

Appendices

- Appendix 1** Guidance for Specific Population Groups
- Appendix 2** Key Consumer Behaviors and Potential Strategies for Professionals to Use in Implementing the 2010 Dietary Guidelines
- Appendix 3** Food Safety Principles and Guidance for Consumers
- Appendix 4** Using the Food Label to Track Calories, Nutrients, and Ingredients
- Appendix 5** Nutritional Goals for Age-Gender Groups, Based on Dietary Reference Intakes and Dietary Guidelines Recommendations
- Appendix 6** Estimated Calorie Needs per Day by Age, Gender, and Physical Activity Level (Detailed)
- Appendix 7** USDA Food Patterns
- Appendix 8** Lacto-ovo Vegetarian Adaptation of the USDA Food Patterns
- Appendix 9** Vegan Adaptation of the USDA Food Patterns
- Appendix 10** The DASH Eating Plan at Various Calorie Levels
- Appendix 11** Estimated EPA and DHA and Mercury Content in 4 Ounces of Selected Seafood Varieties
- Appendix 12** Selected Food Sources Ranked by Amounts of Potassium and Calories per Standard Food Portion
- Appendix 13** Selected Food Sources Ranked by Amounts of Dietary Fiber and Calories per Standard Food Portion
- Appendix 14** Selected Food Sources Ranked by Amounts of Calcium and Calories per Standard Food Portion
- Appendix 15** Selected Food Sources Ranked by Amounts of Vitamin D and Calories per Standard Food Portion
- Appendix 16** Glossary of Terms

APPENDIX 1. GUIDANCE FOR SPECIFIC POPULATION GROUPS

The *Dietary Guidelines for Americans, 2010* is intended for Americans ages 2 years and older, including those who are at increased risk of chronic disease. Topic areas

that provide additional guidance for specific population groups are listed below along with the chapter and page number where the information can be found.

Topic Area	Chapter	Page No.
Children and Adolescents		
Healthy body weight	2 and 6	9, 10, 58
Physical activity	2 and 6	17, 18, 58, 59
Limits on screen time	2 and 6	19, 59
Breakfast	2	19
Sugar-sweetened beverages	2 and 5	16, 47-48
100% juice	2, 4, and 5	16, 36, 47
Alcohol consumption	3	21, 31
Iron intake (adolescent girls)	4	34, 41
Women Capable of Becoming Pregnant^a		
Healthy body weight	2	9, 10
Iron intake	4	34, 41
Folic acid intake	4 and 5	34, 41-42, 49
Women Who Are Pregnant^a		
Gestational weight gain	2 and 6	9, 10, 58
Alcohol consumption	3	31
Seafood consumption	4	34, 39
Iron supplementation	4 and 5	34, 41, 49
Women Who Are Breastfeeding		
Alcohol consumption	3	31
Seafood consumption	4	34, 39
Older Adults		
Healthy body weight	2	9, 10, 18
Sodium intake	3	21, 22, 23, 24
Vitamin B ₁₂	4 and 5	34, 42, 49
Adults at High Risk of Chronic Disease		
Healthy body weight (overweight and obese adults)	2	16, 17, 18, 19
Saturated fat and cholesterol intake (adults at risk of cardiovascular disease)	3	24, 27
Sodium intake (adults with hypertension and African Americans)	3	21, 24
Alcohol consumption (adults taking certain medications; adults with certain medical conditions)	3	32
Potassium intake (adults with hypertension and African Americans)	4	40
a. Includes adolescent girls.		

The *Dietary Guidelines for Americans, 2010* includes recommendations based on the most recent evidence-based review of nutrition science. Two overarching concepts emerge from these recommendations: maintain calorie balance to achieve and sustain a healthy weight; and focus on nutrient-dense foods and beverages. Brief descriptions of these concepts are provided to the right.

Health professionals, educators, policymakers, and other professionals will use the *Dietary Guidelines for Americans, 2010* to help the American public lead healthy lives. This section, which includes a table of key consumer behaviors and potential strategies, or “how-tos,” is designed to assist these professionals as they encourage healthy habits. For practical purposes, this table is organized by 12 specific topic areas (calorie intake, physical activity, vegetables, fruits, milk and milk products, protein foods, grains, oils and fats, added sugars, sodium, alcohol, and food safety).

The strategies presented in the table are not evidence-based recommendations. They are presented as helpful hints that could be tailored for different individuals or groups.

When working with consumers, professionals should draw from research and use theory-based approaches when possible. Ultimately, successful consumer messages will vary based on the target audience and should be tested with the specific target audience before use. Therefore, the potential strategies in the following table are intended to be a conceptual starting point for further message development and not a definitive or comprehensive resource.

OVERARCHING CONCEPTS

Maintain calorie balance to achieve and sustain a healthy weight

Control total calorie intake to manage body weight. For most people, this will mean consuming fewer calories by making informed food and beverage choices. Increase physical activity and reduce time spent in sedentary behaviors.

Focus on nutrient-dense foods and beverages

Increase intake of foods that are consumed below recommended amounts. For most people, this means choosing more vegetables, fruits, whole grains, fat-free or low-fat milk and milk products, seafood, and oils.

Reduce intake of foods and food components consumed in excessive amounts. For most people, this means consuming fewer foods and beverages high in solid fats (sources of saturated and *trans* fatty acids), added sugars, and sodium (i.e., consume these foods and beverages less often and in small amounts). If alcohol is consumed at all, it should be consumed in moderation and only by adults of legal drinking age.

TABLE A2 1. Key Consumer Behaviors and Potential Strategies for Professionals

The strategies presented in this table are not evidence-based recommendations. They are presented as helpful hints that could be tailored for different individuals or groups.

Topic Area	Key Consumer Behaviors	Potential Strategies
CALORIE INTAKE	Consume foods and drinks to meet, not exceed, calorie needs.	Know your calorie needs. See Table 2-3 and Appendix 6 for estimates. Weigh yourself and adjust what and how much you eat and/or your physical activity based on your weight change over time.
	Plan ahead to make better food choices.	Prepare and pack healthy meals at home for children and/or adults to eat at school or work. Have healthy snacks available at home and bring nutrient-dense snacks to eat when on-the-go. Think ahead before attending parties: Eat a small, healthy snack before heading out. Plan to take small portions and focus on healthy options. Consider whether you are hungry before going back for more. Choose a place to talk with friends that is some distance from the food table.
	Track food and calorie intake.	Track what you eat using a food journal or an online food planner (e.g., http://www.mypyramidtracker.gov). Check the calories and servings per package on the Nutrition Facts label. For foods and drinks that do not have a label or posted calorie counts, try an online calorie counter. Pay attention to feelings of hunger. Eat only until you are satisfied, not full. If you tend to overeat, be aware of time of day, place, and your mood while eating so you can better control the amount you eat. Limit eating while watching television, which can result in overeating. If you choose to eat while watching television, portion out a small serving.
	Limit calorie intake from solid fats and added sugars.	Choose foods prepared with little or no added sugars or solid fats. Identify the amount of calories from added sugars and solid fats contained in foods and drinks at http://www.myfoodapedia.gov . Choose products with less added sugars and solid fats. Select products that contain added sugars and solid fats less often. When you have foods and drinks with added sugars and solid fats, choose a small portion.
	Reduce portions, especially of high-calorie foods.	Use smaller plates. Portion out small amounts of food. To feel satisfied with fewer calories, replace large portions of high-calorie foods with lower calorie foods, like vegetables and fruits.
	Cook and eat more meals at home, instead of eating out.	Cook and eat at home more often, preferably as a family. When preparing meals, include vegetables, fruits, whole grains, fat-free or low-fat dairy products, and protein foods that provide fewer calories and more nutrients. Experiment with healthy recipes and ingredient substitutions.

TABLE A2 1. Key Consumer Behaviors and Potential Strategies for Professionals
(Continued)

Topic Area	Key Consumer Behaviors	Potential Strategies
CALORIE INTAKE (Continued)	Think about choosing healthy options when eating out.	<p>When eating out, choose a smaller size option (e.g., appetizer, small plate). Manage larger portions by sharing or taking home part of your meal.</p> <p>Check posted calorie counts or check calorie counts online before you eat at a restaurant.</p> <p>When eating out, choose dishes that include vegetables, fruits, and/or whole grains.</p> <p>When eating out, avoid choosing foods with the following words: creamy, fried, breaded, battered, or buttered. In addition, keep portions of syrups, dressings, and sauces small.</p>
PHYSICAL ACTIVITY	Limit screen time.	<p>Limit the amount of time you spend watching television or using other media such as video games. This is especially important for children and adolescents.</p> <p>Use the time you watch television to be physically active in front of the television.</p>
	Increase physical activity.	<p>Pick activities you like and that fit into your life. For children, activity should be fun and developmentally appropriate.</p> <p>Be active with family and friends. Having a support network can help you stay active.</p> <p>Keep track of your physical activity and gradually increase it to meet the recommendations of the <i>2008 Physical Activity Guidelines for Americans</i>. Physical activity can be tracked at http://www.presidentschallenge.org or by using logs like the one found at http://www.health.gov/paguidelines.</p>
	Choose moderate- or vigorous-intensity physical activities.	<p>Choose moderate-intensity activities, which include walking briskly, biking, dancing, general gardening, water aerobics, and canoeing.</p> <p>You can replace some or all of your moderate-intensity activity with vigorous activity. With vigorous activities, you get similar health benefits in half the time it takes you with moderate ones. Vigorous activities include aerobic dance, jumping rope, race walking, jogging, running, soccer, swimming fast or swimming laps, and riding a bike on hills or riding fast.</p> <p>Adults should include muscle-strengthening activities at least 2 days a week. Muscle-strengthening activities include lifting weights, push-ups, and sit-ups. Choose activities that work all the different parts of the body—the legs, hips, back, chest, stomach, shoulders, and arms.</p> <p>Encourage children to do muscle-strengthening activities such as climbing at least 3 days a week and bone-strengthening activities, such as jumping, at least 3 days a week.</p>
	Avoid inactivity. Some physical activity is better than none.	<p>Start with 10-minute chunks of physical activity a couple of days a week. Every bit counts, and doing something is better than doing nothing.</p> <p>Walking is one way to add physical activity to your life. Build up to walking longer and more often. Pick up the pace as you go.</p>
	Slowly build up the amount of physical activity you choose.	Start by being active for longer each time; then do more by being active more often.

TABLE A2 1. Key Consumer Behaviors and Potential Strategies for Professionals
(Continued)

Topic Area	Key Consumer Behaviors	Potential Strategies
VEGETABLES	<p>Increase vegetable intake.</p> <p>Eat recommended amounts of vegetables, and include a variety of vegetables, especially dark-green vegetables, red and orange vegetables, and beans and peas.</p>	<p>Include vegetables in meals and in snacks. Fresh, frozen, and canned vegetables all count. When eating canned vegetables, choose those labeled as reduced sodium or no salt-added.</p> <p>Add dark-green, red, and orange vegetables to soups, stews, casseroles, stir-fries, and other main and side dishes. Use dark leafy greens, such as romaine lettuce and spinach, to make salads.</p> <p>Focus on dietary fiber—beans and peas are a great source. Add beans or peas to salads (e.g., kidney or garbanzo beans), soups (e.g., split peas or lentils), and side dishes (e.g., baked beans or pinto beans), or serve as a main dish.</p> <p>Keep raw, cut-up vegetables handy for quick snacks. If serving with a dip, choose lower calorie options, such as yogurt-based dressings or hummus, instead of sour cream or cream cheese-based dips.</p> <p>When eating out, choose a vegetable as a side dish. With cooked vegetables, request that they be prepared with little or no fat and salt. With salads, ask for the dressing on the side so you can decide how much you use.</p> <p>When adding sauces, condiments, or dressings to vegetables, use small amounts and look for lower calorie options (e.g., reduced-fat cheese sauce or fat-free dressing). Sauces can make vegetables more appealing, but often add extra calories.</p>
FRUITS	<p>Increase fruit intake.</p> <p>Eat recommended amounts of fruits and choose a variety of fruits. Choose whole or cut-up fruits more often than fruit juice.</p>	<p>Use fruit as snacks, salads, or desserts.</p> <p>Instead of sugars, syrups, or other sweet toppings, use fruit to top foods such as cereal and pancakes.</p> <p>Enjoy a wide variety of fruits, and maximize taste and freshness by adapting your choices to what is in season.</p> <p>Keep rinsed and cut-up fruit handy for quick snacks.</p> <p>Use canned, frozen, and dried fruits, as well as fresh fruits. Unsweetened fruit or fruit canned in 100% juice is the better choice because light or heavy syrup adds sugar and calories.</p> <p>Select 100% fruit juice when choosing juices.</p>
MILK AND MILK PRODUCTS (DAIRY PRODUCTS)	<p>Increase intake of fat-free or low-fat milk and milk products, such as milk, yogurt, cheese, and fortified soy beverages.^a</p> <p>Replace higher fat milk and milk products with lower fat options.</p>	<p>Drink fat-free (skim) or low-fat (1%) milk. If you currently drink whole milk, gradually switch to lower fat versions. This change will cut calories, but will not reduce calcium or other essential nutrients.</p> <p>When drinking beverages, such as cappuccino or latte, request fat-free or low-fat milk.</p> <p>Use fat-free or low-fat milk on cereal and oatmeal. Top fruit salads with fat-free or low-fat yogurt.</p> <p>When recipes such as dip call for sour cream, substitute plain fat-free or low-fat yogurt.</p> <p>When selecting cheese, choose low-fat or reduced-fat versions.</p> <p>If you are lactose intolerant, try lactose-free milk, drink smaller amounts of milk at a time, or try fortified soy beverages.</p> <p>Choose fat-free or low-fat milk or yogurt more often than cheese. Milk and yogurt are better sources of potassium and are lower in sodium than most cheeses. Also, most milk is fortified with vitamin D.</p>

a. Fortified soy beverages have been marketed as “soymilk,” a product name consumers could see in supermarkets and consumer materials. However, FDA’s regulations do not contain provisions for the use of the term soymilk. Therefore, in this document, the term “fortified soy beverage” includes products that may be marketed as soymilk.

TABLE A2 1. Key Consumer Behaviors and Potential Strategies for Professionals
(Continued)

Topic Area	Key Consumer Behaviors	Potential Strategies
PROTEIN FOODS	<p>Choose a variety of foods from the protein foods group.</p> <p>Increase the amount and variety of seafood consumed by choosing seafood in place of some meat and poultry.</p>	<p>Eat a variety of foods from the protein foods group each week. This group includes seafood, beans and peas, and nuts, as well as lean meats, poultry, and eggs.</p> <p>Eat seafood in place of meat or poultry twice a week. Select some seafood that is higher in oils and lower in mercury, such as salmon, trout, and herring.</p> <p>Select lean meats and poultry. Choose meat cuts that are low in fat and ground beef that is extra lean (at least 90% lean). Trim or drain fat from meat and remove poultry skin before cooking or eating.</p> <p>Try grilling, broiling, poaching, or roasting. These cooking methods do not add extra fat.</p> <p>Drain fat from ground meats after cooking. Avoid breading on meat and poultry, which adds calories.</p>
GRAINS		
WHOLE GRAINS	<p>Increase whole-grain intake.</p> <p>Consume at least half of all grains as whole grains.</p>	<p>Substitute whole-grain choices for refined grains in breakfast cereals, breads, crackers, rice, and pasta. For example, choose 100% whole-grain breads; whole-grain cereals such as oatmeal; whole-grain crackers and pasta; and brown rice.</p> <p>Check the ingredients list on product labels for the words “whole” or “whole grain” before the grain ingredient’s name.</p> <p>Note that foods labeled with the words “multi-grain,” “stone-ground,” “100% wheat,” “cracked wheat,” “seven-grain,” or “bran” are usually not 100% whole-grain products, and may not contain any whole grains.</p> <p>Use the Nutrition Facts label and the ingredients list to choose whole grains that are a good or excellent source of dietary fiber. Good sources of fiber contain 10 to 19 percent of the Daily Value per serving, and excellent sources of dietary fiber contain 20 percent or more.</p>
REFINED GRAINS	<p>Whenever possible, replace refined grains with whole grains.</p>	<p>Eat fewer refined grain products, especially those that are high in calories from solid fats and/or added sugars, such as cakes, cookies, other desserts, and pizza.</p> <p>Replace white bread, rolls, bagels, muffins, pasta, and rice with whole-grain versions.</p> <p>When choosing a refined grain, check the ingredients list to make sure it is made with enriched flour.</p>

TABLE A2 1. Key Consumer Behaviors and Potential Strategies for Professionals
(Continued)

Topic Area	Key Consumer Behaviors	Potential Strategies
OILS AND FATS		
OILS	Use oils instead of solid fats, when possible.	<p>When using spreads, choose soft margarines with zero <i>trans</i> fats made from liquid vegetable oil, rather than stick margarine or butter. If you do use butter, use only a small amount.</p> <p>When cooking, use vegetable oils such as olive, canola, corn, safflower, or sunflower oil rather than solid fats (butter, stick margarine, shortening, lard).</p> <p>Consider calories when adding oils to foods or in cooking. Use only small amounts to keep calories in check.</p> <p>Use the ingredients list to choose foods that contain oils with more unsaturated fats. Use the Nutrition Facts label to choose foods that contain less saturated fat.</p>
SOLID FATS	<p>Cut back on solid fats.</p> <p>Choose foods with little solid fats and prepare foods to minimize the amount of solid fats.</p> <p>Limit saturated fat intake and keep <i>trans</i> fat intake as low as possible.</p>	<p>Eat fewer foods that contain solid fats. The major sources for Americans are cakes, cookies, and other desserts (often made with butter, margarine, or shortening); pizza; cheese; processed and fatty meats (e.g., sausages, hot dogs, bacon, ribs); and ice cream.</p> <p>Select lean meats and poultry, and fat-free or low-fat milk and milk products.</p> <p>When cooking, replace solid fats such as butter, beef fat, chicken fat, lard, stick margarine, and shortening with oils; or choose cooking methods that do not add fat.</p> <p>Choose baked, steamed, or broiled rather than fried foods most often.</p> <p>Check the Nutrition Facts label to choose foods with little or no saturated fat and no <i>trans</i> fat.</p> <p>Limit foods containing partially hydrogenated oils, a major source of <i>trans</i> fats.</p>
ADDED SUGARS	Cut back on foods and drinks with added sugars or caloric sweeteners (sugar-sweetened beverages).	<p>Drink few or no regular sodas, sports drinks, energy drinks, and fruit drinks. Eat less cake, cookies, ice cream, other desserts, and candy. If you do have these foods and drinks, have a small portion. These drinks and foods are the major sources of added sugars for Americans.</p> <p>Choose water, fat-free milk, 100% fruit juice, or unsweetened tea or coffee as drinks rather than sugar-sweetened drinks.</p> <p>Select fruit for dessert. Eat less of high-calorie desserts.</p> <p>Use the Nutrition Facts label to choose breakfast cereals and other packaged foods with less total sugars, and use the ingredients list to choose foods with little or no added sugars.</p>

TABLE A2 1. Key Consumer Behaviors and Potential Strategies for Professionals
(Continued)

Topic Area	Key Consumer Behaviors	Potential Strategies
SODIUM	<p>Reduce sodium intake.</p> <p>Choose foods low in sodium and prepare foods with little salt.</p> <p>Increase potassium intake.</p>	<p>Use the Nutrition Facts label to choose foods lower in sodium.</p> <p>When purchasing canned foods, select those labeled as “reduced sodium,” “low sodium,” or “no salt added.” Rinse regular canned foods to remove some sodium. Many packaged foods contain more sodium than their made-from-fresh counterparts.</p> <p>Use little or no salt when cooking or eating. Trade in your salt shaker for the pepper shaker. Spices, herbs, and lemon juice can be used as alternatives to salt to season foods with a variety of flavors.</p> <p>Gradually reduce the amount of sodium in your foods. Your taste for salt will change over time.</p> <p>Get more potassium in your diet. Food sources of potassium include potatoes, cantaloupe, bananas, beans, and yogurt.</p>
ALCOHOL	<p>For adults of legal drinking age who choose to drink alcohol, consume it in moderation.</p> <p>Avoid alcohol in certain situations that can put you at risk.</p>	<p>Limit alcohol to no more than 1 drink per day for women and 2 drinks per day for men.</p> <p>Avoid excessive (heavy or binge) drinking.</p> <p>Consider the calorie content of mixers as well as the alcohol.</p> <p>If breastfeeding, wait at least 4 hours after drinking alcohol before breastfeeding. Alcohol should not be consumed at all until consistent latch on and breastfeeding patterns are established.</p> <p>Avoid alcohol if you are pregnant or may become pregnant; if under the legal drinking age; if you are on medication that can interact with alcohol; if you have medical conditions that could be worsened by drinking; and if planning to drive, operate machinery, or do other activities that could put you at risk if you are impaired.</p> <p>Do not begin drinking or drink more frequently on the basis of potential health benefits.</p>
FOOD SAFETY	<p>Be food safe.</p>	<p>Clean: Wash hands, utensils, and cutting boards before and after contact with raw meat, poultry, seafood, and eggs.</p> <p>Separate: Keep raw meat and poultry apart from foods that won't be cooked.</p> <p>Cook: Use a food thermometer. You can't tell if food is cooked safely by how it looks.</p> <p>Chill: Chill leftovers and takeout foods within 2 hours and keep the refrigerator at 40°F or below.</p>

A critical part of healthy eating is keeping foods safe. Every year, foodborne illness affects more than 76 million individuals in the United States, leading to 325,000 hospitalizations and 5,000 deaths.¹ Food may be handled numerous times as it moves from the farm to homes. Individuals in their own homes can reduce contaminants and keep food safe to eat by following safe food handling practices. Four basic food safety principles work together to reduce the risk of foodborne illness—Clean, Separate, Cook, and Chill. These four principles are the cornerstones of *Fight BAC!*[®], a national food safety education campaign.

CLEAN

Microbes, such as bacteria and viruses, can be spread throughout the kitchen and get onto hands, cutting boards, utensils, countertops, reusable grocery bags, and foods. This is called “cross-contamination.” Hand washing is key to preventing contamination of food with microbes from raw animal products (e.g., raw seafood, meat, poultry, and eggs) and from people (e.g., cold, flu, and *Staph* infections). Frequent cleaning of surfaces is essential in preventing cross-contamination. To reduce microbes and contaminants from foods, all produce, regardless of where it was grown or purchased, should be thoroughly rinsed. This is particularly important for produce that will be eaten raw.

Hands

Hands should be washed before and after preparing food, especially after handling raw seafood, meat, poultry, or eggs, and before eating. In addition, hand washing is recommended after going to the bathroom, changing diapers, coughing or sneezing, tending to someone who is sick or injured, touching animals, and handling garbage. Hands should be washed using soap and water. Soaps with antimicrobial agents are not needed for consumer hand washing, and their use over time can lead to growth of microbes resistant to these agents. Alcohol-based ($\geq 60\%$), rinse-free hand sanitizers should be used when hand washing with soap is not possible.

Wash Hands With Soap and Water

- Wet hands with clean running water and apply soap. Use warm water if it is available.

- Rub hands together to make a lather and scrub all parts of the hands for 20 seconds.
- Rinse hands well under running water.
- Dry hands using a clean paper towel. If possible, use a paper towel to turn off the faucet.

Surfaces

Surfaces should be washed with hot, soapy water. A solution of 1 tablespoon of unscented, liquid chlorine bleach per gallon of water can be used to sanitize surfaces. Many surfaces should be kept clean, including tables, countertops, sinks, utensils, cutting boards, and appliances. For example, the insides of microwaves easily become soiled with food, allowing microbes to grow. They should be cleaned often.

Keep Appliances Clean

- At least once a week, throw out refrigerated foods that should no longer be eaten. Cooked leftovers should be discarded after 4 days; raw poultry and ground meats, 1 to 2 days.
- Wipe up spills immediately—clean food contact surfaces often.
- Clean the inside and the outside of appliances. Pay particular attention to buttons and handles where cross-contamination to hands can occur.

Foods

Vegetables and fruits. All produce, regardless of where it was grown or purchased, should be thoroughly rinsed. Many precut packaged items, like lettuce or baby carrots, are labeled as prewashed and ready-to-eat. These products can be eaten without further rinsing.

Rinse Produce

- Rinse fresh vegetables and fruits under running water just before eating, cutting, or cooking.
- Do not use soap or detergent; commercial produce washes are not needed.
- Even if you plan to peel or cut the produce before eating, it is still important to thoroughly rinse it first to prevent microbes from transferring from the outside to the inside of the produce.

1. Centers for Disease Control and Prevention. Food Safety Web site. <http://www.cdc.gov/foodsafety/>. Accessed November 12, 2010.

- Scrub firm produce, such as melons and cucumbers, with a clean produce brush while you rinse it.
- Dry produce with a clean cloth towel or paper towel to further reduce bacteria that may be present. Wet produce can allow remaining microbes to multiply faster.

Seafood, meat, and poultry. Raw seafood, meat, and poultry should not be rinsed. Bacteria in these raw juices can spread to other foods, utensils, and surfaces, leading to foodborne illness.

SEPARATE

Separating foods that are ready-to-eat from those that are raw or that might otherwise contain harmful microbes is key to preventing foodborne illness. Attention should be given to separating foods at every step of food handling, from purchase to preparation to serving.

Separate Foods When Shopping

- Place raw seafood, meat, and poultry in plastic bags. Separate them from other foods in your grocery cart and bags.
- Store raw seafood, meat, and poultry below ready-to-eat foods in your refrigerator.
- Clean reusable grocery bags regularly. Wash canvas and cloth bags in the washing machine and wash plastic reusable bags with hot, soapy water.

Separate Foods When Preparing and Serving Food

- Always use a clean cutting board for fresh produce and a separate one for raw seafood, meat, and poultry.
 - Always use a clean plate to serve and eat food.
 - Never place cooked food back on the same plate or cutting board that previously held raw food.
-

COOK AND CHILL

Seafood, meat, poultry, and egg dishes should be cooked to the recommended safe minimum internal temperature to destroy harmful microbes (Table A3-1). It is not always possible to tell whether a food is safe by how it looks. A food thermometer should be used to ensure that food is safely cooked and that cooked food is held at safe temperatures until eaten. In general, the food thermometer should be placed in the thickest part of the food, not touching bone, fat, or gristle. The manufacturer's instructions should be followed for the amount of time needed to measure the temperature of foods. Food thermometers should be cleaned with hot, soapy water before and after each use.

Temperature rules also apply to microwave cooking. Microwave ovens can cook unevenly and leave "cold spots" where harmful bacteria can survive. When cooking using a microwave, foods should be stirred, rotated, and/or flipped periodically to help them cook evenly. Microwave cooking instructions on food packages always should be followed.

Keep Foods at Safe Temperatures

- Hold cold foods at 40°F or below.
- Keep hot foods at 140°F or above.
- Foods are no longer safe to eat when they have been in the danger zone of 40-140°F for more than 2 hours (1 hour if the temperature was above 90°F).
 - When shopping, the 2-hour window includes the amount of time food is in the grocery basket, car, and on the kitchen counter.
 - As soon as frozen food begins to thaw and become warmer than 40°F, any bacteria that may have been present before freezing can begin to multiply. Use one of the three safe ways to thaw foods: (1) in the refrigerator, (2) in cold water (i.e., in a leakproof bag, changing cold water every 30 minutes), or (3) in the microwave. Never thaw food on the counter.
- Keep your refrigerator at 40°F or below. Keep your freezer at 0°F or below. Monitor these temperatures with appliance thermometers.

TABLE A3-1. Recommended Safe Minimum Internal Cooking Temperatures

Consumers should use a food thermometer to determine internal temperatures of foods.

Food	Degrees Fahrenheit (°F)
Ground meat and meat mixtures	
Beef, pork, veal, lamb	160
Turkey, chicken	165
Fresh beef, veal, lamb	
Steaks, roasts, chops	145
Poultry	
Chicken and turkey, whole	165
Poultry breasts, roasts	165
Poultry thighs, wings	165
Duck and goose	165
Stuffing (cooked alone or in bird)	165
Fresh pork	160
Ham	
Fresh (raw)	160
Pre-cooked (to reheat)	140
Eggs and egg dishes	
Eggs	Cook until yolk and white are firm.
Egg dishes	160
Seafood	
Fish	145
	Cook fish until it is opaque (milky white) and flakes with a fork.
Shellfish	
<i>Shrimp, lobster, scallops</i>	Cook until the flesh of shrimp and lobster are an opaque color. Scallops should be opaque and firm.
<i>Clams, mussels, oysters</i>	Cook until their shells open. This means that they are done. Throw away any that were already open before cooking as well as ones that did not open after cooking.
Casseroles and reheated leftovers	165

RISKY EATING BEHAVIORS

Harmful bacteria, viruses, and parasites do not always change the look or smell of food. This makes it impossible for consumers to know whether food is contaminated. Consumption of raw or undercooked animal food products increases the risk of contracting a foodborne illness. Raw or undercooked foods commonly eaten in the United States include eggs (e.g., eggs with runny yolks), ground beef (e.g., undercooked hamburger), milk and milk products (e.g., cheese made from unpasteurized milk), and seafood (e.g., raw oysters). Cooking foods to recommended safe minimum internal temperatures and consuming only pasteurized milk and milk products are the best ways to reduce the risk of foodborne illness from animal products. Consumers who prepare foods that require eggs to remain raw (e.g., eggnog, hollandaise sauce, homemade ice cream) should use pasteurized eggs or egg products. Consumers who choose to eat raw seafood despite the risks should choose seafood that has been previously frozen, which will kill parasites but not harmful microbes.

Specific Populations at Increased Risk

Some individuals, including women who are pregnant and their unborn children, young children, older adults, and individuals with weakened immune systems (such as those living with HIV infection, cancer treatment, organ transplant, or liver disease), are more susceptible than the general population to the effects of foodborne illnesses such as listeriosis and salmonellosis. The outcome of contracting a foodborne illness for these individuals can be severe or even fatal. They need to take special care to keep foods safe and to not eat foods that increase the risk of foodborne illness. Women who are pregnant, infants and young children, older

adults, and people with weakened immune systems should only eat foods with seafood, meat, poultry, or eggs that have been cooked to recommended safe minimum internal temperatures. They also should take special precautions not to consume unpasteurized (raw) juice or milk or foods made from unpasteurized milk, like some soft cheeses (e.g., Feta, queso blanco, queso fresco, Brie, Camembert cheeses, blue-veined cheeses, and Panela). They should reheat deli and luncheon meats and hot dogs to steaming hot to kill *Listeria*, the bacteria that causes listeriosis, and not eat raw sprouts, which also can carry harmful bacteria.

RESOURCES FOR ADDITIONAL FOOD SAFETY INFORMATION

Federal Food Safety Gateway: www.foodsafety.gov

Fight BAC![®]: www.fightbac.org

Be Food Safe: www.befoodsafe.gov

Is It Done Yet?: www.isitdoneyet.gov

Thermy[™]: www.fsis.usda.gov/food_safety_education/thermy/index.asp

For more information and answers to specific questions:

- Call the USDA Meat and Poultry Hotline 1-888-MPHotline (1-888-674-6854) TTY: 1-800-256-7072. Hours: 10:00 a.m. to 4:00 p.m. Eastern time, Monday through Friday, in English and Spanish, or email: mph hotline.fsis@usda.gov
- Visit "Ask Karen," FSIS's Web-based automated response system at www.fsis.usda.gov.

The Nutrition Facts label and the ingredients list on packages of foods and beverages are useful tools that can help consumers learn about what is in foods and beverages (Figure A4-1). Food labeling can help consumers evaluate and compare the nutritional content and/or the ingredients in foods and beverages. This can help them identify the calorie and nutrient content of a food and select foods with higher or lower amounts of certain nutrients that fit within an overall healthy eating pattern.

NUTRITION FACTS LABEL

The Nutrition Facts label provides the number of calories that are in a serving of food and the number of servings that are in a package (e.g., can or box). This information can be used to determine how many calories are being consumed from one serving, or from that portion eaten if it is more or less than one serving. For example, if a package contains two servings and the entire package is consumed, then twice the calories and nutrients listed in the Nutrition Facts label are being consumed.

The Nutrition Facts label also provides information on the amount (i.e., grams [g] or milligrams [mg]) per serving of dietary fiber, as well as the amount of certain nutrients that should be limited in the diet, including saturated fat, *trans* fat, cholesterol, and sodium. It is mandatory for this information to be provided on the Nutrition Facts label.

The label also provides the percent Daily Value for these nutrients (except *trans* fat and sugars) and several shortfall nutrients, including dietary fiber and calcium. The Daily Value is based on a reference intake level that should be consumed or should not be exceeded. The percent Daily Value can be used to determine whether a serving of a food contributes a lot or a little of a particular nutrient and provides information on how a serving of the food fits in the context of a total daily diet. The higher the percent Daily Value, the more that serving of food contributes to an individual's intake of a specific nutrient. Foods that are "low" in a nutrient generally contain less than 5 percent of the Daily Value. Foods that are a "good" source of a nutrient generally contain 10 to 19 percent of the Daily Value per serving. Foods that are "high" or "rich" in or are an "excellent" source of a nutrient generally contain 20 percent or more of the Daily Value per serving.

The footnote at the bottom of the Nutrition Facts label provides the Daily Values for total fat, saturated fat, cholesterol, sodium, total carbohydrate, and fiber, based on a 2,000 or 2,500 calorie diet. The Daily Value for these nutrients, other than cholesterol and sodium, would be higher or lower depending on an individual's calorie needs (e.g., the lower one's calorie needs, the lower the Daily Value for the particular nutrients).

FIGURE A4-1. The Nutrition Facts Label and Ingredients List of a Granola Bar

Nutrition Facts																						
Serving Size 1 Bar (40g)																						
Amount Per Serving																						
Check Calories	Calories 170 Calories from Fat 60																					
	% Daily Value*																					
	Total Fat 7g 11%																					
	Saturated Fat 3g 15%																					
	Trans Fat 0g																					
Limit These Nutrients	Cholesterol 0mg 0%																					
	Sodium 160mg 7%																					
	Total Carbohydrate 24g 8%																					
	Dietary Fiber 3g 12%																					
	Sugars 10g																					
	Protein 5g																					
Get Enough of These Nutrients	Vitamin A 2% • Vitamin C 2%																					
	Calcium 20% • Iron 8%																					
	<small>* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:</small>																					
Footnote	<table border="1"> <thead> <tr> <th></th> <th>Calories: 2,000</th> <th>2,500</th> </tr> </thead> <tbody> <tr> <td>Total Fat</td> <td>Less than 65g</td> <td>80g</td> </tr> <tr> <td>Sat Fat</td> <td>Less than 20g</td> <td>25g</td> </tr> <tr> <td>Cholesterol</td> <td>Less than 300mg</td> <td>300mg</td> </tr> <tr> <td>Sodium</td> <td>Less than 2,400mg</td> <td>2,400mg</td> </tr> <tr> <td>Total Carbohydrate</td> <td>300g</td> <td>375g</td> </tr> <tr> <td>Dietary Fiber</td> <td>25g</td> <td>30g</td> </tr> </tbody> </table>		Calories: 2,000	2,500	Total Fat	Less than 65g	80g	Sat Fat	Less than 20g	25g	Cholesterol	Less than 300mg	300mg	Sodium	Less than 2,400mg	2,400mg	Total Carbohydrate	300g	375g	Dietary Fiber	25g	30g
	Calories: 2,000	2,500																				
Total Fat	Less than 65g	80g																				
Sat Fat	Less than 20g	25g																				
Cholesterol	Less than 300mg	300mg																				
Sodium	Less than 2,400mg	2,400mg																				
Total Carbohydrate	300g	375g																				
Dietary Fiber	25g	30g																				
	Calories per gram: Fat 9 • Carbohydrate 4 • Protein 4																					

Ingredients
Granola Bar (Brown Rice Syrup, Granola [rolled oats, honey, canola oil], Dry Roasted Peanuts, Soy Crisps [soy protein isolate, rice flour, malt extract, calcium carbonate], Crisp Brown Rice [organic brown rice flour, evaporated cane juice, molasses, rice bran extract, sea salt], Glycerine, Peanut Butter [ground dry roasted peanuts], Inulin, Whey Protein Isolate, Gold Flax Seeds, Quinoa Flakes, Calcium Carbonate, Salt, Natural Flavors, Water, Soy Lecithin [an emulsifier]), Dark Compound Coating (evaporated cane juice, palm kernel oil, cocoa [processed with alkali], palm oil, soy lecithin [an emulsifier]).

Solid fats are not specified on the Nutrition Facts label. However, consumers can look at the saturated fat and *trans* fat content of a food in the Nutrition Facts label for a rough estimate of the amount of solid fat in it. Foods that are low in saturated fats or contain zero grams of *trans* fats contain low amounts of solid fats. The ingredients list (see below) also can be used to help identify foods that contain solid fats.

The Nutrition Facts label provides the total amount of sugars (natural and added), but does not list added sugars separately. Natural sugars are found mainly in fruit and milk products. Therefore, for all foods that do not contain any fruit or milk ingredients, the total amount of sugars listed in the Nutrition Facts label approximates the amount of added sugars. For foods that contain fruit or milk products, added sugars can be identified in the ingredients list.

INGREDIENTS LIST

The ingredients list can be used to find out whether a food or beverage contains synthetic *trans* fats, solid fats, added sugars, whole grains, and refined grains. Ingredients are listed in the order of weight; that is, the ingredient with the greatest contribution to the product weight is listed first and the ingredient contributing the least is listed last (Figure A4-1). The ingredients list is usually located near the name of the food's manufacturer and often under the Nutrition Facts label.

Trans fats

Although the amount by weight of *trans* fat is provided on the Nutrition Facts label, the ingredients list can help identify the type of *trans* fat in the food (i.e., synthetic vs. natural). Synthetic *trans* fats can be produced during the hydrogenation of oils (see Chapter 3). If the ingredients list includes partially hydrogenated oils, then the product is likely to contain *trans* fatty acids.

Oils, solid fats, and added sugars

To determine whether foods contain oils or solid fats, consumers can read the ingredients list to make sure that fats in the foods are oils containing primarily unsaturated fatty acids and that solid fats

are not one of the first few ingredients. Examples of unsaturated oils that may be listed as an ingredient are provided in Chapter 3, Figure 3-3. Examples of solid fats that may be used in the ingredients list are provided in Table A4-1. The ingredients list can be used in the same way to identify foods that are high in added sugars. Added sugars that are often used as ingredients are provided in Table A4-2.

TABLE A4-1. Examples of Solid Fats^a That Can Be Listed as an Ingredient

Beef fat (tallow, suet)
Butter
Chicken fat
Coconut oil
Cream
Hydrogenated oils
Palm kernel oil
Palm oil
Partially hydrogenated oils
Pork fat (lard)
Shortening
Stick margarine
a. The oils listed here are high in saturated fat, and partially hydrogenated oils contain <i>trans</i> fat; therefore, for nutritional purposes, these oils are considered solid fats.

Whole grains

The ingredients list also can be used to find out if a food contains whole grains. Whole grains are consumed either as a single food (e.g., wild rice or popcorn) or as a food that contains whole grains as an ingredient (e.g., cereals, breads, and crackers). If whole grains are the primary ingredient listed, the food could be considered a 100% whole-grain food. The relative amount of grain in the food is important and can be inferred by placement of the grain in the ingredients list. The whole grain should be the first or second ingredient, after water. For foods with multiple whole-grain ingredients, they should appear near the beginning of the ingredients list. Examples of whole grains that can be listed as an ingredient are provided in Table A4-3.

TABLE A4-2. Examples of Added Sugars That Can Be Listed as an Ingredient

Anhydrous dextrose	Lactose
Brown sugar	Malt syrup
Confectioner's powdered sugar	Maltose
Corn syrup	Maple syrup
Corn syrup solids	Molasses
Dextrin	Nectars (e.g., peach nectar, pear nectar)
Fructose	Pancake syrup
High-fructose corn syrup	Raw sugar
Honey	Sucrose
Invert sugar	Sugar
	White granulated sugar

Other added sugars may be listed as an ingredient but are not recognized by FDA as an ingredient name. These include cane juice, evaporated corn sweetener, fruit juice concentrate, crystal dextrose, glucose, liquid fructose, sugar cane juice, and fruit nectar.

TABLE A4-3. Examples of Whole Grains That Can Be Listed as an Ingredient

Brown rice	Whole-grain sorghum
Buckwheat	Whole-grain triticale
Bulgur (cracked wheat)	Whole-grain barley
Millet	Whole-grain corn
Oatmeal	Whole oats/oatmeal
Popcorn	Whole rye
Quinoa	Whole wheat
Rolled oats	Wild rice

Some foods are labeled “made with whole grains.” Although some foods are labeled as being a “good source of whole grains,” no definition for a “good” or “excellent” source of whole grains has been established. Foods in which a substantial proportion of the grain ingredients are whole grains can help consumers increase their whole-grain intake (see Chapter 4). Many, but not all whole-grain products are good or excellent sources of dietary fiber. Use the Nutrition Facts label on whole-grain products to choose foods that are a good or excellent source of dietary fiber. For example, Figure A4-1 shows that the granola bar is a good source (12% of the Daily Value) of dietary fiber.

Refined grains

When refined grains (e.g., white bread and white rice) are consumed, they should be enriched. Often the package will state that it is “enriched.” The ingredients list also can be used to determine whether a refined grain has been enriched with iron, thiamin, riboflavin, niacin, and fortified with folic acid.

APPENDIX 5. NUTRITIONAL GOALS FOR AGE-GENDER GROUPS, BASED ON DIETARY REFERENCE INTAKES AND DIETARY GUIDELINES RECOMMENDATIONS

Nutrient (units)	Source of goal ^a	Child 1-3	Female 4-8	Male 4-8	Female 9-13	Male 9-13	Female 14-18	Male 14-18	Female 19-30	Male 19-30	Female 31-50	Male 31-50	Female 51+	Male 51+
Macronutrients														
Protein (g)	RDA ^b	13	19	19	34	34	46	52	46	56	46	56	46	56
(% of calories)	AMDR ^c	5-20	10-30	10-30	10-30	10-30	10-30	10-30	10-35	10-35	10-35	10-35	10-35	10-35
Carbohydrate (g)	RDA	130	130	130	130	130	130	130	130	130	130	130	130	130
(% of calories)	AMDR	45-65	45-65	45-65	45-65	45-65	45-65	45-65	45-65	45-65	45-65	45-65	45-65	45-65
Total fiber (g)	IOM ^d	14	17	20	22	25	25	31	28	34	25	31	22	28
Total fat (% of calories)	AMDR	30-40	25-35	25-35	25-35	25-35	25-35	25-35	20-35	20-35	20-35	20-35	20-35	20-35
Saturated fat (% of calories)	DG ^e	<10%	<10%	<10%	<10%	<10%	<10%	<10%	<10%	<10%	<10%	<10%	<10%	<10%
Linoleic acid (g)	AI ^f	7	10	10	10	12	11	16	12	17	12	17	11	14
(% of calories)	AMDR	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10
alpha-Linolenic acid (g)	AI	0.7	0.9	0.9	1.0	1.2	1.1	1.6	1.1	1.6	1.1	1.6	1.1	1.6
(% of calories)	AMDR	0.6-1.2	0.6-1.2	0.6-1.2	0.6-1.2	0.6-1.2	0.6-1.2	0.6-1.2	0.6-1.2	0.6-1.2	0.6-1.2	0.6-1.2	0.6-1.2	0.6-1.2
Cholesterol (mg)	DG	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	<300
Minerals														
Calcium (mg)	RDA	700	1,000	1,000	1,300	1,300	1,300	1,300	1,000	1,000	1,000	1,000	1,200	1,200
Iron (mg)	RDA	7	10	10	8	8	15	11	18	8	18	8	8	8
Magnesium (mg)	RDA	80	130	130	240	240	360	410	310	400	320	420	320	420
Phosphorus (mg)	RDA	460	500	500	1,250	1,250	1,250	1,250	700	700	700	700	700	700
Potassium (mg)	AI	3,000	3,800	3,800	4,500	4,500	4,700	4,700	4,700	4,700	4,700	4,700	4,700	4,700
Sodium (mg)	UL ^g	<1,500	<1,900	<1,900	<2,200	<2,200	<2,300	<2,300	<2,300	<2,300	<2,300	<2,300	<2,300	<2,300
Zinc (mg)	RDA	3	5	5	8	8	9	11	8	11	8	11	8	11
Copper (mcg)	RDA	340	440	440	700	700	890	890	900	900	900	900	900	900
Selenium (mcg)	RDA	20	30	30	40	40	55	55	55	55	55	55	55	55
Vitamins														
Vitamin A (mcg RAE)	RDA	300	400	400	600	600	700	900	700	900	700	900	700	900
Vitamin D ^h (mcg)	RDA	15	15	15	15	15	15	15	15	15	15	15	15	15
Vitamin E (mg AT)	RDA	6	7	7	11	11	15	15	15	15	15	15	15	15
Vitamin C (mg)	RDA	15	25	25	45	45	65	75	75	90	75	90	75	90
Thiamin (mg)	RDA	0.5	0.6	0.6	0.9	0.9	1.0	1.2	1.1	1.2	1.1	1.2	1.1	1.2
Riboflavin (mg)	RDA	0.5	0.6	0.6	0.9	0.9	1.0	1.3	1.1	1.3	1.1	1.3	1.1	1.3
Niacin (mg)	RDA	6	8	8	12	12	14	16	14	16	14	16	14	16
Folate (mcg)	RDA	150	200	200	300	300	400	400	400	400	400	400	400	400
Vitamin B ₆ (mg)	RDA	0.5	0.6	0.6	1.0	1.0	1.2	1.3	1.3	1.3	1.3	1.3	1.5	1.7
Vitamin B ₁₂ (mcg)	RDA	0.9	1.2	1.2	1.8	1.8	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Choline (mg)	AI	200	250	250	375	375	400	550	425	550	425	550	425	550
Vitamin K (mcg)	AI	30	55	55	60	60	75	75	90	120	90	120	90	120

Notes for APPENDIX 5.

^a Dietary Guidelines recommendations are used when no quantitative Dietary Reference Intake value is available; apply to ages 2 years and older.

^b Recommended Dietary Allowance, IOM.

^c Acceptable Macronutrient Distribution Range, IOM.

^d 14 grams per 1,000 calories, IOM.

^e Dietary Guidelines recommendation.

^f Adequate Intake, IOM.

^g Upper Limit, IOM.

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

AT = alpha-tocopherol; DFE = dietary folate equivalents; RAE = retinol activity equivalents.

Sources:

Britten P, Marcoe K, Yamini S, Davis C. Development of food intake patterns for the MyPyramid Food Guidance System. *J Nutr Educ Behav* 2006;38(6 Suppl):S78-S92.

IOM. *Dietary Reference Intakes: The essential guide to nutrient requirements*. Washington (DC): The National Academies Press; 2006.

IOM. *Dietary Reference Intakes for Calcium and Vitamin D*. Washington (DC): The National Academies Press; 2010.

APPENDIX 6. ESTIMATED CALORIE NEEDS PER DAY BY AGE, GENDER, AND PHYSICAL ACTIVITY LEVEL (DETAILED)

Estimated amounts of calories^a needed to maintain calorie balance for various gender and age groups at three different levels of physical activity. The estimates are rounded to the nearest 200 calories. An individual's calorie needs may be higher or lower than these average estimates.

Gender/ Activity level ^b	Male/ Sedentary	Male/ Moderately Active	Male/ Active	Female ^c / Sedentary	Female ^c / Moderately Active	Female ^c / Active
Age (years)						
2	1,000	1,000	1,000	1,000	1,000	1,000
3	1,200	1,400	1,400	1,000	1,200	1,400
4	1,200	1,400	1,600	1,200	1,400	1,400
5	1,200	1,400	1,600	1,200	1,400	1,600
6	1,400	1,600	1,800	1,200	1,400	1,600
7	1,400	1,600	1,800	1,200	1,600	1,800
8	1,400	1,600	2,000	1,400	1,600	1,800
9	1,600	1,800	2,000	1,400	1,600	1,800
10	1,600	1,800	2,200	1,400	1,800	2,000
11	1,800	2,000	2,200	1,600	1,800	2,000
12	1,800	2,200	2,400	1,600	2,000	2,200
13	2,000	2,200	2,600	1,600	2,000	2,200
14	2,000	2,400	2,800	1,800	2,000	2,400
15	2,200	2,600	3,000	1,800	2,000	2,400
16	2,400	2,800	3,200	1,800	2,000	2,400
17	2,400	2,800	3,200	1,800	2,000	2,400
18	2,400	2,800	3,200	1,800	2,000	2,400
19-20	2,600	2,800	3,000	2,000	2,200	2,400
21-25	2,400	2,800	3,000	2,000	2,200	2,400
26-30	2,400	2,600	3,000	1,800	2,000	2,400
31-35	2,400	2,600	3,000	1,800	2,000	2,200
36-40	2,400	2,600	2,800	1,800	2,000	2,200
41-45	2,200	2,600	2,800	1,800	2,000	2,200
46-50	2,200	2,400	2,800	1,800	2,000	2,200
51-55	2,200	2,400	2,800	1,600	1,800	2,200
56-60	2,200	2,400	2,600	1,600	1,800	2,200
61-65	2,000	2,400	2,600	1,600	1,800	2,000
66-70	2,000	2,200	2,600	1,600	1,800	2,000
71-75	2,000	2,200	2,600	1,600	1,800	2,000
76+	2,000	2,200	2,400	1,600	1,800	2,000

a. Based on Estimated Energy Requirements (EER) equations, using reference heights (average) and reference weights (healthy) for each age-gender group. For children and adolescents, reference height and weight vary. For adults, the reference man is 5 feet 10 inches tall and weighs 154 pounds. The reference woman is 5 feet 4 inches tall and weighs 126 pounds. EER equations are from the Institute of Medicine. Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids. Washington (DC): The National Academies Press; 2002.

b. Sedentary means a lifestyle that includes only the light physical activity associated with typical day-to-day life. Moderately active means a lifestyle that includes physical activity equivalent to walking about 1.5 to 3 miles per day at 3 to 4 miles per hour, in addition to the light physical activity associated with typical day-to-day life. Active means a lifestyle that includes physical activity equivalent to walking more than 3 miles per day at 3 to 4 miles per hour, in addition to the light physical activity associated with typical day-to-day life.

c. Estimates for females do not include women who are pregnant or breastfeeding.

Source: Britten P, Marcoe K, Yamini S, Davis C. Development of food intake patterns for the MyPyramid Food Guidance System. J Nutr Educ Behav 2006;38(6 Suppl):S78-S92.

APPENDIX 7. USDA FOOD PATTERNS

For each food group or subgroup,^a recommended average daily intake amounts^b at all calorie levels. Recommended intakes from vegetable and protein foods subgroups are per week. For more information and tools for application, go to MyPyramid.gov.

Calorie level of pattern ^c	1,000	1,200	1,400	1,600	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200
Fruits	1 c	1 c	1½ c	1½ c	1½ c	2 c	2 c	2 c	2 c	2½ c	2½ c	2½ c
Vegetables^d	1 c	1½ c	1½ c	2 c	2½ c	2½ c	3 c	3 c	3½ c	3½ c	4 c	4 c
Dark-green vegetables	½ c/wk	1 c/wk	1 c/wk	1½ c/wk	1½ c/wk	1½ c/wk	2 c/wk	2 c/wk	2½ c/wk	2½ c/wk	2½ c/wk	2½ c/wk
Red and orange vegetables	2½ c/wk	3 c/wk	3 c/wk	4 c/wk	5½ c/wk	5½ c/wk	6 c/wk	6 c/wk	7 c/wk	7 c/wk	7½ c/wk	7½ c/wk
Beans and peas (legumes)	½ c/wk	½ c/wk	½ c/wk	1 c/wk	1½ c/wk	1½ c/wk	2 c/wk	2 c/wk	2½ c/wk	2½ c/wk	3 c/wk	3 c/wk
Starchy vegetables	2 c/wk	3½ c/wk	3½ c/wk	4 c/wk	5 c/wk	5 c/wk	6 c/wk	6 c/wk	7 c/wk	7 c/wk	8 c/wk	8 c/wk
Other vegetables	1½ c/wk	2½ c/wk	2½ c/wk	3½ c/wk	4 c/wk	4 c/wk	5 c/wk	5 c/wk	5½ c/wk	5½ c/wk	7 c/wk	7 c/wk
Grains^e	3 oz-eq	4 oz-eq	5 oz-eq	5 oz-eq	6 oz-eq	6 oz-eq	7 oz-eq	8 oz-eq	9 oz-eq	10 oz-eq	10 oz-eq	10 oz-eq
Whole grains	1½ oz-eq	2 oz-eq	2½ oz-eq	3 oz-eq	3 oz-eq	3 oz-eq	3½ oz-eq	4 oz-eq	4½ oz-eq	5 oz-eq	5 oz-eq	5 oz-eq
Enriched grains	1½ oz-eq	2 oz-eq	2½ oz-eq	2 oz-eq	3 oz-eq	3 oz-eq	3½ oz-eq	4 oz-eq	4½ oz-eq	5 oz-eq	5 oz-eq	5 oz-eq
Protein foods^d	2 oz-eq	3 oz-eq	4 oz-eq	5 oz-eq	5 oz-eq	5½ oz-eq	6 oz-eq	6½ oz-eq	6½ oz-eq	7 oz-eq	7 oz-eq	7 oz-eq
Seafood	3 oz/wk	5 oz/wk	6 oz/wk	8 oz/wk	8 oz/wk	8 oz/wk	9 oz/wk	10 oz/wk	10 oz/wk	11 oz/wk	11 oz/wk	11 oz/wk
Meat, poultry, eggs	10 oz/wk	14 oz/wk	19 oz/wk	24 oz/wk	24 oz/wk	26 oz/wk	29 oz/wk	31 oz/wk	31 oz/wk	34 oz/wk	34 oz/wk	34 oz/wk
Nuts, seeds, soy products	1 oz/wk	2 oz/wk	3 oz/wk	4 oz/wk	4 oz/wk	4 oz/wk	4 oz/wk	5 oz/wk	5 oz/wk	5 oz/wk	5 oz/wk	5 oz/wk
Dairy^f	2 c	2½ c	2½ c	3 c	3 c	3 c	3 c	3 c	3 c	3 c	3 c	3 c
Oils^g	15 g	17 g	17 g	22 g	24 g	27 g	29 g	31 g	34 g	36 g	44 g	51 g
Maximum SoFAS^h limit, calories (% of calories)	137 (14%)	121 (10%)	121 (9%)	121 (8%)	161 (9%)	258 (13%)	266 (12%)	330 (14%)	362 (14%)	395 (14%)	459 (15%)	596 (19%)

Notes for APPENDIX 7.

^aAll foods are assumed to be in nutrient-dense forms, lean or low-fat and prepared without added fats, sugars, or salt. Solid fats and added sugars may be included up to the daily maximum limit identified in the table. Food items in each group and subgroup are:

Fruits	All fresh, frozen, canned, and dried fruits and fruit juices: for example, oranges and orange juice, apples and apple juice, bananas, grapes, melons, berries, raisins.
Vegetables	
▪ Dark-green vegetables	All fresh, frozen, and canned dark-green leafy vegetables and broccoli, cooked or raw: for example, broccoli; spinach; romaine; collard, turnip, and mustard greens.
▪ Red and orange vegetables	All fresh, frozen, and canned red and orange vegetables, cooked or raw: for example, tomatoes, red peppers, carrots, sweet potatoes, winter squash, and pumpkin.
▪ Beans and peas (legumes)	All cooked beans and peas: for example, kidney beans, lentils, chickpeas, and pinto beans. Does not include green beans or green peas. (See additional comment under protein foods group.)
▪ Starchy vegetables	All fresh, frozen, and canned starchy vegetables: for example, white potatoes, corn, green peas.
▪ Other vegetables	All fresh, frozen, and canned other vegetables, cooked or raw: for example, iceberg lettuce, green beans, and onions.
Grains	
▪ Whole grains	All whole-grain products and whole grains used as ingredients: for example, whole-wheat bread, whole-grain cereals and crackers, oatmeal, and brown rice.
▪ Enriched grains	All enriched refined-grain products and enriched refined grains used as ingredients: for example, white breads, enriched grain cereals and crackers, enriched pasta, white rice.
Protein foods	All meat, poultry, seafood, eggs, nuts, seeds, and processed soy products. Meat and poultry should be lean or low-fat and nuts should be unsalted. Beans and peas are considered part of this group as well as the vegetable group, but should be counted in one group only.
Dairy	All milks, including lactose-free and lactose-reduced products and fortified soy beverages, yogurts, frozen yogurts, dairy desserts, and cheeses. Most choices should be fat-free or low-fat. Cream, sour cream, and cream cheese are not included due to their low calcium content.

b. Food group amounts are shown in cup (c) or ounce-equivalents (oz-eq). Oils are shown in grams (g). Quantity equivalents for each food group are:

- Grains, 1 ounce-equivalent is: 1 one-ounce slice bread; 1 ounce uncooked pasta or rice; ½ cup cooked rice, pasta, or cereal; 1 tortilla (6" diameter); 1 pancake (5" diameter); 1 ounce ready-to-eat cereal (about 1 cup cereal flakes).

- Vegetables and fruits, 1 cup equivalent is: 1 cup raw or cooked vegetable or fruit; ½ cup dried vegetable or fruit; 1 cup vegetable or fruit juice; 2 cups leafy salad greens.

- Protein foods, 1 ounce-equivalent is: 1 ounce lean meat, poultry, seafood; 1 egg; 1 Tbsp peanut butter; ½ ounce nuts or seeds. Also, ¼ cup cooked beans or peas may also be counted as 1 ounce-equivalent.

- Dairy, 1 cup equivalent is: 1 cup milk, fortified soy beverage, or yogurt; 1½ ounces natural cheese (e.g., cheddar); 2 ounces of processed cheese (e.g., American).

c. See Appendix 6 for estimated calorie needs per day by age, gender, and physical activity level. Food intake patterns at 1,000, 1,200, and 1,400 calories meet the nutritional needs of children ages 2 to 8 years. Patterns from 1,600 to 3,200 calories meet the nutritional needs of children ages 9 years and older and adults. If a child ages 4 to 8 years needs more calories and, therefore, is following a pattern at 1,600 calories or more, the recommended amount from the dairy group can be 2½ cups per day. Children ages 9 years and older and adults should not use the 1,000, 1,200, or 1,400 calorie patterns.

d. Vegetable and protein foods subgroup amounts are shown in this table as weekly amounts, because it would be difficult for consumers to select foods from all subgroups daily.

e. Whole-grain subgroup amounts shown in this table are minimums. More whole grains up to all of the grains recommended may be selected, with offsetting decreases in the amounts of enriched refined grains.

f. The amount of dairy foods in the 1,200 and 1,400 calorie patterns have increased to reflect new RDAs for calcium that are higher than previous recommendations for children ages 4 to 8 years.

g. Oils and soft margarines include vegetable, nut, and fish oils and soft vegetable oil table spreads that have no *trans* fats.

h. SoFAS are calories from solid fats and added sugars. The limit for SoFAS is the remaining amount of calories in each food pattern after selecting the specified amounts in each food group in nutrient-dense forms (forms that are fat-free or low-fat and with no added sugars). The number of SoFAS is lower in the 1,200, 1,400, and 1,600 calorie patterns than in the 1,000 calorie pattern. The nutrient goals for the 1,200 to 1,600 calorie patterns are higher and require that more calories be used for nutrient-dense foods from the food groups.

APPENDIX 8. LACTO-OVO VEGETARIAN ADAPTATION OF THE USDA FOOD PATTERNS

For each food group or subgroup,^a recommended average daily intake amounts^b at all calorie levels. Recommended intakes from vegetable and protein foods subgroups are per week. For more information and tools for application, go to MyPyramid.gov.

Calorie level of pattern ^c	1,000	1,200	1,400	1,600	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200
Fruits	1 c	1 c	1½ c	1½ c	1½ c	2 c	2 c	2 c	2 c	2½ c	2½ c	2½ c
Vegetables^d	1 c	1½ c	1½ c	2 c	2½ c	2½ c	3 c	3 c	3½ c	3½ c	4 c	4 c
Dark-green vegetables	½ c/wk	1 c/wk	1 c/wk	1½ c/wk	1½ c/wk	1½ c/wk	2 c/wk	2 c/wk	2½ c/wk	2½ c/wk	2½ c/wk	2½ c/wk
Red and orange vegetables	2½ c/wk	3 c/wk	3 c/wk	4 c/wk	5½ c/wk	5½ c/wk	6 c/wk	6 c/wk	7 c/wk	7 c/wk	7½ c/wk	7½ c/wk
Beans and peas (legumes)	½ c/wk	½ c/wk	½ c/wk	1 c/wk	1½ c/wk	1½ c/wk	2 c/wk	2 c/wk	2½ c/wk	2½ c/wk	3 c/wk	3 c/wk
Starchy vegetables	2 c/wk	3½ c/wk	3½ c/wk	4 c/wk	5 c/wk	5 c/wk	6 c/wk	6 c/wk	7 c/wk	7 c/wk	8 c/wk	8 c/wk
Other vegetables	1½ c/wk	2½ c/wk	2½ c/wk	3½ c/wk	4 c/wk	4 c/wk	5 c/wk	5 c/wk	5½ c/wk	5½ c/wk	7 c/wk	7 c/wk
Grains^e	3 oz-eq	4 oz-eq	5 oz-eq	5 oz-eq	6 oz-eq	6 oz-eq	7 oz-eq	8 oz-eq	9 oz-eq	10 oz-eq	10 oz-eq	10 oz-eq
Whole grains	1½ oz-eq	2 oz-eq	2½ oz-eq	3 oz-eq	3 oz-eq	3 oz-eq	3½ oz-eq	4 oz-eq	4½ oz-eq	5 oz-eq	5 oz-eq	5 oz-eq
Refined grains	1½ oz-eq	2 oz-eq	2½ oz-eq	2 oz-eq	3 oz-eq	3 oz-eq	3½ oz-eq	4 oz-eq	4½ oz-eq	5 oz-eq	5 oz-eq	5 oz-eq
Protein foods^d	2 oz-eq	3 oz-eq	4 oz-eq	5 oz-eq	5 oz-eq	5½ oz-eq	6 oz-eq	6½ oz-eq	6½ oz-eq	7 oz-eq	7 oz-eq	7 oz-eq
Eggs	1 oz-eq/wk	2 oz-eq/wk	3 oz-eq/wk	4 oz-eq/wk	4 oz-eq/wk	4 oz-eq/wk	4 oz-eq/wk	5 oz-eq/wk	5 oz-eq/wk	5 oz-eq/wk	5 oz-eq/wk	5 oz-eq/wk
Beans and peas ^f	3½ oz-eq/wk	5 oz-eq/wk	7 oz-eq/wk	9 oz-eq/wk	9 oz-eq/wk	10 oz-eq/wk	10 oz-eq/wk	11 oz-eq/wk	11 oz-eq/wk	12 oz-eq/wk	12 oz-eq/wk	12 oz-eq/wk
Soy products	4 oz-eq/wk	6 oz-eq/wk	8 oz-eq/wk	11 oz-eq/wk	11 oz-eq/wk	12 oz-eq/wk	13 oz-eq/wk	14 oz-eq/wk	14 oz-eq/wk	15 oz-eq/wk	15 oz-eq/wk	15 oz-eq/wk
Nuts and seeds	5 oz-eq/wk	7 oz-eq/wk	10 oz-eq/wk	12 oz-eq/wk	12 oz-eq/wk	13 oz-eq/wk	15 oz-eq/wk	16 oz-eq/wk	16 oz-eq/wk	17 oz-eq/wk	17 oz-eq/wk	17 oz-eq/wk
Dairy^g	2 c	2½ c	2½ c	3 c	3 c	3 c	3 c	3 c	3 c	3 c	3 c	3 c
Oils^h	12 g	13 g	12 g	15 g	17 g	19 g	21 g	22 g	25 g	26 g	34 g	41 g
Maximum SoFASⁱ limit, calories (% total calories)	137 (14%)	121 (10%)	121 (9%)	121 (8%)	161 (9%)	258 (13%)	266 (12%)	330 (14%)	362 (14%)	395 (14%)	459 (15%)	596 (19%)

a,b,c,d,e. See Appendix table 7, notes a through e.

f. Total recommended beans and peas amounts would be the sum of amounts recommended in the vegetable and the protein foods groups. An ounce-equivalent of beans and peas in the protein foods group is ¼ cup, cooked. For example, in the 2,000 calorie pattern, total weekly beans and peas recommendation is (10 oz-eq/4) + 1½ cups = about 4 cups, cooked.

g,h,i. See Appendix 7, notes f, g, and h.

APPENDIX 9. VEGAN ADAPTATION OF THE USDA FOOD PATTERNS

For each food group or subgroup,^a recommended average daily intake amounts^b at all calorie levels. Recommended intakes from vegetable and protein foods subgroups are per week. For more information and tools for application, go to MyPyramid.gov.

Calorie level of pattern ^c	1,000	1,200	1,400	1,600	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200
Fruits	1 c	1 c	1½ c	1½ c	1½ c	2 c	2 c	2 c	2 c	2½ c	2½ c	2½ c
Vegetables^d	1 c	1½ c	1½ c	2 c	2½ c	2½ c	3 c	3 c	3½ c	3½ c	4 c	4 c
Dark-green vegetables	½ c/wk	1 c/wk	1 c/wk	1½ c/wk	1½ c/wk	1½ c/wk	2 c/wk	2 c/wk	2½ c/wk	2½ c/wk	2½ c/wk	2½ c/wk
Red and orange vegetables	2½ c/wk	3 c/wk	3 c/wk	4 c/wk	5½ c/wk	5½ c/wk	6 c/wk	6 c/wk	7 c/wk	7 c/wk	7½ c/wk	7½ c/wk
Beans and peas (legumes)	½ c/wk	½ c/wk	½ c/wk	1 c/wk	1½ c/wk	1½ c/wk	2 c/wk	2 c/wk	2½ c/wk	2½ c/wk	3 c/wk	3 c/wk
Starchy vegetables	2 c/wk	3½ c/wk	3½ c/wk	4 c/wk	5 c/wk	5 c/wk	6 c/wk	6 c/wk	7 c/wk	7 c/wk	8 c/wk	8 c/wk
Other vegetables	1½ c/wk	2½ c/wk	2½ c/wk	3½ c/wk	4 c/wk	4 c/wk	5 c/wk	5 c/wk	5½ c/wk	5½ c/wk	7 c/wk	7 c/wk
Grains^e	3 oz-eq	4 oz-eq	5 oz-eq	5 oz-eq	6 oz-eq	6 oz-eq	7 oz-eq	8 oz-eq	9 oz-eq	10 oz-eq	10 oz-eq	10 oz-eq
Whole grains	1½ oz-eq	2 oz-eq	2½ oz-eq	3 oz-eq	3 oz-eq	3 oz-eq	3½ oz-eq	4 oz-eq	4½ oz-eq	5 oz-eq	5 oz-eq	5 oz-eq
Refined grains	1½ oz-eq	2 oz-eq	2½ oz-eq	2 oz-eq	3 oz-eq	3 oz-eq	3½ oz-eq	4 oz-eq	4½ oz-eq	5 oz-eq	5 oz-eq	5 oz-eq
Protein foods^d	2 oz-eq	3 oz-eq	4 oz-eq	5 oz-eq	5 oz-eq	5½ oz-eq	6 oz-eq	6½ oz-eq	6½ oz-eq	7 oz-eq	7 oz-eq	7 oz-eq
Beans and peas ^f	5 oz-eq/wk	7 oz-eq/wk	10 oz-eq/wk	12 oz-eq/wk	12 oz-eq/wk	13 oz-eq/wk	15 oz-eq/wk	16 oz-eq/wk	16 oz-eq/wk	17 oz-eq/wk	17 oz-eq/wk	17 oz-eq/wk
Soy products	4 oz-eq/wk	5 oz-eq/wk	7 oz-eq/wk	9 oz-eq/wk	9 oz-eq/wk	10 oz-eq/wk	11 oz-eq/wk	11 oz-eq/wk	11 oz-eq/wk	12 oz-eq/wk	12 oz-eq/wk	12 oz-eq/wk
Nuts and seeds	6 oz-eq/wk	8 oz-eq/wk	11 oz-eq/wk	14 oz-eq/wk	14 oz-eq/wk	15 oz-eq/wk	17 oz-eq/wk	18 oz-eq/wk	18 oz-eq/wk	20 oz-eq/wk	20 oz-eq/wk	20 oz-eq/wk
Dairy (vegan)^g	2 c	2½ c	2½ c	3 c	3 c	3 c	3 c	3 c	3 c	3 c	3 c	3 c
Oils^h	12 g	12 g	11 g	14 g	16 g	18 g	20 g	21 g	24 g	25 g	33 g	40 g
Maximum SoFASⁱ limit, calories (% total calories)	137 (14%)	121 (10%)	121 (9%)	121 (8%)	161 (9%)	258 (13%)	266 (12%)	330 (14%)	362 (14%)	395 (14%)	459 (15%)	596 (19%)

a,b,c,d,e. See Appendix 7, notes a through e.

f. Total recommended beans and peas amounts would be the sum of amounts recommended in the vegetable and the protein foods groups. An ounce-equivalent of beans and peas in the protein foods group is ¼ cup, cooked. For example, in the 2,000 calorie pattern, total weekly beans and peas recommendation is (13 oz-eq/4) + 1½ cups = about 5 cups, cooked.

g. The vegan “dairy group” is composed of calcium-fortified beverages and foods from plant sources. For analysis purposes the following products were included: calcium-fortified soy beverage, calcium-fortified rice milk, tofu made with calcium-sulfate, and calcium-fortified soy yogurt. The amounts in the 1,200 and 1,400 calorie patterns have increased to reflect new RDAs for calcium that are higher than previous recommendations for children ages 4 to 8 years.

h,i. See Appendix 7, notes g and h.

APPENDIX 10. THE DASH EATING PLAN AT VARIOUS CALORIE LEVELS

The number of daily servings in a food group vary depending on caloric needs ^a								
Food Group ^b	1,200 Calories	1,400 Calories	1,600 Calories	1,800 Calories	2,000 Calories	2,600 Calories	3,100 Calories	Serving Sizes
Grains	4-5	5-6	6	6	6-8	10-11	12-13	1 slice bread 1 oz dry cereal ^c ½ cup cooked rice, pasta, or cereal ^c
Vegetables	3-4	3-4	3-4	4-5	4-5	5-6	6	1 cup raw leafy vegetable ½ cup cut-up raw or cooked vegetable ½ cup vegetable juice
Fruits	3-4	4	4	4-5	4-5	5-6	6	1 medium fruit ¼ cup dried fruit ½ cup fresh, frozen, or canned fruit ½ cup fruit juice
Fat-free or low-fat milk and milk products	2-3	2-3	2-3	2-3	2-3	3	3-4	1 cup milk or yogurt 1½ oz cheese
Lean meats, poultry, and fish	3 or less	3-4 or less	3-4 or less	6 or less	6 or less	6 or less	6-9	1 oz cooked meats, poultry, or fish 1 egg
Nuts, seeds, and legumes	3 per week	3 per week	3-4 per week	4 per week	4-5 per week	1	1	½ cup or 1½ oz nuts 2 Tbsp peanut butter 2 Tbsp or ½ oz seeds ½ cup cooked legumes (dried beans, peas)
Fats and oils	1	1	2	2-3	2-3	3	4	1 tsp soft margarine 1 tsp vegetable oil 1 Tbsp mayonnaise 1 Tbsp salad dressing
Sweets and added sugars	3 or less per week	3 or less per week	3 or less per week	5 or less per week	5 or less per week	< 2	< 2	1 Tbsp sugar 1 Tbsp jelly or jam ½ cup sorbet, gelatin dessert 1 cup lemonade
Maximum sodium limit^d	2,300 mg/day	2,300 mg/day	2,300 mg/day	2,300 mg/day	2,300 mg/day	2,300 mg/day	2,300 mg/day	

Notes for APPENDIX 10.

- a. The DASH eating patterns from 1,200 to 1,800 calories meet the nutritional needs of children 4 to 8 years old. Patterns from 1,600 to 3,100 calories meet the nutritional needs of children 9 years and older and adults. See Appendix 6 for estimated calorie needs per day by age, gender, and physical activity level.
- b. Significance to DASH Eating Plan, selection notes, and examples of foods in each food group.
- Grains: Major sources of energy and fiber. Whole grains are recommended for most grain servings as a good source of fiber and nutrients. Examples: Whole-wheat bread and rolls; whole-wheat pasta, English muffin, pita bread, bagel, cereals; grits, oatmeal, brown rice; unsalted pretzels and popcorn.
 - Vegetables: Rich sources of potassium, magnesium, and fiber. Examples: Broccoli, carrots, collards, green beans, green peas, kale, lima beans, potatoes, spinach, squash, sweet potatoes, tomatoes.
 - Fruits: Important sources of potassium, magnesium, and fiber. Examples: Apples, apricots, bananas, dates, grapes, oranges, grapefruit, grapefruit juice, mangoes, melons, peaches, pineapples, raisins, strawberries, tangerines.
 - Fat-free or low-fat milk and milk products: Major sources of calcium and protein. Examples: Fat-free milk or buttermilk; fat-free, low-fat, or reduced-fat cheese; fat-free/low-fat regular or frozen yogurt.
 - Lean meats, poultry, and fish: Rich sources of protein and magnesium. Select only lean; trim away visible fats; broil, roast, or poach; remove skin from poultry. Since eggs are high in cholesterol, limit egg yolk intake to no more than four per week; two egg whites have the same protein content as 1 oz meat.
 - Nuts, seeds, and legumes: Rich sources of energy, magnesium, protein, and fiber. Examples: Almonds, filberts, mixed nuts, peanuts, walnuts, sunflower seeds, peanut butter, kidney beans, lentils, split peas.
 - Fats and oils: DASH study had 27 percent of calories as fat, including fat in or added to foods. Fat content changes serving amount for fats and oils. For example, 1 Tbsp regular salad dressing = one serving; 2 Tbsp low-fat dressing = one serving; 1 Tbsp fat-free dressing = zero servings. Examples: Soft margarine, vegetable oil (canola, corn, olive, safflower), low-fat mayonnaise, light salad dressing.
 - Sweets and added sugars: Sweets should be low in fat. Examples: Fruit-flavored gelatin, fruit punch, hard candy, jelly, maple syrup, sorbet and ices, sugar.
- c. Serving sizes vary between ½ cup and 1¼ cups, depending on cereal type. Check product's Nutrition Facts label.
- d. The DASH Eating Plan consists of patterns with a sodium limit of 2,300 mg and 1,500 mg per day.

APPENDIX 11. ESTIMATED EPA AND DHA AND MERCURY CONTENT IN 4 OUNCES OF SELECTED SEAFOOD VARIETIES

Common Seafood Varieties	EPA+DHA ^a mg/4 oz ^b	Mercury ^c mcg/4 oz ^d
Salmon [†] : Atlantic [*] , Chinook [*] , Coho [*]	1,200-2,400	2
Anchovies [*] , [†] , Herring [*] , [†] , and Shad [†]	2,300-2,400	5-10
Mackerel: Atlantic and Pacific (not King)	1,350-2,100	8-13
Tuna: Bluefin [*] , [†] and Albacore [†]	1,700	54-58
Sardines [†] : Atlantic [*] and Pacific [*]	1,100-1,600	2
Oysters: Pacific ^{e,f}	1,550	2
Trout: Freshwater	1,000-1,100	11
Tuna: White (Albacore) canned	1,000	40
Mussels ^{†,f} : Blue [*]	900	NA
Salmon [†] : Pink [*] and Sockeye [*]	700-900	2
Squid	750	11
Pollock [†] : Atlantic [*] and Walleye [*]	600	6
Crab ^f : Blue [†] , King [*] , [†] , Snow [†] , Queen [*] , and Dungeness [*]	200-550	9
Tuna: Skipjack and Yellowfin	150-350	31-49
Flounder [*] , [†] , Plaice [†] , and Sole [*] , [†] (Flatfish)	350	7
Clams ^f	200-300	0
Tuna: Light canned	150-300	13
Catfish	100-250	7
Cod [†] : Atlantic [*] and Pacific [*]	200	14
Scallops ^{†,f} : Bay [*] and Sea [*]	200	8
Haddock [*] , [†] and Hake [†]	200	2-5
Lobsters ^{f,g} : Northern [*] , [†] American [†]	200	47
Crayfish ^f	200	5
Tilapia	150	2
Shrimp ^f	100	0
Seafood varieties that should not be consumed by women who are pregnant or breastfeeding^h		
Shark	1,250	151
Tilefish [*] : Gulf of Mexico ^{†,i}	1,000	219
Swordfish	1,000	147
Mackerel: King	450	110

Notes for APPENDIX 11.

- a. A total of 1,750 mg of Eicosapentaenoic (EPA) and Docosahexaenoic (DHA) per week represents an average of 250 mg per day, which is the goal amount to achieve at the recommended 8 ounces of seafood per week for the general public.
 - b. EPA and DHA values are for cooked, edible portion rounded to the nearest 50 mg. Ranges are provided when values are comparable. Values are estimates.
 - c. A total of 39 mcg of mercury per week would reach the EPA reference dose limit (0.1 mcg/kg/d) for a woman who is pregnant or breastfeeding and who weighs 124 pounds (56 kg).
 - d. Mercury was measured as total mercury and/or methyl mercury. Mercury values of zero were below the level of detection. NA-Data not available. Values for mercury adjusted to reflect 4 ounce weight after cooking, assuming 25 percent moisture loss. Canned varieties not adjusted; mercury values gathered from cooked forms. Values are rounded to the nearest whole number. Ranges are provided when values are comparable. Values are estimates.
 - e. Eastern oysters have approximately 500–550 mg of EPA+DHA per 4 ounces.
 - f. Cooked by moist heat.
 - g. Spiny Lobster has approximately 550 mg of EPA+DHA and 14 mcg mercury per 4 ounces.
 - h. Women who are pregnant or breastfeeding should also limit white (Albacore) Tuna to 6 ounces per week.
 - i. Values are for Tilefish from the Gulf of Mexico; does not include Atlantic Tilefish, which have approximately 22 mcg of mercury per 4 ounces.
- *. Seafood variety is included in EPA+DHA value(s) reported.
†. Seafood variety is included in mercury value(s) reported.

Sources:

U.S. Department of Agriculture, Agricultural Research Service, Nutrient Data Laboratory, 2010, USDA National Nutrient Database for Standard Reference, Release 23, Available at: <http://www.ars.usda.gov/ba/bhnrc/ndl>.

U.S. Food and Drug Administration, "Mercury Levels in Commercial Fish and Shellfish," Available at: <http://www.fda.gov/Food/FoodSafety/Product-SpecificInformation/Seafood/FoodbornePathogensContaminants/Methylmercury/ucm115644.htm>.

National Marine Fisheries Service. "National Marine Fisheries Service Survey of Trace Elements in the Fishery Resource" Report, 1978.
Environmental Protection Agency. "The Occurrence of Mercury in the Fishery Resources of the Gulf of Mexico" Report, 2000.

APPENDIX 12. SELECTED FOOD SOURCES RANKED BY AMOUNTS OF POTASSIUM AND CALORIES PER STANDARD FOOD PORTION

Food	Standard portion size	Calories in standard portion ^a	Potassium in standard portion (mg) ^a
Potato, baked, flesh and skin	1 small potato	128	738
Prune juice, canned	1 cup	182	707
Carrot juice, canned	1 cup	94	689
Tomato paste	¼ cup	54	664
Beet greens, cooked	½ cup	19	654
White beans, canned	½ cup	149	595
Tomato juice, canned	1 cup	41	556
Plain yogurt, nonfat or lowfat	8 ounces	127-143	531-579
Tomato puree	½ cup	48	549
Sweet potato, baked in skin	1 medium	103	542
Clams, canned	3 ounces	126	534
Orange juice, fresh	1 cup	112	496
Halibut, cooked	3 ounces	119	490
Soybeans, green, cooked	½ cup	127	485
Tuna, yellowfin, cooked	3 ounces	118	484
Lima beans, cooked	½ cup	108	478
Soybeans, mature, cooked	½ cup	149	443
Rockfish, Pacific, cooked	3 ounces	103	442
Cod, Pacific, cooked	3 ounces	89	439
Evaporated milk, nonfat	½ cup	100	425
Low-fat (1%) or reduced fat (2%) chocolate milk	1 cup	158-190	422-425
Bananas	1 medium	105	422
Spinach, cooked	½ cup	21-25	370-419
Tomato sauce	½ cup	29	405
Peaches, dried, uncooked	¼ cup	96	398
Prunes, stewed	½ cup	133	398
Skim milk (nonfat)	1 cup	83	382
Rainbow trout, cooked	3 ounces	128	381
Apricots, dried, uncooked	¼ cup	78	378
Pinto beans, cooked	½ cup	122	373
Pork loin, center rib, lean, roasted	3 ounces	190	371
Low-fat milk or buttermilk (1%)	1 cup	98-102	366-370
Lentils, cooked	½ cup	115	365
Plantains, cooked	½ cup	89	358
Kidney beans, cooked	½ cup	112	358

a. Source: U.S. Department of Agriculture, Agricultural Research Service, Nutrient Data Laboratory. 2009. USDA National Nutrient Database for Standard Reference, Release 22. Available at: <http://www.ars.usda.gov/ba/bhnrc/ndl>.

APPENDIX 13. SELECTED FOOD SOURCES RANKED BY AMOUNTS OF DIETARY FIBER AND CALORIES PER STANDARD FOOD PORTION

Food	Standard portion size	Calories in standard portion ^a	Dietary fiber in standard portion (g) ^a
Beans (navy, pinto, black, kidney, white, great northern, lima), cooked	½ cup	104-149	6.2-9.6
Bran ready-to-eat cereal (100%)	⅓ cup (about 1 ounce)	81	9.1
Split peas, lentils, chickpeas, or cowpeas, cooked	½ cup	108-134	5.6-8.1
Artichoke, cooked	½ cup hearts	45	7.2
Pear	1 medium	103	5.5
Soybeans, mature, cooked	½ cup	149	5.2
Plain rye wafer crackers	2 wafers	73	5.0
Bran ready-to-eat cereals (various)	⅓-¾ cup (about 1 ounce)	88-91	2.6-5.0
Asian pear	1 small	51	4.4
Green peas, cooked	½ cup	59-67	3.5-4.4
Whole-wheat English muffin	1 muffin	134	4.4
Bulgur, cooked	½ cup	76	4.1
Mixed vegetables, cooked	½ cup	59	4.0
Raspberries	½ cup	32	4.0
Sweet potato, baked in skin	1 medium	103	3.8
Blackberries	½ cup	31	3.8
Soybeans, green, cooked	½ cup	127	3.8
Prunes, stewed	½ cup	133	3.8
Shredded wheat ready-to-eat cereal	½ cup (about 1 ounce)	95-100	2.7-3.8
Figs, dried	¼ cup	93	3.7
Apple, with skin	1 small	77	3.6
Pumpkin, canned	½ cup	42	3.6
Greens (spinach, collards, turnip greens), cooked	½ cup	14-32	2.5-3.5
Almonds	1 ounce	163	3.5
Sauerkraut, canned	½ cup	22	3.4
Whole wheat spaghetti, cooked	½ cup	87	3.1
Banana	1 medium	105	3.1
Orange	1 medium	62	3.1
Guava	1 fruit	37	3.0
Potato, baked, with skin	1 small	128	3.0
Oat bran muffin	1 small	178	3.0
Pearled barley, cooked	½ cup	97	3.0
Dates	¼ cup	104	2.9
Winter squash, cooked	½ cup	38	2.9
Parsnips, cooked	½ cup	55	2.8
Tomato paste	¼ cup	54	2.7
Broccoli, cooked	½ cup	26-27	2.6-2.8
Okra, cooked from frozen	½ cup	26	2.6

a. Source: U.S. Department of Agriculture, Agricultural Research Service, Nutrient Data Laboratory. 2009. USDA National Nutrient Database for Standard Reference, Release 22. Available at: <http://www.ars.usda.gov/ba/bhnrc/ndl>.

APPENDIX 14. SELECTED FOOD SOURCES RANKED BY AMOUNTS OF CALCIUM AND CALORIES PER STANDARD FOOD PORTION

Food	Standard portion size	Calories in standard portion ^a	Calcium in standard portion ^a (mg)
Fortified ready-to-eat cereals (various)	¾-1 cup (about 1 ounce)	100-210	250-1,000
Orange juice, calcium fortified	1 cup	117	500
Plain yogurt, nonfat	8 ounces	127	452
Romano cheese	1½ ounces	165	452
Pasteurized process Swiss cheese	2 ounces	189	438
Evaporated milk, nonfat	½ cup	100	371
Tofu, regular, prepared with calcium sulfate	½ cup	94	434
Plain yogurt, low-fat	8 ounces	143	415
Fruit yogurt, low-fat	8 ounces	232	345
Ricotta cheese, part skim	½ cup	171	337
Swiss cheese	1½ ounces	162	336
Sardines, canned in oil, drained	3 ounces	177	325
Pasteurized process American cheese food	2 ounces	187	323
Provolone cheese	1½ ounces	149	321
Mozzarella cheese, part-skim	1½ ounces	128	311
Cheddar cheese	1½ ounces	171	307
Low-fat milk (1%)	1 cup	102	305
Muenster cheese	1½ ounces	156	305
Skim milk (nonfat)	1 cup	83	299
Soy milk, original and vanilla, with added calcium	1 cup	104	299
Reduced fat milk (2%)	1 cup	122	293
Low-fat chocolate milk (1%)	1 cup	158	290
Low-fat buttermilk (1%)	1 cup	98	284
Rice milk, with added calcium	1 cup	113	283
Whole chocolate milk	1 cup	208	280
Whole milk	1 cup	149	276
Plain yogurt, whole milk	8 ounces	138	275
Reduced fat chocolate milk (2%)	1 cup	190	272
Ricotta cheese, whole milk	½ cup	216	257
Tofu, firm, prepared with calcium sulfate and magnesium chloride	½ cup	88	253

a. Data source: U.S. Department of Agriculture, Agricultural Research Service, Nutrient Data Laboratory. 2009. USDA National Nutrient Database for Standard Reference, Release 22. Available at: <http://www.ars.usda.gov/ba/bhnrc/ndl>.

APPENDIX 15. SELECTED FOOD SOURCES RANKED BY AMOUNTS OF VITAMIN D AND CALORIES PER STANDARD FOOD PORTION

Food	Standard portion size	Calories in standard portion ^a	Vitamin D in standard portion ^{a,b} (mcg)
Salmon, sockeye, cooked	3 ounces	184	19.8
Salmon, smoked	3 ounces	99	14.5
Salmon, canned	3 ounces	118	11.6
Rockfish, cooked	3 ounces	103	6.5
Tuna, light, canned in oil, drained	3 ounces	168	5.7
Orange juice ^c	1 cup	118	3.4
Sardine, canned in oil, drained	3 ounces	177	4.1
Tuna, light, canned in water, drained	3 ounces	99	3.8
Whole milk ^c	1 cup	149	3.2
Whole chocolate milk ^c	1 cup	208	3.2
Reduced fat chocolate milk (2%) ^c	1 cup	190	3.0
Milk (nonfat, 1% and 2%) ^c	1 cup	83-122	2.9
Low-fat chocolate milk (1%) ^c	1 cup	158	2.8
Soy milk ^c	1 cup	104	2.7
Evaporated milk, nonfat ^c	½ cup	100	2.6
Flatfish (flounder and sole), cooked	3 ounces	99	2.5
Fortified ready-to-eat cereals (various) ^c	¾-1¼ cup (about 1 ounce)	92-190	0.9-2.5
Rice drink ^c	1 cup	113	2.4
Herring, pickled	3 ounces	223	2.4
Pork, cooked (various cuts)	3 ounces	153-337	0.6-2.2
Cod, cooked	3 ounces	89	1.0
Beef liver, cooked	3 ounces	149	1.0
Cured ham	3 ounces	133-207	0.6-0.8
Egg, hard-boiled	1 large	78	0.7
Shiitake mushrooms	½ cup	41	0.6
Canadian bacon	2 slices (about 1½ ounces)	87	0.5

a. Source: U.S. Department of Agriculture, Agricultural Research Service, Nutrient Data Laboratory. 2009. USDA National Nutrient Database for Standard Reference, Release 22. Available at: <http://www.ars.usda.gov/ba/bhnrc/ndl>.

b. 1 mcg of vitamin D is equivalent to 40 IU.

c. Vitamin D fortified.

Added sugars—Sugars, syrups, and other caloric sweeteners that are added to foods during processing, preparation, or consumed separately. Added sugars do not include naturally occurring sugars such as those in fruit or milk. Names for added sugars include: brown sugar, corn sweetener, corn syrup, dextrose, fructose, fruit juice concentrates, glucose, high-fructose corn syrup, honey, invert sugar, lactose, maltose, malt syrup, molasses, raw sugar, turbinado sugar, trehalose, and sucrose.

Body mass index (BMI)—A measure of weight in kilograms (kg) relative to height in meters (m) squared. BMI is considered a reasonably reliable indicator of total body fat, which is related to the risk of disease and death. BMI status categories include underweight, healthy weight, overweight, and obese. Overweight and obese describe ranges of weight that are greater than what is considered healthy for a given height, while underweight describes a weight that is lower than what is considered healthy. Because children and adolescents are growing, their BMI is plotted on growth charts for sex and age. The percentile indicates the relative position of the child's BMI among children of the same sex and age.

Calorie—Unit of (heat) energy available from the metabolism of food that is required to sustain the body's various functions, including metabolic processes and physical activity. Carbohydrate, fat, protein, and alcohol provide all of the energy supplied by foods and beverages.

Calorie balance—The balance between calories consumed through eating and drinking and those expended through physical activity and metabolic processes.

Calorie density—Amount of calories provided per unit of food weight. Also known as "energy density." Foods high in water and/or dietary fiber typically have fewer calories per gram and are lower in calorie density, while foods higher in fat are generally higher in calorie density. Calorie density is most useful when considering the eating pattern in its entirety. A healthy eating pattern with low calorie density can include consumption of a small amount of some calorie-dense foods (such as olive oil and nuts). An eating pattern low in calorie density is characterized by a relatively high intake of vegetables, fruit, and dietary fiber and a relatively low

intake of total fat, saturated fat, and added sugars. (See "Nutrient dense.")

Carbohydrates—One of the macronutrients. They include sugars, starches, and fibers:

- **Sugars**—A simple carbohydrate composed of one unit (a monosaccharide, such as glucose or fructose) or two joined units (a disaccharide, such as lactose or sucrose). Sugars include those occurring naturally in foods, those added to foods during processing and preparation, and those consumed separately.
- **Starches**—Many glucose units linked together into long chains. Examples of foods containing starch include grains (e.g., brown rice, oats, wheat, barley, corn), beans and peas (e.g., kidney beans, garbanzo beans, lentils, split peas), and tubers (e.g., potatoes, carrots). Refined starches are added to foods during food processing or cooking as thickeners and stabilizers. Corn starch is an example of a refined starch.
- **Fiber**—Nondigestible carbohydrates and lignin that are intrinsic and intact in plants. Fiber consists of dietary fiber (the fiber naturally occurring in foods) and functional fiber, which are isolated, nondigestible carbohydrates that have beneficial physiological effects in humans.

Cardiovascular disease—Diseases of the heart and diseases of the blood vessel system (arteries, capillaries, veins) within a person's entire body.

Cholesterol—A natural sterol present in all animal tissues. Free cholesterol is a component of cell membranes and serves as a precursor for steroid hormones (estrogen, testosterone, aldosterone), and for bile acids. Humans are able to synthesize sufficient cholesterol to meet biologic requirements, and there is no evidence for a dietary requirement for cholesterol.

- **Dietary cholesterol**—Cholesterol found in foods of animal origin, including meat, seafood, poultry, eggs, and dairy products. Biologically, a liver is required to produce cholesterol, thus plant foods, such as grains, vegetables and fruits, and oils contain no dietary cholesterol.
- **Serum cholesterol**—Cholesterol that travels in the blood as part of distinct particles containing

both lipids and proteins (lipoproteins). Three major classes of lipoproteins are found in the serum of a fasting individual: low-density lipoprotein (LDL), high-density lipoprotein (HDL), and very-low-density lipoprotein (VLDL). Another lipoprotein class, intermediate-density lipoprotein (IDL), resides between VLDL and LDL; in clinical practice, IDL is included in the LDL measurement. Elevated lipid levels in the blood is known as hyperlipidemia.

Cross-contamination—The spread of bacteria, viruses, or other harmful agents from one surface to another.

Cup equivalent—The amount of a food product that is considered equal to 1 cup from the vegetable, fruit, or milk food group. A cup equivalent for some foods may be less than a measured cup because the food has been concentrated (such as raisins or tomato paste), more than a cup for some foods that are airy in their raw form and do not compress well into a cup (such as salad greens), or measured in a different form (such as cheese).

Diabetes—A disorder of metabolism—the way the body uses digested food for growth and energy. In diabetes, the pancreas either produces little or no insulin (a hormone that helps glucose, the body's main source of fuel, get into cells), or the cells do not respond appropriately to the insulin that is produced. The three main types of diabetes are type 1, type 2, and gestational diabetes. About 90 to 95 percent of people with diabetes have type 2. This form of diabetes is most often associated with older age, obesity, family history of diabetes, previous history of gestational diabetes, physical inactivity, and certain ethnicities. About 80 percent of people with type 2 diabetes are overweight. Prediabetes, also called impaired fasting glucose or impaired glucose tolerance, is a state in which blood glucose levels are higher than normal but not high enough to be called diabetes.

Dietary Reference Intakes (DRIs)—A set of nutrient-based reference values that expand upon and replace the former Recommended Dietary Allowances (RDAs) in the United States and the Recommended Nutrient Intakes (RNIs) in Canada. They include:

- **Acceptable Macronutrient Distribution Range (AMDR)**—Range of intake for a particular energy source that is associated with reduced risk of chronic disease while providing intakes of essential nutrients. An intake outside of the AMDR carries the potential of increased risk of chronic diseases and/or insufficient intakes of essential nutrients.
- **Adequate Intake (AI)**—A recommended average daily nutrient intake level based on observed or experimentally determined approximations or estimates of mean nutrient intake by a group (or groups) of apparently healthy people. This is used when the Recommended Dietary Allowance cannot be determined.
- **Estimated Average Requirement (EAR)**—The average daily nutrient intake level estimated to meet the requirement of half the healthy individuals in a particular life stage and gender group.
- **Recommended Dietary Allowance (RDA)**—The average dietary intake level that is sufficient to meet the nutrient requirement of nearly all (97 to 98%) healthy individuals in a particular life stage and gender group.
- **Tolerable Upper Intake Level (UL)**—The highest average daily nutrient intake level likely to pose no risk of adverse health effects for nearly all individuals in a particular life stage and gender group. As intake increases above the UL, the potential risk of adverse health effects increases.

Eating pattern—The combination of foods and beverages that constitute an individual's complete dietary intake over time. This may be a description of a customary way of eating or a description of a combination of foods recommended for consumption. Specific examples include USDA Food Patterns, Dietary Approaches to Stop Hypertension (DASH) Eating Plan, and Mediterranean, vegetarian, and vegan patterns.

Enrichment—The addition of specific nutrients (iron, thiamin, riboflavin, and niacin) to refined-grain products in order to replace losses of the nutrients that occur during processing.

Essential nutrient—A vitamin, mineral, fatty acid, or amino acid required for normal body functioning

that either cannot be synthesized by the body at all, or cannot be synthesized in amounts adequate for good health, and thus must be obtained from a dietary source. Other food components, such as dietary fiber, while not essential, also are considered to be nutrients.

Fast food—Foods designed for ready availability, use, or consumption and sold at eating establishments for quick availability or take-out. Fast food restaurants also are known as quick-service restaurants.

Fats—One of the macronutrients. (See “Solid Fats” and “Oils” and Figure 3-3 in Chapter 3.)

- **Monounsaturated fatty acids**—Monounsaturated fatty acids (MUFAs) have one double bond. Plant sources that are rich in MUFAs include nuts and vegetable oils that are liquid at room temperature (e.g., canola oil, olive oil, and high oleic safflower and sunflower oils).
- **Polyunsaturated fatty acids**—Polyunsaturated fatty acids (PUFAs) have two or more double bonds and may be of two types, based on the position of the first double bond.
 - **Omega-6 PUFAs**—Linoleic acid, one of the *n*-6 fatty acids, is required but cannot be synthesized by humans and, therefore, is considered essential in the diet. Primary sources are liquid vegetable oils, including soybean oil, corn oil, and safflower oil. Also called *n*-6 fatty acids.
 - **Omega-3 PUFAs**—Alpha-linolenic acid is an *n*-3 fatty acid that is required because it is not synthesized by humans and, therefore, is considered essential in the diet. It is obtained from plant sources, including soybean oil, canola oil, walnuts, and flaxseed. Eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) are long chain *n*-3 fatty acids that are contained in fish and shellfish. Also called *n*-3 fatty acids.
- **Saturated fatty acids**—Saturated fatty acids have no double bonds. Examples include the fatty acids found in animal products, such as meat, milk and milk products, hydrogenated shortening, and coconut or palm oils. In general, foods with relatively high amounts of saturated fatty acids are solid at room temperature.

- **Trans fatty acids**—Unsaturated fatty acids that contain one or more isolated double bonds in a *trans* configuration produced by chemical hydrogenation. Sources of *trans* fatty acids include hydrogenated/partially hydrogenated vegetable oils that are used to make shortening and commercially prepared baked goods, snack foods, fried foods, and margarine. *Trans* fatty acids also are present in foods that come from ruminant animals (e.g., cattle and sheep). Such foods include dairy products, beef, and lamb.

FightBAC![®]—A national public education campaign to promote food safety to consumers and educate them on how to handle and prepare food safely. In this campaign, pathogens are represented by a cartoonlike bacteria character named “BAC.”

Food security—Access by all people at all times to enough food for an active, healthy life. Food security includes, at a minimum: (a) the ready availability of nutritionally adequate and safe foods; and (b) an assured ability to acquire acceptable foods in socially acceptable ways (e.g., without resorting to emergency food supplies, scavenging, stealing, or other coping strategies).

Food insecurity—The limited or uncertain availability of nutritionally adequate and safe foods or uncertain ability to acquire acceptable foods in socially acceptable ways. Hunger is defined as the uneasy or painful sensation caused by a lack of food, or the recurrent and involuntary lack of access to food.

Foodborne disease—Disease caused by consuming foods or beverages contaminated with disease-causing bacteria or viruses. Many different disease-causing microbes, or pathogens, can contaminate foods, so there are many different foodborne infections. In addition, poisonous chemicals, or other harmful substances, can cause foodborne diseases if they are present in food. The most commonly recognized foodborne infections are those caused by the bacteria *Campylobacter*, *Salmonella*, and *E. coli* O157:H7, and by a group of viruses called calicivirus, also known as the Norwalk and Norwalk-like viruses.

Fortification—The addition of one or more essential nutrients to a food, whether or not it is normally contained in the food. Fortification may be used for the purpose of preventing or correcting a

deficiency in the population or specific population groups; to restore naturally occurring nutrients lost during processing, storage, or handling; or to increase the nutrient level above that found in comparable food and to serve as a meaningful source of the specific nutrient.

Hypertension—A condition, also known as high blood pressure, in which blood pressure remains elevated over time. Hypertension makes the heart work too hard, and the high force of the blood flow can harm arteries and organs, such as the heart, kidneys, brain, and eyes. Uncontrolled hypertension can lead to heart attacks, heart failure, kidney disease, stroke, and blindness. Prehypertension is defined as blood pressure that is higher than normal but not high enough to be defined as hypertension.

Macronutrient—A dietary component that provides energy. Macronutrients include protein, fats, carbohydrates, and alcohol.

Nutrient dense—Nutrient-dense foods and beverages provide vitamins, minerals, and other substances that may have positive health effects, with relatively few calories. The term “nutrient dense” indicates the nutrients and other beneficial substances in a food have not been “diluted” by the addition of calories from added solid fats, added sugars, or added refined starches, or by the solid fats naturally present in the food. Nutrient-dense foods and beverages are lean or low in solid fats, and minimize or exclude added solid fats, sugars, starches, and sodium. Ideally, they also are in forms that retain naturally occurring components, such as dietary fiber. All vegetables, fruits, whole grains, seafood, eggs, beans and peas, unsalted nuts and seeds, fat-free and low-fat milk and milk products, and lean meats and poultry—when prepared without solid fats or added sugars—are nutrient-dense foods. (See “Calorie density.”)

Oils—Fats that are liquid at room temperature. Oils come from many different plants and from seafood. Some common oils include canola, corn, olive, peanut, safflower, soybean, and sunflower oils. A number of foods are naturally high in oils, such as nuts, olives, some fish, and avocados. Foods that are mainly oil include mayonnaise, certain salad dressings, and soft (tub or squeeze) margarine with no *trans* fats. Most oils are high in monounsaturated or

polyunsaturated fats, and low in saturated fats. A few plant oils, including coconut oil and palm kernel oil, are high in saturated fats and for nutritional purposes should be considered solid fats. Hydrogenated oils that contain *trans* fats also should be considered solid fats for nutritional purposes. (See “Fats” and Figure 3-3 in Chapter 3.)

Ounce-equivalent (oz-eq)—The amount of a food product that is considered equal to 1 ounce from the grain group or the protein foods group. An oz-eq for some foods may be less than a measured ounce if the food is concentrated or low in water content (nuts, peanut butter, dried meats, or flour), more than an ounce if the food contains a large amount of water (tofu, cooked beans, cooked rice, or cooked pasta).

Portion size—The amount of a food served or consumed in one eating occasion. A portion is not a standardized amount, and the amount considered to be a portion is subjective and varies. (See “Serving size.”)

Protein—One of the macronutrients. Protein is the major functional and structural component of every cell in the body. Proteins are composed of amino acids, nine of which cannot be synthesized to meet the body’s needs and therefore must be obtained from the diet. The quality of a source of dietary protein depends on its ability to provide the nitrogen and amino acid requirements that are necessary for the body’s growth, maintenance, and repair.

Refined grains—Grains and grain products missing the bran, germ, and/or endosperm; any grain product that is not a whole grain. Many refined grains are low in fiber and enriched with thiamin, riboflavin, niacin, and iron, and fortified with folic acid as required by U.S. regulations.

Seafood—Marine animals that live in the sea and in freshwater lakes and rivers. Seafood includes fish, such as salmon, tuna, trout, and tilapia, and shellfish, such as shrimp, crab, and oysters.

Serving size—A standardized amount of a food, such as a cup or an ounce, used in providing information about a food within a food group, such as in dietary guidance. Serving size on the Nutrition Facts label is determined based on the Reference Amounts

Customarily Consumed (RACC) for foods that have similar dietary usage, product characteristics, and customarily consumed amounts for consumers to make “like product” comparisons. (See “Portion size.”)

Solid fats—Fats that are usually not liquid at room temperature. Solid fats are found in most animal foods but also can be made from vegetable oils through hydrogenation. Some common solid fats include: butter, beef fat (tallow, suet), chicken fat, pork fat (lard), stick margarine, coconut oil, palm oil, and shortening. Foods high in solid fats include: full-fat (regular) cheese, cream, whole milk, ice cream, well-marbled cuts of meats, regular ground beef, bacon, sausages, poultry skin, and many baked goods (such as cookies, crackers, donuts, pastries, and croissants). Solid fats contain more saturated fatty acids and/or *trans* fatty acids, and

less monounsaturated or polyunsaturated fatty acids than do most oils, which are liquid at room temperature. (See “Fats” and Figure 3-3 in Chapter 3.)

Sugar-sweetened beverages—Liquids that are sweetened with various forms of sugars that add calories. These beverages include, but are not limited to, soda, fruit ades and fruit drinks, and sports and energy drinks.

Whole grains—Grains and grain products made from the entire grain seed, usually called the kernel, which consists of the bran, germ, and endosperm. If the kernel has been cracked, crushed, or flaked, it must retain nearly the same relative proportions of bran, germ, and endosperm as the original grain in order to be called whole grain. Many, but not all, whole grains are also a source of dietary fiber.