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CHAPTER

2

Tools for Healthy Eating

Chapter Summary

This chapter provides an excellent overview of the key principles describing and quantifying healthful eating. A healthy pattern of eating can be established using the information provided from government guidelines.

Each of the government guidelines/eating plans is defined, shown, and illustrated. The nutrient recommendations via the Dietary Reference Intakes are described, then the interpretation of these recommendations (MyPlate and the *Dietary Guidelines*) are illustrated in a detailed manner. Additionally, students will learn how to assemble a healthy food plan using these guidelines.

Students will also learn about packaged food labels and various health claims.

The information is provided for our safety and to give useful nutrient information to consumers when selecting their groceries in the supermarket.

Learning Outcomes

2.1 Describe the key principles of healthy eating.

2.2 Distinguish between the Dietary Reference Intake terms EAR, AI, RDA, UL, and AMDR.

2.3 Describe the recommendations included in the *Dietary Guidelines for Americans*.

2.4 Explain the concept of the MyPlate food guidance system, including the food groups and typical foods represented.

2.5 Describe how the exchange system can be used as a guide to plan a balanced diet.

2.6 Identify the required components of a food label and Nutrition Facts panel.

2.7 Compare the terms “portion” and “serving size” and summarize the health benefits of controlling your portions.

Chapter Outline

I. What Are the Key Principles of Healthy Eating?

A. Healthy eating means you need to *balance*, *vary*, and *moderate* your nutrient intake.

1. A healthy diet includes foods that are high in *nutrient density* and low in *energy density*.

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B. Healthy eating means balance between food groups.

1. A balanced diet includes healthy proportions of all nutrients and is adequate in energy. A diet that lacks balance can cause *undernutrition* (nutrient and/or energy needs are not met) and/or *malnutrition* (the long-term outcome of an imbalanced diet).

2. *Overnutrition* can result from overconsumption of a certain nutrient or too many kilocalories.

C. Healthy eating means consuming a variety of foods.

1. Because no single food or food group contains all things healthy, one should choose a variety of foods.

D. Healthy eating means moderate intake of all foods, i.e. eating those foods in moderation by limiting the *portion* size and number of servings consumed.

1. Portion sizes are frequently overestimated. In general, we consume two or more portions of a given food at a given meal.

E. Healthy eating includes *nutrient-dense foods*.

1. Nutrient-dense foods provide more nutrients per kilocalorie, are low in fat and added sugars, and are generally excellent sources of important nutrients.

F. Healthy eating includes low-energy-dense foods.

1. Energy density refers to foods that are high in energy but low in weight or volume. A great amount of these foods can be consumed with equal or lower kilocalorie content.

a. Eating a larger amount of food increases satiety and decreases hunger.

2. Modest changes in dietary intake can promote and maintain weight loss over time.

G. Many resources are available for planning a healthy diet.

1. The published guidelines of the *Dietary Reference Intakes* (DRIs), which form the basis for the *Dietary Guidelines for Americans*, are excellent resources for planning a healthy diet.

a. Figure 2.2 shows the books and the implementation tools available for use.

2. The MyPlate food guidance system and the Daily Values (DVs) are additional resources that can help implement the DRI recommendations.

3. The exchange system groups foods according to their macronutrient content, thus making it easier to plan meals.

4. The Nutrition Facts panel on food labels, which contains the Daily Values, can help you decide which foods to buy

Additional Instructor Tools: PPT slides 4–14

Key Terms: balance, vary, moderate, nutrient density, energy density, undernutrition, malnutrition, overnutrition, portion

Figures and Tables:

Figure 2.1 Which Is the Healthier Way to Enjoy Potatoes?

Figure 2.2 Dietary Recommendations and Implementation Tools

Table 2.1 Bargain Shopping on an Energy Budget

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II. What Are the Dietary Reference Intakes?

A. *Dietary Reference Intakes (DRIs)* are specific dietary reference values for each nutrient.

1. The issuing board of the DRIs is the Food and Nutrition Board (FNB) of the National Academy of Sciences' Institute of Medicine.

2. The focus of the DRIs is to maintain good health and reduce the risk of developing chronic diseases while avoiding unhealthy excesses.

3. The recommendations are updated frequently to reflect the most recent scientific research; they have been updated ten times since the 1940s.

B. The DRIs suggest an intake level for each nutrient.

1. The *nutrient requirements* of individuals vary throughout the lifecycle, requiring varying DRI recommendations for particular group needs.

C. The DRIs encompass several reference values.

1. The DRIs are described and illustrated in Focus Figure 2.3 as an umbrella term that covers five reference values.

2. *Estimated Average Requirement (EAR)*: The EAR is the is the starting point of determining the other reference values.

a. The EAR is the amount of a nutrient projected to meet the needs of 50 percent of healthy Americans by age and gender.

b. The EAR for a nutrient is established based on a measurement indicating whether an individual is at risk of deficiency.

c. If there aren't enough studies or collected data to develop an appropriate method of measurement, no EAR is set for that nutrient.

3. *Recommended Dietary Allowance (RDA)*: The RDA, the recommendation for each nutrient that should meet the needs of nearly all the individuals in a specific gender or age group, can be calculated by using the EAR for each nutrient.

a. Because an EAR has not been set for every nutrient, an RDA cannot be calculated for every nutrient.

4. *Adequate Intake (AI)*: An AI is an estimate of the amount of a nutrient that people need to maintain good health.

a. The RDAs are based on EARs, whereas the AIs are set without an estimated average requirement.

b. The RDAs should cover the needs of 97 to 98 percent of the population, but AIs cannot predict how many people are covered due to the lack of EAR.

5. *Tolerable Upper Intake Level (UL)*: The UL is the highest amount of a nutrient that is unlikely to cause harm if consumed daily.

a. The possibility of *toxicity* is introduced and defined as exceeding the UL on a regular basis. People are often unaware that consuming high intakes of some nutrients can have a harmful effect.

6. *Acceptable Macronutrient Distribution Ranges (AMDRs)*: The AMDRs give recommended ranges of carbohydrate, protein, and fat consumption:

a. Carbohydrates should comprise 45 to 65 percent of your daily kilocalories.

b. Fat should comprise 20 to 35 percent of your daily kilocalories.

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c. Proteins should comprise 10 to 35 percent of your daily kilocalories.

7. *Estimated Energy Requirement (EER)*: Determination of the EER is based on a calculation involving age, gender, height, weight, and activity level; the result is meant to indicate the amount of energy needed to maintain energy balance.

D. You can use the DRIs to plan a quality diet.

1. To meet average needs, the goal should be to achieve the RDA or the AI of all nutrients, but not exceed the UL.

Additional Instructor Tools: PPT slides 15–27

Animation: Dietary Reference Intakes

Key Terms: Dietary Reference Intakes (DRIs), nutrient requirements, Estimated Average Requirement (EAR), Recommended Dietary Allowance (RDA), Adequate Intake (AI), Tolerable Upper Intake Level (UL), toxicity, Acceptable Macronutrient Distribution Ranges (AMDRs), Estimated Energy Requirement (EER)

Figures and Tables:

Focus Figure 2.3 Dietary Reference Intakes

Table 2.2 Putting It All Together: Tools for Healthy Eating

Table 2.3 How Many Kilocalories Do You Need Daily?

Table 2.4 The Do's and Don'ts of the DRIs

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

A. The *Dietary Guidelines for Americans* were developed out of concern over the incidence of overnutrition among Americans.

1. Begun in 1977 as *Dietary Goals for Americans*, today's *Guidelines* serve as the basis for all federally funded nutrition programs in areas such as research, labeling, and education.

2. Both the USDA and the Department of Health and Human Services are mandated to update these guidelines every five years.

3. The *Dietary Guidelines* are meant to help those aged 2 and over improve the quality of their diet to lower risk of chronic diseases and unhealthy conditions.

Additional Instructor Tools: PPT slides 28–30

Key Term: *Dietary Guidelines for Americans*

Figures and Tables:

Table 2.5 The Dietary Guidelines for Americans at a Glance

IV. What Is the MyPlate Food Guidance System?

A. MyPlate is the most recent *food guidance system* developed by the USDA for Americans. Released in 2011, MyPlate reflects the recommendations in the *Dietary Guidelines for Americans, 2010*, and the Dietary Reference Intakes (DRIs) nutrient goals.

B. MyPlate emphasizes changes in diet.

1. MyPlate shows five food groups in relative proportion using a visual of a place setting, with each colored section representing one of five food groups: fruits, vegetables, grains, proteins, and dairy.

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2. MyPlate promotes *proportionality* in how the various food groups should rank in your diet.
3. Several important messages at ChooseMyPlate.gov are based on three general areas of recommendation from the current *Dietary Guidelines*:
   a. Balance kilocalories
   b. Increase certain foods (fruits, vegetables, whole grains, and fat-free or low-fat milk)
   c. Reduce certain foods (sodium, sugary drinks)
4. Diets that are high-nutrient-dense and low-energy-dense will typically be lower in solid fats and added sugars and higher in nutrient content.
5. Eating a variety of foods as highlighted via MyPlate will increase the likelihood of consuming all 40 of the nutrients required by the body.
6. Being physically active helps you stay fit and reduce risk of chronic diseases

C. How to use MyPlate:

1. The ChooseMyPlate.gov interactive website, along with Tables 2.7 and 2.8, indicates how many servings to eat from each food group based on daily kilocalorie needs.

Additional Instructor Tools: PPT slides 31–45

Key Terms: food guidance systems, MyPlate, proportionality

Figures and Tables:

Figure 2.4 Anatomy of MyPlate

Figure 2.5 Nutrient-Dense Food Choices

Figure 2.6 Mix Up Your Choices within Each Food Group

Figure 2.7 How Solid Fats and Added Sugars Fit into a Balanced Diet

Figure 2.8 A Healthy Daily Food Plan

Table 2.6 What Is Moderate and Vigorous Activity?

Table 2.7 How Much Should You Eat from Each Food Group?

Table 2.8 Choose Right

V. What Is the Exchange System?

A. In 1950, *exchange lists* for meal planning were designed to give people with diabetes a structured, balanced eating plan; these lists are still used.

1. The exchange lists provide specific portion sizes and list foods according to six food groups: starch, fruit, milk, vegetable, meat, and fat.
   a. The location of foods can vary from assignments in MyPlate.
   b. The flexible exchange lists can be a convenient method for designing a meal plan to lose weight.
   c. Table 2.9 shows the exchange system, the six food groups, and five different kilocalorie distribution examples. Information beneath the table includes portion sizes and common foods within each food exchange category.
   d. Foods within each grouping can be exchanged or swapped to add variety to meals and snacks.

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Additional Instructor Tools: PPT slides 46–47

Key Term: exchange lists

Figures and Tables:

Figure 1 Satiety Ratios Based on Time between Meals and Energy Content

Figure 2 Satiety Index of Different Foods

Table 2.9 Number of Exchanges per Food Group per Day by Kilocalorie Intake

VI. What Information Is on the Food Label?

A. Food labels are strictly regulated by the FDA.

1. According to the 1990 Nutrition Labeling and Education Act, each label must include the following:

a. Name of the food

b. Net weight (weight of the food in the package, excluding weight of package or packing material)

c. Name and address of manufacturer or distributor

d. List of ingredients in descending order by weight, with heaviest item listed first

e. Nutrition information with total kilocalories, kilocalories from fat, total fat, saturated fat, *trans* fats, cholesterol, sodium, total carbohydrates, dietary fiber, sugars, vitamin A, vitamin C, calcium, and iron

f. Serving sizes (uniform across similar products)

g. Indication of how a serving fits into an overall daily diet

h. Uniform adherence to established definitions for certain descriptive terms such as “light” and “fat-free”

i. Health claims that are accurate and science-based if made about the food or one of its nutrients

j. Presence of any of eight common allergens that might be present in the food, including milk, eggs, fish, shellfish, tree nets, peanuts, wheat, and soybeans

B. The Nutrition Facts panel indicates nutrient values.

1. The *Nutrition Facts panel* must list specific nutrients (mentioned above), but other nutrients may be listed at the discretion of the manufacturer on a voluntary basis.

2. Some foods are exempt from carrying a Nutrition Facts panel on the label, including plain coffee and tea, some spices, flavorings, and other foods that don’t provide a significant amount of nutrients.

C. The *Daily Values (DVs)* help you compare packaged foods. The DVs give a general idea of how the nutrients in the food fit into the overall diet.

1. There are no DVs listed for certain ingredients (such as *trans* fat, sugars, protein) as there may not be enough information available to set reference values, or the information is unwarranted.

2. The DVs are calculated on the basis of a 2,000-kilocalorie diet, although some packages may also list a summary of the DVs for a 2,500-kilocalorie diet.

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D. Label claims can reveal potential health benefits. Three types of labels can currently be used on food products: nutrient content claims, health claims, and structure/function claims.

1. *Nutrient content claims*: A food product can make a claim about the amount of a nutrient it does or doesn't contain by using descriptive terms (free, high, low, reduced, extra lean) as long as the food meets the criteria designated by the FDA.

2. *Health claims*: These must contain both a food or a dietary compound (such as fiber) and a corresponding disease or health-related condition associated with the claim. For example, "The soluble fiber in Cheerios, as part of a heart-healthy diet, can help lower your cholesterol."

a. Authorized health claims

b. Health claims based on authoritative statements

c. Qualified health claims

3. *Structure/function claims*: These claims describe how a nutrient or dietary compound affects the structure or function of the human body, such as "calcium builds strong bones."

a. These claims don't need to be approved by the FDA, but the manufacturer is responsible for ensuring the accuracy of the claim.

b. Structure/function claims can be confusing to shoppers; it's important to recognize the difference between a claim supported by solid research that is FDA-approved and a structure/function claim that doesn't require prior approval for use.

c. Dietary supplements (not foods) require inclusion of a disclaimer on the label stating the FDA did not evaluate the claim and that the product is not intended to "diagnose, treat, cure, or prevent any disease."

d. Label claims with less-established scientific evidence behind them generally have the weakest wording.

Additional Instructor Tools: PPT slides 48–62

Animation: Reading Labels

Key Terms: Nutrition Facts panel, Daily Values (DVs), nutrient content claims, health claims, structure/function claims

Figures and Tables:

Figure 2.9 Labeling Requirements Mandated by the FDA

Focus Figure 2.10 The Nutrition Facts Panel

Figure 2.11 Soup's On!

Figure 2.12 A Structure/Function Label Claim

Table 2.10 What Does That Labeling Term Mean?

Table 2.11 Sorting Out Label Claims

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VII. Portion Distortion

A. *Serving size* is a recommended portion of food that is used as a standard reference on food labels.

B. Figure 2.13 illustrates several common portion sizes relative to areas of a human hand. Table 2.12 draws comparisons of portions sizes of common foods by measurement.

C. Portion sizes have grown over the years of the twentieth century.

D. Eating larger portions of certain foods, especially foods high in sugar and fat, can have negative impacts on individual health.

1. An adverse result of oversized portions is that the larger the portion, the less we are able to estimate kilocalorie intake and potential weight gain.

E. Knowing the kilocalorie content of foods may not influence portion size.

Additional Instructor Tools: PPT slides 63–64

Key Term: serving size

ABC NEWS **Lecture Launcher Video:** How Many Servings Are You Eating?

ABC NEWS **Lecture Launcher Video:** Menu Calorie Counts: How Accurate Are They?

Figures and Tables:

Figure 2.13 What's a Portion Size? Eat with Your Hands!

Table 2.12 Comparison of Portion Sizes of Common Foods

Table 2.13 Controlling Portion Sizes

In-Class Discussion Questions

1. Discuss three or more of the *Dietary Guidelines for Americans*. Exactly how do they concern you? To what extent are you already complying with the guidelines?

2. How often do you read or concentrate on food labels when you select food in the supermarket, and what parts of the label do you focus on?

3. To what extent do nutrient content claims influence your food selections? Health claims? Structure/function claims?

4. Pretend you are giving dietary advice to Donald, whose medical condition is diabetes. How does the food exchange system work? How will Donald be helped if he learns to follow this system and if he models his food selection from a food exchange plan?

5. In plain, simple language explain the difference between well-established health claims of calcium and osteoporosis vs. less well-established claims, such as the link between intake of antioxidant vitamins and cancer.

6. Discuss in a comprehensive manner all the aspects of healthy eating. Include at least one new concept from this chapter.

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In-Class Activities

1. List the major food groups from MyPlate and state an example of the foods contained within each group. Put together a comprehensive MyPlate diagram containing foods students suggest in the proper places on the place setting.
2. If the classroom has Internet access, go to the ChooseMyPlate.gov website and explore the links. Explain how a healthful diet incorporates the MyPlate system into the planning process.
3. Turn to Focus Figure 2.10 and recite some of the labeling terms and provide some examples. Hint: A few food samples would be very helpful.
4. State how kilocalorie needs affect food choice for these three people: Andrew—sedentary, overweight, and attempting to lose weight; Bob—moderately active, normal weight; Carl—active, underweight, attempting to gain weight.
5. Have six or more students talk about their favorite sport or physical activity and how it could affect their dietary needs.
6. Have students work in groups of three. Ask each student to state when he or she is most likely to overeat during the day and when he or she is most likely to be highly aware of food choices. What makes the difference?
   a. The same group of students could discuss the concept of discretionary kilocalories. Are they generally within the healthy guidelines? Or are they prone to be excessive?
7. Compare some nutrient-dense foods to low-nutrient-dense foods. Are students correct in their classifications? What would be the nutrient-dense/low-nutrient-dense counterparts to the foods mentioned?
8. Ask each student to bring to class a package of food with a Nutrition Facts panel. Ask: If you label certain foods as highly nourishing, what information on the Nutrition Facts panel is guiding your judgment?

Critical Thinking Questions

1. List all the elements of healthy eating that you can recall. Do you follow these recommendations?
2. Consider the strengths and weaknesses of your own diet. What are a few changes that need to be made? Examples could include adding whole grains or decreasing coffee and colas.
3. Why is changing our food intake one of the most challenging behavior changes we can make?
4. How could you incorporate some of the DRI information into your daily food selection routine?
5. Consider portion size. Which foods are you likely to overeat instead of managing your portion control reasonably? How do you decide how much food to eat? Beverage to drink? How can such a simple concept result in such confusion?
6. What does the term *nutrient density* mean to you? Cite some foods that are overwhelmingly nutrient-dense.

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7. Health care officials in the United States have certainly prepared, published, and released well-documented, scientifically strong nutrition recommendations. Why are many Americans still obese or suffering from life-threatening illnesses? In other words, what lifestyle errors are people making? Why won't these adults reform? What will it take for the "science" to catch up with the application?

ABC NEWS Lecture Launcher Video Discussion Questions

How Many Servings Are You Eating?

1. Discuss whether or not the government should regulate the sale of large serving sizes at restaurants (such as the size of sugary drinks).
2. Discuss creative ways companies can educate consumers regarding appropriate serving sizes of their food products.
3. In what ways should the FDA be involved in educating consumers about serving size?

Menu Calorie Counts: How Accurate Are They?

1. Is the new federal law, which requires posting calorie counts for foods, beneficial or detrimental for restaurant goers?
2. In what ways is the calorie count advertised misleading for customers?
3. Caloric needs are based on several factors. Does the average person have the knowledge to accurately assess caloric intake needs? What more can be done to educate the public regarding caloric needs?
4. What practical methods can the consumer employ to decrease calorie intake at restaurants?

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