

Dietary Guidelines Advisory Committee Meeting

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

Held at the
USDA South Building, Jefferson Auditorium
1400 Independence Avenue, SW
Washington DC
October 30-31, 2008

Meeting Minutes

Thursday, October 30

(8:42 a.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, Dr. Shanthy Bowman, Ms. Holly McPeak

Others: USDA Secretary Ed Schafer, HHS Secretary Michael Leavitt, Ms. Kate Houston, Dr. Gale Buchanan, Dr. Brian Wansink, RADM Penelope Slade Royall, Dr. Robert Post, Mr. Cliff Johnson, Dr. Patricia Britten, Ms. Joan Lyon

Welcome and Opening Remarks

Ms. Kate Houston, Deputy Under Secretary, Food, Nutrition, and Consumer Services, USDA, welcomed participants to the first meeting of the 2010 Dietary Guidelines Advisory Committee (DGAC). She noted that formulating dietary guidelines is a critical element of one of the most important responsibilities of government, namely to promote the health of Americans and reduce risk of major chronic diseases associated with diet and physical activity. The members of the 2010 Dietary Guidelines Advisory Committee represent leading medical and scientific researchers from distinguished universities and scientific institutions across the United States, but their task is much greater than an academic exercise. The *Dietary Guidelines for Americans* are the foundation for federal food and nutrition policy, and as such, have a real impact on real people.

Ms. Houston noted that the *Dietary Guidelines* have been issued jointly by USDA and HHS every 5 years since 1980 and that the two departments share a deep commitment to ensuring that

the development of the *Guidelines* are pursued with the highest integrity and can achieve the greatest impact on the health of the nation. She then introduced the Secretary of Agriculture, Ed Schafer.

Introduction and Swearing In of the Committee

Ed Schafer, Secretary of Agriculture, thanked Ms. Houston and USDA Under Secretary for Food, Nutrition, and Consumer Services, Nancy Johner, and welcomed HHS Secretary, Mike Leavitt. Secretary Schafer noted that the ominous trend in obesity rates and rates of related diseases, such as type 2 diabetes, hypertension, and heart disease, has given particular urgency to the work of the Dietary Guidelines Advisory Committee. Recent research indicates that one in three boys and two in five girls born in 2000 in the United States will develop diabetes at some point in their lives if health and eating habits do not improve.

Secretary Schafer explained that the *Dietary Guidelines* provide a way for the Government to speak with one voice on nutrition and ways to promote good health. As the cornerstone of federal nutrition policy, the *Guidelines* are the basis of federal food and nutrition programs, and nutrition advice for consumers. Nutrition and health professionals actively promote the *Dietary Guidelines* and USDA disseminates them in many ways. The Secretary stated that the task of the Dietary Guidelines Advisory Committee is to determine whether a fresh review of the *Guidelines* is warranted, and if so, to recommend revisions needed for the 2010 *Dietary Guidelines for Americans*.

The Secretary also noted that one of the most important things that USDA does is to ensure that all Americans have enough to eat. The Food Stamp Program – now called the Supplemental Nutrition Assistance Program (SNAP) – the National School Lunch and School Breakfast Programs, and about a dozen other programs make up the Nation’s nutrition safety net and touch one in five American’s lives every year. To supplement these efforts, USDA has created the Secretary’s Fight Hunger Initiative, which focuses on ways to fight hunger at the grassroots level. The Secretary’s page on the USDA website (www.usda.gov) features a tool kit of ways to organize community efforts to fight hunger.

Secretary Schafer then introduced the members of the Dietary Guidelines Advisory Committee. He thanked them for volunteering their time and expertise to assist USDA and HHS. He asked the Chair and Vice-chair of the committee to step forward, asked all the members to raise their right hands, and then administered the oath of office.

He then turned the meeting back to Ms. Houston, who introduced Mike Leavitt, Secretary of Health and Human Services.

Review of the Committee’s Charge

Mike Leavitt, Secretary of Health and Human Services, thanked Secretary Schafer and members of the Committee. He opened his remarks by suggesting that the *Dietary Guidelines* are more than just nutrition policy; they are a volley for health-care reform. Three times as many children are now overweight, compared to 25 years ago, but this problem is not limited to

children. In 1997, only three states had obesity prevalence rates that were over 20%. In 2007, 49 states had obesity rates over 20%. Overweight and obesity are becoming a serious health problem. In addition, an increasing number of Americans are suffering from obesity-related chronic conditions, such as coronary heart disease, strokes, high blood pressure, and type 2 diabetes. The cost of treating these chronic conditions now represents 75% of the \$2 trillion that we spend as a country on health care.

The Secretary explained further by stating that 23% of the 40 million Medicare participants have multiple chronic diseases — more than five. This group represents 67% of total Medicare expenditures. These individuals also have 37 doctor appointments every year, on average, and as many as 50 prescriptions a year. This means that the average American is spending about \$10,000 a year — whether directly or through taxes — to treat chronic diseases.

Secretary Leavitt stated that the work of the DGAC is very important in helping to reverse these trends in obesity and chronic diseases. He also stated that increasing physical activity is a critical companion to improvements in eating behaviors. Earlier in October, HHS released the *2008 Physical Activity Guidelines for Americans*, which are designed to encourage Americans to become physically active on a regular basis. The *Dietary Guidelines* will complement the Physical Activity Guidelines.

Recognizing the difficulties in changing human behavior, he then challenged the committee to identify two or three dietary changes that Americans could make immediately and that would likely have the greatest benefit for their health.

He then read the charge to the DGAC:

The Committee, whose duties are time-limited and solely advisory in nature, will:

- Inform the Secretaries of both Departments if no changes to the 2005 *Dietary Guidelines for Americans* are warranted. This action will disband the DGAC.
- Inform the Secretaries of both Departments if changes are warranted, based on the preponderance of the most current scientific and medical knowledge, and determine what issues for change need to be addressed.
- Place their primary focus on the review of scientific evidence published since the last DGAC deliberations.
- Place their primary emphasis on the development of food-based recommendations.
- Prepare and submit an advisory report of technical recommendations with rationales to the Secretaries. DGAC responsibilities do not include translating the recommendations into a policy or communications document.
- Disband upon the submittal of the Committee's recommendations through the *Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010*.

Role of USDA's Research, Education, and Economics in the Dietary Guidelines

Dr. Gale Buchanan, Under Secretary, Research, Education, and Economic, USDA, thanked the two Secretaries and welcomed the members of the DGAC. Dr. Buchanan stated that the Research, Education, and Economics mission area supports USDA's overall mission by conducting intramural human nutrition research as well as by conducting economic research related to nutrition and by supporting extramural nutrition research and education programs.

The Agricultural Research Service (ARS) conducts intramural research on the nutrition needs of normal healthy adults and children using a food-based approach. This research is carried out at the six USDA human nutrition research centers: Children's Nutrition Research Center at the Baylor College of Medicine (Houston); Arkansas Children's Nutrition Center (Little Rock); Western Human Nutrition Research Center (University of California, Davis); Grand Forks Human Nutrition Center (Grand Forks, ND); Beltsville Human Nutrition Research Center (Beltsville, MD); and Jean Meyer Human Nutrition Research Center on Aging (Tufts University, Boston). ARS also conducts research in the areas of nutrition monitoring and the food supply, the scientific basis for dietary guidance, life stage nutrition and metabolism, and food safety.

The Cooperative States Research, Education, and Extension Service (CSREES, which will become the National Institute of Food and Agriculture) funds programs through the Nation's land grant universities and other universities. The *Dietary Guidelines* are integral to CSREES' research programs on the health benefits of nutrients and other bioactive food components, and on obesity prevention interventions. CSREES also administers the Expanded Food and Nutrition Education Program (EFNEP), which is designed to help low-income adults and children develop nutrition knowledge and skills. The *Dietary Guidelines* provide the foundation for all the education and outreach components of this program.

The Economic Research Service (ERS) conducts economic analyses on many aspects of food and agriculture to support USDA's mission. ERS' intramural scientists focus on food consumption, food safety, food security, and diet-health outcomes. ERS also conducts studies and evaluations of USDA's 15 food and nutrition programs (e.g., SNAP; the Special Supplemental Food Program for Women, Infants, and Children [WIC]; and child nutrition programs). As with the other components of the Research, Education, and Economics Mission area, the *Dietary Guidelines* provide an important foundation for ERS' analyses and evaluations.

Dr. Buchanan concluded his remarks by thanking the Committee for their willingness to serve and then turned the podium over to Dr. Robert Post.

Committee Operations

Dr. Robert Post, Deputy Director, Center for Nutrition Policy and Promotion, USDA, reviewed the "rules of engagement" of the DGAC in keeping with the Federal Advisory Committee Act to ensure an open, public process:

- Each public meeting will be announced in the Federal Register through a public notice.

- Meetings of the full committee are open to the public, and deliberations that occur between meetings, such as those in topic-specific subcommittees, will be brought back to the full committee at a public meeting.
- The public may provide written comments to the Committee through USDA's on-line public comment database (www.dietaryguidelines.gov). The Federal Register notices of committee meetings will provide a date by which written comments should be submitted to be considered for the next DGAC meeting. The public also may submit comments to the Federal Government in response to the release of the final DGAC report.
- The public will have an opportunity to present brief oral testimony before the Committee at one public committee meeting (most likely, the second DGAC meeting).
- Committee members should refer any contacts by the public to DG Management Team.
- Committee members should not give presentations about the Committee's work or speak as a representative of the DGAC.

Dr. Post then turned over the meeting to Dr. Linda Van Horn, Chair of the DGAC.

Review of Agenda

Dr. Linda Van Horn, Chair, Dietary Guidelines Advisory Committee, welcomed all the Committee members and expressed her pleasure at the opportunity to launch the work of the group. She then reviewed the agenda for the day.

Administrative Matters

Dr. Robert Post introduced the DGAC Co-Executive Secretaries and other members of the Dietary Guidelines Management Team staff and Nutrition Evidence Library staff. He also reviewed various housekeeping details.

(Break 9:40-10:00 a.m.)

History of the Dietary Guidelines for Americans

Dr. Robert Post began his presentation by describing the *Dietary Guidelines*. They represent Federal nutrition policy, established jointly by USDA and HHS, and are released every 5 years. This joint effort ensures that the Federal government speaks with one voice on nutrition issues. The *Guidelines* provide science-based advice for individuals age 2 and older to help promote health and prevent chronic disease. They are used in Federal nutrition programs, nutrition education materials, and are a basis for nutrition research.

Dr. Post noted that before the 1970s, public health nutrition was primarily concerned with preventing nutritional deficiencies. As deficiencies became less common, diseases related to dietary excesses became the predominant concern. In 1977, the U.S. Senate Select Committee on Nutrition and Human Needs issued *Dietary Goals for the United States*. The Goals were the focus of controversy among some nutritionists and others. In 1979, the American Society for Clinical Nutrition formed a panel to study relationships between diet and health, and the findings

were reflected in *Healthy People*, the Surgeon General's report on health promotion and disease prevention.

This early guidance pointed to the need for regularly updated, science-based national guidelines. The first version of the *Dietary Guidelines for Americans* was published in 1980, and Congress later mandated that they be jointly published by USDA and HHS every 5 years. In this process, a Dietary Guidelines Advisory Committee is formed to review the science and draft a scientific report. USDA and HHS use the Advisory Committee's report to establish Federal dietary guidelines policy.

The *Dietary Guidelines* were first released in 1980 and revised in 1985, 1990, 1995, 2000, and 2005. Over this time, the *Guidelines* have become more comprehensive. The 1995 *Guidelines* first introduced the concept of balancing dietary intake with physical activity and used supporting tools such as the Food Guide Pyramid, nutrition facts, and a healthy weight chart. The 2000 edition expanded to 10 guidelines organized in three major focus areas – aiming for fitness through balancing intake and physical activity, building a healthy base by consuming enough of certain foods, and choosing foods sensibly in moderation.

The 2005 *Dietary Guidelines* differed from previous versions in that it had 41 recommendations in 9 topic areas, recommendations for the general population and certain population groups, and specific recommendations to eat more of certain foods and less of others. The 2005 *Guidelines* also featured a 2000-calorie reference diet and a significant focus on energy balance and weight status. These *Guidelines* and supporting materials were supported by considerable consumer research.

Dr. Post then described the *Dietary Guidelines* development process. This process begins with the scientific literature, evidence-based nutrition reviews, and the Institute of Medicine's Dietary Reference Intakes (DRI) reports, that are used to develop the Dietary Guidelines Advisory Committee Report. This report is used by USDA and HHS to develop the *Dietary Guidelines for Americans* policy document. The *Guidelines* are then used as the basis for consumer materials and programs across the Federal government, such as USDA's MyPyramid food guidance system and Healthy Eating Index 2005 and HHS' Milk Matters, More Matters, and DASH eating plan. The *Dietary Guidelines* also serve as the basis for Federal food and nutrition programs, including the WIC food package, SNAP allotments, and many other efforts.

Dr. Post noted that the 2010 *Dietary Guidelines* will follow the same development process. One new feature of this cycle is the addition of the Nutrition Evidence Library (NEL), which will be an important source of scientific evidence, along with the HHS 2008 *Physical Activity Guidelines for Americans* and other evidence-based documents, such as the DRI reports.

Dr. Post concluded his presentation by noting that the goal of each revision of the *Dietary Guidelines* is to produce positive changes in the dietary and physical activity behaviors of Americans. To promote these changes, the Federal government uses effective and tested education and communication strategies and strategic alliances across agencies. These efforts stimulate opportunities to make healthy choices available to consumers and help the media and

industry recognize the benefits of working together to achieve a synergistic effect that is greater than what each sector can achieve individually.

Putting the Dietary Guidelines into Action

Speakers: B. Wansink, P. Slade Royall

Dr. Brian Wansink, Executive Director, Center for Nutrition Policy and Promotion, USDA, thanked the USDA and HHS staff supporting the work of the DGAC. He then explained that USDA has seven mission areas and the *Dietary Guidelines* touches five of those areas in ways that directly affect all Americans.

Food, Nutrition, and Consumer Services is a \$60 billion program that administers, among other programs, SNAP, the School Meals Program, WIC, and Commodity Food Programs. The *Dietary Guidelines* are the basis for the meal plans, food packages, commodity food distributions, and educational materials supported by these programs.

Research, Education, and Economics provides national leadership for community-based nutrition education programs and sponsors nutrition-related research. The Cooperative State Research Education Extension Service, Expanded Food and Nutrition Education Program, Economic Research Service, and Agricultural Research Service use the *Dietary Guidelines* for strategic planning, developing educational materials and initiatives, and as a standard when conducting economic and food consumption analyses.

Within USDA's Marketing and Regulatory Programs mission area, the Agricultural Marketing Service uses the *Dietary Guidelines* to guide decisions on purchasing products for Federal nutrition assistance programs.

In the Food Safety mission area, the Food Safety and Inspection Service uses the *Dietary Guidelines* food safety recommendations in its many education programs and campaigns.

In the Natural Resources and Environment mission area, the U.S. Forest Service implements *Dietary Guidelines* physical activity recommendations through its Kids in the Woods Program.

Returning to the Food, Nutrition, and Consumer Services mission area, Dr. Wansink explained that the *Dietary Guidelines* influence a number of initiatives carried out by the Center for Nutrition Policy and Promotion. These include the Thrifty Food Plan, the Healthy Eating Index, and the MyPyramid food guidance system. Since the MyPyramid website was launched in 2005, it has received more than 5.7 billion hits. MyPyramid tools and materials include the tracker, menu planner (750,000 page views every day), Blast-Off game, sections for pregnant and breastfeeding women and parents of preschoolers, print materials, information for professionals, and Project M.O.M (Mothers & Others & MyPyramid).

Dr. Wansink closed his presentation by noting that connecting with people where they really make food decisions – where they purchase and prepare food, where they work, and where they play – is a critical way to increase the effectiveness of the *Dietary Guidelines*. In June 2008, USDA began a new effort, called Partnering with MyPyramid, in which the Department has

challenged companies to promote the Pyramid in ways that are consistent with the *Guidelines* and that help consumers eat better. More than 70 companies now participate and are promoting the *Guidelines* and MyPyramid in many innovative ways.

RADM Penelope Slade Royall, Deputy Assistant Secretary for Health, Disease Prevention and Health Promotion, HHS, began her remarks by thanking Drs. Lawrence Appel and Xavier Pi-Sunyer for their work on the 2005 DGAC and for participating again in the 2010 DGAC. She also thanked Dr. Miriam Nelson for her recent participation in the HHS Physical Activity Guidelines Advisory Committee.

Admiral Royall noted that, like USDA, HHS uses the *Dietary Guidelines* in myriad ways, from developing national health objectives in the Healthy People process and conducting the National Health and Nutrition Examination Survey (NHANES), to developing consumer education programs and materials. She highlighted a number of initiatives in HHS agencies that incorporate *Dietary Guidelines* principles and recommendations:

- ***The Administration on Aging:*** Group menu planning, food preparation, and service; Meals on Wheels; Congregate meals.
- ***Centers for Disease Control and Prevention:*** Fruits and Veggies More Matters®; food safety initiatives; Weight Management Research to Practice Series.
- ***Food and Drug Administration:*** Nutrition Facts Label; Make Your Calories Count interactive program; food safety initiatives.
- ***Health Resources and Services Administration:*** Bright Futures initiative.
- ***Indian Health Service:*** Strengthen the Family Circle; Honoring the Gift of Children.
- ***National Institutes of Health:*** WE CAN! (Ways to Enhance Children's Activity and Nutrition); NHLBI's Portion Distortion website; NHLBI's DASH eating plan.
- ***Office on Women's Health:*** BodyWorks (an adolescent obesity prevention program, also being adapted and tested by the Indian Health Service).
- ***Office of Disease Prevention and Health Promotion:*** Healthy People process (Healthy People 2020 is now under development); consumer information programs, such as the Spanish-English brochure *El Camino Hacia Una Vida Saludable* (A Road to a Healthy Life), which is based on the *Dietary Guidelines for Americans*; HHS' prevention health information website www.healthfinder.gov.

RADM Royall concluded by describing the new HHS Physical Activity Guidelines, which were released in October 2008. She explained that since 1995, the *Dietary Guidelines* have mentioned physical activity, but the physical activity community was interested in having a comprehensive guidelines document that could represent the consensus of current scientific evidence on physical activity and health outcomes. HHS followed a process similar to that of the *Dietary Guidelines*, by first convening a Physical Activity Guidelines Advisory Committee to write a scientific report and then using that report to develop a policy document. This document is designed to provide information and guidance on the types and amounts of physical activity that provide substantial health benefits for Americans ages six and older. The Physical Activity Guidelines are intended

to provide information and recommendations that are complementary and consistent with those of the *Dietary Guidelines*.

RADM Royall concluded her remarks by thanking the Committee again for their service and reiterating Secretary Leavitt's suggestion that the Committee identify two or three key dietary changes that could make an immediate difference to the health of American people.

The State of the American Diet and Public Health

Mr. Cliff Johnson, Director, Division of Health and Nutrition Examination Surveys, National Center for Health Statistics (NCHS), HHS, presented a brief overview of national diet and nutrition data sources. Among these are the NHANES, the National Health Interview Survey (NHIS), the Behavioral Risk Factor Surveillance System (BRFSS), and the Youth Risk Behavioral Surveillance System (YRBSS).

NHANES is a cornerstone of the Federal Nutrition Monitoring System and a significant source of data for the DGAC. NHANES' goal is to assess the health and nutritional status of adults and children in the United States by selecting a representative sample of the U.S. population and conducting interviews and direct physical examinations with them. NHANES is designed to provide population-based estimates of various health conditions; awareness, treatment, and control of selected diseases; environmental exposures; and nutrition status and diet behaviors.

Mr. Johnson then provided a brief review of the development of NHANES, from the first National Health Examination Survey (NHES I) in 1959 to the current NHANES. The nutrition component of the survey was expanded significantly during the early 1970s, and beginning in 1999, NHANES became a continuous ongoing survey conducted as 2-year cycles. Currently, NCHS is nearing the end of the data collection period for the 2007-2008 surveys.

The NHANES is a major collaboration between Federal agencies, including the Centers for Disease Control and Prevention (CDC), National Institutes of Health (NIH), USDA, the Environmental Protection Agency (EPA), and the Food and Drug Administration (FDA). Of particular note, explained Mr. Johnson, was the integration in 2002 of NHANES with USDA's national dietary intake surveys. This represents the merging of the two primary federal dietary data collection efforts, and USDA and HHS share responsibilities in this effort. HHS is responsible for sample design and survey operation and USDA is responsible for dietary methodology, data processing, and the nutrient values of food through the food composition databases. Jointly, the two departments monitor data collection and data quality and release the dietary data. Mr. Johnson noted that the nutrition components of the 2003-2004 and 2005-2006 NHANES were particularly extensive and much of these data have become available within the past year. Many peer reviewed publications on these data are now emerging and will be available to the DGAC for their reviews. He also noted that the current configuration of NHANES allows for an extensive linking of nutrition and diet data with data on a range of health topics.

The next segment of Mr. Johnson's presentation focused on obesity and physical activity. It is clear that poor dietary patterns are associated with obesity and various serious chronic diseases.

Diet-related conditions contribute to reduced quality of life, premature death, and substantial medical costs and lost productivity. Direct physical measures from 1959 to 2003-2006 have documented a steady increase in the percentage of overweight and obese adults and children. Currently, nearly 33% of the U.S. population is obese, far exceeding the Healthy People target goal of 15%.

Turning to physical activity, Mr. Johnson explained that these data come from numerous surveys and surveillance systems. As described in the recent *2008 Physical Activity Guidelines for Americans*, the benefits of physical activity are significant and numerous. Data from the National Health Interview Survey show that approximately 30% of the population met the criteria of regular leisure time physical activity and that no significant change in the percentage of adults reporting moderate, leisure time physical activity has occurred between 1977 and 2006.

Mr. Johnson explained that determining the activity patterns of adults and children using self reports or proxy reports is challenging, and that the introduction of accelerometers into NHANES data collection has allowed objective measurements of the intensity and duration of common activities such as walking and running. A recent analysis of accelerometer data over the 2003-2006 period shows that fewer than 10% of people in most gender and age groups met recommended levels of physical activity. The one exception was children ages 6-11 years.

Mr. Johnson concluded by stating that despite recent advances, both dietary and physical activity data collection still presents numerous methodologic challenges. Much remains to be done to fully understand diet and physical activity behaviors, but our knowledge is growing and the many analyses of NHANES 2003-2006 data that will be emerging in the literature over the next year will add considerably to that store of knowledge.

Dr. Patricia Britten, Nutritionist, Center for Nutrition Policy and Promotion, USDA, noted that she was substituting for Dr. Patricia Guenther, at the CNPP, who was to have given the presentation. Dr. Britten recognized Dr. Guenther as the leader of the Healthy Eating Index-2005 (HEI-2005) development effort.

Dr. Britten reminded the members that an important part of the science underlying the 2005 *Dietary Guidelines* and the MyPyramid food guidance system were the Institute of Medicine's DRI reports. The HEI-2005 represents assessment, the next step once dietary guidance is in place. The HEI is a tool to assess how well Americans are following the quantitative recommendations in the *Guidelines* and MyPyramid. Dr. Britten noted that her presentation would summarize the components of the HEI-2005, describe its scoring system, and present results to date. She also noted that the HEI-2005 is explained in full in a recent article in the *Journal of the American Dietetic Association* (Guenther et al., Development of the Healthy Eating Index. *J Am Dietetic Assoc* 2008;108(11):1896-1901).

The HEI-2005 has 12 components. Nine address dietary adequacy (total fruit, whole fruit, total vegetables, dark green/orange/legumes, total grains, whole grains, milk, meat and beans, oils) and three address dietary moderation (saturated fat, sodium, and calories from solid fats, alcoholic beverages, and added sugars [SoFAAS]). The adequacy components are largely based on food groups and reflect areas of focus in the 2005 *Dietary Guidelines*.

Dr. Britten noted the one especially innovative feature of the HEI-2005 is that it uses a density approach to measure the quality of the diet or the mix of food. That is, it expresses standards or recommendations on a percent of calorie basis, thus allowing a single index to be used for the entire population and across all energy intake levels. Because it is a measure of diet quality, it specifically does not assess energy balance or physical activity.

Dr. Britten described the HEI-2005 scoring system. For the adequacy components, the lowest recommended amount per 1,000 calories in the 2005 *Dietary Guidelines* is considered the standard. Using total grains as an example, the standard recommendation for total grain intake is three ounce equivalents per thousand calories. The maximum number of points (10) is assigned for diets that meet that standard. If a person eats nothing from that category, he or she gets zero points.

The moderation components use science-based standards to assign points. Zero points are assigned at approximately the 85th percentile of 1-day intakes. For example, the 2005 *Dietary Guidelines* recommended less than 10% of calories come from saturated fat. However, both the *Dietary Guidelines* and the DRI reports suggest that less is better. Therefore, a score of 10 is assigned to diets with 7% of calories from saturated fat and 8 points for diets with 10% of calories from saturated fat. Zero points are set at approximately the 85th percentile, in this case 15% of calories. Dr. Britten also explained the scoring for sodium, which uses a similar approach based on the DRI for sodium and the 2005 *Dietary Guidelines* recommendation.

Dr. Britten then described the scoring approach for the third moderation component – SoFAAS. The MyPyramid created the concept of discretionary calories, which are the difference between total energy requirements and the energy consumed to meet recommended nutrient intakes. Discretionary calories include solid fats, alcohol, and added sugars as well as additional amounts of nutrient-rich foods. Because discretionary calories are difficult to measure and a component to address over-consumption was needed, the HEI working group created the proxy measure SoFAAS. Analyses suggest that the components in SoFAAS – solid fats, alcohol, and added sugars – represent a substantial portion of all discretionary calories and, importantly, they capture the calories that carry the fewest nutrients in the diet.

Both the DRI reports and the *Dietary Guidelines* stress that recommendations should be met over time. Therefore, usual intakes should be used to assess the degree to which diets meet recommendations. Because dietary data for individuals is usually available for only one or two days and individual diets often vary considerably from day to day, an individual's usual intake cannot be determined. However, the usual intake of a group can be estimated. HEI scores are, therefore, calculated by applying the scoring system to the population mean intake rather than to individual-level intakes. To determine group mean intake, the weighted sum of the population's total intake for an HEI component is divided by the weighted sum of the population's energy intake.

Dr. Britten concluded her presentation by summarizing HEI results using data from the 2003-2004 NHANES. For the adequacy components, total grain and meat and beans intakes meet the recommended intake standards. All other adequacy components fall far short. Fruit and

vegetable intakes are insufficient and the choices within groups are not in accordance with recommendations. Intakes of dark green and orange vegetables and legumes and of whole grains are strikingly low. For the moderation components, sodium and saturated fat intakes are too high and calories from SoFAAS are excessive (most of these calories are derived from solid fats and added sugars in about equal proportion, with fewer calories coming from alcohol). In summary, dietary quality is far from the recommendations of the *Dietary Guidelines*. The total HEI-2005 score for 2003-2004 is 75.5 out of a total 100 possible points, indicating much room for improvement.

Review of Timeline, Milestones, and Staff Responsibilities

Dr. Van Horn reminded the Committee that their task is to determine whether revisions to the 2005 *Dietary Guidelines* are warranted based on the preponderance of the scientific and medical knowledge currently available. If the Committee decides that changes are warranted, it will submit its recommendations and rationale in an advisory report to the Secretaries between April and May 2010. Dr. Van Horn then referred the members to Tab 1 of their notebooks and reviewed the timeline and milestones under which the Committee will proceed.

- Milestones for the first DGAC meeting include deciding whether to proceed with a review of the science, initiating plans for determining priority review questions, and determining topic areas and membership of subcommittees. Between November 2008 and January 2009, the Committee will work with Dietary Guidelines Management Team and Nutrition Evidence Library staff to gather information, review the evidence base, and identify topic areas and outside experts who can make presentations.
- For the second meeting (January 2009), the subcommittees will meet in work sessions and then bring their deliberations to the public DGAC meeting. The Committee will hear expert presentations as well as presentations on MyPyramid food intake patterns, and new data on usual intakes of nutrients and food groups. Milestones will be that the subcommittees develop objectives for their chapters using rough outlines of chapter content.
- Following the second DGAC meeting, subcommittees will continue their evidence-based reviews of the science and will begin drafting the content and some initial scientific conclusion statements and rationale to be presented at subsequent public meetings.
- The third meeting of the DGAC will be held in March 2009. The Committee will discuss scientific conclusion statements and rationales. (*Note: The date for the third meeting is now planned for April 2009.*)
- Between April and June 2009, the subcommittees will continue reviewing the evidence and developing the conclusion statements, recommendations, and rationale for their chapters. The Committee also will begin drafting technical recommendations and rationale for the report.
- At the fourth meeting, which will be held in July 2009, the Committee will continue its deliberations, discussing conclusion statements and rationales and beginning to reach consensus on conclusions to the extent possible. At this point, much of the report's drafting should be completed.

- From August through October 2009, the report will be completed and refined in preparation for the DGAC's final meeting, which will be held in November 2009.
- Following the November 2009 meeting, the report will undergo final refining, editing, and formatting. The report will be presented to the Secretaries in April or May 2010.

(Lunch 11:30 a.m.-1:15 p.m.)

The Nutrition Evidence Library

Ms. Joan Lyon, Center for Nutrition Policy and Promotion, USDA, thanked the Committee and noted that more than two million articles are published annually in biomedical journals. Conducting a systematic review of published literature on dietary and energy balance therefore presents a challenge.

Over the past two decades, the process used to develop Federal guidelines has become increasingly consistent and structured, and advances in technology have improved the efficiency of research and communication tools to support this work. Following the publication of the 2005 *Dietary Guidelines*, USDA took advantage of new technologies to develop improved methods and tools to support the 2010 *Dietary Guidelines* development process. USDA established a contract with the American Dietetic Association to develop a robust electronic library portal, formed an Executive Committee to provide leadership, and created a federal interest group to provide a collaborative forum for shaping a plan of operations.

The 2010 DGAC will have the published literature, the IOM's DRI reports, and other evidence-based reports to support its work. It also will have a new resource, the Nutrition Evidence Library (NEL), a web-based system and set of tools. NEL will be used to build portfolios of evidence abstracts and overview worksheets related to key topic areas and research questions. It also will provide document sharing, tracking and archiving capabilities, and group communication tools. NEL's primary initial purpose is to serve as a resource for the DGAC. In the future, it will be used more broadly to inform Federal nutrition policy and program development, identify research gaps, and provide information for stakeholders, including consumers, advocates, researchers, and industry.

Ms. Lyon then described NEL's benefits, which include consistency, transparency, accessibility, and perpetuity (the ability to continually build on an existing body of compiled evidence), and its organization. NEL is administered by an Executive Committee and Management Team that provide oversight, quality control, day-to-day management, and training of evidence abstractors. A Research Librarian assists in planning literature searches and carries out the searches. In addition to these government staff, NEL uses Evidence Abstractors, who are non-government researchers and practitioners with advanced degrees in nutrition-related fields. These national service volunteers systematically extract information from published research papers to build the evidence worksheets and overview tables for use by the DGAC subcommittees.

Each DGAC subcommittee will have its own NEL team member who will work in conjunction with the Dietary Guidelines Management Team. The evidence-based review process consists of the following steps:

- DGAC subcommittees will develop and prioritize research questions.
- The subcommittee and NEL team will develop a literature search-and-sort plan, including search terms and inclusion and exclusion criteria.
- The NEL librarian will conduct the literature searches and sorts.
- Evidence abstractors will prepare evidence worksheets. Once the worksheets are completed, NEL project managers will conduct quality reviews and extract data fields to develop evidence overview tables. Portfolios of evidence worksheets and overview tables will be sent to subcommittees to assist in their review and synthesis of the evidence. Electronic versions (PDFs) of all the articles also will be available on the NEL portal.
- After the DGAC submits its report, USDA plans to make the NEL content available online at www.nutrition.gov. All of the components will be available except for the PDFs of individual articles due to copyright restrictions.

Ms. Lyon explained the process that the DGAC subcommittees will be asked to use as they develop their research questions. In evidence-based reviews, these questions commonly follow a PICO or PICO-D format: **P**opulation or primary problem; **I**ntervention, exposure, or procedure; **C**omparators (aspects to be examined); and **O**utcome. For example, a question framed by the Carbohydrate subcommittee using PICO could be, “In healthy adults, what is the association between whole grain consumption and the incidence of Type 2 diabetes?” Some PICO models also include a **D**esign and **D**uration component if the study design is a desired part of the research question.

Ms. Lyon noted that the NEL had two requests for the Committee as they develop questions: (1) that they limit their initial research questions to one to three high-priority topics, and (2) that if the members wish to use intermediate biomarkers, they should be valid for health promotion or chronic disease reduction in the general public.

Ms. Lyon concluded her presentation by highlighting several specific NEL review features that will be of use to the subcommittees. She also displayed an evidence worksheet and described key committee management tools (such as secure electronic communications and document sharing and management software).

Discussion

Dr. Nelson asked whether it is possible to save literature searches in NEL. Ms. Lyon responded that the system allows a user to pull off a list of citations and worksheets and save them.

Dr. Appel asked Ms. Lyon to clarify what she meant by “one to three questions.” Ms. Lyon stated that the total number of questions obviously will be dictated by the depth and breadth of the work required to answer the questions. She anticipates that subcommittees will ask several overarching questions with subquestions.

Dr. Appel also asked whether NEL uses some standardized or customized system for assessing the quality of individual papers. Ms. Lyon responded that NEL worksheets have the ability to come up with a quality rating, but the intent of the worksheets is to assist Committee members by providing information about the key data and study design elements related to the paper. Dr. Nelson commented that the members of the Physical Activity Guidelines Advisory Committee ultimately read most of the papers provided to them from literature searches.

Dr. Pearson asked how subcommittee members and NEL staff would interact during the abstracting process so as to avoid a search resulting in thousands of references. Ms. Lyon assured him that the NEL teams would work with the subcommittees to hone their research questions and literature search plans to improve the efficiency and effectiveness of the searches.

Dr. Clemens noted that many Committee members have built extensive libraries of their own and wondered whether they could be shared with NEL. Ms. Lyon answered that those libraries could be shared, but that NEL searches would still be done using identified search terms.

Nutrient Adequacy

Discussion Leaders: S. Nickols-Richardson, N. Fukagawa, M. Nelson, J. Slavin

Dr. Sharon Nickols-Richardson reported to the members that a review of the 2005 *Dietary Guidelines for Americans* showed that several issues remained relevant in the area of nutrient adequacy, or adequate nutrients within calorie needs. Specifically, overweight, obesity, hypertension, hyperlipidemia, cancer, and osteoporosis, among other chronic diseases, continue to be major public health concerns. Many of these conditions have clear links to overall caloric intake, dietary patterns and specific macronutrients and micronutrients. Although some progress has been made in promoting healthy eating patterns, several nutrients continue to be shortfall nutrients, while others are consumed in excess of their recommendations.

Dr. Nickols-Richardson provided details, taken from USDA's Food and Nutrition Report #FSP08NH, titled *Diet Quality of Americans by Food Stamp Participation Status*, which provides data from the 1999-2004 NHANES. In summary, shortfall nutrients for adults continue to include calcium, potassium, fiber, magnesium, and vitamins A, C, and E:

- 30% of adults not participating in the SNAP program and 39% of adults participating in the program had inadequate typical daily intake of vitamin C.
- About 45% of adults consumed less than the Estimated Average Requirement (EAR) for vitamin A
- 66% of adults consumed magnesium at a level less than the EAR.
- 90% of adults had vitamin E intakes less than the EAR.
- Average usual daily intake of calcium was 88% of the Adequate Intake (AI) for all adults and 62% of the AI for older adults.
- Mean intake of potassium was 58% of the AI for all age groups.
- Fiber was 53% of the AI for all age groups.

- Sodium intake consistently exceeded the Tolerable Upper Intake Level (UL) for 90% of the population.

The report also confirmed that:

- Nearly 37% of adults consumed an abundance of energy from total dietary fat, with 60% of adults consuming excess energy from saturated fat.
- Approximately 38% of total energy was consumed as solid fats, alcoholic beverages, and added sugars (SoFAAs).
- The average HEI-2005 score for adults participating in the SNAP program was 51 (the maximum score is 100). For income-eligible, but non-participating SNAP adults, the HEI-2005 score was 57, and for higher income, non-food stamp participants, the HEI-2005 score was 59. Older adults fared somewhat better with scores of 63, 68, and 69, respectively.
- HEI-2005 areas of concern include a shortfall in total fruit, whole fruit, total vegetables, dark green and orange vegetables and legumes, whole grains and milk intakes, and the abundance of sodium intake and discretionary calories from SoFAAS.

Dr. Nickols-Richardson then summarized findings from USDA Food and Nutrition Service Report Number CN08NH, titled *Diet Quality of American School Age Children by School Lunch Participation Status*. This report also reflects 1999-2004 NHANES data. In summary, shortfall nutrients for children include calcium, potassium, fiber, magnesium and vitamin E. Vitamins A and C and phosphorus are of potential concern for school age children:

- For teenage girls, shortfall nutrients also included pyridoxine, folate, zinc, and iron.
- Dietary calcium was a shortfall nutrient for children aged 9 to 18 years, but not for those aged 5 to 8 years.
- Average potassium and fiber intakes were below the AI for all children.
- Mean sodium consumption was abundant for all age groups.
- About 25% of school age children had an abundance of total energy from dietary fat, with 85% having an abundance of total energy from saturated fat. Approximately 39% of average total daily energy intake was comprised of SoFAAS.
- For all school age children the mean HEI-2005 score was 55. Shortfall component scores (those less than 80% of the maximum score), included total fruit, whole fruit, total vegetables, dark green and orange vegetables and legumes and whole grains, while sodium and discretionary calories from SoFAAS continued to be abundant.

Dr. Nickols-Richardson noted that some special nutrient needs should be considered for teenage girls, including sodium and SoFAAS, the nutrients of abundance. She said it was important also to note that, for a variety of reasons, these reports were silent on the issue of vitamin D.

Median recommended intakes for these shortfall nutrients within the acceptable macronutrient distribution and total energy allowance will require that the 2010 *Dietary Guidelines* emphasize consumption of a variety of nutrient-dense foods. Dr. Nickols-Richardson noted that the HEI-

2005 data indicate a need for specific attention to selecting healthy foods, and acknowledged that nutrition and dietetics professionals and extension agents and specialists are keenly interested in promoting whole foods and dietary approaches to healthy eating that incorporate environmentally friendly and economically friendly foods. She also reported that at the 2008 Food and Nutrition Conference and Expo held by the American Dietetic Association in October 2008, approximately seven educational sessions, one excursion, and one entire Dietetics Practice Group focused on healthy eating through local foods, sustainable diets, a green environment, and economics of food. Moreover, the American Association of Family and Consumer Science's theme for their 2009 Annual Conference is sustainability, and will include educational sessions for professionals on the integration of food, financial literacy, in near and foreign environments.

Dr. Nickols-Richardson stated that the 2010 *Dietary Guidelines* should consider food sustainability and economics when possible, including a consideration of food fortification, biotechnology and nanotechnology, and their implications for nutrient adequacy and toxicity and environmental sustainability. She also suggested that the changing demographic profile of the United States, with increases in African-American, Hispanic, and Asian populations, require that the Committee examine culturally sensitive food patterns that may or may not include vegetarian choices, milk and milk product substitutions, and other contextually relevant eating approaches.

Dr. Nickols-Richardson closed her presentation by stating that the Acceptable Macronutrient Distribution Ranges (AMDR) for dietary protein is 5% to 20% of total energy for children, aged 1 to 3 years; 10% to 30% of total energy for children, aged 4 to 18 years; and 10% to 35% of total energy for adults, aged 18 years and older. NHANES data from 1999-2004 indicate that children and adults consume average daily intakes of dietary protein that fall within the AMDR. Most dietary patterns focus on 15% of total energy from dietary protein. However, protein has received considerable attention in the past 5 years in several areas, including the usefulness of high (20% to 35% of total energy) protein intake range. Increased attention also is being given to the role of protein in dietary approaches to weight maintenance, satiety, prevention of sarcopenia and osteoporosis, risks for osteoporosis and renal stones, and plant-based dietary proteins as an approach for healthy eating. Data are somewhat conflicting in each of these areas. Thus, dietary protein requires a full evidence-based review of its relation to health promotion and disease prevention.

Dr. Naomi Fukagawa focused on two aspects of protein, and her comments were directed not so much at the percentage of calories from protein but the amount and source of dietary protein. She suggested that the Committee may want to consider three questions:

- Should the Committee reconsider the protein recommendation for older individuals, particularly in the context of chronic diseases, disease prevention, and maintaining overall good health?
- Should the Committee reconsider its recommendations about the source of dietary proteins, in light of the nutrient profiles of animal and plant-based protein sources?
- How should the Committee begin to evaluate the value of the "bioactive" proteins and peptides in the diet?

Dr. Fukagawa also suggested that the Committee may want to consider new evidence regarding issues related to methyl groups and their complex relationships to nutrient groups and nutrients, such as folate and vitamin B₁₂.

Dr. Miriam Nelson raised two issues for the Committee's consideration. First she briefly reviewed the history of folate fortification in the food supply and presented observational data from the United States and Canada on folate fortification and trends in colorectal cancer risk. She also noted some data suggesting an association between accelerated dementia and high folate levels in the presence of low vitamin B₁₂ levels. Dr. Nelson summarized by saying that folate fortification has clearly been beneficial in reducing rates of neural tube defects but that other data raise the question of whether the present folate fortification system should be modified and what advice adults should be given about taking folic acid supplements. These are questions the Committee may want to address.

Dr. Nelson then moved on to vitamin D. She noted that new evidence is emerging about vitamin D's benefit on reducing risk of osteoporosis and fractures in older adults and other benefits for common cancers, type 1 diabetes, hypertension, infectious diseases and the immune system. Data from NHANES and other sources show that many Americans have lower-than-optimal intakes of vitamin D and low blood serum levels. A number of groups are examining vitamin D's role in these health areas and deliberating whether and by how much to increase recommended intakes. These groups include an IOM DRI panel. The American Academy of Pediatrics and the National Osteoporosis Foundation both recently increased their recommendations for vitamin D intakes. Dr. Nelson concluded by urging that the Committee examine vitamin D, but in concert with the IOM panel.

Ms. McMurry (HHS Co-Executive Secretary to the DGAC) provided some background information on the upcoming IOM vitamin D and calcium panel and on an ongoing Agency for Healthcare Research and Quality (AHRQ) evidence-based review on vitamin D and calcium. She noted that the AHRQ report is expected in June 2009 and though it will be presented primarily to the IOM panel, its findings also could be shared with the DGAC. She also urged the Committee to complement but not duplicate the IOM committee's work.

Dr. Joanne Slavin completed the presentations on nutrient adequacy, reiterating that diet is a complex exposure and that recommendations should resist the tendency to take a reductionist approach that focuses on individual nutrients or nutrient groups. Rather, recommendations should emphasize dietary patterns, intakes of whole foods, and eating frequencies and should recognize the social aspects of eating. In particular, dietary guidance needs strategies to get nutrients into the low-calorie diets that are required for typically inactive Americans. These strategies emphasize the importance of nutrient-dense foods like fruits, vegetables, grains, legumes, dairy, and meat. Finally, food costs must be considered in making recommendations. Though more nutrient-dense than other foods, proteins, fresh fruits, vegetables, and whole grains are also more expensive.

Discussion

Dr. Appel asked about the short lag period in the data presented by Dr. Nelson between changes in folate levels and increases in cancer risk. Dr. Nelson said she discussed this same question with colleagues who are experts in this field and that the current hypothesis is that individuals may already have precancerous polyps and that high folate levels stimulate them to grow and become cancerous.

Dr. Pearson noted that in considering folate one needs to be very careful to balance evidence about possible risks in various age groups, such as colorectal cancer risk in older people, against evidence showing benefits for younger individuals, such as reductions in neural tube defects or congenital heart defects.

Dr. Nelson asked whether data were available on changes in nutrient content of foods over the past several decades. Dr. Post responded that the USDA has data on nutrients in the food supply dating back to 1909. Dr. Slavin noted that the selenium content of food varies dramatically depending on the soil and that organic and conventional foods can also vary in nutrient content. Members agreed that this topic fits within the Nutrient Adequacy subcommittee and that it might be useful to have an expert presentation on this topic.

Dr. Achterberg wondered whether available data indicate what proportion of the American diet is derived from imported foods. If the Committee is to be thinking about agricultural practices and how that affects nutrients in foods, a consideration of food sources would be relevant. Dr. Post stated that staff could see whether these data are available.

Drs. Appel, Pearson, and Nickols-Richardson agreed on the importance of considering dietary patterns generally, and that this approach may be better than trying to decide which among the many nutrients to evaluate and review. Dr. Appel suggested that it might be valuable to consider questions that are “outside-the-box” or to look at issues from a new perspective, such as examining which dietary patterns from which countries are associated with longevity and what their common characteristics are. Dr. Wansink responded by saying that this approach may be useful in generating hypotheses, but that the Committee must stay focused on what the science says on these questions.

Dr. Pérez-Escamilla highlighted the importance of making recommendations that people can actually carry out. For example, a large segment of the population has difficulty accessing healthy foods such as fruits, vegetables and fish both because of the cost and because the places where they buy food may not have these foods. Local food systems play a large role in determining people’s access to food and their ability to carry out nutrition recommendations.

Fluid and Electrolytes
Discussion Leader: L. Appel

Dr. Appel began his presentation by reiterating the known and hypothesized adverse effects of excess salt intake. A relationship with increased blood pressure is established, leading to increased risk of cardiovascular disease and stroke. A probable relationship exists between high sodium intake and risk of gastric cancer. A suggestive relationship exists between high salt intake and osteoporosis and with increased left ventricular mass. It also is hypothesized that as

salt intake increases, fluid intakes does as well. Because many fluids provide calories, some data suggest that excess salt intake could therefore contribute to overweight and obesity.

Cardiovascular diseases are the leading causes of death worldwide, and high blood pressure is a major causal factor. In terms of blood pressure distributions, 42% of people are normal, about a third are pre-hypertensive, and slightly less than 30% are hypertensive. These figures are somewhat misleading however, because blood pressure rises with aging. Almost everyone has hypertension by the time they reach their 70s, and 90% of people develop the condition in their lifetime.

Evidence relating salt intake to blood pressure comes from epidemiologic, migration, genetic, and animal studies, from clinical trials in adults and children, and from population interventions. Trial data show that reductions in sodium from 3,300 mg to 1,500 mg results in a large reduction in systolic blood pressure.

Dr. Appel then restated the recommendations of the 2005 DGAC on three issues – the amount of fluids recommended for health, the effects of salt intake on health, and the effects of potassium intake on health. He also summarized the DGAC report's research recommendations regarding fluids, sodium, and potassium.

Turning to issues that the 2010 DGAC might consider in light of new evidence and new emphases in the scientific community, Dr. Appel raised three issues. First, the blood pressure status of Americans is worsening. Second, some trial evidence now supports the benefits for cardiovascular events of reducing salt and increasing potassium. Third, concern about rising blood pressures among children is growing. Dr. Appel indicated this last trend could be one of the more important research questions facing the subcommittee. Dr. Appel presented NHANES data from 1988-1994 and 1999-2004 showing increases in hypertension in older adults in each of the major race/ethnic groups studied in NHANES. He also presented a compilation of evidence on age-related increases in blood pressure in children. The data show that the average age-related rise in blood pressure is roughly at least two but perhaps up to three times as fast as in adults. The genesis of the blood pressure epidemic really occurs during childhood and this should be an emphasis of the Committee's work.

Dr. Appel also described three trials showing a reduction in cardiovascular events following reductions in sodium consumption. He then presented several questions for the Committee's consideration in its scientific review:

- What dietary factors influence blood pressure in children and young adults?
- Should the target for sodium intake be reduced from 2,300 mg/day to 1,500 mg/day?
- What are current dietary sources of sodium?
- What are the effects of certain beverages (coffee, tea) on cardiovascular disease and its risk factors?
- What are the effects of sugar-sweetened beverages, beverages with artificial sweeteners, and water on weight in children and adults?

He concluded his presentation by suggesting several expert presenters, including Steve Daniels (blood pressure in children), Barry Popkin or Ben Caballero (weight effects of beverages), and Frank Sacks (sodium recommendations).

Discussion

Dr. Williams echoed Dr. Appel's concerns about high blood pressure trends in children by citing several additional studies. She noted another concern is that the majority of children are above the upper limit for sodium and do not meet the requirements for potassium. Dr. Appel agreed that this was a prime issue for the Committee, especially in terms of primary prevention of cardiovascular disease in children. He noted that a National Heart, Lung, and Blood Institute (NHLBI) committee will be considering this issue and that the DGAC should complement but not duplicate that work. Dr. Williams suggested that Dr. Rae-Ellen Kavey, the coordinator of the NHLBI committee, may also be a good expert presenter.

The Committee members briefly discussed the issues on coffee and tea Dr. Pearson agreed with other members that the coffee evidence did not warrant further exploration by the Committee, but that new studies on the effects of tea on cardiovascular parameters may be worth investigating.

Dr. Pi-Sunyer agreed with Dr. Appel's suggestion that the Committee examine sweetened beverages and their effect on weight in adults and children. Dr. Slavin responded that sweetened beverages will be considered by the carbohydrates subcommittee.

Dr. Pearson suggested that it may be worthwhile for the Committee to examine behavioral issues surrounding sodium intake and the development of preferences for high-sodium foods, especially among children. He also suggested that the Committee examine how well the population groups have implemented the 2005 sodium guidelines before changing the recommendation.

Dr. Nelson asked about evidence on the relative benefits of potassium alone versus potassium as found in fruits and vegetables. Dr. Appel cited findings from the DASH clinical trial showing a substantial effect of fruits and vegetables on blood pressure reduction. It may be that these foods contain a broad panel of nutrients and compounds that are beneficial for blood pressure. Dr. Van Horn echoed this point, stated that even normotensive participants in the DASH trial lowered their blood pressure, and noted that her own doctoral research demonstrated striking changes in tolerance by adolescents for high sodium levels in the diet after only a short time on a lower sodium diet.

Dr. Van Horn thanked the Committee for their participation and stimulating discussion and adjourned for the day.

(Meeting Recess 3:55 p.m.)

Friday October 31

(8:35 a.m.)

Dr. Van Horn opened the second day's session by briefly reviewing key points made in the presentations the previous day. Dr. Post noted in considering potential recommendations about reducing sodium levels, the Committee should take into account the fact that many substances used to promote food safety in processed foods are sodium-based. Ms. McMurry mentioned that the IOM has recently convened a panel to look at strategies for reducing sodium intakes to the 2005 *Dietary Guidelines* level. It would be good for the DGAC to also coordinate with that panel to the extent possible.

Dr. Van Horn then invited Dr. Pi-Sunyer to begin the day's discussions.

Energy Balance, Weight Management, and Physical Activity
Discussion Leaders: X. Pi-Sunyer, M. Nelson, C. Williams, R. Pérez-Escamilla

Dr. Pi-Sunyer opened his talk by presenting NHANES data on trends in age-adjusted prevalence of obesity for adults from 1960 to 2000. These data and the CDC maps illustrating Behavioral Risk Factor Surveillance System obesity data clearly demonstrated the enormous secular increase in the number of obese Americans. Since 2006, the rate might have flattened a little, but that is not clear. Trends in children are similar. Dr. Pi-Sunyer then enumerated the numerous adverse health and medical complications of obesity, including heart disease, diabetes, dyslipidemia, hypertension, cancer, non-alcoholic fatty liver disease, pulmonary disease, and sleep apnea. The obesity epidemic also is related to the epidemic of metabolic syndrome.

Dr. Pi-Sunyer went on to say that the great American paradox of 2008 is the escalating trend toward poor nourishment and health in a land of plenty. Because of sedentary lifestyles and poor food choices, many Americans exceed their caloric needs without meeting their nutrient requirements. A consensus exists that public health is having little impact on the obesity epidemic and that we do not have adequate tools to change lifestyle behaviors. Public awareness of the link between obesity and chronic disease is low. Awareness needs to be increased, particularly in people who already have risk factors.

Dr. Pi-Sunyer proposed that the Committee examine or revisit the following questions:

- Should we focus on preventing weight gain and should we avoid focusing on weight loss? (The former alternative would have a stronger longer-term public health impact, particularly in light of the fact that small excess caloric intakes over time can result in significant weight gain.)
- What are the optimal proportions of dietary fat and carbohydrates to prevent weight gain?
- How is physical activity related to body weight? How much physical activity is needed to avoid weight gain?
- Is caloric compensation different for solid and liquid foods?
- Do energy-dense/nutrient-poor foods displace energy-poor/nutrient-rich foods, and does this lead to weight gain and nutrient inadequacy?

- How should portion size, the effect of snacks, and intake patterns be addressed in efforts to prevent weight gain? What lifestyle behaviors are most likely to prevent weight gain?
- Do Americans really have any discretionary calories? Is it too difficult a concept? Can we talk about it in relation to physical activity, and if so, how?

Dr. Pi-Sunyer also suggested two expert presenters: Adam Drewnowski (nutrient density vs. nutrient adequacy) and Barbara Rolls (liquids vs. solids compensation).

Dr. Miriam Nelson, a member of the recent Physical Activity Guidelines Advisory Committee (PAGAC), described the process the PAGAC used to develop its report and presented the major results of the Committee's review of the science.

Dr. Nelson provided background by stating that Americans are largely inactive and many opportunities for physical activity have been engineered out of daily life. However, physical activity is one of the most important actions people can take for their health. She then described the work of the PAGAC and development of the *2008 Physical Activity Guidelines for Americans*. The PAGAC convened in June 2007 and met three times over the following year. The members reviewed evidence from 1994-2008 and developed a 600-page technical report outlining its findings and rationales. A HHS writing group used this technical report to develop the *2008 Physical Activity Guidelines for Americans*, which are designed for Americans aged 6 years and older.

The Physical Activity Guidelines are the first major science review on this topic in more than a decade, and in going beyond the traditional "30 minutes or more on most days of the week" recommendation, they provide useful, practical details about the "dose" and types of physical activity for Americans. The major research findings of the PAGAC and the recommendations in the *2008 Physical Activity Guidelines for Americans* policy document are available at <http://www.health.gov/paguidelines>.

Dr. Nelson then stated that during their deliberations, the PAGAC spent considerable time on the weight control issue and clearly acknowledged that the role of energy intake must be incorporated into any consideration of physical activity and weight control. Data show that individuals do not lose weight if they only become more physically active because they tend to compensate by eating more. Therefore, dietary intervention is also necessary when talking about weight loss. The PAGAC separated its consideration of weight control issues into weight stability, weight loss, and weight stability after weight loss:

- The preponderance of data indicate that about 150 minutes of moderate-intensity activity or 75 minutes of vigorous-intensity activity per week is sufficient to attain weight stability, but it cannot be isolated from dietary intake.
- Greater amounts of physical activity are necessary for weight loss (45 to 70 minutes/day of moderate-intensity activity or 22 minutes/day of vigorous-intensity). Dietary interventions also must be included.

- Greater amounts of physical activity also are necessary for weight stability after weight loss (60 minutes/day of moderate or 30 minutes/day of vigorous). Dietary interventions must be included.

Dr. Nelson concluded by sharing with the Committee the tables that summarized the evidence used by PAGAC subcommittees to arrive at their conclusions. These tables are available on pages E-4 to E-22 of the *Physical Activity Guidelines Advisory Committee Report 2008* (<http://www.health.gov/paguidelines/committeereport.aspx>), and may be a useful model for the DGAC in its review and synthesis of the science. Dr. Nelson also noted that the PAGAC report is a comprehensive resource that the DGAC can use when considering issues related to physical activity, and that she would be happy to serve as a link between the report and the DGAC.

Dr. Christine Williams opened her presentation by reiterating the importance of a high-quality diet that is sufficient in energy and nutrients and of adequate physical activity in maintaining health during childhood and also in preventing risks of future chronic disease.

One of the most disturbing trends in public health in recent decades has been the increase in obesity among children and adolescents. Since the late 1970s, the prevalence of obesity has increased more than 100% in children 6 to 11 and 200% for adolescents 12 to 19. A close look at the prevalence rates over this time indicates three time periods of interest: a period of slow increase between 1963 and 1980, a period of very rapid increase between 1980 and 1999, and a period between 2000 and 2006 in which evidence suggests a slowing or even decrease in the epidemic. However, the slight decrease seen between 2003-2004 and 2005-2006 is observed only for non-Hispanic white children, not for non-Hispanic black or Mexican-American children. Dr. Williams noted that data from 2007-2008 are needed to further examine these trends.

Dr. Williams then stated that the data raise questions about related changes in energy intake and dietary patterns during the same period of time: What happened to children's dietary intake between 1980 and 1999 and have any healthful dietary trends recently emerged that may be contributing to the possible slowdown in the childhood obesity epidemic? Food consumption data from several sources show that:

- Consumption of pizza, tacos, and snack foods increased dramatically for children and teens between 1977-1978 and 2001-2002.
- Beverage choices shifted from milk to less desirable choices (1977-1978: milk was 51% of all beverages by gram weight while soda made up 29%; 2001-2002: soda was 50% of all beverages by gram weight while milk was 23%).
- Foods that typically have a high calorie content relative to the nutrients they provide showed large gains in popularity.
- Significant increases in food consumed away from home (for children aged 2 to 5: food consumed at home decreased from 88% to 76%, while food away from home doubled from 12% to 24%; for teens aged 12 to 17, food eaten away from home increased from 20% to 35%).
- More children snack now (90% vs. 80%), average energy intake from snacks increased from 450 to 600 calories per day, energy intake from snacks now equal 25% of daily

calorie intake, energy density of snacks has increased from 1.35 to 1.54 calories per gram.

Dr. Williams said that the recent slowing of increases in obesity prevalence rates pose several questions that the Committee could consider:

- Have there been any significant changes in energy intake, as well as macro- and micronutrient intake since 1999, or diverging differences among children by race and ethnicity?
- Have beverage choices changed? Has the amount of beverage intake decreased recently?
- Have higher-fat food choices decreased?
- Has there been a change in patterns of eating out? Or of purchases in take-home foods?
- Have economic hard times encouraged more at-home meals?
- Are children and teens more physically active at home and school?

Dr. Williams closed her presentation by saying that the 2010 *Dietary Guidelines* will need to identify effective strategies to help children and adolescents replace some current food choices with healthful options, including fruits, vegetables, whole grains, and calcium-rich foods and beverages.

Dr. Pérez-Escamilla noted that the 1990 IOM recommendations regarding weight gain during pregnancy were designed to prevent small-for-gestational-age (SGA) babies. Research has shown that these recommendations do help achieve this objective. However, because of the obesity epidemic, the IOM decided to form a committee to review gestational weight gain recommendations, particularly for obese women. The DGAC should take this report into account in its deliberations. The report is scheduled to be released in 2009.

In addition, AHRQ has recently published an evidence-based systematic review of maternal and child consequences of gestational weight gain (available at <http://www.ahrq.gov/clinic/tp/admattp.htm>), and this review can be shared with the Committee now.

Dr. Pérez-Escamilla closed his remarks by identifying two key issues for the Committee:

- Key issue 1:
 - High pre-pregnancy body mass index (BMI) is a significant predictor of excessive gestational weight gain and maternal post-partum weight retention. High pre-pregnancy BMI and excessive gestational weight gain is associated with delivery of large-for-gestational-age (LGA) newborns, and LGA newborns are at increased risk of childhood obesity, insulin resistance, and type 2 diabetes later in life.
 - Implication: Fetal nutritional milieu likely affects risk of childhood obesity. Prevention of maternal obesity before pregnancy and excessive gestational weight

gain will likely have a positive impact on both maternal and child chronic disease outcomes.

- Key issue 2:
 - Underweight before pregnancy and suboptimal gestational weight gain increase risk of SGA newborns. SGA is associated with increased childhood adiposity and risk of type 2 diabetes and CVD later in life.
 - Implication: Preventing maternal underweight before pregnancy and suboptimal gestational weight gain will likely also have a positive impact on childhood obesity epidemic.

Discussion

Dr. Appel suggested that the Committee make recommendations about energy balance and weight control oriented to actions that people can take and that really have an impact on behavior, such as self-measurement of weight, self-measurement of physical activity, and counting calories. Dr. Van Horn agreed that calories are a concept that the Committee may want to emphasize more. If people can learn their cholesterol number, they may also be able to learn how to count calories and calculate energy in versus energy out.

Dr. Pearson and several other Committee members pointed out that food insecurity is an important factor to consider when making recommendations related to energy balance and weight control. Some low-income population groups may be having trouble obtaining sufficient food, whereas in many other instances, food insecurity is more related to the quality than the quantity of the diet. Dr. Pi-Sunyer noted that obesity and related health concerns are a lower priority than other pressing concerns for some lower-income groups.

Dr. Achterberg suggested that the energy balance subcommittee also consider food variety and whether variety is related to nutrient adequacy and calorie intake.

Dr. Nelson reminded the Committee to be careful not to overstate the effect of physical activity alone on weight status because data show that when people become physically active they do not lose weight because they tend to eat a little more. She also suggested that cultural norms of other countries may serve as useful models to help people eat less. For example, people in Okinawa follow *hara hachi bu*, a principle of eating about 80% of what is needed and of stopping before becoming full.

Dr. Nelson also noted that research is now emerging about ways to create less obesigenic environments, which may help parents feed their children in more healthful ways.

Carbohydrates

Discussion Leader: J. Slavin

Dr. Joanne Slavin opened her presentation with a review of the 2005 *Dietary Guidelines* recommendations on carbohydrates. She then provided background information on the various categories of carbohydrates from a chemical perspective (monosaccharides, sugar alcohols,

disaccharides, trisaccharides, oligosaccharides, and polysaccharides) and a nutritional perspective (absorbable, digestible, fermentable, non-fermentable/poorly fermentable).

Carbohydrates serve a number of important functions. They are sweeteners and are used in food preservation. They have functional attributes, such as viscosity, texture, body, and browning capacity. They provide energy and have fermentable substrates. Technically, no dietary carbohydrates are required by the body, as long as adequate amounts of protein and fat are consumed. However, some types of cells have an absolute requirement for glucose, so the DRI report on carbohydrates include a Recommended Dietary Allowance (RDA) of 130 grams/day.

Dr. Slavin then discussed glycemic versus non-glycemic carbohydrates, noting that the glycemic index is driven by the glucose and fructose content of a food and how quickly it is digested. Glycemic load is the glycemic index multiplied by the grams of carbohydrate in a serving of the food. The DRI report did not recommend an upper limit (UL) for glycemic index or glycemic load, but it did suggest that the principle of slowing carbohydrate absorption is potentially important and worthy of additional research. Dr. Slavin noted that carbohydrates are a diverse group of foods and it may therefore be useful to consider how to put them into groups based on physiological effects, which may help the Committee develop recommendations.

Current DRI recommendations on Acceptable Macronutrient Distributions Ranges (AMDRs) for adults state that carbohydrates should be 45% to 65% of calories, lipids should be 20% to 35% of calories, and protein should be 10% to 35% of calories. The DRIs also recommend that no more than 25% of calories should come from added sugars and that men should have 38 grams of fiber and women have 25 grams of fiber per day. The challenge, noted Dr. Slavin, is how to appropriately manage the types of carbohydrates within the 45% to 65% of calories allotted to carbohydrates.

Dr. Slavin then reviewed recent evidence about a number of issues related to carbohydrates that the Committee may want to consider in its deliberations:

- *Macronutrients and obesity.* There is no clear evidence that altering the proportion of total carbohydrate in the diet is an important determinant of energy intake. Evidence indicates that sugar-sweetened beverages do not induce satiety as much as solid carbohydrates. Dietary fiber intake is linked to less weight gain. Low calorie diets tend to be higher in protein, which can increase satiety, thermogenesis and maintain fat-free mass. Consumption of plant-based protein is inversely associated with cardiovascular disease, hypertension, and obesity.
- *Sugars.* There is no evidence that the ratio of fructose and glucose consumed from sugars has changed over the past four decades as a result of high fructose corn syrup (HFCS) replacing sucrose in many applications. HFCS does not appear to contribute to overweight and obesity any differently than do other energy sources. Several studies provide conflicting evidence about the association between the consumption of sugar-sweetened beverages and body mass index or obesity.
- *Glycemic index and glycemic load.* Findings from studies on the impact of dietary glycemic index on body weight have been inconsistent. Dr. Slavin indicated that there appears to be a consistent positive association between glycemic index and the

development of type 2 diabetes. Including a recommendation about glycemic index/glycemic load appears premature.

- *Dietary fiber and whole grains.* Dietary fiber intake is linked to less weight gain, lower weight, improved lipid cholesterol, and improved hormone profiles. Satiety is affected by more viscous fibers in larger doses. Strong evidence exists that a diet rich in whole grains is associated with lower BMI, smaller waist circumference and decreased risk of overweight. Whole grains and weight gain was discussed.

Dr. Slavin concluded her presentation by reiterating the importance of fiber. Fiber intake in the United States is low, about 15 grams per day. USDA data show that white flour and white potatoes provide the most fiber in the U.S. diet, not because they are concentrated fiber sources, but because they are widely consumed. Any encouragement for Americans to consume more fiber would be positive, as would efforts to help people choose carbohydrates wisely and to consume more whole grains.

Discussion

Dr. Van Horn suggested that examining the importance of plant-based proteins may be useful, not only because of their beneficial associations with blood pressure, cardiovascular disease, and obesity, but because it would be a way to increase consumption of complex, nutrient-rich carbohydrates.

Echoing comments from several members, Dr. Nelson noted that the Committee needs to develop a new way to frame messages about carbohydrates – which carbohydrates to encourage because of their nutrient density, how to talk about carbohydrates and discretionary calories, and how to balance proportions of carbohydrates with the other macronutrients.

Dr. Achterberg suggested that the Committee look at some of the European gut-health studies and see what they say about fiber. She also asked whether any studies have been completed on resistant starch. Dr. Slavin responded that some data on intakes exist and some studies have been done on resistance starch's effect on glycemic response.

Dr. Clemens briefly reminded members of some other characteristics of carbohydrates, such as that some carbohydrates function as preservatives and some amino saccharides have been demonstrated to inhibit dental caries. He suggested that the carbohydrate subcommittee also may want to examine the impact of whole grains on microbial health in the gastrointestinal tract.

Dr. Williams noted the dearth of evidence to support the current fiber recommendations for children and that the carbohydrate subcommittee may want to examine that issue. Fiber intakes are low among children, and the *Dietary Guidelines* should encourage increased fiber intake among children, as fiber has the same beneficial effects in children as adults. Dr. Slavin agreed and said that age plus 5 may be a better approach for young children than basing the fiber recommendation on a per thousand calorie basis.

Dr. Nelson said that changes to the food supply need to be kept in mind when considering fiber recommendations. Fiber is being added to many processed foods. The data supporting fiber's

beneficial effect on health is so strong and the Committee should think about it in terms of foods, not an isolated additive to food. Dr. Slavin agreed with this approach and stated that it was consistent with the conclusion of the DRI panel on carbohydrates.

(Break 10:55-11:05 a.m.)

Fatty Acids
Discussion Leader: T. Pearson

Dr. Thomas Pearson presented three disparate ways to examine the role of dietary fats in human health and disease. He also noted that the NHLBI is revising its National Cholesterol Adult Treatment Guidelines, and the DGAC will want its conclusions to be consistent and complementary with the NHLBI's.

- **Splitter's View.** This view looks at categories of fatty acids, including saturated, monounsaturated (*cis* and *trans*), polyunsaturated, plant sterols and stanols, and animal sterols (vitamin D and cholesterol). A consideration of fats from this light raises a number of issues that the fatty acids subcommittee may want to examine in its scientific review:
 - *Dietary cholesterol.* Should the subcommittee look at dietary cholesterol as a means of lowering blood cholesterol? Has sufficient evidence emerged in the past 5 years to warrant any change in the 300 mg/day recommendation for dietary cholesterol? It may be that plant sterols may be a richer avenue of investigations than dietary cholesterol.
 - *Saturated fatty acids.* Stearic acid is included with the saturated fats but does not increase LDL. It may be prothrombotic. It may be worthwhile to examine this fatty acid again to see whether any recommendations about reducing intake are warranted.
 - *Monounsaturated fatty acids.* A fair amount of scientific literature now exists on monounsaturated fatty acids and is getting stronger on the benefits of diets high in these fatty acids. It would be worthwhile for the subcommittee to review this literature
 - *Unsaturated fatty acids.* The 2005 Dietary Guidelines Advisory Committee gave considerable attention to *trans* fatty acids. Their report included a recommendation to consume less than 1% of calories from *trans* fat. Is there sufficient new research on synthetic versus natural *trans* fatty acids and the ability of *trans* fatty acids to not only raise LDL but lower HDL to warrant investigation by the subcommittee? The DGAC may want to give a very focused message on *trans* fat.
 - *Polyunsaturated fatty acids.* The literature on cardiovascular and other health effects of omega-3s and other omega fatty acids is growing. It would be useful for the subcommittee to look broadly at these issues as well as at issues related to the ratio between omega-3 and omega-6 fatty acids.
 - *Total fats.* With all the new information about the beneficial effects of some types of fat, the subcommittee may want to reconsider the recommended range of calories from fat, particularly the upper level of 35% of calories from total fat

- *Blood cholesterol.* LDL-cholesterol was the primary endpoint for the 2005 *Dietary Guidelines*. What surrogate endpoints and outcomes will the 2010 DGAC use in decision-making?
- **Lumper's View.** This view looks at fats as they are found in food groups – fish, nuts, olive/canola oils, and fruits and vegetables – and in diets – Mediterranean, high protein/low carbohydrates, low fat/low cholesterol.
 - *Fish.* The fatty acid subcommittee is interested in examining the literature on fish. However, this work will likely overlap with that of other subcommittees. Issues to consider include levels of omega-3s (broaden the examination beyond cardiovascular disease to include macular degeneration and overall mortality) and safe fish farming.
 - *Nuts.* A number of issues could be examined with respect to the fatty acid composition of nuts, their effects on coronary heart disease, and the amounts necessary to have beneficial effects. The allergenicity of nuts will also have to be considered. There was some question whether nuts should be considered as a separate food group, as nuts contain more nutrients than just fats.
 - *Specialty Diets* (e.g., Mediterranean, high-protein/low-carbohydrate). Although it may be useful to examine these diets, recent data show that most do not work well in helping people lose weight. The subcommittee should focus on trials that examine whether weight loss results are sustained after 1 to 2 years.
- **Mechanistic View.** This third view looks at surrogate endpoints, such as effects on serum lipids and effects on vascular tissues, thrombosis, inflammation, and energy intakes. This is not as productive a line of inquiry as either of other two views. Having outside speakers on this topic may be useful.

Discussion

Dr. Nelson suggested that because the fatty acids topics raise issues that cut across all the subcommittees, the DGAC may want to consider forming another subcommittee on behavior, meal patterns, and individual preferences. Dr. Van Horn replied that perhaps the Science Review subcommittee could consider these issues and that each subcommittee should think about the behavioral and food pattern aspects of their topic areas as they review the scientific evidence.

(Lunch 12:15-1:30 p.m.)

Ethanol *Discussion Leader: E. Rimm*

Dr. Eric Rimm began by reviewing the major questions asked by the 2005 DGAC about consumption of alcoholic beverages and health. He then summarized the conclusions of the 2005 DGAC based on their review of the evidence and reviewed the recommendations about alcoholic beverages in the *Dietary Guidelines*. He noted that the wording of the alcohol guideline has not changed substantially since 1980.

Dr. Rimm also reiterated the research recommendations from the 2005 DGAC report. The 2005 DGAC recommended research on the relationship between moderate alcohol consumption and obesity, research on the impact of adding calorie information to alcoholic beverage labels, research on the impact of banning alcohol advertising when and where it might increase underage drinking, and research on the impact of unified Federal messages on alcohol and health.

Dr. Rimm then shifted his focus to the 2010 *Dietary Guidelines* and reviewed several areas of new evidence. One area of new evidence deals with drinking patterns. Data from a cohort of 50,000 men showed the highest benefit for risk of myocardial infarction was moderate drinking at least every other day. Drinking beyond that level did not confer additional benefit. The amount of alcohol did not matter as much as the pattern of at least every other day.

Another area in which new evidence is emerging is health effects in vulnerable populations. With 60% of the population overweight and an increase in the prevalence of diabetes and hypertension, this is a particularly salient question. A recent clinical trial in Israel showed a decline in glucose levels among diabetics who consumed one drink per day. Dr. Rimm noted that the American Diabetes Association takes the same stance as the *Dietary Guidelines*, namely that those who drink should do so in moderation.

A third area of new evidence deals with the health effects on new drinkers. The Atherosclerosis Risk in Community Study, which examined four different communities representing different ethnicities, followed participants who were non-drinkers at baseline. After 6 years some had started to drink, either moderately or heavily. The investigators were then able to follow the participants to see who developed coronary heart disease. The conclusion was that little, if any, evidence exists that those who start drinking in middle age go on to become heavy drinkers.

Dr. Rimm then reviewed possible new questions for the ethanol subcommittee to review:

- One to two drinks per day is not associated with a poorer quality diet, but what is the impact of the known biological effects on metabolism (e.g., micronutrients, glucose metabolism)?
- Should the 2010 *Dietary Guidelines* expand the list of groups of individuals who should not drink and are the *Guidelines* explicit enough on contraindications for alcohol consumption?
- Do one to two drinks a day really have little benefit for individuals younger than 45 years of age? The primary benefit is for cardiovascular disease, and this disease takes decades to develop. It may be that the benefits begin to accrue at an earlier age.
- What is the role of alcohol's blunting the glycemic effect of a meal on the reduction of risk of type 2 diabetes among individuals who drink moderately?

Discussion

Dr. Appel suggested that another potentially fruitful area is to examine the transition from non-drinking to drinking. Are there “healthy” patterns of starting to drink?

Dr. Pearson agreed that this was an important issue and added that the subcommittee may want to see whether any interventions have been conducted to change young people’s behavior in such a way that they regard alcohol as a beverage and not a drug. The real issue is that excess mortalities occur when alcohol is used as a drug, and benefits occur with moderate use. Among those who choose to drink, are there ways to encourage use of alcohol as a beverage and not a drug?

Dr. Achterberg noted that more than 21 university presidents are working together to create a recommendation to lower the drinking age to 18. The DGAC may want to monitor the development of that initiative.

Food Safety and Technology
Discussion Leader: R. Clemens

Dr. Roger Clemens reviewed the main food safety messages from the 2005 *Dietary Guidelines* (Clean, Separate, Chill, Cook, Chill, Avoid unpasteurized products). He noted that in many low-income areas, the ways in which utensils and cutting boards are used sometimes do not permit appropriate separation, and therefore leading to contamination between raw and cooked foods. He also displayed food safety icons that are increasingly being used in other countries. The 2005 *Dietary Guidelines* did not use these icons.

Temperature and time of proper cooking is an issue, both in the United States and internationally. The safe food temperature range for poultry has changed in the past 5 years, and Dr. Clemens stated that this would be an important element to include in the 2010 *Dietary Guidelines*.

Dr. Clemens then reviewed the “Fight BAC!®” campaign and noted that it covers listeriosis. The food safety subcommittee also should look at other microbes that may be affecting the food supply, especially in the home. Methyl mercury and the safety of fish is another area of interest.

Other areas of guidance for consumers that the subcommittee could consider include:

- The apparent disconnect between food safety recommendations and food preparation techniques used by consumers. For example, the concept of “cross-contamination” needs additional clarification and consumers need to be encouraged to use thermometers, as their use is extremely low.
- Consumers have high expectations, assuming mistakenly that all foods are safe.
- Consumer messages regarding “natural” and “organic” foods lead to misconceptions that these foods are more nutritious or safer than conventionally grown foods. Education for both farmers and consumers is needed.
- A focus on the kitchen as the last line of defense could improve consumer implementation of food safety recommendations.

- Food technology has led to new products for packaging and storage that have improved food stability and decreased microbial growth. These new forms of technology are driven by the needs for food safety.
- The interactions of foods and pharmaceuticals, which are of growing concern with the Nation's aging population, many of whom take multiple medications.

Dr. Clemens concluded by suggesting Dr. Carl Winter (University of California, Davis; food safety) and Dr. Peter Pressman (U.S. Navy Medical Corps; food and drug interactions) as possible speakers for the DGAC.

Discussion

Dr. Nelson asked whether the safety of food additives would be within the purview of the food safety subcommittee. Dr. Clemens thought it would be.

Several members noted the importance of balancing a proper respect for hygiene, washing hands, and washing produce but not encouraging people to be overly afraid of food or microbes.

Dr. Nelson suggested that the subcommittee also may want to consider exploring food safety issues related to isolated bioactive compounds, such as soy protein, that are now added to some foods. Dr. Post replied that these issues could be accommodated if the subcommittee broadened its perspective to be more than just microbes but to also cover food components that may have adverse health effects and causes sensitivities, such as allergies.

Next Steps and Motion to Vote

Dr. Van Horn asked for a motion to revise the 2005 *Dietary Guidelines*. Dr. Clemens moved that sufficient evidence exists to pursue a new set of guidelines. Dr. Pearson seconded the motion and the Committee unanimously voted in favor of the motion.

Dr. Van Horn then listed the members of each subcommittee and the subcommittee Chairs:

- Nutrient Adequacy: Drs. Nickols-Richardson (Chair), Fukagawa, Achterberg, Slavin, Nelson
- Energy Balance: Drs. Pi-Sunyer (Chair), Nelson, Williams, Pérez-Escamilla, Slavin
- Fluids and Electrolytes: Drs. Appel (Chair), Williams, Pearson
- Carbohydrates: Drs. Slavin (Chair), Achterberg, Pi-Sunyer, Van Horn
- Fatty Acids: Drs. Pearson (Chair), Rimm, Clemens
- Ethanol: Drs. Rimm (Chair), Appel, Pearson
- Food Safety: Drs. Clemens (Chair), Pérez-Escamilla
- Science Review: Drs. Van Horn (Chair), Fukagawa, Appel, Pi-Sunyer

Dr. Van Horn then thanked the Committee and adjourned the meeting.

(Adjournment 2:25 p.m.)