

# DIETARY GUIDELINES FOR AMERICANS 2015-2020 EIGHTH EDITION



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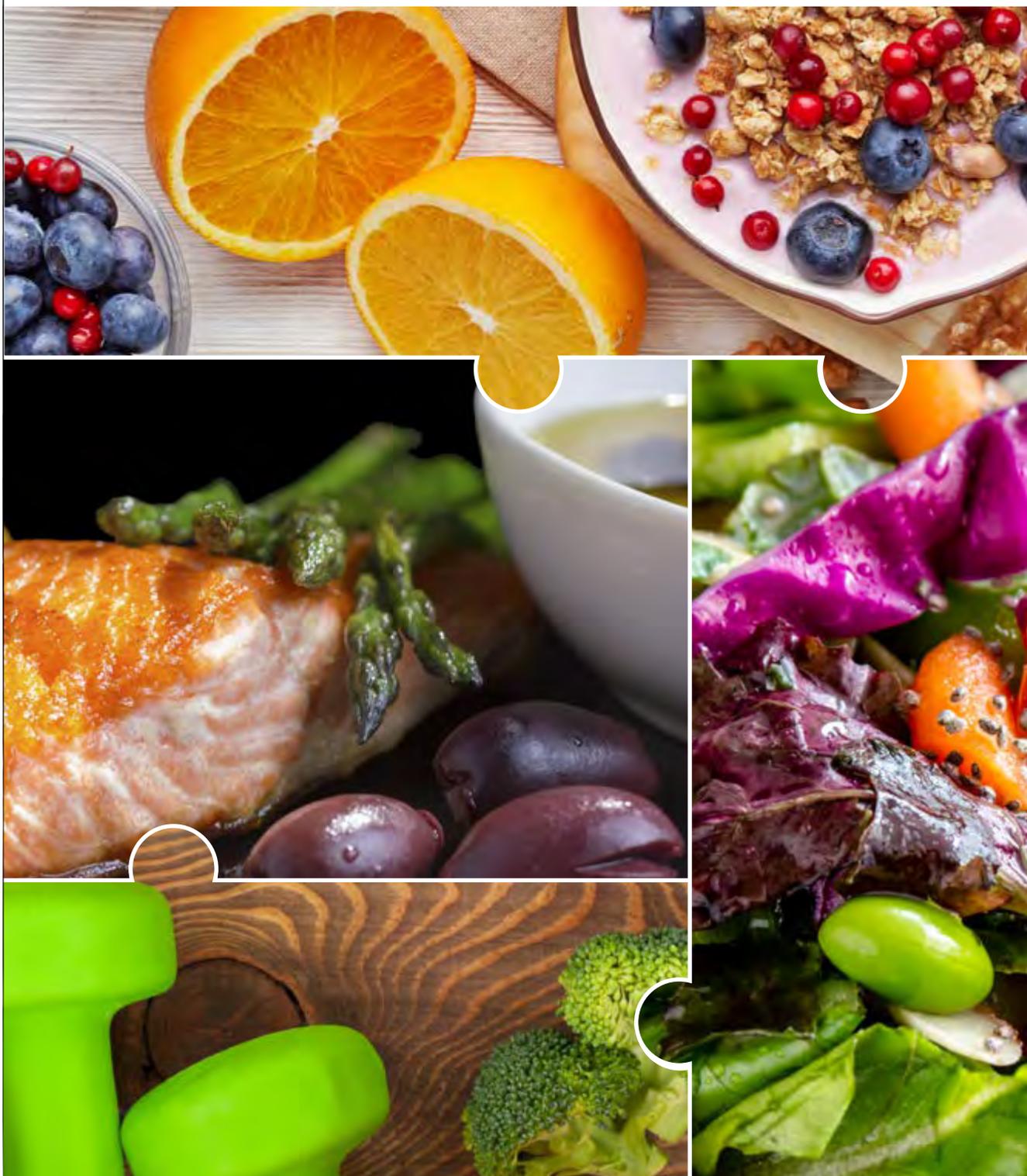
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CHAPTER

# 1

# Key Elements of Healthy Eating Patterns



## Introduction

Over the course of any given day, week, or year, individuals consume foods and beverages<sup>[1]</sup> in combination—an eating pattern. An eating pattern is more than the sum of its parts; it represents the totality of what individuals habitually eat and drink, and these dietary components act synergistically in relation to health. As a result, the eating pattern may be more predictive of overall health status and disease risk than individual foods or nutrients. Thus, eating patterns, and their food and nutrient components, are at the core of the *2015-2020 Dietary Guidelines for Americans*. The goal of the *Dietary Guidelines* is for individuals throughout all stages of the lifespan to have eating patterns that promote overall health and help prevent chronic disease.

## About This Chapter

This chapter defines the core concepts of healthy eating and physical activity patterns and focuses on the first three Guidelines:

- 1. Follow a healthy eating pattern across the lifespan.** All food and beverage choices matter. Choose a healthy eating pattern at an appropriate calorie level to help achieve and maintain a healthy body weight, support nutrient adequacy, and reduce the risk of chronic disease.

- 2. Focus on variety, nutrient density, and amount.** To meet nutrient needs within calorie limits, choose a variety of nutrient-dense foods across and within all food groups in recommended amounts.

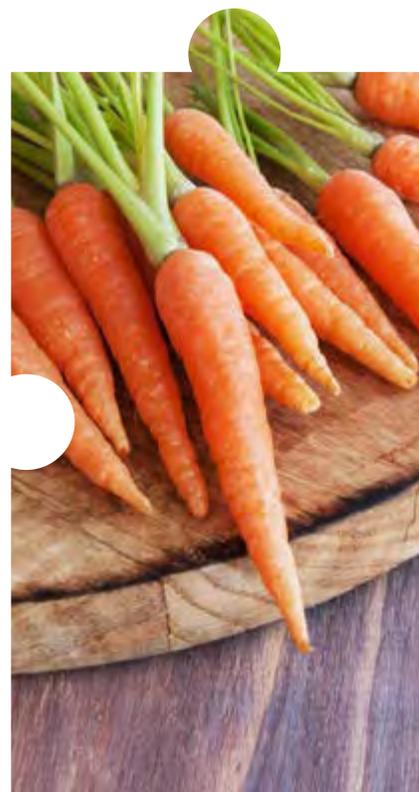
- 3. Limit calories from added sugars and saturated fats and reduce sodium intake.** Consume an eating pattern low in added sugars, saturated fats, and sodium. Cut back on foods and beverages higher in these components to amounts that fit within healthy eating patterns.

- 4. Shift to healthier food and beverage choices.** Choose nutrient-dense foods and beverages across and within all food groups in place of less healthy choices. Consider cultural and personal preferences to make these shifts easier to accomplish and maintain.

- 5. Support healthy eating patterns for all.** Everyone has a role in helping to create and support healthy eating patterns in multiple settings nationwide, from home to school to work to communities.

The chapter first presents Key Recommendations, which describe the elements of a healthy eating pattern and provide detail on how individuals can follow the Guidelines, followed by a description of the science supporting healthy eating patterns. Then, the Healthy U.S.-Style Eating Pattern at the

2,000-calorie level is provided as an example. A Closer Look Inside a Healthy Eating Pattern provides details on each of the food groups and other dietary components of public health importance in the United States. In addition, the chapter provides two variations of the Healthy U.S.-Style Eating Pattern as examples of additional healthy eating patterns—the Healthy Mediterranean-Style Eating Pattern and the Healthy Vegetarian Eating Pattern. Both of these patterns align with the Guidelines. Finally, this chapter provides an overview of healthy physical activity patterns.



[1] If not specified explicitly, references to “foods” refer to “foods and beverages.”

## Key Recommendations: Components of Healthy Eating Patterns

The *Dietary Guidelines'* Key Recommendations for healthy eating patterns should be applied in their entirety, given the interconnected relationship that each dietary component can have with others. As illustrated later

in this chapter, there is more than one way to put these Key Recommendations into action; this is exemplified by the three eating patterns that translate and integrate the Key Recommendations into an overall healthy way to eat.



## Key Recommendations:

### Consume a healthy eating pattern that accounts for all foods and beverages within an appropriate calorie level.

#### A healthy eating pattern includes:<sup>[2]</sup>

- A variety of vegetables from all of the subgroups—dark green, red and orange, legumes (beans and peas), starchy, and other
- Fruits, especially whole fruits
- Grains, at least half of which are whole grains
- Fat-free or low-fat dairy, including milk, yogurt, cheese, and/or fortified soy beverages
- A variety of protein foods, including seafood, lean meats and poultry, eggs, legumes (beans and peas), and nuts, seeds, and soy products
- Oils

#### A healthy eating pattern limits:

- Saturated fats and *trans* fats, added sugars, and sodium

Key Recommendations that are quantitative are provided for several components of the diet that should be limited. These components are of particular public health concern in the United States, and the specified limits can help individuals achieve healthy eating patterns within calorie limits:

- Consume less than 10 percent of calories per day from added sugars<sup>[3]</sup>
- Consume less than 10 percent of calories per day from saturated fats<sup>[4]</sup>
- Consume less than 2,300 milligrams (mg) per day of sodium<sup>[5]</sup>
- If alcohol is consumed, it should be consumed in moderation—up to one drink per day for women and up to two drinks per day for men—and only by adults of legal drinking age.<sup>[6]</sup>

[2] Definitions for each food group and subgroup are provided throughout the chapter and are compiled in Appendix 3. USDA Food Patterns: Healthy U.S.-Style Eating Pattern.

[3] The recommendation to limit intake of calories from added sugars to less than 10 percent per day is a target based on food pattern modeling and national data on intakes of calories from added sugars that demonstrate the public health need to limit calories from added sugars to meet food group and nutrient needs within calorie limits. The limit on calories from added sugars is not a Tolerable Upper Intake Level (UL) set by the Institute of Medicine (IOM). For most calorie levels, there are not enough calories available after meeting food group needs to consume 10 percent of calories from added sugars and 10 percent of calories from saturated fats and still stay within calorie limits.

[4] The recommendation to limit intake of calories from saturated fats to less than 10 percent per day is a target based on evidence that replacing saturated fats with unsaturated fats is associated with reduced risk of cardiovascular disease. The limit on calories from saturated fats is not a UL set by the IOM. For most calorie levels, there are not enough calories available after meeting food group needs to consume 10 percent of calories from added sugars and 10 percent of calories from saturated fats and still stay within calorie limits.

[5] The recommendation to limit intake of sodium to less than 2,300 mg per day is the UL for individuals ages 14 years and older set by the IOM. The recommendations for children younger than 14 years of age are the IOM age- and sex-appropriate ULs (see Appendix 7. Nutritional Goals for Age-Sex Groups Based on Dietary Reference Intakes and Dietary Guidelines Recommendations).

[6] It is not recommended that individuals begin drinking or drink more for any reason. The amount of alcohol and calories in beverages varies and should be accounted for within the limits of healthy eating patterns. Alcohol should be consumed only by adults of legal drinking age. There are many circumstances in which individuals should not drink, such as during pregnancy. See Appendix 9. Alcohol for additional information.

## Healthy Eating Patterns: Dietary Principles

Healthy eating patterns support a healthy body weight and can help prevent and reduce the risk of chronic disease throughout periods of growth, development, and aging as well as during pregnancy. The following principles apply to meeting the Key Recommendations:

**An eating pattern represents the totality of all foods and beverages consumed.** All foods consumed as part of a healthy eating pattern fit together

like a puzzle to meet nutritional needs without exceeding limits, such as those for saturated fats, added sugars, sodium, and total calories. All forms of foods, including fresh, canned, dried, and frozen, can be included in healthy eating patterns.

**Nutritional needs should be met primarily from foods.** Individuals should aim to meet their nutrient needs through healthy eating patterns that include nutrient-dense foods. Foods in nutrient-dense forms contain essential vitamins and minerals and also dietary fiber and other naturally occurring substances

that may have positive health effects. In some cases, fortified foods and dietary supplements may be useful in providing one or more nutrients that otherwise may be consumed in less than recommended amounts (see Chapter 2. Shifts Needed To Align With Healthy Eating Patterns).

**Healthy eating patterns are adaptable.** Individuals have more than one way to achieve a healthy eating pattern. Any eating pattern can be tailored to the individual's socio-cultural and personal preferences.

## Healthy Physical Activity Patterns



### Key Recommendation:

#### **Meet the *Physical Activity Guidelines for Americans***

In addition to consuming a healthy eating pattern, individuals in the United States should meet the *Physical Activity Guidelines for Americans*.<sup>[7]</sup> Regular physical activity is one of the most important things individuals can do to improve their health. The *Physical Activity Guidelines*, released by the U.S. Department of Health and Human Services, provides a comprehensive set of recommendations for Americans on the amounts and types of physical activity needed each day (see Appendix 1. *Physical Activity Guidelines for Americans*). Adults need at least 150 minutes of moderate intensity physical activity and should perform muscle-strengthening exercises on 2 or more days each week. Youth ages 6 to 17 years need at least 60 minutes of physical activity per day, including aerobic, muscle-strengthening, and bone-strengthening activities. Establishing and maintaining a regular physical activity pattern can provide many health benefits. Strong evidence shows that regular physical activity helps people maintain a healthy weight, prevent excessive weight gain, and lose weight when combined with a healthy eating pattern lower in calories. Strong evidence also demonstrates that regular physical activity lowers the risk of early death, coronary heart disease, stroke, high blood pressure, adverse blood lipid profile, type 2 diabetes, breast and colon cancer, and metabolic syndrome; it also reduces depression and prevents falls. People can engage in regular physical activity in a variety of ways throughout the day and by choosing activities they enjoy. The *Physical Activity Guidelines* provides additional details on the benefits of physical activity and strategies to incorporate regular physical activity into a healthy lifestyle.

[7] U.S. Department of Health and Human Services. 2008 *Physical Activity Guidelines for Americans*. Washington (DC): U.S. Department of Health and Human Services; 2008. ODPHP Publication No. U0036. Available at: <http://www.health.gov/paguidelines>. Accessed August 6, 2015.

## The Science Behind Healthy Eating Patterns

The components of healthy eating patterns recommended in this edition of the *Dietary Guidelines* were developed by integrating findings from systematic reviews of scientific research, food pattern modeling, and analyses of current intake of the U.S. population:

- Systematic reviews of scientific research examine relationships between the overall diet, including its constituent foods, beverages, and nutrients, and health outcomes.
- Food pattern modeling assesses how well various combinations and amounts of foods from all food groups would result in healthy eating patterns that meet nutrient needs and accommodate limits, such as those for saturated fats, added sugars, and sodium.
- Analyses of current intakes identify areas of potential public health concern.

Together, these complementary approaches provide a robust evidence base for healthy eating patterns that both reduce risk of diet-related chronic disease and ensure nutrient adequacy.

Scientific evidence supporting dietary guidance has grown and evolved over the decades. Previous editions of the *Dietary Guidelines* relied on the evidence of relationships between individual nutrients, foods, and food groups and health outcomes. Although this evidence base continues to be substantial, foods are not consumed in isolation, but rather in various combinations over time—an “eating pattern.” As previously noted, dietary components of an eating pattern

can have interactive, synergistic, and potentially cumulative relationships, such that the eating pattern may be more predictive of overall health status and disease risk than individual foods or nutrients. However, each identified component of an eating pattern does not necessarily have the same independent relationship to health outcomes as the total eating pattern, and each identified component may not equally contribute (or may be a marker for other factors) to the associated health outcome. An evidence base is now available that evaluates overall eating patterns and various health outcomes.

### Associations Between Eating Patterns & Health

Evidence shows that healthy eating patterns, as outlined in the Guidelines and Key Recommendations, are associated with positive health outcomes. The evidence base for associations between eating patterns and specific health outcomes continues to grow. Strong evidence shows that healthy eating patterns are associated with a reduced risk of cardiovascular disease (CVD). Moderate evidence indicates that healthy eating patterns also are associated with a reduced risk of type 2 diabetes, certain types of cancers (such as colorectal and postmenopausal breast cancers), overweight, and obesity. Emerging evidence also suggests that relationships may exist between eating patterns and some neurocognitive disorders and congenital anomalies.

Within this body of evidence, higher intakes of vegetables and fruits consistently have been identified as characteristics of healthy eating patterns; whole grains have been identified as well, although with slightly

less consistency. Other characteristics of healthy eating patterns have been identified with less consistency and include fat-free or low-fat dairy, seafood, legumes, and nuts. Lower intakes of meats, including processed meats; processed poultry; sugar-sweetened foods, particularly beverages; and refined grains have often been identified as characteristics of healthy eating patterns. Additional information about how food groups and dietary components fit within healthy eating patterns is discussed throughout the *2015-2020 Dietary Guidelines*. For example, as discussed later in this chapter in the section About Meats and Poultry, evidence from food pattern modeling has demonstrated that lean meats can be part of a healthy eating pattern, but as discussed in Chapter 2, average intakes of meats, poultry, and eggs, a subgroup of the protein foods group, are above recommendations in the Healthy U.S.-Style Eating Pattern for teen boys and adult men.

### Associations Between Dietary Components & Health

The evidence on food groups and various health outcomes that is reflected in this 2015-2020 edition of the *Dietary Guidelines* complements and builds on the evidence of the previous 2010 edition. For example, research has shown that vegetables and fruits are associated with a reduced risk of many chronic diseases, including CVD, and may be protective against certain types of cancers. Additionally, some evidence indicates that whole grain intake may reduce risk for CVD and is associated with lower body weight. Research also has linked dairy intake to improved bone health, especially in children and adolescents.

## A Closer Look Inside Healthy Eating Patterns

The following sections describe a healthy eating pattern and how following such a pattern can help people meet the Guidelines and its Key Recommendations. Throughout, it uses the Healthy U.S.-Style Eating Pattern as an example to illustrate the specific amounts and limits for food groups and other dietary components that make up healthy eating patterns. The Healthy U.S.-Style Eating Pattern is one of three USDA Food Patterns and is based on the types and proportions of foods Americans typically consume, but in nutrient-dense forms and appropriate amounts. Because calorie needs vary based on age, sex, height, weight, and level of physical activity (see Appendix 2. Estimated Calorie Needs per Day, by Age, Sex, and Physical Activity Level), the pattern has been provided at 12 different calorie levels (see Appendix 3. USDA Food Patterns: Healthy U.S.-Style Eating Pattern). The 2,000-calorie level of the Pattern is shown in Table 1-1.

The Healthy U.S.-Style Eating Pattern is the same as the primary USDA Food Patterns of the *2010 Dietary Guidelines*. Two additional USDA Food Patterns—the Healthy Mediterranean-Style Eating Pattern and the Healthy Vegetarian Eating Pattern—are found at the end of this chapter and reflect other styles of eating (see Appendix 4. USDA Food Patterns: Healthy Mediterranean-Style Eating Pattern and Appendix 5. USDA Food Patterns: Healthy Vegetarian Eating Pattern). These three patterns are examples of healthy eating patterns that can be adapted based on cultural and personal preferences. The USDA Food Patterns also can be used as guides to plan and serve meals not only for the individual and household but in a variety of other settings, including schools, worksites, and other community settings.

**Table 1-1. Healthy U.S.-Style Eating Pattern at the 2,000-Calorie Level, With Daily or Weekly Amounts From Food Groups, Subgroups, & Components**

Food Group <sup>[a]</sup>	Amount <sup>[b]</sup> in the 2,000-Calorie-Level Pattern
<b>Vegetables</b>	<b>2½ c-eq/day</b>
Dark Green	1½ c-eq/wk
Red & Orange	5½ c-eq/wk
Legumes (Beans & Peas)	1½ c-eq/wk
Starchy	5 c-eq/wk
Other	4 c-eq/wk
<b>Fruits</b>	<b>2 c-eq/day</b>
<b>Grains</b>	<b>6 oz-eq/day</b>
Whole Grains	≥ 3 oz-eq/day
Refined Grains	≤ 3 oz-eq/day
<b>Dairy</b>	<b>3 c-eq/day</b>
<b>Protein Foods</b>	<b>5½ oz-eq/day</b>
Seafood	8 oz-eq/wk
Meats, Poultry, Eggs	26 oz-eq/wk
Nuts, Seeds, Soy Products	5 oz-eq/wk
<b>Oils</b>	<b>27 g/day</b>
<b>Limit on Calories for Other Uses (% of Calories)<sup>[c]</sup></b>	<b>270 kcal/day (14%)</b>

[a] Definitions for each food group and subgroup are provided throughout the chapter and are compiled in Appendix 3.

[b] Food group amounts shown in cup-(c) or ounce-(oz) equivalents (eq). Oils are shown in grams (g). Quantity equivalents for each food group are defined in Appendix 3. Amounts will vary for those who need less than 2,000 or more than 2,000 calories per day. See Appendix 3 for all 12 calorie levels of the pattern.

[c] Assumes food choices to meet food group recommendations are in nutrient-dense forms. Calories from added sugars, added refined starches, solid fats, alcohol, and/or to eat more than the recommended amount of nutrient-dense foods are accounted for under this category.

**NOTE:** The total eating pattern should not exceed *Dietary Guidelines* limits for intake of calories from added sugars and saturated fats and alcohol and should be within the Acceptable Macronutrient Distribution Ranges for calories from protein, carbohydrate, and total fats. Most calorie patterns do not have enough calories available after meeting food group needs to consume 10 percent of calories from added sugars and 10 percent of calories from saturated fats and still stay within calorie limits. Values are rounded.

The Healthy U.S.-Style Eating Pattern is designed to meet the Recommended Dietary Allowances (RDA) and Adequate Intakes for essential nutrients, as well as Acceptable Macronutrient Distribution Ranges (AMDR)

set by the Food and Nutrition Board of the IOM. This eating pattern also conforms to limits set by the IOM or *Dietary Guidelines* for other nutrients or food components (see Appendix 6. Glossary of Terms and Appendix 7.

Nutritional Goals for Age-Sex Groups Based on Dietary Reference Intakes and Dietary Guidelines Recommendations). Nutritional goals for almost all nutrients are met (see Appendix 3 for additional information).





## Importance of Calorie Balance Within Healthy Eating Patterns

Managing calorie intake is fundamental to achieving and maintaining calorie balance—the balance between the calories taken in from foods and the calories expended from metabolic processes and physical activity. The best way to determine whether an eating pattern is at an appropriate number of calories is to monitor body weight and adjust calorie intake and expenditure in physical activity based on changes in weight over time.

All foods and many beverages contain calories, and the total number of calories varies depending on the macronutrients in a food. On average, carbohydrates and protein contain 4 calories per gram, fats contain 9 calories per gram, and alcohol has 7 calories per gram. The total number of calories a person needs each day varies depending on a number of factors, including the person's age, sex, height, weight, and level of physical activity (see Appendix 2). In addition, a need to lose, maintain, or gain weight and other factors affect how many calories should be consumed.

All Americans—children, adolescents, adults, and older adults—are encouraged to achieve and/or maintain a healthy body weight. General guidance for achieving and maintaining a healthy body weight is provided below, and Appendix 8. Federal Resources for Information on Nutrition and Physical Activity provides additional resources, including an evolving array of tools to facilitate Americans' adoption of healthy choices.

- Children and adolescents are encouraged to maintain calorie balance to support normal growth and development without promoting excess weight gain. Children and adolescents who are overweight or obese should change their eating and physical activity behaviors to maintain or reduce their rate of weight gain while linear growth occurs, so that they can reduce body mass index (BMI) percentile toward a healthy range.
- Before becoming pregnant, women are encouraged to achieve and maintain a healthy weight, and women who are pregnant are encouraged to gain weight within gestational weight gain guidelines.<sup>[8]</sup>
- Adults who are obese should change their eating and physical activity behaviors to prevent additional weight gain and/or promote weight loss. Adults who are overweight should not gain additional weight, and those with one or more CVD risk factors (e.g., hypertension and hyperlipidemia) should change their eating and physical activity behaviors to lose weight. To lose weight, most people need to reduce the number of calories they get from foods and beverages and increase their physical activity. For a weight loss of 1 to 1½ pounds per week, daily intake should be reduced by 500 to 750 calories. Eating patterns that contain 1,200 to 1,500 calories each day can help most women lose weight safely, and eating patterns that contain 1,500 to 1,800 calories each day are suitable for most men for weight loss. In adults who are overweight or obese, if reduction in total calorie intake is achieved, a variety of eating patterns can produce weight loss, particularly in the first 6 months to 2 years;<sup>[9]</sup> however, more research is needed on the health implications of consuming these eating patterns long-term.
- Older adults, ages 65 years and older, who are overweight or obese are encouraged to prevent additional weight gain. Among older adults who are obese, particularly those with CVD risk factors, intentional weight loss can be beneficial and result in improved quality of life and reduced risk of chronic diseases and associated disabilities.

[8] Institute of Medicine (IOM) and National Research Council (NRC). Weight gain during pregnancy: Reexamining the guidelines. Washington (DC): The National Academies Press; 2009.

[9] Jensen MD, Ryan DH, Apovian CM, Ard JD, Comuzzie AG, Donato KA, et al. 2013 AHA/ACC/TOS guideline for the management of overweight and obesity in adults: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and The Obesity Society. *J Am Coll Cardiol*. 2014;63(25 Pt B):2985-3023. PMID: 24239920. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/24239920>.

## Food Groups

Eating an appropriate mix of foods from the food groups and subgroups—within an appropriate calorie level—is important to promote health. Each of the food groups and their subgroups provides an array of nutrients, and the amounts recommended reflect eating patterns that have been associated with positive health outcomes. Foods from all of the food groups should be eaten in nutrient-dense forms. The following sections describe the recommendations for each of the food groups, highlight nutrients for which the food group is a key contributor, and describe special considerations related to the food group.

### Vegetables

**Healthy Intake:** Healthy eating patterns include a variety of vegetables from all of the five vegetable subgroups—dark green, red and orange, legumes (beans and peas), starchy, and other.<sup>[10]</sup> These include all fresh, frozen, canned, and dried options in cooked or raw forms, including vegetable juices. The recommended amount of vegetables in the Healthy U.S.-Style Eating Pattern at the 2,000-calorie level is 2½ cup-equivalents of vegetables per day. In addition, weekly amounts from each vegetable subgroup are recommended to ensure variety and meet nutrient needs.

**Key Nutrient Contributions:** Vegetables are important sources of many nutrients, including dietary fiber, potassium, vitamin A,<sup>[11]</sup> vitamin C, vitamin K, copper, magnesium, vitamin E, vitamin B6, folate, iron, manganese, thiamin, niacin, and choline. Each of the vegetable subgroups contributes different combinations of nutrients, making it important for individuals to consume vegetables from all the subgroups. For example, dark-green vegetables provide the most vitamin K, red

## About Legumes (Beans & Peas)

Legumes include kidney beans, pinto beans, white beans, black beans, garbanzo beans (chickpeas), lima beans (mature, dried), split peas, lentils, and edamame (green soybeans).

Legumes are excellent sources of protein. In addition, they provide other nutrients that also are found in seafood, meats, and poultry, such as iron and zinc. They are excellent sources of dietary fiber and of nutrients, such as potassium and folate that also are found in other vegetables.

Because legumes have a similar nutrient profile to foods in both the protein foods group and the vegetable group, they may be thought of as either a vegetable or a protein food and thus, can be counted as a vegetable or a protein food to meet recommended intakes.

Green peas and green (string) beans are not counted in the legume subgroup, because their nutrient compositions are not similar to legumes. Green peas are similar to starchy vegetables and are grouped with them. Green beans are grouped with the other vegetables subgroup, which includes onions, iceberg lettuce, celery, and cabbage, because their nutrient content is not similar to legumes.



and orange vegetables the most vitamin A, legumes the most dietary fiber, and starchy vegetables the most potassium. Vegetables in the “other” vegetable subgroup provide a wide range of nutrients in varying amounts.

**Considerations:** To provide all of the nutrients and potential health benefits that vary across different types of vegetables, the Healthy U.S.-Style Eating Pattern includes weekly recommendations for each subgroup. Vegetable choices over time should vary and include many different vegetables. Vegetables should be consumed in a nutrient-dense form, with limited additions such as salt, butter, or creamy sauces. When selecting frozen or canned vegetables, choose those lower in sodium.

### Fruits

**Healthy Intake:** Healthy eating patterns include fruits, especially whole fruits. The fruits food group includes whole fruits

and 100% fruit juice. Whole fruits include fresh, canned, frozen, and dried forms. The recommended amount of fruits in the Healthy U.S.-Style Eating Pattern at the 2,000-calorie level is 2 cup-equivalents per day. One cup of 100% fruit juice counts as 1 cup of fruit. Although fruit juice can be part of healthy eating patterns, it is lower than whole fruit in dietary fiber and when consumed in excess can contribute extra calories. Therefore, at least half of the recommended amount of fruits should come from whole fruits. When juices are consumed, they should be 100% juice, without added sugars. Also, when selecting canned fruit, choose options that are lowest in added sugars. One-half cup of dried fruit counts as one cup-equivalent of fruit. Similar to juice, when consumed in excess, dried fruits can contribute extra calories.

**Key Nutrient Contributions:** Among the many nutrients fruits provide are dietary fiber, potassium, and vitamin C.

[10] Definitions for each food group and subgroup are provided throughout the chapter and are compiled in Appendix 3.

[11] In the form of provitamin A carotenoids



**Considerations:** Juices may be partially fruit juice, and only the proportion that is 100% fruit juice counts (e.g., 1 cup of juice that is 50% juice counts as ½ cup of fruit juice). The remainder of the product may contain added sugars. Sweetened juice products with minimal juice content, such as juice drinks, are considered to be sugar-sweetened beverages rather than fruit juice because they are primarily composed of water with added sugars (see the Added Sugars section). The percent of juice in a beverage may be found on the package label, such as “contains 25% juice” or “100% fruit juice.” The amounts of fruit juice allowed in the USDA Food Patterns for young children align with the recommendation from the American Academy of Pediatrics that young children consume no more than 4 to 6 fluid ounces of 100% fruit juice per day.<sup>[12]</sup> Fruits with small amounts of added sugars can be accommodated in the diet as long as calories from added sugars do not exceed 10 percent per day and total calorie intake remains within limits.

## Grains

**Healthy Intake:** Healthy eating patterns include whole grains and limit the intake of refined grains and products made with refined grains, especially those high in saturated fats, added sugars, and/or sodium, such as cookies, cakes, and some snack foods. The grains food group includes grains as single foods (e.g., rice, oatmeal, and popcorn), as well as products that include grains as an ingredient (e.g., breads, cereals, crackers, and pasta). Grains are either whole or refined. Whole grains (e.g., brown rice, quinoa, and oats) contain the entire kernel, including the endosperm, bran, and germ. Refined grains differ from whole grains

in that the grains have been processed to remove the bran and germ, which removes dietary fiber, iron, and other nutrients. The recommended amount of grains in the Healthy U.S.-Style Eating Pattern at the 2,000-calorie level is 6 ounce-equivalents per day. At least half of this amount should be whole grains (see the How To Make at Least Half of Grains Whole Grains call-out box).

**Key Nutrient Contributions:** Whole grains are a source of nutrients, such as dietary fiber, iron, zinc, manganese, folate, magnesium, copper, thiamin, niacin, vitamin B6, phosphorus, selenium, riboflavin, and vitamin A.<sup>[13]</sup> Whole grains vary in their dietary fiber content. Most refined grains are enriched, a process that adds back iron and four B vitamins (thiamin, riboflavin, niacin, and folic acid). Because of this process, the term “enriched grains” is often used to describe these refined grains.

**Considerations:** Individuals who eat refined grains should choose enriched grains. Those who consume all of their grains as whole grains should include some grains, such as some whole-grain ready-to-eat breakfast cereals, that have been fortified with folic acid. This is particularly important for women who are or are capable of becoming pregnant, as folic acid fortification in the United States has been successful in reducing the incidence of neural tube defects during fetal development. Although grain products that are high in added sugars and saturated fats, such as cookies, cakes, and some snack foods, should be limited, as discussed in the Added Sugars and Saturated Fats sections, grains with some added sugars and saturated fats can fit within healthy eating patterns.

## How To Make at Least Half of Grains Whole Grains

A food is a 100-percent whole-grain food if the only grains it contains are whole grains. One ounce-equivalent of whole grains has 16 g of whole grains. The recommendation to consume at least half of total grains as whole grains can be met in a number of ways.

The most direct way to meet the whole grain recommendation is to choose 100 percent whole-grain foods for at least half of all grains consumed. The relative amount of whole grain in the food can be inferred by the placement of the grain in the ingredients list. The whole grain should be the first ingredient—or the second ingredient, after water. For foods with multiple whole-grain ingredients, they should appear near the beginning of the ingredients list.

Many grain foods contain both whole grains and refined grains. These foods also can help people meet the whole grain recommendation, especially if a considerable proportion of the grain ingredients is whole grains. Another way to meet the recommendation to make at least half of grains whole grains is to choose products with at least 50 percent of the total weight as whole-grain ingredients.<sup>[14],[15]</sup> If a food has at least 8 g of whole grains per ounce-equivalent, it is at least half whole grains.<sup>[16]</sup> Some product labels show the whole grains health claim or the grams of whole grain in the product. This information may help people identify food choices that have a substantial amount of whole grains.

[12] American Academy of Pediatrics. Healthy Children, Fit Children: Answers to Common Questions From Parents About Nutrition and Fitness. 2011.

[13] In the form of provitamin A carotenoids

[14] Products that bear the U.S. Food and Drug Administration (FDA) health claim for whole grains have at least 51 percent of the total ingredients by weight as whole-grain ingredients; they also meet other criteria.

[15] Foods that meet the whole grain-rich criteria for the school meal programs contain 100 percent whole grain or a blend of whole-grain meal and/or flour and enriched meal and/or flour of which at least 50 percent is whole grain. The remaining 50 percent or less of grains, if any, must be enriched. <http://www.fns.usda.gov/sites/default/files/WholeGrainResource.pdf>. Accessed October 22, 2015.

[16] Adapted from the Food Safety and Inspection Service (FSIS) guidance on whole-grain claims. Available at: <http://www.fsis.usda.gov/wps/portal/fsis/home>. Accessed November 25, 2015.



## Dairy

**Healthy Intake:** Healthy eating patterns include fat-free and low-fat (1%) dairy, including milk, yogurt, cheese, or fortified soy beverages (commonly known as “soymilk”). Soy beverages fortified with calcium, vitamin A, and vitamin D, are included as part of the dairy group because they are similar to milk based on nutrient composition and in their use in meals. Other products sold as “milks” but made from plants (e.g., almond, rice, coconut, and hemp “milks”) may contain calcium and be consumed as a source of calcium, but they are not included as part of the dairy group because their overall nutritional content is not similar to dairy milk and fortified soy beverages (soymilk). The recommended amounts of dairy in the Healthy U.S.-Style Pattern are based on age rather than calorie level and are

2 cup-equivalents per day for children ages 2 to 3 years, 2½ cup-equivalents per day for children ages 4 to 8 years, and 3 cup-equivalents per day for adolescents ages 9 to 18 years and for adults.

**Key Nutrient Contributions:** The dairy group contributes many nutrients, including calcium, phosphorus, vitamin A, vitamin D (in products fortified with vitamin D), riboflavin, vitamin B12, protein, potassium, zinc, choline, magnesium, and selenium.

**Considerations:** Fat-free and low-fat (1%) dairy products provide the same nutrients but less fat (and thus, fewer calories) than higher fat options, such as 2% and whole milk and regular cheese. Fat-free or low-fat milk and yogurt, in comparison to cheese, contain less saturated fats and sodium and more potassium, vitamin A, and vitamin D. Thus, increasing the proportion of dairy intake that is fat-free or low-fat milk or yogurt and decreasing the proportion that is cheese would decrease saturated fats and sodium and increase potassium, vitamin A, and vitamin D provided from the dairy group. Individuals who are lactose intolerant can choose low-lactose and lactose-free dairy products. Those who are unable or choose not to consume dairy products should consume foods that provide the range of nutrients generally obtained from dairy, including protein, calcium, potassium, magnesium, vitamin D, and vitamin A (e.g., fortified soy beverages [soymilk]). Additional sources of potassium, calcium, and vitamin D are found in Appendix 10, Appendix 11, and Appendix 12, respectively.

## Protein Foods

**Healthy Intake:** Healthy eating patterns include a variety of protein foods in nutrient-dense forms. The protein foods group comprises a broad group of foods

from both animal and plant sources and includes several subgroups: seafood; meats, poultry, and eggs; and nuts, seeds, and soy products. Legumes (beans and peas) may also be considered part of the protein foods group as well as the vegetables group (see the About Legumes (Beans and Peas) call-out box). Protein also is found in some foods from other food groups (e.g., dairy). The recommendation for protein foods in the Healthy U.S.-Style Eating Pattern at the 2,000-calorie level is 5½ ounce-equivalents of protein foods per day.

**Key Nutrient Contributions:** Protein foods are important sources of nutrients in addition to protein, including B vitamins (e.g., niacin, vitamin B<sub>12</sub>, vitamin B<sub>6</sub>, and riboflavin), selenium, choline, phosphorus, zinc, copper, vitamin D, and vitamin E). Nutrients provided by various types of protein foods differ. For example, meats provide the most zinc, while poultry provides the most niacin. Meats, poultry, and seafood provide heme iron, which is more bioavailable than the non-heme iron found in plant sources. Heme iron is especially important for young children and women who are capable of becoming pregnant or who are pregnant. Seafood provides the most vitamin B<sub>12</sub> and vitamin D, in addition to almost all of the polyunsaturated omega-3 fatty acids, eicosapentaenoic acid (EPA), and docosahexaenoic acid (DHA), in the Patterns (see the About Seafood call-out box). Eggs provide the most choline, and nuts and seeds provide the most vitamin E. Soy products are a source of copper, manganese, and iron, as are legumes.

**Considerations:** For balance and flexibility within the food group, the Healthy U.S.-Style Eating Pattern includes weekly recommendations for the subgroups: seafood; meats, poultry, and eggs; and nuts, seeds, and soy products. A specific

recommendation for at least 8 ounce-equivalents of seafood per week also is included for the 2,000-calorie level (see the About Seafood call-out box). One-half ounce of nuts or seeds counts as 1 ounce-equivalent of protein foods, and because they are high in calories, they should be eaten in small portions

and used to replace other protein foods rather than being added to the diet. When selecting protein foods, nuts and seeds should be unsalted, and meats and poultry should be consumed in lean forms. Processed meats and processed poultry are sources of sodium and saturated fats, and intake of these products can

be accommodated as long as sodium, saturated fats, added sugars, and total calories are within limits in the resulting eating pattern (see the About Meats and Poultry call-out box). The inclusion of protein foods from plants allows vegetarian options to be accommodated.



## About Seafood

Seafood, which includes fish and shellfish, received particular attention in the *2010 Dietary Guidelines* because of evidence of health benefits for the general populations as well as for women who are pregnant or breastfeeding. For the general population, consumption of about 8 ounces per week of a variety of seafood, which provide an average consumption of 250 mg per day of EPA and DHA, is associated with reduced cardiac deaths among individuals with and without preexisting CVD. Similarly, consumption by women who are pregnant or breastfeeding of at least 8 ounces per week from seafood choices that are sources of DHA is associated with improved infant health outcomes.

The recommendation to consume 8 or more ounces per week (less for young children) of seafood is for the total package of nutrients that seafood provides, including its EPA and DHA content. Some seafood choices with higher amounts of EPA and DHA should be included.

Strong evidence from mostly prospective cohort studies but also randomized controlled trials has shown that eating patterns that include seafood are associated with reduced risk of CVD, and moderate evidence indicates that these eating patterns are associated with reduced risk of obesity. As described earlier, eating patterns consist of multiple, interacting food components and the relationships to health exist for the overall eating pattern, not necessarily to an isolated aspect of the diet.

Mercury is a heavy metal found in the form of methyl mercury in seafood in varying levels. Seafood choices higher in EPA and DHA but lower in methyl mercury are encouraged.<sup>[17]</sup> Seafood varieties commonly consumed in the United States that are higher in EPA and DHA and lower in methyl mercury include salmon, anchovies, herring, shad, sardines, Pacific oysters, trout, and Atlantic and Pacific mackerel (*not* king mackerel, which is high in methyl mercury). Individuals who regularly consume more than the recommended amounts of seafood that are in the Healthy U.S.-Style Pattern should choose a mix of seafood that emphasizes choices relatively low in methyl mercury.

Some canned seafood, such as anchovies, may be high in sodium. To keep sodium intake below recommended limits, individuals can use the Nutrition Facts label to compare sodium amounts.

Women who are pregnant or breastfeeding should consume at least 8 and up to 12 ounces<sup>[18]</sup> of a variety of seafood per week, from choices that are lower in methyl mercury. Obstetricians and pediatricians should provide guidance on how to make healthy food choices that include seafood. Women who are pregnant or breastfeeding and young children should not eat certain types of fish that are high in methyl mercury.<sup>[19]</sup>

[17] State and local advisories provide information to guide consumers who eat fish caught from local waters. See the EPA website, "Fish Consumption Advisories, General Information." Available at: <http://water.epa.gov/scitech/swguidance/fishshellfish/fishadvisories/general.cfm>. Accessed September 26, 2015.

[18] Cooked, edible portion

[19] The U.S. Food and Drug Administration (FDA) and the U.S. Environmental Protection Agency (EPA) provide joint guidance regarding seafood consumption for women who are pregnant or breastfeeding and young children. For more information, see the FDA and EPA websites [www.FDA.gov/fishadvice](http://www.FDA.gov/fishadvice); [www.EPA.gov/fishadvice](http://www.EPA.gov/fishadvice).



## About Meats & Poultry

Meat, also known as red meat, includes all forms of beef, pork, lamb, veal, goat, and non-bird game (e.g., venison, bison, and elk). Poultry includes all forms of chicken, turkey, duck, geese, guineas, and game birds (e.g., quail and pheasant). Meats and poultry vary in fat content and include both fresh and processed forms. Lean meats and poultry contain less than 10 g of fat, 4.5 g or less of saturated fats, and less than 95 mg of cholesterol per 100 g and per labeled serving size (e.g., 95% lean ground beef, pork tenderloin, and skinless chicken or turkey breast). Processed meats and processed poultry (e.g., sausages, luncheon meats, bacon, and beef jerky) are products preserved by smoking, curing, salting, and/or the addition of chemical preservatives.

Strong evidence from mostly prospective cohort studies but also randomized controlled trials has shown that *eating patterns* that include lower intake of meats as well as processed meats and processed poultry are associated with reduced risk of CVD in adults. Moderate evidence indicates that these *eating patterns* are associated with reduced risk of obesity, type 2 diabetes, and some types of cancer in adults. As described earlier, eating patterns consist of multiple, interacting food components, and the relationships to health exist for the overall eating pattern, not necessarily to an isolated aspect of the diet. Much of this research on eating patterns has grouped together all meats and poultry, regardless of fat content or processing, though some evidence has identified lean meats and lean poultry in healthy eating patterns. In separate analyses, food pattern modeling has demonstrated that lean meats and lean poultry can contribute important nutrients within limits for sodium, calories from saturated fats and added sugars, and total calories when consumed in recommended amounts in healthy eating patterns, such as the Healthy U.S.-Style and Mediterranean-Style Eating Patterns.

The recommendation for the meats, poultry, and eggs subgroup in the Healthy U.S.-Style Eating Pattern at the 2,000-calorie level is 26 ounce-equivalents per week. This is the same as the amount that was in the primary USDA Food Patterns of the *2010 Dietary Guidelines*. As discussed in Chapter 2, average intakes of meats, poultry, and eggs for teen boys and adult men are above recommendations in the Healthy U.S.-Style Eating Pattern. For those who eat animal products, the recommendation for the protein foods subgroup of meats, poultry, and eggs can be met by consuming a variety of lean meats, lean poultry, and eggs. Choices within these eating patterns may include processed meats and processed poultry as long as the resulting eating pattern is within limits for sodium, calories from saturated fats and added sugars, and total calories.

### Oils

**Healthy Intake:** Oils are fats that contain a high percentage of monounsaturated and polyunsaturated fats and are liquid at room temperature. Although they are not a food group, oils are emphasized as part of healthy eating patterns because they are the major source of essential fatty acids and vitamin E. Commonly consumed oils extracted from plants include canola, corn, olive, peanut, safflower, soybean, and sunflower oils. Oils also are naturally present in nuts, seeds,

seafood, olives, and avocados. The fat in some tropical plants, such as coconut oil, palm kernel oil, and palm oil, are not included in the oils category because they do not resemble other oils in their composition. Specifically, they contain a higher percentage of saturated fats than other oils (see Dietary Fats: The Basics call-out box). The recommendation for oils in the Healthy U.S.-Style Eating Pattern at the 2,000-calorie level is 27 g (about 5 teaspoons) per day.

**Key Nutrient Contributions:** Oils provide essential fatty acids and vitamin E.

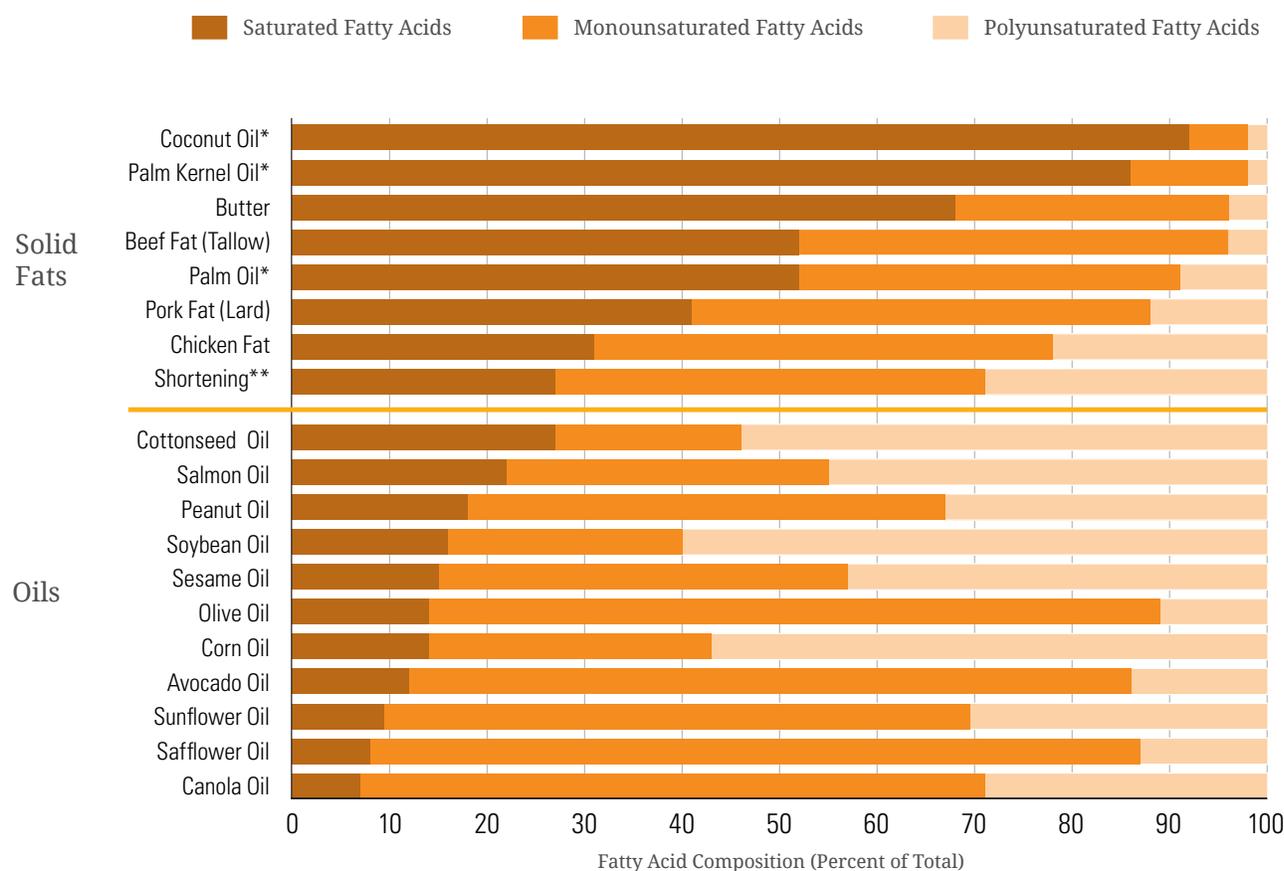
**Considerations:** Oils are part of healthy eating patterns, but because they are a concentrated source of calories, the amount consumed should be within the AMDR for total fats without exceeding calorie limits. Oils should replace solid fats rather than being added to the diet. More information on types of fats is provided in the Dietary Fats: The Basics call-out box, and information on the relationship between dietary fats and health is discussed in the Saturated Fats, *Trans* Fats, and Cholesterol section.

## Dietary Fats: The Basics

Dietary fats are found in both plant and animal foods. They supply calories and help with the absorption of the fat-soluble vitamins A, D, E, and K. Some also are good sources of two essential fatty acids—linoleic acid and  $\alpha$ -linolenic acid.

All dietary fats are composed of a mix of polyunsaturated, monounsaturated, and saturated fatty acids, in varied proportions (Figure 1-2). For example, most of the fatty acids in butter are saturated, but it also contains some monounsaturated and polyunsaturated fatty acids. Oils are mostly unsaturated fatty acids, though they have small amounts of saturated fatty acids.

**Figure 1-2.**  
**Fatty Acid Profiles of Common Fats & Oils**



\* Coconut, palm kernel, and palm oil are called oils because they come from plants. However, they are solid or semi-solid at room temperature due to their high content of short-chain saturated fatty acids. They are considered solid fats for nutritional purposes.

\*\* Shortening may be made from partially hydrogenated vegetable oil, which contains *trans* fatty acids.

**DATA SOURCES:** U.S. Department of Agriculture, Agricultural Research Service, Nutrient Data Laboratory. USDA National Nutrient Database for Standard Reference. Release 27, 2015. Available at: <http://ndb.nal.usda.gov/>. Accessed August 31, 2015.

## Dietary Fats: The Basics *(continued...)*



- **Polyunsaturated fatty acids (polyunsaturated fats<sup>[20]</sup>)** are found in greatest amounts in sunflower, corn, soybean, and cottonseed oils; walnuts; pine nuts; and sesame, sunflower, pumpkin, and flax seeds. Only small amounts of polyunsaturated fats are found in most animal fats. Omega-3 (*n*-3) fatty acids are a type of polyunsaturated fats found in seafood, such as salmon, trout, herring, tuna, and mackerel, and in flax seeds and walnuts. EPA and DHA are long chain *n*-3 fatty acids found in seafood.
- **Monounsaturated fatty acids (monounsaturated fats)** are found in greatest amounts in olive, canola, peanut, sunflower, and safflower oils, and in avocados, peanut butter, and most nuts. Monounsaturated fats also are part of most animal fats such as fats from chicken, pork, beef, and wild game.
- **Saturated fatty acids (saturated fats)** are found in the greatest amounts in coconut and palm kernel oils, in butter and beef fats, and in palm oil. They also are found in other animal fats, such as pork and chicken fats and in other plant fats, such as nuts.
- **Trans fatty acids (trans fats)** are unsaturated fats found primarily in partially hydrogenated vegetable oils and foods containing these oils and in ruminant (animal) fats. They are structurally different from the unsaturated fatty acids that occur naturally in plant foods and differ in their health effects.

The proportions of fatty acids in a particular fat determine the physical form of the fat:

- Fats with a higher amount of polyunsaturated and monounsaturated fatty acids are usually liquid at room temperature and are referred to as “oils.”
- Fats with a higher amount of saturated fatty acids are usually solid at room temperature and are referred to as “solid fats.” Fats containing *trans* fatty acids are also classified as solid fats, although they may or may not be solid at room temperature.

A relevant detail in the complexity of making food-based recommendations that consider nutrients is the difference between the terms “saturated fats” and “solid fats.” Although they are closely related terms, saturated fats and solid fats are not synonymous. The term “saturated fats” refers to saturated fatty acids, a nutrient found in foods, while the term “solid fats” describes the physical manifestation of the fats in a food. Some solid fats, such as the strip of fat around a piece of meat, can easily be seen. Other solid fats are not so visible. For example, the solid fats in whole milk are suspended in the fluid milk by the process of homogenization.

Margarines and margarine-like vegetable oil spreads are food products composed of one or more oils or solid fats designed to replace butter, which is high in saturated fats. These products may be sold in sticks, tubs, bottles, or sprays. Margarine and vegetable oil spreads generally contain less saturated fats than butter. However, they vary in their total fat and calorie content and in the fat and oil blends used to make them and, thus, in the proportions of saturated, unsaturated, and *trans* fats they contain. It is important to read the Nutrition Facts label to identify the calorie and saturated and *trans* fats content of the spread and choose foods with no *trans* fats and lower amounts of saturated fats.

The *Dietary Guidelines* provides recommendations on saturated fats as well as on solid fats because its aim is to improve the health of the U.S. population through food-based guidance. It includes recommendations on saturated fats because of the strong relationship of this nutrient to a health outcome (CVD risk). It includes recommendations on solid fats because, as discussed in Chapter 2, they are abundant in the diets of the U.S. population, and reducing solid fats when making food choices is an important way to reduce saturated fats and excess calories.

[20] The term “fats” rather than “fatty acids” is generally used in this document when discussing categories of fatty acids (e.g., unsaturated, saturated, trans) for consistency with the Nutrition Facts label and other Federal materials.

## Limits on Calories That Remain After Food Group Needs Are Met in Nutrient-Dense Forms

The USDA Food Patterns are designed to meet food group and nutrient recommendations while staying within calorie needs. To achieve this goal, the Patterns are based on consuming foods in their nutrient-dense forms (i.e., without added sugars and in the leanest and lowest fat forms, see Appendix 6). For nearly all calorie levels, most of the calories in the USDA Food Patterns are needed for nutrient-dense food choices, and only a limited number remain for other uses. These calories are indicated in the USDA Food Patterns as “limits on calories for other uses.” For example, after food group needs are met in the Healthy U.S.-Style Eating Pattern from 1,000 to 1,600 calories, only 100 to 170 calories per day remain within the limit for other uses. In the 2,000-calorie pattern, the limit for other uses is 270 calories and in the 2,800-calorie pattern, 400 calories (see Appendix 3, Appendix 4, and Appendix 5). Calories up to the limit for the specific pattern can be used to eat foods that are not in nutrient-dense forms (e.g., to accommodate calories from added sugars, added refined starches, or solid fats) or to eat more than the recommended amount of nutrient-dense foods. If alcohol is consumed, calories from alcoholic beverages should also be accounted for within this limit to keep total calorie intake at an appropriate level.

As discussed in Chapter 2, in contrast to the healthy choices that make up the Patterns, foods from most food groups as they are typically consumed in the United States are not in nutrient-dense forms. In addition, foods and beverages are consumed that are primarily composed of added sugars and/or solid fats, and provide

excess calories without contributing to meeting food group recommendations. The excess calories consumed from these sources far exceed the limited number of calories available for choices other than nutrient-dense foods in each food group.

From a public health perspective, it is important to identify the calories that are needed to meet food group needs to help inform guidance on limits from calories from added sugars, solid fats, alcohol<sup>[21]</sup>, or other sources, in order to help individuals move toward healthy eating patterns within calorie limits. The USDA Food Patterns can be used to plan and serve meals for individuals, households, and in a variety of organizational settings (e.g., schools, worksites, and other community settings). The limit on calories for other uses can assist in determining how to plan and select foods that can fit within healthy eating patterns, such as how many calories are available to select foods from a food group that are not in nutrient-dense forms. As discussed in the next portion of the chapter, additional constraints apply related to other dietary components when building healthy eating patterns.

## Other Dietary Components

In addition to the food groups, it is important to consider other food components when making food and beverage choices. The components discussed here include added sugars, saturated fats, *trans* fats, cholesterol, sodium, alcohol, and caffeine. For each component, information is provided on how the component relates to eating patterns and outlines considerations related to the component. See Chapter 2 for a further discussion of each of these components, current intakes, and shifts that are needed to help individuals align with a healthy eating pattern.

## Added Sugars

**Healthy Intake:** Added sugars include syrups and other caloric sweeteners. When sugars are added to foods and beverages to sweeten them, they add calories without contributing essential nutrients. Consumption of added sugars can make it difficult for individuals to meet their nutrient needs while staying within calorie limits. Naturally occurring sugars, such as those in fruit or milk, are not added sugars. Specific examples of added sugars that can be listed as an ingredient include brown sugar, corn sweetener, corn syrup, dextrose, fructose, glucose, high-fructose corn syrup, honey, invert sugar, lactose, malt syrup, maltose, molasses, raw sugar, sucrose, trehalose, and turbinado sugar.

Healthy eating patterns limit added sugars to less than 10 percent of calories per day. This recommendation is a target to help the public achieve a healthy eating pattern, which means meeting nutrient and food group needs through nutrient-dense food and beverage choices and staying within calorie limits. When added sugars in foods and beverages exceed 10 percent of calories, a healthy eating pattern may be difficult to achieve. This target also is informed by national data on intakes of calories from added sugars, which as discussed in Chapter 2, account on average for almost 270 calories, or more than 13 percent of calories per day in the U.S. population.



[21] It is not recommended that individuals begin drinking or drink more for any reason. The amount of alcohol and calories in beverages varies and should be accounted for within the limits of healthy eating patterns. Alcohol should be consumed only by adults of legal drinking age. There are many circumstances in which individuals should not drink, such as during pregnancy. See Appendix 9. Alcohol for additional information.

Figure 1-3.

## Hidden Components in Eating Patterns

Many of the foods and beverages we eat contain sodium, saturated fats, and added sugars. Making careful choices, as in this example, keeps amounts of these components within their limits while meeting nutrient needs to achieve a healthy eating pattern.



\* Foods very low in sodium not marked

**Contributes:**

- Sodium\*
- Saturated Fats
- Added Sugars

# Dinner

## Spaghetti & Meatballs ●●●

- Spaghetti 1 cup, cooked
- Spaghetti Sauce ●● ¼ cup
- Diced Tomatoes (canned, no salt added) ¼ cup
- Meatballs ●● 3 medium meatballs
- Parmesan Cheese ●● 1 tablespoon

## Apple, Raw ½ medium

## Water, Tap 1 cup

## Garden Salad ●●●

- Mixed Greens 1 cup
- Cucumber 3 slices
- Avocado ● ¼ cup, cubed
- Garbanzo Beans ● (canned, low sodium) ¼ cup
- Cheddar Cheese ● (reduced fat) 3 tablespoons, shredded
- Ranch Salad ●●● Dressing 1 tablespoon



**761 Calories**

# Total

**Sodium: 2,253 mg**  
*less than or equal to 2,300 mg*

**Calories From Saturated Fats: 153**  
**(8% of Total Calories)**  
*less than or equal to 10% of calories*

**Calories From Added Sugars: 164**  
**(8% of Total Calories)**  
*less than or equal to 10% of calories*



**1,995 Calories**

\* Foods very low in sodium not marked

The USDA Food Patterns show that an eating pattern with enough foods from all food groups to meet nutrient needs without eating too many calories has only limited room for calories from added sugars. At most lower calorie levels (i.e., 1,200 to 1,800 calories), the calories that remain after meeting food group recommendations in nutrient-dense forms (“limits on calories for other uses”) are less than 10 percent per day of calories; however, at higher calorie levels, the limits on calories for other uses are more than 10 percent per day. The recommendation to limit added sugars to no more than 10 percent of calories is a target that applies to all calorie levels to help individuals move toward healthy eating patterns within calorie limits.

Although the evidence for added sugars and health outcomes is still developing, the recommendation to limit calories from added sugars is consistent with research examining *eating patterns* and health. Strong evidence from mostly prospective cohort studies but also randomized controlled trials has shown that *eating patterns* that include lower intake of sources of added sugars are associated with reduced risk of CVD in adults, and moderate evidence indicates that these *eating patterns* are associated with reduced risk of obesity, type 2 diabetes, and some types of cancer in adults. As described earlier, eating patterns consist of multiple, interacting food components, and the relationships to health exist for the overall eating pattern, not necessarily to an isolated aspect of the diet. Moderate evidence indicates a relationship between added sugars and dental caries in children and adults.

**Considerations:** Added sugars provide sweetness that can help improve the palatability of foods, help with preservation, and/or contribute to functional attributes such as viscosity, texture, body, color,

and browning capability. As discussed in Chapter 2, the two main sources of added sugars in U.S. diets are sugar-sweetened beverages and snacks and sweets. Many foods high in calories from added sugars provide few or no essential nutrients or dietary fiber and, therefore, may contribute to excess calorie intake without contributing to diet quality; intake of these foods should be limited to help achieve healthy eating patterns within calorie limits. There is room for Americans to include limited amounts of added sugars in their eating patterns, including to improve the palatability of some nutrient-dense foods, such as fruits and vegetables that are naturally tart (e.g., cranberries and rhubarb). Healthy eating patterns can accommodate other nutrient-dense foods with small amounts of added sugars, such as whole-grain breakfast cereals or fat-free yogurt, as long as calories from added sugars do not exceed 10 percent per day, total carbohydrate intake remains within the AMDR, and total calorie intake remains within limits.

It should be noted that replacing added sugars with high-intensity sweeteners may reduce calorie intake in the short-term, yet questions remain about their effectiveness as a long-term weight management strategy. High-intensity sweeteners that have been approved by the U.S. Food and Drug Administration (FDA) include saccharin, aspartame, acesulfame potassium (Ace-K), and sucralose.<sup>[22]</sup> Based on the available scientific evidence, these high-intensity sweeteners have been determined to be safe for the general population. This means that there is reasonable certainty of no harm under the intended conditions of use because the estimated daily intake is not expected to exceed the acceptable daily intake for each sweetener. The FDA has determined that the estimated daily intake of these high-intensity sweeteners would

not exceed the acceptable daily intake, even for high consumers of each substance.



## Saturated Fats, Trans Fats, & Cholesterol

### Saturated Fats

**Healthy Intake:** Intake of saturated fats should be limited to less than 10 percent of calories per day by replacing them with unsaturated fats and while keeping total dietary fats within the age-appropriate AMDR. The human body uses some saturated fats for physiological and structural functions, but it makes more than enough to meet those needs. Individuals 2 years and older therefore have no dietary requirement for saturated fats.

Strong and consistent evidence shows that replacing saturated fats with unsaturated fats, especially polyunsaturated fats, is associated with reduced blood levels of total cholesterol and of low-density lipoprotein-cholesterol (LDL-cholesterol). Additionally, strong and consistent evidence shows that replacing saturated fats with polyunsaturated fats is associated with a reduced risk of CVD events (heart attacks) and CVD-related deaths.

Some evidence has shown that replacing saturated fats with plant sources of monounsaturated fats, such as olive oil and nuts, may be associated with a reduced risk of CVD. However, the evidence base

[22] For more information, see: FDA. High-Intensity Sweeteners. May 19, 2014. [Updated November 5, 2014.] Available at: <http://www.fda.gov/food/ingredientpackaginglabeling/foodadditivesingredients/ucm397716.htm>. Accessed October 19, 2015. This page provides a link to “Additional Information about High-Intensity Sweeteners Permitted for use in Food in the United States” which includes more information on types and uses of high-intensity sweeteners and the scientific evidence evaluated by the FDA for safety for the general population.

for monounsaturated fats is not as strong as the evidence base for replacement with polyunsaturated fats. Evidence has also shown that replacing saturated fats with carbohydrates reduces blood levels of total and LDL-cholesterol, but increases blood levels of triglycerides and reduces high-density lipoprotein-cholesterol (HDL-cholesterol). Replacing total fat or saturated fats with carbohydrates is not associated with reduced risk of CVD. Additional research is needed to determine whether this relationship is consistent across categories of carbohydrates (e.g., whole versus refined grains; intrinsic versus added sugars), as they may have different associations with various health outcomes. Therefore, saturated fats in the diet should be replaced with polyunsaturated and monounsaturated fats.

**Considerations:** As discussed in Chapter 2, the main sources of saturated fats in the U.S. diet include mixed dishes containing cheese, meat, or both, such as burgers, sandwiches, and tacos; pizza; rice, pasta, and grain dishes; and meat, poultry, and seafood dishes. Although some saturated fats are inherent in foods, others are added. Healthy eating patterns can accommodate nutrient-dense foods with small amounts of saturated fats, as long as calories from saturated fats do not exceed 10 percent per day, intake of total fats remains within the AMDR, and total calorie intake remains within limits. When possible, foods high in saturated fats should be replaced with foods high in unsaturated fats, and other choices to reduce solid fats should be made (see Chapter 2).

### Trans Fats

Individuals should limit intake of *trans* fats to as low as possible by limiting foods that contain synthetic sources of *trans* fats, such as partially hydrogenated oils

in margarines, and by limiting other solid fats. A number of studies have observed an association between increased intake of *trans* fats and increased risk of CVD. This increased risk is due, in part, to its LDL-cholesterol-raising effect.

*Trans* fats occur naturally in some foods and also are produced in a process called hydrogenation. Hydrogenation is used by food manufacturers to make products containing unsaturated fatty acids solid at room temperature (i.e., more saturated) and therefore more resistant to becoming spoiled or rancid. Partial hydrogenation means that some, but not all, unsaturated fatty acids are converted to saturated fatty acids; some of the unsaturated fatty acids are changed from a *cis* to *trans* configuration. *Trans* fatty acids produced this way are referred to as “artificial” or “industrially produced” *trans* fatty acids. Artificial *trans* fatty acids are found in the partially hydrogenated oils<sup>[23]</sup> used in some margarines, snack foods, and prepared desserts as a replacement for saturated fatty acids. Although food manufacturers and restaurants have reduced the amounts of artificial *trans* fats in many foods in recent years, these fats can still be found in some processed foods, such as some desserts, microwave popcorn, frozen pizza, margarines, and coffee creamers.

Naturally occurring *trans* fats, known as “natural” or “ruminant” *trans* fats, are produced by ruminant animals. Natural *trans* fats are present in small quantities in dairy products and meats, and consuming fat-free or low-fat dairy products and lean meats and poultry will reduce the intake of natural *trans* fats from these foods. Because natural *trans* fats are present in dairy products and meats in only small quantities and these foods can be important sources of nutrients, these foods do not need to be eliminated from the diet.

### Dietary Cholesterol

The body uses cholesterol for physiological and structural functions but makes more than enough for these purposes. Therefore, people do not need to obtain cholesterol through foods.

The Key Recommendation from the 2010 *Dietary Guidelines* to limit consumption of dietary cholesterol to 300 mg per day is not included in the 2015 edition, but this change does not suggest that dietary cholesterol is no longer important to consider when building healthy eating patterns. As recommended by the IOM,<sup>[24]</sup> individuals should eat as little dietary cholesterol as possible while consuming a healthy eating pattern. In general, foods that are higher in dietary cholesterol, such as fatty meats and high-fat dairy products, are also higher in saturated fats. The USDA Food Patterns are limited in saturated fats, and because of the commonality of food sources of saturated fats and dietary cholesterol, the Patterns are also low in dietary cholesterol. For example, the Healthy U.S.-Style Eating Pattern contains approximately 100 to 300 mg of cholesterol across the 12 calorie levels. Current average intake of dietary cholesterol among those 1 year and older in the United States is approximately 270 mg per day.

Strong evidence from mostly prospective cohort studies but also randomized controlled trials has shown that *eating patterns* that include lower intake of dietary cholesterol are associated with reduced risk of CVD, and moderate evidence indicates that these eating patterns are associated with reduced risk of obesity. As described earlier, *eating patterns* consist of multiple, interacting food components and the relationships to health exist for the overall *eating pattern*, not necessarily to an isolated aspect of the diet. More research is needed

[23] The FDA has determined that partially hydrogenated oils, which are the primary dietary source of industrially produced *trans* fats, are no longer generally recognized as safe (GRAS), with compliance expected by June 18, 2018. FDA. Final Determination Regarding Partially Hydrogenated Oils. Federal Register. June 17, 2015;80(116):34650-34670. Available at: <https://www.federalregister.gov/articles/2015/06/17/2015-14883/final-determination-regarding-partially-hydrogenated-oils>. Accessed October 20, 2015.

[24] 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.

## Dietary Approaches to Stop Hypertension (DASH)

The DASH dietary pattern is an example of a healthy eating pattern and has many of the same characteristics as the Healthy U.S.-Style Eating Pattern. The DASH dietary pattern and several variations have been tested in randomized controlled clinical trials to study the effect of the DASH dietary pattern on CVD risk factors. The original DASH trial demonstrated that the DASH dietary pattern lowered blood pressure and LDL-cholesterol levels, resulting in reduced CVD risk, compared to diets that resembled a typical American diet. The DASH-Sodium trial confirmed the beneficial blood pressure and LDL-cholesterol effects of the DASH eating pattern at three levels of dietary sodium intake and also demonstrated a step-wise lowering of blood pressure as sodium intake was reduced. The OmniHeart Trial found that replacing some of the carbohydrates in DASH with the same amount of either protein or unsaturated fats lowered blood pressure and LDL-cholesterol levels more than the original DASH dietary pattern.



The DASH Eating Plan is high in vegetables, fruits, low-fat dairy products, whole grains, poultry, fish, beans, and nuts and is low in sweets, sugar-sweetened beverages, and red meats. It is low in saturated fats and rich in potassium, calcium, and magnesium, as well as dietary fiber and protein. It also is lower in sodium than the typical American diet, and includes menus with two levels of sodium, 2,300 and 1,500 mg per day. Additional details on DASH are available at <http://www.nhlbi.nih.gov/health/health-topics/topics/dash>.

## Caffeine



Caffeine is not a nutrient; it is a dietary component that functions in the body as a stimulant. Caffeine occurs naturally in plants (e.g., coffee beans, tea leaves, cocoa beans, kola nuts). It also is added to foods and beverages (e.g., caffeinated soda, energy drinks). If caffeine is added to a food, it must be included in the listing of ingredients on the food label.<sup>[25]</sup> Most intake of caffeine in the United States comes from coffee, tea, and soda. Caffeinated beverages vary widely in their caffeine content. Caffeinated coffee beverages include drip/brewed coffee (12 mg/fl oz), instant coffee (8 mg/fl oz), espresso (64 mg/fl oz), and specialty beverages made from coffee or espresso, such as cappuccinos and lattes. Amounts of caffeine in other beverages such as brewed black tea (6 mg/fl oz), brewed green tea (2-5 mg/fl oz), and caffeinated soda<sup>[26]</sup> (1-4 mg/fl oz) also vary. Beverages within the energy drinks category have the greatest variability (3-35 mg/fl oz).

Much of the available evidence on caffeine focuses on coffee intake. Moderate coffee consumption (three to five 8-oz cups/day or providing up to 400 mg/day of caffeine) can be incorporated into healthy eating patterns. This guidance on coffee is informed by strong and consistent evidence showing that, in healthy adults, moderate coffee consumption is not associated with an increased risk of major chronic diseases (e.g., cancer) or premature death, especially from CVD. However, individuals who do not consume caffeinated coffee or other caffeinated beverages are not encouraged to incorporate them into their eating pattern. Limited and mixed evidence is available from randomized controlled trials examining the relationship between those energy drinks which have high caffeine content and cardiovascular risk factors and other health outcomes. In addition, caffeinated beverages, such as some sodas or energy drinks, may include calories from added sugars, and although coffee itself has minimal calories, coffee beverages often contain added calories from cream, whole or 2% milk, creamer, and added sugars, which should be limited. The same considerations apply to calories added to tea or other similar beverages.

Those who choose to drink alcohol should be cautious about mixing caffeine and alcohol together or consuming them at the same time; see Appendix 9. Alcohol for additional discussion. In addition, women who are capable of becoming pregnant or who are trying to, or who are pregnant, and those who are breastfeeding should consult their health care providers for advice concerning caffeine consumption.

[25] Some dietary supplements such as energy shots also contain caffeine, but the amount of caffeine in these products is not required to be disclosed

[26] Caffeine is a substance that is generally recognized as safe (GRAS) in cola-type beverages by the U.S. Food and Drug Administration for use by adults and children. Code of Federal Regulation Title 21, Subchapter B, Part 182, Subpart B. Caffeine. U.S. Government Printing Office. November 23, 2015. Available at: [http://www.ecfr.gov/cgi-bin/retrieveECFR?gp=1&SID=f8c3068e9ec0062a3b4078cfa6361cf6&ty=HTML&h=L&mc=true&r=SECTION&n=se21.3.182\\_11180](http://www.ecfr.gov/cgi-bin/retrieveECFR?gp=1&SID=f8c3068e9ec0062a3b4078cfa6361cf6&ty=HTML&h=L&mc=true&r=SECTION&n=se21.3.182_11180).

regarding the dose-response relationship between dietary cholesterol and blood cholesterol levels. Adequate evidence is not available for a quantitative limit for dietary cholesterol specific to the *Dietary Guidelines*.

Dietary cholesterol is found only in animal foods such as egg yolk, dairy products, shellfish, meats, and poultry. A few foods, notably egg yolks and some shellfish, are higher in dietary cholesterol but not saturated fats. Eggs and shellfish can be consumed along with a variety of other choices within and across the subgroup recommendations of the protein foods group.

## Sodium

**Healthy Intake:** The scientific consensus from expert bodies, such as the IOM, the American Heart Association, and Dietary Guidelines Advisory Committees, is that average sodium intake, which is currently 3,440 mg per day (see Chapter 2), is too high and should be reduced. Healthy eating patterns limit sodium to less than 2,300 mg per day for adults and children ages 14 years and older and to the age- and sex-appropriate Tolerable Upper Intake Levels (UL) of sodium for children younger than 14 years (see Appendix 7). Sodium is an essential nutrient and is needed by the body in relatively small quantities, provided that substantial sweating does not occur.<sup>[27]</sup> Sodium is primarily consumed as salt (sodium chloride).

The limits for sodium are the age- and sex-appropriate ULs. The UL is the highest daily nutrient intake level that is likely to pose no risk of adverse health effects to almost all individuals in the general population. The recommendation for adults and children ages 14 years and older to limit sodium intake to less than 2,300 mg per day is based on evidence showing a

linear dose-response relationship between increased sodium intake and increased blood pressure in adults. In addition, moderate evidence suggests an association between increased sodium intake and increased risk of CVD in adults. However, this evidence is not as consistent as the evidence on blood pressure, a surrogate indicator of CVD risk.

Calorie intake is highly associated with sodium intake (i.e., the more foods and beverages people consume, the more sodium they tend to consume). Because children have lower calorie needs than adults, the IOM established lower ULs for children younger than 14 years of age based on median intake of calories. Similar to adults, moderate evidence also indicates that the linear dose-response relationship between sodium intake and blood pressure is found in children as well.

Adults with prehypertension and hypertension would particularly benefit from blood pressure lowering. For these individuals, further reduction to 1,500 mg per day can result in even greater blood pressure reduction. Because of the linear dose-response relationship between sodium intake and blood pressure, every incremental decrease in sodium intake that moves toward recommended limits is encouraged. Even without reaching the limits for sodium intake, strong evidence indicates that reductions in sodium intake can lower blood pressure among people with prehypertension and hypertension. Further, strong evidence has demonstrated that adults who would benefit from blood pressure lowering should combine the Dietary Approaches to Stop Hypertension (DASH) dietary pattern with lower sodium intake (see Dietary Approaches to Stop Hypertension call-out box).

**Considerations:** As a food ingredient, sodium has multiple uses, such as in curing meat, baking, thickening, enhancing flavor (including the flavor of other ingredients), as a preservative, and in retaining moisture. For example, some fresh meats have sodium solutions added to help retain moisture in cooking. As discussed in Chapter 2, sodium is found in foods across the food supply, including mixed dishes such as burgers, sandwiches, and tacos; rice, pasta, and grain dishes; pizza; meat, poultry, and seafood dishes; and soups. Multiple strategies should be implemented to reduce sodium intake to the recommended limits (see Chapter 3. Everyone Has a Role in Supporting Healthy Eating Patterns).

## Alcohol

Alcohol is not a component of the USDA Food Patterns. The *Dietary Guidelines* does not recommend that individuals who do not drink alcohol start drinking for any reason. If alcohol is consumed, it should be in moderation—up to one drink per day for women and up to two drinks per day for men—and only by adults of legal drinking age.<sup>[6]</sup> There are also many circumstances in which individuals should not drink, such as during pregnancy. For the purposes of evaluating amounts of alcohol that may be consumed, the *Dietary Guidelines* includes drink-equivalents. One alcoholic drink-equivalent is described as containing 14 g (0.6 fl oz) of pure alcohol.<sup>[28]</sup> The following are reference beverages that are one alcoholic drink-equivalent: 12 fluid ounces of regular beer (5% alcohol), 5 fluid ounces of wine (12% alcohol), or 1.5 fluid ounces of 80 proof distilled spirits (40% alcohol).<sup>[29]</sup> The amount of alcohol and calories in beverages varies and should be accounted for within the limits of healthy eating patterns so that calorie limits are not exceeded. See Appendix 9. Alcohol for additional information.

[27] The IOM set an Adequate Intake (AI) level for sodium to meet the sodium needs of healthy and moderately active individuals. Because of increased loss of sodium from sweat, the AI does not apply to highly active individuals and workers exposed to extreme heat stress, estimated to be less than 1 percent of the U.S. population. Institute of Medicine. *Dietary Reference Intakes for Water, Potassium, Sodium, Chloride, and Sulfate*. Washington (DC): The National Academies Press; 2005.

[28] Bowman SA, Clemens JC, Friday JE, Thoeig RC, and Moshfegh AJ. 2014. *Food Patterns Equivalents Database 2011-12: Methodology and User Guide* [Online]. Food Surveys Research Group, Beltsville Human Nutrition Research Center, Agricultural Research Service, U.S. Department of Agriculture, Beltsville, Maryland. Available at: <http://www.ars.usda.gov/nea/bhnrc/fsrg>. Accessed November 3, 2015. For additional information, see the National Institute on Alcohol Abuse and Alcoholism (NIAAA) webpage available at: <http://rethinkingdrinking.niaaa.nih.gov/>.

[29] Drink-equivalents are not intended to serve as a standard drink definition for regulatory purposes.



## Examples of Other Healthy Eating Patterns

The U.S. population consumes many different styles of eating patterns other than the “typical American pattern” that provides the basis for the Healthy U.S.-Style Eating Pattern (see Appendix 3 and Table 1-1). There are many ways to consume a healthy eating pattern, and the evidence to support multiple approaches has expanded over time. The Healthy Mediterranean-Style Eating Pattern and Healthy Vegetarian Eating Pattern, which were developed by modifying the Healthy U.S.-Style Eating Pattern, are two examples of healthy eating patterns individuals may choose based on personal preference. Similar to the Healthy U.S.-Style Eating Pattern, these patterns were designed to consider the types and proportions of foods Americans typically consume, but in nutrient-dense forms and appropriate amounts, which result in eating patterns that are attainable and relevant in the U.S. population. Additionally, healthy eating patterns can be flexible with respect to the intake of carbohydrate, protein, and fat within the context of the AMDR.<sup>[30]</sup>

As with the Healthy U.S.-Style Eating Pattern, each provides recommended intakes at 12 different calorie levels (see Appendix 4 and Appendix 5). The 2,000 calorie level for each Pattern is shown here as an example (Table 1-2).

### Healthy Mediterranean-Style Eating Pattern

A Healthy Mediterranean-Style Eating Pattern (Appendix 4) was designed by modifying the Healthy U.S.-Style Eating

[30] 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.

**Table 1-2. Composition of the Healthy Mediterranean-Style & Healthy Vegetarian Eating Patterns at the 2,000-Calorie Level,<sup>[a]</sup> With Daily or Weekly Amounts From Food Groups, Subgroups, & Components**

Food Group <sup>[b]</sup>	Healthy Mediterranean-Style Eating Pattern	Healthy Vegetarian Eating Pattern
<b>Vegetables</b>	<b>2½ c-eq/day</b>	<b>2½ c-eq/day</b>
Dark Green	1½ c-eq/week	1½ c-eq/week
Red & Orange	5½ c-eq/week	5½ c-eq/week
Legumes (Beans & Peas)	1½ c-eq/week	3 c-eq/week <sup>[c]</sup>
Starchy	5 c-eq/week	5 c-eq/week
Other	4 c-eq/week	4 c-eq/week
<b>Fruits</b>	<b>2½ c-eq/day</b>	<b>2 c-eq/day</b>
<b>Grains</b>	<b>6 oz-eq/day</b>	<b>6½ oz-eq/day</b>
Whole Grains	≥3 oz-eq/day	≥3½ oz-eq/day
Refined Grains	≤3 oz-eq/day	≤3 oz-eq/day
<b>Dairy</b>	<b>2 c-eq/day</b>	<b>3 c-eq/day</b>
<b>Protein Foods</b>	<b>6½ oz-eq/day</b>	<b>3½ oz-eq/day<sup>[c]</sup></b>
Seafood	15 oz-eq/week <sup>[d]</sup>	—
Meats, Poultry, Eggs	26 oz-eq/week	3 oz-eq/week (eggs)
Nuts, Seeds, Soy Products	5 oz-eq/week	14 oz-eq/week
<b>Oils</b>	<b>27 g/day</b>	<b>27 g/day</b>
<b>Limit on Calories for Other Uses (% of Calories)<sup>[e]</sup></b>	<b>260 kcal/day (13%)</b>	<b>290 kcal/day (15%)</b>

[a] Food group amounts shown in cup- (c) or ounce- (oz) equivalents (eq). Oils are shown in grams (g). Quantity equivalents for each food group are defined in Appendix 3. Amounts will vary for those who need less than 2,000 or more than 2,000 calories per day. See Appendix 4 and Appendix 5 for all 12 calorie levels of the patterns.

[b] Definitions for each food group and subgroup are provided throughout the chapter and are compiled in Appendix 3.

[c] Vegetarian patterns include 1½ cups per week of legumes as a vegetable subgroup, and an additional 6 oz-eq (1½ cups) per week of legumes as a protein food. The total amount is shown here as legumes in the vegetable group.

[d] The FDA and EPA provide additional guidance regarding seafood consumption for women who are pregnant or breastfeeding and young children. For more information, see the FDA or EPA websites [www.FDA.gov/fishadvice](http://www.FDA.gov/fishadvice); [www.EPA.gov/fishadvice](http://www.EPA.gov/fishadvice).

[e] Assumes food choices to meet food group recommendations are in nutrient-dense forms. Calories from added sugars, solid fats, added refined starches, alcohol, and/or to eat more than the recommended amount of nutrient-dense foods are accounted for under this category.

**NOTE:** The total eating pattern should not exceed *Dietary Guidelines* limits for intake of calories from added sugars and saturated fats and alcohol and should be within the Acceptable Macronutrient Distribution Ranges for calories from protein, carbohydrate, and total fats. Most calorie patterns do not have enough calories available after meeting food group needs to consume 10 percent of calories from added sugars and 10 percent of calories from saturated fats and still stay within calorie limits. Values are rounded.

Pattern, taking into account food group intakes from studies examining the associations between Mediterranean-Style eating patterns and health.

The Healthy Mediterranean-Style Eating Pattern contains more fruits and seafood and less dairy than does the Healthy U.S.-Style Eating Pattern. The healthfulness of the Healthy Mediterranean-Style Pattern was evaluated based on its similarity to Mediterranean-Style patterns described in studies with positive health outcomes rather than on meeting specified nutrient standards. However, nutrient content of the Pattern was assessed and found to be similar to the Healthy U.S.-Style Eating Pattern, except for calcium and vitamin D. Calcium and vitamin D are lower because the amounts of dairy were decreased, as shown in Appendix 4, to more closely match data from studies of Mediterranean-Style eating patterns.

## Healthy Vegetarian Eating Pattern

A Healthy Vegetarian Eating Pattern (Appendix 5) replaces the previous Lacto-ovo Vegetarian Adaptation of the USDA Food Patterns from the *2010 Dietary Guidelines*. The Healthy Vegetarian Eating Pattern was developed taking into account food choices of self-identified vegetarians in the National Health and Nutrition Examination Survey (NHANES) and provides recommendations to meet the *Dietary Guidelines* for those who follow a vegetarian pattern.

In comparison to the Healthy U.S.-Style Eating Pattern, the Healthy Vegetarian Eating Pattern includes more legumes (beans and peas), soy products, nuts and seeds, and whole grains. It contains no meats, poultry, or seafood, and is identical to the Healthy U.S.-Style Eating Pattern in amounts of all other food groups. The Pattern is similar in meeting



nutrient standards to the Healthy U.S.-Style Pattern, but is somewhat higher in calcium and dietary fiber and lower in vitamin D, due to differences in the foods included in the protein foods group, specifically more tofu and beans and no seafood, as shown in Appendix 5.

## Summary

The *2015-2020 Dietary Guidelines* provides Guidelines and Key Recommendations with clear guidance for individuals to enhance eating and physical activity patterns. Implementation of these Guidelines will help promote health and prevent chronic disease in the United States. At the core of this guidance is the importance of consuming overall healthy eating patterns, including vegetables, fruits, grains, dairy, protein foods, and oils—eaten within an appropriate calorie level and in forms with limited amounts of saturated fats, added sugars, and sodium. Examples of how to put this guidance into practice are provided by the Healthy U.S.-Style Eating Pattern and its two variations, a Healthy Mediterranean-Style Eating Pattern and a Healthy Vegetarian Eating Pattern.



# Appendix 1.

## *Physical Activity Guidelines for Americans*

In addition to consuming a healthy eating pattern, regular physical activity is one of the most important things Americans can do to improve their health. The *Physical Activity Guidelines for Americans*,<sup>[1]</sup> released by the U.S. Department of Health and Human Services, provides a comprehensive set of recommendations for Americans on the amounts and types of physical activity needed each day. Adults need at

least 150 minutes of moderate-intensity physical activity and should perform muscle-strengthening exercises on 2 or more days each week. Youth ages 6 to 17 years need at least 60 minutes of physical activity per day, including aerobic, muscle-strengthening, and bone-strengthening activities (see **Table A1-1** for additional details). Just as individuals can achieve a healthy eating pattern in a variety of ways that meet

their personal and cultural preferences, they can engage in regular physical activity in a variety of ways throughout the day and by choosing activities they enjoy. **Table A1-2** provides a list of Federal resources, including handouts, online assessments, trackers, and interactive websites. These can be used to help motivate consumer audiences to make healthy physical activity choices.

**Table A1-1.**  
***Physical Activity Guidelines for Americans***  
**Recommendations**

Age	Recommendations
6 to 17 Years	<p>Children and adolescents should do 60 minutes (1 hour) or more of physical activity daily.</p> <ul style="list-style-type: none"><li>• <b>Aerobic:</b> Most of the 60 or more minutes a day should be either moderate<sup>[a]</sup>- or vigorous-intensity<sup>[b]</sup> aerobic physical activity, and should include vigorous-intensity physical activity at least 3 days a week.</li><li>• <b>Muscle-strengthening:</b><sup>[c]</sup> As part of their 60 or more minutes of daily physical activity, children and adolescents should include muscle-strengthening physical activity on at least 3 days of the week.</li><li>• <b>Bone-strengthening:</b><sup>[d]</sup> As part of their 60 or more minutes of daily physical activity, children and adolescents should include bone-strengthening physical activity on at least 3 days of the week.</li><li>• It is important to encourage young people to participate in physical activities that are appropriate for their age, that are enjoyable, and that offer variety.</li></ul>

[1] U.S. Department of Health and Human Services. *2008 Physical Activity Guidelines for Americans*. Washington (DC): U.S. Department of Health and Human Services; 2008. ODPHP Publication No. U0036. Available at: <http://www.health.gov/paguidelines>. Accessed August 6, 2015.

Age	Recommendations
18 to 64 Years	<ul style="list-style-type: none"> <li>• All adults should avoid inactivity. Some physical activity is better than none, and adults who participate in any amount of physical activity gain some health benefits.</li> <li>• For substantial health benefits, adults should do at least 150 minutes (2 hours and 30 minutes) a week of moderate-intensity, or 75 minutes (1 hour and 15 minutes) a week of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous-intensity aerobic activity. Aerobic activity should be performed in episodes of at least 10 minutes, and preferably, it should be spread throughout the week.</li> <li>• For additional and more extensive health benefits, adults should increase their aerobic physical activity to 300 minutes (5 hours) a week of moderate-intensity, or 150 minutes a week of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous-intensity activity. Additional health benefits are gained by engaging in physical activity beyond this amount.</li> <li>• Adults should also include muscle-strengthening activities that involve all major muscle groups on 2 or more days a week.</li> </ul>
65 Years & Older	<ul style="list-style-type: none"> <li>• Older adults should follow the adult guidelines. When older adults cannot meet the adult guidelines, they should be as physically active as their abilities and conditions will allow.</li> <li>• Older adults should do exercises that maintain or improve balance if they are at risk of falling.</li> <li>• Older adults should determine their level of effort for physical activity relative to their level of fitness.</li> <li>• Older adults with chronic conditions should understand whether and how their conditions affect their ability to do regular physical activity safely.</li> </ul>

[a] Moderate-intensity physical activity: Aerobic activity that increases a person's heart rate and breathing to some extent. On a scale relative to a person's capacity, moderate-intensity activity is usually a 5 or 6 on a 0 to 10 scale. Brisk walking, dancing, swimming, or bicycling on a level terrain are examples.

[b] Vigorous-intensity physical activity: Aerobic activity that greatly increases a person's heart rate and breathing. On a scale relative to a person's capacity, vigorous-intensity activity is usually a 7 or 8 on a 0 to 10 scale. Jogging, singles tennis, swimming continuous laps, or bicycling uphill are examples.

[c] Muscle-strengthening activity: Physical activity, including exercise that increases skeletal muscle strength, power, endurance, and mass. It includes strength training, resistance training, and muscular strength and endurance exercises.

[d] Bone-strengthening activity: Physical activity that produces an impact or tension force on bones, which promotes bone growth and strength. Running, jumping rope, and lifting weights are examples.

**SOURCE:** Adapted from U.S. Department of Health and Human Services. *2008 Physical Activity Guidelines for Americans*. Washington (DC): U.S. Department of Health and Human Services; 2008. Available at: <http://www.health.gov/paguidelines>. Accessed August 6, 2015.

Table A1-2.

## Federal Physical Activity Resources

Program/Initiative	Lead Office	Website
<i>Physical Activity Guidelines for Americans</i>	Office of Disease Prevention and Health Promotion (ODPHP)	<a href="http://www.health.gov/paguidelines">www.health.gov/paguidelines</a>
Healthfinder.gov (Consumer Resources)	ODPHP	<a href="http://www.healthfinder.gov">www.healthfinder.gov</a>
Healthy People 2020 (Physical Activity National Objectives)	ODPHP	<a href="http://www.healthypeople.gov">www.healthypeople.gov</a>
<i>Let's Move!</i>	Office of the First Lady	<a href="http://www.letsmove.gov">www.letsmove.gov</a>
Step it Up! The Surgeon General's Call to Action to Promote Walking and Walkable Communities	Office of the Surgeon General	<a href="http://www.surgeongeneral.gov">www.surgeongeneral.gov</a>
I Can Do It, You Can Do It	President's Council on Fitness, Sports & Nutrition (PCFSN)	<a href="http://www.fitness.gov">www.fitness.gov</a>
Presidential Youth Fitness Program	PCFSN	<a href="http://www.pyfp.org/index.shtml">www.pyfp.org/index.shtml</a>
The President's Challenge	PCFSN	<a href="http://www.presidentschallenge.org">www.presidentschallenge.org</a>
The President's Challenge Adult Fitness Test	PCFSN	<a href="http://www.adultfitnessstest.org">www.adultfitnessstest.org</a>
<i>Physical Activity Guidelines for Americans Youth Toolkit</i>	U.S. Centers for Disease Control and Prevention (CDC)	<a href="http://www.cdc.gov/healthyschools/physicalactivity/guidelines.htm">www.cdc.gov/healthyschools/physicalactivity/guidelines.htm</a>
BAM! Body and Mind (Focused on Tweens)	CDC	<a href="http://www.cdc.gov/bam">www.cdc.gov/bam</a>

Program/Initiative	Lead Office	Website
<b>We Can! (Ways to Enhance Childhood Nutrition and Physical Activity)</b>	National Institutes of Health (NIH) National Heart, Lung, and Blood Institute	<a href="http://www.nhlbi.nih.gov/health/educational/wecan">www.nhlbi.nih.gov/health/educational/wecan</a>
<b>Go4Life (Focused on Older Adults)</b>	NIH National Institute on Aging	<a href="https://go4life.nia.nih.gov/">https://go4life.nia.nih.gov/</a>
<b>SuperTracker</b>	U.S. Department of Agriculture	<a href="http://www.supertracker.usda.gov">www.supertracker.usda.gov</a>
<b>National Physical Activity Plan (NPAP)*</b>	NPAP Alliance	<a href="http://www.physicalactivityplan.org">www.physicalactivityplan.org</a>

\* The National Physical Activity Plan is not a product of the Federal Government. However, a number of Federal officers were involved in the development of the Plan.

# Appendix 6.

## Glossary of Terms

### A

**Acculturation**—The process by which individuals who immigrate into a new country adopt the attitudes, values, customs, beliefs, and behaviors of the new culture. Acculturation is the gradual exchange between the original attitudes and behaviors associated with the originating country and those of the host culture.

**Added Refined Starch**—The starch constituent (see Carbohydrates) of a grain, such as corn, or of a vegetable, such as potato, used as an ingredient in another food. Starches have been refined to remove other components of the food, such as fiber,

protein, and minerals. Refined starches can be added to foods as a thickener, a stabilizer, a bulking agent, or an anti-caking agent. While refined starches are made from grains or vegetables, they contain little or none of the many other components of these foods that together create a nutrient-dense food. They are a source of calories but few or no other nutrients.

**Added Sugars**—Syrups and other caloric sweeteners used as a sweetener in other food products. Naturally occurring sugars such as those in fruit or milk are not added sugars. Specific examples of added sugars that can be listed as an ingredient include brown sugar, corn sweetener, corn syrup,

dextrose, fructose, glucose, high-fructose corn syrup, honey, invert sugar, lactose, malt syrup, maltose, molasses, raw sugar, sucrose, trehalose, and turbinado sugar. (See Carbohydrates, Sugars.)

### B

**Body Mass Index (BMI)**—A measure of weight in kilograms (kg) relative to height in meters squared (m<sup>2</sup>). 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 (Table A6-1). Overweight and obese describe ranges of weight that are greater than what is considered healthy

Table A6-1.

### Body Mass Index (BMI) & Corresponding Body Weight Categories for Children & Adults

Body Weight Category	Children & Adolescents (Ages 2 to 19 Years) (BMI-for-Age Percentile Range)	Adults (BMI)
Underweight	Less than the 5th percentile	Less than 18.5 kg/m <sup>2</sup>
Normal Weight	5th percentile to less than the 85th percentile	18.5 to 24.9 kg/m <sup>2</sup>
Overweight	85th to less than the 95th percentile	25.0 to 29.9 kg/m <sup>2</sup>
Obese	Equal to or greater than the 95th percentile	30.0 kg/m <sup>2</sup> & greater

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.

## C

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

- **Calorie**—A unit commonly used to measure energy content of foods and beverages as well as energy use (expenditure) by the body. A kilocalorie is equal to the amount of energy (heat) required to raise the temperature of 1 kilogram of water 1 degree centigrade. Energy 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. If not specified explicitly, references to "calories" refer to "kilocalories."

**Carbohydrates**—One of the macronutrients and a source of energy. They include sugars, starches, and fiber:

- **Fiber**—Total fiber is the sum of *dietary fiber* and *functional fiber*. Dietary fiber consists of nondigestible carbohydrates and lignin that are intrinsic and intact in plants (i.e., the fiber naturally occurring in foods). Functional fiber consists of isolated, nondigestible carbohydrates that have beneficial physiological effects in humans. Functional fibers are either extracted from natural sources or are synthetically manufactured and added to foods, beverages, and supplements.

- **Starches**—Many glucose units linked together into long chains. Examples of foods containing starch include vegetables (e.g., potatoes, carrots), grains (e.g., brown rice, oats, wheat, barley, corn), and legumes (beans and peas; e.g., kidney beans, garbanzo beans, lentils, split peas).
- **Sugars**—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 and beverages, those added to foods and beverages during processing and preparation, and those consumed separately. (See Added Sugars.)

**Cardiovascular Disease (CVD)**—Heart disease as well as diseases of the blood vessel system (arteries, capillaries, veins) that can lead to heart attack, chest pain (angina), or stroke.

**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.

- **Blood Cholesterol**—Cholesterol that travels in the serum of the blood as distinct particles containing both lipids and proteins (lipoproteins). Also referred to as serum cholesterol. Two kinds of lipoproteins are:
  - **High-Density Lipoprotein (HDL-cholesterol)**—Blood cholesterol often called "good" cholesterol; carries cholesterol from tissues to the liver, which removes it from the body.

- **Low-Density Lipoprotein (LDL-Cholesterol)**—Blood cholesterol often called "bad" cholesterol; carries cholesterol to arteries and tissues. A high LDL-cholesterol level in the blood leads to a buildup of cholesterol in arteries.

- **Dietary Cholesterol**—Cholesterol found in foods of animal origin, including meat, seafood, poultry, eggs, and dairy products. Plant foods, such as grains, vegetables, fruits, and oils do not contain dietary cholesterol.

**Cup-Equivalent (cup-eq or c-eq)**—

The amount of a food or beverage product that is considered equal to 1 cup from the vegetables, fruits, or dairy food groups. A cup-eq for some foods or beverages may differ from a measured cup in volume because the foods have been concentrated (such as raisins or tomato paste), the foods are airy in their raw form and do not compress well into a cup (such as salad greens), or the foods are measured in a different form (such as cheese).

## D

**DASH Eating Plan**—The DASH (Dietary Approaches to Stop Hypertension) Eating Plan exemplifies healthy eating. It was designed to increase intake of foods expected to lower blood pressure while being heart healthy and meeting Institute of Medicine (IOM) nutrient recommendations. It is available at specific calorie levels. It was adapted from the dietary pattern developed for the Dietary Approaches to Stop Hypertension (DASH) research trials. In the trials, the DASH dietary pattern lowered blood pressure and LDL-cholesterol levels, resulting in reduced cardiovascular disease risk. The DASH Eating Plan is low in saturated fats and rich in potassium, calcium, and magnesium, as well as fiber and protein. It also is lower in sodium than the typical American diet,

and includes menus with two levels of sodium, 2,300 and 1,500 mg per day. It meets the Dietary Reference Intakes for all essential nutrients and stays within limits for overconsumed nutrients, while allowing adaptable food choices based on food preferences, cost, and availability.

**Diabetes**—A disorder of metabolism—the way the body uses digested food (specifically carbohydrate) 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, which causes too much glucose to be released in the blood. The three main types of diabetes are type 1, type 2, and gestational diabetes. If not controlled, diabetes can lead to serious complications.

**Dietary Reference Intakes (DRIs)**—A set of nutrient-based reference values that are quantitative estimates of nutrient intakes to be used for planning and assessing diets for healthy people. DRIs expand on the periodic reports called Recommended Dietary Allowances (RDAs), which were first published by the Institute of Medicine in 1941.

- **Acceptable Macronutrient Distribution Ranges (AMDR)**—Range of intake for a particular energy source (i.e., carbohydrate, fat, and protein) that is associated with reduced risk of chronic disease while providing intakes of essential nutrients. If an individual’s intake is outside of the AMDR, there is a potential of increasing the risk of chronic diseases and/or insufficient intakes of essential nutrients.
- **Adequate Intakes (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. An AI is used when the Recommended Dietary Allowance cannot be determined.

- **Estimated Average Requirements (EAR)**—The average daily nutrient intake level estimated to meet the requirement of half the healthy individuals in a particular life stage and sex group.
- **Recommended Dietary Allowances (RDA)**—The average daily 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 sex group.
- **Tolerable Upper Intake Levels (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 sex group. As intake increases above the UL, the potential risk of adverse health effects increases.

## E

**Eating Behaviors**—Individual behaviors that affect food and beverage choices and intake patterns, such as what, where, when, why, and how much people eat.

**Eating Pattern** (also called “dietary 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 and the Dietary Approaches to Stop Hypertension (DASH) Eating Plan. (See USDA Food Patterns and DASH Eating Plan.)

**Energy Drink**—A beverage that contains caffeine as an ingredient, along with

other ingredients, such as taurine, herbal supplements, vitamins, and added sugars. It is usually marketed as a product that can improve perceived energy, stamina, athletic performance, or concentration.

**Enrichment**—The addition of specific nutrients (i.e., iron, thiamin, riboflavin, and niacin) to refined grain products in order to replace losses of the nutrients that occur during processing. Enrichment of refined grains is not mandatory; however, those that are labeled as enriched (e.g., enriched flour) must meet the standard of identity for enrichment set by the FDA. When cereal grains are labeled as enriched, it is mandatory that they be fortified with folic acid. (The addition of specific nutrients to whole-grain products is referred to as fortification; see Fortification.)

**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.

**Existing Report**—An existing systematic review, meta-analysis, or report by a Federal agency or leading scientific organization examined by the 2015 Dietary Guidelines Advisory Committee in its review of the scientific evidence. A systematic process was used by the Advisory Committee to assess the quality and comprehensiveness of the review for addressing the question of interest. (See Nutrition Evidence Library (NEL) systematic review.)

## F

**Fats**—One of the macronutrients and a source of energy. (See Solid Fats and Oils.)

- **Monounsaturated Fatty Acids (MUFAs)**—Fatty acids that have one double bond and are usually liquid at room temperature. Plant sources rich in MUFAs include vegetable oils (e.g., canola, olive, high oleic safflower and sunflower), as well as nuts.
- **Polyunsaturated Fatty Acids (PUFAs)**—Fatty acids that have two or more double bonds and are usually liquid at room temperature. Primary sources are vegetable oils and some nuts and seeds. PUFAs provide essential fats such as *n*-3 and *n*-6 fatty acids.
- ***n*-3 PUFAs**—A carboxylic acid with an 18-carbon chain and three *cis* double bonds, Alpha-linolenic acid (ALA) is an *n*-3 fatty acid that is essential in the diet because it cannot be synthesized by humans. Primary sources include soybean oil, canola oil, walnuts, and flaxseed. Eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) are very long chain *n*-3 fatty acids that are contained in fish and shellfish. Also called omega-3 fatty acids.
- ***n*-6 PUFAs**—A carboxylic acid with an 18-carbon chain and two *cis* double bonds, Linoleic acid (LA), one of the *n*-6 fatty acids, is essential in the diet because it cannot be synthesized by humans. Primary sources are nuts and liquid vegetable oils, including soybean oil, corn oil, and safflower oil. Also called omega-6 fatty acids.
- **Saturated Fatty Acids**—Fatty acids that have no double bonds. Fats high in saturated fatty acids are usually solid at room temperature. Major sources include animal products such as meats and dairy products, and tropical oils such as coconut or palm oils.

- ***Trans* Fatty Acids**—Unsaturated fatty acids that are structurally different from the unsaturated fatty acids that occur naturally in plant foods. Sources of *trans* fatty acids include partially hydrogenated vegetable oils used in processed foods such as desserts, microwave popcorn, frozen pizza, some margarines, and coffee creamer. *Trans* fatty acids also are present naturally in foods that come from ruminant animals (e.g., cattle and sheep), such as dairy products, beef, and lamb.

**Food Access**—Ability to obtain and maintain levels of sufficient amounts of healthy, safe, and affordable food for all family members in various settings including where they live, learn, work and play. Food access is often measured by distance to a store or the number of stores in an area; individual-level resources such as family income or vehicle availability; and neighborhood-level indicators of resources, such as average income of the neighborhood and the availability of public transportation.

**Food Categories**—A method of grouping similar foods in their as-consumed forms, for descriptive purposes. The USDA's Agricultural Research Service (ARS) has created 150 mutually exclusive food categories to account for each food or beverage item reported in What We Eat in America (WWEIA), the food intake survey component of the National Health and Nutrition Examination Survey (for more information, visit: <http://seprl.ars.usda.gov/Services/docs.htm?docid=23429>). Examples of WWEIA Food Categories include soups, nachos, and yeast breads. In contrast to food groups, items are not disaggregated into their component parts for assignment to food categories. For example, all pizzas are put into the pizza category.

**Food Hub**—A community space anchored by a food store with adjacent social and financial services where businesses or organizations can actively manage the aggregation, distribution, and marketing of source-identified food products to strengthen their ability to satisfy wholesale, retail, and institutional demand.

**Food Groups**—A method of grouping similar foods for descriptive and guidance purposes. Food groups in the USDA Food Patterns are defined as vegetables, fruits, grains, dairy, and protein foods. Some of these groups are divided into subgroups, such as dark-green vegetables or whole grains, which may have intake goals or limits. Foods are grouped within food groups based on their similarity in nutritional composition and other dietary benefits. For assignment to food groups, mixed dishes are disaggregated into their major component parts.

**Food Pattern Modeling**—The process of developing and adjusting daily intake amounts from food categories or groups to meet specific criteria, such as meeting nutrient intake goals, limiting nutrients or other food components, or varying proportions or amounts of specific food categories or groups. This methodology includes using current food consumption data to determine the mix and proportions of foods to include in each group, using current food composition data to select a nutrient-dense representative for each food, calculating nutrient profiles for each food group using these nutrient-dense representative foods, and modeling various combinations of foods and amounts to meet specific criteria. (See USDA Food Patterns.)

**Food & Nutrition Policies**—Regulations, laws, policymaking actions, or formal or informal rules established by formal organizations or government units. Food and nutrition policies are those that influence food settings and/or

eating behaviors to improve food and/or nutrition choices, and potentially, health outcomes (e.g., body weight).

**Fortification**—As defined by the U.S. Food and Drug Administration (FDA), the deliberate addition of one or more essential nutrients to a food, whether or not it is normally contained in the food. Fortification may be used to prevent or correct a demonstrated deficiency in the population or specific population groups; restore naturally occurring nutrients lost during processing, storage, or handling; or to add a nutrient to a food at the level found in a comparable traditional food. When cereal grains are labeled as enriched, it is mandatory that they be fortified with folic acid.

## H

**Health**—A state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.

**Healthy Eating Index (HEI)**—A measure of diet quality that assesses adherence to the *Dietary Guidelines*. The HEI is used to monitor diet quality in the United States and to examine relationships between diet and health-related outcomes. The HEI is a scoring metric that can be applied to any defined set of foods, such as previously collected dietary data, a defined menu, or a market basket. Thus, the HEI can be used to assess the quality of food assistance packages, menus, and the U.S. food supply.

**High-Intensity Sweeteners**—Ingredients commonly used as sugar substitutes or sugar alternatives to sweeten and enhance the flavor of foods and beverages. People may choose these sweeteners in place of sugar for a number of reasons, including that they contribute few or no calories to the diet. Because high-intensity sweeteners are many times sweeter than table sugar (sucrose), smaller amounts

of high-intensity sweeteners are needed to achieve the same level of sweetness as sugar in food and beverages. (Other terms commonly used to refer to sugar substitutes or alternatives include non-caloric, low-calorie, no-calorie, and artificial sweeteners, which may have different definitions and applications. A high-intensity sweetener may or may not be non-caloric, low-calorie, no-calorie, or artificial sweeteners.)

### **Household Food Insecurity**—

Circumstances in which the availability of nutritionally adequate and safe food, or the ability to acquire acceptable foods in socially acceptable ways, is limited or uncertain.

**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.

## M

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

**Meats & Poultry**—Foods that come from the flesh of land animals and birds. In the USDA Food Patterns, organs (such as liver) are also considered to be meat or poultry.

- **Meat** (also known as “red meat”)—All forms of beef, pork, lamb, veal, goat, and non-bird game (e.g., venison, bison, elk).

- **Poultry**—All forms of chicken, turkey, duck, geese, guineas, and game birds (e.g., quail, pheasant).

- **Lean Meat & Lean Poultry**—Any meat or poultry that contains less than 10 g of fat, 4.5 g or less of saturated fats, and less than 95 mg of cholesterol per 100 g and per labeled serving size, based on USDA definitions for food label use. Examples include 95% lean cooked ground beef, beef top round steak or roast, beef tenderloin, pork top loin chop or roast, pork tenderloin, ham or turkey deli slices, skinless chicken breast, and skinless turkey breast.

- **Processed Meat & Processed Poultry**—All meat or poultry products preserved by smoking, curing, salting, and/or the addition of chemical preservatives. Processed meats and poultry include all types of meat or poultry sausages (bologna, frankfurters, luncheon meats and loaves, sandwich spreads, viennas, chorizos, kielbasa, pepperoni, salami, and summer sausages), bacon, smoked or cured ham or pork shoulder, corned beef, pastrami, pig’s feet, beef jerky, marinated chicken breasts, and smoked turkey products.

**Mixed Dishes**—Savory food items eaten as a single entity that include foods from more than one food group. These foods often are mixtures of grains, protein foods, vegetables, and/or dairy. Examples of mixed dishes include burgers, sandwiches, tacos, burritos, pizzas, macaroni and cheese, stir-fries, spaghetti and meatballs, casseroles, soups, egg rolls, and Caesar salad.

**Moderate Alcohol Consumption**—Up to one drink per day for women and up to two drinks per day for men. One drink-equivalent is described using the reference beverages of 12 fl oz of

regular beer (5% alcohol), 5 fl oz of wine (12% alcohol), or 1.5 fl oz of 80 proof (40%) distilled spirits. One drink-equivalent is described as containing 14 g (0.6 fl oz) of pure alcohol.<sup>[1]</sup>

### **Multi-Component Intervention—**

Interventions that use a combination of strategies to promote behavior change. These strategies can be employed across or within different settings or levels of influence.

### **Multi-Level Intervention—**

Interventions are those that target change at the individual level as well as additional levels, such as in the community (e.g., public health campaigns), schools (e.g., education), and food service (e.g., menu modification).

## **N**

**Nutrient Dense—**A characteristic of foods and beverages that provide vitamins, minerals, and other substances that contribute to adequate nutrient intakes or may have positive health effects, with little or no solid fats and added sugars, refined starches, and sodium. Ideally, these foods and beverages 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 dairy products, and lean meats and poultry—when prepared with little or no added solid fats, sugars, refined starches, and sodium—are nutrient-dense foods. These foods contribute to meeting food group recommendations within calorie and sodium limits. 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, sugars, or refined starches, or by the

solid fats naturally present in the food.

**Nutrient of Concern—**Nutrients that are overconsumed or underconsumed and current intakes may pose a substantial public health concern. Data on nutrient intake, corroborated with biochemical markers of nutritional status where available, and association with health outcomes are all used to establish a nutrient as a nutrient of concern. Underconsumed nutrients, or “shortfall nutrients,” are those with a high prevalence of inadequate intake either across the U.S. population or in specific groups, relative to IOM-based standards, such as the Estimated Average Requirement (EAR) or the Adequate Intake (AI). Overconsumed nutrients are those with a high prevalence of excess intake either across the population or in specific groups, related to IOM-based standards such as the Tolerable Upper Intake Level (UL) or other expert group standards.

### **Nutrition Evidence Library (NEL)**

**Systematic Review—**A process that uses state-of-the-art methods to identify, evaluate, and synthesize research to provide timely answers to important food and nutrition-related questions to inform U.S. Federal nutrition policies, programs, and recommendations. This rigorous, protocol-driven methodology is designed to minimize bias, maximize transparency, and ensure the use of all available relevant and high-quality research. The NEL is a program within the USDA Center for Nutrition Policy and Promotion. For more detailed information, visit: [www.NEL.gov](http://www.NEL.gov).

## **O**

**Oils—**Fats that are liquid at room temperature. Oils come from many different plants and some fish. 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 made up of oil include mayonnaise, certain salad dressings, and soft (tub or squeeze) margarine with no *trans* fats. Oils are high in monounsaturated or polyunsaturated fats, and lower in saturated fats than solid fats. A few plant oils, termed tropical oils, including coconut oil, palm oil and palm kernel oil, are high in saturated fats and for nutritional purposes should be considered as solid fats. Partially hydrogenated oils that contain *trans* fats should also be considered as solid fats for nutritional purposes. (See Fats.)

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

## **P**

**Physical Activity—**Any bodily movement produced by the contraction of skeletal muscle that increases energy expenditure above a basal level; generally refers to the subset of physical activity that enhances health.

**Point-of-Purchase—**A place where sales are made. Various intervention strategies have been proposed to affect individuals’ purchasing decisions at the point of purchase, such as board or menu labeling with various amounts of nutrition information or shelf tags in grocery stores.

**Portion Size—**The amount of a food served or consumed in one eating

[1] Drink-equivalents are not intended to serve as a standard drink definition for regulatory purposes.

occasion. A portion is not a standardized amount, and the amount considered to be a portion is subjective and varies.

**Prehypertension**—See Hypertension.

**Protein**—One of the macronutrients; a major functional and structural component of every animal cell. Proteins are composed of amino acids, nine of which are indispensable (essential), meaning they cannot be synthesized by humans and therefore must be obtained from the diet. The quality of dietary protein is determined by its amino acid profile relative to human requirements as determined by the body's requirements for growth, maintenance, and repair. Protein quality is determined by two factors: digestibility and amino acid composition.

## R

**Refined Grains**—Grains and grain products with the bran and germ removed; any grain product that is not a whole-grain product. Many refined grains are low in fiber but enriched with thiamin, riboflavin, niacin, and iron, and fortified with folic acid.

## S

**Screen Time**—Time spent in front of a computer, television, video or computer game system, smart phone or tablet, or related device.

**Seafood**—Marine animals that live in the sea and in freshwater lakes and rivers. Seafood includes fish (e.g., salmon, tuna, trout, and tilapia) and shellfish (e.g., shrimp, crab, and oysters).

**Sedentary Behavior**—Any waking activity predominantly done while in a sitting or reclining posture. A behavior that expends energy at or minimally

above a person's resting level (between 1.0 and 1.5 metabolic equivalents) is considered sedentary behavior.

**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.)

**Shortfall Nutrient**—

See Nutrient of Concern.

**Social-Ecological Model**—

A framework developed to illustrate how sectors, settings, social and cultural norms, and individual factors converge to influence individual food and physical activity choices.

**Solid Fats**—Fats that are usually not liquid at room temperature. Solid fats are found in animal foods, except for seafood, and can be made from vegetable oils through hydrogenation. Some tropical oil plants, such as coconut and palm, are considered as solid fats due to their fatty acid composition. The fat component of milk and cream (butter) is solid at room temperature. Solid fats contain more saturated fats and/or *trans* fats than liquid oils (e.g., soybean, canola, and corn oils), with lower amounts of monounsaturated or polyunsaturated fatty acids. Common fats considered to be solid fats include: butter, beef fat (tallow), chicken fat, pork fat (lard), shortening, coconut oil, palm oil and palm kernel oil. Foods high in solid fats include: full-fat (regular) cheeses, creams, whole milk, ice cream, marbled cuts of meats, regular ground beef, bacon, sausages, poultry skin, and many baked

goods made with solid fats (such as cookies, crackers, doughnuts, pastries, and croissants). (See Fats and Nutrient Dense)

**Sugar-Sweetened Beverages**—

Liquids that are sweetened with various forms of added sugars. These beverages include, but are not limited to, soda (regular, not sugar-free), fruitades, sports drinks, energy drinks, sweetened waters, and coffee and tea beverages with added sugars. Also called calorically sweetened beverages. (See Added Sugars and Carbohydrates: Sugars.)

## U

**USDA Food Patterns**—A set of eating patterns that exemplify healthy eating, which all include recommended intakes for the five food groups (vegetables, fruits, grains, dairy, and protein foods) and for subgroups within the vegetables, grains, and protein foods groups. They also recommend an allowance for intake of oils. Patterns are provided at 12 calorie levels from 1,000 to 3,200 calories to meet varied calorie needs. The Healthy U.S.-Style Pattern is the base USDA Food Pattern.

- **Healthy U.S.-Style Eating Pattern**—A pattern that exemplifies healthy eating based on the types and proportions of foods Americans typically consume, but in nutrient-dense forms and appropriate amounts, designed to meet nutrient needs while not exceeding calorie requirements. It is substantially unchanged from the primary USDA Food Patterns of the *2010 Dietary Guidelines*. This pattern is evaluated in comparison to meeting Dietary Reference Intakes for essential nutrients and staying within limits set by the IOM or *Dietary Guidelines* for overconsumed food components. It aligns closely with the Dietary Approaches to Stop Hypertension

(DASH) Eating Plan, a guide for healthy eating based on the DASH diet which was tested in clinical trials. (See Nutrient Dense and DASH Eating Plan.)

- **Healthy Mediterranean-Style Eating Pattern**—A pattern that exemplifies healthy eating, designed by modifying the Healthy U.S.-Style Pattern to more closely reflect eating patterns that have been associated with positive health outcomes in studies of Mediterranean-Style diets. This pattern is evaluated based on its similarity to food group intakes of groups with positive health outcomes in these studies rather than on meeting specified nutrient standards. It differs from the Healthy U.S.-Style Pattern in that it includes more fruits and seafood and less dairy.
- **Healthy Vegetarian Eating Pattern**—A pattern that exemplifies healthy eating, designed by modifying the Healthy U.S.-Style Pattern to more closely reflect eating patterns reported by self-identified vegetarians. This pattern is evaluated in comparison to meeting Dietary Reference Intakes for essential nutrients and staying within limits set by the IOM or *Dietary Guidelines* for overconsumed food components. It differs from the Healthy U.S.-Style Pattern in that it includes more legumes, soy products, nuts and seeds, and whole grains, and no meat, poultry, or seafood.

## V

**Variety**—A diverse assortment of foods and beverages across and within all food groups and subgroups selected to fulfill the recommended amounts without exceeding the limits for calories and other dietary components. For example, in the vegetables food group, selecting a variety of foods could be accomplished

over the course of a week by choosing from all subgroups, including dark green, red and orange, legumes (beans and peas), starchy, and other vegetables.

## W

**Whole Fruits**—All fresh, frozen, canned, and dried fruit but not fruit juice.

**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 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 sources of dietary fiber.

# Appendix 14.

## Food Safety Principles & Guidance

An important part of healthy eating is keeping foods safe. It is estimated that foodborne illness affects about 1 in 6 Americans (or 48 million people), leading to 128,000 hospitalizations and 3,000 deaths every year.<sup>[1]</sup> Food may be handled numerous times as it moves from the farm to homes. Individuals in their own homes can reduce contaminants and help 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!<sup>®</sup>, a national food safety education campaign aimed at consumers.

### 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 important to prevent 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. Hand sanitizers are not as effective when hands are visibly dirty or greasy.

#### Wash Hands With Soap & Water

- Wet hands with clean running water (warm or cold), turn off tap, and apply soap.
- Rub hands together to make lather and scrub the back of hands, between fingers, and under nails for at least 20 seconds. If you need a timer you can hum the “happy birthday” song from beginning to end twice.
- Rinse hands well under running water.
- Dry hands using a clean towel or air dry them.

### 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. All kitchen 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 & Fruits.** All produce, regardless of where it was grown or purchased, should be thoroughly rinsed. However, any precut packaged items, like lettuce or baby carrots, are labeled as prewashed and ready-to-eat. These products can be eaten without further rinsing.

[1] <http://www.cdc.gov/foodborneburden/>. Accessed June 1, 2015.

- Rinse fresh vegetables and fruits under running water just before eating, cutting, or cooking.
- Do not use soap or detergent to clean produce; 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.
- Scrub the skin or rind of 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, & 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 & 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 & Chill

Seafood, meat, poultry, and egg dishes should be cooked to the recommended safe minimum internal temperature to destroy harmful microbes (see **Table A14-1**). 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 leak proof 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 A14-1.**

## Recommended Safe Minimum Internal Temperatures

Consumers should cook foods to the minimum internal temperatures shown below. The temperature should be measured with a clean food thermometer before removing meat from the heat source. For safety and quality, allow meat to rest for at least 3 minutes before carving or consuming. For reasons of personal preference, consumers may choose to cook meat to higher temperatures.

Food	Degrees Fahrenheit
<b>Ground Meat &amp; Meat Mixtures</b>	
Beef, Pork, Veal, Lamb	160
Turkey, Chicken	165
<b>Fresh Beef, Pork, Veal, Lamb</b>	
Steaks, Roasts, Chops	145
<b>Poultry</b>	
Chicken & Turkey, Whole	165
Poultry Breasts, Roasts	165
Poultry Thighs, Wings	165
Duck & Goose	165
Stuffing (Cooked Alone or in Bird)	165
<b>Fresh Pork</b>	160
<b>Ham</b>	
Fresh Ham (Raw)	145
Pre-cooked Ham (to Reheat)	140
<b>Eggs &amp; Egg Dishes</b>	
Eggs	Cook until yolk and white are firm.
Egg Dishes	160
<b>Fresh Seafood</b>	
Finfish	145; Cook fish until it is opaque (milky white) and flakes with a fork.
Shellfish	Cook shrimp, lobster, and scallops until they reach their appropriate color. The flesh of shrimp and lobster should be an opaque (milky white) color. Scallops should be opaque (milky white) and firm. Cook clams, mussels, and oysters until their shells open. This means that they are done. Throw away the ones that didn't open. Shucked clams and shucked oysters are fully cooked when they are opaque (milky white) and firm.
<b>Leftovers &amp; Casseroles</b>	165

## Risky Eating Behaviors

Harmful bacteria, viruses, and parasites usually do not 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), dairy (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 dairy products are the best ways to reduce the risk of foodborne illness from animal products. Always use pasteurized eggs or egg products when preparing foods that are made with raw eggs (e.g., eggnog, smoothies and other drinks, hollandaise sauce, ice cream, and uncooked cookie dough). 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 of Foodborne Illness

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 containing 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](http://www.foodsafety.gov)

Fight BAC!®: [www.fightbac.org](http://www.fightbac.org)

Be Food Safe: [www.befoodsafe.gov](http://www.befoodsafe.gov)

Is It Done Yet?: [www.isitdoneyet.gov](http://www.isitdoneyet.gov)

Thermy™: <http://www.fsis.usda.gov/wps/portal/ffsis/topics/food-safety-education/teach-others/ffsis-educational-campaigns/thermy>

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](mailto:mph hotline.fsis@usda.gov)
- Visit "Ask Karen," FSIS's Web-based automated response system at [www.fsis.usda.gov](http://www.fsis.usda.gov)



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