Wardlaws Perspectives in Nutrition 10th edition Byrd-Bredbenner Solutions Manual

SKU: 9780078021411-SOLUTIONS

Wardlaws Perspectives in Nutrition 10th edition Byrd-Bredbenner Solutions Manual

Chapter 2
Tools of a Healthy Diet

Overview

Chapter 2 provides students with the science behind current nutrition recommendations for North Americans. The components of the Dietary Reference Intakes are defined, including Estimated Average Requirements, Recommended Dietary Allowances, Adequate Intakes, Tolerable Upper Intake Levels, and Estimated Energy Requirements. The required and optional elements of food labels are also discussed. The text defines Daily Values as they relate to DRIs and also examines the various nutrition claims allowed on food labels. The development and utility of nutrient databases are presented. Finally, the Dietary Guidelines for Americans and MyPlate are presented as sound nutrition advice based on the latest scientific research.

Learning Objectives

1. Explain the purpose of the Dietary Reference Intake (DRI) and its components (Estimated Average Requirements, Recommended Dietary Allowances, Adequate Intakes, Upper Levels, Estimated Energy Requirements, and Acceptable Macronutrient Distribution Ranges).

2. Compare the Daily Values to the Dietary Reference Intakes and explain how they are used on Nutrition Facts panels.

3. Describe Nutrition Facts panels and the claims permitted on food packages.

4. Describe the uses and limitations of the data in nutrient databases.

5. Discuss the Dietary Guidelines for Americans and the diseases they are intended to prevent or minimize.

6. Discuss the MyPlate food groupings and plan a diet using this tool.

7. Develop a healthy eating plan based on the concepts of variety, balance, moderation, nutrient density, and energy density.

Teaching Strategies, Activities, Demonstrations, and Assignments

1. Complete **Take Action** activities, “Are You Putting the Dietary Guidelines into Practice?” and "Does Your Diet Meet MyPlate Recommendations?”. In this activity, students will use the dietary record they kept as suggested in Chapter 1 activities. Having students complete and analyze a three-day food record would provide a more accurate nutrition assessment. Students should hold on to this assessment for future use.

2. Ask students to select nutrition labels from four food products they consume regularly and to calculate the

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Wardlaws Perspectives in Nutrition 10th edition Byrd-Bredbenner Solutions Manual

actual amount or percent of RDA of selected nutrients for their age and gender group provided by these products.

3. Provide students with a sample of a day's food intake. Make sure it is high in fat, sodium, simple sugars, and low in fruits and vegetables. Ask students to make changes in this menu to comply with the Dietary Guidelines.

4. People often have difficulty accurately estimating portion/serving sizes of foods they eat. To help students with this, have them estimate food portions in class. You can do this by bringing to class samples of commonly consumed foods, various-sized glasses, bowls, measuring cups, measuring spoons, and a food scale if one is available. Examples of food to bring: puffed rice, Grape Nuts, cooked pasta, bagel or English muffin, chips, peanut butter, shelled sunflower seeds, raisins, orange juice, grape juice, mayonnaise, and some type of salad dressing. Pick and choose students to estimate a portion size using only the bowls and glasses provided. Keep the measuring cups and spoons, as well as the food scale hidden during this phase of the activity. Once portion sizes have been estimated by the students, show them, using measuring cups, measuring spoons, and the food scale, how accurate portion sizes look. They will be amazed. At the same time, discuss how to record food portions, what could happen to one's health when portion sizes are either overestimated or underestimated, how the Food Guide Pyramid and Exchange System differ in serving sizes, and how relatively easy nutrient needs can be met by consuming foods.

5. Find a particular nutritional supplement that exceeds the U.S. RDA for a variety of nutrients. Duplicate the label for each student. Point out in class how many nutrients significantly exceed the USRDA. Given the class's understanding of the U.S. RDA, ask them to discuss the implications of those nutrients exceeding it.

6. Assign students the task of visiting the web site, http://www.dietitian.com/calcbody.php, to complete the Healthy Body Calculator. Discuss the various factors this site uses to assess a "healthy body." How should individuals interpret their results?

Lecture Outline

2.1 Dietary Reference Intakes (DRIs)

- A. General
  - 1. Food and Nutrition Board formed in 1941 to establish the first dietary standards
    - a. Evaluate nutrient intake of population
    - b. Plan agricultural production
  - 2. Dietary standards are periodically updated to reflect latest research
  - 3. DRIs were established by scientists from the United States and Canada
  - 4. DRIs vary by life stage and gender after age 9
  - 5. Recommendations should be applied to average dietary intake
  - 6. Figure 2-1 illustrates the relationship of the DRIs to each other
- B. Estimated Average Requirements (EARs)

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

1. Daily nutrient intake amounts that are estimated to meet the needs of half of the people in a certain life stage
2. Only set for a nutrient when functional markers are available to evaluate the effects of nutrient status on physiological function; currently set for 17 nutrients
3. EARs are adjusted to account for digestibility and absorption
4. Used to evaluate the adequacy of diets of groups, not individuals

C. Recommended Dietary Allowances (RDAs)
1. Daily nutrient intake amounts sufficient to meet the needs of nearly all individuals (97 - 98%) in a life stage
2. Based on a multiple of the EAR for a nutrient (generally, RDA = EAR x 1.2); can only be set for nutrients with established EARs
3. Considers nutrient's ability to prevent chronic disease in addition to ability to prevent deficiency
4. Goal for usual intake
5. If average intake is habitually lower than RDA (especially lower than EAR), risk for nutrient deficiency increases

D. Adequate Intakes (AIs)
1. Daily intake amounts set for nutrients for which there are insufficient research data to establish an EAR; currently set for essential fatty acids, fiber, certain vitamins and minerals
2. Based on observed or experimentally determined estimates of average nutrient intakes that appear to maintain a defined nutritional state in a specific life-stage group
3. Should cover needs of more than 97 - 98% of individuals in a life-stage group
4. Goal for usual intake

E. Tolerable Upper Intake Levels (Upper Levels, or ULs)
1. Maximum daily intake amounts of nutrients that are not likely to cause adverse health effects in 97 - 98% of individuals in a life-stage group
2. Applies to chronic daily use
3. For most nutrients, ULs are set based on combined intake of food, water, supplements, and fortified foods; refers only to nonfood sources of niacin, magnesium, zinc, and nickel

F. Estimated Energy Requirements (EERs)
1. Average daily energy intake needs for each life-stage group
2. Only serve as estimates because actual EER depends on energy expenditure
3. Set to achieve and maintain a healthy weight

G. Acceptable Macronutrient Distribution Ranges (AMDRs)
1. Range of intake, as a percentage of energy, associated with good health and reduced risk of chronic diseases while providing for recommended intakes of essential nutrients
2. Established for carbohydrate, protein, fat, and essential fatty acids

H. Appropriate Uses of the DRIs

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Wardlaws Perspectives in Nutrition 10th edition Byrd-Bredbenner Solutions Manual

1. Intended mainly for diet planning
2. Apply to healthy people; undernourishment and some diseases may increase nutrient requirements

I. Putting the DRIs into Action to Determine the Nutrient Density of Foods
1. Determining nutrient density
   a. Divide the amount of a nutrient in a serving of food by daily recommended intake
   b. Divide the calories per serving by daily calorie needs
   c. A food is nutrient dense if it provides a greater contribution to nutrient needs than calorie needs
2. Easy way to identify more nutritious choices; more difficult to obtain an overall picture of nutritional quality; some experts recommend averaging nutrient density for key nutrients
3. Empty-calorie foods tend to be high in sugar and/or fat but few other nutrients

2.2 Daily Values (DVs)

A. General
1. Generic standards developed by FDA to use on food labels because DRIs are age- and gender-specific
2. Set for 4 groups:
   a. Infants
   b. Toddlers
   c. Pregnant or lactating women
   d. People over 4 years of age - appear on all food labels except those specifically marketed for infants, toddlers, or pregnant or lactating women
3. Based on combination of Reference Daily Intakes and Daily Reference Values

B. Reference Daily Intakes (RDIs)
1. Set for vitamins and most minerals
2. Usually set at the highest value for any life-stage group from 1968 RDAs
3. Current RDIs tend to be slightly higher than RDAs and related nutrient standards; should be revised to reflect latest scientific evidence
4. Table 2-2 compares Daily Values with current RDAs and other nutrient standards

C. Daily Reference Values (DRVs)
1. Standards for energy-producing nutrients, cholesterol, sodium, and potassium
2. Based on daily calorie intake, using 2000 calories as reference for calculation
3. Larger food labels may list DRVs for 2500 kcal/d as well
4. Calculations based on:
   a. Fat: 30% of kcal
   b. Saturated fat: 10% of calories
   c. Carbohydrate: 60% of calories
   d. Protein: 10% of calories

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Wardlaws Perspectives in Nutrition 10th edition Byrd-Bredbenner Solutions Manual

e. Fiber: 11.5 g/1000 calories

D. Putting the Daily Values into Action on Nutrition Facts Panels

1. Required information on food labels:
   a. Product name
   b. Name and address of manufacturer
   c. Amount of product in package
   d. Ingredients listed in descending order by weight
   e. Ingredients that are common allergens
   f. Nutrition Facts panel
   g. Country of origin of certain products
2. Food labeling is regulated by FDA in the United States
3. Nutrition Facts panel
   a. Presents information for a single serving
      i. Serving size is specified by FDA for consistency
      ii. Serving size may differ from MyPlate recommendations
   b. Required
      i. Total calories (kcal)
      ii. Calories from fat
      iii. Total fat
      iv. Saturated fat
      v. *Trans* fat
      vi. Cholesterol
      vii. Sodium
      viii. Total carbohydrate
      ix. Fiber
      x. Sugars
      xi. Protein
      xii. Vitamin A
      xiii. Vitamin C
      xiv. Calcium
      xv. Iron
   c. Listing of other nutrients is optional
   d. Nutrient must be listed on Nutrition Facts panel if label makes a claim about its health benefits or if food is fortified with the nutrient
   e. % DV for protein is not mandatory for products marketed for people 4 over years of age because protein deficiency is not a public health concern in the U.S.; such listing requires analysis for protein quality
4. Uses of DVs
   a. Determine how a particular food fits into an overall diet
   b. Make necessary adjustments for nutrients based on calorie intake
5. Nutrients listed on Nutrition Facts panel are those of greatest public health concern in North America

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Wardlaws Perspectives in Nutrition 10th edition Byrd-Bredbenner Solutions Manual

a. Keep intake below 100% DV for
   i. Total fat
   ii. Saturated fat
   iii. Cholesterol
   iv. Sodium
b. Plan to achieve 100% DV for
   i. Fiber
   ii. Vitamin A
   iii. Vitamin C
   iv. Iron
   v. Calcium

6. Nutrition Facts panel may include a footnote to show intake recommendations for fat, saturated fat, cholesterol, sodium, carbohydrate, and fiber for 2000- (and sometimes 2500-) calorie diet
7. Figure 2-4 highlights prominent features of the Nutrition Facts panel
8. Claims on Food Labels
   a. FDA permits and regulates specific label claims
   b. Nutrient content claims: describe nutrients in food (see Table 2-3)
      i. Calories
      ii. Total fat
      iii. Saturated fat
      iv. Cholesterol
      v. Sugar
      vi. Sodium
      vii. Fiber
      viii. Other claims
   c. Health claims: describe a relationship between a disease and a nutrient, food, or food constituent
      i. Calcium/osteoporosis
      ii. Low sodium/hypertension
      iii. Low total fat/cancer
      iv. Low-fat, fiber-containing grain products, fruits, and/or vegetables/cancer
      v. Low saturated fat and cholesterol/cardiovascular disease
      vi. Low in saturated fat and cholesterol, rich in fruits, vegetables and grains with soluble fiber/heart disease
      vii. Low saturated fat, low cholesterol, 25 g/day of soy protein/heart disease
      viii. Foods with plant stanols or sterol esters/heart disease
      ix. Folate/brain or spinal cord defects
      x. Sugar alcohols/tooth decay
   d. Conditions for health claims

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Wardlaws Perspectives in Nutrition 10th edition Byrd-Bredbenner Solutions Manual

i. Must use “may” or “might”
ii. Must be a good source of fiber, protein, vitamin A, vitamin C, calcium, or iron before fortification
iii. Cannot contain more than 13 g fat, 4 g saturated fat, 60 mg cholesterol, or 480 mg sodium

e. Qualified health claims
i. Based on incomplete scientific knowledge
ii. Must include disclaimer
iii. Food must meet definitions of “healthy” as described in Table 2-3

f. Structure/function claims: describe how a nutrient affects human body structure or function
i. Do not focus on disease risk reduction
ii. Not approved or authorized by FDA
iii. Manufacturers are responsible for ensuring claims are accurate and not misleading

E. Global Perspective: Front-of-Package Nutrition Labeling

1. Nutrition Facts panel provides U.S. consumers with accurate information about a food’s nutrient and calorie content
2. However, food industry has tried to condense nutrition labels into nutrition symbols (e.g. check marks, traffic lights, ratings) that are placed on the front of food packages or supermarket shelves
   a. Consumers are less likely to check nutritional labels when a symbol appears on the front of food packages
   b. Not regulated by FDA
   c. Lack of consistency
3. FDA is working with the food industry to develop uniform eligibility criteria for front-of-package food labels
   a. Create easy-to-understand labels that consumers can trust

2.3 Nutrient Composition of Foods

A. General

1. Compare amount of calories and nutrients consumed to dietary standards
2. Determine nutrient density and energy density of foods
3. Nutrient values in databases are average values of analyzed samples, but many factors may affect actual values
   a. Farming conditions
   b. Maturity and ripeness of plant foods
   c. Food processing
   d. Shipping conditions
   e. Storage time
   f. Cooking processes

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Wardlaws Perspectives in Nutrition 10th edition Byrd-Bredbenner Solutions Manual

B. Putting Nutrient Databases into Action to Determine Energy Density and Dietary Intake
   1. Energy density compares a food's calorie content per gram weight of the food
      a. Foods low in energy density contain large amounts of water (e.g., fruits, vegetables)
      b. Low-energy dense foods can keep calorie intake under control
      c. Eating foods with high energy density can help people with poor appetites to maintain or gain weight
      d. Table 2-4 lists energy density of common foods
   2. Awareness of amounts of nutrients and calories in food can help improve healthfulness of diet

C. Expert Perspective from the Field: Menu Labeling: How Many Calories Are in That?
   1. Consumers have the right to know the nutrition content of foods
   2. Restaurant food is now a significant portion of the food we eat
   3. Evidence indicates that stating calorie content on menus can lead to dietary improvements
      a. Fast food customers who reported seeing calorie information at the point of purchase ordered meals with fewer calories
      b. When calorie information was included in menus, customers ordered lower-calorie dinners for themselves and their children
   4. www.menulabeling.org

2.4 Dietary Guidelines for Americans

A. General
   1. Published by USDA and DHHS every 5 years
   2. Foundation of U.S. government's nutrition policy and education
   3. Designed to meet nutrient needs while reducing the risk of obesity, hypertension, cardiovascular disease, type 2 diabetes, osteoporosis, alcoholism, and foodborne illness
   4. Guide government nutrition programs, research, food labeling, and nutrition education and promotion
   5. Based on meeting nutrient needs primarily with food, although dietary supplements and fortified foods may be warranted in some people

B. Nutrition-related objectives
   1. Balancing calories to maintain weight
      a. Prevent and/or reduce overweight and obesity through improved eating and physical activity behaviors.
      b. 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.
      c. Increase physical activity and reduce time spent in sedentary behaviors.

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Wardlaws Perspectives in Nutrition 10th edition Byrd-Bredbenner Solutions Manual

d. Maintain appropriate calorie balance during each stage of life—childhood, adolescence, adulthood, pregnancy and breastfeeding, and older age.

2. Foods and food components to reduce
   a. Reduce daily sodium intake to less than 2,300 milligrams (mg) and further reduce intake to 1,500 mg among persons who are 51 and older and those of any age who are African American or have hypertension, diabetes, or chronic kidney disease. The 1,500 mg recommendation applies to about half of the U.S. population, including children, and the majority of adults.
   b. Consume less than 10 percent of calories from saturated fatty acids by replacing them with monounsaturated and polyunsaturated fatty acids.
   c. Consume less than 300 mg per day of dietary cholesterol.
   d. 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.
   e. Reduce the intake of calories from solid fats and added sugars.
   f. Limit the consumption of foods that contain refined grains, especially refined grain foods that contain solid fats, added sugars, and sodium.
   g. 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.

3. Foods and nutrients to increase
   Individuals should meet the following recommendations as part of a healthy eating pattern while staying within their calorie needs.
   a. Increase vegetable and fruit intake.
   b. Eat a variety of vegetables, especially dark-green, red, and orange vegetables and beans and peas.
   c. Consume at least half of all grains as whole grains. Increase whole-grain intake by replacing refined grains with whole grains.
   d. Increase intake of fat-free or low-fat milk and milk products, such as milk, yogurt, cheese, or fortified soy beverages.
   e. Choose a variety of protein foods, which include seafood, lean meat and poultry, eggs, beans and peas, soy products, and unsalted nuts and seeds.
   f. Increase the amount and variety of seafood consumed by choosing seafood in place of some meat and poultry.
   g. Replace protein foods that are higher in solid fats with choices that are lower in solid fats and calories and/or are sources of oils.
   h. Use oils to replace solid fats where possible.
   i. 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.

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Wardlaws Perspectives in Nutrition 10th edition Byrd-Bredbenner Solutions Manual

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

C. Putting the Dietary Guidelines into Action
1. Table 2-5 offers suggestions for implementing recommended diet changes based on the Dietary Guidelines
2. Control cost of healthy eating by choosing canned and frozen fruits and vegetables and non-fat dry milk
3. Based on current health status and family medical history, identify changes to incorporate into your lifestyle
4. Results of dietary changes sometimes take a while to occur
5. See a registered dietician or physician if the changes are not leading to health improvements

2.5 MyPlate

A. General
1. Translates nutrition science into practical terms
2. Key elements
    a. Balancing calories
        i. Enjoy your food, but eat less
        ii. Avoid oversized portions
    b. Foods to increase
        i. Make half your plate fruits and vegetables
        ii. Make at least half your grains whole grains
        iii. Switch to fat-free or low-fat (1%) milk
    c. Foods to reduce
        i. Compare sodium in foods like soup, bread, and frozen meals and choose the foods with lower numbers
        ii. Drink water instead of sugary drinks
3. The www.choosemyplate.gov website has many resources to help consumers use MyPlate and personalize it to their life stage
    a. Daily Food Plan
    b. The SuperTracker
    c. My Food-a-pedia
    d. Daily Food Plan
4. Table 2-7 presents MyPlate food serving sizes
    a. Grains: 1 ounce equivalent
        i. 1 slice of bread

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Wardlaws Perspectives in Nutrition 10th edition Byrd-Bredbenner Solutions Manual

ii. 1 c ready-to-eat breakfast cereal
iii. ½ c cooked cereal, rice, pasta, or bulgur
iv. 1 mini bagel or small tortilla
v. 1⁄2 muffin
vi. 3 c popcorn

b. Vegetable group: 1 cup
i. 1 c raw or cooked vegetables
ii. 1 c vegetable juice
iii. 2 c raw leafy greens

c. Fruits group: 1 cup
i. 1 c fruit
ii. 1 c 100% fruit juice
iii. ½ c dried fruit

d. Milk group: 1 cup
i. 1 c of milk, yogurt, or calcium-fortified soymilk
ii. 1 c frozen yogurt or pudding made with milk
iii. 1 ½ c ice cream
iv. 1 ½ oz of natural cheese
v. 2 oz of processed cheese

e. Meat & Beans group: 1 ounce equivalent
i. 1 oz meat, poultry, fish, or cooked tempeh
ii. 1 egg
iii. 1 T peanut butter or hummus
iv. ¼ c cooked beans
v. ½ oz nuts or seeds

f. Oils: 1 teaspoon
i. 1 t vegetable, fish oil, or oil-rich foods (e.g., mayonnaise, soft margarine)

B. Putting MyPlate into Action
1. Estimate energy needs
2. Use Table 2-6 to formulate meal pattern
3. Use Table 2-7 to determine portion sizes that fit into meal pattern
4. Key points
a. No specific food is required for good nutrition
b. No individual food group provides all essential nutrients in adequate amounts
c. Foods within a group may vary widely in nutrient and energy content
d. Use Figure 2-9 to estimate portion sizes
e. Variety is the key to getting the array of nutrients offered by each food group
5. Helpful hints for a nutritious diet
a. Grains group

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Wardlaws Perspectives in Nutrition 10th edition Byrd-Bredbenner Solutions Manual

i. Make half your grains whole grain
ii. Daily serving of whole-grain, ready-to-eat breakfast cereal
iii. Limit number of grain products with added fat or sugar

b. Vegetables group
i. Variety ensures optimal nutrients and phytochemicals

c. Fruits group
i. Variety ensures optimal nutrients and phytochemicals
ii. Keep the amount of fruit juice to less than half of total fruit intake to ensure fiber intake is higher
iii. Select 100% juices rather than punches, fruit-flavored soft drinks, etc., to limit added sugars

d. Dairy group
i. Choose primarily low-fat (1%) and fat-free items
ii. Limit dairy desserts and chocolate milk to reduce added sugars

e. Proteins group
i. Limit portion sizes of meats
ii. Choose lean meats, poultry without skin, and beans to limit fat intake
iii. Avoid fried foods and trim visible fat
iv. Include plant sources of protein to boost vitamin E, mineral, and fiber intake

f. Oils
i. Include some plant oils on a daily basis
ii. Eat fish twice per week

g. Empty calorie foods
i. Foods in each food group that are high solid fats and/or added sugars but contain few or no nutrients
ii. Keep consumption at the level that matches calorie needs

C. Rating Your Current Diet
1. Regular comparison of personal diet to MyPlate recommendations is a simple way to evaluate your overall diet
2. Use The SuperTracker program at www.choosemyplate.gov
3. Even small diet and exercise changes can have positive results

Copyright © 2016 McGraw-Hill Education. All rights reserved. No reproduction or distribution without the prior written consent of McGraw-Hill Education.

Wardlaws Perspectives in Nutrition 10th edition Byrd-Bredbenner Solutions Manual