

Dietary Guidelines Advisory Committee Meeting

Sponsored by the
U.S. Department of Agriculture (USDA)
U.S. Department of Health and Human Services (HHS)

April 29-30, 2009

Meeting Summary

Wednesday, April 29

(1:30 p.m.)

Participants

Dietary Guidelines Advisory Committee: Dr. Linda V. Van Horn (Chair), Dr. Naomi K. Fukagawa (Vice-Chair), Dr. Cheryl Achterberg, Dr. Lawrence J. Appel, Dr. Roger A. Clemens, Dr. Miriam E. Nelson, Dr. Shelly M. Nickols-Richardson, Dr. Thomas A. Pearson, Dr. Rafael Pérez-Escamilla, Dr. Xavier Pi-Sunyer, Dr. Eric B. Rimm, Dr. Joanne L. Slavin, Dr. Christine L. Williams

Executive Secretaries: Ms. Carole Davis, Ms. Kathryn McMurry, Ms. Holly McPeak, Dr. Shanthy Bowman

Others: Dr. Robert Post, RADM Penelope Slade-Sawyer, CAPT Sarah Linde-Feucht

Welcome and Opening Remarks

Carole Davis, Director, Nutrition Guidance and Analysis Division, Center for Nutrition Policy and Promotion (CNPP), USDA, speaking on behalf of Dr. Robert Post, Acting Executive Director, CNPP, called the meeting to order at 1:30 p.m. She recognized Rear Admiral Penny Slade-Sawyer of Health and Human Services (HHS) and welcomed the Committee members and those attending by webinar to the meeting. She reviewed information from the Federal Advisory Committee Act (FACA), including the requirements of announcing the meeting through a Federal Register notice and the importance of transparency. The public is invited to provide written comments at www.dietaryguidelines.gov. She turned the meeting over to Dr. Linda Van Horn, Chair of the Dietary Guidelines Advisory Committee.

Dr. Van Horn welcomed the Committee members and webinar audience. The Committee has met several milestones since the second meeting. The subcommittees prioritized their research questions for literature reviews and met with outside experts. The Subcommittees have been working to move their scientific reviews forward by gathering information and clarifying plans. In areas where the literature reviews have been completed, the information is being extracted and organized. Discussions continue on cross-cutting issues.

Expert Presentation
Food, Health, and Incomes:
Economics of Dietary Behavior and Satiety

Adam Drewnowski, Ph.D.

Adam Drewnowski, Ph.D., Director of the Nutritional Sciences Program at the University of Washington, the Center for Public Health and Nutrition, and the Center for Obesity Research, spoke on food health and incomes, the economics of food choice behavior, and satiety. He said the economic crisis brings a new challenge to the Committee: to recommend nutrient-dense foods that are affordable and can be used by all segments of the population to build healthy diets. He disclosed that his research has been funded by USDA, NIH, the Nutrient-Rich Foods Coalition, the French Government, and national and international industry sources. His presentation focused on five fundamental questions: Is it possible to improve diet quality while maintaining or lowering diet cost; What is the relationship between food prices and diet quality; What is the relationship between food prices, poverty, and obesity; Are specific macronutrients (sugar, fat) associated with obesity; and Do liquid calories promote satiety? He said food choices are driven not only by taste, cost, and convenience, but also by money, time, access, nutrition knowledge, health, and cooking skills. Some foods are too expensive or are not available in certain neighborhoods. People often lack nutritional knowledge or cooking skills.

His research shows that energy-dense foods (by calories per 100 grams) cost less per calorie. These foods are selected by lower income groups, which show high rates of obesity, diabetes, and metabolic syndrome. Using USDA data from the Food and Nutrition Database for Dietary Studies and the 2001-2002 Food Prices Database from the Center for Nutrition Policy and Promotion, he looked at the relationship between food quality, nutrient density of foods, nutrient quality of diet, and cost. The data can be used to calculate energy cost, nutrients per calorie, and nutrients per unit cost. The energy density of foods is inversely related to the water content. When all of the food groups are put together, there is an inverse relationship between energy density and the energy cost of foods. The foods providing the most calories per dollar contain added sugars and fats. They are likely to be of a high glycemic index and to have high fructose corn syrups, *trans* fats, and minimal nutritional value. He suggested that the cost barrier be recognized and be included in dietary guidelines and recommendations. There are many foods in the middle of the affordability/energy density distribution that are affordable and nutritionally dense. At any level of cost, there are both high and low energy products, and at any level of energy density, there are both more and less expensive foods within the food groups.

He moved on to diets, demonstrating that energy-dense diets cost less and are likely to be nutrient-poor. Using French data, he charted food prices and intake. The highest cost diets were the most nutrient-rich and the least energy-dense. The lower cost diets were higher in energy density and lower in nutrient density. This study was replicated in the US with similar results. These studies demonstrate that economic pressures drive consumer food choices toward cheaper, more energy-dense foods, and low-cost, energy-dense diets lead to overeating and weight gain. Sugar-sweetened beverages are also a factor.

Diet quality is measured by adherence to the Dietary Guidelines. Dr. Drewnowski said that as food costs go up or food spending decreases, consumers buy cheaper foods rather than eat less. Tom Frieden's study in New York City linked frequent consumption of soda to being young, male, and a minority. Soda consumption was linked to poverty, low education, high prevalence

of TV watching, less physical activity, and obesity. The highest prevalence of frequent soda consumption was in neighborhoods of deprivation and poverty. Diabetes rates were also highest in the poorest neighborhoods. He had similar data for Seattle.

Dr. Drewnowski said obesity is an economic issue, and poverty, social disparities, unemployment, lack of health insurance, and under-served neighborhoods are factors that are as important to look at as macronutrients and specific foods. He noted that Slimfast associated with weight loss, and fruit juices associated with health often have just as much sugar as soft drinks associated with obesity. However, the beverages associated with health tend to be more expensive. One theory on the link between sweetened beverages and excessive calorie intake was that sugar-sweetened beverages have no satiating power. The issue of satiety from beverages is currently unresolved. Dr. Drewnowski's study used cola and cookies. There was no difference in satiety or hunger suppression between subjects given 300 calories of cola or of a fat-free cookie. In another study, subjects were given cola, juice or milk. Orange juice, 1 percent milk, and cola, all had the same satiating effect, but sparkling water did not. This suggests that the desire to eat is sensitive to liquid caloric intake. Liquid yogurts, which are high in protein, have a high satiating impact. While the beverages reduced hunger, they had no suppression affect on how much was eaten later, resulting in more total calories being consumed.

Dr. Drewnowski looked at whether it is better to tell Americans to avoid added sugars and fats or to help Americans build better diets by selecting affordable, nutrient-dense foods in each food group. Victor Fulgoni's study showed that limiting problematic nutrient intake does not necessarily lead to healthier diets. The study also showed that if a food is nutritionally dense, a person will eat less of it. Total energy consumption was lowest in the more nutrient-dense diets. He concluded that nutrient density provides a better indicator of diet quality than approaches based on avoiding added sugars, sodium, and saturated fat. The avoidance approach tells Americans what not to eat without helping people build healthier diets. He suggested changing the approach to focus on constructing affordable, healthier diets. He concluded that it is possible to improve diet quality while maintaining or lowering cost, but only if information is provided to the public to identify foods within each food group that are nutrient dense, affordable, accessible, and appealing. Nutrition education and cooking skills are also very important. Dietary guidance should have a positive approach.

Discussion

Dr. Van Horn opened the floor for questions. Dr. Nelson commented that, while green leafy vegetables may cost more per calorie, they are not actually very expensive per serving. Dr. Drewnowski said the next phase of his work will be to match the food price data to actual diets of participants in the National Health and Nutrition Examination Survey. Dr. Nelson asked if the economic view of the poorer neighborhoods in the New York data might be overly simplistic. Dr. Drewnowski said environment affects food choice in many ways, including purchasing power, the types of food available, and education. Many factors going into what is consumed are not a matter of personal choice, especially in poorer segments of society. Dr. Nelson said the economic issue may be more related to what environment a person finds him or herself in. Dr. Drewnowski said that he is looking into distinguishing physical access from economic access. Dr. Appel said the issue of access may be overblown, having seen poor uptake when good foods

are available. Dr. Drewnowski said physical access is not as much an issue as economic access, knowledge, and time. Dr. Rimm said he had heard of pilot studies in which fruits and vegetables were available for free and people still did not take them. He questioned the notion that people drink soda because they need cheap calories, saying there are other issues in play. Dr. Drewnowski said there are preference and taste issues and reemphasized that nutritional knowledge and cooking skills are key to having people use vegetables. He said there have been some successful programs with USDA and WIC encouraging utilization of vegetables.

Expert Presentation
Weight-Loss Diets:
Fat, Protein, or Carbohydrate?
Behavior, Participation, Commitment
Frank Sacks, M.D.

Frank Sacks, M.D., Professor of Cardiovascular Disease Prevention, Harvard School of Public Health, and Professor of Medicine, Harvard Medical School, compared low-fat and low-carbohydrate diets, the Mediterranean, higher-fat diets and the Pounds Lost Trial. The common paradigm is that low-fat, high-carbohydrate diets promote weight loss or prevent weight gain. This kind of diet can promote weight loss, if the carbohydrate-rich foods are vegetables and whole grains of a low glycemic index, as seen in vegetarians and coronary patients. The Turner-McGrievy, et al study compared a vegan diet to a standard low-fat diet. The vegan diet had greater weight loss at three months, but only if the subjects were given sustained support. Without support, neither group lost more than half a kilogram. The low-carbohydrate Atkins diet promotes rapid weight loss that is then regained faster than with a conventional low-fat diet. At 12 months, there is no significant difference between a conventional diet and an Atkins diet. The Garner study compared four diets: Atkins, the Ornish high-carbohydrate, low-fat; O'LEARN, and Zone Diets. Atkins showed the fastest weight loss out to six months, but after six months, it shows the fastest regain of weight. At the end of the study, there was no significant difference between these different diets.

Another type of diet is the Mediterranean high-fat diet. A study by Drs. Sacks and McManus showed that people do lose weight on a Mediterranean-style diet. Weight loss was the same at six and 12 months, and less weight was regained than with a low fat diet out to 18 months. Adherence out to 18 months was much better in the Mediterranean group. When the Mediterranean Diet was compared to both Atkins and a low-fat diet, Atkins showed rapid weight loss at six months with a regain. At two years, the Atkins diet shows an average weight loss of 4.7 kg. The Mediterranean diet showed a loss of 4.4 kg. The low-fat diet shows a loss of 2.9 kg. In many other weight control trials, each type of diet occasionally shows superiority over other types, depending on the trial, but there is no obvious pattern of a specific diet showing a pattern of superiority. Additionally, superiority in the first few months did not predict long-term superiority. Many comparative trials of diet types had many limitations, including lack of information on adherence, high dropout rates, and bias.

The limitations of the current literature led to the development of the Pounds Lost Trial, in which 811 people were randomized to four diets: two low-fat diets and two high-fat diets. The low and high fat diets were either high protein or high carbohydrate. To ensure that the subjects met the

macronutrient targets, each group was given a specified menu on two week cycles, educated on the macronutrient targets, and given motivation to comply. Participants were taught to follow the meal plans exactly. The physical activity goal was 90 minutes per week, with the same techniques and intensity in all groups. There were group and individual counseling sessions to ensure compliance, and participants recorded their diet and exercise online.

Of the 811 participants, 645 (80 percent) completed the study, and it is possible that those least happy with the results were least likely to complete the study. The missing results were imputed. The primary outcome, change in weight from zero to two years, showed very little difference among the diets, about 4 kilograms lost at two years across all of the diets. The average weight loss in all the diets was about 6 kg at six months, and weight loss was similar among the diets at 6 months, 12 months, 18 months, and 24 months. Due to the sustained program of ensuring adherence, there was not the weight gain seen in other studies at 6 to 12 months, though there was some regain at 12 to 24 months. A secondary outcome, loss in waist circumference, was also the same among all the groups, about 7 cm at 6 months, with loss continuing to 12 months. There was some regain at 24 months. Abdominal fat did not return at the same rate as fat in other locations. Different diets did not show substantially different effects for weight loss achievements such as a percentage of body weight or in terms of weight loss of 20 kg or greater. The highly successful patients were also equally distributed among the diets. Satiety, diet satisfaction, food cravings, dietary restraint, and quality of life were not significantly different among the diet groups at 6 and 24 months.

Other studies have shown that adherence to diets falls rapidly between zero and six months. There is a relationship between sustained interaction and support and increased weight loss. At two years, the macronutrient proportions converged toward the average; however, differences in macronutrient levels were sustained out to two years, with the carbohydrate/protein/fat group of 35/25/40 migrating to 43/21/35 and 65/15/20 migrating to 53/20/26. Ambitious macronutrient goals in a population-based study may not be achievable. Subjects on the low-fat diets had slightly greater reductions in LDL cholesterol. In the high-carbohydrate, low-fat group, HDL levels were not as increased or insulin levels as lowered as in the other groups. Dr. Sacks concluded that reduced calorie diets achieve similar weight loss after two years, regardless of macronutrient emphasis. Average weight loss was 9 pounds; average waist reduction was 2 inches, and there were favorable changes in serum lipid risk factors and insulin. The low-fat, high-carbohydrate diet may not be the best for metabolic syndrome or diabetes. Ongoing counseling is important to maintain weight loss, and successful diets for weight loss can be tailored to individual or cultural preferences to achieve long-term success.

He then spoke on interventional studies on sodium, hypertension, and cardiovascular disease. Before the DASH study, MacGregor's double blind sodium study in 20 moderately hypertensive patients showed a progressive blood pressure reduction with reduced sodium intake. The DASH study looked at sodium in a larger population, 412 patients, with sodium levels of 150, 100, and 50 millimoles. The study showed blood pressure reduction proportional to sodium reduction. In patients over 45 who are mildly hypertensive, the lowering of sodium correlated with blood pressure at both the control diet level and the DASH diet level. Reduction from a high to low sodium level with the control diet resulted in a decrease of 8 mmHg, 7 mmHg for DASH. In hypertensive patients, the reduction in blood pressure is higher at the lower levels of sodium. In

African Americans, the effect was even more pronounced. The reduction from 100 to 50 millimoles brought more than twice the blood pressure reduction (7 mmHg in African Americans, 4.8 in non-African Americans) than the change from 150 mmol to 100 (2.3 mmHg in African Americans, 1.9 mmHg in non African Americans). Sodium reduction also shows an increased effect on blood pressure reduction in and after middle age, both with the DASH diet and the control diet. He concluded that there is an accentuation of blood pressure lowering in the 1500 to 2500 mg range, compared to the 2500 to 3000 range. Most population groups are responsive to this, about 70 percent of the population.

Discussion

Dr. Van Horn asked if there are any downsides to reducing the recommended sodium level to around 1500 mg. Dr. Sacks said there was no known downside. Dr. Van Horn commented that ongoing support seemed to be the key factor in long-term changes in diet. Dr. Sacks said it is important for people to find their way to a healthy diet that is within the guidelines for reduction of heart disease and diabetes, and with reduced calories. Support is needed, but the level of support in the study would be too expensive for mass implementation. Dr. Rimm asked if the dietary guideline of 20 to 35 percent of calories from fats is still appropriate, considering that other studies showed weight loss even with 40 percent of calories from fat. Dr. Sacks said no macronutrient intake recommendations are needed at all to lose weight. Recommendations should be based on foods. There are benefits from fats for the risk factors -- if it's the right kind of fat. The question is, if a high fat diet is recommended, will people consume the right kinds of fats? Dr. Pearson asked about the compliance level of physical activity in the Pounds Lost study. Dr. Sacks said all levels of compliance are inter-related, but he was still looking into the individual variables. Dr. Achterberg asked about the drifting back to old dietary patterns. Dr. Sacks said subjects drifted toward their previous intake, but their micronutrient intake remained altered by the diet, and the diets had healthier sources of the macronutrients. Dr. Appel asked about Framingham risk and satiety. Dr. Sacks said the study did not look at Framingham risk, since they were looking at weight change. He further stated that satiety was measured at six months and later. The differences in satiety would probably have been greatest early in the study. Dr. Perez-Escamilla said support for behavior changes is more difficult to obtain for low-income people. Dr. Sacks said that the important factor is participation, not counseling. Behavior reinforcement can be done at the community level in neighborhood groups, peer groups, or internet-based support groups. Dr. Van Horn commented that fat level does affect risk for cardiovascular disease. Both the total fat and the types of fat should be considered. Dr. Sacks said the high-fat group was probably eating some saturated fat, accounting for the difference in results. Dr. Appel asked about saturated fat in the Pounds Lost study. Dr. Sacks said that he did not have the numbers on hand, but they are published.

Expert Presentation

Patricia Crawford, Ph.D., R.N.

Patricia Crawford, Dr.PH, R.D., Director of the Robert C. and Veronica Atkins Center for Weight and Health, at the University of California of Berkeley, spoke on the Center's community partners and their thoughts on the Dietary Guidelines and the Food Pyramid. She presented four sets of questions. The first was, "In what ways does your work suggest that the

current nutrition guidelines are problematic when applied at the school or community level? In what ways are they effective? For example, how can food service managers in schools and other settings distinguish between foods that are the most healthy and those that are the least healthy? How useful is the discretionary calorie allowance for the lay public and food service manager in planning amounts of various foods that should be consumed?” The community members feel that the current Guidelines are credible, current, and comprehensive. The Guidelines are clear on some messages, less so on others. The community members value the resource, and most of their concerns are with application, transmission, and translation of the information.

Their first concern is the lack of specificity. People want food-based specifics for translation on nutrient-based guidelines, including quantities, types, and classifications of foods to help them meet the Guidelines. She offered the fruits and vegetables group as a clear recommendation and asked that the recommendations for the other groups be made as clear. The clarity and simplicity of the Five-A-Day recommendation makes it memorable and easy to comply with, while other group guidelines are less clear. The second comment was that the Dietary Guidelines are too complex. A national set of benchmarks and standards would be helpful in developing a nutrition curriculum. The third comment was that the Guidelines focus too much on nutrients. People want concrete guidance about foods, not nutrients. She suggested that the Committee consider what school personnel will do with the information. She gave the examples of California Senate Bill 12-Competitive Foods, which sets macronutrient guidelines and a calorie cap for snacks available in schools, and Senate Bill 965-Competitive Beverages, which specifies what types of beverages can be sold in schools. Because the beverage law is easier to follow, compliance is better. Some school food directors feel that the recommendations and rules are already conflicting and too confusing. A fourth concern is that people don't understand the use of discretionary calories.

The second question she addressed was, “Have School Wellness Policies utilized information from the Dietary Guidelines?” She is working on the Team Nutrition Local Wellness Demonstration Project with the Departments of Education in California, Iowa, and Pennsylvania, and the Project shows they have utilized the Guidelines. The School Wellness Policy requires that schools set goals for nutrition education, so the information is getting to the wellness communities. Interviewees mention the Guidelines and MyPyramid, but the data show difficulty in including the Guidelines in nutrition education. Many schools are using recommendations from the Guidelines as the basis of their competitive food and beverage standards. Some schools have set higher standards for their reimbursable meals than current USDA requirements. Finally, many policies are based on the model policies, often using the exact same language. In the project, 30 of 31 school districts mention the Guidelines for education or competitive food goals, either by referencing Guidelines information or by specifically referencing the Guidelines.

The third set of questions she addressed was, “How can government nutrition guidelines convey usable information applicable to the school and community setting? For example, how is the Pyramid being used? Has it been adapted or have alternatives been developed by community groups?” The community partners feel that the Pyramid is complicated and not helpful on a social marketing level. The recommendations are too specific to be worked into a curriculum. Additionally, there is little guidance on how to integrate the recommendations into foods offered to the students. One popular alternative developed by the UC Cooperative Extension is My

Healthy Plate, which shows a plate divided into quarters for fruit, vegetables, grains, and meat/beans. Dairy is represented by a circle to the side of the plate. One version has examples of foods from the groups in the sections. Another version is the Healthy Kids Meal Wheel, which shows graphical proportional representations of recommended servings from the food groups and includes a recommendation for daily exercise.

The fourth question she addressed was, “Drawing on your experience, what do you think needs to be done at the level of the federal nutrition guidelines to optimize nutrition for Americans in the school and community setting?” The community recommended providing guidance on what constitutes a healthy food. The guidance should be simple, specific, and clear. Include examples. If guidance is not provided, the community will figure it out for themselves, using different and often conflicting criteria. It is often difficult to know what is healthy. Perhaps there should be a simplified rating scale of healthiness. More translational research on the Guidelines and MyPyramid is needed. She pointed out that, if 30 million students per day get school lunches, it does not make sense that only 2 percent of children are meeting the Guidelines.

Discussion

Dr. Van Horn opened the floor for questions. Dr. Pearson asked if the alternative programs, such as the plate, had been subjected to randomized evaluations. Dr. Crawford said that more research was needed and that no trials had been done. Dr. Williams said there should be a way of balancing healthy snacks and somewhat-healthy treat snacks, since children get about 30 percent of their calories from snacks and are less enthusiastic about healthy snacks. Dr. Crawford said she would like to see work on degrees of healthiness so certain levels of healthiness could be established.

Expert Presentation

Dietary Guidelines and a Sustainable Food System

Michael W. Hamm, Ph.D.

Michael Hamm, Ph.D., CS Mott Professor of Sustainable Agriculture at Michigan State University, spoke on the relationship of the Guidelines to sustainability. The first question he had been asked to address was, “Does sustainability of our food supply relate to the Dietary Guidelines?” He responded by showing that the US does not produce enough fruits and vegetables to meet the Guidelines. If Americans followed the Guidelines for fruit and vegetable consumption, an additional 13 million acres would have to be planted to meet the demand. America would need more farmland, but the existing farmland is threatened by development; 86 percent of fruits and vegetables and 63 percent of dairy is produced in the path of development. Half of domestic fruits and vegetables are grown in California, and the Central Valley of California is in a drought. As the population grows, land is taken out of production and water is taken from irrigation. Planning is needed to ensure a sustainable food supply. Current production should be preserved while production is also redistributed across the country. He said production is a matter of national security and economic development.

The second question he addressed was, “Should we think about more than food as nutrition but also consider other food attributes?” Consumers look at a lot of attributes of their food. There are differences of opinion on what sustainability is. However, Dr. Hamm envisioned a sustainable system as locally integrated, with food production dispersed across the US. The system would be community-based and would try to have food secure communities. Food should come from a dynamic blend of local, regional, national, and global sources. He used the example of Michigan as a state with a short growing season. He showed plastic hoop houses that can be used to extend the growing season. While there is no evidence that locally-grown food is healthier, it does present an opportunity for economic development. In Michigan, if people were to eat more of the fruits and vegetables than they currently eat, and get more produce from within their state that is fresh with newly available technology, it would require that 37,000 more acres be put into production and would result in \$211 million increased net income, 1,800 off-farm jobs, and at least 3,600 on-farm jobs. The results are even greater when technology is used to lengthen the growing season. A survey of consumers at farmers markets shows that consumers would come both earlier and later in the year if there was produce to purchase. There have been efforts to get SNAP card readers at farmer’s markets. There is also a program to train youth to sell produce in the communities. The Michigan Farmers Market Association provides insurance for farmer’s markets. A philanthropic project is in place to double the value of SNAP card credit spent at a farmer’s market so that five dollars of SNAP card value can buy ten dollars of produce. Training programs will have to be put into place for youth and immigrants going into farming. He concluded that enhancing sustainability provides many economic opportunities.

Discussion

Dr. Perez-Escamilla asked why there should be a concern about local production, given that produce can be purchased globally. Dr. Hamm said an increasing amount of produce is coming from the tropics, which will be hardest hit by climate change. These tropical nations are also increasing in population and will need to feed their own populations. It is important to maintain both global trade and a domestic food supply. Dr. Pearson commented that global trade can be a threat to domestic production. The current global market for fruits and vegetables does not favor the American farmer. Dr. Hamm said that is true for certain products, especially juice. He added that a recent USDA rule makes it acceptable to use geographic preferencing when bidding for the K-12 school lunch program for contracts under \$100,000. In Michigan, these preferences are being used to help the local farmers.

Food Safety and Technology Subcommittee Discussion Leader: Roger Clemens

Dr. Clemens, Chair of the Subcommittee, said the Subcommittee has prioritized the questions and topics it wants to address. Priority level one issues are in-home food safety behaviors and risks of fish consumption. Fish consumption will be handled in collaboration with the Fatty Acids Subcommittee. PICO charts have been developed for these projects, and a literature review is underway. The priority level two topic areas are new technologies related to food safety and food allergies.

Dr. Perez-Escamilla gave an update on the topics the Subcommittee is working on. For in-home food safety behaviors, the questions have been reorganized into two groups: “To what extent do consumers follow proper techniques and procedures?” and “What in-home techniques are associated with favorable food safety outcomes, such as reduced pathogen loads and subsequent risk of home-based foodborne illnesses?” Search and sort plans have been developed and approved. The review of consumer behavior literature will focus on US studies, but the favorable techniques literature search will include both US and international studies. Research conducted in a healthcare setting will be excluded, since the target population of the Guidelines is healthy Americans. The conclusion statements will be drafted based on information from the Federal “Topline” consumer survey data on food safety and from the Nutritional Evidence Library (NEL) literature review. The Subcommittee will look at knowledge, attitude, and behavior trends since the 2005 Guidelines.

The Subcommittee had a teleconference with Amy Lando, CFSAN, FDA, on food safety trends and will continue to work with her and FDA on analysis of the survey data by socioeconomic, demographic, and other characteristics. The literature review is going well. So far, 16 “consumer behavior” and 7 “favorable technique” studies have been identified, related to food storage, preparation, and handling. The next steps are to conduct additional searches for literature on hand washing, washing and sanitation of food preparation areas and utensils, and washing foods.

The 2005 DGAC endorsed FightBAC!® and added information for areas not included in the campaign. The support staff of the Subcommittee has had contact with FDA, USDA, and the Partnership for Food Safety Education to get updates on what has happened in the area food safety education programs since 2005. The literature review will focus on publications since 2004 and will explain the evidence supporting FightBAC! ® and other food safety recommendations. New programs include befoodsafe.gov, isitdoneyet.gov, BACdown, and a program by FDA on safe handling of fruits and vegetables. Emerging issues related to food safety include microwave safety, consumption of raw foods, and more specific information for the time and temperature for specific foods to be consumed safely. The Subcommittee will consider these emerging issues in reviewing the literature.

The second topic was the risks of fish consumption, raising two questions: “What are the risks (also consider benefit/risk ratio, BRR) for different levels and frequencies of fish consumption?” and “Do the risks (also consider BRR) differ by the type and source of fish, if so, how?” The PICO chart was edited to no longer include Persistent Organic Pollutants (POPs) as an exposure risk. The Subcommittee reviewed a number of reports, including *Seafood Choices* (IOM, 2007), a literature review; and the public draft of *Quantitative Risk and Benefit Assessment of Commercial Fish Consumption* (draft released by FDA in January 2009), which looks at the risks and benefits of fish consumption, particularly related to neurological development, heart disease, and stroke. Mike Bolger of FDA’s Risk Assessment Unit helped the Subcommittee understand the methodology and the goals for the report. Expert consensus seems to be that fish consumption is healthy and should be recommended. However, methylmercury contamination is real, and the public should be informed on the types of fish that are high in mercury and what are safe amounts to eat. US fish consumption is low, with none of the top fish consumed being high in methyl mercury. Communication on this issue will be challenging. The public needs species-

specific data on methylmercury content. The Subcommittee's review of the science will be based on the 2007 IOM Report, the 2009 FDA Fish Risk/Benefit Analysis (if the final version is completed and released), and an NEL literature review on benefit/risk analyses from 2006-2009. The subcommittee wants to better understand the species-specific consumption patterns for fish in the US by socioeconomic demographics and physiologic status. For this topic, the Subcommittee will collaborate with the Fatty Acids Subcommittee, which is addressing the benefits of fish consumption.

Dr. Clemens commented that there may be nutrients in fish, such as selenium, that may offset some negative affects of mercury consumption. The Subcommittee will address this balance.

Dr. Clemens gave an update on the topic of recently-developed technological materials to reduce pathogen loads and subsequent risk of home-based foodborne illnesses. Nothing new has been completed by the Subcommittee since the last meeting. On the topic of food allergies, the Subcommittee's staff has contacted the Center for Food Safety and Applied Nutrition (CFSAN) and the National Institute of Allergy and Infectious Disease (NIAID) to learn about current Federal initiatives. CFSAN is currently looking at food allergy labeling and will have a public hearing on this topic later this year. NIAID is in the process of developing *Clinical Practice Guidelines for the Diagnosis and Management of Food Allergy*. NIAID's process includes an evidence-based review, deliberations by an expert panel, and a public comment period. The Subcommittee will invite NIAID to present at a Subcommittee meeting. The literature review for food allergies will proceed once the level 1 priority questions are complete.

Discussion

Dr. Nickols-Richardson asked that home canning be included in the review. Dr. Clemens said it is already included. Dr. Pearson supported looking at the evidence-base of FightBAC![®] and other programs. Dr. Appel asked if the underlying illnesses like gastroenteritis and hemolytic uremic syndrome could be studied. Dr. Perez-Escamilla clarified that there is limited data because symptoms are not well reported. Dr. Appel further asked that the magnitude of the problems raised by the topics be made clear, such as the magnitude of food borne illness and, for fish consumption, the magnitude of mercury risk. Dr. Achterberg requested that the Subcommittee cover clarifications for the public related to organic and local food. Dr. Clemens said the topic had been discussed by the Subcommittee but was removed from the topic list. He agreed to take up the topic again for discussion. Concern was voiced as to whether this belonged with the Food Safety Subcommittee. Dr. Clemens agreed to investigate what procedures are followed by organic farmers. Dr. Williams asked if the Subcommittee had looked at contaminants other than mercury, such as pesticides. Dr. Perez-Escamilla said over 75 percent of fish advisories are about methylmercury. The experts contacted did not think POPs were a concern in the US. Some experts believe these are not an issue for fish in the US food supply, but there is no consensus that this is always the case. Dr. Rimm said the issue should be addressed, since it is a public perception.

Dr. Van Horn thanked the presenters and participants and adjourned for the day.

(Meeting Recess 5:11 p.m.)

Thursday April 30

(8:28 a.m.)

Dr. Van Horn opened the second day's session and introduced Dr. Andrea Carlson and Dr. Mark Lino to give their presentation.

Expert Presentation
USDA Food Plans: Eating Healthy for Less Money
Andrea Carlson, Ph.D. and Mark Lino, Ph.D.

Andrea Carlson, PhD, a USDA economist, presented on the question of whether a nutritious diet can be inexpensive. She said a nutritious diet can be expensive or inexpensive, depending upon the foods chosen. USDA Food Plans can help guide people to eat healthy for less. There are four food plans, the Thrifty, Low-Cost, Moderate-Cost, and Liberal. The Low-Cost, Moderate-Cost, and Liberal Plans are used when calculating alimony and child support in divorce cases and for foster care payments. The Low-Cost Plan is used in bankruptcy cases. The Liberal Plan is used to set the food allotment for DoD service members. The Thrifty Food Plan (TFP) is a minimal cost, nutritious diet. The plan has a set of market baskets specifying the type and quantity of foods an individual can purchase. It is the basis of SNAP program allotments. For a family of four, the TFP cost \$137 per week for February 2009, 25 percent below what the average family of four spends on food.

The nutritional basis of the TFP market baskets are: 1) the 1997-2004 Recommended Dietary Allowances (RDAs), Adequate Intakes (AIs), and Acceptable Macronutrient Distribution ranges (AMDRs); the 2005 Dietary Guidelines for Americans; and 3) the 2005 MyPyramid food intake recommendations. The baskets were derived from the 2001-02 National Health and Nutrition Examination Survey (NHANES), which showed food consumption and the nutrient content of the food consumed. A 2001-02 Food Prices Database was compiled based on Nielsen Homescan data to price the food consumed; the cost of the TFP is adjusted monthly using the Consumer Price Index. A nutritious diet is then determined based on an optimization model that uses the dietary standards, cost constraints, current consumption by food category, and energy levels to maintain median weight at a low level of physical activity. There are 58 food categories. For each category, average consumption weights are used to calculate cost, nutrient profile, and the number of MyPyramid equivalents.

Compared to current consumption, the baskets derived are much lower in fats and added sugars, high in whole grains and fruits and vegetables, and they meet the MyPyramid recommendations as well as nearly all of the nutrients. The nutrients not met: potassium, vitamin E, and sodium, were better than in average current consumption. For vitamin E and potassium, cost was not an issue. It was simply the foods available. Sodium levels were below median consumption.

Dr. Carlson concluded that it is quite possible to have a healthy diet inexpensively, such as through the TFP. One can also have a more expensive, healthy diet using the Liberal Food Plan. Additional CNPP research shows that food costs do not correlate with Healthy Eating Index (HEI) scores. USDA has resources to translate the food plans to useful information for consumers such as a recipe database for nutrition educators and consumers. The State EFNEP and SNAP Nutrition Education programs can also help.

Discussion

Dr. Williams suggested that the information be translated to educational materials showing meal plates fitting in the Thrifty Food Plan so the materials could be made available to pediatricians. Dr. Carlson said FNS is working on translating the material, and it will be available online. People can also save money just by following MyPyramid and choosing low-cost foods. Dr. Pearson commented that a study of 16 clinics in upstate New York demonstrated that a good or bad diet can be constructed at any cost. Dr. Carlson said behavior changes affect health and cost, and healthy food is not always expensive. Dr. Pi-Sunyer asked about Dr. Drenowski's point about poor people eating energy-dense foods. Dr. Carlson said you eat more, by weight, with the Thrifty food basket. It is volume, not calories that make a person feel full. She questioned the value of the cost per calorie calculation, since people do not buy or eat food by the calorie.

Dr. Perez-Escamilla said he had published a paper showing that food label use was a more useful predictor of a healthy diet than income. Dr. Nelson noted that foods eaten away from home are now a larger contributor to consumers' intake and expenditures, and that should be taken into account. Dr. Carlson said she is a co-author on a paper that addressed that issue. It is possible to incorporate healthy foods into the diet away from home, just difficult. Dr. Achterberg asked about the convenience of food preparation under this plan. Dr. Carlson said the process took care to include convenience foods. It is assumed that beans and soups are purchased in cans, that spaghetti sauce is pre-made, and that foods normally purchased pre-made were purchased pre-made.

Expert Presentation *Food and Nutrition and Consumer Behavior* *Brian Wansink, Ph.D.*

Brian Wansink, Ph.D., Professor and Director of the Cornell University Food and Brand Lab, addressed food and nutrition from a consumer behavior and marketing perspective. The questions posed to him were: "What are the determinants of intake?" "What is effective nutrition information?" "What is segmenting messages and markets?" "What are optimal models that relate from transitions to different lifestyles?" "When does nutrition information fail?" and "How do you get people to prioritize nutrition?" Due to overlap in the questions, he reordered and reworded them. The first question he responded to was, "Where do you find most of the published research on food and nutrition behavior?" He said the best source is not PubMed, since the research is published in journals of psychology, economics, consumer behavior, marketing, sociology, and other non-medical journals. He recommended that the NEL look beyond medical journals. He recommended the Web of Science (Social Science Citation Index).

The second question he addressed was, “What are the drivers of food intake?” He said three things affect food intake: when and how often you eat, what you eat, and how much you eat. The timing and frequency of eating is affected by physiological factors, such as hunger or nutritional deficiency; emotional factors; and salience, which can be internal or external. Internal salience is often based on scripts, such as looking in the refrigerator upon returning home, and emotions. Externally-generated salience is caused by seeing, smelling, or hearing about food. These same drivers affect what people eat, but there are self-stated drivers of choice: taste, convenience, price, and health. Taste is the most important driver, health the least. Another factor is the immediate environment and the presence of food. Overeating is generally caused by poor monitoring of consumption, habit, and ideas of consumption norms, which can be affected by packaging and plate size.

The third issue he addressed was consumer segments and markets, looking at who pays attention to nutrition information. It is believed that 70 percent of consumers report paying attention to nutrition information. However, controlled studies in supermarkets show that 12 to 22 percent of customers read the nutritional content labels in detail, and those who read the labels are often those who least need to. Among consumers, there are the nutrition vigilant, the nutrition predisposed, and the nutrition disinterested. The nutrition vigilant do not need intervention. The nutrition predisposed is where the largest change for the lowest cost can be attained. The nutrition disinterested will be difficult to reach.

The fourth issue he addressed was messaging and leveraging. He looked at when labeling is most effective. There are two concerns with labeling: that it can be totally ignored or that it can lead to unmerited health halos. One way to avoid that is to have labeling on the front and back of the packaging, a short blurb on the front and a full claim on the back. The most effective claims are those that target a specific population, receive significant media coverage, are introduced with aggressive and partnered marketing campaigns, highlight quantitative benefits, and help prevent a vivid, personally relevant problem. The nutrition knowledge most correlated with food intake is for people to know that a food has a certain attribute and the consequence of the attribute. That means to not only know the benefit of a food, but also the reason the food has that benefit. He looked at which messages are most effective with what segments. The effectiveness of positive or negative messages vary by situation and individual. Optimistic people who enjoy eating tend to respond to positive messages. Pessimistic people who think logically about food prefer negative messages. Scientists tend to think in terms of negative messages, but the general population responds better to positive messages.

The fifth topic was intervention and change. The question was, what are effective intervention strategies for the non-vigilant? People make over 200 food decisions per day, seldom when there is guidance available. However, only a few decisions would have to change to move people toward healthier eating. One way to influence behaviors would be to surround people with nutritional information, using partnerships with MyPyramid to promote Dietary Guidelines. Social marketing (such as Facebook and Twitter) can have a positive role in nutrition education and motivation, if the information is good, but there is a lot of misinformation out there. The circumstances with the most promise are movements (like veganism) and cool causes (identity bandwagons). The Dietary Guidelines are difficult to make “cool” or movement-inspiring. Efforts should target the nutritional gatekeeper, the person who buys and cooks the food, since

they influence 72 percent of the family eating decisions. Simultaneously, awareness should be built with the children. He said that it is better to make a difference where possible than to attempt a “no person left behind” approach. For the nutrition vigilant, information and reminders are enough. The nutrition predisposed should be provided tools and product solutions for change. For the nutrition disinterested, the approach should be to use passive environmental or product-related changes (such as portion-control packaging) and stealth help in order to have an effect.

Discussion

Dr. Van Horn asked about the difference between education and motivation. Dr. Wansink said people tend to be motivated by big results and are easily discouraged when large efforts fail. Instead, people should make small, gradual changes. Dr. Perez-Escamilla asked about acculturation of immigrants and how it affects food choices. Dr. Wansink said Americans are very flexible in adapting foreign meal patterns. Dr. Nelson noted that, in partnering with companies, there would be no large representative of produce. Dr. Wansink said retailers have an interest in getting people to buy produce and will partner. Dr. Pearson asked about strategies to get the nutrition disinterested into the nutrition predisposed. Dr. Wansink said that the change may be generational, and as younger people grow up with healthier habits, the size of the segments will change. Dr. Fukagawa asked for suggestions on portion control. Dr. Wansink said nutrition has to do both with eating the right amount of calories and eating a balanced diet.

Sodium, Potassium and Water Subcommittee Discussion Leader: Larry Appel

Dr. Larry Appel, Chair of the Subcommittee, and Dr. Christine Williams provided an update. Dr. Appel said the Subcommittee has prioritized the topic areas. The priority one topics are water (on which there is little new data) and sodium in children, which is a new topic. The second priority is sodium in adults. Potassium is the third priority topic.

For water, the question is, “What amount of fluid is recommended for health?” The literature search has been completed, and no new major study was identified. Discussions with an expert on water, Dr. Mike Sawka, confirmed that there is no additional evidence to change the current recommendation. The Subcommittee has completed a first draft of the chapter on water. Dr. Appel will provide additional text on water in the elderly and hyponatremia (low serum sodium). He will also coordinate with other committees on caloric vs. non-caloric beverages. The Subcommittee’s proposed conclusion is the same as the 2005 recommendation. The combination of thirst and usual drinking behavior, especially the consumption of fluids with meals, is sufficient to maintain normal hydration. Healthy individuals who have routine access to fluids and who are not exposed to heat stress consume adequate water to meet their needs. Purposeful drinking is warranted for individuals who are exposed to heat stress or who perform sustained vigorous activity. It is unclear how to grade the evidence for this recommendation.

Dr. Williams presented on the second question: “What are the effects of salt (sodium chloride) intake on health?” Literature searches for adult and children have been completed, and articles are being abstracted. There is progress on sodium in children. There are 32 clinical trial

citations and nine reviews included. Additionally, background articles on hypertension and blood pressure in children will be included. Some of the literature goes back to 1970 and includes U.S. and global literature. The background prevalence search is almost completed.

Dr. Appel made the point that NEL searches alone will not get all the information and suggested that the subcommittees think about how to get comprehensive reviews. He said the Subcommittee discussed target sodium level, whether to adjust sodium and potassium levels by caloric intake, how to approach the joint effects of potassium and sodium, and the data source on sodium sources. The 2005 Guidelines recommend less than 2300 mg per day for the general population, and 1500 mg for hypertensives, African-Americans, and those middle age and older. However, those for whom 1500 mg is recommended make up nearly 70 percent of the population, so perhaps the recommendation should be 1500 mg in the general population.

On the issue of calorie-adjusting sodium and potassium recommendations, the reasoning is that absolute intake of Na and K is inextricably linked to calorie intake. People naturally adjust by calories, and clinical trials that test different levels of sodium and potassium formally adjust sodium and potassium by calorie level. The reason to not calorie adjust is that there is no clear biologic rationale to adjust sodium and potassium recommendations, since such a small amount of sodium is actually needed.

The research on potassium, the third priority, is on hold, though the literature search has begun.

Discussion

Dr. Pi-Sunyer asked if the link between obesity and hypertension might be related to the link between calories and sodium. Dr. Appel said it could be a contributing reason. It is not clear whether or not the obese are more salt-sensitive. Dr. Perez-Escamilla asked if there should be a water recommendation in MyPyramid. Dr. Appel said people meet their fluid requirements without purposeful drinking, according to the 2003 IOM study. However, water might be addressed as a way of controlling calorie intake. Dr. Slavin asked about the review of sodium in adults. Dr. Appel said the 2005 recommendation was based on the IOM report. He is not sure there will be any major new literature, but he would like to look at cohort studies. Dr. Van Horn commented that sodium intake is much higher than the biologic requirement and non-hypertensive people benefit from reduced sodium. Dr. Appel said there are a few trials that show hypertension prevention. Dr. Van Horn commented that increasing consumption of potassium-rich foods will result in a reduction in sodium. Dr. Appel said that depends on the way the foods are prepared.

Dr. Pearson commented that the evidence is very heterogeneous, depending on the nutrient. Dr. Appel said that is related to how mature the field of research is and how the NEL search is conducted. Dr. Nelson noted that there is a lot of salt in the US diet, but it is possible to have good-tasting food at 1500 mg of sodium per day. She pointed out that taste should be kept in mind in the recommendations and that just getting average consumption down to 2300 would be an accomplishment. Dr. Pi-Sunyer asked whether the majority of sodium is inherent in foods or added. Dr. Appel said it is inherent. There is a large amount of sodium coming from restaurants and processed food. It would be useful to have current data on sodium sources.

Dr. Slavin commented that it is difficult to make low-sodium whole grain foods. She expressed concern that limiting sodium levels would cause the industry to increase sugar levels. Dr. Van Horn noted a study in middle school students who were given a reduced intake of sodium. After three weeks, the students had adjusted and did not like the taste of their previous salt levels. People adjust, so the issue is just lowering the level of sodium that is considered normal. Dr. Williams commented that the sodium content in school lunches is very high, so that might be where to start. Dr. Acherberg suggested modeling, considering the lack of literature. Dr. Post commented that the old data on sodium sources has been updated. Dr. Appel said there was a presentation based on NHANES III data, but it does not have the data aggregated in the manner that would be useful to the Subcommittee. He said he might use NCI data to find the top ten contributors. K. McMurry directed the DGAC to turn to the back of the notebook, where Sources of Nutrients, including sodium sources, were newly prepared for the committee by NCI. (Food sources by percentage of the contribution to intake, based on NHANES data 2005-2006) The meeting recessed from 10:11 to 10:29 a.m.

Nutrient Adequacy Subcommittee
Discussion Leader: Shelly Nickols-Richardson

Dr. Shelly Nickols-Richardson, Chair of the Subcommittee, reviewed the list of current research questions by priority and discussed the status for each topic area. The Priority 1 questions are: within a fixed energy intake, what dietary patterns are associated with achieving the recommended nutrient intakes and positive health outcomes; and what environmental factors and individual group behaviors related to diet are associated with achieving recommended nutrient and food group intakes? The priority 2 questions are: what nutrients and food groups are most likely to be consumed by the general public in amounts low enough or high enough to be of concern; how is folic acid intake related to health outcomes; and is an increase in vitamin D intakes above current consumption levels is associated with positive health outcomes? The third priority questions are: are special nutrient recommendations needed for certain subgroups, has the nutrient composition of foods changed in a way that impacts nutrient adequacy, and is evidence that nutrient bioavailability has significantly changed due to alterations in the matrix of foods?

For the question on dietary patterns and nutrient intakes, the Subcommittee discussed using a literature search versus data modeling analyses. The Subcommittee will focus on modeling ways to meet nutrient needs within a fixed nutrient intake, rather than doing literature searches for intervention trials. The priority is to look at nutrients within foods. A new question on water intake and discretionary calories can also be addressed through modeling water as a substitute for sweetened beverages. The Subcommittee will conduct a literature review on breakfast intake as it relates to nutrient adequacy, but not its impact on health outcomes. The Carbohydrates and Proteins Subcommittee will conduct the systematic review on dietary patterns and health outcomes. Work on environmental factors and individual behaviors related to nutrient/food group intakes questions will be integrated into the work of the Energy Balance and Carbohydrate/Protein subcommittees.

For the Priority 2 questions, the Subcommittee will develop a definition of what constitutes a shortfall nutrient and a nutrient of concern. The criteria used will include usual intake data, functional indicators identified by the IOM, and outcomes of public health significance. The Subcommittee will also develop a definition of what constitutes a shortfall food group and a food group of concern. Criteria will include usual intake data, links to nutrients of concern, and links between underconsumption and significant health outcomes. The first draft will be completed by May 29. On the topic of nutrients and food groups of concern for overconsumption, the Subcommittee will look at SoFAAS (solid fats, added sugars, and alcohol) only in the context of nutrient shortfalls and dietary patterns and will refer to information from other subcommittees for links to health outcomes. For the folic acid questions, the Subcommittee heard presentations from two experts: Joel Mason on folate and colon cancer, and Lynn Bailey on folate and neural tube defects. An NEL search and sort plan has been completed, articles are under review for approval, and the SC should have a first draft written by the end of June. For Vitamin D intake and health outcomes the Subcommittee will rely heavily on the AHRQ report, which will be available this summer. Some Subcommittee members will attend the summer IOM vitamin D committee public meeting. The issue of patterns of protein uptake is being passed to the Carbohydrate/Protein Subcommittee.

The first priority 3 topic is the needs of special population groups for iron, B12, and other nutrients. The Subcommittee plans an update of the 2005 DGAC report for B12. A minimal review of the literature will be conducted to identify any newer research, and a first draft should be ready by the end of May. A section on nutrient supplements is also planned for the special populations section. This section will consider which population groups may need supplements to attain nutrient adequacy. The topic of nutrient composition and bioavailability is currently on hold. It may be addressed indirectly through updated food composition information. In addition, Dr. Nickols-Richardson said the Subcommittee plans to address the topic of discretionary calories, but wanted discussion to determine if this topic might be addressed more fully by another subcommittee.

Discussion

Dr. Pi-Sunyer said the Subcommittee should address discretionary calories, since they are linked to nutrient adequacy. Dr. Van Horn pointed out that the Subcommittee was focusing on modeling, which also makes the group a good fit for discretionary calories, since discretionary calories will be included in the modeling of food intake patterns. She added that grain-based desserts are the number one contributor to energy intake, so discretionary calories are definitely important. Dr. Appel pointed out the importance of stratifying by age, since contributors to intakes are different by age. Dietary pattern modeling analyses should answer the question, "What patterns meet the goals?" The patterns should not be limited to specific diets but be more general in how to meet micronutrient needs, since there are many diet plans that can meet recommendations and the current modeling structure allow for different calorie levels. There is a need to do both modeling and a literature search, since the literature doesn't answer all of the questions. Dr. Achterberg said the Subcommittee would also look at different calorie levels and agreed that there are gaps in the literature. Dr. Pi-Sunyer suggested looking for non-English literature. Dr. Nelson asked what calorie levels the Subcommittee would look at. Dr. Nickols-Richardson said modeling could be done at many calorie levels. Dr. Achterberg said the

modeling should include calorie-restricted diets. Dr. Rimm raised the issue of SoFAAS and sodium. Dr. Britten said alcohol is included in the discretionary calorie allowance. Alcohol and sodium can be included in the modeling by making specific assumptions. Dr. Rimm emphasized that the models should include industry changes in the food supply over time. Dr. Nelson noted that SoFAAS do not make up all discretionary calories. Some is from overeating in other food groups. Dr. Slavin suggested that organic foods and sustainability be considered in the Food Safety Subcommittee. Dr. Clemens responded that the Food Safety Subcommittee has the topic on their docket. Dr. Pearson asked, relative to the folate question, would other potential benefits of fortification, such as congenital heart disease, be considered? Dr. Nelson said that both experts said folate fortification has had a positive impact, and noted that women of childbearing age probably should take a supplement as well. Older adults probably do not need folate supplements, which may be harmful, folate should be obtained from foods preferentially. Dr. Appel noted that there are cohort studies showing harm from high intake of supplements.

Energy Balance Subcommittee
Discussion Leader: Xavier Pi-Sunyer

Dr. Pi-Sunyer, Chair of the Subcommittee, began the presentation by reviewing the topic areas that are being considered by the Subcommittee and which member is taking the lead on each topic: energy density by Dr. Pérez-Escamilla; childhood overweight and obesity by Dr. Williams; dietary behaviors by Drs. Nelson and Williams; environment by Dr. Nelson; macronutrient proportion by Dr. Pi-Sunyer; weight management for population subgroups, including gestational weight gain by Dr. Pérez-Escamilla, breastfeeding and weight change by Dr. Pérez-Escamilla, energy requirement during lactation by Dr. Pérez-Escamilla; weight management for older adults by Dr. Pi-Sunyer; and physical activity by Dr. Nelson.

The question on energy density is, “How is energy density (ED) related to body weight and health?” This includes the extent to which dietary ED is associated with BMI and highly prevalent chronic diseases. The Subcommittee will discuss dietary intake patterns associated with diets of different ED and nutrient intake patterns associated with diets with different ED. The NEL librarian has completed the searches for these questions, and this will be the first topic area addressed by the Subcommittee.

For childhood overweight and obesity, the question is, “What is the role of dietary intake in the maintenance of healthy weight and prevention of childhood overweight/obesity?” The NEL is updating several searches conducted by the American Dietetic Association’s (ADA) Evidence Analysis Library (EAL) on childhood adiposity. Since this question hasn’t been asked previously, some of the literature searches will go back further than 2004. This will be the second question reviewed by the NEL.

For dietary behaviors, the question is, “What is the relationship between behaviors related to food intake and body weight?” Sub-questions are: “What dietary behaviors are associated with the maintenance of healthy weight and prevention of obesity in childhood?” “What behaviors related to food intake most contribute to achieving and maintaining a healthy weight in adults?” and “What behaviors related to food intake most contribute to an unhealthy body weight in adults?” Dr. Williams will address the question related to behaviors in childhood, and Dr.

Nelson will lead the questions pertaining to adults. Published systematic reviews are being considered. Additional NEL review will be conducted on individual behaviors that are selected by the Subcommittee.

Regarding environment, the question is, “What environmental factors (e.g., access, availability, type, and quantity of food) contribute to an unhealthy body weight?” Published systematic reviews are currently being considered by the Subcommittee.

The question on macronutrient proportions is, “What is the optimal proportion of dietary fat, carbohydrate, and protein to maintain a healthy BMI, to lose weight if overweight or obese, and to avoid regain in weight-reduced persons?” The search and sort plan for this question has been sent to the NEL librarian, and initial searches are being conducted.

Regarding weight management for population subgroups, four topic areas are being considered. For the question, “How does gestational weight gain impact short (e.g., premature, small for gestational age, and large for gestational age) and longer term (e.g., childhood obesity) pregnancy outcomes?” Dr. Pérez-Escamilla will review the Institute of Medicine (IOM) report on the reexamination of pregnancy weight guidelines, which is expected in June. Questions are being developed about breastfeeding and weight change and energy requirement during lactation. For the question of the effect of weight loss versus weight maintenance on health outcomes in older adults, the PICO chart and search and sort plan are in development.

On the topic of physical activity, the questions are, “How is physical activity related to body weight and other nutrition-related aspects of health?” and “How much physical activity is needed to maintain a healthy body weight, lose weight if overweight or obese, and avoid regain in weight-reduced persons?” Dr. Nelson will review the Physical Activity Guidelines and Physical Activity Guidelines Advisory Committee Report to address these questions.

Discussion

Dr. Appel asked which dietary behaviors would be considered by the Subcommittee. Dr. Nelson said the Subcommittee has not identified which specific behaviors will be addressed. The Subcommittee will first look at published systematic reviews and use the reviews to help identify those behaviors that have the most evidence, then do NEL searches. Regarding the environment question, Dr. Nelson said the Subcommittee will summarize published systematic reviews rather than identify specific environmental factors to review. Dr. Van Horn referred to Brian Wansink’s recommendation to look outside of PubMed for literature on behaviors. Dr. Nelson responded that there are a number of articles available in PubMed, but the Subcommittee will consider other search engines.

Dr. Pearson asked if the Subcommittee was going to consider weight loss packages and programs. Dr. Pi-Sunyer replied that aspects of this topic will be addressed when the committee considers dietary patterns and macronutrient proportions. Dr. Nelson noted that aspects of this question will also be addressed as the Subcommittee considers the behaviors that promote successful weight maintenance over time. She noted “support” and “self-monitoring” as examples. She said the Subcommittee will consider those factors related to weight loss,

maintaining a healthy body weight, and avoiding weight regain. Dr. Williams noted that there are good reviews on this topic with children that she will consider. Dr. Pearson said the National Heart, Lung and Blood Institute is considering research on weight loss packages and programs, but the results will not likely be ready for review by the Committee. Dr. Van Horn agreed that “support” is important to consider. Dr. Slavin said she was concerned about the interventional trials that rely on self-reported data, though they might have the best data available. Dr. Appel suggested looking at data from trials that randomized weight maintenance strategies and suggested inviting a speaker from one of these trials. Dr. Slavin said cost is a concern and suggested the Committee consider the cost-effectiveness of the strategies. Dr. Van Horn commented that there is a lot of research on Internet programs, but much of this research isn’t published yet. Dr. Pearson referred to a 6,000-paper Canadian database concerning the implementation of guidelines. Dr. Achterberg acknowledged the large scope of this issue and suggested drawing parameters. She asked if it should be a cross-cutting issue in the report. Dr. Slavin suggested limiting the scope to just address prevention of weight gain. Dr. Nelson responded that there is enough literature available on all three topics (weight loss, maintaining a healthy body weight, and avoiding weight regain) to address all of these questions.

Carbohydrates and Protein Subcommittee
Discussion Leader: Joanne Slavin

Dr. Joanne Slavin, Chair of the Subcommittee, said the Subcommittee has been re-named to include protein. The Subcommittee’s research questions are: “How is carbohydrate consumption related to health?” “How is protein consumption related to health?” “How is fiber consumption related to health?” “What is the utility of the glycemic index/glycemic load for providing dietary guidance for Americans?” “How are non-caloric sweeteners related to body weight?” “What is the impact of the consumption of liquids versus solid foods on weight gain?” and “What is the role of probiotics and prebiotics in the diet?” Some of these questions overlap with other Subcommittees or are cross-cutting.

Under the question of how carbohydrate consumption relates to health, there were several sub-questions. First was, “What is the evidence that the types and percentages of carbohydrate in the diet influence health outcomes (e.g., overweight and obesity, type 2 diabetes mellitus, cardiovascular disease, and cancer)?” The second was, “What is the relationship between the consumption of carbohydrate-containing foods and oral health?” Most of the work related to this question was done before 2005. Third was, “Are low-carbohydrate (<45% of calories from carbohydrate) hypocaloric diets safe and effective for long-term (>6 mo) weight loss/maintenance?” This question will be moved to the Energy Balance Subcommittee. The fourth sub-question was, “Does the type of carbohydrate (sugar vs. starch, high fiber, etc.) alter body weight and/or maintenance?” The Subcommittee has decided to take the lead on this question. The fifth question was, “What is the association between added sugar intake (e.g., sugar-sweetened beverages) and body weight?” The Subcommittee will address the sixth question, “What is the role of carbohydrates on satiety?” The seventh question, “What is the relationship between fruit and vegetable intake and health?” was addressed in 2005, so the Subcommittee’s work will be an update. The Subcommittee will also do an update on the eighth question, “What is the relationship between whole grain intake and health?” The questions on the low-carbohydrate diet and on carbohydrates and satiety are new.

Under the question of how is protein consumption is related to health, There were also several sub-questions, most of them very similar to the carbohydrate questions. First was, “What is the evidence that the type and percentage of protein in the diet influences health outcomes (e.g., overweight and obesity, type 2 diabetes mellitus, cardiovascular disease, and cancer)?” This question has not been previously reviewed, so the Subcommittee is looking into what the scope of the NEL search should be. Much of the second question, “Are high-protein (>35%) hypocaloric diets safe and effective for long-term (>6 mo) weight loss/maintenance?” will be passed on to the Energy Balance Subcommittee. The third question, “What is the role of protein on satiety?” will become part of the general satiety question. The fourth question, “What are the relationships between dried beans and peas intake and health?” cuts across two other Subcommittees. The Subcommittee will address the fifth question: “What are the relationships between milk product intake and health?” Another question that cuts across multiple groups is the sixth: “What are the relationships between other animal protein products (meat, fish, eggs) and health?” For the seventh question, “How do the health outcomes of a vegan diet compare to that of an animal-based diet?” there is some literature, but the question will require modeling the diets, with help from the Nutrient Adequacy Subcommittee. The last question under this topic, number eight, “How do the health outcomes of a plant-based diet compare to that of an animal-based diet?” will be difficult to approach through literature or modeling, since the diets are difficult to define. There was some discussion on the difference between a vegan and a plant-based diet. Dr. Slavin concluded that a plant-based diet is between an animal-based diet and veganism, which makes it difficult to define. Questions 2, 3, 4, 6, 7, and 8 are new.

The question on how fiber consumption relates to health looks at laxation, benefits of dietary fiber versus added fiber, and fiber in satiety. This last question also goes to the general satiety question.

The Subcommittee has made the most progress on the question of the utility of the glycemic index/glycemic load for providing dietary guidance. It addresses glycemic index/glycemic load in body weight and health. The issue was well-reviewed in 2005. The Subcommittee has NEL results, and not much has been done on this topic since 2005.

The remaining three questions do not necessarily fit under Carbohydrates or Proteins. The question on how non-caloric sweeteners relate to body weight could be in another Subcommittee. It was not addressed in 2005, so it will have to be a new literature search. The question of liquids versus solid foods and weight gain overlaps with questions about water and satiety. The question of the role of probiotics and prebiotics was not addressed in 2005.

PICO charts and literature search and sort plans have been approved for all research questions, with the exception of the prebiotics and probiotics question. Searches have been completed on the glycemic index/load and dental caries questions. The Subcommittee will address the protein and health question first. They will try to finish it by the end of May. The search will go back to 2000. This Subcommittee seems to have the largest number of cross-cutting topics and will work with other Subcommittees on satiety, food group questions, dietary patterns, and macronutrient proportions in weight and health.

Discussion

Dr. Nelson asked if there was another way of addressing satiety, since it seems to touch on so many issues. Dr. Slavin said looking at macronutrients is one way of getting meaningful results, but there are many other factors involved. Dr. Nelson noted that other Subcommittees are looking at range of macronutrients on body weight. Dr. Slavin said it will only be done once, in the Energy Balance Subcommittee. It is important to keep track of cross-cutting issues. Dr. Rimm noted that many of the questions were addressed in 2005 and may not need to be addressed again. Even if there is new data, if the data is not contradictory, it may not be worth rewriting the sections. Dr. Slavin agreed, saying that many of these reports will merely uphold and update the 2005 recommendations, and that can be done quickly. In many cases, the 2005 reports can be repeated verbatim with a single paragraph summarizing the latest data. Dr. Van Horn noted that if Americans ate half of the dietary fiber they should, many other things would work themselves out, so it would be better to show people how to add more fiber than to reiterate how good it is for them. Dr. Rimm also noted that some of the questions from the 2005 report had been dropped. Dr. Pi-Sunyer said only unresolved issues should be readdressed. Dr. Fukagawa noted that, on the satiety issue, there is a growing field of research on the connection between the brain and the gut. Dr. Slavin agreed that a number of things outside the field of nutrition affect satiety, and that can be summarized in the introduction. Dr. Van Horn emphasized that the Committee's work is being done during an obesity epidemic, and that must be borne in mind. She also said the approach must be standardized so each Subcommittee is doing the same thing in such a way that the new data is used but old work is not duplicated. Dr. Perez-Escamilla said the Committee should address the American Dietetic Association's suggestion that Dietary Guidelines be updated every 10 years. If much of the work is copying or duplication, every 5 years may be too often. However, he said it seemed there was a lot of new data in the past five years. Dr. Van Horn said she currently supports updating every five years, however the strong recommendation is that updated NHANES data should be available so the new committee can see the progress that the American public has made since the last Dietary Guidelines. The Committee recessed from 12:00 p.m. to 1:27 p.m.

Ethanol Subcommittee *Discussion Leader: Eric Rimm*

Dr. Rimm, Chair of the Subcommittee, provided a status update. In 2005, it was concluded that 1-2 drinks lowers total mortality and coronary heart disease, while one drink per day slightly increases breast cancer risk. Overall, the conclusions reached in 2005 will likely not change significantly; full NEL searches are not needed for coronary heart disease and breast cancer. He will include new data in the report, but the new data is likely to support the current recommendation. However, the Subcommittee has changed the overarching question to "Among people who consume alcoholic beverages, what is the relationship between patterns of alcohol intake and health?" The search and sort plan was approved, going back to 1995; this is the second priority question.

The definition of "moderate drinking" may merit revision. The 2005 Guidelines defined moderate drinking by the amount a person drank per day; however, the National Institute of Alcohol Abuse and Alcoholism's (NIAAA) current definition of "low risk" drinking among

males is no more than four drinks on any day and no more than fourteen drinks per week. The risks and benefits of the two recommendations may ultimately be the same, with the latter approach offering more flexibility. Most literature on the patterns of alcohol intake and health address cardiovascular disease, mortality, blood pressure, and diabetes. At intake levels of three or four drinks in one day, though, the risk of unintentional injury may increase.

A search and sort plan was also approved for the question, “What is the relationship between alcohol intake and weight gain?” Dr. Rimm expects to have the summary and conclusion finished in May or June, and this will be the first priority question. Current evidence does not appear to suggest a link between moderate drinking and weight gain. Weight gain may lead people to stop drinking, so cross-sectional studies will not be evaluated; only prospective studies will be utilized in the evidence summary. The Subcommittee will look at NHANES data on alcohol intake, relative to other sources of discretionary calories in those who consume alcohol.

The Subcommittee also plans to examine the question, “How effective are predictors of alcohol-related disorders?”. A search and sort plan has been approved, with the search going back to 1995. The SC has had a conference call with NIAAA. This is the third priority question.

The Subcommittee discussed the question, “What is the relationship between consuming alcoholic beverages and macronutrient and micronutrient profiles, and overall metabolic consequences?” The question is currently tabled; the concept may be incorporated into the Energy Balance Subcommittee’s work. Any change in related recommendations since the 2005 Guidelines would likely be in relation to either folate status or glycemic index. The Subcommittee will review NHANES data on carbohydrates, proteins, and fats provided by alcoholic beverages (since alcohol is often mixed with other beverages that provide energy and macronutrients).

Discussion

Dr. Achterberg suggested looking at the effects of a lower drinking age as something for future study. Dr. Van Horn asked about alcohol and discretionary calories and weight control recommendations. Dr. Rimm agreed that alcohol could affect energy balance, depending upon consumption patterns. Dr. Van Horn pointed out that drinking leads to disinhibition, and potential overeating/unhealthy eating. Dr. Rimm explained that lots of studies indicate a reduction in heart disease risk among moderate drinkers, so the effects of the disinhibited eating may be neutralized. Dr. Slavin pointed out that all alcohol calories are discretionary. Dr. Rimm stated that a standard equivalency has been established across alcoholic beverages, but alcohol is often not consumed alone (i.e. often served with mixers) so there are additional dietary implications. Dr. Rimm said he would rely on the World Cancer Research Fund (WCRF) report for cancer risks. Dr. Pi-Sunyer pointed out that moderate drinkers differ from binge drinkers; the type of drinks that are selected by the two groups may differ and may also influence patterns of drinking. Dr. Perez-Escamilla commented that the term drinking pattern seems to indicate type of drink; he asked if the group was going to address what people are eating with various types of drinks. Dr. Rimm responded that that question may have an impact on calorie intake, but not on the recommendations in the Dietary Guidelines overall.

Fatty Acids and Cholesterol Subcommittee
Discussion Leader: Tom Pearson

Dr. Pearson, Chair of the Fatty Acids Subcommittee, said the Subcommittee was renamed Fatty Acids and Cholesterol. The Subcommittee had a webinar on omega 3 and 6 fatty acids and at the face-to-face meeting, Roger Clemens gave a very useful update at the Experimental Biology Symposium on some issues relative to types of fats and outcomes. The Subcommittee has five major questions. Question 1 is not a NEL question. Questions 2 and 3 are the priority 1 questions; 4 and 5 are the priority 2 questions. The first three questions were the basis of the Guidelines for fats going back before 2005. The questions were: “1. What is the evidence for implementation of the *Dietary Guidelines for Americans* (DGA) for fats and cholesterol?” “2. What is the influence of dietary fat on cardiovascular disease and other health outcomes?” “3. What dietary components affect plasma LDL, HDL and non-HDL cholesterol?” “4. What are the relationships between consumption of n-6 and n-3 fatty acids and health outcomes?” and “5. What are the associations between consumption of fats from specific foods, i.e., nuts, fish and chocolate, and health outcomes?” Questions 2 and 3 have considerable overlap with the 2005 Guidelines.

Under the first question, evidence for implementing the Guidelines for fat and cholesterol, there are a few sub-questions: how intakes of fat and cholesterol by Americans changed between 1977-78 and 2005-6, how they changed in terms of absolute amounts consumed, and how they changed in terms of distributions of macronutrients. There has been little change in total and saturated fat intake since 1990. Apparent changes in the data are confounded by methodology changes. The 2005 DGA focused on cardiovascular disease relative to fats and cholesterol, and that’s appropriate. However, despite mortality reductions in those diseases, the incidence data suggests no change in these diseases since 1990 and possibly since 1980. The reductions in cardiovascular disease mortality since 1990 have more to do with reductions in case fatality rates than a decrease in incidence per se and this is due largely to improved treatment. NHANES data suggest that blood cholesterol levels in the U.S. have not significantly changed since 1990, and some of the changes that may have occurred, particularly in men, are probably due to pharmacologic agents, e.g., HMG-CoA reductase inhibitors.

Looking at the intake of fats and cholesterol in the surveys that are most representative of Americans we see intake of fats in absolute amounts and as percentage of diet. Intake of total and saturated fat and cholesterol has not changed. The number of calories consumed has gone up. In 2005, saturated fat made up 11.4 percent of caloric intake, suggesting that approximately 60 percent of Americans are not at the saturated fat guidelines. The consumption of total fat, saturated fat and cholesterol is consistently higher in men compared to women. There’s a big male-female difference in cholesterol intake averaging 350 mg/day and 230 mg/day in males and females, respectively. The trend for reported intake over time is similar to that in all persons.

The DGA quantitative advice related to total fat, saturated fat, and cholesterol have gone from general guidelines to specific targets between 1980 and 2005. However, not much progress has been made toward the goal of decreasing fat intake. The lack of change in cholesterol intake and lack of change in coronary heart disease incidence are committing us to the continuation of our CVD epidemic. Saturated fat intake increases blood cholesterol and both continue to be high in

the American diet. Dr. Rimm commented that a guideline for total fat might not be needed, since there is no evidence. However, saturated and *trans* fats do have evidence. The real question is the role of the Dietary Guidelines in really getting to a level where we could expect our incidence of coronary disease to fall.

The second question, the influence of dietary fat (saturated fat, cholesterol, MUFA and PUFA) on cardiovascular disease and other health outcomes, will probably have the same outcome as in 2005. For the health outcome of cancer, we will refer to the World Cancer Research Fund Report. The Subcommittee will update the evidence over the past five years, but the conclusions and recommendations are unlikely to change from previous DGA reports. There will be a NEL search, and the PICO chart is completed. Other diseases looked at will be stroke, CHD mortality, and type 2 diabetes.

The third question asks what dietary components affect plasma LDL, HDL and non-HDL cholesterol. It is an expansion of the 2005 Guidelines. The question will look at the effects of total dietary fat and dietary cholesterol on LDL levels at different levels of saturated fat, how genetic polymorphisms affect the association between dietary components and plasma LDL cholesterol, the association between LDL and dietary stearic acid, and the effect of consuming natural versus synthetic *trans* fats on LDL, HDL, and non-HDL cholesterol. In the ATP III Guidelines, the National Cholesterol Education Program, goals are targeted to blood LDL cholesterol levels and coronary heart disease. Secondarily, HDL cholesterol levels are considered. At the tertiary level, non-HDL cholesterol levels are considered. From this family of questions two have been selected for the first NEL analysis: the association between LDL cholesterol and dietary stearic acid and the effect of natural versus synthetic *trans* fatty acids on LDL, HDL, and non-HDL cholesterol. The 2005 Guidelines discussed *trans* fatty acids but made no quantitative recommendation.

The fourth question was on the relationships between consumption of n-6 and n-3 fatty acids and health outcomes. The Subcommittee met with experts by webinar on the question of the n-6 to n-3 ratio. The Subcommittee will review the literature on outcomes from plant versus marine sources of n-3 fatty acids, looking for neurological and cognitive development, serum lipid levels, cardiovascular disease, insulin sensitivity, and macular degeneration. For cancer, they will refer to the WCRF report.

The final question looks at the associations between consumption of fats from specific foods and health outcomes. The specific foods being looked at are nuts, fish, and chocolate. The research information with regard to fat is strongest for nuts, fish, and chocolate as compared to the other foods. The other foods we discussed were not included because they're more into the protein area. These are particularly related to the health effects of their fat constituents. Nuts and chocolate have other compounds not related to fats, however, so the Subcommittee is looking at fats and health effects. The literature search will look at obesity, BMI, type 2 diabetes, serum lipids, and cardiovascular disease risk. For cancer, they will consult the WCRF report.

Discussion

Dr. Slavin asked if the effects in nuts and chocolate might be unrelated to fats. Dr. Pearson agreed but said the Subcommittee took them on because they are fat sources. Dr. Appel suggested that the discussion on the impact of the Guidelines be held in all of the subcommittees, however, this gets into the issue of standardization. Dr. Pi-Sunyer said the charts showed a lack of impact up to 2005. Dr. Nelson suggested disaggregating the data and doing a single regression on trends and the change in diet over time.. Dr. Van Horn said it is important to point out potential problems, the current situation, and what the Guidelines are doing and it may be something we'll want to standardize. But it needs to be a group decision. Dr. Perez-Escamilla asked if the 2005 report addressed genetic polymorphisms and their effect on dietary fats and cholesterol and asked if there will be enough data to make a recommendation. Dr. Pearson said there are a number of known polymorphisms, but the effect may be for future guidelines. Dr. Williams suggested looking at n3 and n6 fatty acids in neonates. Dr. Pearson agreed that the PICO should be changed.

SCIENCE REVIEW/CROSS-CUTTING ISSUES AND MEETING WRAP-UP

Discussion Leader: Linda Van Horn

Dr. Van Horn led the discussion on which Subcommittees will address cross-cutting issues. She started with the food group questions, asking for discussion. Joanne Spahn, Director of the USDA Evidence Analysis Library Division of CNPP, said that the main concern had been that many Subcommittees were working on questions for the same foods and/or food groups. Chair Van Horn clarified that to prevent duplication of effort, the goal is to make sure that each food group or specific foods as identified in research questions were addressed in a Subcommittee, and that these data and knowledge would be synthesized within the report. The Subcommittees have now identified who will address each food or food group. The Carbohydrates and Protein Subcommittee will be addressing foods in all of the food groups, specifically: fruits, vegetables, whole grains (as part of the grains group), dried beans and peas (as vegetable protein sources from meat and beans food group, and sources of fiber from the vegetables group), milk and milk products, and animal protein (related to the milk and the meat and beans food groups). Dr. Slavin said that since the Carbohydrates and Protein Subcommittee will address animal protein, and there will be overlap with fish, which the Fatty Acids Subcommittee is doing. The Fatty Acids Subcommittee is looking at nuts and fish, which are components of the meat and beans food group, and chocolate. In a discussion of the consumption of whole foods as opposed to nutrients, Dr. Pearson used the example of fish, noting that fish oil in supplements does not show the same benefits of eating fish as part of the diet. Dr. Rimm said fish was left out of the 2005 Guidelines due to lack of evidence for primary prevention and that evidence is now available. He said the focus should be on foods, not micronutrients.

Another cross-cutting topic is macronutrient proportions and weight or health. Dr. Pi-Sunyer said the Energy Balance Subcommittee was looking at that and will work with the Carbohydrate and Protein Subcommittee to address it. Ms. Spahn said one sort list for this issue could serve both Subcommittees. Dr. Van Horn noted that there is a good deal of interaction among the Subcommittees. The cross-cutting issues should be addressed so that duplication of effort is avoided.

Dr. Van Horn moved on to the topic of grading the evidence. The Committee reviewed a chart that evaluated data by quality, consistency, quantity, public health nutrition impact, and generalizability. It graded the evidence as: strong, moderate, limited, expert opinion only, or a grade not assignable. Each Subcommittee will grade each of their conclusion statements on the strength of the body of evidence. Dr. Appel pointed out the grading is a hybrid between guideline development and implementation, since it looks at both the strength of the evidence and the public health impact. Dr. Van Horn said the next step is to put the grading mechanism into practice. Dr. Rimm gave the example of applying the grading scale to the data that alcohol consumption of one drink per day shows only a modest (10%) increase in breast cancer prevalence. However, there are 30 studies, so the value of the evidence is inflated by quantity of studies. Chair. Dr. Van Horn noted that the grading mechanism is a draft, and use will uncover flaws to be repaired. Dr. Pearson said the quality of the evidence and the magnitude of impact should affect the strength and wording of the recommendation.

Ms. Spahn suggested commenting on risk/benefit while grading the evidence. Dr. Appel asked when can a previously completed systemic review be utilized, making a systematic review through the NEL not necessary for a specific topic. Dr. Van Horn said they should not redo work that has been done. However, a Subcommittee can make the determination when additional investigation is required related to the evidence needed to answer a question. Ms. Spahn agreed that questions have to be prioritized so that NEL resources are utilized efficiently to handle the volume of questions that must be answered.

Chair Van Horn stated that each Subcommittee has a target to have written a review and conclusion statement for one question by the end of May. She noted the next public meeting is planned for fall. She thanked the members, staff, and Webinar attendees, and adjourned the meeting.

(Adjournment 3:02 p.m.)