CHAPTER 1

Food, Nutrition, and Health

KEY CONCEPTS

- Optimal personal and community nutrition are major components of health promotion.
- Certain nutrients in food are essential to our health and well-being.
- Food and nutrient guides help us to plan a balanced diet that is in accordance with our individual needs and goals.

We live in a world of rapidly changing elements, including our environment, food supply, population, and scientific knowledge. Within different environments, our bodies, emotional responses, needs, and goals change. To be realistic within the concepts of change and balance, the study of food, nutrition, and health care must focus on health promotion. Although we may define health and disease in a variety of ways, the primary basis for promoting health and preventing disease must start with a balanced diet and the nutrition it provides. The study of nutrition is of primary importance in the following two ways: it is fundamental for our own health, and it is essential for the health and well-being of our patients and clients.

HEALTH PROMOTION

Basic Definitions

Nutrition and Dietetics

Nutrition is the food people eat and how their bodies use it. Nutrition science comprises the body of scientific knowledge that governs food requirements for maintenance, growth, activity, reproduction, and lactation. Dietetics is the health profession responsible for applying nutrition science to promote human health and treat disease. The registered dietitian (RD), who is also referred to as the *clinical nutrition specialist* or the *public health nutritionist,* is the nutrition authority on the health care team; this health care professional carries the major responsibility of nutrition care for patients and clients.

Health and Wellness

High-quality nutrition is essential to good health throughout life, beginning with prenatal life and continuing through old age. In its simplest terms, the word ***health*** is defined as the absence of disease. However, life experience shows that the definition of health is much more complex. It must include extensive attention to the roots of health for the meeting of basic needs (e.g., physical, mental, psychologic, and social well-being). This approach recognizes the individual as a whole and relates health to both internal and external environments. The concept of *wellness* broadens this approach one step further. Wellness seeks the full development of potential for all people within their given environments. It implies a balance between activities and goals: work versus leisure, lifestyle

choices versus health risks, and personal needs versus others' expectations. The term *wellness* implies a positive dynamic state that motivates a person to seek a higher level of functioning.

National Health Goals

The ongoing wellness movement continues to be a fundamental response to the health care system's emphasis on illness and disease and the rising costs of medical care. Since the 1970s, holistic health and health promotion have focused on lifestyle and personal choice when it comes to helping individuals and families develop plans for maintaining health and wellness. The U.S. national health goals continue to reflect this wellness philosophy. The most recent report in the *Healthy People* series published by the U.S. Department of Health and Human Services, *Healthy People 2020*, continues to focus on the nation's main objective of positive health promotion and disease prevention[1] (Figure 1-1). The guidelines encompass four overarching goals with the ultimate vision of a "society in which all people live long, healthy lives."[1]

A major theme throughout the report is the encouragement of healthy choices in diet, weight control, and other risk factors for disease, especially in the report's specific nutrition objectives. Community health agencies continue to implement these goals and objectives in local, state, public, and private health programs, particularly in areas where malnutrition and poverty exist. Programs such as the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) and school lunch programs are well established throughout the United States. Each effort recognizes personal nutrition as an integral component of health and health care for all people.

Traditional and Preventive Approaches to Health

The preventive approach to health involves identifying risk factors that increase a person's chances of developing a particular health problem. Knowing these factors, people can choose behaviors that will prevent or minimize their risks for disease. Alternatively, the traditional approach to health only attempts change when symptoms of illness or disease already exist, at which point those who are ill seek a physician to diagnose, treat, and "cure" the condition (see the Drug-Nutrient Interaction box, "Introduction to Drug-Nutrient Interactions"). The traditional approach has little value for lifelong positive health. Major chronic problems (e.g., heart disease, cancer, diabetes) may develop long before signs become apparent.

Importance of a Balanced Diet

Food and Health

Food is a necessity of life. However, many people are only concerned with food insofar as it relieves their hunger or satisfies their appetite and not with whether it supplies their bodies with all of the components of proper nutrition. The six essential nutrients in human nutrition are the following:

1. Carbohydrates
2. Proteins
3. Fats
4. Vitamins
5. Minerals
6. Water

The core practitioners of the health care team (i.e., physician, dietitian, and nurse) are all aware of the important part that food plays in maintaining good health and recovering from illness. Therefore, assessing a patient's nutritional status and identifying his or her nutrition needs are primary activities in the development of a health care plan.

health promotion the active engagement in behaviors or programs that advance positive well-being.

nutrition the sum of the processes involved with the intake of nutrients as well as assimilating and using them to maintain body tissue and provide energy; a foundation for life and health.

nutrition science the body of science, developed through controlled research, that relates to the processes involved in nutrition internationally, clinically, and in the community.

dietetics the management of the diet and the use of food; the science concerned with nutrition planning and the preparation of foods.

registered dietitian (RD) a professional dietitian accredited with an academic degree from an undergraduate or graduate study program who has passed required registration examinations administered by the Commission on Dietetic Registration.

health a state of optimal physical, mental, and social well-being; relative freedom from disease or disability.

metabolism the sum of all chemical changes that take place in the body by which it maintains itself and produces energy for its functioning; products of the various reactions are called *metabolites*.

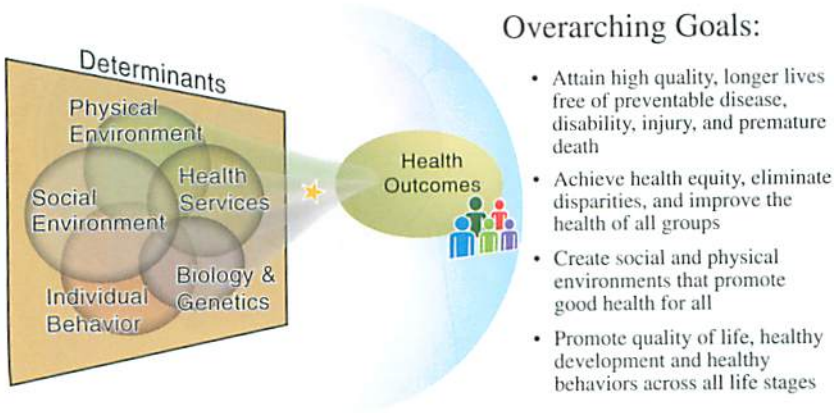

Figure 1-1 Healthy People 2020 Goals. (From the U.S. Department of Health and Human Services. *Healthy People 2020*, Washington, DC: U.S. Government Printing Office; 2010.)

DRUG-NUTRIENT INTERACTION

INTRODUCTION TO DRUG-NUTRIENT INTERACTIONS

Part of the traditional approach to medicine is "curing" the condition or disease. This often includes a physician's prescription for a medication to alleviate symptoms or to treat the condition. Drug regimens should be strictly followed. Many medications have potentially dangerous side effects, such as heart arrhythmias, hypertension, dizziness, and tingling in the hands and feet when they are consumed inappropriately.

Some medications may interact with nutrients in food or dietary supplements, thereby creating a drug-nutrient interaction. The presence of food in the stomach may increase or decrease drug absorption, thus potentially enhancing or diminishing the effects of the intended medication. Dietary supplements that contain vitamins and minerals can be especially dangerous if they are consumed at the same time as a drug. Knowing which drugs are influenced by nutrients and how to work with a patient's diet is essential to the development of a complete medical plan.

In the following chapters of this book, look for the Drug-Nutrient Interaction boxes to learn about some of the more common interactions that may be encountered in the health care setting.

Sara Harcourt

Signs of Good Nutrition

A lifetime of good nutrition is evidenced by a well-developed body, the ideal weight for height and body composition (i.e., the ratio of muscle mass to fat mass), and good muscle development. In addition, a healthy person's skin is smooth and clear, the hair is glossy, and the eyes are clear and bright. Appetite, digestion, and elimination are normal. Well-nourished people are more likely to be mentally and physically alert and to have a positive outlook on life. They are also more able to resist infectious diseases as compared with undernourished people. This is particularly important with our current trends of population growth and ever-increasing life expectancy. National vital statistics reports published in 2010 stated that life expectancy in the United States reached a high of 75.4 years for men and 80.4 for women.[2]

FUNCTIONS OF NUTRIENTS IN FOOD

To sustain life, the nutrients in foods must perform the following three basic functions within the body:

1. Provide energy
2. Build tissue
3. Regulate metabolic processes

Metabolism refers to the sum of all body processes that accomplish the basic life-sustaining tasks. Intimate metabolic relations exist among all nutrients and their

metabolic products. This is the fundamental principle of *nutrient interaction*, which involves two concepts. First, the individual nutrients have many specific metabolic functions, including primary and supporting roles. Second, no nutrient ever works alone; this key principle of nutrient interaction is demonstrated more clearly in the following chapters. Although the nutrients may be separated for study purposes, remember that they do not exist that way in the human body. They always interact as a dynamic whole to produce and maintain the body.

Energy Sources

Carbohydrates

Dietary carbohydrates (e.g., starches, sugars) provide the body's primary and preferred source of fuel for energy. They also maintain the body's backup store of quick energy as **glycogen** (see Chapter 2). Human energy is measured in heat units called ***kilocalories***, which is abbreviated as *kcalories* or *kcal* (see Chapter 6). Each gram of carbohydrate consumed yields 4 kcal of body energy. In a well-balanced diet, carbohydrates from all sources should provide approximately 45% to 65% of the total kilocalories.

Fats

Dietary fats from both animal and plant sources provide the body's secondary or storage form of energy. This form is more concentrated, yielding 9 kcal for each gram consumed. In a well balanced diet, fats should provide no more than 20% to 35% of the total kilocalories. Approximately two thirds of this amount should be from plant sources, which provide monounsaturated and polyunsaturated fats, and no more than 10% of kcals should come from saturated fat (see Chapter 3).

Proteins

Ideally protein would not be used for energy by the body. Rather, it should be preserved for other critical functions, such as structure, enzyme and hormone production, fluid balance, and so on. However, in the event that necessary energy from carbohydrates and fat is insufficient, the body may draw from dietary or tissue protein to obtain required energy. When this occurs, protein yields 4 kcal per gram. In a well-balanced diet, protein should provide approximately 10% to 35% of the total kilocalories (see Chapter 4).

Thus, the recommended intake of each energy-yielding *nutrient*, as a percent of total calories, is as follows (Figure 1-2):

- Carbohydrate: 45% to 65%
- Fat: 20% to 35%
- Protein: 10% to 35%

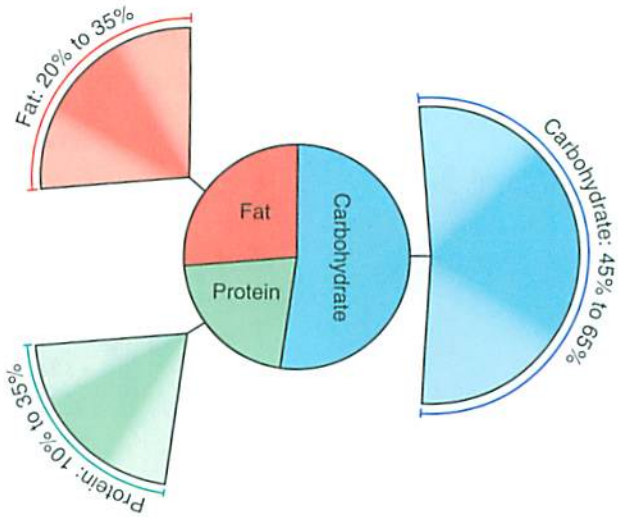

Figure 1-2 The recommended intake of each energy-yielding nutrient as a percentage of total energy intake.

Tissue Building

Proteins

The primary function of protein is tissue building. Dietary protein provides **amino acids**, which are the building blocks that are necessary for constructing and repairing body tissues (e.g., organs, muscle, cells, blood proteins). Tissue building is a constant process that ensures the growth and maintenance of a strong body structure as well as the creation of vital substances for cellular functions.

glycogen a polysaccharide; the main storage form of carbohydrate in the body, which is stored primarily in the liver and to a lesser extent in muscle tissue.

kilocalorie the general term *calorie* refers to a unit of heat measure, and it is used alone to designate the small calorie; the calorie that is used in nutrition science and the study of metabolism is the large Calorie or kilocalorie, which avoids the use of large numbers in calculations; a kilocalorie, which is composed of 1000 calories, is the measure of heat that is necessary to raise the temperature of 1000 g (1 L) of water by 1° C.

amino acids the nitrogen-bearing compounds that form the structural units of protein; after digestion, amino acids are available for the synthesis of required proteins.

Other Nutrients

Several other nutrients contribute to the building and maintenance of tissues.

Vitamins and Minerals. Vitamins and minerals are nutrients that help to regulate many body processes. An example of the use of a vitamin in tissue building is that of vitamin C in developing collagen. Collagen is the protein found in fibrous tissues such as cartilage, bone matrix, skin, and tendons. Two major minerals, calcium and phosphorus, participate in building and maintaining bone tissue. Another example is the mineral iron, which contributes to building the oxygen carrier hemoglobin in red blood cells. Several other vitamins and minerals are discussed in greater detail in Chapters 7 and 8 with regard to their functions, which include tissue building.

Fatty Acids. Fatty acids, which are derived from fat metabolism, help to build the central fat substance that is necessary in all cell membranes, and they promote the transport of fat-soluble nutrients throughout the body.

Regulation and Control

The multiple chemical processes in the body that are necessary for providing energy and building tissue are carefully regulated and controlled to maintain a constant dynamic balance among all body parts and processes. Several of these regulatory functions involve essential nutrients.

Vitamins

Many vitamins function as coenzyme factors, which are components of cell enzymes, in the governing of chemical reactions during metabolism. For example, this is true for most of the B-complex vitamins.

Minerals

Many minerals also serve as coenzyme factors with enzymes in cell metabolism. For example, cobalt, which is a central constituent of vitamin B_{12} (cobalamin), functions with this vitamin in the synthesis of heme for hemoglobin formation.

Water and Fiber

Water and fiber also function as regulatory agents. In fact, water is the fundamental agent for life itself, providing the essential base for all metabolic processes. The adult body is approximately 50% to 70% water. Dietary fiber helps to regulate the passage of food material through the gastrointestinal tract, and it influences the absorption of nutrients.

NUTRITIONAL STATES

Optimal Nutrition

Optimal nutrition means that a person receives and uses substances obtained from a varied and balanced diet of carbohydrates, fats, proteins, minerals, vitamins, and water in appropriate amounts. The desired amount of each essential nutrient should be balanced to cover variations in health and disease and to provide reserve supplies without unnecessary excesses.

Malnutrition

Malnutrition refers to a condition that is caused by an improper or insufficient diet. Both undernutrition and overnutrition are forms of malnutrition. Dietary surveys have shown that approximately one third of the U.S. population lives on suboptimal diets. That does not necessarily mean that all of these Americans are undernourished. Some people can maintain health on somewhat less than the optimal amounts of various nutrients in a state of borderline nutrition. However, on average, someone who is receiving less than the desired amounts of nutrients has a greater risk for physical illness and compromised immunity as compared with someone who is receiving the appropriate amounts.[3] Such nutritionally deficient people are limited with regard to their physical work capacity, immune system function, and mental activity. They lack the nutritional reserves to meet any added physiologic or metabolic demands from injury or illness or to sustain fetal development during pregnancy or proper growth during childhood. This state may result from poor eating habits or a continuously stressful environment with little or no available food.

Undernutrition

Signs of more serious malnutrition appear when nutritional reserves are depleted and nutrient and energy intake are not sufficient to meet day-to-day needs or added metabolic stress. Many malnourished people live in conditions of poverty or illness. Such conditions influence the health of all involved but especially that of the most vulnerable populations: pregnant women, infants, children, and elderly adults. In the United States, which is one of the wealthiest countries in the world, widespread hunger and malnutrition among the poor still exist, which indicates that food security problems involve urban development issues, economic policies, and more general poverty issues (see the Cultural Considerations box, "Food Insecurity").

CULTURAL CONSIDERATIONS

FOOD INSECURITY

Food insecurity is defined by the U.S. Department of Agriculture as the limited or uncertain availability of nutritious and adequate food. Using this definition, the Food Assistance and Nutrition Research Program of the U.S. Department of Agriculture reported that 17 million households (i.e., 14.6% of all U.S. households) qualified as having food insecurity in 2008. Furthermore, homes with children report double the rate of food insecurity as compared with homes without children (21% and 11.3%, respectively).[1] Many studies document widespread hunger and malnutrition among the poor, especially among the growing number of homeless, including mothers with young children. Such problems can manifest themselves as physical, psychologic, and sociofamilial disturbances in all age groups, with a significant negative impact on health status (including mental health) and the risk of chronic disease. Data from the *National* Health and Nutrition Examination Study (NHANES) demonstrated an increased incidence of cardiovascular risk factors such as hypertension and hyperlipidemia among food-insecure adults.[2]

Feeding America, which is the nation's largest organization of emergency food providers, estimated that 14 million children in the United States receive emergency food services each year.[3] Malnourished children are at an increased risk for stunted growth and episodes of infection and disease, which often have lasting effects on their intellectual development. Hunger is a chronic issue (i.e., persisting 8 months or more per year) among most households that report food insecurity. The prevalence of food insecurity is substantially higher among households that are headed by single mothers and in African-American and Hispanic households.[1] A variety of federal and nonfederal programs are available to address hunger issues in all cultural and age groups. The U.S. Department of Agriculture's Food and Nutrition Service provides detailed information about such programs on its Web site at www.fns.usda.gov/fns.

1. Nord M, Andrews M, Carlson S. *Household food security in the United States, 2008 (Economic research report 83).* Alexandria, Va: U.S. Department of Agriculture, Economic Research Services; 2009.
2. Seligman HK, Laraia BA, Kushel MB. Food insecurity is associated with chronic disease among low-income NHANES participants. *J Nutr.* 2010;140:304-310.
3. Mabli J, Cohen R, Potter F, Zhao Z. *Hunger in America 2010; National Report Prepared for Feeding America.* Chicago: Feeding America; 2010.

Malnutrition sometimes occurs in hospitals as well. For example, acute trauma or chronic illness, especially among older people, places added stress on the body, and the daily nutrient and energy intake may be insufficient to meet the needs of these patients.

Overnutrition

Some people are in a state of overnutrition, which results from excess nutrient and energy intake over time. Overnutrition is another form of malnutrition, especially when excess caloric intake produces harmful body weight (i.e., morbid obesity; see Chapter 15). Harmful overnutrition can also occur among people who consistently use excessive (e.g., "megadose") amounts of nutrient supplements, which can result in vitamin or mineral toxicities (see Chapters 7 and 8).

NUTRIENT AND FOOD GUIDES FOR HEALTH PROMOTION

Nutrient Standards

Most of the developed countries of the world have established nutrient standard recommendations. These standards serve as a reference for intake levels of the essential nutrients to meet the known nutrition needs of most healthy population groups. Although these standards are similar in most countries, they vary according to the philosophies of the scientists and practitioners with regard to the purpose and use of such standards. In the United States, these standards are referred to as the ***Dietary Reference Intakes (DRIs)***.

U.S. Standards: Dietary Reference Intakes

Since 1941, the **Recommended Dietary Allowances (RDAs)**, which are published by the National Academy of Sciences, have been the authoritative source for setting standards for the minimum amounts of nutrients necessary to protect almost all people against the risk for nutrient deficiency. The U.S. RDA standards were first published during World War II as a guide for planning and obtaining food supplies for national defense and for providing population standards as a goal for good nutrition. These standards are revised and expanded every 5 to 10 years to reflect increasing scientific knowledge and social concerns about nutrition and health.

Both public awareness and research attention have shifted to reflect an increasing emphasis on nutrient requirements for maintaining optimal health within the general population as opposed to only preventing deficiency. This change of emphasis resulted in the DRIs project. The creation of the DRIs involved distinguished

BOX 1-1 DIETARY REFERENCE INTAKE PANELS OF THE INSTITUTE OF MEDICINE OF THE NATIONAL ACADEMY OF SCIENCES

1. Calcium, vitamin D, phosphorous, magnesium, and fluoride
2. Folate and other B vitamins
3. Antioxidants
4. Macronutrients
5. Trace elements
6. Electrolytes and water

U.S. and Canadian scientists, who were divided into six functional panels (Box 1-1) and who have examined thousands of nutrition studies addressing the health benefits of nutrients and the hazards of consuming too much of a nutrient. The working group of nutrition scientists responsible for these standards forms the Food and Nutrition Board of the Institute of Medicine. The DRI recommendations were published over several years in a series of six volumes.[4-9]

The DRIs include recommendations for each gender and age group as well as recommendations for pregnancy and lactation (see the inside front cover of this book). For the first time, excessive amounts of nutrients were identified as tolerable upper intakes. The new DRIs incorporate and expand on the well-established RDAs. The DRIs encompass the following four interconnected categories of nutrient recommendations:

1. *RDA.* This is the daily intake of a nutrient that meets the needs of almost all (i.e., 97.5%) healthy individuals of a specific age and gender. Individuals should use the RDA as a guide to achieve adequate nutrient intake to decrease the risk of chronic disease. RDAs are established only when enough scientific evidence exists about a specific nutrient.
2. *Estimated Average Requirement.* This is the intake level that meets the needs of half of the individuals in a specific group. This quantity is used as the basis for the development of the RDA.
3. *Adequate Intake.* The Adequate Intake is used as a guide when not enough scientific evidence is available to establish the RDA. Both the RDA and the Adequate Intake may be used as goals for individual intake.
4. *Tolerable Upper Intake Level.* This indicator is not a recommended intake. Rather, it sets the maximal intake that is unlikely to pose adverse health risks in almost all healthy individuals. For most nutrients, the Tolerable Upper Intake Level refers to the daily intake from food, fortified food, and nutrient supplements combined.

Other Standards

Historically, Canadian and British standards have been similar to the U.S. standards. In less-developed countries, where factors such as the quality of available protein foods must be considered, individuals look to standards such as those set by the Food and Agriculture Organization and World Health Organization. Nonetheless, all standards provide a guideline to help health care workers who work with a variety of population groups to promote good health and prevent disease through sound nutrition.

Food Guides and Recommendations

To interpret and apply nutrient standards, health care workers need practical food guides to use for nutrition education and food planning with individuals and families. Such tools include the U.S. Department of Agriculture's MyPlate system and the *Dietary Guidelines for Americans.*

MyPlate

The **MyPlate** food guidance system (Figure 1-3), which was released in June 2011 by the U.S. Department of Agriculture, provides the public with a valuable nutrition education tool. The goal of this food guide is to promote variety, proportionality, moderation, gradual improvements, and physical activity.[10] Participants are encouraged to personalize their own plans via the public Web site www.choosemyplate.gov by entering their age, gender, weight, height, and activity level. The system will create a plan with individualized calorie levels and specific recommendations for serving amounts from each food group. In addition, the MyPlate site provides participants with individualized meal-tracking worksheets, tips, resources, and sample menus as well as access to the Choose MyPlate Tracker, an online dietary and physical activity assessment tool.

Dietary Reference Intakes (DRIs) the nutrient recommendations for each gender and age group that can be used for assessing and planning diets for healthy populations.

Recommended Dietary Allowances (RDAs) the recommended daily allowances of nutrients and energy intake for population groups according to age and gender with defined weight and height.

MyPlate a visual pattern of the current basic five food groups—grains, vegetables, fruits, dairy, and protein—arranged on a plate to indicate proportionate amounts of daily food choices.

10 tips
Nutrition Education Series

choose MyPlate

10 tips to a great plate

Making food choices for a healthy lifestyle can be as simple as using these 10 Tips. Use the ideas in this list to *balance your calories*, to choose foods to *eat more often*, and to cut back on foods to *eat less often*.

1 balance calories

Find out how many calories YOU need for a day as a first step in managing your weight. Go to www.ChooseMyPlate.gov to find your calorie level. Being physically active also helps you balance calories.

2 enjoy your food, but eat less

Take the time to fully enjoy your food as you eat it. Eating too fast or when your attention is elsewhere may lead to eating too many calories. Pay attention to hunger and fullness cues before, during, and after meals. Use them to recognize when to eat and when you've had enough.

3 avoid oversized portions

Use a smaller plate, bowl, and glass. Portion out foods before you eat. When eating out, choose a smaller size option, share a dish, or take home part of your meal.

4 foods to eat more often

Eat more vegetables, fruits, whole grains, and fat-free or 1% milk and dairy products. These foods have the nutrients you need for health—including potassium, calcium, vitamin D, and fiber. Make them the basis for meals and snacks.

5 make half your plate fruits and vegetables

Choose red, orange, and dark-green vegetables like tomatoes, sweet potatoes, and broccoli, along with other vegetables for your meals. Add fruit to meals as part of main or side dishes or as dessert.

6 switch to fat-free or low-fat (1%) milk

They have the same amount of calcium and other essential nutrients as whole milk, but fewer calories and less saturated fat.

7 make half your grains whole grains

To eat more whole grains, substitute a whole-grain product for a refined product—such as eating whole-wheat bread instead of white bread or brown rice instead of white rice.

8 foods to eat less often

Cut back on foods high in solid fats, added sugars, and salt. They include cakes, cookies, ice cream, candies, sweetened drinks, pizza, and fatty meats like ribs, sausages, bacon, and hot dogs. Use these foods as occasional treats, not everyday foods.

9 compare sodium in foods

Use the Nutrition Facts label to choose lower sodium versions of foods like soup, bread, and frozen meals. Select canned foods labeled "low sodium," "reduced sodium," or "no salt added."

10 drink water instead of sugary drinks

Cut calories by drinking water or unsweetened beverages. Soda, energy drinks, and sports drinks are a major source of added sugar, and calories, in American diets.

USDA Center for Nutrition Policy and Promotion

Go to www.ChooseMyPlate.gov for more information.

DG TipSheet No. 1
June 2011
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Figure 1-3 MyPlate food guidance system recommendations. (From the U.S. Department of Agriculture, Center for Nutrition Policy and Promotion. *Choose MyPlate mini-poster* (website): www.choosemyplate.gov. Accessed August 23, 2011.)

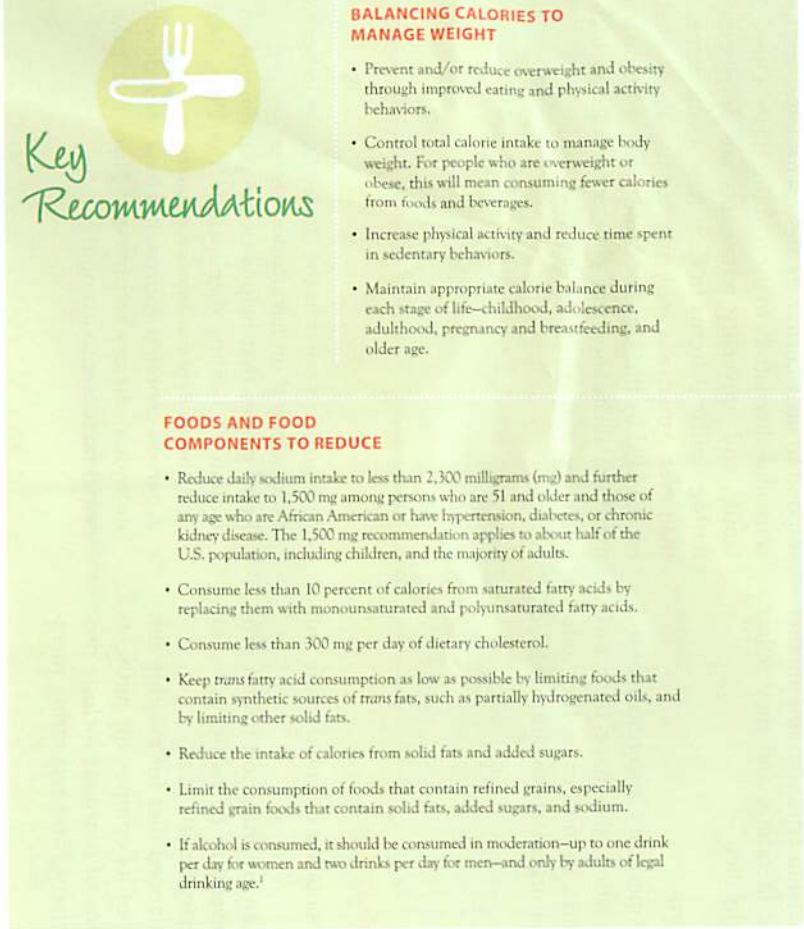

Figure 1-4 Summary of the *Dietary Guidelines for Americans, 2010.* (From the U.S. Department of Agriculture, U.S. Department of Health and Human Services. *Dietary Guidelines for Americans, 2010.* Washington, DC: U.S. Government Printing Office; 2010.)

Dietary Guidelines for Americans

The *Dietary Guidelines for Americans* were issued as a result of growing public concern that began in the 1960s and the subsequent Senate investigations studying hunger and nutrition in the United States. These guidelines are based on developing alarm about chronic health problems in an aging population and a changing food environment. An updated statement is issued every 5 years, but recent review by expert committees has led to minimal changes over the past decade. This publication encompasses a comprehensive evaluation of the scientific evidence regarding diet and health in a report jointly issued by the U.S. Department of Agriculture and the U.S. Department of Health and Human Services.[11]

Figure 1-4 shows the four key recommendations of the *Dietary Guidelines for Americans*. The current guidelines continue to serve as a useful general guide for promoting dietary and lifestyle choices that reduce the risk for chronic disease. Although no guidelines can guarantee health or well-being and although people differ widely with regard to their food needs and preferences, these general statements are meant to help evaluate food habits and move toward general improvements. Good food habits that are based on moderation and variety can help to build healthy bodies.

The current DRIs, MyPlate guidelines, and *Dietary Guidelines for Americans* are all in sync with one another and supported by scientific literature, and they reflect sound guidelines for a healthy diet.

Other Recommendations

Organizations such as the American Cancer Society and the American Heart Association also have their own independent dietary guidelines. In most cases, the guidelines set by various national organizations are modeled after the *Dietary Guidelines for Americans*. This may seem a bit repetitive, but the difference is the added emphasis on the prevention of specific chronic diseases, such as heart disease and cancer.

Individual Needs

Person-Centered Care

Regardless of the type of food guide or recommendations used, health care professionals must remember that food patterns vary with individual needs, tastes, habits, living situations, and energy demands. People who eat nutritionally balanced meals spread evenly throughout the day can usually work more efficiently and sustain a more even energy supply.

Changing Food Environment

Our food environment has been rapidly changing in recent years. American food habits may have deteriorated in some ways, with a heightened reliance on fast, processed, and prepackaged foods. Despite a plentiful food supply, surveys give evidence of malnutrition in all segments of the population. Nurses and other health care professionals have an important responsibility to observe patients' food intake carefully. However, in general, Americans are recognizing the relationship between food and health. Even fast-food restaurants are beginning to respond to their customers' desires for lower-fat, health-conscious alternatives to the traditional fare. Other chain, family, and university restaurants are developing and testing similar patterns in their new menu items. More than ever, Americans are being selective about what they eat. Guided by the U.S. Food and Drug Administration's nutrition labels, shoppers' choices indicate an increased awareness of nutritional values.

SUMMARY

- Good food and key nutrients are essential to life and health.
- In our changing world, an emphasis on health promotion and disease prevention by reducing health risks has become a primary health goal.
- The importance of a balanced diet for meeting this goal via the functioning of its component nutrients is fundamental. Functions of nutrients include providing energy, building tissue, and regulating metabolic processes.
- Malnutrition exists in the United States in both overnutrition and undernutrition states.
- Food guides that help with the planning of an individualized healthy diet include the DRIs, MyPlate, and the *Dietary Guidelines for Americans*.
- A person-centered approach is best when developing individual dietary recommendations that take personal factors into account.

CRITICAL THINKING QUESTIONS

1. What is the current U.S. national health goal? Define this goal in terms of health, wellness, and the differences between traditional and preventive approaches to health.
2. Why is a balanced diet important? List and describe some signs of good nutrition.
3. What are the three basic functions of foods and their nutrients? Describe the general roles of nutrients with regard to the following: (1) the main nutrients for each function and (2) other contributing nutrients.
4. With regard to both purpose and use, compare the DRIs with the MyPlate food guidelines.
5. Use the MyPlate guidelines to plan a day's food pattern for a selected person in accordance with the *Dietary Guidelines for Americans.*

CHAPTER CHALLENGE QUESTIONS

True-False

Write the correct statement for each statement that is false.

1. *True or False:* The diet-planning tool MyPlate is available only to health care professionals.
2. *True or False:* The focus of the DRIs is to promote health as opposed to exclusively centering on preventing disease.
3. *True or False:* Malnutrition is not a problem in the United States.

Multiple Choice

1. Nutrients are
   a. chemical elements or compounds in foods that have specific metabolic functions within the body.
   b. whole foods that are necessary for good health.
   c. exclusively energy-yielding compounds.
   d. nourishing foods that are used to cure certain illnesses.
2. All nutrients needed by the body
   a. must be obtained by specific food combinations.
   b. must be obtained by vitamin or mineral supplements.
   c. have only one function and use in the body.
   d. are supplied by a variety of foods in many different combinations.
3. All people throughout life, as indicated by the DRIs, need
   a. the same nutrients in varying amounts.
   b. the same amount of nutrients in any state of health.
   c. the same nutrients at any age in the same amounts.
   d. different nutrients in varying amounts.

Evolve **Please refer to the Students' Resource section of this text's Evolve Web site for additional study resources.**

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FURTHER READING AND RESOURCES

The following organizations are key sources of up-to-date information and research regarding nutrition. Each site has a unique focus and may be helpful for keeping abreast of current topics.

Academy of Nutrition and Dietetics. www.eatright.org

American Society for Nutrition. www.nutrition.org

Dietary Guidelines for Americans. www.health.gov/dietaryguidelines

Food and Agriculture Organization of the United Nations. www.fao.org

Healthy People 2020. http://healthypeople.gov/2020/

National Research Council (National Academies of Science). http://sites.nationalacademies.org/NRC/index.htm

Society for Nutrition Education and Behavior. www.sne.org

USDA Choose My Plate. www.choosemyplate.gov

World Health Organization. www.who.int

Bachman JL, Reedy J, Subar AF, Krebs-Smith SM. Sources of food group intakes among the US population, 2001-2002. *J Am Diet Assoc.* 2008;108(5):804-814.

Despite substantial research and efforts to make recommendations known, Americans do not eat appropriate ratios of food from the recommended food groups. Instead, the average person consumes excess fat and sugar throughout the day.

Reedy J, Krebs-Smith SM. A comparison of food-based recommendations and nutrient values of three food guides: USDA's mypyramid, NHLBI's dietary approaches to stop hypertension eating plan, and Harvard's healthy eating pyramid. *J Am Diet Assoc.* 2008;108(3):522-528.

The authors compare three food guide systems that are regularly referred to in the United States. Although the research used for the basis of each of the three guides varied, the general recommendations are the same.