

Introduction



Every 5 years since 1980, a new edition of the *Dietary Guidelines for Americans* has been published.

Its goal is to make recommendations about the components of a healthy and nutritionally adequate diet to help promote health and prevent chronic disease for current and future generations. Although many of its recommendations have remained relatively consistent over time, the *Dietary Guidelines* has evolved as scientific knowledge has grown. These advancements have provided a greater understanding of, and focus on, the importance of healthy eating patterns as a whole, and how foods and beverages act synergistically to affect health. Therefore, healthy eating patterns is a focus of the *2015-2020 Dietary Guidelines*.



Nutrition & Health Are Closely Related

Over the past century, essential nutrient deficiencies have dramatically decreased, many infectious diseases have been conquered, and the majority of the U.S. population can now anticipate a long and productive life. However, as infectious disease rates have dropped, the rates of noncommunicable diseases—specifically, chronic diet-related diseases—have risen, due in part to changes in lifestyle behaviors. A history of poor eating and physical activity patterns have a cumulative effect and have contributed to significant nutrition- and physical activity-related health challenges that now face the U.S. population. About half of all American adults—117 million individuals—have one or more preventable chronic diseases, many of which are related to poor quality eating patterns and physical inactivity. These

include cardiovascular disease, high blood pressure, type 2 diabetes, some cancers, and poor bone health. More than two-thirds of adults and nearly one-third of children and youth are overweight or obese. These high rates of overweight and obesity and chronic disease have persisted for more than two decades and come not only with increased health risks, but also at high cost. In 2008, the medical costs associated with obesity were estimated to be \$147 billion. In 2012, the total estimated cost of diagnosed diabetes was \$245 billion, including \$176 billion in direct medical costs and \$69 billion in decreased productivity.^[1]

Table I-1 describes the high rates of nutrition- and physical activity-related chronic diseases and their related risk factors. These diseases affect all ages—children, adolescents, adults, and older adults—though rates vary by several factors, including race/ethnicity, income status, and body weight status.

Table I-1.

Facts About Nutrition & Physical Activity-Related Health Conditions in the United States

Health Condition	Facts
Overweight & Obesity	<ul style="list-style-type: none"> For more than 25 years, more than half of the adult population has been overweight or obese. Obesity is most prevalent in those ages 40 years and older and in African American adults, and is least prevalent in adults with highest incomes. Since the early 2000s, abdominal obesity^[a] has been present in about half of U.S. adults of all ages. Prevalence is higher with increasing age and varies by sex and race/ethnicity. In 2009-2012, 65% of adult females and 73% of adult males were overweight or obese. In 2009-2012, nearly one in three youth ages 2 to 19 years were overweight or obese.

[1] For more information, see: Centers for Disease Control and Prevention (CDC). Chronic Disease Overview. August 26, 2015. Available at <http://www.cdc.gov/chronicdisease/overview/>. Accessed November 3, 2015.

Table I-1. (continued...)

Facts About Nutrition & Physical Activity-Related Health Conditions in the United States

Health Condition	Facts
Cardiovascular Disease (CVD) & Risk Factors: Coronary Heart Disease Stroke Hypertension High Total Blood Cholesterol	<ul style="list-style-type: none"> • In 2010, CVD affected about 84 million men and women ages 20 years and older (35% of the population). • In 2007-2010, about 50% of adults who were normal weight, and nearly three-fourths of those who were overweight or obese, had at least one cardiometabolic risk factor (i.e., high blood pressure, abnormal blood lipids, smoking, or diabetes). • Rates of hypertension, abnormal blood lipid profiles, and diabetes are higher in adults with abdominal obesity. • In 2009-2012, almost 56% of adults ages 18 years and older had either prehypertension (27%) or hypertension (29%).^[a] • In 2009-2012, rates of hypertension among adults were highest in African Americans (41%) and in adults ages 65 years and older (69%). • In 2009-2012, 10% of children ages 8 to 17 years had either borderline hypertension (8%) or hypertension (2%).^[c] • In 2009-2012, 100 million adults ages 20 years or older (53%) had total cholesterol levels ≥ 200 mg/dL; almost 31 million had levels ≥ 240 mg/dL. • In 2011-2012, 8% of children ages 8 to 17 years had total cholesterol levels ≥ 200 mg/dL.
Diabetes	<ul style="list-style-type: none"> • In 2012, the prevalence of diabetes (type 1 plus type 2) was 14% for men and 11% for women ages 20 years and older (more than 90% of total diabetes in adults is type 2). • Among children with type 2 diabetes, about 80% were obese.
Cancer^[d]: Breast Cancer Colorectal Cancer	<ul style="list-style-type: none"> • Breast cancer is the third leading cause of cancer death in the United States. • In 2012, an estimated 3 million women had a history of breast cancer. • Colorectal cancer is the second leading cause of cancer death in the United States. • In 2012, an estimated 1.2 million adult men and women had a history of colorectal cancer.
Bone Health	<ul style="list-style-type: none"> • A higher percent of women are affected by osteoporosis (15%) and low bone mass (51%) than men (about 4% and 35%, respectively). • In 2005-2010, approximately 10 million (10%) adults ages 50 years and older had osteoporosis and 43 million (44%) had low bone mass.

[a] Abdominal obesity, as measured by waist circumference, is defined as a waist circumference of >102 centimeters in men and >88 centimeters in women.

[b] For adults, prehypertension was defined as a systolic blood pressure of 120-139 mm mercury (Hg) or diastolic blood pressure of 80-89 mm Hg among those who were not currently being treated for hypertension. Hypertension was defined as systolic blood pressure (SBP) ≥ 140 mm Hg, diastolic blood pressure (DBP) ≥ 90 mm Hg, or taking antihypertensive medication.

[c] For children, borderline hypertension was defined as systolic or diastolic blood pressure at the 90th percentile or higher but lower than the 95th percentile or as blood pressure levels of 120/80 mm Hg or higher (but less than the 95th percentile). Hypertension was defined as a systolic or diastolic blood pressure at the 95th percentile or higher.

[d] The types of cancer included here are not a complete list of all diet- and physical activity-related cancers.

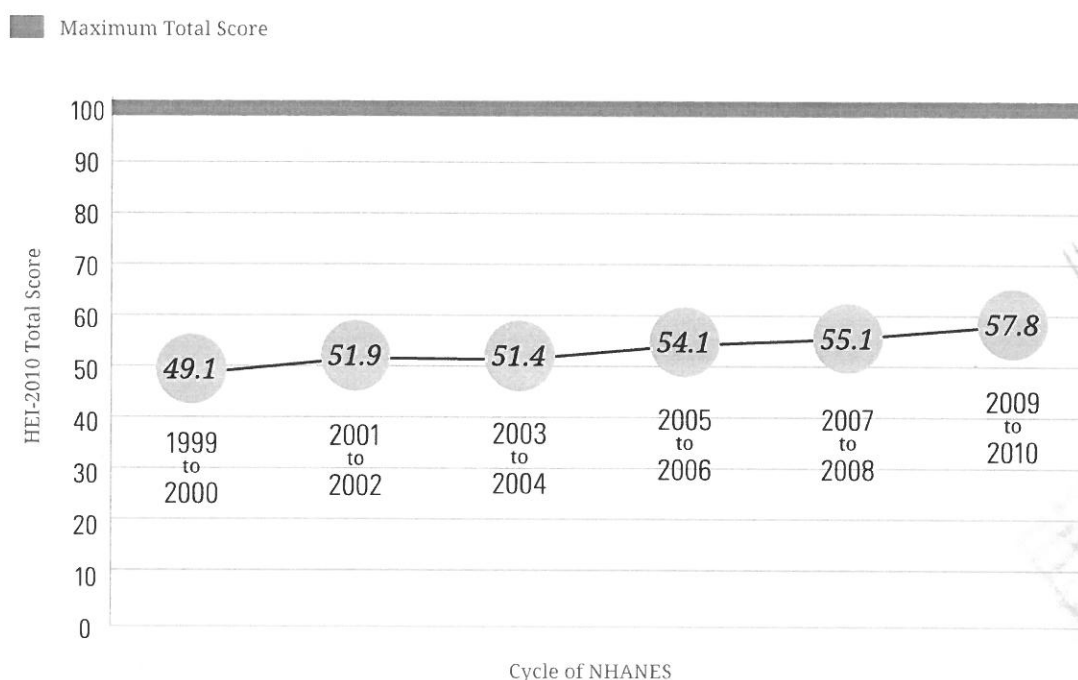
Concurrent with these diet-related health problems persisting at high levels, trends in food intake over time show that, at the population level, Americans are not consuming healthy eating patterns. For example, the prevalence of overweight and obesity has risen and remained high for the past 25 years, while Healthy Eating Index (HEI) scores, a measure of how food

choices align with the *Dietary Guidelines*, have remained low (Figure I-1). Similarly, physical activity levels have remained low over time (Figure I-2). The continued high rates of overweight and obesity and low levels of progress toward meeting *Dietary Guidelines* recommendations highlight the need to improve dietary and physical activity education and behaviors across

the U.S. population. Progress in reversing these trends will require comprehensive and coordinated strategies, built on the *Dietary Guidelines* as the scientific foundation, that can be maintained over time. The *Dietary Guidelines* is an important part of a complex and multifaceted solution to promoting health and helping to reduce the risk of chronic disease.

Figure I-1.

Adherence of the U.S. Population Ages 2 Years and Older to the 2010 Dietary Guidelines, as Measured by Average Total Healthy Eating Index-2010 (HEI-2010) Scores

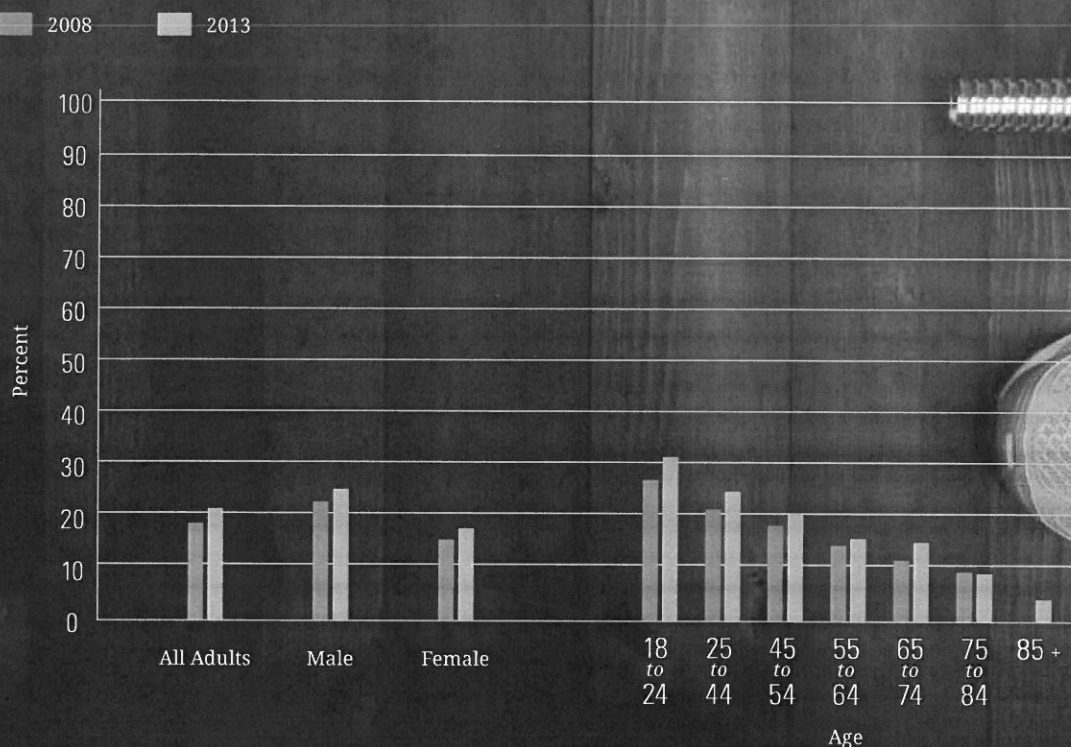


DATA SOURCES: Analyses of What We Eat in America, National Health and Nutrition Examination Survey (NHANES) data from 1999-2000 through 2009-2010.

NOTE: HEI-2010 total scores are out of 100 possible points. A score of 100 indicates that recommendations on average were met or exceeded. A higher total score indicates a higher quality diet.

Figure I-2.

Percentage of Adults Meeting the *Physical Activity Guidelines* (Aerobic & Muscle-Strengthening Recommendations)



DATA SOURCES: Analyses of the National Health Interview Survey, 2008 and 2013.

Healthy People 2020 PA-2.4. Increase the proportion of adults who meet the objectives for aerobic physical activity and for muscle strengthening activity. Washington, DC: U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion, June 3, 2015. Available at: <http://www.healthypeople.gov/2020/data-search/Search-the-Data?nid=5072>.

The *Dietary Guidelines* for Americans: What It Is, What It Is Not

The main purpose of the *Dietary Guidelines* is to inform the development of Federal food, nutrition, and health policies and programs. The primary audiences are policymakers, as well as nutrition and health professionals, not the general public. The *Dietary Guidelines* is a critical tool for professionals to help

Americans make healthy choices in their daily lives to help prevent chronic disease and enjoy a healthy diet. It serves as the evidence-based foundation for nutrition education materials that are developed by the Federal Government for the public. For example, Federal dietary guidance publications are required by law to be consistent with the *Dietary Guidelines*. It also is used to inform USDA and HHS food programs, such as USDA's National School Lunch Program and School Breakfast Program, which feed more than 30 million children each

school day, and the Special Supplemental Nutrition Program for Women, Infants and Children, which uses the *Dietary Guidelines* as the scientific underpinning for its food packages and nutrition education program with about 8 million beneficiaries. In HHS, the Administration on Aging implements the *Dietary Guidelines* through the Older Americans Act Nutrition Services programs (i.e., nutrition programs for older adults), with about 5,000 community-based nutrition service providers who together serve more



The Importance of Physical Activity in a Healthy Lifestyle

Although the primary focus of the *Dietary Guidelines* is on nutrition recommendations, physical activity is mentioned throughout this edition because of its critical and complementary role in promoting good health and preventing disease, including many diet-related chronic diseases. The following chapters note the role of physical activity in improving health and reducing chronic disease risk; describe the gap between current physical activity recommendations and reported levels of activity; and discuss how the settings in which people live, learn, work, and play can be enhanced to encourage increased physical activity. For more information, see the *Physical Activity Guidelines for Americans* at www.health.gov/paguidelines.

than 900,000 meals a day across the United States. Other Departments, such as the Department of Defense and the Department of Veterans Affairs, also use the *Dietary Guidelines* to inform programs. The *Dietary Guidelines* also may be used to inform the development of programs, policies, and communication by audiences other than the document's principal audiences. These audiences, who share the common goal of serving the general public, include businesses, schools, community groups, media, the food industry, and State and local governments.

The *2015-2020 Dietary Guidelines* translates science into succinct, food-based guidance that can be relied upon to help Americans choose foods that provide a healthy and enjoyable diet. Its recommendations are ultimately intended to help individuals improve and maintain overall health and reduce the risk of chronic disease—its focus is disease prevention. The *Dietary Guidelines* is not intended to be used to treat disease. Regardless of an individual's current health

status, almost all people in the United States could benefit from shifting choices to better support healthy eating patterns. Thus, the *Dietary Guidelines* may be used or adapted by medical and nutrition professionals to encourage healthy eating patterns to patients.

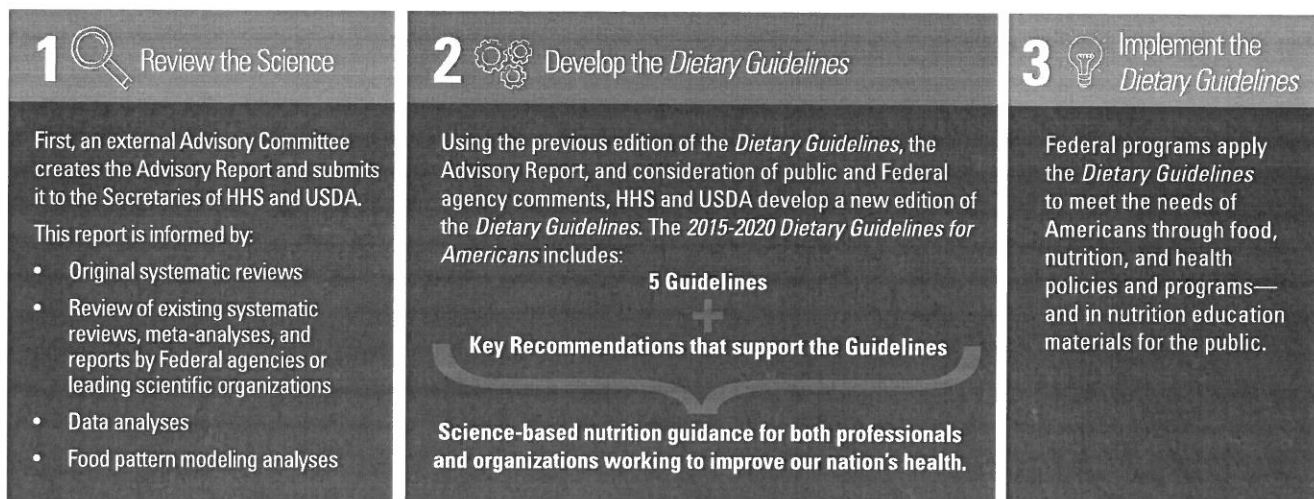
Developing the *Dietary Guidelines for Americans*

A greater understanding of the relationships between nutrition and human health has and will continue to evolve over time. Creating each edition of the *Dietary Guidelines* is a joint effort of HHS and USDA. A new edition is published every 5 years to reflect advancements in scientific knowledge and translate the science current at the time into sound food-based guidance to promote health in the United States.^[2] The process to develop the *Dietary Guidelines* has also evolved and includes three stages.

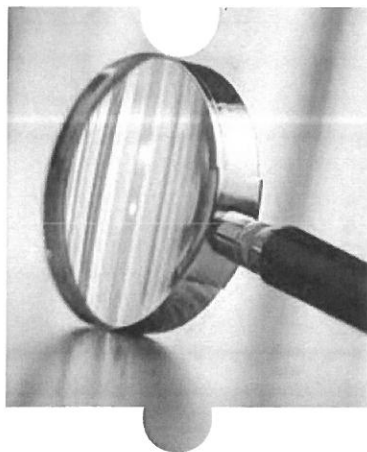
Figure I-3.

Science, Policy, Implementation: Developing the *2015-2020 Dietary Guidelines for Americans*

To develop each edition of the *Dietary Guidelines for Americans*, HHS and USDA collaborate during a 3-stage process.



[2] Public Law 101-445, Title III, Section 301, 7 U.S.C. 5341 et seq. requires that the U.S. Departments of Health and Human Services and of Agriculture publish a new edition of the *Dietary Guidelines for Americans* every 5 years.



Stage 1: Review of Current Scientific Evidence

In the first stage, the Secretaries of HHS and of USDA appoint an external Dietary Guidelines Advisory Committee (Advisory Committee). The use of a Federal advisory committee is to ensure the Federal Government is seeking sound external scientific advice to inform policy decisions. Nominations from the public were sought for candidates to serve on the 2015 Advisory Committee. The 15 members of the 2015 Advisory Committee are prestigious researchers in the fields of nutrition, health, and medicine. Their role was to provide advice and recommendations to the Federal Government on the current state of scientific evidence on nutrition and health. Per Federal Advisory Committee Act rules, Advisory Committee members were thoroughly vetted for conflicts of interest before they were appointed to their positions and were required to submit a financial disclosure form annually.

The 2015 Advisory Committee was charged with reviewing the 2010 edition of the *Dietary Guidelines* to determine the topics for which new scientific evidence was likely to be available, and

to review that evidence to inform the development of the 2015-2020 edition. The Advisory Committee was asked to place primary emphasis on evidence published since the 2010 Advisory Committee completed its work and on evidence to support the development of food-based recommendations that are of public health importance for Americans ages 2 years and older. It met in public meetings to discuss its findings and develop its recommendations. The public was invited to submit written comments to the Advisory Committee throughout the entirety of its work as well as oral comments at a public meeting.

The 2015 Advisory Committee used four state-of-the-art approaches to review and analyze the available evidence: original systematic reviews; existing systematic reviews, meta-analyses, and reports by Federal agencies or leading scientific organizations; data analyses; and food pattern modeling analyses. Most of its conclusion statements on nutrition and health were informed by systematic reviews, which are a gold standard for informing clinical practice guidelines and public health policies worldwide. The Dietary Reference Intakes (DRIs), as set by the Institute of Medicine (IOM), also serve as a source of evidence for the Advisory Report and the *Dietary Guidelines*. This multifaceted approach allowed the Advisory Committee to ask and answer scientific questions about the relationship of diet and health to systematically, objectively, and transparently synthesize research findings and to limit bias in its evaluation of the totality of the evidence for the topics it reviewed. This approach also allowed one or more methods to be used that were best suited to comprehensively answer each question. These methods are described here.

Original Systematic Reviews.

The Advisory Committee used this approach to systematically search the scientific literature for relevant articles; assess the methodologic rigor of each included article; and summarize, analyze, and grade the evidence presented in the articles.

For systematic reviews, all studies published by the time the literature search was conducted were screened for inclusion to ensure all available evidence was reviewed in a systematic manner. To preserve the integrity of the process, individual studies that were published after the systematic review was concluded were not included on an ad hoc basis. Recent studies that were not included in the 2015 Advisory Committee's review will be available for consideration during the development of the next edition of the *Dietary Guidelines*.

The USDA Nutrition Evidence Library (NEL) uses a systematic review methodology designed to analyze food, nutrition, and public health science. The medical field has used systematic reviews as the standard practice for more than 25 years to inform the development of national guidelines for health professionals.

Review of Existing Systematic Reviews, Meta-Analyses, and Reports by Federal Agencies or Leading Scientific Organizations.

The Advisory Committee used this method when a high-quality existing review or report had already addressed a question under consideration. The approach involved applying a systematic process to assess the quality of the existing review or report and to ensure that it presented a comprehensive review of the Advisory Committee's question of interest.

At the time that the NEL was created by USDA for use in informing the *2010 Dietary Guidelines*, it was among the first to apply the systematic review methodology in the field of nutrition. Thus, very few *existing* nutrition-focused systematic reviews were available for the 2010 Advisory Committee to use. Since that time, systematic reviews in the nutrition field have become common practice. Therefore, unlike the 2010 Advisory Committee, the 2015 Advisory Committee was able to use *existing* reviews to answer many of its research questions, preventing duplication of effort. Existing systematic reviews underwent quality assessment to ensure they were just as rigorous and were held to the same high standards as the systematic reviews conducted through the NEL.



Data Analyses. The Advisory Committee used national data from Federal agencies to answer questions about chronic disease prevalence rates; food and nutrient intakes of the U.S. population across age, sex, and other demographic characteristics; and nutrient content of foods.

For other questions, a new analysis from existing data sets was requested from the appropriate Federal agency to provide the answer to the question posed. Data analyses tailored to a specific question helped inform the Advisory Committee's recommendations.



Food Pattern Modeling Analyses. The Advisory Committee used this method to estimate the effect on diet quality of possible changes in types or amounts of foods in the USDA Food Patterns that it was considering recommending. The USDA

Food Patterns describe the types and amounts of foods^[3] to eat that can provide a healthy and nutritionally adequate diet. The Food Patterns aim to meet the DRIs while taking into consideration current intakes in the United States and systematic reviews of scientific research. They were developed to demonstrate how *Dietary Guidelines* recommendations can be met within an overall eating pattern.

Food pattern modeling analyses guided by the Advisory Committee provided objective information on the potential nutritional effects of recommending an eating pattern with specific changes, such as selecting foods to increase vitamin D intake or modifying the pattern based on studies of Mediterranean diets. The results of the modeling analyses informed the Committee's recommendations on specific topics, including keeping recommendations grounded within the structure of an overall healthy eating pattern.

As part of its assessment of evidence on diet and health, the Committee also formulated recommendations for future research. These research recommendations reflect an acknowledgment that knowledge about nutrition, diet, and health associations continues to evolve and that new findings build on and enhance existing evidence.

The Advisory Committee's work culminated in the *Scientific Report of the 2015 Dietary Guidelines Advisory Committee*, which was submitted to the Secretaries of HHS and of USDA and made available for public and agency comment in February 2015. For more information about the Advisory Committee and its review process and Advisory Report, visit <http://health.gov/dietaryguidelines/>.



Stage 2: Development of the *Dietary Guidelines* for Americans

In the second stage, HHS and USDA develop the policy document *Dietary Guidelines*, applying several process steps to promote scientific rigor. Similar to previous editions, this 8th edition builds upon the preceding edition, with the scientific justification for revisions informed by the Advisory Committee's report and consideration of public and Federal agency comments.

As previously mentioned, the public is invited to submit written comments to the Advisory Committee throughout the entirety of its work as well as oral comments at a public meeting. In addition, after the Advisory Committee's report was submitted to the Secretaries, the public is again invited to submit written comments to the Federal Government on the Advisory Committee's final report as well as oral comments at a public meeting. Comments on the Advisory Committee's report are considered in the development of the policy document, placing emphasis on those with scientific justification while ensuring that the policy is based on the totality of the evidence and not on individual studies.

[3] If not specified explicitly, references to "foods" refer to "foods and beverages."

Federal agencies within HHS and USDA have extensive, broad scientific expertise in nutrition and health, as well as experts who specialize in unique aspects of nutrition and health. Federal experts validate the rigor of the policy document in multiple ways. After the Advisory Committee's report is complete, Federal agencies provide comments regarding the applicability and rigor of the report for consideration in translating the science into policy. Those who update the policy document are Federal experts with specialized knowledge in the evidence under consideration and its policy applications within the Federal Government. These policy writers include nutrition scientists,

Looking Ahead to 2020—Expanding Guidance

Traditionally, the *Dietary Guidelines* has focused on individuals ages 2 and older in the United States, including those who are at increased risk of chronic disease. This is the focus of the recommendations in this edition as well. However, the relationship of early nutrition to health outcomes throughout the lifespan has grown as a public health interest, and it is expected that evidence will become sufficiently robust to support additional dietary guidance in the future. As mandated by Congress in the Agricultural Act of 2014, also known as the Farm Bill, the *Dietary Guidelines* will expand to include infants and toddlers (from birth to age 2), as well as additional guidance for women who are pregnant, beginning with the 2020-2025 edition.

policy experts, and communications specialists. Consultation with other Federal experts occurs throughout the policy development process.

A peer-review step also is completed, in which nonfederal experts independently conduct a confidential review of the draft policy document for clarity and technical accuracy of the translation of the evidence from the Advisory Report into policy language. In addition, extensive review and clearance of the policy document also occurs by Federal experts within the agencies of both Departments. The Federal clearance of the policy document culminates with review and approval by the Secretaries of HHS and of USDA.

The *2015-2020 Dietary Guidelines* is built around five Guidelines with accompanying Key Recommendations that provide detail on the elements of healthy eating patterns. The Key Recommendations represent the preponderance of the most current scientific evidence. Emphasis is placed on topics with the strongest evidence or public health need, indicating a low likelihood that new or additional evidence would greatly change the recommendation. Ultimately, the *Dietary Guidelines* aims to represent the current science on diet and health, provide food-based guidance that meets nutrient needs, and address areas of particular public health importance in the United States.

Describing the Strength of Evidence Supporting Recommendations

Considerable evidence demonstrates that a healthy diet and regular physical activity can help improve health and reduce the risk of certain chronic diseases. Throughout, the 2015-2020 edition of the *Dietary Guidelines* notes the strength of evidence supporting its recommendations.

This information is provided to show how much evidence is available and how consistent the evidence is for a particular statement or recommendation:

Strong evidence reflects a large, high-quality, and/or consistent body of evidence. There is a high level of certainty that the evidence is relevant to the population of interest, and additional studies are unlikely to change conclusions derived from this evidence. Topics that are supported by strong evidence often lead to policy recommendations with the greatest emphasis because of the confidence generated by the evidence.

Moderate evidence reflects sufficient evidence to draw conclusions. The level of certainty may be restricted by certain limitations in the evidence, such as the amount of evidence available, inconsistencies in findings, or limitations in methodology or generalizability. Topics that are supported by moderate evidence can support recommendations of varying emphasis, including complementing those with a strong evidence base.

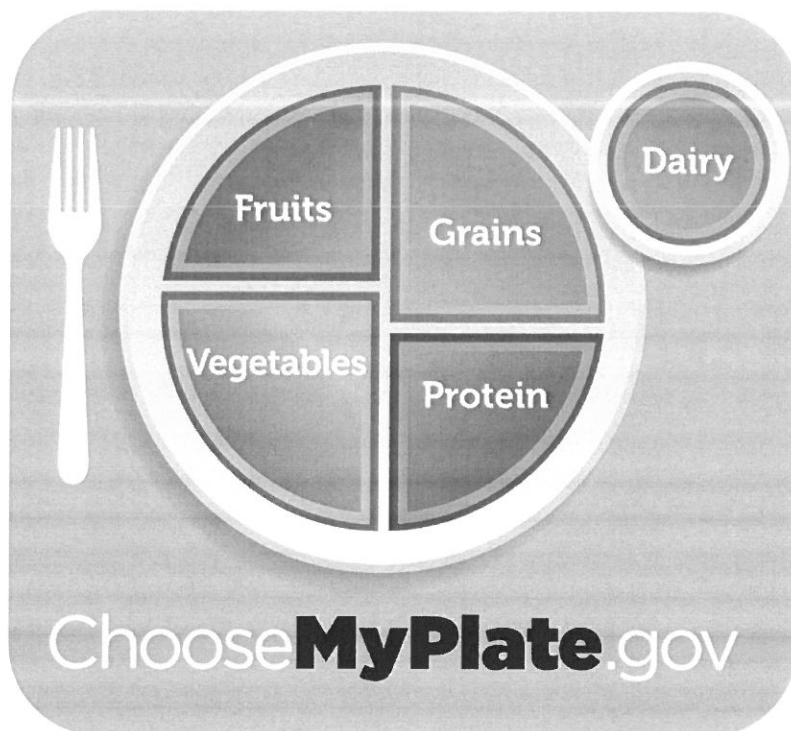
Limited evidence reflects either a small number of studies, studies of weak design or with inconsistent results, and/or limitations on the generalizability of the findings. When only limited evidence is available on a topic, it is insufficient to inform Key Recommendations. However, policy statements are sometimes useful for topics that have limited supporting evidence, such as when the evidence for those topics reinforces recommendations on related topics that have a stronger evidence base, to clarify that it is not possible to make a recommendation, or to identify an area of emerging research.

The evidence described in the *Dietary Guidelines* also reflects an understanding of the difference between *association*

and *causation*. Two factors may be associated; however, this association does not mean that one factor necessarily causes the other. Often, several different factors may contribute to a health outcome. In some cases, scientific conclusions are based on relationships or associations because studies examining cause and effect are not available.

Stage 3: Implementing the *Dietary Guidelines* for Americans

In the third and final stage, the Federal Government implements the recommendations in the *Dietary Guidelines*. Federal programs apply the *Dietary Guidelines* to meet the needs of Americans and specific population groups through food, nutrition, and health policies and programs and in nutrition education materials for the public. Although the *Dietary Guidelines* provides the foundation for Federal nutrition and health initiatives, it is each Federal agency's purview and responsibility to determine how best to implement the *Dietary Guidelines* to serve its specific audiences. For example, one way USDA and other Federal agencies can implement the *Dietary Guidelines* is through MyPlate, which serves as a reminder to build healthy eating patterns by making healthy choices across the food groups. Both Federal and nonfederal programs may use MyPlate as a resource to help Americans make shifts in their daily food and beverage choices to align with the *Dietary Guidelines*. For more information about *Dietary Guidelines* implementation for the public through MyPlate, see Chapter 3. Everyone Has a Role To Play in Supporting Healthy Eating Patterns and Figure 3-2.



Implementation of the *Dietary Guidelines* Through MyPlate

MyPlate is a Federal symbol that serves as a reminder to build healthy eating patterns by making healthy choices across the food groups. For more information about *Dietary Guidelines* implementation for the public through MyPlate, see Chapter 3 and Figure 3-2.

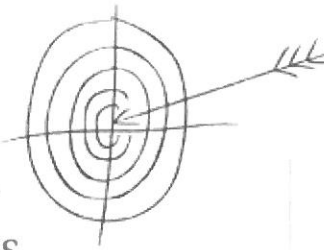
The *Dietary Guidelines* recognizes that many factors influence the diet and physical activity choices individuals make. The United States is a highly diverse nation, with people from many backgrounds, cultures, and traditions, and with varied personal preferences. It also acknowledges that income and life circumstances play a major role in food and physical activity decisions. Significant health and food access disparities exist, with nearly 15 percent of U.S. households unable to acquire adequate food to meet

their needs because of insufficient income or other resources for food.^[4] These factors—along with the settings in which people live, learn, work, and play—can have a profound impact on their choices.

In addition to implementation by the Federal Government and as discussed in Chapter 3, ample opportunities exist for many other sectors of society to implement the *Dietary Guidelines* in the multiple settings they influence, from home to school to work to community.

[4] U.S. Department of Agriculture, Economic Research Service. Food security in the U.S. Key Statistics and Graphics. [Updated September 8, 2015.] Available at: <http://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/key-statistics-graphics.aspx>. Accessed June 10, 2015.

Aligning With the *Dietary Guidelines for Americans*: What Does This Mean in Practice?



As introduced here and described in detail in the following Chapters, the *Dietary Guidelines* describes adaptable eating patterns that can help promote health and reduce risk of chronic disease across the lifespan. It presents an array of options that can be tailored to income levels and that can accommodate cultural, ethnic, traditional, and personal preferences.

All segments of society—individuals, families, communities, businesses and industries, organizations, governments, and others—can and should “align with the *Dietary Guidelines*.” In practice, the goal is to take the following actions in their entirety and maintain them over time:

- Make food and beverage choices that meet the Key Recommendations for food groups, subgroups, nutrients, and other components in combination to contribute to overall healthy eating patterns.
- Meet nutritional needs primarily through foods. Foods provide an array of nutrients and other components that are associated with beneficial effects on health. Individuals should aim to consume a diet that achieves the most recent DRIs, which consider many factors, including the individual’s age, life stage, and sex. 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 or that are of particular concern for specific population groups.
- Establish and maintain settings (e.g., homes, schools, worksites, restaurants, stores) that support and encourage food and beverage choices that help individuals make shifts to meet the Key Recommendations for healthy eating patterns.
- Ensure that food is kept safe to eat by using the principles of clean, separate, cook, and chill.^[5]
- Establish and maintain sectors and settings that support and encourage regular physical activity as part of a healthy lifestyle.

All of these actions are important individually, but they are intended to be taken together. Aligning with the *Dietary Guidelines* by taking these actions is powerful because it can help change social norms and values and ultimately support a new prevention and healthy lifestyle paradigm that will benefit the U.S. population today as well as future generations.

[5] For more information on this action, see Appendix 14, Food Safety Principles and Guidance.

A Roadmap to the 2015-2020 Edition of the *Dietary Guidelines for Americans*

People do not eat foods and nutrients in isolation but in combination, and this combination forms an overall eating pattern. A growing body of research has examined the relationship between overall eating patterns, health, and risk of chronic disease, and findings on these relationships are sufficiently well established to support dietary guidance. As a result, eating patterns and their food and nutrient characteristics are a primary emphasis of the recommendations in this 2015-2020 edition of the *Dietary Guidelines*. This edition of the *Dietary Guidelines* consists of this Introduction, three chapters, and 14 appendixes:

- **Chapter 1. Key Elements of Healthy Eating Patterns** discusses the relationship of diet and physical activity to health over the lifespan and explains the principles of a healthy eating pattern. The chapter provides quantitative recommendations for a Healthy U.S.-Style Eating Pattern at the 2,000-calorie level as an example to show how individuals can follow these principles and recommendations. It also includes two variations at the same 2,000-calorie level as examples of other healthy eating patterns individuals can choose based on personal preference: the Healthy Mediterranean-Style Eating Pattern and the Healthy Vegetarian Eating Pattern. Chapter 1 focuses on the first three Guidelines and the Key Recommendations.

- **Chapter 2. Shifts Needed To Align With Healthy Eating Patterns**

compares current food and nutrient intakes in the United States to recommendations and describes the shifts in dietary choices that are needed to align current intakes with recommendations. Chapter 2 focuses on the fourth Guideline.

- **Chapter 3. Everyone Has a Role in Supporting Healthy Eating**

Patterns explains how all individuals and segments of society in the

United States have an important role to play in supporting healthy eating and physical activity choices. It outlines a variety of strategies and actions that align with the *Dietary Guidelines*. Chapter 3 focuses on the fifth Guideline.

- **The Appendixes** provide additional information to support the content of the chapters, including recommendations from the *Physical Activity Guidelines for Americans*; calorie needs by age, sex, and level

of physical activity; the base Healthy U.S.-Style Eating Pattern; two other examples of healthy eating patterns: the Healthy Mediterranean-Style and Healthy Vegetarian Eating Patterns; a glossary of terms; and nutritional goals for various age-sex groups. The Appendixes also include a list of selected Government resources on diet and physical activity; additional information on alcohol; lists of food sources of nutrients of public health concern; and food safety principles and guidance.

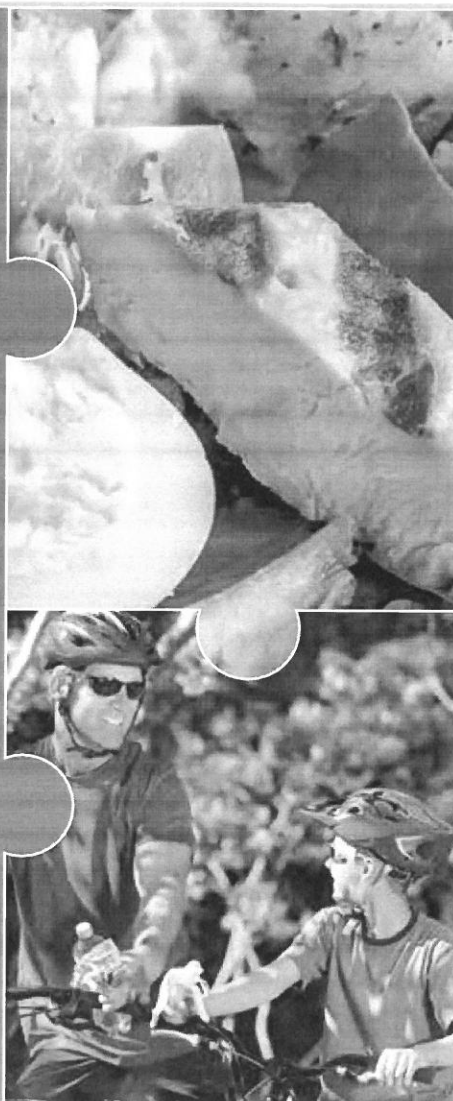
Terms To Know

Several terms are used to operationalize the principles and recommendations of the *2015-2020 Dietary Guidelines*. These terms are essential to understanding the concepts discussed herein:

Eating Pattern—The combination of foods and beverages that constitute an individual's complete dietary intake over time. Often referred to as a "dietary pattern," an eating pattern may describe a customary way of eating or a combination of foods recommended for consumption. Specific examples include USDA Food Patterns and the Dietary Approaches to Stop Hypertension (DASH) Eating Plan.

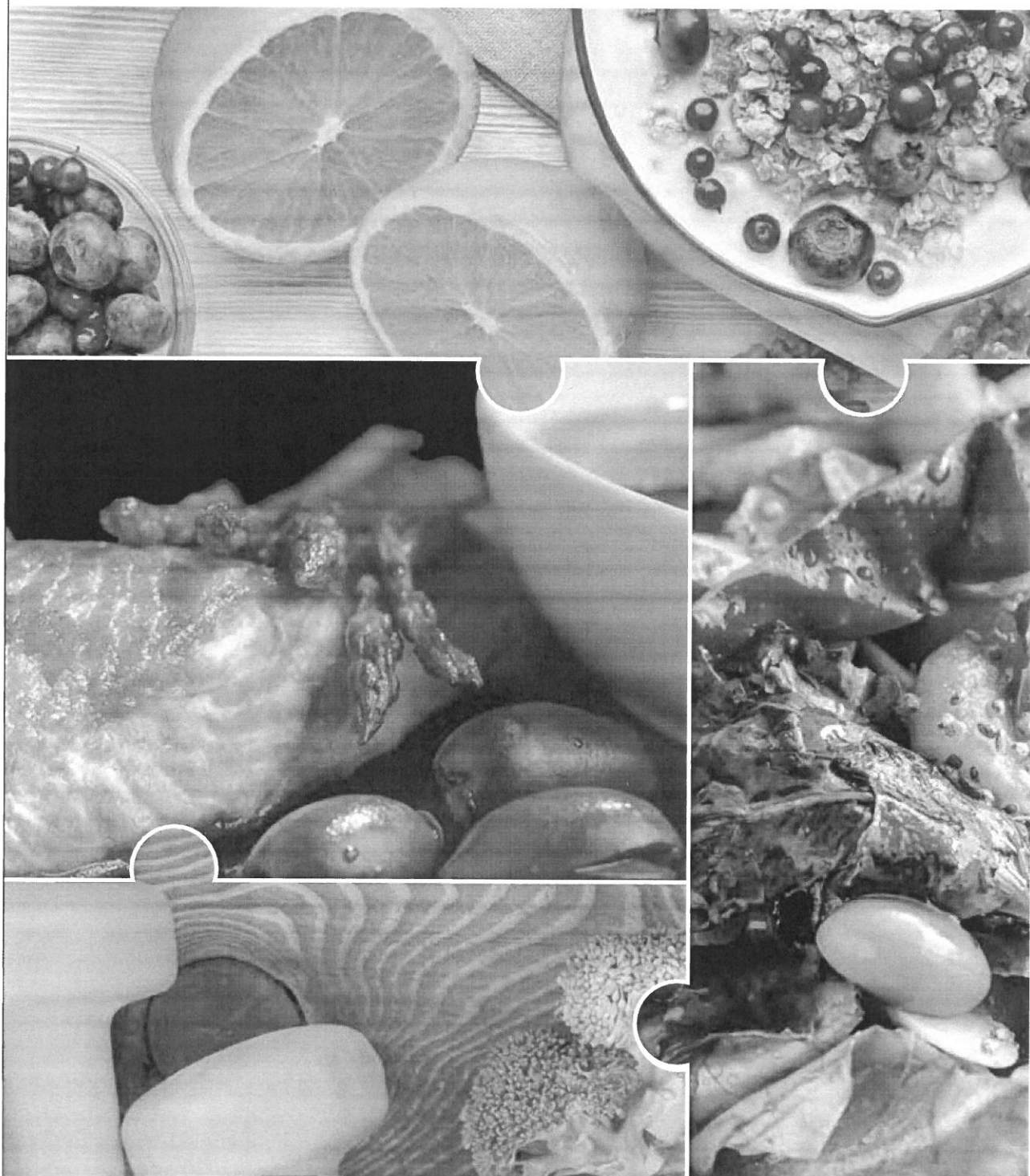
Nutrient Dense—A characteristic of foods and beverages that provide vitamins, minerals, and other substances that contribute to adequate nutrient intakes or may have positive health effects, with little or no solid fats and added sugars, refined starches, and sodium. Ideally, these foods and beverages 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.

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.



CHAPTER

1 Key Elements of Healthy Eating Patterns



Introduction

Over the course of any given day, week, or year, individuals consume foods and beverages^[1] 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:^[2]

- 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^[3]
- Consume less than 10 percent of calories per day from saturated fats^[4]
- Consume less than 2,300 milligrams (mg) per day of sodium^[5]
- 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.^[6]

[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*.^[7] 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 ^a	Amount ^b in the 2,000-Calorie-Level Pattern
Vegetables	2½ c-eq/day
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
Fruits	2 c-eq/day
Grains	6 oz-eq/day
Whole Grains	≥ 3 oz-eq/day
Refined Grains	≤ 3 oz-eq/day
Dairy	3 c-eq/day
Protein Foods	5½ oz-eq/day
Seafood	8 oz-eq/wk
Meats, Poultry, Eggs	26 oz-eq/wk
Nuts, Seeds, Soy Products	5 oz-eq/wk
Oils	27 g/day
Limit on Calories for Other Uses (% of Calories)^c	270 kcal/day (14%)

[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).

