

Promoting Long Term Health with High Food Quality in Elderly Nutrition Programs

Prepared for the Aging and Disabilities Services of the Seattle
Health and Human Services Department

Elizabeth Knierim
18 March 2008
NS 531

Introduction

The Seattle-King County Elderly Nutrition Program offers congregate and home delivered meals following Title III-C of the Older Americans Act, which represents the federal effort to promote healthy aging in America. The primary purpose of the Elderly Nutrition Program is to assist aging individuals in meeting the nutrient recommendations given by the Dietary Guidelines of the United States Department of Agriculture and revised in 2005. Meals are offered to community members 60 years of age and older, and efforts are taken to target those at high risk of poor nutrition. The need for elderly nutrition programs is related to both the increasing numbers of elderly persons and the decline of health associated with aging and abundant studies showing a correlation between proper nutrition and long-term health.

Meals offered by nutrition service programs for the elderly must meet standard guidelines for nutrient content. The Washington State Department of Health and Human Services requires that, if one meal is served a day, it must contain one-third of the DRIs established by the Food and Nutrition Board of the Institute of Medicine of the National Academy of Sciences for specified nutrients as (1,2).¹ The congregate and home delivered meals in the Seattle-King County area have received positive participant feedback and have been recognized for their successes in recent assessments (3). Yet, recent evaluation of the program has shown that participation has declined (4). This paper seeks to explore the food quality of the congregate and home-delivered meals and how food quality relates to nutritional status of the participants and possibly to the recent decline in participation. As well, this paper will propose ideas centered on food quality

¹ See Appendix A for table of nutrients and DRIs, of which 1/3 must be provided with each congregate or home-delivered meal.

to implement in the Seattle-King County Elderly Nutrition Services using evidence from other local nutrition programs that have been successful. Implementation of the suggested policy changes given in this paper may lead to increased participation, increased funds, and ultimately a higher quality of life for all participants.

Background of the USDA Dietary Guidelines for Americans

The USDA provides nutrition recommendations with the Nutrition Guidelines for Americans, which is based on the most recent research findings from studies carried out and funded by the Agricultural Research Service (ARS) of the USDA and other studies. Nutrition service programs and policies established by the USDA throughout the United States use the Dietary Guidelines for Americans as their foundation. Much federal funding has gone toward research in nutrition and toward disseminating research findings, such as with the Dietary Guidelines, in efforts to reduce healthcare spending on chronic disease.

The current status of nutrition and the elderly in the US and globally

Presently in America, the size of the older population is rising. As of 2007, 12.4% of the population was above 65 years of age; this reflects an increase by 3.4 million (about 10.0%) since 1996 (5). It is projected that by 2010 there will be 40 million older Americans, and by 2020 this number will reach 55 million. At the same time, the older people are getting older: The 85 years and older group is increasing at the highest rate. More than nine percent were below the poverty line in 2006, 23.4% had an income of less than \$10,000, and among the older Americans, there are increasing numbers of minorities (19% in 2006) (5). The median income of those 65 years and older is \$23,500 for men and \$13,603 for women. In addition, many elderly persons live alone; nearly

half of all women above age 75 live alone, and Hispanic and black women living alone have the highest poverty rate. It has been shown that healthcare costs are highest among the elderly, and for nearly all health disparities, risk increases with census tract poverty (6). The mean healthcare cost for the aging population is \$4,331, compared to \$2,766 for all Americans. Since about 40% of medical costs are supplied by Medicare, this reflects a high expense for the American economy (7). Overall, the numbers from this 2007 profile coupled with trends in socioeconomic health inequalities (6) clearly indicate that strong, successful nutritional services programs for the elderly, which especially reach out to those at highest economic need, are increasingly vital for America's people and America's economy. Curiously, though, the Seattle-King County Nutritional Services Program is seeing fewer participants each year. Changes must be made to insure that this nutrition service program is meeting the needs of our growing aging population.

The implication of a nutritious diet to the health of seniors is well understood and supported by much scientific research. In a joint review by the World Health Organization (WHO) and the Food and Agriculture Organization (FAO) of the United Nations, the role of diet and nutrition as determinants of non-communicable diseases is well established:

“Nutrition is coming to the fore as a major modifiable determinant of chronic disease, with scientific evidence increasingly supporting the view that alterations in diet have strong effects, both positive and negative, on health throughout life. Most importantly, dietary adjustments may not only influence present health, but may determine whether or not an individual

will develop such diseases as cancer, cardiovascular disease and diabetes much later in life. However, these concepts have not led to a change in policies or in practice.” (8)

Malnutrition, which includes both undernutrition and overnutrition, increases the risk of chronic disease (8,9). Weight loss and low body mass index (BMI) have been associated with adverse health outcomes among the aging population. Very high BMIs, as well, increase risk of adverse outcomes (8). Malnutrition is especially problematic for older individuals because of the increased prevalence of age-related diseases and often numerous medications as compared to younger individuals, making them more vulnerable to diseases associated with malnutrition (9).

Not only is there an increased need for high quality foods among seniors, but seniors have shown a need for guidance in order to meet these higher nutritional recommendations. According to findings by Janet Foote and others in a cross-sectional assessment, a majority of older adults consume lower than estimated average requirement (EAR) levels for vitamin D, vitamin E, folate, and calcium, and less than the recommended daily dairy, grain, vegetable, or fruit servings (10). Further, macronutrient intakes of older adults exceeded the recommended proportions of protein and fat. Another nutrient of concern is vitamin B₁₂. Deficiency of vitamin B₁₂ is common among the elderly, usually as a secondary complication of an underlying disease, and is associated with numerous neurological and physiological complications (11). The USDA Dietary Guidelines 2005 recommends that adults above 50 years old consume vitamin B₁₂ in its crystalline form, such as in supplements or fortified foods, because of a

decreased ability to absorb naturally occurring B₁₂. Older adults are also recommended to consume vitamin D fortified foods or supplements to improve calcium absorption and prevent bone loss. According to Reuben (2007), all vulnerable elders should take vitamin D supplement of at least 800 IU or equivalent each day (9).² This suggestion is based on the evidence that supplementation of vitamin D reduces falls among the aging.

According to this data, supplementing vitamin D reduces risk of falling by 22%. Also, to prevent the progression of hypertension, older adults should consume no more than 1,500 mg of sodium in a day (2,10).

Aspects of food quality beyond nutrient content also become increasingly important with age. Of particular importance is food safety, where unsanitary food preparation methods can encourage bacterial growth, a situation more dangerous among vulnerable elders who may have compromised immune systems (12). Much care must be taken to thoroughly wash produce, to cook at optimal temperatures and for the proper times, and to transport food safely from its place of preparation to the plate.

While the epidemics of obesity, heart disease, and other chronic diseases have been characteristic of Western nations, such diseases are becoming global problems. For example, cardiovascular diseases are now more prevalent in India and China than they are in all developed nations combined (8). If successful changes to the senior nutrition services in Washington State can lead to reduced prevalence of such chronic ailments, we can set a model for the rest of the nation and other countries and begin to help reduce the global disease burden of poor nutrition.

² One IU of vitamin D is equal to 0.025 µg of vitamin D₂ or D₃ (ergocalciferol and cholecalciferol, respectively). The recommendation of 800 IU equals 20 µg. This is more than the AI for vitamin D for those above 51 years, which is 10 µg for males and 15 µg for females (DRIs...).

Evidence of health disparities and the need for successful nutrition service programs

Socioeconomic inequalities in health have historically been difficult to monitor. This is due largely to the lack of socioeconomic data in public health surveillance systems (6). Krieger and others used geocoding techniques and Massachusetts census tract poverty data from 2000 to monitor inequalities in health among census tracts. They discovered major socioeconomic gradients in health across many outcomes; socioeconomic deprivation contributed not only to racial and ethnic disparities in health but also to the occurrence of more than 50 percent of the cases for over half of the disease outcomes studied (6). Kreiger and others did extensive literature review to validate their method of grouping people by the poverty level of the census tract in which they reside, and thus their results were highly compelling. The differences in access to nutritious foods in low-income and minority communities compared with higher-income communities may contribute to a conglomeration of factors that play into major health disparities seen between these communities.

A recent cross-sectional study of food security by Catherine Champagne and others shows that in a rural American society, adults with higher food security tended to have higher quality diets than food insecure adults (13). Adult respondents, 1,607 in total, were surveyed over the phone by random digit dialing. In this study, food security status and diet quality were defined by adherence to the Healthy Eating Index, a measurement used by the USDA, and Dietary Reference Intakes and were determined from self-reported 24-hour recalls.

Studies looking at availability of high-quality foods have found a correlation between the race and income levels of communities and food availability (14). Baker and

others found that there were differences among communities in location of food outlets as well as variation in the availability of healthy food options, and that these differences were at least partially due to disparities in racial distribution and poverty rates.

Specifically, individuals living in mixed or white high-poverty areas and in primarily African American areas are less likely to have access to food outlets than individuals in primarily white, higher-income communities. Further, the food available in the lower-income and African American communities is less likely to enable individuals to make healthy choices (14). This study, however, is confounded by the argument that food outlets usually cater to the purchasing behaviors of the communities, so the food availability may reflect what the individuals residing in the community choose to buy rather than limit what they are able to buy. Another important consideration not addressed by this study is the access to transportation, which would affect whether a longer distance to food outlets truly makes it less accessible if driving is an option. However, this data coupled with the noted disparities in health among census tracts highlights the importance for senior food programs to act aggressively to provide high quality foods in low-income and minority communities.

The studies on food availability and health disparities among communities are limited for the purposes of this paper, however, because they compare all age populations rather than comparing only seniors in different communities and of different socioeconomic status. The underlying assumption is that health outcome measures, food quality, and income levels are averages for all individuals in the communities and reflect what comparisons would be observed among only seniors. Furthermore, assessing

persons for indicators of undernutrition is difficult because there is no universally accepted clinical definition of undernutrition (9).

It is not sufficient to group the elderly all into one population with identical nutritional needs or to generalize them in terms of the community in which they reside. Seniors served by the Elderly Nutrition Program in Seattle-King County vary in nutritional requirements depending on numerous factors, including living situation and health and medication status. Those living actively in the community may be at lower risk than those who are homebound, and those who are homebound may thus have greater nutritional needs (9). For example, due to lower activity, homebound seniors may require fewer calories for weight maintenance, leading to a need for more nutrient-dense foods (12). These seniors may need fruits and vegetables to be delivered because they cannot access these themselves. Similarly, some seniors may suffer diabetes or hypertension and require special diets. Meal providers should correlate with nutrition educators to improve education on making wise food choices with diseases such as diabetes and hypertension. If meal providers offer a few additional options, empowered seniors can make health promoting choices. A few substitutions should be available for home-based meals clients as well.

Incorporating fresh and local produce into the program model

Incorporating fresh produce that has been grown locally is important for improving food quality and improving the nutritional status among the elderly. However, such food has been shown to be more expensive than processed foods of lower nutritional quality. Dr. Pablo Monsivais, research fellow, and Dr. Adam Drewnowski, director of the Center for Public Health Nutrition at the University of Washington, and other

researchers studied food prices in the Seattle area in 2004 and again in 2006 (15). Their findings have significant implications to the Elderly Nutrition Program. They explained that diets which are higher in low-energy-dense foods are higher in nutrient content, whereas those high in high-energy-dense foods are less nutritious. Low-energy-dense foods include fruits and vegetables. High-energy-dense foods, on the other hand, are generally high in refined grains, added sugars, and added fats.

The first significant finding was that low-energy-dense and thus more nutritious foods cost more per unit energy than high-energy-dense foods.³ Secondly, this study found that as food prices rise, foods that are less energy dense and thus more nutritious were rising in cost much quicker than more energy-dense foods (15). In other words, the most nutritious foods are the most expensive, while foods that cause weight gain but do not provide vital nutrients are cheapest, and this trend is becoming more dramatic with time. Knowing from scientific evidence the importance in the aging population of foods low in energy and high in nutrients, such as fruits and vegetables, it is apparent that funding must be increased not just at a rate to match the average increasing cost of all foods, but at a rate to reflect the more rapidly increasing cost of healthful foods.

Diets higher in fruits and vegetables have been correlated with reduced risk of chronic disease (12). Increased national consumption of fruits and vegetables would thus theoretically lead to lower healthcare costs, and considering that about two-thirds of healthcare spending goes toward the aging population and about 40 percent of healthcare spending is provided by Medicare, this would ultimately benefit the national economy (5).

³ See Appendix A, Figure 1. Figure 1 shows the relationship between energy density and cost per 1000 kcal of energy.

Program policy needs to account for the need for adequate fruits and vegetables in the diet. The USDA and Washington State have established programs in the past, such as the Farm Fresh Meals program in Seattle, which brings produce from local farmers markets to homebound meals recipients. The Farm Fresh Meals evaluation report and suggestions are described in more detail later. Also, the Senior Farmers Market Nutrition Program (SFMNP) of the USDA gives seniors vouchers to be redeemed at local farmers markets. Unfortunately, these programs have limitations. First and foremost, they are not year-round. In winter months, when some vegetables are still growing and farmers also have preserved fruits from earlier seasons, seniors are not benefiting from this productivity.

Secondly, Farm Fresh Meals fruit and vegetable baskets do not reach seniors who are not homebound, and the SFMNP vouchers are worth very little. In fiscal year 2007 in Washington, the SFMNP provided an average of only \$40 per eligible senior per year. A voucher had to be picked up at one of only two locations in Seattle and nine other locations in the surrounding areas, vouchers were limited, and vouchers had to be redeemed by October of that year (16). Offering vouchers year-round would help to increase fruit and vegetable intake of seniors in the winter months, when there still are many farmers markets operating. In addition, if vouchers were distributed not only at the designated locations but also at congregate meal sites and delivered to home-bound seniors, those needing vouchers but unable to get them because of transportation or disability would benefit.

Another potential option that is currently in the works is a partnership with Lettuce Link, which is a program of Seattle's Solid Ground and which serves the

community need for fresh, organic fruits and vegetables (17). The Seattle Pike Market Senior Center with the Lettuce Link is growing a “P-Patch” garden for its congregate meals. If this is successful, other elderly nutrition services contractors should follow in line and establish a partnership and their own garden with Lettuce Link. Lettuce Link also works with many area farms, so it would be beneficial to partner with Solid Ground and work with Lettuce Link to obtain more produce from local farms to be used in congregate and home-delivered meals, to raise money for elderly nutrition services, and to recruit other interested groups or volunteers who have interest in donating to or working with elderly nutrition programs.

Respond to dietary needs and cultural preferences of ethnic populations

Though its recommendations are flexible for various meal patterns, the Dietary Guidelines 2005 is based mostly on an American diet and does not necessarily reflect traditional eating of other ethnicities. In our area, though, the ethnic population is growing. In 2006, 19% of the aging population was of minority status. The Seattle-King County ADS has a strong ethnic meals program, which encompasses nine different cultures, including Lao, Hmong, Filipino, Chinese, Korean, Vietnamese, Latino, Somali, and Ukranian (18). It is necessary at the ethnic meal sites to cater to traditional diets as closely as possible and while insuring that these meals meet nutritional needs following the same nutritional guidelines. Responding to feedback from participants is vital to successfully serve ethnic populations. In a survey distributed to participants at El Centro de la Raza in Seattle, one respondent said the services were “excellent except that I do not like hot spicy food and it is not good for my stomach ulcer. I like rice better than

bread” (19). Such feedback needs to be quickly acted upon to insure continued participation.

A recent phone interview with Kim Storms, RD, consulting dietitian of 15 ethnic congregate meals and two home-delivered services, revealed much about how participants respond to certain foods, how the menus are planned and assessed for meeting nutrient requirements, and other issues (18). According to Storms, these programs generally do well to meet the nutrient guidelines. For each meal, the dishes are as follows: One serving of meat or alternate, three servings (totaling 1 ½ cups) of a variety of fruits and vegetables, a grains dish (most often white rice), and an occasional dessert. Though sometimes brown rice is served or white and brown rice are mixed, white rice is most often served because of participant preference. Participants may not even eat the brown rice. One barrier to incorporating brown rice in the Asian meals is that at Asian markets, where most of the ingredients are purchased for these meals, there is no brown rice sold.

Cooks in ethnic centers are most often volunteers (those at Legacy and El Centro are paid), and they are usually members of the ethnic community. This means that the food often does reflect traditional cuisine. In addition, ingredients are mostly bought at the ethnic markets and thus are adequate for traditional cooking. The process for evaluating the nutrient quality of these meals are as follows: Meals are prepared and chefs record the foods offered in a menu. Storms evaluates the menus for meeting nutrient standards, but no computerized nutrient analysis is done. Because the menus are created in retrospect and done by non-nutritional professionals, they may not be completely accurate. However, according to Storms, who regularly visits the sites and

eats the meals, they are mostly doing well to provide one-third of the DRIs as outlined in the standards. She notes that “ethnic people eat much healthier, anyway.”

One challenge at the ethnic meal sites, however, has been meeting the calcium requirements. The adequate intake (AI) is the only DRI established for calcium, as there has not been enough science-based evidence to determine an EAR. The AI for men and women 51 years old and older is 1,200 mg/day (2). This means that each congregate meal must provide 400 mg of calcium. One cup of one percent cow’s milk contains 290 mg of calcium and is a significant source of calcium in the meal when it is included, but many ethnic cuisines do not traditionally embrace milk, and individuals of these cultures are often lactose intolerant. While problems with osteoporosis have historically been low in these cultures, people also traditionally consume more vegetables and nuts and other calcium-rich foods (20). The difference in lifestyle and overall diet in America may be a reason for higher need. In the American diet, milk contributes about 70% of dietary calcium (12). Also, it has been known that weight-bearing activity is most effective at increasing and maintaining bone density and osteoporosis is associated with inactivity. Compared to the lifestyle in many foreign cultures, daily life in America may involve less physical activity. According to anthropological research by Stini (1995), African populations have higher bone density averages and both African and Asian populations have much lower incidences of bone fractures among the elderly than do Caucasian populations (20). Therefore, while fitness programs are vital to help elderly improve physical fitness and bone health, there is additional potential for dietary methods to improve bone health.

Calcium-fortified soymilk and orange juice have been used as replacements in ethnic meal sites. Storms brought samples of soymilk and orange juice to some sites, and the responses were positive. Asians especially liked the soymilk. Later, it was realized that the soy drinks in most Asian markets are not calcium fortified, so Storms and other managers had to return to some meal sites to make sure that they were using calcium-fortified drinks. Unfortunately, milk is expensive and calcium-fortified soymilk and juices cost even more. At a meeting with ADS staff and meal site contractors, concern regarding the high cost of milk and substitutes was discussed. Diane Carmel, meal program manager at the Pike Market senior center, worried that milk was unaffordable on the current budget and it appeared as if milk was currently not being supplemented (21). Similarly in another instance, a cook stopped using calcium-fortified orange juice for budget reasons.

Considering the bone loss that is characteristic with aging as well as the reduction in falls and fractures from increased calcium consumption, it is necessary to provide a decent calcium source with every meal. Storms will return to the sites again to assess the calcium in meals. A coalition with dairy and soymilk providers could be established. If all the Seattle-King County meal sites came together to approach these providers, a partnership could begin that would benefit both. If companies, such as Darigold and Silk Soymilk could provide bulk milk and soymilk at a lower cost, the budget could more easily include milk and calcium-fortified drinks, which often are more expensive than their non-fortified counterparts.

In a survey of Pacific Asian Empowerment Program (PAEP) participants, conducted on a one-on-one basis with 265 PAEP participants, 93% said that they attend

the lunches for the socialization, 86% attend to have a delicious and healthy lunch, and 82% attend to receive their share of the food bank (19). Sixty-seven percent were very satisfied with the program. Suggestions from these interviews included: add more fruits and vegetables and include a greater variety, avoid salty foods, and replace old utensils to bring more dignity to the program. An example from one Seattle meal site shows how pertinent variety is. There, the cook had a limited set of dishes that he would prepare, and the participants began complaining. Some even stopped coming (19). So, not only should there be variety in the foods offered during a meal, but also from day to day there should be variety. It might be helpful to make a calendar of the meals planned for each month. This would prevent the same meal being given on the same day of the week, so a participant who only comes on Wednesdays, for example, will not be eating the same meal each time. This recommendation should be applied not just at ethnic sites but all meal sites.

Participants do not hesitate to voice their thoughts on the meals, as Storms has learned. In cases such as the one above where variety was lacking, or at some sites where food is consistently being fried in oil or salted excessively, it has been necessary that ADS staff ask the cook to make changes. This has been difficult because many cultures find it highly disrespectful to criticize the cook, especially if he is a man. Holding regular meetings with the ADS Nutrition Services contractors, site managers, registered dietitians, and the cooks might allow better opportunity to collectively decide what changes should be made. Cooks would feel that they are being involved in deciding what foods should be made and may be more open to different ways to incorporate nutritious

ingredients to their recipes. Working together like this may lessen the almost contradictory dynamic between the cook and the ADS staff.

Current status of Seattle-King County Programs: Feedback from participants

In 2003, University of Washington graduate nutrition students conducted a survey at two Seattle-King County senior centers to assess the congregate meal programs.

Persons who participated in activities but did not regularly participate in the meals were surveyed to find out why they chose not to. Seventeen percent said they did not eat the meals primarily because of food quality. The only reason given more frequently (22%) was that they did not need the meals. Secondly, when asked what sort of changes might make them choose to eat the meals, given a range of thirteen possible answers, 36% said improving the menu would help (22). While few participants agreed that a healthier menu would encourage them to eat (2.8%), some did suggest that using fresh and local ingredients and providing restaurant-style service would improve meals. It is clear from this study that improving the quality of ingredients and dishes served and expanding the menu to offer more options would encourage higher participation.

More options for dishes, local ingredients, and a dining area, utensils, and dishes that resemble what one might expect from a nice restaurant would all potentially boost participant numbers. Considering that participant survey results indicated interest in receiving restaurant vouchers at meal sites and a collective desire to see restaurant-style service at meal sites, it is clear that there is appeal of restaurant dining. In a restaurant, diners are treated as esteemed guests, they are a part of the community, they are given many options from which to choose, the food is made fresh on-site after being ordered, and the quality and presentation of the foods are of highest importance. Of course, these

meals are rather expensive, time-consuming, and complicated to make, but it would be possible to incorporate these themes into menu creation and meal production at congregate meal sites. Money to use for improved ingredients, restaurant-like meals, and enhancing the meal site atmosphere could be raised with community fund-raising events, such as luncheons open to business people, philanthropists, and community members with food donated from a local business. If the center has a decent kitchen, cooking should be done on site. Currently, 75% of the ethnic centers have cooks who prepare meals on site (18). Alternately, meals could be produced by and served in a restaurant. Such a program has been implemented in Snohomish County, Washington and is described later.

Specific improvements suggested by the Shoreline and Renton Senior Center Meal focus groups included: improve the rice because it is too dry, balance the food groups better, improve the food temperature, reduce dressing on the salad or serve it on the side, provide less pasta, increase fruits and vegetables, reduce the salt in soup and other foods, include fresh vegetables, improve sandwich quality, and cater to special diets.

In the 2007 Community Dining Survey by the Seattle Senior Services, 218 Seattle-King County Elderly Nutrition Program participants were interviewed. The social aspect of the meal sites was clearly significant. In terms of nutrition, half of the participants (49%) said that they eat the same amounts of fruits and vegetables than they did before attending the meal program, while almost half (45%) said that they eat more fruits and vegetables, and they do so mainly because of the combination of these foods in the congregate meals and the education provided. As many as 75% of the participants

said that they were “very satisfied” with the meal program site atmosphere. This is encouraging, and if all sites can provide more fresh fruits and vegetables and become more restaurant-like, the numbers may become even more positive.

For aging persons, maintaining a sense of dignity is very important. Understandably, individuals might not want to define themselves as old, needy, poor, frail, or disabled. Thus, no person would want to take part in a program that suggests he fits into any of these groups. By improving the ingredient quality and freshness and focusing on the dining experience rather than on the need for free food, participation in meals becomes more of a fun and gastronomic occasion instead of “a place for old people.”

Case Studies throughout the United States

Portland, Oregon: Loaves & Fishes

Portland’s program for congregate and home-based meals and health intervention services is charmingly titled Loaves & Fishes. The menus offer a wide selection and many of the sites have a salad bar. There are extensive options for ethnic menus, as well. This program relies heavily on volunteers and funds much of its activities with fundraising events. Community members can purchase meals to be sent to someone with Meal-A-Gram and Valentine-A-Gram, or 6 individuals can donate \$2,000 to enjoy the city’s finest restaurant fare in the Portland Dineout. Portland also holds an annual luncheon where businesspeople and philanthropists can hear about what Loaves & Fishes has accomplished and give donations (3).

NYC Successful Meal Programs

The New York City Department for the Aging (DFTA) produced a report on meal programs in New York in 2007. They initiated a study in 2004 aiming to realize what makes certain programs successful and others not. They suggest that successful programs continue to meet or exceed expected utilization of meals. The New York City DFTA developed a model for increasing meal utilization that is centered upon positive leadership and community building.⁴ Among their proposed strategies, they suggest being present and mindful to be aware of participants' wants and needs, focusing on meals choice, creating a restaurant atmosphere, and establishing good partnerships within the community (23). These strategies should guide changes made by the Seattle ADS when striving to improve food quality and increase participation.

Establishing strong partnerships with sponsoring organizations is critical to making improvements and increasing meal utilization, but it is as important to keep the sponsors actively involved in future planning and problem solving for long-term maintenance of high utilization (23). Engaging partners in program meetings and in fundraising events will promote continued involvement.

Montgomery County, Pennsylvania: BoomerANG Program

Unique to Montgomery County, Pennsylvania, a public/private partnership brings together many local foundations with numerous businesses to serve the areas growing older adult population. They have titled this program Boomers: America's Next Generation, or BoomerANG (24). In 2004, the Montgomery County Office of Aging and Adult Services (MCAAS) and the leaders of the senior service centers saw a challenge

⁴ See Appendix for key points from NYC DFTA model for increasing meal utilization regarding food quality and funding.

ahead with the baby boomers reaching older age status and thus created a steering committee to embark on a year-long research and planning process. This project has been remarkably successful. The steering committee consisted of the senior center leaders, MCAAS staff, funding agencies, community advocates and older adults of the community. They held six “Creating Community Connections” sessions to bring in the community’s elders and truly understand the wants and needs of this population.

The project achieved its outcomes by extensive demographic analysis, much networking to increase partnerships and resources, community comment meetings, and surveying consumers ages 50 and up. They also promoted the meal program more as a chance to socialize and enjoy high-quality cuisine than as a place to receive charity. This brought in seniors of higher economic standing, thus leading to more donations. What this program can teach us is that involving all those taking part in the meal programs, including participants from all meal sites, ethnic and lower-income community members, funding partners, translators, cooks, dietitians, and senior service leaders, in the extensive planning and analysis of the community’s needs is very effective for establishing a successful nutrition service program. An interaction of all stakeholders involved coupled with a market based approach, rather than needs or service based, helps to build partnerships with business and organizations that will provide essential resources and services. Finally, effective promotion by emphasizing high-quality cuisine and social rewards brings in more seniors of higher economic standing and thus more participant donations, and this can allow further improvements made in food quality, such as making it possible to purchase and serve fresh locally grown produce and serve meals in restaurants.

Numerous other nutrition service programs for the elderly throughout the nation have seen success in making their centers more restaurant- or home-like and by including more variety in the menu. In Frankfurt, Indiana, new kitchens were built, and money to do this was raised by giving tours of the old kitchens and showing the plans for the new kitchens. Montgomery County and other centers attracted participants with “lighter fare” options on the menu, as well as “grab & go” selections, in addition to a variety of other menu options.

Seattle-King County, Washington: Farm Fresh Meals

Ann Coulston and others found, through a descriptive study, that Meals on Wheels applicants are at high risk of poor nutritional status (25). Recently, the Area Agency on Aging of King County and the Senior Services partnered with the Pike Place Market Basket Cooperative to bring locally grown fresh produce to Meals on Wheels participants. The “Farm Fresh Meals” pilot program aimed to enhance access to fresh fruits and vegetables to homebound seniors and support sustainable agriculture in Washington State (26). This program was widely and enthusiastically accepted. Results from the pilot study show that purchasing fresh produce from distributors provides no cost savings compared with purchasing from local growers (27), yet there would likely be a difference if compared fresh produce from local growers to canned fruits and vegetables from distributors, and the cost of transporting produce from farms will add extra expense.

Because of the Senior Service’s relationship with Pike Place Market, funding went directly to farmers, whereas another organization would have to pay intermediary service costs to Pike Place market. Bringing revenue to farmers, this program also

supported local farming. Senior Services and Pike Place market staff all thought program was successful, mainly because they were providing fresh, tasty fruits and vegetables to older adults. Also, this program helped to improve the Seattle Senior Services' reputation as meal providers and stood as a model for other nutrition service programs.

This program brought high-quality, nutrient dense foods to those who needed it but who might otherwise not have had access to these foods. By enhancing food quality to home-delivered meals, the desirability of the meals increased as suggested by the increase in average donation by recipients from \$1.75 to \$1.99. The cause of this increase could not be conclusively determined, but the follow-up survey did show that 53% said they would increase their donation if they found out it cost more to offer the Farm Fresh Meals program (27). Since this program also supported sustainable agriculture, all those involved benefited. Ninety-four percent of participants said that they would like to participate in this program again in the future. Since then, this program has been offered each summer, when the weather is optimal for growing and continues to be extremely successful.

The Farm Fresh Meals Pilot program did not show a significant increase in average fruit or vegetable consumption, measured by baseline and follow-up surveys, nor did it lead to increased Meals on Wheels participation. This likely reflects both that the pilot program only lasted one season and people did not come enough for effective behavior change and that the ability for sites to make participants aware of the program was less than ideal. Only about 58% of Meals on Wheels participants were actually made aware of this program.

In follow-up interviews, participants expressed that they liked the freshness and taste of the produce, their favorites being salad greens, berries, and carrots. Eighty-one percent said they liked program, and 89% said it should continue. Complaints were that produce was not served often enough, produce was not prepared properly, and using fresh produce increased the time required to make dishes. Other barriers included increased cost of fresh produce compared with canned, miscommunication between Pike Market and Senior Services kitchen staff, delivery and perishability of produce, unpredictable growing season and having to substitute unavailable food items, increased time in preparing fresh fruits and vegetables, inherent variation in sizes, and conflict in providing both farmers with profit with the limited funds of Senior Services.

Suggestions offered by program coordinators following the pilot program were to adjust the menu for seasonality and crop availability, use perishable produce on the menu as soon as possible once it is delivered, provide new quicker preparation methods to sites, and scale back at first and ease into the program because of limited funding and to evaluate how to best progress. Since many homebound seniors have limited mobility, it may also be helpful to pre-cut some of the vegetables and fruits. A question raised by this trial that warrants further consideration is whether there is a difference in cost per meal when using fresh produce as opposed to canned or frozen produce and what that difference is. Because fresh produce is generally healthier than canned or frozen, and because using local produce benefits farmers, a small difference in price should not be of concern. Another consideration is that the value of bringing farmed produce to members of ethnic home-delivered meals services may not be the same. Among some ethnic populations, individuals may not be familiar with the produce available and how to

incorporate such foods into their cooking (18). Thus, it would be necessary to do an assessment, possibly by surveying current ethnic Meals on Wheels participants, to find out what produce would be preferred of that which is available and how it should be prepared. Another evaluation of this program should be done to reassess its utilization, acceptance, and effect on the eating behavior and health of recipients.

Snohomish County, Washington: Restaurant Voucher Programs

A major hindrance noted by meal site directors in the above survey was recruitment of younger elderly (22). A lively restaurant-style dining experience might attract this population. Dining in a restaurant atmosphere, participants can feel more at leisure and there will be less of an association of the site being a “place for old people.” In Snohomish County, Washington, congregate meals participants can enjoy fine restaurant dining while still receiving the same nutritional quality and other services as offered in more traditional congregate meal sites. The restaurant may be used as the meal site with administrative functions done at the restaurant. In these settings, participants can enjoy a high-quality meal in a pleasing, attractive restaurant setting and visit with fellow senior participants. Menus are planned by the restaurant with input from the provider and must meet the OAA standards of one-third DRIs and be approved by the dietitian. Offering a number of menus at each meal provides for more options for participants and better resembles a true restaurant dining experience. Or, one menu can be offered and the restaurant can take advantage of daily specials. (3).

What changes should be made in the Elderly Nutrition Program meals?

1. Include foods fortified with vitamin B₁₂ in its crystalline form or a B₁₂ supplement.
Many adults over 50 years have reduced ability to absorb naturally occurring

vitamin B₁₂ but are able to digest it in its crystalline form. Cereals and soy products are typically fortified with vitamin B₁₂. Since senior centers typically do not provide breakfast, offering B₁₂ supplements may be more reasonable. The Senior Nutrition Program Standards 2004 prohibits supplement provision, but changing this policy to include only vitamin B₁₂ supplementation may benefit the health of participants. Otherwise, foods high in naturally occurring vitamin B₁₂ include mollusks, clams, and other shellfish, trout, and salmon.

2. Include vitamin D as a nutrient that must be provided at 1/3 DRI and use fortified milk, soymilk, or juices. Since drinks already being provided for calcium are often also fortified with vitamin D, meeting this additional requirement should not be difficult.
3. Reduce salt in many of the dishes, such as soups. The program standard requirements for sodium content of under 400 mg should be strictly followed.
4. Offer a few options for special needs diets and collaborate with nutrition educators to teach seniors with certain diseases to make beneficial food choices at meals.
5. Offer less salad dressing and serve it on the side.
6. Insure that meals are at the proper temperature during cooking, transporting, and when served. Foods should be cooked safely, especially because older adults may have compromised immune systems, and foods should not be served if they have cooled down and no longer taste as good. Report temperatures to the King County health department monthly for assessment.
7. Make sure there is variety in foods served at each meal and in meals from day to day and week to week. Make a calendar at the beginning of each month to make

sure that a certain dish or meal is not offered within one week or on the same day of the week in consecutive weeks.

8. Serve only 100% whole-wheat pastas.
9. Provide more fruits and vegetables and make sure there is a variety. Dietary Guidelines 2005 stresses the importance of getting all types of vegetables, including dark leafy greens, oranges, legumes, starches, and others (12). Partnering with Lettuce Link to have site-owned gardens would bring more locally grown produce to meal sites. In winter months, farmer's markets are still open, and lettuces, dried and canned preserved fruits, and root vegetables such as beets, varieties of potatoes, and carrots are being sold. The Farm Fresh Meals program could be extended to congregate meals, where larger boxes of seasonal produce would be brought to meal sites weekly, and it should be implemented year-round. The Farm Fresh Meals Evaluation Report showed that purchasing produce from local growers was less expensive than purchasing from the distributor (27).
10. Work with local restaurants to set up meals in these restaurants and establish a contract with the restaurant staff to provide administrative functions and produce meals which follow the Elderly Nutrition Program standards, offering either a menu with multiple options or utilizing daily specials to offer to the participants. A separate room can be used for the program so the seniors can visit each other without interruption of other patrons, or they can sit in the main dining area for a more traditional restaurant dining experience. Otherwise, create more of a restaurant environment in the meal sites with updated dishes and silverware, fine

tables and chairs, pleasant and themed décor, different lighting, more menu options, on-site cooked-to-order meals, and table service.

Unfortunately, funding is limited, and each year funds are reduced. Storms stated that current reimbursement is 1.75 to two dollars per meal (18). Actual meal costs are higher, at about two dollars per meal, and they are notably higher in some ethnic sites, such as the Somali site where meals cost about six to seven dollars. Federal money is intended to be “seed money,” and further action by the local ADS is expected to bring in additional funding. Collaborating with more businesses and food and service providers would help to bring in resources and money. Holding steering committee meetings to bring all stakeholders together, and engaging meal program participants as well, would lead to better cooperation and access to resources and funding. Fund raisers similar to those mentioned previously in the Portland, Oregon Loaves & Fishes case study should also be held. Senior centers can also appeal to a wider crowd by holding fund-raising events for all ages, such as cooking demonstrations and concerts or other shows.

Collaborating with local area restaurants, guest chefs could be brought in on occasion to cook the congregate meals or to give cooking demonstrations. This would not only raise money for the program but also support local ethnic or private restaurants by offering promotional opportunities.

The Seattle-King County Elderly Nutrition Program has been successful in utilizing local resources by collaborating with farmers markets in the Seattle Farmer’s Market Nutrition Program. There are also many opportunities for partnering with businesses and organizations that are members of the Healthy Aging Partnerships of Washington State (HAP) (28). The Seattle-King County program was actually used as an

example of an innovative nutrition program along with the programs described above in Strombeck (3). Strombeck highlights HAP and the former Lifetime Fitness Program (now the Enhance Fitness Program) of Seattle-King County. However, a focus on food quality has seemingly been neglected. By raising money with fundraising activities and enhancing the atmosphere of the meal sites to attract more participants, more funds will be available to provide more nutritious foods, such as milk or milk substitutes and locally produced fruits and vegetables, and to expand the menus to include a greater selection. With more foods to choose from and healthier options, the Seattle-King County Aging and Disability Services and the Area Agency on Aging can help to improve the health status of the aging population.

References

1. Senior Nutrition Program Standards 2004. Washington State Department of Social and Health Services Aging and Disabilities Services Administration.
2. Dietary Reference Intakes (DRIs): Recommended Intakes for Individuals, Vitamins. Food and Nutrition Board, Institute of Medicine, National Academics. National Academy of Sciences 2004.
3. Strombeck R. Innovative nutrition programs for older adults: Common problems and innovative solutions. Riverside County Foundation on Aging, 2005.
4. Conversation with Maria Langlais of Aging and Disabilities Services, Seattle. January 2008.
5. A Profile of Older Americans. 2007. United States Department of Health and Human Services Administration on Aging.
6. Krieger N, Chen JT, Waterman PD, Rehkopf DH, Subramanian SV. Painting a truer picture of US socioeconomic and racial/ethnic health inequalities: The public health disparities geocoding project. *American Journal of Public Health* 2005; 95(2):312-323.
7. Beers MH, Jones TV, Berkwits M, Kaplan JL, and Porter R, eds. (2000-2006). The Merck Manual of Geriatrics, 3rd Edition. Merck & Co. Available from: URL: <http://www.merck.com/mkgr/mmg/home.jsp>.
8. WHO and FAO. Diet, Nutrition, and the Prevention of Chronic Disease. WHO Technical Report Series 2003. Geneva; 916.
9. Reuben DB. Quality indicators for the care of undernutrition in vulnerable elders. *Journal of the American Geriatrics Society* 2007; 55(S2):438-442.

10. Foote JA, Giuliano AR, Harris RB. Older adults need guidance to meet nutritional recommendations. *Journal of the American college of nutrition* 2000; 19(5):628-640.
11. Wahlin TBR, Wahlin A, Winblad B, and Backman L. The influence of vitamin B₁₂ and folate status on cognitive functioning in very old age. *Biological Psychology* 2001; 56(3):247-265.
12. Dietary Guidelines for Americans, 2005. US Department of Health and Human Services; US Department of Agriculture.
13. Champagne CM, Casey PH, Connell CL, Stuff JE, Gossett JM, Harsha DW, McCabe-Sellers B, Robbins JM, Simpson PM, Weber JL, and Bogle ML. Poverty and food intake in rural America: Diet quality is lower in food insecure adults in the Mississippi Delta. *Journal of the American Dietetic Association* 2007; 107(11):1886-1894.
14. Baker EA, Schootman M, Barnidge E, Kelly C. The role of race and poverty in access to foods that enable individuals to adhere to dietary guidelines. *Preventing Chronic Disease* 2006; 3(3). Available from: URL: http://www.cdc.gov/pcd/issues/2006/jul/05_0217.htm
15. Monsivais P and Drewnowski A. The rising cost of low-energy dense foods. *Journal of the American Dietetic Association* 2007; 107(12):2071-2076.
16. Seniors Farmers Market Nutrition Program Seattle-King County 2007 Distribution. Available from: URL: <http://www.agingkingcounty.org/docs/FarmersMktDistributionSites2007.pdf>

17. Lettuce Link, Solid Ground. Available from: URL: <http://www.solid-ground.org/Programs/Nutrition/Lettuce/Pages/default.aspx>. Accessed 13 March 2007.
18. Conversation with Kim Storms, RD, Aging and Disabilities Services Ethnic Meals Dietitian. 7 February 2008.
19. El Centro de la Raza Congregate Meal Services 2006 Survey and PAEP Survey on Congregate Meal Clients for Seniors for the Period October 24 Till November 9, 2007.
20. Stini WA. Osteoporosis in biocultural perspective. *Annual Review of Anthropology* 1995; 24:397-421.
21. Conversation with Diane Carmel, Pike Market Senior Center meal program manager. 27 February 2008.
22. Averkiou X, Averill M, Bialias I, Campbell N, et al. Findings from the ADS Senior Congregate Meal Program Survey: Rethinking Congregate Nutrition. A Report to Aging and Disability Services, Seattle-King County, State of Washington. 2003.
23. Stephens R and Kwah H. 2007. Critical factors in the successful utilization of senior center meals. New York City Department for the Aging; New York.
24. Marcus M and Migliaccio J. 2006. BoomerANG Project Final Report. Cohen G and Florio K, eds. Montgomery County, PA.
25. Coulston AM, Craig L, Voss AC. Meals-on-Wheels applicants are a population at risk for poor nutritional status. *Journal of the American Dietetic Association* 1996; 96(6):570-573.

26. Beaudoin S, Smith L, Johnson D. Providing homebound seniors in King County, Washington with market fresh fruits and vegetables. Program evaluation of the senior farmers market nutrition pilot program. University of Washington Department of Health, Health Promotion Research Center, Department of Nutritional Sciences. November 2001.
27. Farm Fresh Meals Program Evaluation Report. May 2005. Senior Services of Seattle-King County.
28. King County Healthy Aging Partnership. Available from: URL:
<http://www.chef.org/programs/aging.php>

Appendix

Table 1. DRIs for important nutrients from the Dietary Guidelines 2005 for ages 51 and older. Must meet 1/3 of RDA/AI and not exceed 1/3 of UL (5).

Nutrient	RDA/AI	1/3 RDA/AI	UL	1/3 UL
Protein	56/46 g	19/15 g	N/A	N/A
Fiber	30/21 g	10/7 g	N/A	N/A
Fat	20-35% kcal	7-12% kcal	N/A	N/A
Calcium	1200/1200* mg	400/400* mg	2.5 g	0.83 g
Vitamin A	900/700 µg	300/233 µg	3000 µg	1000 µg
Vitamin C	90/75 mg	30/25 mg	2000 mg	667 mg
Vitamin B6	1.7/1.5 mg	0.57/0.50 mg	100 mg	33.3 mg
Vitamin B12	2.4/2.4 µg	0.8/0.8 µg	ND	N/A
Sodium	1.3/1.3* g 1.2/1.2* [†] g	0.43/0.43* g 0.4/0.4* [†] g	2.3 g	0.76 g

Values expressed as Male/Female

*Value of RDA unknown and AI used

[†] For ages 71 and over

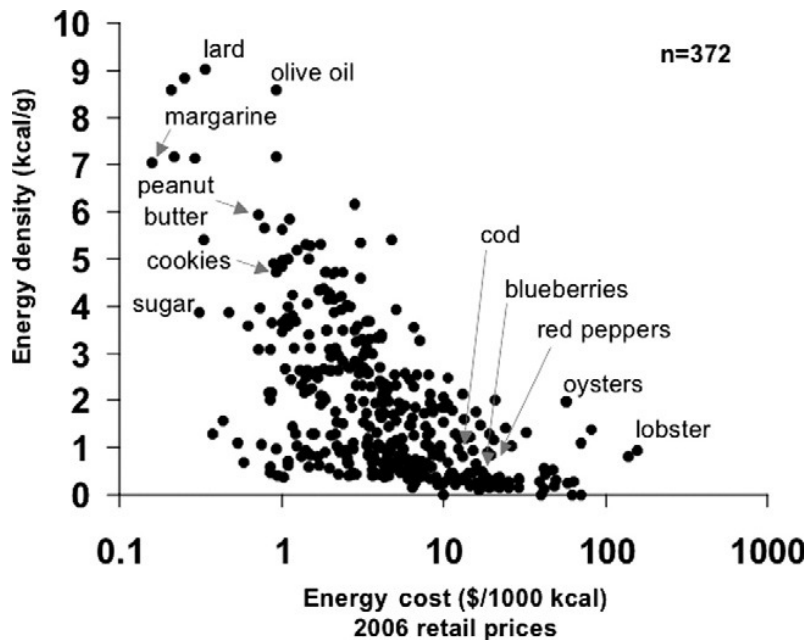


Figure 1. The relationship between energy density (kcal/g) and energy cost (\$/1000 kcal) of 372 foods from the Seattle area supermarkets in 2006. Energy cost was inversely associated with energy density. The data were fit with a linear regression: $r^2 = 0.38$. Source: Monsivais and Drewnowski 2007 (10).

NYC DFTA Leadership Model: Mission and Strategic Practices (NYC meals)
for Increasing Senior Center Meals Utilization

- If you don't like it, how can I fix it: Create the right kind of customer service organization.
- Get the right people on your bus (and the wrong people off).
- Be present and mindful: Observe, assess, and respond.
- Whose center is it anyway: Involve the membership as partners in leadership.
- Meals choice: Make a big difference and send an important message.
- Little things mean a lot: Make it more like a restaurant.
- No center is an island: Engagement with the larger community can help sustain growth.