit and 61% consumed two or fewer servings of vegetables per day. Most interviewees were interested in consuming more fruits and vegetables, and over 20% indicated that lower prices, better quality and larger selection of produce, and more stores selling fruits and vegetables would facilitate their increased consumption. Few subjects cited recipe ideas or having more stores accept SNAP or WIC as community facilitators for increasing their produce consumption. There were few differences in survey responses among subjects over age 50 compared to younger subjects. Older subjects tended to get cite the food pantry as a source of their fresh produce more than younger respondents. Fewer older subjects than younger respondents considered that it was somewhat easy to find good quality and affordable fruits and vegetables. Eleven percent of younger subjects responded that stores offering more prepared ready-to-eat fruits and vegetables would help them to eat more produce, but no older subjects rated this item as important. Analysis of these data and further studies are planned to determine perceptions of community availability of fresh produce in older adults.

UMass researchers also collaborated with investigators from Florida State University to examine the role of social support on dietary quality among older adults. Through this study, we investigated the effect of demographics, social network size, frequency of contact, and proximity on dietary quality based on 3 24-hr recalls in 80 public housing residents age 55+. Data were analyzed using Pearson correlation coefficients, multiple regression analyses, and structural equation modeling (SEM). Number of meals consumed, frequency of social network contact, and proximity of network significantly influenced dietary quality.

These studies indicate that the dietary intake of older adults may be influenced by both social and physical environments. Further research on perceptions related to the environment and the intake of fruits and vegetables in older adults is ongoing.

Iowa State University, Sarah Francis

Kara Strand, a graduate student, from Iowa State University, and Sarah Francis reported on the “Impact of Community-based Exergaming Program in Older Adult Fitness”. Kara discussed the following

- Demographics of older adults In Iowa- 20% of population older than 65.
- 2030 30% of population older than 65 years
- 80-86% of adults over 70 have at least one disease.
- 20% older adults suffer from depression, living alone, hopelessness and worthlessness.
- Research specified the relationship of Mental illness which may lead to malnutrition.
- Impact of physical activity: prevents chronic illness, improves physical fitness, quality of life performance of activities of daily living, maintains independence.
- Less than 5% getting required amount of physical activity.
- Exergaming is any video game that incorporates physical activity with game play. Controls the game through motor actions, promote health, fitness and exercise.
- Fun way to get activity, improves health outcomes, greater sense of enjoyment, reduces attrition rate, increases adherence to activity, improves quality of life and depressive symptoms.
- Another approach is intergenerational. Enhances understanding and appreciation between generations. Increases overall well-being and quality of life in older adults. Engages in life and the world around them.
- Discussed the whole wellness model that focuses on social, physical, emotional occupational, intellectual and spiritual wellness. Second model used was trans-theoretical model. Progresses from pre-contemplation through contemplation, preparation, action and maintenance.
- Life program of researchers is theory based- for rural residing inactive older adults. 8 week on-site program and 16 week news letter intervention. The program is conducted in 7 different sites. Goal was to evaluate the efficacy of the LIFE program for older adults and increase older adults functional fitness, subjective wellbeing .
- Wii EA active: The first part was Conducted for 30 minutes twice a week for 8 weeks- 12 different workouts with exercises appropriate for older adults. Strength training and aerobic activities, walking and running, dancing, boxing. Second part was interactive games to promote team building, problem solving and communication skills,

intergenerational activity, alternative activity and contribute to the cognitive component of the program.

- Methodology used were, identifying rural communities, recruitment, training interested trainers, trainers workshop and lead on-site LIFE program.

Recruited interested participants, 43 participants, filled out questionnaire, consent form, physicians' approval, trainer led on site LIFE program,

Measurement: pre, post and follow up measurements, looked at characteristics, number and percent of gender, marital status and living arrangement., general health, contact with youth in a day. Measured quality of life including depression, satisfaction with life and positive and negative life schedule. Appraised fitness test, readiness to change,

The best liked features were, feeling of doing something good for my body, exercising in a group, enabled to do exercise.

Progress: 2010/01 TO 2011/08

OUTPUTS: We (an interdisciplinary team: exercise physiologist, psychologist, dietitian, youth development specialist) applied for and received NIFA funding for an intergenerational physical activity program designed to be implemented in rural residing congregate meal sites. The overall objective is to pilot test a community-based, intergenerational exergaming program for older and young adults (Living well through Intergenerational Fitness and Exercise [LIFE] Program). The central hypothesis for the proposed research is that the LIFE Program will increase functional fitness, subjective well-being and physical activity readiness to change among older adults while improving aging perceptions among young adults.

Quarter 1 (September 1, 2010 - December 31, 2010) involved program planning and material development. During this time, we applied for and received Institutional Review Board permission; developed a "phase-in" site schedule; met with previously identified collaborators; drafted accompanying materials (recruitment information, questionnaires, program logo, wellness newsletters); developed the Trainer workshop curriculum (handouts, PowerPoint slides, accompanying user manual); purchased materials; and conducted site visits. A detailed description of accomplishments is shown below.

- Scheduled seven meal sites to host program (five Spring 2011, two Summer 2011). These sites are located in the study area (35 miles round-trip from Ames, IA). All are located in Story County Iowa with five identified as rural.
- Worked with graphic designer to create a LIFE program logo for use on all accompanying material.
- Began intensive trainer recruitment at the University. To date, we have 15 confirmed trainers (out of 30+ inquiries). A training workshop is scheduled for January 17th.
[Objective 2]
- Created eight wellness newsletters. We pilot-tested these with a small sample of 28 older adults. They completed a brief questionnaire developed to gather input regarding newsletter content, layout (font size, color scheme), name, and relevance to their lives. This input was included during the revision process. The newsletters are being finalized by the editor and graphic designer for our review.

- Developed a training manual/user guide draft (10 Chapters, plus appendices). This will be used during the training workshops. Final edits will be done during Fall 2011 prior to making the manual/user guide available on CDs. Members of the research team will keep track of questions asked during the workshop so that we can revise the materials to ensure the resources provided are informative. We will also use the data collected through focus to identify any program areas that may need modified. The input gathered will be included with the final manual/user guide.
- Designed training workshop PowerPoint presentations (5 total) and agenda. These presentations include:
 - LIFE Program Overview (Purpose, Program Design, Expectations of Trainers)
 - Interactive Games (Background, training on team building games)
 - Introduction to Older Adults (demographics, myths, characteristics of older adult learners, strategies to building successful relationships with older adults, simulated aging activity)
 - Older Adults and Physical Activity (benefits, safety concerns, strategies to ensure safety, senior fit test training and practicum)
 - Wii Active as a Research tool (background information, steps to ensuring safety, how to use Wii, practicum)
- Ordered required supplies and materials (Wii kits, training workshop supplies, etc.) through our University purchasing department.

Quarter 2 (January 1, 2011 – April 29, 2011) involved participant and trainer recruitment; compilation of Wii Kits; training workshop implementation; launching of five research sites; and data collection

- Started five research sites.
- Conducted an eight-hour training workshop for 13 trainers. The second training workshop for the summer session of the LIFE program is scheduled for June 2011
- Finalized and printed the eight wellness newsletters (LIFE Lessons) in February 2011. The newsletter intervention for the first site began April 25, 2011.
- Designed training agenda for on-site leaders. The on-the-job training includes 4 ½ hours of training under the guidance of the Trainer.

Quarter 3 (April 30, 2011 – July 29, 2011) involved participant and trainer recruitment; training workshop implementation; closing of five research sites; launching of two research sites; focus group discussions and data collection

- Closed five research sites and launched two new sites. Currently 52 participants and 18 trainers have completed and/or are enrolled (Tables 1-2). To date, five sites have pre- and post-data available (28 participants, 13 trainers).
- Conducted an eight-hour training workshop for five trainers. This training workshop invited previous participants to come and discuss their experiences
- The newsletter intervention has been active since April 25, 2011.
- Conducted trainer focus group session May 2011
- Scheduled participant/trainer focus group discussion (August 3, 2011)
- Identified four (2 urban, 2 rural) needs assessment focus group sites
- Conducted one statewide needs assessment focus group (July 27th; N=6 participants)

- Scheduled two additional focus groups (August 11th and Sept 7th). A fourth focus group is still being scheduled.

PARTICIPANTS: *Individuals:* Sarah L. Francis, Ph.D., MHS, RD (PI), Assistant Professor/State Nutrition Extension Specialist, Dept. of Food Science and Human Nutrition; Warren D. Franke, Ph.D., FACSM (Co-investigator), Professor/Director, The Exercise Clinic at Dept. of Kinesiology; Jennifer A. Margrett, Ph.D. (Co-investigator), Assistant Professor, Department of Human Development and Family Studies; Marc Peterson (collaborator), Program Specialist, 4-H Youth Development, Iowa State University Extension, Polk County; Kara Strand, Graduate Student, Dept. of Food Science and Human Nutrition.

Organizations: Aging Resources of Central Iowa (congregate mealsites in Story County Iowa).

Target Audiences: The LIFE program utilizes an intergenerational design towards health promotion of older adults. We recruited a convenience and snowball sample of rural older adults age 60+ (n=52) and young adults ages 16-22 years (n=18) (Tables 1 and 2). Young adults served as the on-site program trainers and older adults were the program participants. To ensure success, a key component is the training workshop for the trainers during which training materials will be provided.

Table 1: Participant Sociodemographic Baseline Data

CHARACTERISTIC	NUMBER^a	PERCENT
Age^b (in years)	76	60-92
Gender		
Male	7	13.5
Female	45	86.5
General health		
Very poor	0	0
Somewhat poor	5	9.6
Average	18	34.6
Somewhat good	18	34.6
Very good	11	21.2
Contact with youth in a day		
Never	14	26.9
Occasionally	32	61.5
Several times a day	6	11.5
Marital Status		
Single, never married	3	5.8
Married	17	32.7
Divorced	5	9.6
Widowed	27	51.9
Living arrangement		
Apartment or home	42	80.8
Independent &/or Assisted Living Facility	5	9.6
With Adult Children	1	1.9
Other	4	7.7

^a Total number of participants is 52; ^b Data provided are mean and range

Table 2: Trainer Sociodemographic Baseline Data

CHARACTERISTIC	NUMBER ^a	PERCENT
Sex		
Male	1	5.6
Female	17	94.4
Age		
< 20 years	4	22.2
21-25 years	13	72.2
≥ 26 years	1	5.6
Ethnicity		
Caucasian	15	83.3
Asian	3	16.7
Year of School		
1 st Year College	1	5.6
2 nd Year College	1	5.6
3 rd Year College	7	38.9
4 th Year College	7	38.9
Graduate Student	2	11.1
Self-Reported Health Status		
Average	2	11.1
Somewhat good	5	27.8
Very good	11	61.1
Daily Contact with Older Adults		
Never	4	22.2
Occasionally	11	61.1
Several times a day	3	16.7
Lived with older adult relative in last 5 years		
Yes	5	27.8
No	13	72.2

^a Total number of trainers is 18

PROJECT MODIFICATIONS: Nothing significant to report during this reporting period.

IMPACT: 2010/01 TO 2010/12

The drafts of the newsletters, user manual and training workshop curriculum will be used during the pilot project time period (Jan 2011-Dec 2011). Throughout the study period evaluation data (focus group and survey) will be collected on each of the above items. The feedback will be used to revise the aforementioned products prior to final production. The newsletter will be made available through ISU-Extension in print or pdf; the user manual and workshop curriculum will be available in a CD format. Tables 1-3 provide the most recent data analysis available for the LIFE Program research project.

Table 3: Preliminary Outcome Data (5 sites)

MEASURE	PRE ^a (mean ± SD)	POST ^b (mean ± SD)
Chair Stand (Senior Fit Test) (n=28)	10.1 stands ± 3.65	11.2 stands ± 3.72
Average Shoulder Stretch Test (Senior Fit Test) in inches (n=25)	7.05 ± 4.78	6.7 ± 4.65 ^c
Average Hand Grip (Senior Fit Test) in pounds (n=28)	40.8 lbs ± 20.09	43.3 lbs ± 19.13
Late Life Function (Total Score) (n=17)	64.8 ± 10.84	64.36 ± 7.4
Late Life Function (Upper Extremity Score) (n=18)	81.6 ± 12.99	78.3 ± 7.72
Late Life Disability Limitations (n=23)	75.1 ± 17.22	78.8 ± 14.25 ^d
Readiness to Change (n=28)	3.6 ± 1.26 (Preparation Stage)	3.5 ± 1.50 (Preparation Stage)
Satisfaction with Life Score (n=28)	26.8 ± 7.17	28.0 ± 5.00
Geriatric Depression Scale Score ^d (n=28)	1.8 ± 2.88	1.6 ± 2.50 ^e

^a Data collected during Week 1; ^b Data collected during Week 8; ^c An decrease in score indicates more flexibility ^d An increase in the score (based on a Likert scale) indicates reduced number of limitations ^e A decrease in score (based on a Likert scale) means improved mood

University of New Hampshire, Joanne Curran-Celentano

2011 Modifications Proposed for Objective 2:

Objective 2, Experiment 1

The effect of combined physical activity and dietary interventions on body composition, physical performance, and CHD risk factors in overweight and obese older adults. (URI lead; UNH participating)

Purpose. To develop effective intervention strategies to improve physical performance and reduce CHD risk factors in overweight and obese older adults.

All data will be collected at the URI station for analysis. In addition, subjects will be tested for macular pigment in Objective 2, Experiment 3b (below). Remove this for modification below

Objective 2, Experiment 2

Investigating determinants of macular pigment density as a biomarker of carotenoid status and eye disease risk in the elderly.

2a. Purpose. To determine the impact of pregnancy and lactation on lutein status, retinal health and MPOD; Does number of pregnancies impact lutein/n-3 FA status and health risk with aging. (UNH lead; LSU participating)

We will build on our previous work on age-related macular degeneration (AMD), macular pigment density, dietary lutein and dietary DHA. As women, compared to men, are at higher risk for AMD we propose to explore if life events and choices that are specific to women (number of pregnancies and breast feeding versus formula feeding) diagnosed with AMD are related to incidence for AMD. This will be done by retrospective examination of medical records; this will be carried out in partnership with clinicians in ophthalmology and pediatrics at LSU Medical School. Additionally we will examine how both pregnancy and breast feeding impact macular pigment density in women. These data will help establish if pregnancy and breast feeding women should be consuming more lutein and DHA compared to non-pregnant and non-breast feeding women to protect their retina with aging.

Status Report Objective 2 Experiment 2 a:

Data are currently being collected on 300 women over 50 years of age seen at the ophthalmology unit at LSU Medical Center and diagnosed with age-related eye disease (macular degeneration and cataract). Information related to number of pregnancies and infant feeding practices will be related to diagnosis to test the hypothesis that changes in hormone status and transfer of carotenoid from mother to infant during pregnancy and breastfeeding influence long term macular pigment density and function.

2b. Purpose. To assess the impact of exercise and weight loss on carotenoid status and macular pigment optical density (MPOD); to characterize the transport of lutein and MPOD as impacted by exercise and/or weight loss. (UNH lead and RI participating)

~~This study is an expansion of our current research looking at transport of lutein following supplementation for 120 days. The methodology for evaluating carotenoid status and MPOD will be coordinated with the exercise study of URI (Objective 2, experiment 2). RI will identify and screen subjects for inclusion in Objective 2, Experiment 2 and collect relevant dietary, anthropometric and biochemical data. MPOD will be measured using a Macular Metrics heterochromatic flicker photometry unit set up at the laboratory at URI. Subject MPOD will be established at baseline and measured every 4 weeks for the duration of the 16 week intervention. At the time of each retinal measurement, blood samples will be collected for carotenoid analysis by HPLC at NH. Changes in MPOD and carotenoids will be assessed along with changes in serum cholesterol, lipid profiles, dietary and anthropometric measures.~~

Modification: Since the presence of macular pigment through the lifecycle is hypothesized to influence risk of aging eye disease and obesity is a known risk factor for AMD, we are assessing

MPOD on normal, overweight and obese young adults in two studies. Data collection is ongoing in both

a. Normal, mild and overweight college students are recruited for MPOD measurement using heterochromatic flicker photometry. In this study the retinal carotenoid density will be assessed relative to body weight, BMI, lifestyle questionnaire and dietary intake evaluation using the LZQ©™ questionnaire (HNRCA and Tufts University) for lutein and zeaxanthin.

b. Normal and overweight adults aged 18-50 are being actively recruited to participate in a 12 week lutein intervention to determine the impact of body weight, body composition and dietary pattern on absorption, transport and deposition of supplemented lutein (10 mg lutein, 2 mg zeaxanthin). The effect of supplementation on serum, macular density and markers of inflammation will be evaluated. Five measurements of MPOD are being assessed over 3 month intervention. MPOD will be measured using a Macular Metrics heterochromatic flicker photometry unit set-up at the laboratory at St Anslem College. At the time of each retinal measurement, blood samples will be collected for carotenoid analysis by HPLC at UNH. Changes in MPOD and carotenoids will be assessed along with changes in serum cholesterol, lipid profiles, dietary and anthropometric measures.

Dietary intake and lifestyle questionnaire (LZQ™) is included in the assessment. This study is supported in part by the NH INBRE grant with St Anslem College investigator Adam Wenzel, PhD.

University of the District of Columbia, Prema Ganganna & William Rice

The major goal of the UDC NE-1039 project is to design and implement intervention strategies that will increase fruit, vegetable, and whole grain consumption in multicultural elderly individuals in the District of Columbia who have been identified as low consumers of these foods. These interventions will be designed as a result of data collected using a survey instrument that has been constructed to:

- Compare knowledge, priorities, and attitudes of high fruit, vegetable, and whole grain consumers with low fruit, vegetable, and whole grain consumers.
- Compare the cognitive and affective characteristics of these two groups in order to assess their effect on food choices and consumption.
- Determine the extent to which elderly citizens provide nutritional care to children. (The assumption is that interventions with child caregivers will positively affect the children in their care.)

The survey instrument was completed and pilot tested on 16 elderly adults who are registered participants in congregate sites provided by the District of Columbia Office on Aging through a senior service network. Research assistants were trained in cognitive interview techniques. However there were logistical limitations at the pilot sites that prevented individual interviews. Surveys were completed by subjects working in small groups. Some items were skipped, misunderstood, or misinterpreted, and it is likely that group dynamics compromised some of the responses. Interviewer prompts and probes did not occur. As a result, valuable data – especially affective data – was sacrificed. Unclear items have been rewritten, and steps will be taken to

insure that interviews of subjects will occur individually and privately. Attitudes about foods and eating will be sought in addition to consumption data.

The table below summarizes some of the pilot group characteristics.

	<i>High FV</i>	<i>Low FV</i>	<i>High WG</i>	<i>Low WG</i>	<i>Cares for Children</i>	<i>Diet Change</i>	<i>Obese</i>
<i>Male</i>	1	4	1	4	0	1	1
<i>Female</i>	3	8	1	10	5	4	4

Pilot data suggests:

- The survey is able to partition subjects into fruit and vegetable consumption groups.
- Whole grain numbers rely on clarity of definitions that interviewers will be able to explain.
- Subjects seemed generally aware of the benefits of fruits, vegetables, and whole grains, even when they were not consumed in adequate quantities.
- Diagnosis of mobility changes eating behavior.
- It is not unusual for elderly individuals to prepare regular meals for children under 13 years of age.

Five student research assistants have begun interviews and will complete a total of 100 subjects. In addition to the survey completion, each subject will provide photographs of all meals for 4 days as an accurate record of consumption.

Data analysis will provide guidance for the development of interventions for low consumers of fruits, vegetables, and whole grains. Subjects will participate in intervention development. One cooperative project will be a recipe book that will include family recipes with healthy nutritional modifications, as well as personal, cultural, and historical entries. Special consideration will be given to interventions for child caregivers.

University of Rhode Island, Matthew Delmonico, Ingrid Lofgren, and Furong Xu

During our recent USDA-funded randomized clinical trial (UR-IDEAL IV, spring 2011), 32 obese older women aged 55-79 years underwent 16 weeks of either 1) dietary education alone for weight loss (WL) (one session a week for 45 minutes) or 2) dietary education for weight loss and Tai Chi (TC) (3 sessions a week for 60 minutes) at the University of Rhode Island. Subjects were assessed at baseline and post-intervention by the following tests; height, weight, BMI, physical functioning, dietary intake (FFQ and DST), flexibility, blood lipids, body composition (iDXA), and muscle mass (CT scan of the thigh). Weight loss for the TC group was ~2.3% and weight loss for the WL groups was ~3.4%. Attendance for the TC group was ~70% for TC and 80% for WL sessions. Attendance for the WL group was ~80% for WL sessions.

We are now in the development stage of completing a similar intervention next year in two senior centers.