

CHAPTER 2

Nutrition Guidelines: Tools for a Healthful Diet

THINK About It

- 1 Do you and your friends discuss food and diet?
- 2 Have you ever taken a large dose of a vitamin or mineral supplement?
- 3 Do you eat the same foods most days, or do you prefer a variety of choices?
- 4 What food group makes up the biggest part of your diet?

Visit go.jblearning.com/inseldisco4e



So, you want to be healthier—maybe that’s why you are taking this course! You probably already know that a well-planned diet is a prerequisite of being healthy. Although most of us know that the foods we choose have a major impact on our health, we aren’t always certain about what to choose. Selecting the right foods isn’t any easier when we are bombarded by headlines and advertisements: Eat less fat! Get more fiber! Build strong bones with calcium!

For many Americans, nutrition is simply a lot of hearsay . . . or maybe the latest slogan coined from last week’s news headline. Conversations about nutrition start off with “*They* say you should . . .” or “Now *they* think that . . .” Have you ever wondered who “they” are and why “they” are telling you what to eat or what not to eat?

It’s no secret that a healthy population is a more productive population, so many of our nutrition guidelines come from the federal government’s efforts to improve our overall health; thus the government is one “they.” Many important elements of nutrition policy focus on relieving undernutrition in some population groups. To prevent widespread deficiencies, the government requires food manufacturers to add nutrients to certain foods: iodine to salt; vitamin D to milk; and thiamin, riboflavin, niacin, iron, and folic acid to grains. Dietary standards, such as the Dietary Reference Intakes, make it easier to define adequate diets for large groups of people.

Overnutrition has led to changes in public policy as well. Health researchers have discovered links between diet and obesity, high blood pressure, cancer, and heart disease. As a result, nutritionists suggest that we make informed food choices by reducing our intake of excess calories, sodium, saturated fats, and *trans* fats while being physically active. The public’s desire to know about food items and the larger food supply has led to increased information on food labels. In addition, public education efforts have developed teaching tools such as MyPlate.

New information about diet and health will continue to drive public policy. This chapter explores current dietary standards, guidelines, and diet-planning tools. While you read, think about your diet and how it measures up to current guidelines and standards.

Linking Nutrients, Foods, and Health

We all know that what we eat affects our health. Nutrition science has made significant advancements in identifying essential nutrients and the foods in which they are found. Eating foods with all the essential nutrients prevents nutritional deficiencies such as scurvy (vitamin C deficiency) or pellagra (deficiency of the B vitamin niacin). Many people in the United States are malnourished, but fewer people suffer nutritional deficiencies from dietary inadequacies than from chronic diseases (such as heart disease, cancer, hypertension, and diabetes) that develop from overconsumption, nutrition imbalance, and poor lifestyle choices. Your future health depends on today’s lifestyle choices, which includes what you eat.

Planning How You Will Eat

Living in a high-tech world, we expect immediate solutions to long-term problems. Wouldn’t it be nice if we could avoid the consequences of overeating by taking a pill, drinking a beverage, or getting a shot? As you know, no magic food, nutrient, or drug exists. Instead, we have to rely on healthful foods, exercise, and lifestyle choices to reduce our risk of chronic disease—a task that challenges many Americans.

Quick Bite

Early “Laws of Health”

Galen may be the best-known physician who ever lived. During the second century, Galen expounded his “laws of health”—eat proper foods, drink the right beverages, exercise, breathe fresh air, get enough sleep, have a daily bowel movement, and control your emotions.

Many tools are available to help us select healthful foods to eat. The U.S. Department of Agriculture's MyPlate food guidance system and the Diabetic Exchange Lists are two common and comprehensive tools. Although different, these tools rely on the same core nutrition concepts: adequacy, balance, calorie (energy) control, nutrient density, moderation, and variety. These underlying concepts help to keep the focus of healthy eating on the total diet approach. Let's look at how each concept can shape our eating patterns.

Adequacy

Having an adequate diet means that the foods you choose to eat provide all the essential nutrients, fiber, and energy in amounts sufficient to support growth and maintain health.¹ Many Americans consume more calories than they need while not getting 100 percent of the recommended intake for a number of nutrients. Take, for example, a meal of soda pop, two hard-shell beef tacos, and cinnamon twists. Although this meal provides foods from different food groups, it is high in sugar and fat and is low in many vitamins and minerals that are found in fruit and vegetables. Occasionally skipping fruits and vegetables at a meal will not create a vitamin or mineral deficiency; however, dietary habits that skimp on fruit and vegetables most of the time will provide an overall inadequate diet. Most people could improve their diet adequacy by choosing meals and snacks that are high in vitamins and minerals but low to moderate in energy (calorie) content. Doing so offers important benefits: normal growth and development of children, health promotion for people of all ages, and reduced risk for a number of chronic diseases.²

Balance

A healthful diet requires a balance of food groups (grains, vegetables, fruits, oil, milk, and meat and beans), energy sources (carbohydrates, protein, and fat), and other nutrients (vitamins and minerals). Your diet is balanced if the amount of energy (calories) you eat equals the amount of energy you expend in daily activities and exercise. Your diet also is balanced when the foods you choose to eat provide you with adequate nutrients. The trick is to consume enough, but not too much, from all of the different food groups.

Calorie Control

The challenge is to figure out how to maintain a healthy weight while balancing your optimally healthful diet. This entails identifying the amount of calories you need to maintain or achieve a healthy weight and then choosing an adequate diet that balances the calories you eat with the amount of calories your body uses. The formula for weight maintenance seems simple: if you eat the same amount of calories that you use each day, your weight will stay the same. If you eat more than you use, you will gain weight, and, if you eat less than you use, you will lose weight. In this chapter, we focus on how to control the amount of calories you eat by making food choices that provide the most nutrients per calorie. This is like a lesson on budgeting money: you should demand value for your expenditures. Let's put the concept of calorie control together with nutrient density to see how it works.

Nutrient Density

The Dietary Guidelines Advisory Committee report and the *Dietary Guidelines for Americans, 2010* confirm that many Americans are overweight or obese, yet many of these same people are also undernourished.³ Understanding

nutrient density can help explain how overeating can nevertheless result in undernutrition, and it also can help people make informed food choices.

How does this condition relate to the previously mentioned budget? Just as each of us has a monetary budget—a certain amount of money to spend on things such as food, rent, books, and transportation—in a sense we all have a calorie budget, too. Once you determine how many calories your body uses each day and how to manipulate your calorie expenditure to reach certain health goals, you will be making food choices to match your calorie needs. Every time you eat, you are choosing to spend some of your calorie budget for that day. Those who spend their budget wisely tend to be healthier than those who do not.

The **nutrient density** of food provides a clue to how “healthy” a food is. Nutrient-dense foods are those foods that provide substantial amounts of vitamins and minerals in proportion to relatively few calories.⁴ Foods that are low in nutrient density are foods that supply calories but relatively small amounts of vitamins and minerals, sometimes none at all.⁵ If a food is high in calories but low in vitamins and minerals, we say that food is less nutrient dense than one that has a high vitamin and mineral content compared with its overall calories.

Take, for example, a potato. We can prepare a potato many different ways. We eat baked potatoes, mashed potatoes with toppings, or french fries. Regardless of how it is cooked, the potato is still a potato, but, depending on how it is cooked and what is added to it before we eat it, the nutrient density of that potato changes. The most nutrient-dense form of this potato would be a plain baked potato, which provides the highest amount of vitamins and minerals with relatively few calories. The least nutrient-dense version of this potato is french fries because frying adds a lot more calories without adding more vitamins and minerals. In this case, the proportion of vitamins and minerals is low compared to the overall higher calorie content. French fries are not nutrient dense.

Foods with little or no added sugar or fat are usually nutrient dense. For example, you might decide to eat a pear instead of a handful of jelly beans. Both provide about the same amount of calories. But, by choosing to eat the nutrient-dense pear instead of the jelly beans, you are working toward meeting your daily nutrient needs on a lower energy budget. These choices over time will create a diet that is healthier overall.

Moderation

Not too much or too little—that’s what moderation means. Moderation does not mean that you have to eliminate low nutrient–dense foods from your diet but rather that you can include them occasionally. Moderation also means not taking anything to extremes. Here is an example: You probably have heard that vitamin C has positive health effects, but that doesn’t mean huge doses of this essential nutrient are appropriate for you. It’s also important to remember that substances that are healthful in small amounts can sometimes be dangerous in large quantities. For example, the body needs zinc for hundreds of chemical reactions, including those that support normal growth, development, and immune function. Too much zinc, however, can cause deficiency of another essential mineral, copper, which can lead to impaired immune function. Being moderate in your diet means that you do not restrict or completely eliminate any one type of food, but rather that you fit all types of food into a healthful diet.

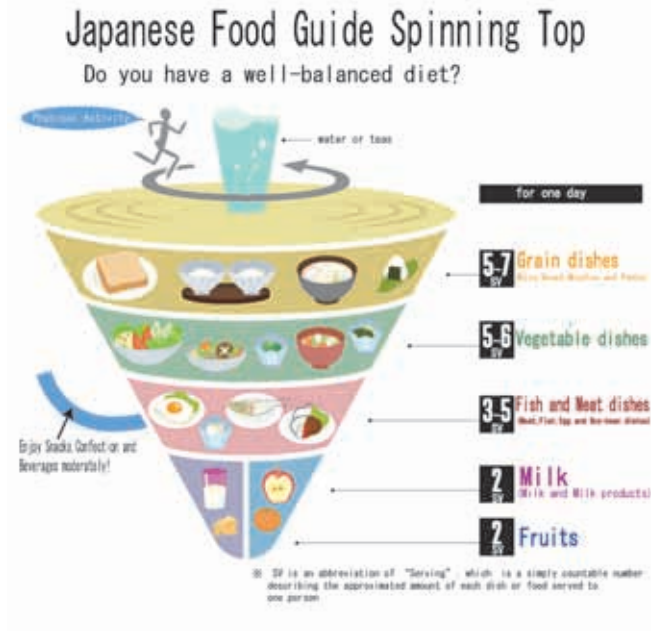
Food guides and their graphics convey the message of moderation by showing suggested amounts of different food groups. Appearing in diverse

nutrient density A description of the healthfulness of foods. Foods high in nutrient density are those that provide substantial amounts of vitamins and minerals and relatively few calories; foods low in nutrient density are those that supply calories but relatively small amounts of vitamins and minerals (or none at all).

Quick Bite

How Much Do Doctors and Dentists Know About Nutrition?

Nutrition training in medical schools and residency programs has been identified as an essential component of medical education by numerous organizations, including the American Society for Clinical Nutrition, the American Medical Student Association, the National Academy of Sciences, and the U.S. Congress, which passed the National Nutritional Monitoring and Related Research Act of 1990 mandating nutrition as a part of the medical school curriculum. Findings indicate, however, that significant variation in nutrition knowledge of U.S. medical students exists and that the amount of time medical schools spend on nutrition education varies significantly, ranging from a mandatory course in nutrition to nutrition education relegated to just a component of another required course.



(a) The Japanese food guide spinning top.
 Source: Courtesy of the Japanese Ministry of Health, Labor and Welfare/USDA.



(b) The Mediterranean diet pyramid.
 Source: © 2009 Oldways Preservation & Exchange Trust

Figure 2.1 Dietary guidelines around the world.

Global differences in environment, culture, socioeconomics, and behavior create significant differences in the foods that make up our diets. Despite this, dietary guidelines from one country to the next show surprising similarities. Whether a country has only 3 guidelines or as many as 23, all share similar basic recommendations.

shapes, food guides from other countries reflect their cultural contexts. Japan, for example, uses the shape of a spinning top. (See **Figure 2.1**)

Variety

How many *different* foods do you eat on a daily basis? Ten? Fifteen? Would it surprise you that one of Japan’s dietary guidelines suggests eating 30 different foods each day?⁶ Now *that’s* variety!

Variety means including a lot of different foods in the diet: not just different food groups, such as fruits, vegetables, and grains but also different foods from within each group. Eating two bananas and three carrots each and every day may give you the minimum number of recommended daily servings for fruits and vegetables, but it doesn’t add much variety.

Variety is important for a number of reasons. Eating a variety of fruits, for example, will provide a broader mix of vitamins, minerals, and phytochemicals than just including one or two fruits. Choosing a variety of protein sources will give you a different balance of fats and other nutrients. Variety can add interest and excitement to your meals over and above merely preventing boredom with your diet. Perhaps most important, variety in your diet helps ensure that you get all the nutrients you need. Studies have shown that people who have varied diets are more likely to meet their overall nutrient needs.⁷

Remember, there are no magic diets, foods, or supplements. Instead, your overall, long-term food choices can bring you the benefits of a healthful diet.

THINK About It 3

A healthful diet is something you create over time; it is not the way you eat on any given day. Using the principles of adequacy, balance, calorie (energy) control, nutrient density, moderation, and variety will help you attain and achieve healthy eating habits, which, in turn, will contribute to your overall healthy lifestyle. Let's take a look at some general guidance for making those food choices.

Key Concepts *Food and nutrient intake play a major role in health and risk of disease. For most Americans, overnutrition is more of a problem than undernutrition. The diet-planning principles of adequacy, balance, calorie (energy) control, nutrient density, moderation, and variety are important concepts in choosing a healthful diet.*

Dietary Guidelines

To help citizens improve overall health, many countries develop dietary guidelines—simple, easy-to-understand statements about food choices. Dietary guidelines are used to develop educational materials and aid policymakers in designing and carrying out nutrition-related programs.

A Brief History of the *Dietary Guidelines for Americans*

In 1980 the **U.S. Department of Agriculture (USDA)** and the **U.S. Department of Health and Human Services (DHHS)** jointly released the first edition of the *Dietary Guidelines for Americans*. Revised guidelines have been released every 5 years as scientific information about links between diet and chronic disease is updated. The ultimate goal of the *Dietary Guidelines for Americans* is to improve the health of our nation's current and future generations by facilitating and promoting healthy eating and physical activity choices so that these behaviors become a way of life for all individuals.⁸

The *Dietary Guidelines for Americans, 2010*

The *Dietary Guidelines for Americans, 2010* offers a roadmap intended to guide personal choices and help individuals make informed food and activity decisions. The result of a systematic, evidence-based review of the scientific literature, the *Dietary Guidelines for Americans, 2010* is based on what experts have determined to be the best advice for Americans to reduce their risk for chronic diseases and reduce the prevalence of overweight and obesity through improved nutrition and physical activity. The *Guidelines* are the cornerstone of federal nutrition policy and education. They are used to develop educational materials and to aid in the design and implementation of nutrition-related programs, such as the National School Lunch Program and Meals on Wheels. The *Dietary Guidelines for Americans* serves as the basis for nutrition messages and consumer materials developed by nutrition educators and health professionals for the general public.⁹

Lifestyle choices, including a poor diet and lack of physical activity, are the most important contributors to the overweight and obesity epidemic that is currently affecting men, women, and children throughout the United States. Even in individuals who are not overweight, a poor diet and physical inactivity are well-known to be associated with the major causes of morbidity and mortality. Currently, the number of Americans who are overweight or obese is at an all-time high, and, as a consequence, the risk for various chronic diseases also is on the rise. In an effort to address this growing problem, the *Dietary Guidelines for Americans, 2010* focuses on the integration of government, agriculture, health care, business, educators, and communities working together to encourage individuals to make healthy lifestyle changes.¹⁰

U.S. Department of Agriculture

(USDA) The government agency that monitors the production of eggs, poultry, and meat for adherence to standards of quality and wholesomeness. The USDA also provides public nutrition education, performs nutrition research, and administers the WIC program.

U.S. Department of Health and Human Services (DHHS)

The principal federal agency responsible for protecting the health of all Americans and providing essential human services. The agency is especially concerned with those Americans who are least able to help themselves.

Dietary Guidelines for Americans,

2010 The *Guidelines* are the foundation of federal nutrition policy and is jointly developed by the U.S. Department of Agriculture (USDA) and the Department of Health and Human Services (DHHS). These science-based guidelines are intended to reduce the number of Americans who develop chronic diseases such as hypertension, diabetes, cardiovascular disease, obesity, and alcoholism.

The main objective of the *Guidelines* is to encourage Americans to balance calorie intake with physical activity to manage weight. This means helping Americans make the choices they need to eat a healthier diet by promoting the consumption of more vegetables, fruits, whole grains, fat-free and low-fat dairy products, and seafood and foods with less sodium, saturated and *trans* fats, added sugars, and refined grains and emphasizing the importance of daily physical activity.

The two overarching concepts in the *Dietary Guidelines for Americans, 2010* are:

- *Maintain calorie balance over time to achieve and sustain a healthy weight.* To decrease the number of overweight and obese children and adults, many Americans would benefit from a decrease in calorie consumption and an increase in calorie expenditure each day.
- *Focus on consuming nutrient-dense foods and beverages.* An eating pattern that frequently includes foods that are low in nutrients and high in calories (unhealthy) will often take the place of more nutrient-dense (healthier) foods in one's diet. In a healthy eating pattern, the majority of foods should be those foods and beverages that have a high nutrient content; foods with a low nutrient density should be limited.

These two overarching concepts form the basis of the *Dietary Guidelines for Americans, 2010*. The chapters include 23 Key Recommendations for the general population as well as additional Key Recommendations for specific population groups, such as women who are pregnant. The following is a review of the concepts and recommendations from each chapter of the *Dietary Guidelines for Americans, 2010*. You can access the full report at <http://www.dietaryguidelines.gov>.

Balancing Calories to Manage Weight

Being successful at maintaining a healthy body weight requires a balance between the amount of calories you eat and the amount of calories you expend every day. Participating in physical activity on a regular basis also helps make it easier for you to maintain a healthy weight. The *2008 Physical Activity Guidelines for Americans* suggests that adults should do the equivalent of 150 minutes of moderate-intensity aerobic activity each week—that's an average of only 30 minutes a day, 5 days a week. For children and adolescents age 6 years or older, the recommendation is 60 minutes or more of physical activity per day.¹¹

The environment in which many Americans now live, work, learn, and play may also be a roadblock for many people trying to achieve or maintain a healthy body weight. An **obesogenic environment** is a significant contributor to America's obesity epidemic because it affects both sides of the calorie balance equation.¹² In our modern lifestyle, the availability of high-calorie, palatable, inexpensive food is coupled with many mechanized labor-saving devices. The result is that we live in an environment that often promotes overeating while at the same time discouraging physical activity.

obesogenic environment

According to the *Dietary Guidelines for Americans, 2010*, an environment that promotes overconsumption of calories and discourages physical activity.

Key Recommendations

The following Key Recommendations are intended to help each of us balance calories to manage weight:

- Prevent and/or reduce overweight and obesity through improved eating and physical activity behaviors.

- Control total calorie intake to manage body weight. For people who are overweight or obese, this will mean consuming fewer calories from foods and beverages.
- Increase physical activity and reduce time spent in sedentary behaviors.
- Maintain appropriate calorie balance during each stage of life—childhood, adolescence, adulthood, pregnancy and breastfeeding, and older age.

Foods and Food Components to Reduce

This chapter of the *Dietary Guidelines for Americans, 2010* focuses on several foods and food components that Americans typically consume in excess. These foods/food components include sodium, solid fats, added sugars, and refined grains. Consistently eating too much of these foods/food components may increase the risk of certain chronic diseases, such as cardiovascular disease, diabetes, and certain types of cancer. In addition, when these foods/food components are a regular part of a person's diet, they tend to replace more nutrient-dense foods in the diet, making it even more difficult to meet recommended nutrient and calorie levels.

Key Recommendations

The following Key Recommendations are intended to help each of us reduce our intake of certain foods and food components:

- Reduce daily sodium intake to less than 2,300 milligrams (approximately 1 teaspoon) and further reduce intake to 1,500 milligrams among persons who are 51 or older and those of any age who are African American or have hypertension, diabetes, or chronic kidney disease. The 1,500-milligram recommendation applies to about half of the U.S. population, including children and the majority of adults.
- Consume less than 10 percent of calories from saturated fatty acids by replacing them with monounsaturated and polyunsaturated fatty acids.
- Consume less than 300 milligrams per day of dietary cholesterol.
- Keep *trans* fatty acid consumption as low as possible by limiting foods that contain synthetic sources of *trans* fats, such as partially hydrogenated oils, and by limiting other solid fats.
- Reduce the intake of calories from solid fats and added sugars.
- Limit the consumption of foods that contain refined grains, especially refined-grain foods that contain solid fats, added sugars, and sodium.
- If alcohol is consumed, it should be consumed in moderation—up to one drink per day for women and two drinks per day for men—and only by adults of legal drinking age.

Foods and Nutrients to Increase

In this chapter of the *Dietary Guidelines for Americans, 2010*, the focus is on food choices that many Americans should adopt to move toward more healthful eating. In the United States, intakes of vegetables, fruits, whole grains, milk and milk products, and oils are lower than recommended. As a result, dietary intakes of several nutrients, such as potassium, dietary fiber, calcium, and vitamin D, are low enough to be of public concern for both adults and children. Choosing healthful foods that provide these nutrients has been found to aid in preventing disease and be beneficial for overall well-being.

Keep in mind that recommendations for a healthy eating pattern will generally group foods based on commonalities in nutrients provided, their effects on health, and how the foods are viewed and used by consumers. When trying to adopt the following recommendations as part of a healthy eating pattern, it is important that you also consider the recommendations from the previous section to help ensure you are staying within your calorie needs. Examples of the health benefits from adopting the Key Recommendations, as well as tips for implementing them, can be found in **Table 2.1**.

Key Recommendations

The following Key Recommendations are intended to help each of us increase consumption of particular foods and nutrients:

- Increase vegetable and fruit intake.
- Eat a variety of vegetables, especially dark-green and red and orange vegetables and beans and peas.
- Consume at least half of all grains as whole grains. Increase whole-grain intake by replacing refined grains with whole grains.
- Increase intake of fat-free or low-fat milk and milk products, such as milk, yogurt, cheese, or fortified soy beverages.
- Choose a variety of protein foods, which include seafood, lean meat and poultry, eggs, beans and peas, soy products, and unsalted nuts and seeds.
- Increase the amount and variety of seafood consumed by choosing seafood in place of some meat and poultry.

Table 2.1 2010 Dietary Guidelines for Americans: Benefits, Behaviors, and Tips

Dietary Guideline Recommendation	Benefits to Your Health	Goals or Behaviors That Could Make You Healthier	How-to Tips
Control total calorie intake to manage body weight.	<ul style="list-style-type: none"> • Helps you to achieve and sustain a healthy weight. • Benefits your physical health by improving blood pressure. • Benefits your physical health by improving your blood cholesterol levels. • Benefits your physical health by improving your blood sugar levels. • Improves your energy level. • Improves your physical mobility. • Improves your overall general mood and self-confidence. 	<ul style="list-style-type: none"> • Consume foods and drinks to meet, not exceed, calorie needs. • Plan ahead to make better food choices. • Track food and calorie intake. • Reduce portion sizes, especially of high-calorie foods. • Cook and eat more meals at home, instead of eating out. • Choose healthy options when eating out. 	<ul style="list-style-type: none"> • Know your calorie needs. • Prepare and pack healthy snacks at home to be eaten at school or work. • Track and evaluate what you eat using a food journal or an online food planner. • Pay attention to feelings of hunger. Eat only until you are satisfied, not full. • Limit eating while watching television, which often leads to overeating. • Choose smaller plates and smaller portions. • To feel satisfied with fewer calories, replace large portions of high-calorie foods with lower-calorie foods, like vegetables and fruits. • Cook and eat at home more often. • When eating out, choose a smaller size option or take home part of your meal. • Choose dishes that include vegetables, fruits, and/or whole grains, and avoid choosing foods with the following words: creamy, fried, breaded, battered, or buttered.

Table 2.1 2010 Dietary Guidelines for Americans: Benefits, Behaviors, and Tips (Continued)

Dietary Guideline Recommendation	Benefits to Your Health	Goals or Behaviors That Could Make You Healthier	How-to Tips
Increase physical activity and reduce time spent in sedentary behaviors.	<ul style="list-style-type: none"> • Helps to control your weight. • Promotes psychological well-being. • Reduces feelings of pressure and anxiety. • Helps reduce your risk for chronic diseases such as diabetes, metabolic syndrome, high blood pressure, and some cancers. • Helps build and maintain healthy bones, muscles, and joints. • Improves your ability to do daily activities. • Helps older adults become stronger and better able to move about without falling. • Increases your chances of living longer. 	<ul style="list-style-type: none"> • Limit screen time. • Be more active daily. • Avoid couch time. Some physical activity is better than none. • Slowly build up the amount of physical activity you choose. 	<ul style="list-style-type: none"> • Limit the amount of time you spend watching television or using other media such as computers and video games. • Pick activities you like and that fit into your life. • Be active with family and friends. Having a support network can help you stay active. • Keep track of your physical activity and gradually increase it to meet the recommendations of the <i>2008 Physical Activity Guidelines for Americans</i>. • Start by being active for longer each time you exercise, and then do more by exercising more often. • Adults should do the equivalent of 150 minutes of moderate-intensity aerobic activity each week.
Increase vegetable and fruit intake.	<ul style="list-style-type: none"> • Eating vegetables and fruits as part of a reduced-calorie diet can be of benefit to your body weight. • Is associated with a decreased risk for many chronic diseases such as cardiovascular disease and many cancers. • Contributes to healthy aging. 	<ul style="list-style-type: none"> • Eat five or more servings of vegetables and fruit daily, made up of a variety of choices. 	<ul style="list-style-type: none"> • Add dark-green, red, and orange vegetables to soups, stews, casseroles, and stir-fries and other main and side dishes. • Add beans or peas to salad, soups, and side dishes, or serve as a main dish. • Have raw, cut-up vegetables and fruit handy for a quick side dish, snacks, salad, or desserts. • When eating out, choose a vegetable as a side dish.
Increase intake of fat-free or low-fat milk and milk products, such as milk, yogurt, cheese, or fortified soy beverages.	<ul style="list-style-type: none"> • Milk and milk products contribute many nutrients to the diet, including calcium and vitamin D, which help to build and maintain strong bones and teeth. • Adequate milk intake is associated with decreased chance of developing metabolic syndrome and high blood pressure. 	<ul style="list-style-type: none"> • Choose two to three servings of low-fat dairy products every day. • Replace higher-fat milk and milk products with lower-fat options. 	<ul style="list-style-type: none"> • Drink fat-free (skim) or low-fat (1%) milk. • When drinking beverages such as cappuccino or latte, request fat-free or low-fat milk. • When recipes call for sour cream, substitute plain fat-free or low-fat yogurt.

(Continues)

Table 2.1 2010 Dietary Guidelines for Americans: Benefits, Behaviors, and Tips (Continued)

Dietary Guideline Recommendation	Benefits to Your Health	Goals or Behaviors That Could Make You Healthier	How-to Tips
Limit the consumption of foods that contain refined grains and added sugars.	<ul style="list-style-type: none"> Eating foods that contain whole grains offers a good source of antioxidants such as vitamin E, magnesium, iron, and fiber to your diet. Eating foods that contain fiber helps lower blood cholesterol levels, control blood glucose levels for people with diabetes, and causes a feeling of satiety. A diet high in sugar is associated with being overweight/obese. 	<ul style="list-style-type: none"> Increase whole-grain intake. Consume at least half of all grains as whole grains. Whenever possible, replace refined grains with whole grains. Choose foods and drinks with added sugars or caloric sweeteners (sugar-sweetened beverages) less frequently. Drink more water. 	<ul style="list-style-type: none"> Choose 100 percent whole-grain breads, crackers, rice, and pasta. Use the Nutrition Facts label to choose whole grains that are a good or excellent source of dietary fiber. Eat fewer refined grain products, such as cakes, cookies, other desserts, and pizza. Replace white bread, rolls, bagels, muffins, pasta, and rice with whole-grain versions. To increase fiber in your diet, choose foods such as oat bran, barley, kidney beans, fruits, vegetables, wheat bran, and whole grains. To increase insoluble fiber in your diet, choose foods such as wheat bran, vegetables, and whole grains. Drink few or no regular sodas, sports drinks, energy drinks, and fruit drinks. Eat less cake, cookies, ice cream, other desserts, and candy. Choose water, fat-free milk, 100 percent fruit juice, or unsweetened tea or coffee as drinks rather than sugar-sweetened drinks.
Keep trans fatty acid consumption as low as possible.	<ul style="list-style-type: none"> Eating a diet that includes saturated fat, <i>trans</i> fat, and dietary cholesterol raises low-density lipoprotein (LDL), or “bad” cholesterol, levels, which increases the risk of coronary heart disease (CHD). 	<ul style="list-style-type: none"> Be aware of the most likely sources of <i>trans</i> fat in your diet, such as many pastry items and donuts, deep-fried foods, many types of snack chips, cookies, and crackers. Choose foods and drinks with added sugars or caloric sweeteners (sugar-sweetened beverages) less frequently. Drink more water. 	<ul style="list-style-type: none"> When using spreads, choose soft margarines with zero <i>trans</i> fats made from liquid vegetable oil, rather than stick margarine or butter. Use vegetable oils such as olive, canola, corn, or sunflower oil rather than solid fats (butter, stick margarine, shortening, lard). Check the Nutrition Facts label to choose foods with little or no saturated fat and no <i>trans</i> fat. Limit foods that contain partially hydrogenated oils and other solid fats.
If alcohol is consumed, it should be consumed in moderation.	<ul style="list-style-type: none"> Excessive drinking has no benefits, and the health and social hazards of heavy alcohol intake are numerous and well known. 	<ul style="list-style-type: none"> If you are of legal drinking age you should drink alcoholic beverages in moderation. Avoid alcohol in situations that can put you at risk. 	<ul style="list-style-type: none"> Limit alcohol to no more than one drink per day for women and two drinks per day for men. Avoid excessive (heavy or binge) drinking. Avoid alcohol if you are pregnant or may become pregnant.

Table 2.1

2010 Dietary Guidelines for Americans: Benefits, Behaviors, and Tips (Continued)

Dietary Guideline Recommendation	Benefits to Your Health	Goals or Behaviors That Could Make You Healthier	How-to Tips
Follow food safety recommendations when preparing and eating foods to reduce the risk of foodborne illnesses.	<ul style="list-style-type: none"> Prevents foodborne illness. 	<ul style="list-style-type: none"> Learn proper food handling techniques. When in doubt, throw it out. Cook food to a safe temperature. Store food safely. 	<ul style="list-style-type: none"> Clean: Wash hands, utensils, and cutting boards before and after contact with raw meat, poultry, seafood, and eggs. Separate: Keep raw meat and poultry apart from foods that won't be cooked. Cook: Use a food thermometer. Chill: Chill leftovers and takeout foods within 2 hours and keep the refrigerator at 40 degrees Fahrenheit or below.

Source: Modified from US Department of Health and Human Services, US Department of Agriculture. *Dietary Guidelines for Americans, 2010*. 7th ed, page 63. Washington, DC: US Government Printing Office, 2010.

- Replace protein foods that are higher in solid fat with choices that are lower in solid fats and calories and/or are sources of oils.
- Use oils to replace solid fats where possible.
- Choose foods that provide more potassium, dietary fiber, calcium, and vitamin D, which are nutrients of concern in American diets. These foods include vegetables, fruits, whole grains, and milk and milk products.

Recommendations for Specific Population Groups

Within the “Foods and Nutrients to Increase” chapter, unique recommendations for specific population groups are described. These recommendations are designed to improve the food choices and health outcomes of certain individuals, such as pregnant and lactating women and older adults who have specific nutritional needs. The recommendations are as follows:

- Women capable of becoming pregnant
 - Choose foods that supply heme iron, which is more readily absorbed by the body; additional iron sources; and enhancers of iron absorption, such as vitamin C–rich foods.
 - Consume 400 micrograms per day of synthetic folic acid (from fortified foods and/or supplements) in addition to food forms of folate from a varied diet.
- Women who are pregnant or breastfeeding
 - Consume 8 to 12 ounces of seafood per week from a variety of seafood types.
 - Due to their methyl mercury content, limit white (albacore) tuna to 6 ounces per week, and do not eat the following four types of fish: tilefish, shark, swordfish, and king mackerel.
 - If pregnant, take an iron supplement as recommended by an obstetrician or other healthcare provider.
- Individuals age 50 years or older
 - Consume foods fortified with vitamin B₁₂, such as fortified cereals, or dietary supplements.

Building Healthy Eating Patterns

The *Dietary Guidelines for Americans, 2010* also shows you how the recommendations and principles described in the previous chapters can be combined

into a healthy overall eating pattern. Culture, ethnicity, tradition, personal preferences, food cost, and food availability are all factors people consider when creating the way they choose to eat. Americans have flexibility in the choices they make when forming their own healthy eating patterns. Americans also have access to established eating plans, such as the USDA Food Patterns and DASH Eating Plan, to help assist in such efforts.

In addition, this chapter focuses on eating patterns that prevent foodborne illness and identifies how the four basic food safety principles—*clean*, *separate*, *cook*, and *chill*—work together to reduce the risk of foodborne illnesses.

Key Recommendations

The following Key Recommendations are intended to help each of us build healthy eating patterns:

- Select an eating pattern that meets nutrient needs over time at an appropriate calorie level.
- Account for all foods and beverages consumed and assess how they fit within a total healthy eating pattern.
- Follow food safety recommendations when preparing and eating foods to reduce the risk of foodborne illnesses.

Helping Americans Make Healthy Choices

This chapter focuses on two important factors. The first is that people make choices about what to eat and how physically active they will be every day. Second, all elements of society, including individuals and families, communi-

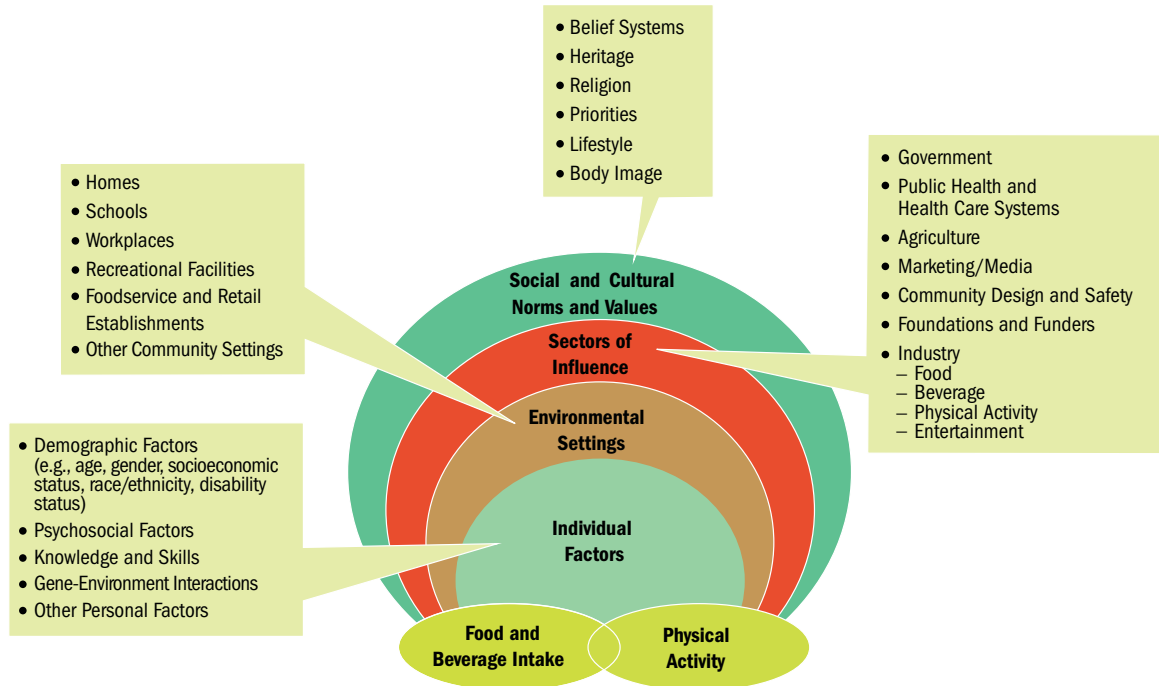


Figure 2.2 A social ecological framework for nutrition and physical activity decisions.

Sources: US Department of Health and Human Services and US Department of Agriculture. *Dietary Guidelines for Americans, 2010*. 7th ed, page 56. Washington, DC: US Government Printing Office; 2010; Adapted from Centers for Disease Control and Prevention, Division of Nutrition, Physical Activity, and Obesity. *State Nutrition, Physical Activity and Obesity (NPAO) Program: Technical Assistance Manual*. January 2008, page 36. Accessed 4/21/10. http://www.cdc.gov/obesity/downloads/TA_Manual_1_31_08.pdf; Institute of Medicine. *Preventing Childhood Obesity: Health in the Balance*. Page 85. Washington, DC: National Academies Press; 2005; and Story M, Kaphingst KM, Robinson-O'Brien R, Glanz K. Creating healthy food and eating environments: policy and environmental approaches. *Annu Rev Public Health*. 2008;29:253–272.

ties, business and industry, and various levels of government, should have a positive and productive role in the efforts to make America healthy.¹³ The *Dietary Guidelines for Americans, 2010* employs the social ecological model (see **Figure 2.2**) as a tool to illustrate how all elements of society combine to shape an individual's food and physical activity choices. As a result, they ultimately influence the choices people make every day about what they will eat and drink and what their daily activity will be.¹⁴

This chapter also includes the *2010 Dietary Guidelines'* Call to Action, which includes three guiding principles:

1. Ensure all Americans have access to nutritious foods and opportunities for physical activity.
2. Facilitate individual behavior change through environmental strategies.
3. Set the stage for lifelong healthy eating, physical activity, and weight management behaviors.

The *Dietary Guidelines for Americans, 2010* (see **Figure 2.3**) also provides resources that can be used in developing policies, programs, and educational materials. These include:

- Guidelines for Specific Population Groups
- Key Consumer Behaviors and Potential Strategies for Professionals to Use
- Food Safety Principles and Guidance for Consumers
- Using the Food Label to Track Calories, Nutrients, and Ingredients

How to Incorporate the Dietary Guidelines into Your Daily Life

Think about your diet and consider your overall food intake to determine whether it is consistent with the *Dietary Guidelines for Americans, 2010*. Choose more fruits, vegetables, and whole grains to make sure you are getting all the nutrients you need while lowering your intake of saturated fat, *trans* fat, and cholesterol. Eat fewer high-fat toppings and fried foods to balance your energy intake and expenditure. Exercise regularly. Use the extra things—sugar, salt, and alcohol—in moderation. Drink water more often than soft drinks, and, if you choose to drink alcohol at all, use caution. By using the *Dietary Guidelines* as your roadmap for finding a healthier way of eating, you may not only find it easier to meet your nutrition needs, but you also will be protecting your health and achieving or maintaining a healthy weight along the way. Table 2.1 offers suggestions of changes you can make in your own diet or lifestyle. Pick one or two of these suggestions, or come up with some simple changes of your own, to try to incorporate the *Dietary Guidelines for Americans, 2010* into your daily life. **Table 2.2** gives a summary of daily limits or targets for a number of nutrients addressed in the *Dietary Guidelines*.

Canada's Guidelines for Healthy Eating

Promoting healthy eating habits among Canadians has been a priority of Health Canada for many years. Health Canada is the federal department responsible for helping the people of Canada maintain and improve their health. In the 1980s, a high priority was given to developing a single set of dietary guidelines. The result of this effort was the 1990 *Nutrition Recommendations for Canadians* and *Canada's Guidelines for Healthy Eating*, Canada's first set of positive, action-oriented messages for healthy Canadians over the age of 2.

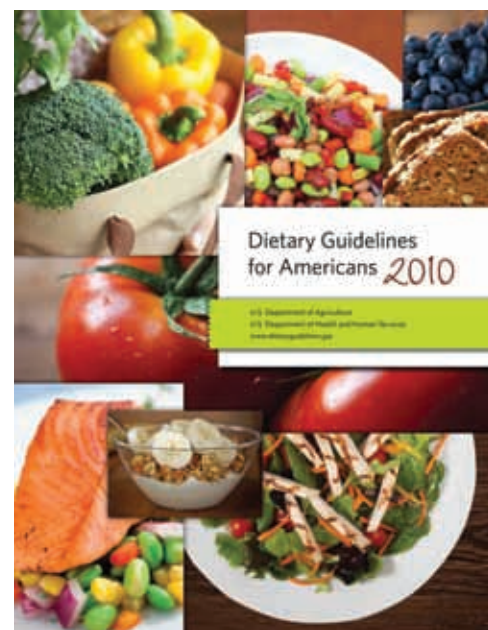


Figure 2.3 *Dietary Guidelines for Americans, 2010*. A revised *Dietary Guidelines for Americans* was released in 2010. **Source:** US Department of Health and Human Services, US Department of Agriculture. *Dietary Guidelines for Americans, 2010*. 7th ed. Washington, DC: US Government Printing Office; 2010.

Quick Bite

How Well Do School Cafeterias Follow Nutrition Guidelines?

About one in three kids and teenagers is obese, and high-fat school lunches may be part of the problem. Until recently, the USDA's nutritional standards for school meals had not been updated in more than 15 years. With the majority of school-age kids and teens getting 30 to 50 percent of their total calories from cafeteria meals each day, it's important that these meals be as healthy as possible. The Healthy, Hunger-Free Kids Act is a plan that will (1) boost the nutrition quality of school lunch by requiring fewer calories and sodium and more fresh fruits, vegetables, and whole grains; (2) expand the number of students enrolled in free- and reduced-cost meals; and (3) put into place a plan to eliminate things like unhealthy vending machines from school cafeterias.



Academy of Nutrition and Dietetics

Total Diet Approach to Communicating Food and Nutrition Information

It is the position of the Academy of Nutrition and Dietetics that the total diet or overall pattern of food eaten is the most important focus of a healthful eating style. All foods can fit within this pattern, if consumed in moderation with appropriate portion size and combined with regular physical activity. The Academy of Nutrition and Dietetics strives to communicate healthful eating messages to the public that emphasize a balance of foods, rather than any one food or meal.

Source: Reproduced from Nitzke S, Freeland-Graves J. Position of The American Dietetic Association: total diet approach to communicating food and nutrition information. *J Am Diet Assoc.* 2007;107:1224–1232.

Quick Bite

Pass Up the Salt

Our bodies require only a few hundred milligrams of sodium each day, but this minimal amount would be difficult to achieve given our current food supply and would be unpalatable, given our acquired taste—so the guideline is to eat less sodium (not more than a teaspoon total) but to not cut down to the level of actual body requirements.

Table 2.2 Daily Targets for Nutrients as Addressed in the *Dietary Guidelines for Americans, 2010*

Nutrient or Food Group	Target for Adults Ages 19–50
Total fat (percent of calories)	20–35
Saturated fat (percent of calories)	< 10
Cholesterol (mg)	< 300
Calcium (mg)	1,000
Potassium (mg)	4,700
Sodium (mg)	< 2,300
Vitamin D (mcg) ^a	15
Fiber (g)	14 g per 1,000 calories (28–34 g/day)
Vegetables and fruit (cups per day)	At least 4–5
Refined grains (oz per day)	> 3
Physical activity	150 minutes of moderate-intensity aerobic activity each week

^a 1 mcg of vitamin D is equivalent to 40 IU.

Source: Data from US Department of Agriculture and US Department of Health and Human Services. *Dietary Guidelines for Americans, 2010*. 7th ed. Washington, DC: US Government Printing Office; December 2010.

The 2007 revision, *Eating Well with Canada's Food Guide*, recommends that Canadians do the following:¹⁵

- Eat at least one dark-green and one orange vegetable each day.
- Enjoy vegetables and fruits prepared with little or no added fat, sugar, or salt.
- Have vegetables and fruits more often than juice.
- Select whole grains for at least half of their grain products.
- Choose grain products that are low in fat, sugar, or salt.
- Drink skim, 1%, or 2% milk each day.
- Select lower-fat milk alternatives.
- Consume meat alternatives, such as beans, lentils, and tofu, often.
- Eat at least two *Food Guide* servings of fish each week.
- Select lean meat and alternatives prepared with little or no added fat or salt.
- Include a small amount of unsaturated fat each day.
- Satisfy thirst with water.
- Limit foods and beverages high in calories, fat, sugar, or salt.
- Be active every day.

Canada's Physical Activity Guide, released in January 2011 by the Canadian Society for Exercise Physiology, recommends that children ages 5 to 11 and youth ages 12 to 17 should get at least 60 minutes of moderate- to vigorous-intensity physical activity daily. Adults ages 18 to 64 and older adults age 65 and older should get at least 150 minutes of moderate- to vigorous-intensity aerobic physical activity per week, in bouts of 10 minutes or more (see <http://www.csep.ca/english/view.asp?x=804> for detailed information).

Dietary guidelines in the United States and Canada address similar issues—less fat; more fruits, vegetables, and grains; less salt; and achieving healthy weights. In addition, both countries have developed graphic depictions of a healthful diet by showing the balance of food groups to be consumed each day.

Key Concepts *Dietary guidelines are statements based on current science that “guide” people toward more healthful choices. The Dietary Guidelines for Americans, 2010 pro-*

vides two overarching themes and 23 Key Recommendations for making food choices that promote good health, a healthy weight, and prevention of disease for healthy Americans age 2 or older. Six additional key recommendations target specific population groups. Behavioral strategies and creating a healthy environment are important for adopting the recommendations in the *Dietary Guidelines for Americans, 2010*. Both the United States and Canada have guidelines that embody the basic principles of balance, variety, and moderation.

From Dietary Guidelines to Planning: What Will You Eat?

For many years, nutritionists and teachers have used **food groups** to illustrate the proper combination of foods in a healthful diet. The foods within each group are apparently similar because of their origins—fruits, for example, all come from the same part of different plants. But from a nutritional perspective, what fruits have in common are the balance of macronutrients and similarities in micronutrient composition. Even so, the foods in one group may differ significantly in their vitamin and mineral profiles. Some fruits (e.g., citrus, strawberries, kiwi) are rich in vitamin C, whereas others (e.g., apples, bananas) have very little. Here again, we can see the importance of variety, of choosing a variety of foods *within* each group, not simply including different food groups.

food groups Categories of similar foods, such as fruits or vegetables.

A Brief History of Food Group Plans

When the U.S. Department of Agriculture published its first dietary recommendations in 1894, specific vitamins and minerals had not even been discovered.¹⁶ The initial guide stressed the importance of consuming enough fat and sugar and energy-rich foods to support daily activity. Because people performed more manual labor in those days, many people were simply not getting enough calories! Canada's Official Food Rules (1942) recommended a weekly serving of liver, heart, or kidney and regular doses of fish liver oils—good sources of vitamins A and D. Later food group plans, including the Basic Four that was popular from the 1950s through the 1970s, focused on fruits, vegetables, grains, dairy products, and meats and their substitutes. The Basic Four was usually illustrated as either a circle or a square with each group having an equal share. The implication was that people should consume equal amounts of food from each group. Nutrition science now tells us that those proportions give us a diet too high in fat and protein for our modern lifestyle and not high enough in carbohydrates and fiber. After the development of the *Dietary Guidelines for Americans* in 1980, the USDA developed a new food guide that would promote overall health and be consistent with the *Dietary Guidelines*. To bring this new food guide and its key messages to the attention of consumers, the colorful Food Guide Pyramid was developed.¹⁷ By law, the *Dietary Guidelines for Americans* is reviewed, updated if necessary, and published every 5 years; thus the current version, the *Dietary Guidelines for Americans, 2010* and MyPlate (see **Figure 2.4**) were created.

MyPlate

MyPlate is the USDA's current icon and the primary food group symbol to accompany the *Dietary Guidelines for Americans, 2010*. As part of the federal government's healthy eating initiative, My Plate is designed to convey the seven key messages from the *Dietary Guidelines for Americans, 2010*: Enjoy food, but eat less; avoid oversized portions; make half your plate fruits and vegetables; drink water instead of sugary drinks; switch to fat-free or low-fat (1%) milk; compare sodium in foods; and make at least half your grains whole grains.

Quick Bite

SuperTracker: My Foods, My Fitness, My Health

MyPlate includes the SuperTracker.

Get your personalized nutrition and physical activity plan. Track your foods and physical activities to see how they stack up. Get tips and support to help you make healthier choices and plan ahead. Visit <https://www.choosemyplate.gov/SuperTracker/default.aspx>.

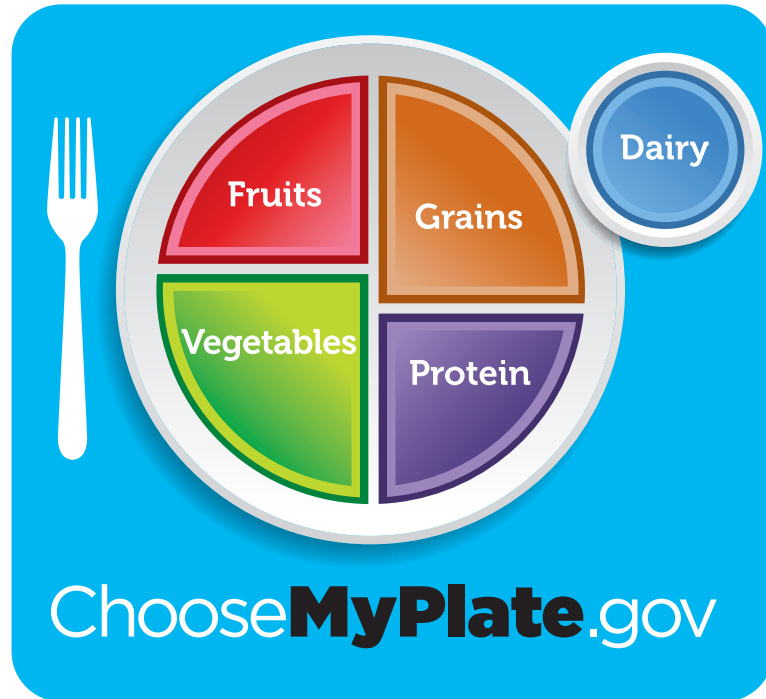


Figure 2.4 **MyPlate.** Released in 2011, MyPlate is an Internet-based educational tool that helps consumers implement the principles of the *Dietary Guidelines for Americans, 2010* and other nutritional standards.
Source: Courtesy of USDA.

MyPlate is an easy-to-understand visual image intended to empower people with the information they need to make healthy food choices and create eating habits consistent with the *Dietary Guidelines for Americans, 2010*. Experts suggest that, because we eat on plates, the design of the MyPlate icon is able to visually convey how much room on a plate each food group should occupy. The goal is for the MyPlate icon to remind people to think about and make better, more balanced food choices.¹⁸ MyPlate uses the image of a dinner plate divided into four sections representing fruits, vegetables, grains, and proteins with a smaller plate (or glass) representing a serving of dairy.

MyPlate is accompanied by a supporting website (<http://www.ChooseMyPlate.gov>). The website provides tools, resources, and practical information on dietary assessment, nutrition education, and other user-friendly nutrition information.¹⁹ Unlike the USDA's former food guide systems, MyPlate does not suggest particular foods or specific serving sizes and does not even mention desserts or sweets. The purpose behind these changes is clear—this food guide is different! It is not intended to tell people what to eat but to empower them to make their own healthy choices and to use the icon as a sensible guide.

Eating Well with Canada's Food Guide

Recommendations to help Canadians select foods to meet energy and nutrient needs while reducing the risk of chronic disease. The *Food Guide* is based on the *Nutrition Recommendations for Canadians* and Canada's Guidelines for Healthy Eating and is a key nutrition education tool for Canadians aged 2 to 3 years and older.

Eating Well with Canada's Food Guide

As science advanced and nutritional concerns changed, Canada's Official Food Rules evolved into *Eating Well with Canada's Food Guide*. (See **Figure 2.5**.) The amounts and types of foods recommended in the *Food Guide* are based on the nutrient reference values of the Dietary Reference Intakes (DRIs). The foods pictured in the *Food Guide* reflect the diversity of foods available in Canada. The *Food Guide* document essentially incorporates both the recommended eating pattern and associated dietary guidance.

The “rainbow” of the *Food Guide* places foods into four groups: Vegetables and Fruit, Grain Products, Milk and Alternates, and Meat and Alternatives. The *Food Guide* describes the kinds of foods to choose from each group. For example, under the Milk and Alternates group, the *Food Guide* suggests, “Drink fortified soy beverages if you do not drink milk.” *Canada’s Food Guide* illustrates that vegetables, fruits, and grains should be the major part of the diet with milk products and meats consumed in smaller amounts.

The *Food Guide* provides a “bar” that shows how many daily servings are recommended from each group for each age group and gives examples of serving sizes. The *Food Guide* also provides specific advice for different ages and stages. Limiting foods and beverages high in calories, fat, sugar, or salt is recommended. Label-reading is recommended, and a list of steps to healthy living is provided. The Health Canada website (<http://www.healthcanada.gc.ca/foodguide>) includes a link to “My Food Guide,” an interactive tool for personalizing the information in the Food Guide.

Using MyPlate or Canada’s Food Guide in Diet Planning

The first step in using MyPlate or *Canada’s Food Guide* for diet planning is to determine the amount of calories you should eat each day. **Table 2.3** shows the recommended amounts of food for three calorie-intake levels. It also will give you an idea of how MyPlate varies with different energy needs. Next, become familiar with the types of food in each group, the number of recommended servings, and the appropriate serving sizes. (For an intuitive guide to serving sizes, see **Table 2.4**.) Finally, plan your meals and snacks using the suggested serving sizes for your appropriate calorie level.

Let’s start to plan a 2,000-calorie diet. Beginning with breakfast, you could plan to have: 1 cup (1 ounce) of ready-to-eat cereal, ½ cup of skim milk, one slice of whole wheat toast with 1 teaspoon of butter, and 1 cup of orange juice.

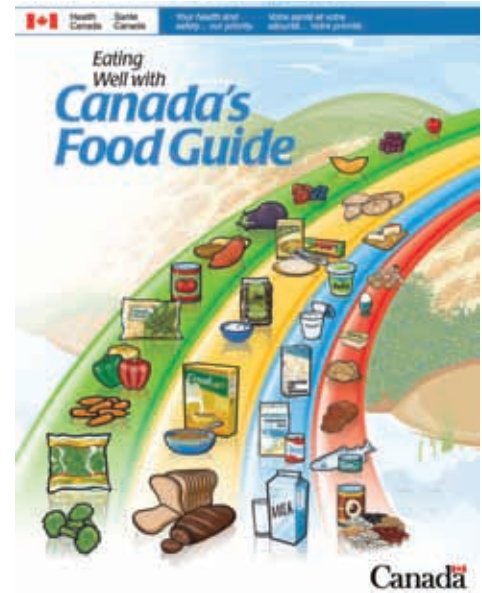


Figure 2.5 *Eating Well with Canada’s Food Guide*. The rainbow portion of *Canada’s Food Guide* sorts foods into groups from which people can make wise food choices.

Source: *Eating Well With Canada’s Food Guide*, Health Canada, 2007. © Reproduced with the permission of the Minister of Public Works and Government Services Canada, 2009.

Table 2.3 MyPlate Suggested Daily Amounts for Three Levels of Energy Intake

Food Group	Energy Intake Level		
	Low (1,400 kcal) ^a	Moderate (2,000 kcal) ^b	High (2,800 kcal) ^c
Grains	5 oz eq	6 oz eq	10 oz eq
Vegetables	1½ cups	2½ cups	3½ cups
Fruits	1½ cups	2 cups	2½ cups
Milk	2 cups	3 cups	3 cups
Meat and beans	4 oz eq	5½ oz eq	7 oz eq
Oils	4 teaspoons	6 teaspoons	8 teaspoons
Empty calories allowed ^d	117 kilocalories	267 kilocalories	426 kilocalories

^a 1,400 kilocalories is about right for many young children.
^b 2,000 kilocalories is about right for teenaged girls, active women, and many sedentary men.
^c 2,800 kilocalories is about right for teenaged boys and many active men.
^d Empty calorie allowance is the remaining amount of calories needed for all food groups, assuming that those choices are fat-free or low-fat and with no added sugars.

Note: Your calorie needs may be higher or lower than those shown. Women may need more calories when they are pregnant or breastfeeding.

Source: US Department of Agriculture. Adapted from MyPlate. <http://www.choosemyplate.gov>. Accessed 6/12/11.

Table 2.4 Playing with MyPlate Portions

Your favorite sports and games can help you visualize MyPlate portion sizes.

GRAINS 1 cup dry cereal 2 ounce bagel ½ cup cooked cereal, rice, or pasta



4 golf balls



1 hockey puck



tennis ball

VEGETABLES 1 cup of vegetables



1 baseball or 1 Rubik's cube

FRUITS 1 medium fruit (equivalent of 1 cup of fruit)



1 baseball

OILS 1 teaspoon vegetable oil 1 tablespoon salad dressing



1 die (1½" size)



1 jacks ball

MILK 1½ ounces of hard cheese ⅓ cup of shredded cheese



6 dice (1½" size)



1 billiard ball or racquetball

MEAT AND BEANS 3 ounces cooked meat 2 tablespoons hummus



1 deck of playing cards



1 ping pong ball

Continue to plan your meals and snack for the rest of the day with the amount of servings you have remaining for each food group. In this case it would be:

Food Group	Total Recommended for 2,000-Calorie Diet	Amount Used at Breakfast	Amount Left for Remainder of the Day
Grains	6 oz eq	2 oz eq	4 oz eq
Vegetables	2½ cups	0	2½ cups
Fruits	2 cups	1 cup	1 cup
Milk	3 cups	½ cup	2½ cups
Meat and beans	5½ oz eq	0	5½ oz
Oils	6 teaspoons	1 teaspoons	5 teaspoons
Discretionary calorie allowance	267 calories	0 calories	267 calories

Keep in mind that what you consider a serving may differ from the sizes defined in MyPlate. Research shows that Americans' serving sizes for common foods such as pasta, cookies, cereal, soft drinks, and french fries have increased significantly.²⁰ Do large portions promote overeating and obesity? (See the FYI feature “Portion Distortion” for a scientific exploration related to this question.)

Sometimes it's difficult to figure out how to account for foods that are mixtures of different groups—lasagna, casseroles, or pizza, for example. Try separating such foods into their ingredients (e.g., pizza contains crust, tomato sauce, cheese, and toppings, which might be meats or vegetables) to estimate the amounts. You should be able to come up with a reasonable approximation. All in all, MyPlate and *Canada's Food Guide* are easy-to-use guidelines that can help you select a variety of foods.

Watch the empty calories, too. Note in Table 2.3 that for a 2,000-calorie food plan 267 calories are unused even when all the other food groups are accounted for. However, this accounting with leftover calories assumes that all food choices are fat-free or low-fat and do not have added sugars. What does this all mean? If you are already in the habit of choosing low-fat and low-sugar options, you have a few calories to play with each day. These calories can be used for a higher-fat choice or for some sugar in your iced tea. But watch out! Those calories get used up quickly. One regular 12-ounce soft drink would take up 150 discretionary calories; an extra tablespoon of dressing on your salad would be 100 calories.

Using the <http://www.ChooseMyPlate.gov> website is easy and informative. You can use it to create a personalized plan, learn healthy eating tips, get weight loss information, plan a healthy menu, and analyze your diet. The website is an excellent tool to help guide you through the necessary steps of putting the *Dietary Guidelines* into practice. You can use it to learn about good nutrition and appropriate physical activity.

Key Concepts *MyPlate is a complete food guidance system based on the Dietary Guidelines for Americans, 2010 and Dietary Reference Intakes to help Americans make healthy food choices and remind them to be active every day. The interactive tools on the <http://www.ChooseMyPlate.gov> website can help you monitor your food choices. Eating Well with Canada's Food Guide illustrates the dietary guidelines for Canadians and the Dietary Reference Intakes. These graphic tools show the appropriate balance of food groups in a healthful diet: more whole grains, vegetables, and fruits and less dairy, meat, and added fats and sugars.*



Portion Distortion

The prevalence of obesity is of increasing concern in the United States. A notable increase in obesity has occurred over the past 20 years. In 2010, no state had an obesity rate less than 20 percent. Thirty-six states had obesity rates greater or equal to 25 percent; 12 of these states (Alabama, Arkansas, Kentucky, Louisiana, Michigan, Mississippi, Missouri, Oklahoma, South Carolina, Tennessee, Texas, and West Virginia) had obesity rates greater than 30 percent.¹

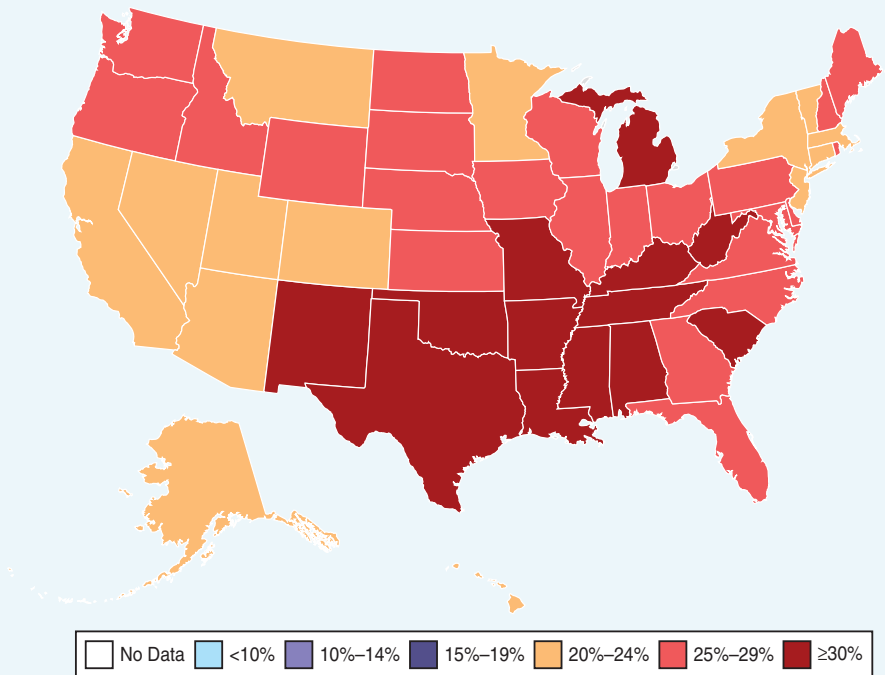
Many factors are contributing to Americans' growing waistlines, but one observation in particular cannot be overlooked: the incidence of obesity has increased in parallel with increasing portion sizes.² In almost every eating situation, we are now confronted by huge portions, which are perceived as "normal" or "a great value." This perception that large portion sizes are appropriate has created an environment of *portion distortion*.³ We find portion distortion in supermarkets, where the number

of larger sizes has increased 10-fold between 1970 and 2000. We find portion distortions in restaurants, where the jumbo-sized portions are consistently 250 percent larger than the regular portions.⁴ We even find portion distortions in our homes, where the sizes of our bowls and glasses have steadily increased and where the surface area of the average dinner plate has increased 36 percent since 1960.⁵ Research shows that people unintentionally consume more calories when faced with larger portions. In addition, research also shows that portion distortion seems to affect the portion sizes selected by young adults and children for some foods.⁶ Consuming larger portion sizes can contribute to positive energy balance, which, over time, leads to weight gain and ultimately may result in obesity.

The phenomenon of portion distortion has the potential to hinder weight loss, weight maintenance, and health improvement efforts. Food and nutrition professionals must develop ways to "undistort" what people perceive to be typical portion sizes and help individuals recognize what is an appropriate amount to eat at a single eating occasion.⁷

To see whether you know how today's portions compare to the portions available 20 years ago, take the interactive portion distortion quizzes on the National Heart, Lung and Blood Institute's Portion Distortion website (<http://hp2010.nhlbi-hin.net/portion>). You can also learn about the amount of physical activity required to burn off the extra calories provided by today's portions.

- Centers for Disease Control and Prevention. U.S. obesity trends: trends by state, 1985–2010. <http://www.cdc.gov/obesity/data/trends.html>. Accessed 11/24/11.
- Schwartz J, Byrd-Bredbenner C. Portion distortion: typical portion sizes selected by young adults. *J Am Diet Assoc.* 2006;106(9):1412–1418.
- Wansink B, van Ittersum K. Portion size me: downsizing our consumption norms. *J Am Diet Assoc.* 2007;7(7):1103–1106.
- Ibid.
- Ibid.
- Schwartz J, Byrd-Bredbenner C. Op. cit.; and Lawhun SA, Starkoff B, Sundararajan S, et al. Influence of larger portion sizes on the diet of overweight children and adolescents. *J Am Diet Assoc.* 2008;108(9):A38.
- Schwartz J, Byrd-Bredbenner C. Op. cit.



Prevalence of obesity.

Source: Centers for Disease Control and Prevention. U.S. obesity trends: trends by state, 1985–2010. <http://www.cdc.gov/obesity/data/trends.html>. Accessed 11/24/11.

Exchange Lists

Another tool for diet planning that uses food groups is the **Exchange Lists**. Like MyPlate, the Exchange Lists divide foods into groups. Diets can be planned by choosing a certain number of servings, or exchanges, from each group each day. The original purpose of the Exchange Lists was to help people with diabetes plan diets that would provide consistent levels of energy and carbohydrates—both of which are essential for dietary management of diabetes. For this reason, foods are organized into groups or lists not only by the type of food (e.g., fruits, vegetables) but also by the amount of macronutrients (carbohydrate, protein, and fat) in each portion. The portions are defined so that each “exchange” has a similar composition. For example, 1 fruit exchange is $\frac{1}{2}$ cup of orange juice, 17 small grapes, 1 medium apple, or $\frac{1}{2}$ cup of applesauce. All these exchanges have approximately 60 kilocalories, 15 grams of carbohydrate, 0 grams of protein, and 0 grams of fat. In the Exchange Lists, starchy vegetables such as potatoes, corn, and peas are grouped with breads and cereals instead of with other vegetables because their balance of macronutrients is more like bread or pasta than carrots or tomatoes.

Figure 2.6 shows the amounts of carbohydrate, protein, fat, and kilocalories in one exchange from each group, along with a sample serving size. For a complete set of the Exchange Lists, go to go.jblearning.com/inseldisco4e.

Exchange Lists Lists of foods that in specified portions provide equivalent amounts of carbohydrate, fat, protein, and energy. Any food in an Exchange List can be substituted for any other without markedly affecting macronutrient intake.

Using the Exchange Lists in Diet Planning

In addition to their use by people with diabetes, Exchange Lists are used in many weight-control programs. Planning a diet using the Exchange Lists is done in much the same manner as using MyPlate. The first step is to become very familiar with the components of each group, the variations in fat content for the dairy and meat lists, and the ways other foods may be included. Then, select the specific meals and snacks to eat throughout the day. A diet plan based on Exchange Lists specifies the number of exchanges to be consumed from each group at each meal. For example, a 1,500-kilocalorie weight-reduction diet plan might have the following meal pattern:

Breakfast: 2 starch, 1 fruit, 1 milk, 1 fat
Lunch: 3 meat, 2 starch, 1 fruit, 1 vegetable, 1 fat
Snack: 1 milk, 1 starch, 1 fat
Dinner: 2 meat, 1 starch, 2 vegetable, 2 fat
Snack: 2 starch, 1 fruit

Using this pattern and a complete set of the Exchange Lists, you could then plan out a day or week of menus. Here's one sample:

Breakfast: $\frac{1}{2}$ cup orange juice, $\frac{3}{4}$ cup corn flakes, 1 cup 2% milk, 1 slice toast, 1 teaspoon margarine
Lunch: 3 ounces cooked hamburger on bun, 1 teaspoon mayonnaise, $\frac{1}{2}$ cup baby carrots, 1 medium apple
Snack: $\frac{3}{4}$ cup low-fat yogurt, $\frac{1}{2}$ bagel with 1 tablespoon cream cheese
Dinner: 2 ounces cooked pork chop, $\frac{1}{2}$ cup rice with 1 teaspoon margarine, $\frac{1}{2}$ cup yellow squash, $\frac{1}{2}$ cup zucchini stir-fried in 1 teaspoon vegetable oil
Snack: 1 toasted English muffin, 1 medium pear

Key Concepts *The Exchange Lists are diet-planning tools that work on the basis of food groups, but define groups specifically in terms of macronutrient (carbohydrate, fat, and protein) content. Individual diet plans can be developed for people who need to control energy or carbohydrate intake, such as for weight control or management of diabetes mellitus.*

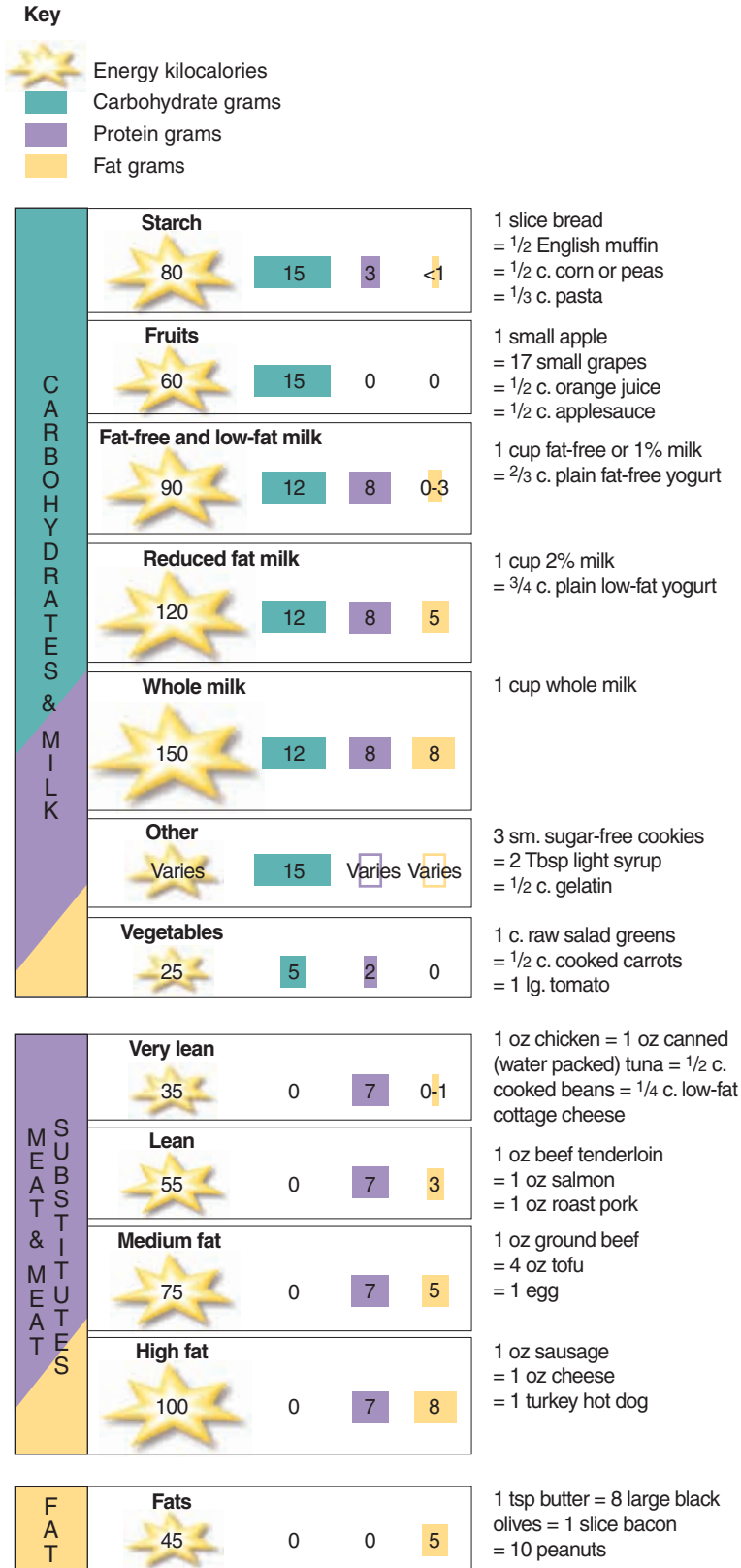


Figure 2.6 Exchange Lists. The Exchange Lists are a widely used system for meal planning for people with diabetes. They also are helpful for people interested in healthy eating and weight control.

Source: Data from *Exchange Lists for Meal Planning*. Alexandria, VA: Academy of Nutrition and Dietetics; 2003.

Recommendations for Nutrient Intake: The DRIs

So far, the tools we have described (*Dietary Guidelines for Americans*, *Eating Well with Canada's Food Guide*, MyPlate, and Exchange Lists) have dealt with whole foods and food groups rather than individual nutrient values; foods—rather than nutrients—are the units that we think about in planning our daily meals and shopping lists. Sometimes, though, we need more specific information about our nutritional needs—a healthful diet is healthful because of the balance of nutrients it contains. Before we can choose foods that meet our needs for specific nutrients, we need to know how much of each nutrient we require daily. This is what dietary standards do—they define healthful diets in terms of specific amounts of the nutrients.

Understanding Dietary Standards

Dietary standards are sets of recommended intake values for nutrients. These standards tell us how much of each nutrient we should have in our diets. In the United States and Canada, the **Dietary Reference Intakes (DRIs)** are the current dietary standards.

Consider the following scenario. You are running a North Pole research center staffed by 60 people. Because they will not be able to leave the site to get meals, you must provide all their food. You must keep the group adequately nourished; you certainly don't want anyone to become ill as a result of a nutrient deficiency. How would you (or the nutritionist you hire) start planning? How can you be sure to provide adequate amounts of the essential nutrients? The most important tool would be a set of dietary standards! Essentially the same scenario faces those who plan and provide food for groups of people in more routine circumstances—the military, prisons, and even schools. To assess nutritional adequacy, diet planners can compare the nutrient composition of their food plans to recommended intake values.

A Brief History of Dietary Standards

Beginning in 1938, Health Canada published dietary standards called Recommended Nutrient Intakes (RNIs). In the United States, the Recommended Dietary Allowances (RDAs) were first published in 1941. By the 1940s, nutrition scientists had been able to isolate and identify many of the nutrients in food. They were able to measure the amounts of these nutrients in foods

All DRI values refer to intakes averaged over time

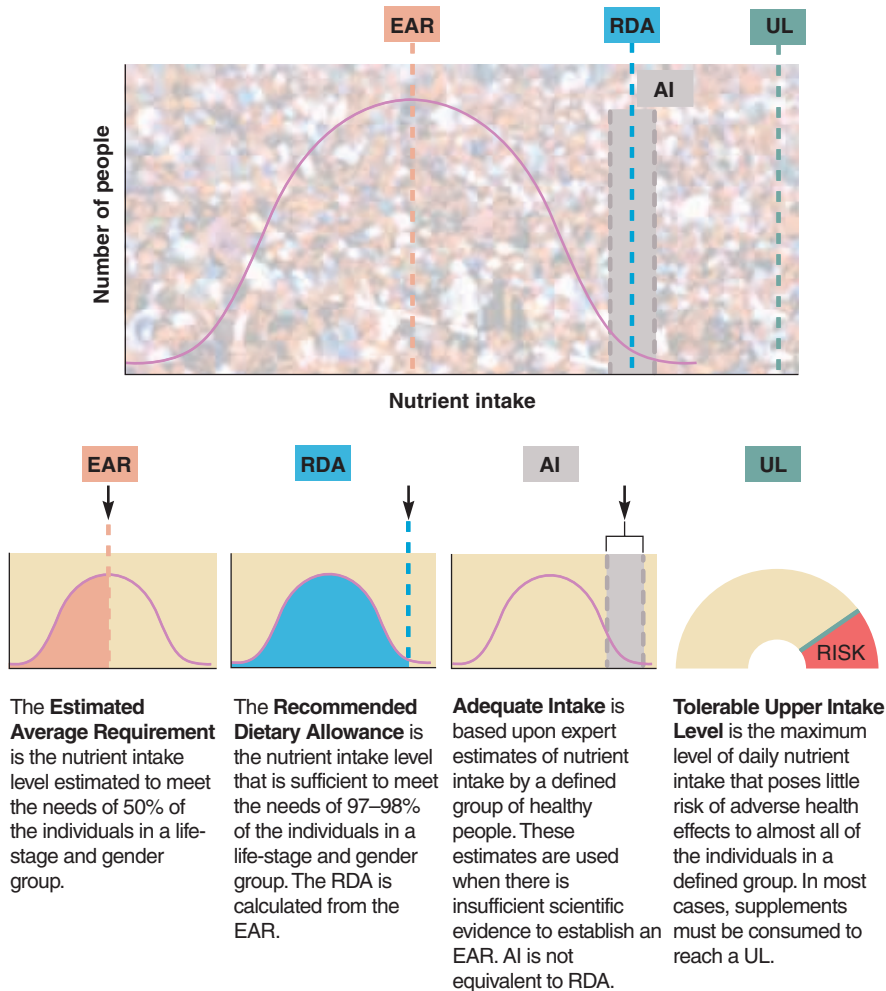


Figure 2.7 Dietary Reference Intakes.

The DRIs are a set of dietary standards that include Estimated Average Requirement (EAR), Recommended Dietary Allowance (RDA), Adequate Intake (AI), and Tolerable Upper Intake Level (UL).

and to recommend daily intake levels. These levels then became the first RNI and RDA values. Committees of scientists regularly reviewed and published revised editions; for example the tenth (and final) edition of the RDAs was published in 1989.

In the mid-1990s, the **Food and Nutrition Board** of the National Academy of Sciences began a partnership with Health Canada to make fundamental changes in the approach to setting dietary standards and to replace the RDAs and RNIs. In 1997, the first set of DRIs was published for calcium, phosphorus, magnesium, vitamin D, and fluoride—nutrients that are important for bone health.

Dietary Reference Intakes

Since the inception of the RDAs and RNIs, we have learned more about the relationships between diet and chronic disease, and nutrient-deficiency diseases have become rare in the United States and Canada. The new DRIs reflect not just intake levels for dietary adequacy but also for optimal nutrition.

The DRIs are reference values for nutrient intakes to be used in assessing and planning diets for healthy people. (See **Figure 2.7**.) The DRIs include four basic elements: Estimated Average Requirement (EAR), Recommended

dietary standards Set of values for recommend intake of nutrients.

Dietary Reference Intakes (DRIs) A framework of dietary standards that include Estimated Average Requirement (EAR), Recommended Dietary Allowance (RDA), Adequate Intake (AI), and Tolerable Upper Intake Level (UL).

Food and Nutrition Board A board within the Institute of Medicine of the National Academy of Sciences. It is responsible for assembling the group of nutrition scientists who review available scientific data to determine appropriate intake levels of the known essential nutrients.

Dietary Allowance (RDA), Adequate Intake (AI), and Tolerable Upper Intake Level (UL). Underlying each value is the definition of a *requirement* as the “lowest continuing intake level of a nutrient that, for a specific indicator of adequacy, will maintain a defined level of nutriture in an individual.”²¹ *Nutriture* refers to the nutritional status of the body, especially with regard to a specific nutrient. In other words, a requirement is the smallest amount of a nutrient you should take in on a regular basis to remain healthy. In the DRI report on macronutrients, two other concepts were introduced: the Estimated Energy Requirement (EER) and the Acceptable Macronutrient Distribution Ranges (AMDRs).²²

Estimated Average Requirement

The **Estimated Average Requirement (EAR)** reflects the amount of a nutrient that would meet the needs of 50 percent of the people in a particular life-stage (age) and gender group. For each nutrient, this requirement is defined using a specific indicator of dietary adequacy. This indicator could be the level of the nutrient or one of its breakdown products in the blood, or the amount of an enzyme associated with that nutrient.²³ The EAR is used to set the RDA, and EAR values also can be used to assess dietary adequacy or plan diets for groups of people.

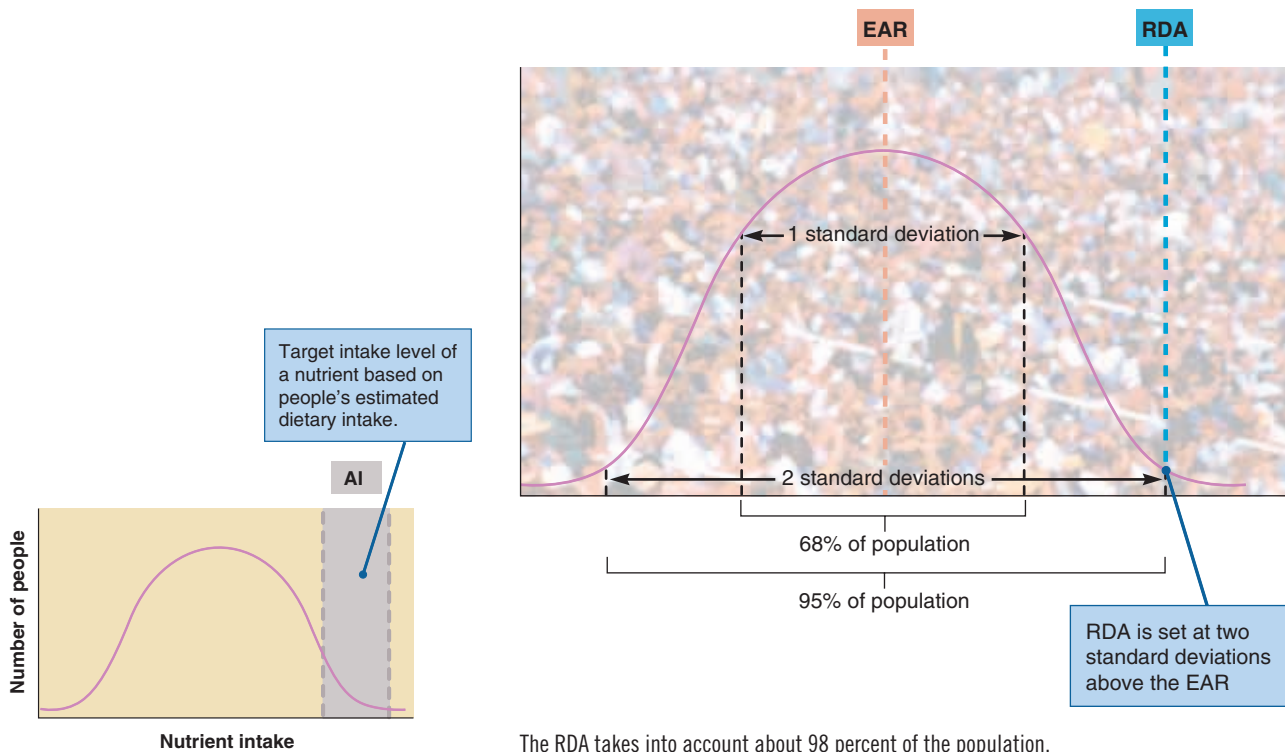
Estimated Average Requirement (EAR)

The intake value that meets the estimated nutrient needs of 50 percent of individuals in a specific life-stage and gender group.

Recommended Dietary Allowance

The Recommended Dietary Allowance (RDA) is the daily intake level that meets the needs of most people (97 to 98 percent) in a life-stage and gender group. The RDA is mathematically determined based on the EAR. A nutrient will not have an RDA value if there are not enough scientific data available to set an EAR value.

People can use the RDA value as a target or goal for dietary intake and make comparisons between actual intake and RDA values. It is important to remember, however, that the RDAs do not define an *individual's* nutrient



The RDA takes into account about 98 percent of the population.

requirements. Your actual nutrient needs may be much lower than average, and, therefore, the RDA would be much more than you need. An analysis of your diet might show, for example, that you consume 45 percent of the RDA for a certain vitamin, but that might be adequate for your needs. Only specific laboratory or other tests can determine a person's true nutrient requirements and actual nutritional status. An intake that is consistently at or near the RDA level is highly likely to be meeting your needs.

Adequate Intake

If not enough scientific data are available to set an EAR level, a value called an **Adequate Intake (AI)** is determined instead. AI values are determined, in part, by observing healthy groups of people and estimating their dietary intake. All the current DRI values for infants are AI levels because there have been too few scientific studies to determine specific requirements in infants. Instead, AI values for infants are usually based on nutrient levels in human breast milk, a complete food for newborns and young infants. Values for older infants and children are extrapolated from human milk and from data on adults. For nutrients with AI instead of RDA values for all life-stage groups (e.g., calcium, vitamin D), more scientific research is needed to better define nutrient requirements of population groups. AI values can be considered target intake levels for individuals.

Tolerable Upper Intake Level

Tolerable Upper Intake Levels (ULs) have been defined for many nutrients. Consumption of a nutrient in amounts higher than the UL could be harmful. The ULs have been developed partly in response to the growing interest in dietary supplements that contain large amounts of essential nutrients. The UL is not to be used as a target for intake, but rather should be a cautionary level for people who regularly take nutrient supplements.

Estimated Energy Requirement

The **Estimated Energy Requirement (EER)** is defined as the energy intake that is estimated to maintain energy balance in healthy, normal-weight individuals. It is determined using an equation that considers weight, height, age, and physical activity. Different equations are used for males and females and for different age groups.

Acceptable Macronutrient Distribution Ranges

Acceptable Macronutrient Distribution Ranges (AMDRs) indicate the recommended balance of energy sources in a healthful diet. These values consider the amounts of macronutrients needed to provide adequate intake of essential nutrients while reducing the risk for chronic disease. The AMDRs are shown in [Table 2.5](#).

Use of Dietary Standards

The most appropriate use of DRIs is for planning and evaluating diets for large groups of people. Remember the North Pole scenario at the beginning of this section? If you had planned menus and evaluated the nutrient composition of foods that would be included and if the average nutrient levels of those daily menus met or exceeded the RDA/AI levels, you could be confident that your group would be adequately nourished. If you had a very large group—thousands of soldiers, for instance—the EAR would be a more appropriate guide.

Dietary standards are also used to make decisions about nutrition policy. The Special Supplemental Food Program for Women, Infants, and Children

Adequate Intake (AI) The nutrient intake that appears to sustain a defined nutritional state or some other indicator of health (e.g., growth rate, normal circulating nutrient values) in a specific population or subgroup. AI is used when there is insufficient scientific evidence to establish an EAR.

Tolerable Upper Intake Levels (ULs) The maximum levels of daily nutrient intakes that are unlikely to pose health risks to almost all of the individuals in the group for whom they are designed.

Estimated Energy Requirement (EER) Dietary energy intake that is predicted to maintain energy balance in a healthy adult of a defined age, gender, weight, height, and level of physical activity consistent with good health.

Acceptable Macronutrient Distribution Ranges (AMDRs) Range of intakes for a particular energy source that are associated with reduced risk of chronic disease while providing adequate intakes of essential nutrients.

Table 2.5 Acceptable Macronutrient Distribution Ranges for Adults

Fat	20–35 percent
Carbohydrate	45–65 percent
Protein	10–35 percent
<i>n</i> -6 polyunsaturated fatty acids	5–10 percent
α -linolenic acid	0.6–1.2 percent

Note: All values are the percentage of total calorie intake.

Source: Data from Institute of Medicine, Food and Nutrition Board. *Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids*. Washington, DC: National Academies Press; 2002.

(WIC), for example, takes into account the DRIs as it provides food or vouchers for food. The goal of this federally funded supplemental feeding program is to improve the nutrient intake of low-income pregnant and breastfeeding women, their infants, and young children. The guidelines for school lunch and breakfast programs also are based on DRI values.

Often, we use dietary standards as comparison values for individual diets, something you may be doing in class. It can be informative to see how your daily intake of a nutrient compares to the RDA or AI. However, an intake that is less than the RDA/AI doesn't necessarily mean deficiency; your individual requirement for a nutrient may be less than the RDA/AI value. You can use the RDA/AI values as targets for dietary intake, while avoiding nutrient intake that exceeds the UL.

Key Concepts *Dietary standards are levels of nutrient intake recommended for healthy people. These standards help the government set nutrition policy and also can be used to guide the planning and evaluation of diets for groups and individuals. Dietary Reference Intakes are the dietary standards for the United States and Canada. These standards focus on optimal health and lowering the risks of chronic disease, rather than simply on dietary adequacy.*

Food Labels

Now that you understand diet-planning tools and dietary standards, let's focus on your use of these tools—for example, when making decisions at the grocery store. One of the most useful tools in planning a healthful diet is the **food label**.

Specific federal regulations control what can and cannot appear on a food label and what must appear on it. The Food and Drug Administration (FDA) is responsible for assuring that foods sold in the United States are safe, wholesome, and properly labeled. Only a small category of foods is not required by the FDA to have a particular food label. Examples of these foods are things like spices and flavorings. Such foods are exempted because they do not provide a significant amount of nutrients. Deli items and ready-to-eat foods that are prepared and sold in retail establishments also do not require a food label.²⁴ Raw fruits and vegetables and fresh fish generally do not carry food labels either; however, these foods fall under the FDA's voluntary, point-of-purchase nutrition information program, which establishes that the nutrition information for grocery stores' most commonly purchased items be posted somewhere near where that food is sold.²⁵ The FDA's jurisdiction does not include meat, meat products, poultry, or poultry products; the USDA regulates these foods.

food label Labels required by law on virtually all packaged foods and having five requirements: (1) a statement of identity; (2) the net contents (by weight, volume, or measure) of the package; (3) the name and address of the manufacturer, packer, or distributor; (4) a list of ingredients; and (5) nutrition information.

Health Products and Food Branch of Health Canada is responsible for the regulation of health products and food. The Canadian Food Inspection Agency (CFIA) provides all federal inspection services related to food and enforces the food safety and nutritional quality standards.²⁶

Brief History of Food Labels

As information about the role of diet in chronic disease grew during the 1970s and 1980s, so did the demand for nutrition labels on all food products. As a result, in 1990 Congress passed the **Nutrition Labeling and Education Act (NLEA)**. Once the necessary regulations had been developed, “Nutrition Facts” labels began appearing on foods in 1994. Voluntary nutrition labeling was introduced in Canada in 1988, and a “Nutrition Facts” label was introduced in 2003. This label became mandatory for most prepackaged food products on December 12, 2007. Canadian nutrition labels now are similar in format to U.S. nutrition labels.

Nutrition Labeling and Education Act (NLEA)

An amendment to the Food, Drug, and Cosmetic Act of 1938. The NLEA made major changes to the content and scope of the nutrition label and to other elements of the food labels. Final regulations were published in 1993 and went into effect in 1994.

Ingredients and Other Basic Information

The label on a food you buy today has been shaped by many sets of regulations. As **Figure 2.8** shows, food labels have five mandatory components:

1. A statement of identity/name of the food
2. The net weight of the food contained inside of the package, not including the weight of the package
3. The name and address of the manufacturer, packer, or distributor
4. A list of ingredients in descending order by weight
5. Nutrition information

Ingredients must be listed by common or usual name, in descending order by weight, so the first ingredient listed is the primary ingredient in that food product. Let’s compare two cereals:

- *Cereal A ingredients:* Milled corn, sugar, salt, malt flavoring, high-fructose corn syrup
- *Cereal B ingredients:* Sugar, yellow corn flour, rice flour, wheat flour, whole oat flour, partially hydrogenated vegetable oil (contains one or more of the following oils: canola, soybean, cottonseed), salt, cocoa, artificial flavor, corn syrup

Quick Bite

Truth in Tuna

Due to an old regulation still in the law books, tuna companies can get away with skimping on canned tuna. Legally, a 6-ounce can of solid tuna has to contain only 3.75 ounces of actual tuna. Although the Tuna Foundation has set a voluntary minimum of 4 ounces, not all manufacturers subscribe to the minimum. The FDA is considering making companies use the drained weight on tuna cans so future labels may be more precise.



Figure 2.8

The five mandatory requirements for food labels. Federal regulations determine what can and cannot appear on food labels.

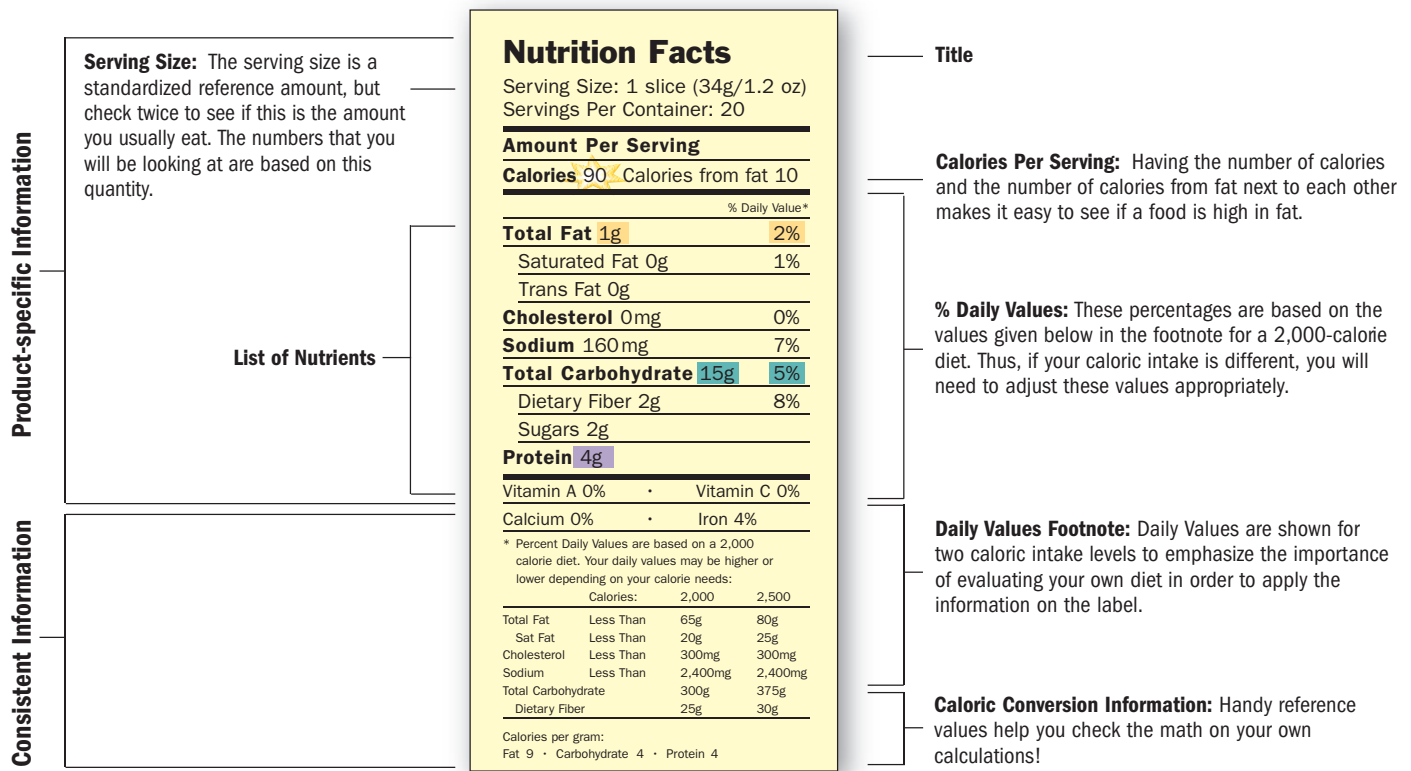


Figure 2.9 The Nutrition Facts panel. Consumers can use the Nutrition Facts panel to compare the nutritional value of different products.

In Cereal B, the first ingredient listed is sugar, which means this cereal contains more sugar by weight than any other ingredient. Cereal A’s primary ingredient is milled corn. If we were to read the nutrition information, we would find that a 1-cup serving of Cereal A contains 2 grams of sugars while a similar amount of Cereal B contains 12 grams of sugars. Quite a difference! Preservatives and other additives in foods must be listed, along with an explanation of their function. The labels of foods that contain any of the eight major food allergens (egg, wheat, peanuts, milk, tree nuts, soy, fish, and crustaceans) must include common names when listing these ingredients. For example, an ingredient list might show “albumen (egg).”

Nutrition Facts Panel

Let’s take a closer look at the elements of the Nutrition Facts panel. It was designed so that the nutrition information would be easy to find on the label. The heading *Nutrition Facts* stands out clearly. (See **Figure 2.9**.) Just under the heading is information about the serving size and number of servings per container. It is important to note the serving size, because all of the nutrient information that follows is based on that amount of food, and the listed serving size may be different from what you usually eat. An 8-ounce bag of potato chips may be a “small” snack to a hungry college student, but according to the manufacturer the bag really contains eight servings! Serving sizes are standardized according to reference amounts developed by the FDA. Similar products (cereals, for instance) will have similar serving sizes (1 ounce).

The next part of the label shows the calories per serving and the calories that come from fat. Following this is a list of the amounts of total fat, saturated

fat, *trans* fat, cholesterol, sodium, total carbohydrate, dietary fiber, sugars, and protein in one serving. This information is given both in quantity (grams or milligrams per serving) and as a percentage of the Daily Value—a comparison standard specifically for food labels (this standard is described in the next section). Listed next are percentages of Daily Values for vitamins A and C, calcium, and iron, which are the only micronutrients that must appear on all standard labels. Manufacturers may choose to include information about other nutrients, such as potassium, polyunsaturated fat, additional vitamins, or other minerals, in the Nutrition Facts. However, if they make a claim about an optional component (e.g., “good source of vitamin E”) or **enrich** or **fortify** the food, the manufacturers must include specific nutrition information for these added nutrients such as the fortification of milk with vitamin D to prevent rickets (a bone disease in children that results from vitamin D deficiency) or the fortification of enriched grain products with folic acid to reduce risk of birth defects. Food products that come in small packages (e.g., gum, candy, tuna) or that have little nutritional value (e.g., diet soft drinks) can have abbreviated versions of the Nutrition Facts on the label, as **Figure 2.10** shows.

Daily Values

Let’s come back to the Daily Values part of the label. The **Daily Values (DVs)** are a set of dietary standards used to compare the amount of a nutrient (or other component) in a serving of food to the amount recommended for daily consumption. The Percent Daily Values (%DV) are based on a 2,000-calorie diet. Your estimated needs may not be 2,000 calories per day, but you can still use the %DV as a guide whether or not you consume more than or less than 2,000 calories. The %DV helps you determine if a serving of a food is high or low in a nutrient. In other words, you can see if this food contributes a lot or a little to your daily recommended allowance. Let’s say you rely on your breakfast cereal as a major source of dietary fiber intake. Comparing two packages, as in **Figure 2.11**, you find that a serving of cornflakes cereal has 4 percent of the DV for dietary fiber, but a bran flakes cereal has 20 percent. By eating one serving of the cornflakes (left label), you will get 4 percent of an estimated 100 percent of your fiber needs for the day. If you choose to eat the bran flakes (right label), you will get 20 percent of the 100 percent estimated needs of fiber for the day. You don’t have to know anything about grams to see which food is higher in fiber!

Claims That Can Be Made for Foods and Dietary Supplements

The U.S. Food and Drug Administration enforces numerous laws and regulations that dictate how food and dietary supplement labels are required to look and what language or claims are allowed to be printed on the label. Companies selling foods and dietary supplements can make three types of claims: nutrient content claims, health claims, and structure/function claims. The responsibility for ensuring that claims are accurate and follow appropriate laws rests with the manufacturer, the FDA, or, in the case of advertising, with the Federal Trade Commission.²⁷

Nutrient Content Claims

The NLEA and the associated FDA regulations allow food manufacturers to make **nutrient content claims** using a variety of descriptive terms on labels, such as low fat and high fiber. The FYI feature “Definitions for Nutrient



Figure 2.10 **Nutrition Facts on small packages.** When a product package has insufficient space to display a full Nutrition Facts panel, manufacturers may use an abbreviated version.

enrich To add vitamins and minerals lost or diminished during food processing, particularly the addition of thiamin, riboflavin, niacin, folic acid, and iron to grain products.

fortify Refers to the addition of vitamins or minerals that were not originally present in a good.

Daily Values (DVs) A single set of nutrient intake standards developed by the Food and Drug Administration to represent the needs of the “typical” consumer; used as standards for expressing nutrient content on food labels.

nutrient content claims These claims describe the level of a nutrient or dietary substance in the product, using terms such as *good source*, *high*, or *free*.

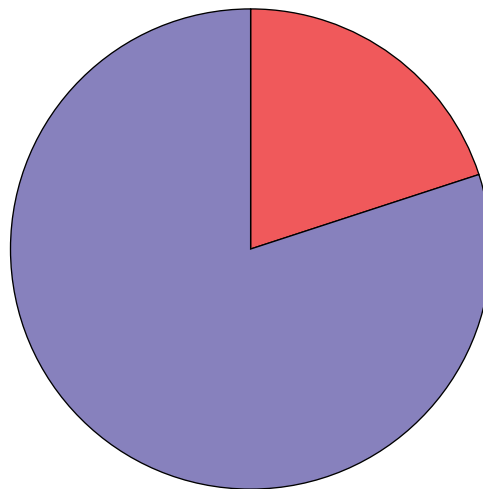
Figure 2.11 Comparing cereals. These

cereal labels come from different types of breakfast cereal: cornflakes cereal (left) and bran flakes cereal (right). What might influence your decision to buy one over the other?

Nutrition Facts		
Serving Size:		1 Cup (28g/1.0 oz.)
Servings Per Container:		About 18
Amount Per Serving	Cereal	with 1/2 cup Skim Milk
Calories	100	140
Fat Calories	0	0
% Daily Value		
Total Fat 0g	0%	0%
Saturated Fat 0g	0%	0%
Trans Fat 0g		
Cholesterol 0mg	0%	0%
Sodium 300mg	13%	15%
Potassium 25mg	1%	7%
Total Carbohydrate 24g	8%	10%
Dietary Fiber 1g	4%	4%
Sugars 2g		
Other Carbohydrates 21g		
Protein 2g		
Vitamin A	15%	20%
Vitamin C	25%	25%
Calcium	0%	15%
Iron	45%	45%
Vitamin D	10%	25%
Thiamin	25%	30%
Riboflavin	25%	35%
Niacin	25%	25%
Vitamin B ₆	25%	25%
Folate	25%	25%
Vitamin B ₁₂	25%	35%

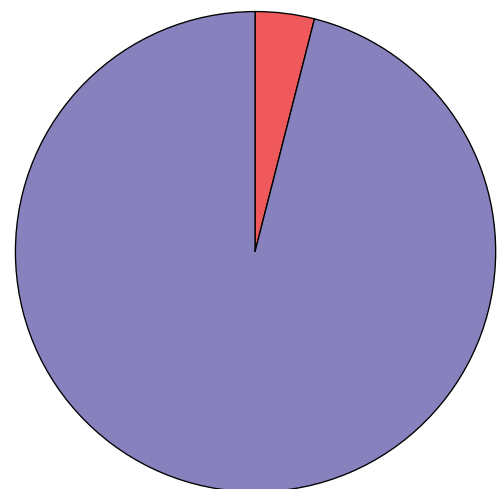
Nutrition Facts		
Serving Size:		3/4 Cup (30g)
Servings Per Container:		About 15
Amount Per Serving	Cereal	with 1/2 cup Skim Milk
Calories	100	140
Calories from fat	5	5
% Daily Value		
Total Fat 0.5g	1%	1%
Saturated Fat 0g	0%	0%
Trans Fat 0g		
Cholesterol 0mg	0%	0%
Sodium 210mg	9%	12%
Potassium 200mg	6%	11%
Total Carbohydrate 24g	8%	10%
Dietary Fiber 5g	20%	20%
Sugars 5g		
Other Carbohydrates 14g		
Protein 3g		
Vitamin A	15%	20%
Vitamin C	0%	2%
Calcium	0%	15%
Iron	45%	45%
Vitamin D	10%	25%
Thiamin	25%	30%
Riboflavin	25%	35%
Niacin	25%	25%
Vitamin B ₆	25%	25%
Folate	25%	25%
Vitamin B ₁₂	25%	35%

Branflakes contribute fiber to your %DV allowance.



■ Amount of fiber allowance met by eating 1 serving of branflakes
■ Amount of fiber allowance remaining for the day

Cornflakes contribute fiber to your %DV allowance.



■ Amount of fiber allowance met by eating 1 serving of cornflakes
■ Amount of fiber allowance remaining for the day

Content Claims on Food Labels” shows a list of terms that may be used. The FDA has made an effort to make the terms meaningful, and the regulations have reduced the number of potentially misleading label statements. It would be misleading, for example, to print “cholesterol free” on a can of vegetable shortening—a food that is 100 percent fat and high in saturated and *trans* fatty acids (types of fats that raise blood cholesterol levels). This type of statement misleads consumers who associate “cholesterol free” with “heart healthy.” Remember that only animal products have cholesterol in them. Under the NLEA regulations, statements about low cholesterol content can be used only when the product also is low in saturated fat (less than 2 grams per serving). In addition to the content claims defined in the regulations, companies may submit to the FDA a notification of a new nutrient content claim based on “an authoritative statement from an appropriate scientific body of the United States Government or the National Academy of Sciences.”²⁸

Health Claims

With the passage of the NLEA, manufacturers also were allowed to add health claims to food labels. A **health claim** is a statement that links one or more dietary components to reduced risk of disease. A health claim must be supported by scientifically valid evidence for it to be approved for use on a food label.

So far, the FDA has authorized the following health claims:

- *Calcium, vitamin D, and osteoporosis.* Adequate calcium and vitamin D along with regular exercise may reduce the risk of osteoporosis.
- *Dietary fat and cancer.* Low-fat diets may reduce the risk for some types of cancer.
- *Dietary fiber, such as that found in whole oats, barley, and psyllium seed husk, and coronary heart disease (CHD).* Diets low in fat and rich in these types of fiber can help reduce the risk of heart disease.
- *Dietary noncarcinogenic carbohydrate sweeteners and dental caries (tooth decay).* Foods sweetened with sugar alcohols do not promote tooth decay.
- *Dietary saturated fat and cholesterol and CHD.* Diets high in saturated fat and cholesterol increase risk for heart disease.
- *Dietary saturated fat, cholesterol, and trans fat and heart disease.* Diets low in saturated fat and cholesterol and as low as possible in *trans* fat may reduce the risk of heart disease.
- *Fiber-containing grain products, fruits, and vegetables and cancer.* Diets low in fat and rich in high-fiber foods may reduce the risk of certain cancers.
- *Fluoridated water and dental caries.* Drinking fluoridated water may reduce the risk of dental caries.
- *Folate and neural tube defects.* Adequate folate intake prior to and early in pregnancy may reduce the risk of neural tube defects (a birth defect).
- *Fruits and vegetables and cancer.* Diets low in fat and rich in fruits and vegetables may reduce the risk of certain cancers.
- *Fruits, vegetables, and grain products that contain fiber, particularly pectins, gums, and mucilages, and CHD.* Diets low in fat and rich in these types of fiber may reduce the risk of heart disease.
- *Plant sterol/stanol esters and CHD.* Diets low in saturated fat and cholesterol that contain significant amounts of these additives may reduce the risk of heart disease.

health claim Any statement that associates a food or a substance in a food with a disease or health-related condition. The FDA authorizes health claims.



Definitions for Nutrient Content Claims on Food Labels

- **Free:** Food contains no amount (or trivial or “physiologically inconsequential” amounts). May be used with one or more of the following: fat, saturated fat, cholesterol, sodium, sugar, and calories. Synonyms include *without*, *no*, and *zero*.
 - **Fat-free:** Less than 0.5 grams of fat per serving
 - **Saturated fat-free:** Less than 0.5 grams of saturated fat per serving, and less than 0.5 grams of *trans* fatty acids per serving
 - **Cholesterol-free:** Less than 2 milligrams of cholesterol and 2 grams or less of saturated fat per serving
 - **Sodium-free:** Less than 5 milligrams of sodium per serving
 - **Sugar-free:** Less than 0.5 grams of sugar per serving
 - **Calorie-free:** Fewer than 5 calories per serving
 - **Low:** Food can be eaten frequently without exceeding dietary guidelines for one or more of these components: fat, saturated fat, cholesterol, sodium, and calories. Synonyms include *little*, *few*, and *low source of*.
 - **Low-fat:** 3 grams or less per serving
 - **Low-saturated fat:** 1 gram or less of saturated fat per serving; no more than 15 percent of calories from saturated fat
 - **Low-cholesterol:** 20 milligrams or less and 2 grams or less of saturated fat per serving
 - **Low-sodium:** 140 milligrams or less per serving
 - **Very low-sodium:** 35 milligrams or less per serving
 - **Low-calorie:** 40 calories or less per serving
 - **High:** Food contains 20 percent or more of the Daily Value for a particular nutrient in a serving.
 - **Good source:** Food contains 10 to 19 percent of the Daily Value for a particular nutrient in one serving.
 - **Lean and extra lean:** Describe the fat content of meat and main dish products, seafood, and game meat products.
 - **Lean:** Less than 10 grams of fat, 4.5 grams or less of saturated fat, and less than 95 milligrams of cholesterol per serving and per 100 grams
 - **Extra lean:** Less than 5 grams of fat, less than 2 grams of saturated fat, and less than 95 milligrams of cholesterol per serving and per 100 grams
 - **Reduced:** Nutritionally altered product containing at least 25 percent less of a nutrient or of calories than the regular or reference product. (Note: A “reduced” claim can’t be used if the reference product already meets the requirement for “low.”)
 - **Less:** Food, whether altered or not, contains 25 percent less of a nutrient or of calories than the reference food. *Fewer* is an acceptable synonym.
 - **Light:** This descriptor can have two meanings:
 1. A nutritionally altered product contains one-third fewer calories or half the fat of the reference food. If the reference food derives 50 percent or more of its calories from fat, the reduction must be 50 percent of the fat.
 2. The sodium content of a low-calorie, low-fat food has been reduced by 50 percent. Also, *light in sodium* may be used on a food in which the sodium content has been reduced by at least 50 percent.
-
- **Potassium and high blood pressure/stroke.** Diets that contain good sources of potassium may reduce the risk of high blood pressure and stroke.
 - **Sodium and hypertension (high blood pressure).** Low-sodium diets may help lower blood pressure.
 - **Soy protein and CHD.** Foods rich in soy protein as part of a low-fat diet may help reduce the risk of heart disease.
 - **Whole-grain foods and CHD or cancer.** Diets high in whole-grain foods and other plant foods and low in total fat, saturated fat, and cholesterol may help reduce the risk of heart disease and certain cancers.

A new health claim may be proposed at any time, so this list will expand. The most current information on label statements and claims can be found on the FDA website (<http://www.inspection.gc.ca/english/fssa/labeti/guide/tab7e.shtml>).

Note: The term *light* can still be used to describe such properties as texture and color as long as the label clearly explains its meaning (e.g., light brown sugar or light and fluffy).

- **More:** A serving of food, whether altered or not, contains a nutrient that is at least 10 percent of the Daily Value more than the reference food. This also applies to fortified, enriched, and added claims, but, in those cases, the food must be altered.
- **Healthy:** A healthy food must be low in fat and saturated fat and contain limited amounts of cholesterol (less than 60 milligrams) and sodium (less than 360 milligrams for individual foods and less than 480 milligrams for meal-type products). In addition, a single-item food must provide at least 10 percent or more of one of the following: vitamins A or C, iron, calcium, protein, or fiber. A meal-type product, such as a frozen entrée or dinner, must provide 10 percent of two or more of these vitamins or minerals, or protein, or fiber, in addition to meeting the other criteria. Additional regulations allow the term *healthy* to be applied to raw, canned, or frozen fruits and vegetables and enriched grains even if the 10 percent nutrient content rule is not met. However, frozen or canned fruits or vegetables cannot contain ingredients that would change the nutrient profile.
- **Fresh:** Food is raw, has never been frozen or heated, and contains no preservatives. *Fresh frozen, frozen fresh, and freshly fro-*



zen can be used for foods that are quickly frozen while still fresh. Blanched foods also can be called fresh.

- **Percent fat-free:** Food must be a low-fat or a fat-free product. In addition, the claim must reflect accurately the amount of nonfat ingredients in 100 grams of food.
- **Implied claims:** These are prohibited when they wrongfully imply that a food contains or does not contain a meaningful level of a nutrient. For example, a product cannot claim to be made with an ingredient known to be

a source of fiber (such as “made with oat bran”) unless the product contains enough of that ingredient (e.g., oat bran) to meet the definition for “good source” of fiber. As another example, a claim that a product contains “no tropical oils” is allowed, but only on foods that are “low” in saturated fat, because consumers have come to equate tropical oils with high levels of saturated fat.

Source: Data from Food Labeling Guide, 2009. US Department of Health and Human Services, Food and Drug Administration.

Structure/Function Claims

Food labels also may contain **structure/function claims** that describe potential effects of a food, food component, or dietary supplement component on body structures or functions, such as bone health, muscle strength, and digestion. As long as the label does not claim to diagnose, cure, mitigate, treat, or prevent a disease, a manufacturer can claim that a product “helps promote immune health” or is an “energizer” if *some* evidence can be provided to support the claim. Currently, structure/function claims on foods must be related to the food’s nutritive value. Many scientists are concerned about the lack of a consistent scientific standard for both health claims and structure/function claims.

Using Labels to Make Healthful Food Choices

What’s the best way to start using the information on food labels to make food choices? Let’s look at a couple of examples. Perhaps one of your goals is to add more iron to your diet. Compare the cereal labels in Figure 2.11.

structure/function claims These statements may claim a benefit related to a nutrient-deficiency disease (e.g., *vitamin C prevents scurvy*) or describe the role of a nutrient or dietary ingredient intended to affect a structure or function in humans (e.g., *calcium helps build strong bones*).

Nutrition Facts	
Serving Size: 1 Entree (240g)	
Servings Per Container: 1	
Amount Per Serving	
Calories 400	Calories from fat 150
% Daily Value*	
Total Fat 16g	25%
Saturated Fat 2.5g	13%
Trans Fat 1g	
Cholesterol 10mg	3%
Sodium 780mg	33%
Total Carbohydrate 56g	19%
Dietary Fiber 2g	8%
Sugars 2g	
Protein 8g	
Vitamin A 2%	Vitamin C 4%
Calcium 6%	Iron 4%

Product A

Nutrition Facts	
Serving Size: 1 package (269g)	
Servings Per Container: 1	
Amount Per Serving	
Calories 400	Calories from fat 140
% Daily Value*	
Total Fat 16g	24%
Saturated Fat 6g	30%
Trans Fat 2g	
Cholesterol 40mg	14%
Sodium 690mg	29%
Total Carbohydrate 48g	16%
Dietary Fiber 2g	9%
Sugars 5g	
Protein 15g	
Vitamin A 10%	Vitamin C 8%
Calcium 20%	Iron 15%

Product B

Which cereal contains a higher percentage of the Daily Value for iron? How do they compare in terms of sugar content? What about vitamins and other minerals?

Maybe it's a frozen entrée you're after. Look at the two examples in **Figure 2.12**. Which is the best choice nutritionally? Are you sure? Sometimes the answer is not clear-cut. Product A is higher in sodium while Product B has more saturated and *trans* fat. It would be important to know about the rest of your dietary intake before making a decision. Do you already have quite a bit of sodium in your diet, or are you likely to add salt at the table? Maybe you never salt your food, so a bit extra in your entrée is okay. If you know that your saturated fat intake is already a bit high, however, Product A might be a better choice. To make the best choice, you should know which substances are most important in terms of your own health risks. The label is there to help you make

Figure 2.12 Comparing product labels. Labels may look similar, but appearances can be deceptive. Compare the amounts of saturated fat and sodium in these two products

these types of food decisions.

Key Concepts Making food choices at the grocery store is your opportunity to implement the Dietary Guidelines for Americans and your MyPlate-planned diet. The Nutrition Facts panel on most packaged foods contains not only specific amounts of nutrients shown in grams or milligrams, but also comparisons between the amounts of nutrients in a food and the recommended intake values. These comparisons are reported as %DV (Daily Values). The %DV information can be used to compare two products or to see how individual foods contribute to the total diet.



Many of us use food labels to determine such things as how many calories are in a food, how many grams of carbohydrate it provides, or how much saturated fat it contains. Sometimes we overlook the serving size that these numbers are based on, assuming that the amount we eat is considered one serving. But is the amount of food you eat equal to the serving size listed on the package? Consider a bowl of cereal or a box of snack crackers. About how much of either of these foods would you eat at one time? Not

sure? Pour your typical serving into a bowl. Now, use a measuring cup to measure how much you have. Look at the serving size listed on that food's label. Is the amount you will eat smaller, larger, or the same as the serving size listed? Remember that the amounts of each nutrient listed on the food's Nutrition Facts panel, as well as the %DVs, are based on the listed serving size, so you may have to recalculate those numbers to get more accurate values.



Learning Portfolio



Key Terms

	page	food groups	43
Acceptable Macronutrient		food label	54
Distribution Ranges (AMDRs)	53	Food and Nutrition Board	51
Adequate Intake (AI)	53	fortify	57
Daily Values (DVs)	57	health claim	59
Dietary Guidelines for Americans,		nutrient content claims	57
2010	33	nutrient density	31
Dietary Reference Intakes (DRIs)	51	Nutrition Labeling and Education	
dietary standards	51	Act (NLEA)	55
Eating Well with Canada's Food		obesogenic environment	34
Guide	44	structure/function claims	61
enrich	57	Tolerable Upper Intake Levels	
Estimated Average Requirement		(ULs)	53
(EAR)	52	U.S. Department of Agriculture	
Estimated Energy Requirement		(USDA)	33
(EER)	53	U.S. Department of Health and	
Exchange Lists	49	Human Services (DHHS)	33

Study Points

- Moderation, balance, and variety are general guiding principles for healthful diets.
 - The *Dietary Guidelines for Americans* advise consumers regarding general components of the diet.
 - Dietary recommendations for Canadians are described in *Eating Well with Canada's Food Guide*. Intake recommendations are based on the Dietary Reference Intakes and depicted graphically in the *Food Guide*.
 - MyPlate is a graphic representation of a food guidance system that supports the principles of the *Dietary Guidelines for Americans*.
 - The Exchange Lists are a diet-planning tool most often used for diabetic or weight-control diets.
 - Servings for each food in the Exchange Lists are grouped so that equal amounts of carbohydrate, fat, and protein are provided by each choice.
 - Dietary standards are values for individual nutrients that reflect recommended intake levels. These values are used for planning and evaluating diets for groups and individuals.
 - The Dietary Reference Intakes are the current dietary standards in Canada and the United States. The DRIs consist of several types of values: EAR, RDA, AI, UL, EER, and AMDR.
- Nutrition information on food labels can be used to select a more healthful diet.
 - Label information not only provides the gram or milligram amounts of the nutrients present but also gives a percentage of Daily Values so the consumer can compare the amount in the food and the amount recommended for consumption each day.
 - Nutrition information, label statements, and health claims are specifically defined by the regulations that were developed after passage of the Nutrition Labeling and Education Act of 1990.

Study Questions

1. Define *undernutrition* and *overnutrition*.
2. What is the purpose of the *Dietary Guidelines for Americans*? List the two overarching concepts from the *Dietary Guidelines for Americans, 2010*.
3. What are the recommended MyPlate amounts for each food group for a 2,000-calorie diet?
4. Describe how the Exchange List system works and why people with diabetes might use it.
5. List and define the four main Dietary Reference Intake categories.
6. List the five mandatory components found on all food labels.
7. The standard Nutrition Facts panel shows information on which nutrients?
8. What is the purpose of the Percent Daily Value (%DV) listed next to most nutrients on the label?
9. Define the three types of claims that may be found on food labels.

Try This

Are You a MyPlate Pleaser?

Keep a detailed food diary for three days. Make sure to include the things you drink along with the amounts (e.g., cups, ounces, tablespoons) of each food or beverage. How well do you think your intake matches the Dietary Guidelines and MyPlate recommendations? To find out, go to <http://www.ChooseMyPlate.gov>. This feature allows you to complete an online assessment of your food intake. Follow the directions to register, and set up your Personal

Profile. Next, within the “Food-A-Pedia” box, select the “Food Tracker.” Search for each food that you have eaten. Choose the appropriate food, serving size, and the meal or snack from which you ate it. As you are entering your meals and snacks, watch as your “Daily Food Group Targets” and “Daily Calorie Limits” add up. See how your intake compares to the Dietary Guidelines and MyPlate. How did you do? From which groups did you tend to eat more than is recommended? Were there any groups for which you did not meet the recommendations? Use the results of this activity to plan ways you can improve your diet. You may want to visit this site frequently to monitor changes you are making in your food intake.

Grocery Store Scavenger Hunt

On your next trip to the grocery store, find a food item that has any number other than “0” listed for the two vitamins and two minerals required to be listed on the food label %DV. It doesn’t matter if you choose a cereal, soup, cracker, or snack item, as long as it has numbers other than “0” for all four items. Once you’re home, review the Daily Values and calculate the number of milligrams of calcium, iron, and vitamin C found in each serving of your food. Next, take a look at vitamin A: How many International Units

(IUs) does each serving of your product have? If you can calculate these, you should have a better understanding of %DVs.

What About Bobbie?

Now that you have learned something about the recommendations for a healthful diet, how do you think Bobbie did? Review her one-day food record (see the “Food Choices: Nutrients and Nourishment” chapter). How closely does Bobbie’s intake compare to the USDA-established Nutrition Targets? She can use the SuperTracker from the ChooseMyPlate website (<https://www.choosemyplate.gov/SuperTracker/foodtracker.aspx>) to find out. Was her diet balanced enough to meet most of the Dietary Guidelines recommendations?

How do you think Bobbie’s food choices fit with the *Dietary Guidelines for Americans, 2010* and MyPlate? Can you classify all Bobbie’s foods into one of the MyPlate groups? Some items, like the cheese pizza, have elements of more than one group. Others, like the dill pickle, don’t seem to fit anywhere.

When Bobbie analyzed her food intake using the SuperTracker she got the following results:



Bobbie's Food Groups and Calories Report

Your plan is based on a 2000 Calorie allowance.

Food Groups	Target	Average Eaten	Status
Grains	6 ounce(s)	14 ounce(s)	Over
Whole Grains	≥ 3 ounce(s)	1 ounce(s)	Under
Refined Grains	≤ 3 ounce(s)	13 ounce(s)	Over
Vegetables	2 1/2 cup(s)	3 1/2 cup(s)	Over
Dark Green	1 1/2 cup(s)/week	0 cup(s)	Under
Red & Orange	5 1/2 cup(s)/week	1 1/2 cup(s)	Under
Beans & Peas	1 1/2 cup(s)/week	1/2 cup(s)	Under
Starchy	5 cup(s)/week	0 cup(s)	Under
Other	4 cup(s)/week	1 1/2 cup(s)	Under
Fruits	2 cup(s)	1 cup(s)	Under
Whole Fruit	No Specific Target	1 cup(s)	No Specific Target
Fruit Juice	No Specific Target	0 cup(s)	No Specific Target
Dairy	3 cup(s)	1 1/2 cup(s)	Under
Milk & Yogurt	No Specific Target	1/2 cup(s)	No Specific Target
Cheese	No Specific Target	1 cup(s)	No Specific Target
Protein Foods	5 1/2 ounce(s)	2 1/2 ounce(s)	Under
Seafood	8 ounce(s)/week	0 ounce(s)	Under
Meat, Poultry & Eggs	No Specific Target	2 1/2 ounce(s)	No Specific Target
Nuts, Seeds & Soy	No Specific Target	0 ounce(s)	No Specific Target
Oil	6 teaspoon	6 teaspoon	OK
Limits	Allowance	Average Eaten	Status
Total Calories	2000 Calories	2368 Calories	Over
Empty Calories*	≤ 250 Calories	428 Calories	Over
Solid Fats	*	375 Calories	*
Added Sugars	*	53 Calories	*

*Calories from food components such as added sugars and solid fats that provide little nutritional value. Empty Calories are part of Total Calories.

Note: If you ate Beans & Peas and chose "Count as Protein Foods instead," they will be included in the Nuts, Seeds & Soy subgroup.

As you can see, Bobbie's diet was low in Milk, Fruits, and Meat and Beans. She was high in the Grains group but without much whole grain. Her fat intake was also a little high, as was sodium. It's probably not fair to evaluate just this single day of eating, though. We would need to know much more about Bobbie's usual diet and lifestyle before making specific recommendations.

References

- 1 Liu A, Berhane Z, Tseng M. Improved dietary variety and adequacy but lower dietary moderation with acculturation in Chinese women in the United States. *J Am Diet Assoc.* 2010;110(3):457–462.
- 2 Schwartz C, Scholtens PA, Lalanne A, et al. Development of healthy eating habits early in life. Review of recent evidence and selected guidelines. *Appetite.* 2011; May 27.
- 3 US Department of Health and Human Services, US Department of Agriculture. *Dietary Guidelines for Americans, 2010.* 7th ed. Washington, DC: US Government Printing Office, 2010.
- 4 Pennington J, Kandiah J, Nicklas T, et al. Practice paper of the Academy of Nutrition and Dietetics: nutrient density: meeting nutrient goals within calorie needs. *J Am Diet Assoc.* 2007;107(5):860–869.
- 5 Ibid.
- 6 Uauy R, Hertrampf E, Dangour AD. Food-based dietary guidelines for healthier populations: international considerations. In: Shils ME, Shike M, Ross AC, et al., eds. *Modern Nutrition in Health and Disease.* 10th ed. Baltimore, MD: Lippincott Williams & Wilkins, 2006.
- 7 Wengreen HJ, Neilso C, Munger R, Corcoran C. Diet quality is associated with better cognitive test performance among aging men and women. *J Nutr.* 2009;139(10):1944–1949.
- 8 US Department of Health and Human Services, US Department of Agriculture. Op. cit.
- 9 Ibid.
- 10 Ibid.
- 11 US Department of Health and Human Services. *2008 Physical Activity Guidelines for Americans.* Washington, DC: DHHS; 2008. Office of Disease Prevention and Health Promotion publication U0036.
- 12 US Department of Health and Human Services, US Department of Agriculture, p. 10.
- 13 Ibid, p. 4.
- 14 Ibid, p. 55.
- 15 Health Canada Office of Nutrition Policy and Promotion. *Eating Well with Canada's Food Guide.* <http://www.hc-sc.gc.ca/fn-an/food-guide-aliment/index-eng.php>. Accessed 1/3/12.
- 16 Davis C, Saltos E. Dietary recommendations and how they have changed over time. <http://www.ers.usda.gov/publications/aib750/aib750b.pdf>. Accessed 6/26/11.
- 17 US Department of Agriculture, Human Nutrition Information Service. *USDA's Food Guide: Background and Development.* Washington, DC: USDA; 1993. Miscellaneous publication 1514.
- 18 US Department of Agriculture. First Lady, Agriculture Secretary launch MyPlate icon as a new reminder to help consumers to make healthier food choices. Press release. 6/2/11.
- 19 US Department of Agriculture. <http://www.ChooseMyPlate.gov>. Accessed 10/16/11.
- 20 Burger KS, Kern M, Coleman KJ. Characteristics of self-selected portion size in young adults. *J Am Diet Assoc.* 2007;107(4):611–618.
- 21 Institute of Medicine, Food and Nutrition Board. *Dietary Reference Intakes: The Essential Guide to Nutrient Requirements.* Washington, DC: National Academies Press; 2006.
- 22 Ibid.
- 23 Academy of Nutrition and Dietetics. Practice paper of the Academy of Nutrition and Dietetics: using the Dietary Reference Intakes. *J Am Diet Assoc.* 2011;111(5):762–770.
- 24 US Food and Drug Administration. Food labeling and nutrition. 2007. <http://www.cfsan.fda.gov/label.html>. Accessed 4/11/11.
- 25 Ibid.
- 26 Canadian Food Inspection Agency. Acts and regulations. <http://www.inspection.gc.ca/about-the-cfia/acts-and-regulations/eng/1299846777345/1299847442232>. Accessed 1/23/12.
- 27 US Food and Drug Administration. Claims that can be made for conventional foods and dietary supplements. September 2003. <http://www.fda.gov/Food/LabelingNutrition/LabelClaims/ucm111447.htm>. Accessed 6/26/11.
- 28 US Food and Drug Administration. Guidance for industry: notification of a health claim or nutrient content claim based on an authoritative statement of a scientific body. <http://www.cfsan.fda.gov/guidance.html>. Accessed 4/11/11.