# *Nutrition and You 4th edition Blake Solutions Manual*

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CHAPTER

# 2 Tools for Healthy Eating

## Chapter Overview

Incorporating the principles of balance, variety, and moderation is fundamental to healthy eating. It is wise to have goals centered on having a diet consisting of a variety of foods (some in more moderate quantities), and the foods consumed must be balanced appropriately to meet individual needs. Using the available tools designed to help you plan and consume a healthy diet helps to make these goals a reality.

The Dietary Reference Intakes (DRIs) help you to obtain the recommended amount of each nutrient. The *Dietary Guidelines for Americans* summarize the current recommendations for healthy individuals over the age of two regarding nutrition and lifestyle (including physical activity) for good health. These guidelines are also geared toward helping people reduce the risk of many diseases where there is a relationship with diet and lifestyle choices.

The food guidance system known as MyPlate provides a visual illustration of the concepts from the *Dietary Guidelines for Americans.* MyPlate also includes guidance regarding the number of servings from each food group to help individuals to meet the DRIs for nutrient needs based on appropriate calorie intake (based on age, gender, and activity level). MyPlate may be accessed via the Internet.

Food labels are another type of tool intended to assist you with selecting healthy foods. In addition to the informative Nutrition Facts panel on the side or back of each food package, the Food and Drug Administration (FDA) allows and regulates labeling claims that provide further insight (that is also accurate) on each item.

Functional foods contain potentially beneficial compounds derived from plants (phytochemicals) or animals (zoochemicals). Consumed as part of a healthy diet, these foods may help prevent adverse health conditions; but problems can arise if too much of a particular compound is consumed. This is a particular risk when consuming prepackaged functional foods.

## Chapter Objectives

After reading this chapter, students should be able to:

1. Describe the three key principles of a healthy diet and the tools you can use to help guide you.
2. Explain what the DRIs are and the differences between the EAR, AI, RDA, UL, and AMDR.
3. Describe the principles in the *Dietary Guidelines for Americans*.
4. Explain the concept of MyPlate and name the five food groups and the typical foods represented in each group.
5. Identify the required components of a food label and how to use it.
6. Explain the role of functional foods in the diet.

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## Chapter Outline

### I. What Is Healthy Eating and What Tools Can Help?

**A.** Healthy eating involves the principles of balance, variety, and moderation.

**1.** A balanced diet includes healthy proportions of all nutrients.

**2.** A varied diet includes many different foods.

**3.** A moderate diet provides adequate amounts of nutrients and energy.

**B.** Undernutrition is a state of not meeting your nutrient needs.

**1.** Malnourishment may result from not meeting nutrient needs on a long-term basis.

**C.** Overnutrition is a state of having too much of a nutrient or too many calories.

**1.** Some nutrients can be toxic in high amounts.

**2.** Too many calories can lead to obesity.

**3.** A person who is overnourished can also be malnourished.

**D.** Tools such as the Dietary Reference Intakes, the *Dietary Guidelines for Americans,* MyPlate, and the Nutrition Facts panel on food labels may be used to help you avoid states of undernutrition or overnutrition.

**1.** Figure 2.1 illustrates the relationship between the tools.

### II. What Are the Dietary Reference Intakes?

**A.** Dietary Reference Intakes (DRIs) are specific reference values for each nutrient issued by the Institute of Medicine of the U.S. National Academy of Sciences.

**1.** DRIs are specific amounts of each nutrient needed to maintain good health, prevent chronic disease, and avoid unhealthy excesses.

**B.** DRIs tell you how much of each nutrient you need.

**1.** Nutrient needs vary with an individual's age and gender and stage of the lifecycle (such as pregnancy), resulting in different DRIs.

**2.** Nutrition research in the 1990s suggested that higher amounts of certain nutrients might impact disease prevention; subsequent research has also looked at dietary supplements and the potential problems of excessive consumption.

**3.** As research evolves, changes are made in the DRIs.

**C.** DRIs encompass several reference values.

**1.** Estimated Average Requirement (EAR)

**a.** The EAR is the average amount of a nutrient known to meet the needs of 50 percent of the individuals in a similar age and gender.

**i.** This is considered a good starting point for determining the daily amount needed for good health.

**2.** Recommended Dietary Allowance (RDA)

**a.** The RDA is based on, but set higher than, the EAR.

**b.** The RDA represents the average amount of a nutrient that meets the needs of nearly all (97–98 percent) of the individuals in a similar age and gender group.

**c.** Sometimes there is not enough scientific evidence about a nutrient to determine an EAR, so an RDA cannot be set.

**3.** Adequate Intake (AI)

**a.** An AI is the approximate amount of a nutrient estimated for individuals to consume in a similar age and gender group to maintain good health.

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**b.** The AI is used when an RDA cannot be set due to a lack of scientific information available to determine the EAR for a nutrient.

**4.** Tolerable Upper Intake Level (UL)

**a.** The UL is the highest amount of a nutrient that may be consumed daily without harm.

**i.** The higher the consumption above the UL, the greater the risk of toxicity.

**5.** Acceptable Macronutrient Distribution Range (AMDR)

**a.** The AMDR are set for the energy-containing nutrients carbohydrates, fat, and protein.

**i.** The AMDR for carbohydrates is 45 to 65 percent of daily calories.

**ii.** Fats should be 20 to 35 percent of daily calories.

**iii.** Proteins should be consumed at 10 to 35 percent of daily calories.

**6.** Estimated Energy Requirement (EER)

**a.** The EER is the amount of energy, or calories, you need daily.

**i.** It is calculated based on your age, gender, height, weight, and activity level, and indicates the amount of energy *you* need daily to maintain energy balance.

**ii.** Table 2.1 gives the range of calories needed daily based on age, gender, and activity level.

**7.** Figure 2.2 illustrates the relationships between the reference values.

**D.** How to use the DRIs:

**1.** You can use the DRIs to make healthy food choices and plan a quality diet.

**2.** The goal should be to meet the RDA or AI of all nutrients, without surpassing the UL.

**3.** Table 2.2 summarizes the DRIs.

**4.** The inside front cover of the textbook shows the DRIs for all nutrients needed daily.

**5.** The Table Tips feature "Tip-Top Nutrition Tips" on page 37 provides ideas for using the DRIs in daily life.

**eLearn: Healthy Eating on a Budget**

**Animation: DRI Determination**

## III. What Are the *Dietary Guidelines for Americans*?

**A.** Due to the health consequences of overconsumption of fat, saturated fat, cholesterol, and sodium, the government designed goals to improve Americans' diets.

**1.** The *Dietary Guidelines for Americans* are intended for healthy individuals over the age of two and correspond with the latest recommendations for nutrition and physical activity.

**a.** The intention of the guidelines is to lower risk for chronic diseases and conditions, such as high blood pressure, high blood cholesterol levels, diabetes mellitus, heart disease, and certain cancers.

**b.** The Nutrition in the Real World feature "The *Dietary Guidelines for Americans at* a Glance" provides an overview of the 2010 guidelines.

**i.** For the 2015 update to the guidelines, see http://health.gov/dietaryguidelines.

## IV. What Are MyPlate and ChooseMyPlate.gov?

**A.** There are several carefully designed food guidance systems to help you select the best foods for your diet.

**1.** A food guidance system is an illustrated diagram to help people select from a variety of foods to design a healthy diet.

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2. Many countries have developed their own food guidance systems, as illustrated in Figure 2.3.
3. Some food guidance systems are specifically geared toward reducing risk of certain diseases, as is the case with the DASH (Dietary Approaches to Stop Hypertension) diet and the Mediterranean-style eating pattern.
4. The website www.ChooseMyPlate.gov and the tool MyPlate were released by the USDA in 2011..
   a. MyPlate, which depicts five food groups in a place setting (see Figure 2.4), serves as an icon to remind consumers to eat healthfully.
   a. ChooseMyPlate.gov provides information, tips, and tools to help you build a healthier diet based on the *Dietary Guidelines for Americans*.

**B.** MyPlate and ChooseMyPlate.gov emphasize changes in diet, eating behaviors, and physical activity.

1. MyPlate and ChooseMyPlate.gov promote proportionality, moderation, variety, and personalization.
2. Food proportionality on the plate can have a dramatic effect on calorie intake.
3. You should choose mostly nutrient-dense foods—food with a high amount of nutrients compared to the number of calories—from each food group.
   a. The foundation of your diet should be nutrient-dense foods with little solid fats and added sugars.
   b. Figure 2.5 shows a comparison of the nutrient density of two versions of a potato: a medium baked potato and an ounce of potato chips.
   c. Figure 2.6 compares sample nutrient-dense food choices to less healthy food choices in each food group.
4. Energy density refers to foods that are high in energy but low in weight or volume.
5. Eating a variety of foods among and within the food groups highlighted in MyPlate will increase your chances of consuming all 40 of the nutrients your body needs.
   a. Figure 2.7 provides tips on how to choose a variety of foods from each food group.
6. Physical activity is an important component in the *Dietary Guidelines for Americans*.
   a. Advice regarding physical activity can also be found at ChooseMyPlate.gov.

**C.** How to use MyPlate and ChooseMyPlate.gov

1. MyPlate reminds you to eat a diverse group of foods, and ChooseMyPlate.gov will give you the exact numbers of servings to eat from each food group, based on your daily calorie needs.
2. If you cannot go to the website, you can obtain similar information by using Tables 2.1 and 2.3 in this chapter.
   a. First, figure out how many calories you should be eating daily by considering your activity level.
   b. Refer back to Table 2.1 on page 36 for the number of calories you need based on your activity level, age, and gender.
   c. Next, Table 2.3 tells you how many servings from each food group you should consume to healthfully obtain the calories your body requires.
3. Figure 2.8 provides an easy way to eyeball your serving sizes.
   a. The Nutrition in the Real World feature "When a Portion *Isn't* a Portion" on pages 46–47 shows how portion sizes have changed over the years, and how portion distortion can adversely affect your health.

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4. Figure 2.9 shows how solid fats and added sugars fit into a healthy diet.
   a. If you select mostly nutrient-dense, lean foods that contain few solid fats and added sugars, you may have leftover calories to "spend" on extra helpings or a small sweet dessert.
   b. Table 2.4 shows how you can select foods to reduce your solid fats and added sugars.
5. Figure 2.10 shows how servings from the various food groups can create well-balanced meals and snacks throughout the day.
6. Nutrient needs are averaged over several days, or a week, of eating
   a. Read more about the time of day you should eat in the Examining the Evidence feature "Does the Time of Day You Eat Impact Your Health?" on pages 48–49.
7. Foods that you eat, such as pizza, may contribute to more than one food group.
   a. Table 2.5 provides examples of such foods.
8. As you shop, the food label can help you make sure you know the nutrient and calorie contents of foods.

**Practical Nutrition Video: Portion Sizes**

**Self-Assessment: Does Your Diet Have Proportionality?**

**NutriTools: Build-A-Meal**

**NutriTools: Build-A-Salad**

**abc NEWS Lecture Launcher Video: Fast-Paced Movies, Television Shows May Lead to More Snacking**

**abc NEWS Lecture Launcher Video: Experiment Shows Portion Control is the Key to Healthy Eating**

## V. What Is a Food Label and Why Is It Important?

**A.** The food label (Figure 2.11) tells you what's in the package.
1. The FDA regulates the food labels in the United States.
   a. The FDA mandates that every packaged food be labeled with:
      i. The name of the food
      ii. The net weight of the food
      iii. The name and address of the manufacturer or distributor
      iv. A list of ingredients in descending order by weight
      v. A Nutrition Facts panel, which lists total calories, calories from fat, total fat, saturated fat, *trans* fats, cholesterol, sodium, total carbohydrate, dietary fiber, sugars, vitamin A, vitamin C, calcium, and iron
      vi. Serving sizes that are uniform among similar products
      vii. An indication of how a serving of the food fits into an overall daily diet
      viii. Uniform definitions for descriptive label terms (such as "light" and "fat-free")
      ix. Health claims that are accurate and science-based
      x. The presence of any of eight common allergens that might be present in the food, including milk, eggs, shellfish, tree nuts, peanuts, wheat, and soybeans
   b. Some foods, such as plain coffee and spices, are exempt from having a Nutrition Facts panel.

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**c.** Nutrition labeling is mandatory for meat and poultry, unless they are sold as prepared foods.

**B.** The food label can help you make healthy food choices.

**1.** The information needed to make smart product choices is provided on the Nutrition Facts panel.

**2.** On the label: the Nutrition Facts panel:

**a.** The Nutrition Facts panel provides a snapshot of what is inside the food package.

**b.** The panel must, by law, list calories and calories from fat; total fat, saturated fat, and *trans* fat; cholesterol; sodium; total carbohydrate, dietary fiber, and sugars; protein; vitamin A, vitamin C, calcium, and iron.

**i.** If an additional nutrient such as vitamin E or vitamin $B_{12}$ has been added, or if the product makes a claim about a nutrient, it must be listed; otherwise, the manufacturer lists additional vitamins and minerals voluntarily.

**c.** The FDA is considering changes to the Nutrition Facts panel; the current content of the panel and the proposed new label are both shown in Figure 2.12.

**d.** The serving size must be listed as both weight in grams and common household measures (with which you are more familiar, such as cups or ounces).

**i.** Serving sizes are standardized among similar products so you may easily compare one brand of a product to another.

**ii.** The remaining information on the Nutrition Facts panel is based on the serving size listed.

**3.** On the label: the Daily Values:

**a.** The Daily Values (DVs) are general reference levels for the nutrients listed on the food label.

**b.** DVs are not as current as DRIs.

**c.** There are only DVs for nutrients for which there exists sufficient scientific evidence to set reference values.

**d.** Depending upon the size of the food package, there may be a footnote at the bottom that provides a summary of the DVs for a 2,000-calorie and a 2,500-calorie diet.

**e.** A manufacturer may claim that a food is "high" in a particular nutrient if a serving provides 20 percent or more of the DV.

**f.** If a serving provides 5 percent or less of the DV, it is considered "low" in that nutrient.

**4.** On the label: label claims:

**a.** The FDA allows food manufacturers to use three types of claims on food products: nutrient content claims, health claims, and structure/function claims.

**b.** Nutrient content claims:

**i.** Nutrient content claims are claims that express the level or amount of a nutrient in a product using descriptive terms (such as free, high, low, reduced, or extra lean) and are permitted within the FDA criteria.

**ii.** Each descriptor means something specific.

**iii.** Figure 2.13 illustrates different nutrient content claims.

**iv.** Table 2.6 shows the most common nutrient claims on food labels.

**d.** Health claims:

**i.** Health claims must contain both a food or dietary compound (such as fiber) and a corresponding disease or health-related condition associated with the claim.

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ii. Three types of health claims exist: authorized health claims, health claims based on authoritative statements, and qualified health claims.

iii. See Table 2.7 for definitions and examples of health claims.

e. Structure/function claims:

i. These claims describe how a nutrient affects the structure or function of the human body.

ii. Though they must be based in truth, structure/function claims do not need to be preapproved by the FDA.

iii. These claims cannot state that the nutrient or dietary compound can be used to treat a disease or condition.

iv. Dietary supplement manufacturers using structure/function claims must follow more strict usage guidelines, including a label disclaimer.

v. See a sample structure/function claim in Figure 2.14.

5. All foods showing a health claim or a structure/function claim can be marketed as functional foods.

6. Keep the types of claims straight by remembering these points:

a. Authorized health claims and health claims based on authoritative statements are the strongest.

b. Qualified health claims are less convincing; these claims are "qualified" as based on evidence that is still emerging.

c. Structure/function claims are the weakest and will have the weakest wording.

7. Table 2.8 summarizes the various tools for healthy eating.

**Practical Nutrition Video: Reading a Food Label**

**Practical Nutrition Video: Understanding Food Claims**

**eLearn: Virtual Food Label Fun**

**abc NEWS Lecture Launcher Video: Changes Coming to Nutrition Labels**

**Animation: Reading Labels**

## VI. Functional Foods: What Role Do They Play in Your Diet?

**A.** The Academy of Nutrition and Dietetics defines functional foods as whole foods that have a potentially beneficial effect on health when regularly consumed in enough quantity as part of a varied diet.

1. If the beneficial compound is derived from plants, it is called a phytochemical.

2. If the beneficial compound is derived from animals, it is called a zoochemical.

3. Table 2.9 provides a list of currently known health benefits of certain compounds in foods.

**B.** Are there concerns associated with consuming functional foods?

1. The best way to use functional foods is as part of a healthy diet that can help prevent adverse health conditions.

2. Problems may arise if too much of a particular dietary substance is consumed.

a. Note that some functional beverages can have more calories and added sugar than soft drinks.

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**C.** How to use functional foods:

1. Whole grains, fruits, vegetables, healthy vegetable oils, lean meat and dairy products, fish, and poultry are functional foods that contain varying amounts of phytochemicals and zoochemicals.
2. When consuming packaged functional foods, take care to not overconsume any one compound.
3. The Health Connection: A Case Study titled "Functional Foods and Cholesterol" on page 62 discusses the potential of use of functional foods to lower blood cholesterol.

**ABC NEWS Lecture Launcher Video: Coconut: How Healthy Is the Superfood?**

## In-Class Discussion Questions

1. Do you have a healthy diet? What exactly makes a diet "healthy"? How do you know if your diet fits that description?
2. Pick and discuss one of the *Dietary Guidelines for Americans* categories you feel is the most critical for children under the age of 18 or older adults.
3. The last time you bought a new food product at the store, what was it that convinced you to do so? The colors and pictures on the label? The nutrient content claims? The health claims? The structure/function claims? The information on the Nutrition Facts panel? Discuss what influences you personally to purchase a new food item, and what you think sways the public.
4. Food guidance systems have changed over the years. What do you think is especially effective for the public about MyPlate? What else (if anything) would you do to enhance MyPlate to help Americans improve their eating habits?

## In-Class Activities

1. Ask students to write down four nutrients they know are important to their personal health. Then ask them how much they think they need each day and write that down as well. Have them compare their guesses to the actual amounts using the table on the inside cover of the text, and to note whether the amount for each is an EAR, RDA, AI, or UL.
2. (If you have computer and Internet access in your classroom.) Create a fictional profile to use with the ChooseMyPlate.gov SuperTracker (https://www.supertracker.usda.gov/). Find the "Food Tracker" section. Have students suggest a fast-food meal and note the nutrient content. Follow the instructions to analyze and see how this sample intake compares to the "acceptable or recommended range." Go back and analyze a meal with healthier substitutions suggested by the class. You may also wish to use different types of profiles (for example: 20-year-old male with a higher activity level, 45-year-old female with lower activity level, etc.) so that students are able to see differences in how the intake compares to the recommendations for a variety of individuals.
3. Have students write down the foods they consumed in the meal prior to class (morning, afternoon, or evening prior). Instruct them to determine if their choices were nutrient-dense and to list more nutrient-dense options where possible. Have students share examples of how they might be able to improve their food intake in this manner.
4. Ask students to bring in a Nutrition Facts panel from home (it does not have to be "healthy"). In class, students should exchange labels with a fellow classmate. Have students take turns identifying one noteworthy value that makes his or her item "healthy"

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or “less healthy” by discussing a particular aspect of what is shown on the Nutrition Facts panel. Ask each student to explain why he or she would or would not purchase this food based solely on the Nutrition Facts panel.

5. Using the same labels as in Activity #4, have students locate the claim (if any) and identify it as either a nutrient content claim, a health claim, or a structure/function claim.

## Critical Thinking Questions

1. Consider how the information available on food labels and your knowledge of MyPlate actually affects the choices you make about the food you eat. Do you ever read food labeling information to make decisions when you shop for food? After reading this chapter, will you change your purchasing habits to include reading more food labels?
2. Were you familiar with the DRIs prior to reading this chapter? Do you think most Americans are familiar with them? Are the DRIs valuable to the average consumer? Why or why not?
3. What do you do when confronted with a restaurant menu that doesn’t include the types of information that, by law, must be included on food labels? How can an understanding of the DRIs, MyPlate, and other guidelines help you make healthy choices even without a nutrition label?

## Practical Nutrition Videos

Author Joan Salge Blake offers lecture teaching tips for effectively communicating a nutrition concept to students in **Practical Tips for Teaching: Reading a Food Label**, available on the Teaching Toolkit DVD and through course management.

She also walks students through making better eating choices in familiar environments in the Practical Nutrition videos **Portion Sizes**; **Reading a Food Label**; and **Understanding Food Claims**, available by scanning the QR codes or through the Teaching Toolkit DVD and course management.

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