

PART A: EXECUTIVE SUMMARY

Dietary Guidelines for Americans provide science-based advice to promote health and to reduce risk for major chronic diseases through diet and physical activity. By law (Public Law 101-445, Section 301), the Secretaries of the Department of Health and Human Services (HHS) and the Department of Agriculture (USDA) issue a report at least every 5 years that “shall contain nutritional and dietary information and guidelines for the general public.” Every 5 years, an expert Dietary Guidelines Advisory Committee is appointed to make recommendations to the Secretaries concerning revision of *Dietary Guidelines for Americans*. The recommendations are to be targeted to the general public age 2 years and older and based on the preponderance of scientific and medical knowledge that is current at the time of publication of the Committee’s report.

Because of its focus on health promotion and risk reduction, *Dietary Guidelines* form the basis of Federal food, nutrition education, and information programs. By law, the *Dietary Guidelines* is to be “promoted by each Federal agency in carrying out any Federal food, nutrition, or health program.” This means that the *Dietary Guidelines* must be applied in menu planning in programs such as the National School Lunch Program; in educational materials used by the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) and by many other Federal programs; and in setting the Healthy People objectives for the Nation. Using *Dietary Guidelines* helps policymakers, educators, clinicians, and others to speak with one voice on nutrition and health.

This report presents the recommendations of the 2005 Dietary Guidelines Advisory Committee to the Secretaries of HHS and USDA. It represents a milestone in documenting the scientific base used to develop the recommendations. The Committee used a fresh approach rather than simply considering how the year 2000 *Dietary Guidelines* should be changed. Committee members posed a large number of questions. Questions were prioritized, and an extensive search of the scientific literature was done. Available time, expertise, and resources precluded an examination of all issues relating diet and physical activity to health promotion and chronic disease prevention.

Working through subcommittees, the Committee critically reviewed relevant scientific evidence, requested special analyses relating to nutrients and dietary patterns, obtained useful information and insights from invited experts and from public oral and written testimony, and deliberated its findings. Since the general public now comprises large numbers of individuals with chronic health problems such as obesity, high blood pressure, and abnormal blood lipid values, as well as a large elderly population, the Committee addressed a few topics that may go beyond the dietary concerns of persons who meet strict definitions for good health. This report presents findings, conclusions, and recommendations from the entire Committee. Appendices and other materials posted at www.health.gov/dietaryguidelines provide additional details about the evidence used by the Committee.

The topics that the Committee addressed in depth included meeting recommended nutrient intakes; physical activity; energy balance; relationships of fats, carbohydrates, selected food groups, and alcohol with health; and consumer aspects of food safety. The Committee was especially interested in finding strong scientific support for dietary and physical activity measures that could reduce the Nation's major diet-related health problems—overweight and obesity, hypertension, abnormal blood lipids, diabetes, coronary heart disease (CHD), certain types of cancer, and osteoporosis. They developed the concept of discretionary calories in connection with calorie and weight control; discretionary calories are those calories remaining within a person's caloric allowance after all nutrient recommendations are met. The Committee also focused on the potential health benefits and serious health risks of alcohol intake. Because food can promote health only if it is safe to eat and because foodborne illness affects more than 76 million Americans each year, food safety must undergird all dietary guidance.

KEY MESSAGES—TRANSLATING SCIENTIFIC FINDINGS INTO DIETARY AND PHYSICAL ACTIVITY GUIDANCE

The Committee's extensive review of the evidence and deliberations led to the development of a set of nine key messages. These messages should be useful to nutrition-related program providers, healthcare providers, and educators, as well as to those charged with the responsibility to produce the publication *Dietary Guidelines for Americans, 2005 Edition*. Part D of the report provides the scientific basis for the nine key messages. Part E provides specific recommendations for the content of the main messages and supporting details without specifying wording that would be suitable for consumers.

The Committee's findings support the development of *Dietary Guidelines* that convey the following nine major messages:

- Consume a variety of foods within and among the basic food groups while staying within energy needs.
- Control calorie intake to manage body weight.
- Be physically active every day.
- Increase daily intake of fruits and vegetables, whole grains, and nonfat or low-fat milk and milk products.
- Choose fats wisely for good health.
- Choose carbohydrates wisely for good health.
- Choose and prepare foods with little salt.
- If you drink alcoholic beverages, do so in moderation.
- Keep food safe to eat.

This list makes a major departure from previous editions of *Dietary Guidelines for Americans* in that it does not include a message specifically directed toward sugars. This does not mean that the current Committee views the topic of sugars to be unimportant. On the contrary, the Committee provides a strong rationale for limiting one's intake of added sugars (that is, sugars and syrups that are added to foods during processing or preparation or at the table). The Committee's intent is to make this point clearly under

the new topic “Choose Carbohydrates Wisely for Good Health” and also under the first and second topics, which address energy needs and controlling calorie intake, respectively.

A synopsis of the Committee’s recommendations regarding content to be included under each of the nine main messages follows.

Consume a Variety of Foods Within and Among the Basic Food Groups, While Staying Within Energy Needs

Because the recommendations for nutrient intakes from the Institute of Medicine now consider the prevention of chronic disease as well as basic nutrient needs, meeting those recommendations provides a firm foundation for current health and for reducing chronic disease risk. Thus, meeting recommended nutrient intakes while staying within energy needs is a basic premise of dietary guidance. For most nutrients, intakes by Americans appear adequate. However, efforts are warranted to promote increased dietary intakes of vitamin E, calcium, magnesium, potassium, and fiber by children and adults and to promote increased dietary intakes of vitamins A and C by adults.

Choosing a variety of foods from within each of the basic food groups helps achieve recommended nutrient intakes, but attention to maintaining appropriate energy balance also is important. This means limiting calorie intake, especially from added sugars, solid fats, and alcoholic beverages—sources of calories that are very poor sources of essential nutrients.

Use of the revised USDA food intake pattern included in the report is one method to plan diets that meet recommended nutrient intakes considering age, gender, and physical activity level. This food pattern specifies recommended numbers of servings from the five food groups and from food subgroups. The foods in these groups are good sources of nutrients relative to the calories that they provide. The pattern allows a wide choice of foods within each food group and subgroup, and this report suggests ways to make substitutions across some of the food groups as well. Also included in this report are food lists of the best sources of nutrients that tend to be in short supply in the diets of Americans. These lists provide a useful way for consumers to choose foods they like to boost their intake of the nutrient; and they may be especially helpful for meeting recommended intakes of vitamin E, potassium, and fiber. Rather than simply adding nutrient-rich foods to one’s diet, substituting nutrient rich foods for nutrient poor foods helps control calorie intake.

Special nutrient recommendations are warranted for a few large subgroups of the population as follows:

- Adolescent female and women of childbearing age need extra iron and folic acid.
- Persons over age 50 benefit from taking vitamin B₁₂ in its crystalline form from foods fortified with this vitamin or from supplements that contain vitamin B₁₂.
- The elderly, persons with dark skin, and persons exposed to little UVB radiation may need extra vitamin D from vitamin D-fortified foods and/or supplements that contain vitamin D.

Control Calorie Intake To Manage Body Weight

Calorie intake and physical activity go hand in hand in controlling a person's weight. Caloric intake is emphasized under this message, physical activity under the next one.

To stem the obesity epidemic, most Americans need to reduce the amount of calories they consume. When it comes to weight control, calories *do* count—not the proportions of carbohydrate, fat, and protein in the diet. Energy expended must equal energy consumed to stay at the same weight. A deficit could be achieved by eating less, being more active physically, or combining the two. Since many adults gain weight slowly over time, even a small calorie deficit can help avoid weight gain. For example, a calorie deficit of 50 to 100 calories per day would enable many adults to maintain their weight rather than continuing to gain weight each year. For children who are gaining excess fat, a similar small decrease in energy intake can reduce the rate at which they gain weight so as they age they will grow into a healthy weight. Small changes maintained over time can make a big difference in body weight.

Monitoring weight regularly helps people know if they need to adjust their food intake or amount of physical activity to maintain their weight. Limiting the portion sizes that a person takes or serves to others often helps reduce calorie intake, especially if the food is high in energy density. On the other hand, consuming large portions of raw vegetables or low-fat soups may help limit one's intake of other foods that are more energy dense. The healthiest way to reduce calorie intake is to reduce one's intake of added sugars, solid fats, and alcohol—they all provide calories, but they do not provide essential nutrients.

Be Physically Active Every Day

Making moderate physical activity a part of an adult's daily routine for at least 30 minutes per day promotes fitness and reduces the risk of chronic health conditions such as obesity, hypertension, diabetes, and coronary artery disease. (Walking at a brisk pace [3 to 4 miles per hour] is an example of a moderate physical activity.) Moderate physical activity for an hour each day can increase energy expenditure by about 150 to 200 calories, depending on body size. If not offset by increased calorie intake, this increase in physical activity could be helpful in preventing weight gain. Many adults need to participate in up to 60 minutes of moderate to vigorous physical activity on most days to prevent unhealthy weight gain, while adults who have previously lost weight may need 60 to 90 minutes of moderate physical activity daily to help avoid regain of weight. Children and adolescents need at least 60 minutes of moderate to vigorous physical activity on most days for the maintenance of good health and fitness and for healthy weight gain during growth. Compared with moderate physical activity, vigorous physical activity provides greater benefits for physical fitness and burns more calories per unit time. Part D, Section 2, "Energy," addresses health benefits of additional types of physical activity.

Choose Fats Wisely For Good Health

Keeping intake of saturated fat, *trans* fat and cholesterol very low can help keep low-density lipoprotein (LDL) cholesterol low and reduce the risk of CHD. The main goals are to keep saturated fat intake below 10 percent of calories, *trans* fat intake below about 1 percent of calories, and cholesterol intake below 300 mg per day. Keeping saturated fat below 10 percent of calories should be the main focus, because this is the predominant fat that adversely affects blood lipid values. However, the lower the combined intake of saturated and *trans* fat and the lower the dietary cholesterol intake, the greater the cardiovascular benefit will be.

The major way to keep saturated fat low is to limit one's intake of animal fats (such as those in cheese, milk, butter, ice cream, and other full-fat dairy products; fatty meat; bacon and sausage; and poultry skin and fat). The major way to limit *trans* fat intake is to limit the intake of foods made with partially hydrogenated vegetable oils. To limit dietary intake of cholesterol, one needs to limit the intake of eggs and organ meats especially, as well as limit the intake of meat, shellfish, and poultry and dairy products that contain fat.

A reduced risk of both sudden death and CHD death in adults is associated with the consumption of two servings (approximately eight ounces) per week of fish high in the n-3 fatty acids called eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). To benefit from the potential cardioprotective effects of EPA and DHA, the weekly consumption of two servings of fish, particularly fish rich in EPA and DHA, is suggested. However, it is advisable for pregnant women, lactating women, and children to avoid eating fish with a high mercury content and to limit their consumption of fish with a moderate mercury content. Consulting current consumer advisories helps one know which species of fish to limit or avoid in order to reduce exposure to environmental contaminants.

Total fat intake of 20 to 35 percent of calories is recommended for all Americans age 18 years or older. Intakes of fat outside of this range are not recommended for most Americans because of potential adverse effects on achieving recommended nutrient intakes and on risk factors for chronic diseases. The *lower* limit of fat intake is higher for children: 30 percent of calories from fat for children age 2 and 3 years, and 25 percent of calories from fat for those age 4 to 18 years. Part D, Section 4, includes conclusions relating to n-6 and n-3 polyunsaturated fatty acids and monounsaturated fatty acids in addition to the fats listed here.

Choose Carbohydrates Wisely For Good Health

Carbohydrates—the sugars, starches, and fibers found in fruits, vegetables, grains, and milk products—are an important part of a healthful diet and the major energy source in most diets. Sugars and starches supply energy to the body in the form of glucose, which is the only energy source for the red blood cell and the preferred energy source for the brain, central nervous system, placenta, and fetus, and for muscle cells when they are operating anaerobically (without oxygen). Diets rich in dietary fiber help promote healthy laxation and help reduce the risk of type 2 diabetes and coronary heart disease.

When selecting foods from the fruit, vegetable, and grains groups, it is beneficial to make fiber-rich choices often. This means, for example, choosing whole fruits rather than juices and whole grains rather than refined grains. Current evidence suggests that there is no relationship between total carbohydrate intake (minus fiber) and the incidence of either type 1 or type 2 diabetes.

Following guidance to increase one's intake of fruits, vegetables, whole grains, and nonfat or low-fat milk or milk products is a healthful way to obtain the recommended amounts of carbohydrate. Compared with individuals who consume small amounts of foods and beverages that are high in added sugars, those who consume large amounts tend to consume more calories but smaller amounts of vitamins and minerals. Although more research is needed, prospective studies suggest a positive association between the consumption of sugar-sweetened beverages and weight gain. A reduced intake of added sugars (especially sugar-sweetened beverages) may be helpful in achieving the recommended intakes of nutrients and in weight control.

Sugars and starches supply substrate for bacterial fermentation in the mouth, and acids produced can cause tooth demineralization resulting in dental caries. However, drinking fluoridated water and/or using fluoride-containing dental hygiene products helps reduce the risk of dental caries. A combined approach is helpful for reducing caries incidence: reducing the frequency of consuming sugars and starches (e.g., limiting snacking on foods that contain these carbohydrates), limiting the length of time the teeth are exposed to fermentable carbohydrates, and optimizing oral hygiene practices.

Increase Daily Intakes of Fruits and Vegetables, Whole Grains, and Reduced-Fat Milk and Milk Products

Fruits and Vegetables

Fruits contain glucose, fructose, sucrose, and fiber, and most fruits are relatively low in calories. In addition, fruits are important sources of at least eight additional nutrients, including vitamin C, folate, and potassium (which may help control blood pressure). Many vegetables provide only small amounts of sugars and/or starch, some are high in starch, and all provide fiber. Vegetables are important sources of 19 or more nutrients, including potassium, folate, and vitamins A and E.

Adults who increase their fruit and vegetable consumption to meet recommended nutrient intakes will also be consuming amounts of fruits and vegetables that are associated with a decreased risk of such chronic diseases as stroke, perhaps other cardiovascular diseases, type 2 diabetes, and cancer in certain sites. Moreover, increased consumption of fruits and vegetables may be a useful component of programs designed to achieve and sustain weight loss.

The suggested range of intake is 2½ to 6½ cups¹ of fruits and vegetables daily, depending on calorie needs. For persons needing 2,000 calories per day to maintain their weight, the

¹ See Tables D1-13 and D1-16 for information on 2 to 3 year olds.

goal is 4½ cups (or the equivalent) of fruits and vegetables per day. Consuming a variety of fruits and vegetables daily is recommended—choosing among citrus fruits, melons, and berries; other fruits; dark green leafy vegetables; bright orange vegetables; legumes; starchy vegetables; and other vegetables.

Whole Grains

Whole grains are high in starch, and they are important sources of 14 nutrients including fiber. Diets rich in whole grains can reduce the risk of CHD and type 2 diabetes and help with weight control. Important sources of whole grains include whole wheat, oatmeal, popcorn, bulgur, and brown rice. Whole wheat bread is an example of a whole-grain food. The goal is to eat at least three 1-ounce equivalents per day of whole-grain foods, preferably in place of refined grains.

Nonfat and Low-Fat Milk and Milk Products

Milk and milk products are important sources of at least 12 nutrients including calcium, magnesium, potassium, and vitamin D. Diets that provide 3 cups or the equivalent of milk and/or milk products per day can improve bone mass. This amount of milk product consumption may have additional health benefits and is not associated with increased body weight.

The goal for persons with energy requirements greater than 1,600 calories per day is 3 cups or the equivalent of milk products per day, preferably nonfat or low-fat products such as skim milk and yogurt. Milk products that are consumed in their nonfat or low-fat forms provide no or little solid fat and are very nutrient dense. When considering alternatives to milk, the most reliable way to derive the health benefits associated with milk products is to choose alternatives within the dairy food group such as lactose-free milk or yogurt.

Choose and Prepare Foods With Little Salt

Reducing salt (sodium chloride) intake is one of several ways that people can lower their blood pressure. Reducing blood pressure, ideally to the normal range, reduces the chance of developing a stroke, heart disease, heart failure, and kidney disease. The relationship between salt intake and blood pressure is direct and progressive without an apparent threshold. On average, the higher a person's salt intake, the higher is his or her blood pressure. Thus, reducing salt intake as much as possible is one way to lower blood pressure. Another dietary measure to lower blood pressure is to consume a diet rich in potassium. A potassium-rich diet also blunts the effects of salt on blood pressure, may reduce the risk of developing kidney stones, and possibly decrease bone loss with age.

The vast majority of the U.S. population consumes too much salt, much of it from processed foods. The goal is to consume less than 2,300 mg of sodium per day. The goal is expressed in terms of sodium rather than salt because the Nutrition Facts Labels on food products list sodium content. Many people—especially persons with hypertension, blacks, and older adults—will benefit from working toward a goal of an even lower sodium intake.

Reducing salt intake requires careful attention to food selection when shopping or when eating outside the home, and also during food preparation at home. The Nutrition Facts Label on food packages can help consumers compare and identify prepared foods that are lower in sodium.

Fruits, vegetables, and most milk products are widely available in forms that contain no added salt, and most of them are important sources of potassium. Increasing one's intake of foods rich in potassium helps lower blood pressure. In addition, many of these potassium-rich foods enhance the taste of other foods that contain no added salt.

If You Drink Alcoholic Beverages, Do So in Moderation

Among middle-aged and older adults, the lowest all-cause mortality occurs at the level of one to two drinks per day. The mortality reduction is likely due to the protective effects of moderate alcohol consumption on coronary heart disease, primarily among males older than age 45 years and women older than age 55 years. Among younger people, alcohol consumption appears to provide little, if any, health benefit. Alcohol use among young adults is associated with an increased risk of traumatic injury and death. Heavy drinking is very hazardous, contributing to automobile injuries and deaths, assault, liver disease, and other health problems. Abstinence is an important option.

The goal for adults who choose to drink is to do so in moderation. Moderation is defined as the consumption of up to one drink per day for women and two drinks per day for men. One drink is defined as 12 ounces of regular beer, 5 ounces of wine (12 percent alcohol), or 1.5 ounces of 80-proof distilled spirits.

Among the people who should not consume alcoholic beverages are those who cannot restrict their drinking to moderate levels, children and adolescents, and individuals taking medications that can interact with alcohol or who have specific medical conditions. Drinking alcoholic beverages should be avoided by women who may become pregnant or who are pregnant, by breastfeeding women, and by persons who plan to drive or take part in other activities that require attention, skill, or coordination.

Keep Food Safe To Eat

Foodborne diseases cause approximately 76 million illnesses, 325,000 hospitalizations, and 5,000 deaths in the United States each year. Three pathogens (*Salmonella*, *Listeria*, and *Toxoplasma*) are responsible for more than 75 percent of these deaths. Actions by consumers can reduce the occurrence of foodborne illness substantially. The behaviors in the home that are most likely to prevent a problem with foodborne illnesses are

- Cleaning hands, contact surfaces, and fruits and vegetables (This does not apply to meat and poultry, which should not be washed.)
- Separating raw, cooked, and ready-to-eat foods while shopping, preparing, or storing
- Cooking foods to a safe temperature
- Chilling (refrigerating) perishable foods promptly
- Avoiding higher-risk foods (e.g., deli meats and frankfurters that have not been reheated to a safe temperature [may contain *Listeria*]). This is especially

important for high-risk groups (the very young, pregnant women, the elderly, and those who are immunocompromised).

HEEDING ALL THE MESSAGES

Making any one of the recommended changes in diet, decreasing calorie intake, or increasing physical activity may improve health and reduce one or more health risks. However, the greatest benefits can be anticipated if one tries to heed all nine of the major recommendations. It is well recognized that multiple dietary factors and physical activity influence the risk of chronic diseases and that no one factor accounts for any of the chronic diseases.

The food pattern developed by the USDA and included in this report integrates most of the recommendations made by the Committee. This food pattern

- Is high in fruits and vegetables, whole grains, and nonfat or low-fat milk products
- Provides amounts of nutrients (including potassium and fiber) that are consistent with recommended nutrient intakes and with reducing the risk of chronic disease
- Is low in saturated fat, cholesterol, and added sugars and can be low in *trans* fat² and sodium³

A diet that is consistent with the diet-related recommendations in this report—the Dietary Approaches to Stop Hypertension (DASH diet)—has been demonstrated to have health benefits, including reducing blood pressure and LDL cholesterol. The DASH diet provides nutrients in recommended amounts and is very close to the revised USDA food intake pattern in the nutrients it provides. Thus, the finding that the DASH diet provides health benefits lends support to the combination of diet-related recommendations in this report.

Adding at least 30 minutes of moderate physical activity into one’s daily routine would increase the calorie requirement by a small amount, allowing somewhat more leeway in the amount of food that could be consumed without gaining weight. Increasing physical activity would contribute to a lowering of chronic disease risk as well. Moderation in alcohol consumption, if used, also would reduce health risks. And taking measures to keep food safe to eat would reduce the risk of foodborne illness.

DEALING WITH HEALTH DISPARITIES AND CONTRIBUTIONS OF THE ENVIRONMENT

Health disparities are substantial among racial and ethnic minorities and among the economically disadvantaged. Available evidence suggests that certain dietary changes

² Currently, *trans* fat intake is not evaluated in the USDA food modeling method. However, limiting intake of solid fats as specified in the food intake pattern would be expected to help keep the intake of *trans* fats low.

³ Special care is needed in the selection of processed foods and of foods consumed outside the home to keep sodium intake at or below the recommended level of 2,300 mg.

are a means to reduce these disparities. Social changes and educational efforts are required to facilitate healthy diets and lifestyles among these high-risk individuals.

In conducting the research on which this report is based, the Committee was struck by the critical and likely predominant role of the environment in determining whether or not individuals consume excess calories, eat a healthful diet, and are physically active. By environment we mean the constellation of cultural forces, societal norms, family influences (e.g., mealtime structure and parental feeding styles), changes in meal patterns, and commercial advertising that potentially influence individual behavior.

Environmental influences tend to be beyond the control of individuals. Examples include the large size of portions served by many food establishments, lack of information on calorie content at point of purchase, the high amount of sodium in the food supply, the *trans* fatty acid content of many ready-to-eat foods, the cost and availability of fruits and vegetables, and opportunities for safe and enjoyable physical activity. Thus, changes to the environment could make a substantial difference in consumers' ability and willingness to follow the guidance provided in this report.