

PART E: TRANSLATING THE SCIENCE INTO DIETARY GUIDANCE

The purpose of this part of the report is to identify content needed to translate the Committee's findings into policy and dietary guidance for consumers. This information should be useful to nutrition-related program providers, healthcare providers, and educators as well as to the groups charged with the responsibility of producing policy statements and the 2005 edition of *Dietary Guidelines for Americans*. The Committee provides specific recommendations for the content of main messages and supporting details, but we leave the wording of consumer documents to communication experts.

Good nutrition is vital to good health—both in the present and the distant future. Good nutrition is absolutely essential for the healthy growth and development of children and adolescents. A basic premise of the Committee is that nutrient needs should be met primarily through consuming foods. Foods provide an array of nutrients and of other compounds that may have beneficial effects on health. In some cases, fortified foods may be useful sources of one or more nutrients that otherwise might be consumed in less than recommended amounts. Nutrient supplements cannot replace a healthy diet. Supplements are useful when they fill a specific identified nutrient gap that cannot or is not otherwise being met by the individual's intake of food. Individuals who are already consuming the recommended amount of a nutrient will not achieve any recognized health benefit if they also take the nutrient as a supplement. In fact, in some cases, supplements and fortified foods may cause intakes to exceed the Tolerable Upper Intake Level for nutrients.

In brief, the Committee's findings support 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 alcohol, do so in moderation.
- Keep food safe to eat.

All these topics are important to promote day-to-day health and to reduce the risk for major chronic diseases. The topics are not listed in order of priority. In fact, they are closely interrelated. Consuming a variety of foods from the basic food groups and controlling calorie intake are two major themes—themes that are intertwined. To achieve weight control, for example, guidance to increase one's intake of certain food groups must go hand in hand with guidance to decrease intake of added sugars and solid fats. At the same time, being physically active increases energy expenditure and makes it easier to meet recommended intakes for nutrients and to control weight. The Committee

believes these messages should be conveyed in *Nutrition and Your Health: Dietary Guidelines for Americans, 2005*.

The list of major messages includes a major departure from previous editions of *Dietary Guidelines for Americans* in that it does not include a message specifically directed toward sugars. This omission does not mean that the current Committee views the topic of sugars as unimportant. On the contrary, the Committee provides a strong rationale for limiting one's intake of added sugars. The Committee's intent is to make this point clearly under the new topic "Choosing Carbohydrates Wisely for Good Health" and under the first and second topics that address energy needs and controlling calorie intake, respectively.

CONSUME A VARIETY OF FOODS WITHIN AND AMONG THE BASIC FOOD GROUPS WHILE STAYING WITHIN ENERGY NEEDS

Overview

Many Americans consume more calories than they need without meeting recommended intakes for a number of nutrients. This circumstance means that most people need to choose meals and snacks that are high in nutrients but low to moderate in energy content; that is, meeting nutrient recommendations must go hand in hand with keeping calories under control. Doing both offers important benefits—normal growth and development of children, health promotion for people of all ages, and reduction of risk for a number of chronic diseases that are major public health problems.

Dietary data suggest that, in general,

- Adults do not consume enough vitamins A, C, and E; calcium; magnesium; potassium; and fiber.¹
- Children do not consume enough vitamin E, calcium, magnesium, potassium, and fiber.

At the same time, in general, Americans consume too many calories and too much saturated and *trans* fat, cholesterol, added sugars, and salt.

Key Messages

- Eating a variety of food within and among the basic food groups helps one achieve recommended nutrient intakes while maintaining appropriate energy intake.
- Adults who consume the amounts of fruits and vegetables, whole grains, and nonfat or low-fat milk and milk products that are recommended in the U.S. Department of Agriculture (USDA) food intake pattern (see Table D1-13 and the Dietary Approaches To Stop Hypertension (DASH) diet, Table D1-18) will achieve the levels of intake of these foods that are associated with a reduced risk of chronic disease.

¹ Folate also was identified as a shortfall nutrient by the studies cited in Part D; however, the data used were for these studies were collected prior to the mandatory fortification of enriched grains with folate. See further discussion in Part D, Section 1, "Aiming To Meet Recommended Intakes of Nutrients."

- Diets can be planned to meet recommended nutrient intakes while considering the food preferences of different racial/ethnic groups, vegetarians, and others.
- A few special nutrient recommendations apply to the elderly, women in the childbearing years, and groups susceptible to vitamin D insufficiency.
- Combining a physically active lifestyle with an eating pattern that features foods high in nutrient density helps to achieve recommended nutrient intake without excess calorie intake.

Additional Important Information

Meeting Recommended Intakes Within Energy Needs

- It is essential to convey the concept “a variety of foods from within each of the basic food groups” accurately to consumers. The food groups consist of fruits, vegetables, grains, milk, and meat and beans. The term *foods* refers to agricultural commodities such as wheat, corn, green beans, oranges, beef, eggs, fish, poultry, milk, and cheese. A meal that includes salmon, brown rice, spinach, sliced tomatoes, and nonfat milk includes five different food commodities. Bread, pasta, crackers, bulgar, and wheat cereal represent only one food commodity (wheat). Consuming different forms of the same commodity has not been associated with improved nutrient intake.
- The recommended nutrient intakes that are based on Dietary Reference Intakes are listed in Table D1-1. The calorie level that is generally appropriate for each age/gender group at a specified physical activity level is shown in Table D8-1.
- The use of the revised USDA food intake pattern is one method to plan to meet recommended nutrient intakes considering age, gender, and physical activity level. The food intake pattern in Table D1-13 includes suggested amounts to eat from each of the basic food groups and subgroups. Oils and *trans* fat free soft margarines also are included in the food intake pattern to provide essential fatty acids and vitamin E.
- When using the food intake pattern to plan diets, one must pay close attention to the forms of food described in footnote 1 to Table D1-13 and to Table D1-14, which provides additional information about discretionary calories. The pattern assumes that the meats and poultry are in their lowest fat form, the milk is nonfat, and the foods from all of the food groups contain no added sugars or fats. These are not the forms of food eaten by most Americans. Discretionary calorie values listed in Table D1-13 and D1-14 are the maximum amounts that can be accommodated at each calorie level. Discretionary calories are available to use for increasing variety, for example, having more fruits or vegetables or having medium-fat meat or cheese sometimes—or low-fat or whole milk, sweetened low-fat yogurt, sweetened cereal, or cake. Most people will exceed calorie recommendations if they consistently choose medium-fat meat and full-fat milk products in the amounts specified in the table—even if they do not have dessert, sweetened beverages, or alcoholic beverages.
- Eating the amounts of foods from each food group listed in the food intake pattern table each day (or averaged over a week in the case of vegetable subgroups) will enable most people to meet their recommended nutrient intakes at a calorie level

that does not exceed their energy needs. Eating in accordance with the food intake pattern also will keep intakes of saturated fat, total fat, and cholesterol within the limits recommended below under “Choosing Fats Wisely for Good Health”.

- The food intake pattern that is designed to meet currently recommended nutrient intakes differs in important ways from commonly consumed food patterns. In general, they include
 - More** dark green vegetables, bright orange vegetables, legumes, fruits, whole grains, and milk
 - Less** enriched grains, total fats (especially solid fats), added sugars, and calories
- Americans need to increase their consumption of vitamin E- (α -tocopherol-) rich foods while decreasing their intake of foods high in energy but low in nutrients. The USDA food intake pattern does not provide for meeting the recommended intake of vitamin E unless vitamin E-rich sources are selected. Foods that can help increase vitamin E intake are listed in Table D1-8a along with their calorie content. Breakfast cereal that is fortified with vitamin E is an option for individuals seeking to increase their vitamin E intake while consuming a low-fat diet.
- Most Americans of all ages also need to increase their fiber intake. Diets rich in fiber help reduce the risk of coronary heart disease (CHD) and promote healthy laxation. Table D1-11a identifies foods that help increase fiber intake. Substituting whole grains for refined grains is a good way to increase fiber intake without increasing energy intake.
- Most Americans of all ages need to increase their potassium intake. Diets rich in potassium can lower blood pressure, lessen the adverse effects of salt on blood pressure, may reduce the risk of developing kidney stones, and possibly decrease bone loss. Blacks have a lower intake of potassium than do whites and a higher prevalence of elevated blood pressure and salt sensitivity. Thus, this subgroup of the population especially would benefit from an increased intake of potassium. Table D1-10a identifies foods that can help increase potassium intake and provides information about their calorie content.
- Many Americans need to increase their intake of vitamins A and C and/or magnesium. Tables D1-5a through D1-7a identify foods that help increase the intake of each of these nutrients along with their calorie content.

Flexibility

A number of approaches can be used to increase the flexibility of the meal pattern while still meeting the recommended intake values. Such flexibility is to be encouraged to accommodate individual preferences, cultural preferences, cost, and availability.

- ***Vegetarian Choices.*** Vegetarians can achieve recommended nutrient intakes through careful selection of foods, especially if they give special attention to their intakes of protein, iron, vitamin B₁₂, and calcium and vitamin D (if they avoid milk products). One way for a lacto-ovo vegetarian who needs 2,200 kcal to make daily selections from the meat and beans group would be to eat 1 egg, 1.5

oz nuts, and 2/3 cup legumes instead of 6 ounces of meat, poultry, and/or fish (further information is available in Appendix 2).

- 1 egg
- 1.5 oz of nuts
- 2/3 cup of legumes

- **Enriched Grain Substitutions.** Whole grains can be substituted for enriched grains on an ounce-for-ounce basis. They are comparable in energy content and will provide for meeting nutrient recommendations nutrient adequacy in the food intake pattern. (Further information is available in Appendix G-2.)
- **Legume Substitutions.** For people who don't like legumes, several other food choices can be substituted in the food intake pattern and still provide for meeting nutrient recommendations. (See Appendix G-2).
- **Substitutions for Milk and Milk Products.** Since milk and milk products provide more than 70 percent of the calcium consumed by Americans, guidance on other choices of dietary calcium is needed for those who choose not to consume the recommended amount of milk products. (Tables D1-9a and D1-19 include information on calcium content and bioavailability from a variety of foods). Those who avoid milk may need to choose rich sources of the nutrients shown in Table D1-20 as well. Foods that can help increase intake of some of the nutrients provided by milk appear in Tables D1-5a, D1-7a, D1-9a, and D1-10a.

Those who avoid milk because of its lactose content may obtain all the nutrients provided by the milk group by using lactose-reduced or low-lactose milk products, taking small servings of milk a number of times a day, taking the enzyme lactase before consuming milk products, or eating other calcium-rich foods such as calcium-fortified orange juice, fortified soy milk, broccoli and oranges. For additional information, see Tables D1-9a through D1-19 and <http://digestive.niddk.nih.gov/ddiseases/pubs/lactoseintolerance/index.htm>.

Meeting Nutrient Needs of Special Groups

- Women of childbearing age can reduce the risk of iron deficiency by eating foods high in iron (preferably meat, poultry, fish, shellfish) and/or consuming iron-rich plant foods, such as iron-fortified breakfast cereals, with a food rich in vitamin C (e.g., orange juice). Table D1-22a lists foods that can help increase iron intake and gives their calorie content.
- To reduce the risk of a pregnancy being affected by a neural tube defect, daily intake of 400 µg of synthetic folic acid (from supplements or fortified food) is recommended for women who are capable of becoming pregnant and those in the first trimester of pregnancy.
- Because many persons over age 50 have reduced ability to absorb naturally occurring vitamin B₁₂, consuming vitamin B₁₂ in its crystalline form is recommended for this age group. The goal for those over age 50 is to eat foods fortified with vitamin B₁₂, such as fortified breakfast cereals, or to take vitamin

B₁₂ supplements to achieve a B₁₂ intake of at least 2.4 mcg per day. (This equals about 40 percent of the Daily Value expressed on food labels.)

- The elderly, persons with dark skin, and persons exposed to insufficient ultraviolet band (UVB) radiation are at risk of being unable to maintain vitamin D status. Persons in these groups may need substantially more than the 1997 Adequate Intake (AI) for vitamin D from vitamin D-fortified foods and/or vitamin D supplements. Three cups of vitamin D-fortified milk (300 IU), one cup of vitamin D-fortified orange juice (100 IU), and 600 IU of supplemental vitamin D would provide 1,000 IU of vitamin D daily.

Nutrient Density

- Nutrient-dense foods are those that provide substantial amounts vitamins and minerals and relatively fewer calories. Foods that are low in nutrient density are foods that supply calories but relatively small amounts of micronutrients (sometimes none at all).
- The greater the consumption of foods or beverages that are low in nutrient density, the more difficult it is to consume enough nutrients without gaining weight, especially for sedentary individuals.
- The consumption of added sugars, solid fats, and alcohol provides calories while providing little, if any, of the essential nutrients.

CONTROL CALORIE INTAKE TO MANAGE BODY WEIGHT

Overview

The prevalence of obesity has doubled in the past two decades. Nearly one-third of adults have a body mass index (BMI) in the obese range of 30 or greater. The prevalence of overweight among both children and adolescents has increased substantially as well. A high prevalence of overweight and obesity among adults is of great public health concern because excess body fat leads to a much higher risk for premature death, diabetes mellitus, hypertension, dyslipidemia, cardiovascular disease, stroke, gall bladder disease, respiratory dysfunction, gout, osteoarthritis, and certain kinds of cancers. Ideally, the goal for adults is to achieve and maintain a BMI in the healthy weight range. However, even modest weight loss (e.g., 10 pounds) has health benefits, and the prevention of further weight gain is very important. For overweight children and adolescents, the goal is to slow the rate of weight gain to achieve healthy growth. Maintaining a healthy weight throughout childhood will reduce an individual's risk of becoming an overweight or obese adult. Eating fewer calories is a key method of controlling body weight. Increasing physical activity also is very helpful in weight control, but because physical activity has additional beneficial effects on nutrition and health, it is covered separately. (See below—"Be Physically Active Every Day.")

Key Messages

- Persons who follow typical American eating and activity patterns have used up all their discretionary calories and are likely to be consuming diets well in excess of their energy requirements for their age, gender, and physical activity level. 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.
- Since many adults gain weight slowly over time, even small decreases in calorie intake can help avoid weight gain. Decreasing intake or increasing expenditure by 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.
 - Focusing on the prevention of overweight is critical because the behaviors required to lose weight are more challenging than the behaviors required to prevent weight gain. For most people, a reduction of 50 to 100 calories per day will prevent weight gain, but a reduction of 500 calories or more per day is a common goal in weight loss programs. Similarly, 30 to 60 minutes of moderate physical activity per day is recommended to prevent weight gain, but up to 60 to 90 minutes of physical activity per day is recommended to sustain weight loss among persons who have been overweight. (See below—“Being Physically Active Every Day.”)
 - Weight maintenance depends on balancing energy consumed and energy expended. Weight loss requires taking in fewer calories than expended. Small decreases in calorie intake can lead to big benefits if sustained over time, especially if accompanied by increased physical activity. (See “Essential Elements for Weight Loss” in Table E-1.)
 - Calories come from fat, carbohydrate, protein, and alcohol. The healthiest way to reduce calorie intake is to reduce one’s intake of added sugars, solid fat, and alcohol—they all provide calories, but they do not provide essential nutrients. Table E-2 gives some examples of how calories can be decreased by choosing foods that are lower in saturated fats. Table E-3 gives examples of how calories can be decreased by decreasing alcoholic beverage intake.
 - When making changes to improve nutrient intake, one needs to take care to make substitutions to avoid excessive calorie intake. For example, foods such as fruits, vegetables, and whole grains—all of which provide fiber—might be eaten in place of more refined foods such as fruit drinks and refined grain products.
 - Monitoring body weight regularly is a useful strategy for identifying weight changes and the need to decrease one’s energy intake, increase physical activity, or both. Such changes are fundamental to controlling one’s weight.
 - Reduced calorie diets that provide fat, carbohydrate, and protein within the recommended ranges can be safe and efficacious for weight loss. Diets that provide very low or very high amounts of protein, carbohydrate, or fat are likely to provide low amounts of a number of nutrients and are not advisable for long-term use.

Additional Important Information

- Eating foods that are high in calories and low in volume may make it hard to avoid excessive calorie intake. Eating foods that are low in calories and high in volume (such as many kinds of vegetables and fruits and some soups) may be a useful strategy to reduce energy intake.

- Controlling portion sizes helps limit calorie intake, especially when eating energy-dense foods (foods that are high in calories for a given amount). Table E-4 provides information on how portion sizes have grown over the past 20 years.
- Diets rich in whole grains, fruits, and vegetables may help with weight maintenance.
- It is unclear whether consuming milk products helps control body weight, but consuming three servings of milk products daily is not associated with increased body weight.
- Table E-5 gives examples of some simple ways to cut calories from your diet.
- Use the BMI chart (Figure E-1) to determine your BMI using your height and weight. If your BMI does not fall into the “Healthy Weight” section, set your weight goal as a weight corresponding to your height and “Healthy Weight” on the BMI chart.
- Table D3-1 will help you estimate your current energy requirements on the basis of your gender, age, and physical activity level so that you can know what your caloric intake limit is to maintain a healthy weight.

BE PHYSICALLY ACTIVE EVERY DAY

Overview

Americans tend to be relatively inactive. In 2002, 38 percent of adult Americans engaged in no leisure-time physical activity, and in 1999, 43 percent of students in grades 9 through 12 viewed television nearly 3 hours per day. Regular physical activity and physical fitness make a big contribution to one’s day-to-day health and sense of well-being. Lack of physical activity puts many people at risk. In particular, a sedentary lifestyle poses risks for coronary artery disease, hypertension, type 2 diabetes, overweight and obesity, osteoporosis, certain types of cancer, anxiety, depression, decreased health-related quality of life, and decreased cardiorespiratory, metabolic, and musculoskeletal fitness. All-cause mortality rates are lower in physically active than in sedentary persons.

Key Messages

- Thirty minutes of at least moderate physical activity on most days provide important health benefits in adults in part by reducing the risk of chronic disease. More than 30 minutes of moderate to vigorous physical activity on most days provide even more health benefits.
- Participating in up to 60 minutes of moderate to vigorous physical activity on most days is recommended to prevent unhealthy weight gain among adults. After losing weight, adults who obtain 60 to 90 minutes of moderate physical activity daily are more successful at maintaining their reduced weight than those who rely only on limiting calorie intake.
- The recommendation for children and adolescents is at least 60 minutes of moderate to vigorous physical activity on most days to maintain good health and fitness and for healthy weight during growth. Increasing physical activity can lower the BMI of overweight children.
- Regular physical activity is essential to the maintenance of a healthy weight for children and adults and a useful component of weight control programs. Physical

activity increases total energy expenditure and thus the number of calories needed in a day. Energy expenditure increases with increases in both the duration and the intensity of physical activity. Table E-6 provides examples of physical activities and the calories expended by performing these physical activities.

- Physical fitness requires regular physical activity that involves cardiovascular conditioning, stretching exercises to enhance flexibility, and weight work or calisthenics to develop strength and muscle endurance.
- Vigorous-intensity physical activity (e.g., jogging or other aerobic exercise) provides greater benefits for physical fitness than moderate physical activity, and it burns more calories per unit time.
- During leisure time, it is advisable for all individuals to limit sedentary behaviors, such as television watching and video viewing, and replace them with activities that require more movement. Engaging in physical activity will increase a person's caloric requirement for weight maintenance. Therefore, a person who engages in regular physical activity may have more discretionary calories available to him or her than a sedentary individual.

Additional Important Information

- Activity counted toward the 30 minutes should not include usual activities at work or at home.
- The physical activity counted may include short bouts (e.g., 10-minute bouts) of moderate activity. The accumulated total is what is important—both for health and for burning calories. Setting aside 30 to 60 consecutive minutes for planned exercise is one way to obtain physical activity, but it is not necessary. Physical activity can be accumulated through three to six 10-minute bouts over the course of a day. The *accumulated total* is what is important—both for health and for burning calories
- The body adapts to physical activity by building muscle and by increasing the maximum amount of work than can be done and the use of oxygen. Regular aerobic exercise improves the cardiovascular system.
- Two steps help avoid dehydration during prolonged physical activity in conditions of heat stress, whether for work or leisure: (1) consuming fluid regularly during the activity and (2) drinking several glasses of water or other fluid after the physical activity is completed.
- Most persons can safely increase their physical activity without consulting with a healthcare provider. However, it is advisable for men over age 40, women over age 50, and those with a personal history of chronic diseases such as heart disease or diabetes to consult with a healthcare provider before starting an exercise program.
- Resistance exercise (such as weight training, using weight machines and resistance band workouts) increases muscular strength and endurance and maintains or increases lean body weight. These benefits are seen in adolescents, adults, and older adults who perform 8 to 10 resistance exercises 2 or more days per week.
- Exercise that loads the skeleton has the potential to reduce the risk of osteoporosis by increasing peak bone mass during growth, maintaining peak bone mass during

adulthood, and reducing the rate of bone loss during aging. Regular exercise can help prevent falls.

INCREASE DAILY INTAKE OF FRUITS AND VEGETABLES, WHOLE GRAINS, AND NONFAT OR LOW-FAT MILK AND MILK PRODUCTS

Overview

Increased intakes of fruits, vegetables, whole grains, and milk products are likely to have important health benefits for Americans. Compared with the many persons who consume only small amounts of fruits and vegetables, those who eat more generous amounts are likely to have reduced risk of chronic diseases, including stroke and perhaps other cardiovascular diseases, type 2 diabetes, and cancers in certain sites (oral cavity and pharynx, larynx, lung, esophagus, stomach, and colon-rectum). Diets rich in dietary fiber and in whole grains can reduce the risk of coronary heart disease. Diets rich in milk and milk products can reduce the risk of low bone mass throughout the life cycle, but many Americans have low intakes of milk products. The consumption of milk products is especially important for children and adolescents who are building their peak bone mass and developing lifelong habits.

Key Messages

- Fruits, vegetables, whole grains, and milk products are all important to a healthy diet and are a good source of the shortfall nutrients.
- A range of 5 to 13 servings (2½ to 6½ cups) of fruits and vegetables each day is recommended for daily energy intakes of 1,200 to 3,200 calories². For a 2,000-calorie daily energy intake, 9 servings (4½ cups) are recommended, with increases or decreases depending on energy intake. Table E-7 provides the daily amounts of fruits and vegetables by calorie level.
- One goal is to consume a *variety* of fruits and vegetables each day. Over a week, eating vegetables from all five vegetable subgroups (dark green, bright yellow, legumes, starchy vegetables, and other vegetables) is recommended. For persons who require 2,000 calories daily to meet their energy needs, the recommended combined intake is 4½ cups (or the equivalent) of fruits and vegetables each day. Greater amounts are recommended for those with higher calorie requirements, and somewhat smaller amounts are recommended for those with lower calorie requirements. Table E-8 provides a list of fruits and vegetables that are the best sources of vitamins A and C, folate, and potassium. Table E-9 provides recommendations for ways to increase fruit and vegetable intake.
- The goal for whole-grain intake is at least three servings (approximately 3 ounces) per day, preferably by eating whole grains in place of refined grains. Table E-10 lists the whole grains that are widely available in the United States.
- For people who require 1,600 kcal per day or more, the goal for milk and milk products is three servings (3 cups) of nonfat or low-fat milk or milk products or the equivalent per day. The goal is 2 cups per day for those with lower calorie

² See tables D1-13 and D1-16 for information on 2-3 year olds.

needs. Table E-11 provides recommendations for ways to increase milk and milk product consumption.

Additional Important Information

- When increasing intake of fruits, vegetables, whole grains, and nonfat or low-fat milk and milk products, it is important to decrease one's intake of other less-nutrient-dense foods to control calorie intake.
- As illustrated by the comparison of whole wheat and enriched white flours in Table E-12, whole grains are richer in many nutrients, but they are not richer in folate unless they have been fortified with folic acid, which currently is allowed for only a few types of whole grain products. Enriched refined grains are required to be fortified with folic acid. Label reading is important.
- Young children and others with low energy needs are encouraged to include three servings of whole grains daily, one of which is a folic acid-fortified breakfast cereal.
- One cannot identify whole grains by the color of the food; label-reading skills are needed. Table E-10 identifies names of whole grains that are widely available in the United States. Table E-13 provides tips to consumers for obtaining information about whole grains from food labels.
- The strength of the evidence for the association between increased intake of fruits and vegetables and reduced risk of chronic diseases is variable and depends on the specific disease, but a wide array of evidence points to beneficial health effects.
- Adults and children should not avoid nonfat or low-fat milk and milk products because of concerns that these foods are "fattening." Even the lowest calorie (1,000 calorie) USDA food pattern includes them.
- When considering milk alternatives, the most reliable and easiest way to derive the health benefits associated with dairy consumption is to choose alternatives within the dairy food group, such as lactose-free milk or yogurt.
- Fruits, vegetables, whole grains, and milk products contain sugars and/or starches. These sugars and starches (like those provided by added sugars and refined cereals) provide fermentable substrates for bacteria that, in turn, can cause dental caries. However, good oral hygiene and fluoridation protect against caries.

CHOOSE FATS WISELY FOR GOOD HEALTH

Overview

Fats and oils are a part of a healthy diet, but the type of fat makes a difference to heart health, and the amount of fat consumed also is important. High intakes of saturated fats, *trans* fats, and cholesterol increase the risk of unhealthy blood lipid levels, which, in turn, may increase the risk of coronary heart disease. A high intake of fat (greater than 35 percent of energy) generally increases saturated fat intake and makes it more difficult to avoid consuming excess calories. A low intake of fats and oils (less than 20 percent of energy) increases the risk of inadequate intakes of vitamin E and of essential fatty acids and may contribute to unfavorable changes in high-density lipoprotein (HDL) cholesterol and triglycerides. Fish contains oils that may have beneficial effects on mortality from coronary artery disease.

Key Messages

- To decrease their risk of an elevated low-density lipoprotein (LDL) cholesterol, most Americans need to decrease their intakes of saturated fat and *trans* fat, and many (especially men because of their high cholesterol intake) need to decrease their dietary intake of cholesterol.
- Recommended goals are less than 10 percent of calories from saturated fat and less than 300 mg of cholesterol per day for adults with an LDL cholesterol less than 130 mg/dL. Even lower intakes (less than 7 percent of calories from saturated fat and less than 200 mg of cholesterol) are recommended for adults with an elevated LDL cholesterol (greater than 130 mg/dL). Persons with an elevated LDL cholesterol value should be under the care of a healthcare provider.
- *Trans* fatty acid consumption should be kept as low as possible—about 1 percent of energy intake or less.
- Decreasing one's intake of saturated fat and of *trans* fat is the recommended way to reduce fat intake so that total fat intake does not exceed 35 percent of calories.
- Consuming two servings of fish per week (approximately 8 ounces total) may reduce the risks from cardiovascular disease, especially mortality from coronary heart disease. The intake of salmon, trout, light tuna, mackerel, or other fish that are high in eicosapentaenoic acid (EPA) and docosahexanoic acid (DHA) may be especially beneficial. Other sources of EPA and DHA may provide similar benefits; however, more research is needed.

Additional Important Information

- Recommended total fat intake is between 20 and 35 percent of energy for adults. Few Americans consume less than 20 percent of calories from fat.
- General information about fatty acids appears at the beginning of Part D, Section 4, "Fats."
- Because dietary intake of saturated fat is much higher than that of *trans* fat and cholesterol, it is most important to decrease one's intake of saturated fat. However, intake of all three should be decreased. Table E-14 shows, for selected calorie levels, the maximum amounts of saturated fat to consume to keep saturated fat intake below 10 percent of total calorie intake. This box may be useful combined with label reading guidance. Table E-2 gives a few practical examples of the differences in the saturated fat content of different forms of commonly consumed foods.
- Table E-15 provides the dietary sources of saturated fats in the U.S. diet, listed in decreasing order. Table E-16 provides strategies for decreasing saturated fat intake.
- Since *trans* fatty acids are produced in the hydrogenation of vegetable oils and account for more than 80 percent of total intake, the food industry has a large role to play in helping consumers decrease their *trans* fat intake. Table E-17 provides dietary sources of *trans* fat, listed in decreasing order.
- Table E-18 provides dietary sources of cholesterol.
- Consumer advisories provide current information about lowering exposure to environmental contaminants, such as methylmercury, in fish. For more

information on the latest methylmercury advisory, see www.fda.gov/bbs/topics/news/2004/NEW01038.html.

CHOOSE CARBOHYDRATES WISELY FOR GOOD HEALTH

Overview

Carbohydrates are part of a healthy diet. Sugars and starches supply energy to the body in the form of glucose, which is the only energy source for red blood cells and is the preferred energy source for the brain, central nervous system, placenta, and fetus. Dietary fiber has been shown to have a number of beneficial effects including decreased risk of type 2 diabetes and of coronary heart disease, and improvement in laxation. Although the body's response to sugars does not depend on whether they are naturally present in a food (such as the fructose in fruit or the lactose in milk) or added to the food, there is a concern that people should not consume excessive amounts of foods that supply calories but few or no nutrients. This is the case for many foods that contain added sugars.

Key Messages

- As described above under “Increasing Daily Intake of Fruits and Vegetables, Whole Grains, and Nonfat or Low-Fat Milk and Milk Products,” consuming foods from the basic food groups that provide carbohydrates can promote health and reduce chronic disease risk. Foods in these groups are important sources of many nutrients.
- 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. Table D1-8 lists some of the best sources of dietary fiber.
- Reducing intake of added sugars (especially sugar-sweetened beverages) may be helpful in achieving recommended nutrient intakes and weight control.
- A combined approach of reducing the frequency of consuming sugars and starches (e.g., limiting snacking on foods that contain these carbohydrates) and optimizing oral hygiene practices is advised to reduce caries incidence.

Additional Important Information

- The concern about added sugars is not the sugar itself but rather with many of the foods in which added sugars are found. Individuals who consume food or beverages high in added sugars tend to consume more calories than those who consume low amounts of added sugars, and also tend to consume lower amounts of micronutrients.
- The major sources of added sugars are listed in Table E-19. Decreased intake of such foods is recommended.
- Moderate amounts of sugars added to nutrient-dense foods such as breakfast cereals and reduced-fat milk products may increase a person's intake of such foods and thus improve nutrient intake without contributing excessive calories.
- Table E-20 lists ingredients that are included in the term *added sugars*. Nutritional labels list the amount of total sugars, but not added sugars. To find

out whether a food contains added sugars, one must examine the ingredient list (Table E-21).

CHOOSE AND PREPARE FOODS WITH LITTLE SALT

Overview

On average, the higher one's salt intake, the higher one's blood pressure. Keeping blood pressure in the normal range reduces one's risk of coronary heart disease, stroke, congestive heart failure, and kidney disease. Nearly all American adults will develop hypertension (high blood pressure) during their lifetime. Lifestyle changes can prevent or delay the onset of high blood pressure and can lower elevated blood pressure. These lifestyle changes include reducing salt intake, increasing potassium intake, losing excess body weight, increasing physical activity, and eating an overall healthy diet (such as diets based on the revised USDA food intake pattern or the DASH diet described in this report).

Key Messages

- Nearly all Americans consume substantially more salt than they need. Decreasing salt (sodium chloride) intake is advisable to reduce the risk of elevated blood pressure. Expressed in terms of sodium, the general goal is for adults to aim to consume less than 2,300 mg of sodium per day.
- Many persons will benefit from reducing their salt intake even more. Such persons include hypertensive individuals, blacks, and middle- and older-aged adults.
- At the same time, individuals are encouraged to increase their consumption of foods rich in potassium. Potassium lowers blood pressure and blunts the effects of salt on blood pressure.
- Since sodium added during the processing of foods provides more than three-fourths of total intake, the food industry has a large role to play in helping consumers decrease their sodium intake.

Additional Important Information

- Salt is sodium chloride.
- Food labels list sodium rather than salt content. Sources of sodium in the food supply are provided in Figure E-2.
- Many processed foods and foods served by food establishments are high in sodium. See Table E-22 for examples of these foods and Table E-23 for examples of strategies to decrease sodium intake.
- One's preference for salt is not fixed. After consuming foods low in salt for a period of time, one's taste for salt tends to decrease. Alternative flavorings may help. Table E-24 provides examples of alternative flavorings and foods to pair with seasonings.

IF YOU DRINK ALCOHOLIC BEVERAGES, DO SO IN MODERATION

Overview

The consumption of alcohol can have beneficial or harmful effects depending on the amount consumed, the age and other characteristics of the person consuming the alcohol, and specific situations. The lowest all-cause mortality occurs at an intake of one to two drinks per day. The lowest coronary heart disease mortality also occurs at an intake of one to two drinks per day. Morbidity and mortality are highest among those drinking large amounts of alcohol.

Key Messages

- Those who choose to drink alcoholic beverages should do so sensibly, and in moderation.
- Abstinence is an important option; approximately one in three American adults do not drink alcohol.
- Moderation is defined as the consumption of up to one drink per day for women and up to 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.
- Drinking alcoholic beverages should be avoided before or when driving, or whenever it puts anyone at risk.

Additional Important Information

- The definition of moderation, including the size of one drink, requires emphasis. (Some investigators and apparently many individuals interpret “moderate drinking” to cover higher levels of intake than shown in Table E-25. Many mixed drinks actually provide several servings of alcohol per drink. (See Table E-3.)
- Studies suggest adverse effects even at moderate alcohol consumption levels in specific individuals and situations.
 - Some people should not drink alcohol (e.g., individuals who cannot restrict alcohol intake, children and adolescents, individuals taking medications that can interact with alcohol, and individuals with specific medical conditions).
 - In some situations, alcohol should be avoided (e.g., women who may become or are pregnant; women who are breastfeeding; and individuals who plan to drive, operate machinery, or take part in other activities that require attention, skill, or coordination).
- Factors other than moderate alcohol consumption that may reduce the risk of chronic disease include a healthy diet (see above), physical activity, avoidance of smoking, and maintenance of a healthy weight.
- Compared with nondrinkers, women who consume one drink per day appear to have a slightly higher risk of breast cancer.
- The consumption of one to two alcoholic beverages per day is not associated with macronutrient or micronutrient deficiencies or with overall dietary quality. Nonetheless, the calorie content of alcoholic beverages should be considered. (See Table E-3.)

KEEP FOOD SAFE TO EAT

Overview

Foodborne illness results from eating food contaminated with bacteria (or their toxins) or other pathogens such as parasites or viruses. The signs and symptoms range from upset stomach to diarrhea, fever, vomiting, abdominal cramps, and dehydration. It is estimated that every year about 76 million people in the United States become ill from pathogens in food; of these, about 5,000 die. The foodborne illness listeriosis, although rare, has very serious public health consequences—it can be life threatening for vulnerable groups. Consumers can take simple measures to reduce their risk of foodborne illness, especially in the home.

Key Messages

- The most important food safety problem is microbial foodborne illness. 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 food from 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 unsafe foods also is an important protective measure, especially for high-risk groups (the very young, pregnant women, elderly, and those who are immunocompromised).

Additional Important Information

- For more information on cleaning, separating, cooking, chilling, and consumer messages, see www.fightbac.org.
- Table D9-1 provides a protocol for washing hands.
- Table D9-2 provides a protocol for washing fruits and vegetables.
- Figure E-3 provides information for temperature rules for proper cooking.
- Refrigerated leftovers may become unsafe within 3 to 4 days. Despite the appearance of a food, it may not be safe to eat. Not all bacterial growth causes a food's surface to discolor or smell bad. It may be unsafe to taste fresh or leftover food items when there is any doubt about their safety. Safe disposal of the food is indicated if there is a question about whether or not a food is safe to eat.
- Those at risk of listeriosis (pregnant women, the elderly, and those who are immunocompromised) should avoid high-risk foods, including deli meats and frankfurters that are not reheated to a safe temperature. See Table E-26 for tips for those at increased risk of foodborne illness.
- Guidance is evolving on reducing dietary exposure to environmental contaminants, including methylmercury in fish. Thus, referring to consumer advisories is recommended to obtain updates on this topic. (For more information

on the latest methylmercury advisory, see www.fda.gov/bbs/topics/news/2004/NEW01038.html.)

- Refrigerator surfaces can become contaminated from contact with high-risk foods such as raw meats, poultry, fish, uncooked hotdogs, certain deli meats, or raw vegetables. If not cleaned, affected refrigerator surfaces can, in turn, serve as a vehicle for contaminating other foods.
- Chilling should take place at any stage of food handling during which raw foods are not being cleaned or cooked. For example, when shopping, it is advisable to buy perishable foods last, take them straight home, and chill them. Until cooking takes place (e.g., while other foods are being prepared), chilling is indicated after handling or preparing perishable foods (especially raw meat, poultry, fish, shellfish, or eggs).