



Chapter 5

Building Healthy Eating Patterns

Individuals and families can incorporate the recommendations presented in each of the previous chapters into an overall healthy way to eat—a healthy eating pattern.⁷¹ A growing body of evidence from research on eating patterns supports these recommendations. A healthy eating pattern is not a rigid prescription, but rather an array of options that can accommodate cultural, ethnic, traditional, and personal preferences and food cost and availability. Americans have flexibility in making choices to create a healthy eating pattern that meets nutrient needs and stays within calorie limits. This chapter describes research findings from clinical trials of eating patterns and from observational studies of traditional eating patterns. The chapter also explains the principles for selecting a healthy eating pattern. Several templates—adaptable guides for healthy eating—have been developed that show how Americans can put these principles into action: the USDA Food Patterns, lacto-ovo vegetarian or vegan adaptations of the USDA Food Patterns, and the DASH⁷² Eating Plan. These templates translate and integrate dietary

recommendations into an overall healthy way to eat. They identify average daily amounts of foods, in nutrient-dense forms, to eat from all food groups and include limits for some dietary components. Consumers, professionals, and organizations can make use of these templates to plan healthy eating patterns or assess food and beverage choices.



Key Recommendations

Select an eating pattern that meets nutrient needs over time at an appropriate calorie level.

Account for all foods and beverages consumed and assess how they fit within a total healthy eating pattern.

Follow food safety recommendations when preparing and eating foods to reduce the risk of foodborne illnesses.

71. *Dietary Guidelines for Americans, 2010* uses the term “eating pattern,” rather than the term “total diet” (the term used in the 2010 DGAC report), to refer to the combination of foods and beverages that constitute an individual’s complete dietary intake over time. The term “diet” may be misconstrued as an eating pattern intended for weight loss.

72. Dietary Approaches to Stop Hypertension.

RESEARCH INFORMS US ABOUT HEALTHY EATING PATTERNS

Around the world and within the United States, people make strikingly different food choices and have different diet-related health outcomes. Although the study of eating patterns is complex, evidence from international scientific research has identified various eating patterns that may provide short- and long-term health benefits, including a reduced risk of chronic disease. Many traditional eating patterns can provide health benefits, and their variety demonstrates that people can eat healthfully in a number of ways.

Several types of research studies have been conducted on these eating patterns, including clinical trials and prospective studies that measure specific health outcomes or health-related risk factors, and observational studies of traditional eating patterns. Considerable research exists on health outcomes as well as information on nutrient and food group composition of some eating patterns constructed for clinical trials (e.g., DASH and its variations) and traditional eating patterns (e.g., Mediterranean-style patterns). Some evidence for beneficial health outcomes for adults also exists for vegetarian eating patterns. In addition, investigators have studied traditional Japanese and Okinawan dietary patterns and have found associations with a low risk of coronary heart disease. However, detailed information on the composition of these Asian diets, and evidence on health benefits similar to that available for the other types of diets, is very limited.

Research on Dietary Approaches to Stop Hypertension (DASH)

The DASH eating pattern and its variations have been tested in clinical trials. In these studies, specific foods are provided and health impacts monitored over time. Prospective studies also have been conducted in groups of people who make their own food choices, to identify and evaluate eating patterns that are similar to DASH.

DASH emphasizes vegetables, fruits, and low-fat milk and milk products;⁷³ includes whole grains, poultry, seafood, and nuts; and is lower in sodium, red and processed meats, sweets, and sugar-containing beverages than typical intakes in the United States. One of the original DASH study diets also was lower in total fat (27% of calories) than typical American intakes.

However, modifications containing higher levels of either unsaturated fatty acids or protein have been tested. In research studies, each of these DASH-style patterns lowered blood pressure, improved blood lipids, and reduced cardiovascular disease risk compared to diets that were designed to resemble a typical American diet. The DASH-Sodium study of hypertensives and pre-hypertensives also reduced sodium, and resulted in lower blood pressure in comparison to the same eating pattern, but with a higher sodium intake. Eating patterns that are similar to DASH also have been associated with a reduced risk of cardiovascular disease and lowered mortality.

Research on Mediterranean-style eating patterns

A large number of cultures and agricultural patterns exist in countries that border the Mediterranean Sea, so the “Mediterranean diet” is not one eating pattern. No single set of criteria exists for what constitutes a traditional Mediterranean eating pattern. However, in general terms, it can be described as an eating pattern that emphasizes vegetables, fruits and nuts, olive oil, and grains (often whole grains). Only small amounts of meats and full-fat milk and milk products are usually included. It has a high monounsaturated to saturated fatty acid intake ratio and often includes wine with meals.

Traditional eating patterns found throughout the Mediterranean region, especially in Crete during the 1960s, are associated with a low risk of cardiovascular disease. Over time, the diet of Crete has changed remarkably and is now characterized by higher intake of saturated fatty acids and cholesterol, and reduced intake of monounsaturated fatty acids, while total fat consumption has fallen. Over this same period of time, the population of Crete has experienced a steady rise in risk of heart disease.

A number of studies with varying designs have examined the effects of Mediterranean-style eating patterns on cardiovascular disease and total mortality. Most of these studies apply a score that compares an individual’s food group or nutrient intake to median intake of the study population: a higher “Mediterranean diet score” is above the median intake for the study population in vegetables, fruits, nuts, legumes, whole grains/cereals, and fish; below the median intake for red and processed meats; moderate in alcohol intake; with a high monounsaturated fatty acid to saturated fatty acid ratio; and in

73. Milk and milk products also can be referred to as dairy products.

many cases, below the median intake for milk and milk products. In most studies, individuals with a higher Mediterranean diet score have reduced cardiovascular disease risk factors, reduced incidence of cardiovascular disease, and a lower rate of total mortality.

Research on vegetarian eating patterns

The types of vegetarian diets consumed in the United States vary widely. Vegans do not consume any animal products, while lacto-ovo vegetarians consume milk and eggs. Some individuals eat diets that are primarily vegetarian but may include small amounts of meat, poultry, or seafood.

In prospective studies of adults, compared to non-vegetarian eating patterns, vegetarian-style eating patterns have been associated with improved health outcomes—lower levels of obesity, a reduced risk of cardiovascular disease, and lower total mortality. Several clinical trials have documented that vegetarian eating patterns lower blood pressure.

On average, vegetarians consume a lower proportion of calories from fat (particularly saturated fatty acids); fewer overall calories; and more fiber, potassium, and vitamin C than do non-vegetarians. Vegetarians generally have a lower body mass index. These characteristics and other lifestyle factors associated with a vegetarian diet may contribute to the positive health outcomes that have been identified among vegetarians.

Common elements of the healthy eating patterns examined

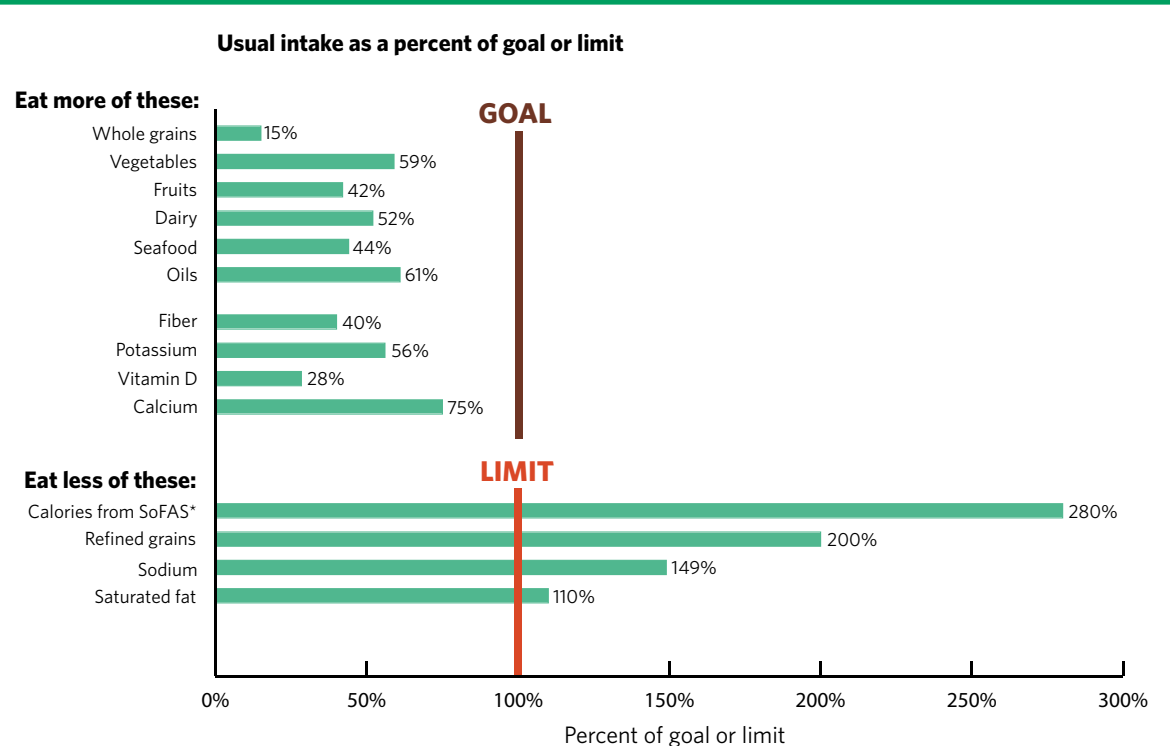
Although healthy eating patterns around the world are diverse, some common threads exist. They are abundant in vegetables and fruits. Many emphasize whole grains. They include moderate amounts and a variety of foods high in protein (seafood, beans and peas, nuts, seeds, soy products, meat, poultry, and eggs). They include only limited amounts of foods high in added sugars and may include more oils than solid fats. Most are low in full-fat milk and milk products. However, some include substantial amounts of low-fat milk and milk products. In some patterns, wine is included with meals. Compared to typical American diets, these patterns tend to have a high unsaturated to saturated fatty acid ratio and a high dietary fiber and potassium content. In addition, some are relatively low in sodium compared to current American intake.

These elements of healthy traditional and constructed (e.g., DASH) eating patterns are generally consistent with the recommendations from Chapters 2, 3, and 4 about what Americans should eat. The recommendations in these chapters, summarized below, are based on studies of specific dietary components:

- Limit calorie intake to the amount needed to attain or maintain a healthy weight for adults, and for appropriate weight gain in children and adolescents.
- Consume foods from all food groups in nutrient-dense forms and in recommended amounts.
- Reduce intake of solid fats (major sources of saturated and *trans* fatty acids).
- Replace solid fats with oils (major sources of polyunsaturated and monounsaturated fatty acids) when possible.
- Reduce intake of added sugars.
- Reduce intake of refined grains and replace some refined grains with whole grains.
- Reduce intake of sodium (major component of salt).
- If consumed, limit alcohol intake to moderate levels.
- Increase intake of vegetables and fruits.
- Increase intake of whole grains.
- Increase intake of milk and milk products and replace whole milk and full-fat milk products with fat-free or low-fat choices to reduce solid fat intake.
- Increase seafood intake by replacing some meat or poultry with seafood.

Although there is no single “American” or “Western” eating pattern, average American eating patterns currently bear little resemblance to these dietary recommendations. Americans eat too many calories and too much solid fat, added sugars, refined grains, and sodium. Americans also consume too little potassium; dietary fiber; calcium; vitamin D; unsaturated fatty acids from oils, nuts, and seafood; and other important nutrients. These nutrients are mostly found in vegetables, fruits, whole grains, and low-fat milk and milk products. Figure 5-1 graphically shows how the typical American diet compares to recommended intakes or limits.

FIGURE 5-1. How Do Typical American Diets Compare to Recommended Intake Levels or Limits?



*SoFAS = solid fats and added sugars.

Note: Bars show average intakes for all individuals (ages 1 or 2 years or older, depending on the data source) as a percent of the recommended intake level or limit. Recommended intakes for food groups and limits for refined grains and solid fats and added sugars are based on amounts in the USDA 2000-calorie food pattern. Recommended intakes for fiber, potassium, vitamin D, and calcium are based on the highest AI or RDA for ages 14 to 70 years. Limits for sodium are based on the UL and for

saturated fat on 10% of calories. The protein foods group is not shown here because, on average, intake is close to recommended levels.

Based on data from: U.S. Department of Agriculture, Agricultural Research Service and U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. What We Eat in America, NHANES 2001-2004 or 2005-2006.

PRINCIPLES FOR ACHIEVING A HEALTHY EATING PATTERN

Focus on nutrient-dense foods

A healthy eating pattern focuses on nutrient-dense foods—vegetables, fruits, whole grains, fat-free or low-fat milk and milk products, lean meats and poultry, seafood, eggs, beans and peas, and nuts and seeds that are prepared without added solid fats,

FOR MORE INFORMATION

See **Chapter 4** for a more detailed description of nutrient-dense foods.

sugars, starches, and sodium. Combined into an eating pattern, these foods can provide the full range of essential nutrients and fiber,

without excessive calories. The oils contained in seafood, nuts and seeds, and vegetable oils added to foods also contribute essential nutrients.

Most people's eating patterns can accommodate only a limited number of calories from solid fats and added sugars. These calories are best used to increase the palatability of nutrient-dense foods rather than to consume foods or beverages that are primarily solid fats, added sugars, or both. A few examples of nutrient-dense foods containing some solid fats or added sugars include whole-grain breakfast cereals that contain small amounts of added sugars, cuts of meat that are marbled with fat, poultry baked with skin on, vegetables topped with butter or stick margarine, fruit

sprinkled with sugar, and fat-free chocolate milk. In addition, for those who consume alcohol, the calories in these beverages need to be considered as part of

FOR MORE INFORMATION
See **Chapter 3** for more information about solid fats and added sugars.

total calorie intake; they reduce the allowance for calories from solid fats and added sugars that can be accommodated in an eating pattern.

Too often, however, Americans choose foods that are not in nutrient-dense forms. Figure 5-2 shows examples of typical food choices from each food group, and the number of additional calories in these foods compared to a nutrient-dense version of the same food. In these examples, the extra calories from added fats and sugars, or refined grains (breadings) are from about one-quarter to more than half of the total calories in the food product.

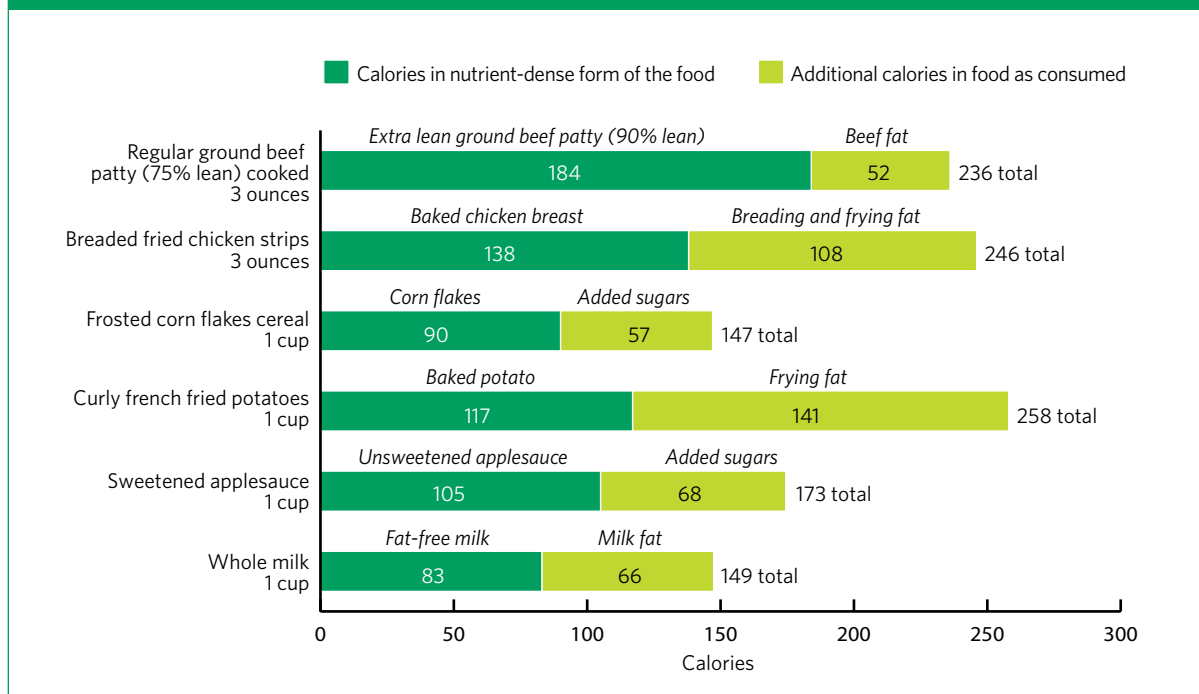
Remember that beverages count

Beverages contribute substantially to overall dietary and calorie intake for most Americans. Although they provide needed water, many beverages add calories

to the diet without providing essential nutrients. Their consumption should be planned in the context of total calorie intake and how they can fit into the eating pattern of each individual. Currently, American adults ages 19 years and older consume an average of about 400 calories per day as beverages. The major types of beverages consumed by adults, in descending order by average calorie intake, are: regular soda, energy, and sports drinks; alcoholic beverages; milk (including whole, 2%, 1%, and fat-free); 100% fruit juice; and fruit drinks. Children ages 2 to 18 years also consume an average of 400 calories per day as beverages. The major beverages for children are somewhat different and, in order by average calorie intake, are: milk (including whole, 2%, 1%, and fat-free); regular soda, energy, and sports drinks; fruit drinks; and 100% fruit juice. Among children and adolescents, milk and 100% fruit juice intake is higher for younger children, and soda intake is higher for adolescents.

The calorie content of beverages varies widely, and some of the beverages with the highest intake, including regular sodas, fruit drinks, and alcoholic beverages, contain calories but provide few or no

FIGURE 5-2. Examples of the Calories in Food Choices That Are Not in Nutrient Dense Forms and the Calories in Nutrient Dense Forms of These Foods



Based on data from the U.S. Department of Agriculture, Agricultural Research Service, Food and Nutrient Database for Dietary Studies 4.1. <http://www.ars.usda.gov/Services/docs.htm?docid=20511> and USDA National Nutrient Database for Standard Reference, Release 23. <http://www.nal.usda.gov/fnic/foodcomp/search/>.

A SPECIAL NOTE ABOUT WATER INTAKE

Total water intake includes water from fluids (drinking water and other beverages) and the water that is contained in foods. Healthy individuals, in general, have an adequate total water intake to meet their needs when they have regular access to drinking water and other beverages. The combination of thirst and typical behaviors, such as drinking beverages with meals, provides sufficient total water intake.

Individual water intake needs vary widely, based in part on level of physical activity and exposure to heat stress. Heat waves have the potential to result in an increased risk of dehydration, especially in older adults.

Although the IOM set an Adequate Intake (AI) for total water, it was based on median total water intake estimated from U.S. dietary surveys. Therefore, the AI should not be considered as a specific requirement level.

FLUORIDE AND HYGIENE ARE KEYS TO ORAL HEALTH

Drinking fluoridated water and/or using fluoride-containing dental products helps reduce the risk of dental caries. Most bottled water is not fluoridated. With the increase in consumption of bottled water, Americans may not be getting enough fluoride to maintain oral health.

During the time that sugars and starches are in contact with teeth, they also contribute to dental caries. A combined approach of reducing the amount of time sugars and starches are in the mouth, drinking fluoridated water, and brushing and flossing teeth, is the most effective way to reduce dental caries.

essential nutrients. Other beverages, however, such as fat-free or low-fat milk and 100% fruit juice, provide a substantial amount of nutrients along with the calories they contain. Water and unsweetened beverages, such as coffee and tea, contribute to total water intake without adding calories. To limit excess calories and maintain healthy weight, individuals are encouraged to drink water and other beverages with few or no calories, in addition to recommended amounts of low-fat or fat-free milk and 100% fruit juices.

FOR MORE INFORMATION

See **Chapters 2 and 3** for additional information about sugar-sweetened beverages and alcoholic beverages, and **Chapter 4** for more on 100% fruit juice and milk.

Follow food safety principles

Ensuring food safety is an important principle for building healthy eating patterns. Foodborne illness affects more than 76 million individuals in the United States every year and leads to 325,000 hospitalizations and 5,000 deaths.⁷⁴ The proportion of outbreaks that can be attributed to unsafe food safety practices in the home is unknown, but is assumed to be substantial. Washing hands, rinsing vegetables and fruits, preventing cross-contamination, cooking foods to safe internal temperatures, and storing foods safely in the home kitchen are the behaviors most likely to prevent food safety problems. These behaviors are highlighted in the four basic food safety principles that work together to reduce the risk of foodborne illnesses. These principles are:

- **Clean** hands, food contact surfaces, and vegetables and fruits.
- **Separate** raw, cooked, and ready-to-eat foods while shopping, storing, and preparing foods.
- **Cook** foods to a safe temperature.
- **Chill** (refrigerate) perishable foods promptly.

In addition, some foods pose high risk of foodborne illness. These include raw (unpasteurized) milk, cheeses, and juices; raw or undercooked animal foods, such as seafood, meat, poultry, and eggs; and raw sprouts. These foods should be avoided.

FOR MORE INFORMATION

See **Appendix 3** for more information about the four food safety principles and additional guidance for specific population groups that are at higher risk of foodborne illness.

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

COPING WITH FOOD ALLERGIES OR INTOLERANCES

Some individuals may have an allergy or intolerance to one or more foods that are part of a healthy eating pattern. Common food allergies include those to milk, eggs, fish, crustacean shellfish, tree nuts, wheat, peanuts, and soybeans. Proteins in these foods trigger an abnormal immune response in persons allergic to the food. In comparison, food intolerances are due to the inability of the body to digest or metabolize a food component. For example, lactose intolerance is caused by a deficiency of the enzyme lactase that breaks down the sugar lactose in milk and milk products.

Because food allergies and food intolerances can cause some of the same symptoms (e.g., stomach cramps, vomiting, and diarrhea), they are often mistaken for one another. Those who think they may have a food allergy or a food intolerance should be medically evaluated to avoid unnecessarily eliminating foods from their diet. Most persons who have a food allergy need to totally eliminate the offending food and ingredients that contain the food's protein from their diet. However, for some food intolerances, like lactose intolerance, smaller portions (e.g., 4 ounces of milk) or a modified version of the offending food (e.g., lactose-reduced or lactose-free milk, yogurt, or cheese) may be well tolerated. More information on food allergies and food intolerances can be found at <http://www.niaid.nih.gov/topics/foodallergy/Pages/default.aspx>.

Consider the role of supplements and fortified foods

A fundamental premise of the Dietary Guidelines is that nutrients should come primarily from foods. Foods in nutrient-dense, mostly intact forms contain not only the essential vitamins and minerals that are often contained in nutrient supplements, but also dietary fiber and other naturally occurring substances that may have positive health effects.

Americans should aim to meet their nutrient requirements through a healthy eating pattern that includes nutrient-dense forms of foods, while balancing calorie intake with energy expenditure.

Dietary supplements or fortification of certain foods may be advantageous in specific situations to increase intake of a specific vitamin or mineral. In some cases, fortification can provide a food-based means for increasing intake of particular nutrients or providing nutrients in highly bioavailable forms. For example:

- **Vitamin D.** For many years, most fluid milk has been fortified with vitamin D to increase calcium absorption and prevent rickets. Vitamin D-fortified milk is now the major dietary source of vitamin D for many Americans. Other beverages and foods that often are fortified with vitamin D include orange juice, soy beverages,⁷⁵ and yogurt. Vitamin D also is available as a dietary supplement. As intake increases above 4,000 IU (100 mcg) per day, the potential risk of adverse effects increases.
- **Folic acid.** More recently, folic acid fortification of enriched grains was mandated to reduce the incidence of neural tube defects, which are serious birth defects of the brain and spine. Subsequently, folate intake has increased substantially. It is recommended that all women who are capable of becoming pregnant consume 400 mcg per day of folic acid from these fortified foods or from dietary supplements, in addition to eating food sources of folate.
- **Vitamin B₁₂.** Foods fortified with the crystalline form of vitamin B₁₂, such as fortified cereals, or vitamin B₁₂ supplements, are encouraged for individuals older than age 50 years. A substantial proportion of these individuals may have reduced ability to absorb naturally occurring vitamin B₁₂, but their ability to absorb the crystalline form is not affected. In addition, vegans should ensure adequate intake of vitamin B₁₂ through fortified foods or supplements.
- **Iron supplements for pregnant women.** Iron supplementation during pregnancy is routinely recommended for all pregnant women to help meet their iron requirements. Obstetricians often monitor the need for iron supplementation during pregnancy

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

and provide individualized recommendations to pregnant women.

Sufficient evidence is not available to support a recommendation for or against the use of multivitamin/mineral supplements in the primary prevention of chronic disease for the healthy American population. Supplements containing combinations of certain nutrients may be beneficial in reducing the risks of some chronic diseases when used by special populations. For example, calcium and vitamin D supplements may be useful in postmenopausal women who have low levels of these nutrients in their diets, to reduce their risk of osteoporosis. In contrast, high levels of certain nutrient supplements may be harmful, if a nutrient's Tolerable Upper Intake Level is exceeded. Supplement use may be discussed with a health care provider to establish need and correct dosage.

PUTTING THE PRINCIPLES FOR A HEALTHY EATING PATTERN INTO ACTION

The principles of a healthy eating pattern can be applied by following one of several templates for healthy eating. The USDA Food Patterns, their lacto-ovo vegetarian or vegan adaptations, and the DASH Eating Plan are illustrations of varied approaches to healthy eating patterns. The USDA Food Patterns and their vegetarian variations were developed to help individuals carry out Dietary Guidelines recommendations. The DASH Eating Plan, based on the DASH research studies, was developed to help individuals prevent high blood pressure and other risk factors for heart disease.

Compared with average consumption in the United States, these patterns feature increased amounts of vegetables, fruits, beans and peas, whole grains, fat-free and low-fat milk and milk products, and oils, and decreased amounts of solid fats, added sugars, and sodium. They also all feature less red and processed meat and more seafood⁷⁶ than typical American diets. Table 5-1 shows the amounts consumed from each food group and subgroup in typical American diets, in comparison to amounts in two healthy, traditional Mediterranean-style eating patterns (from Greece and Spain) and the DASH diet used in research studies, all adjusted to a

2,000 calorie intake level, and to the 2,000 calorie USDA Food Pattern. Although the Mediterranean patterns do not specify amounts of whole grains, intake of minimally refined cereal grains is typical for many of these patterns. Amounts of milk and milk products vary in the Mediterranean patterns, but both DASH and USDA patterns contain substantially more milk and milk products than are currently consumed in the United States and focus on fat-free and low-fat versions.

USDA Food Patterns

The USDA Food Patterns identify daily amounts of foods, in nutrient-dense forms, to eat from five major food groups and their subgroups (Table 5-2 and Appendices 7, 8, and 9). The patterns also include an allowance for oils and limits on the maximum number of calories that should be consumed from solid fats and added sugars. The food patterns were developed to meet nutrient needs, as identified by the Dietary Reference Intakes and the Dietary Guidelines (Appendix 5), while not exceeding calorie requirements. Though they have not been specifically tested for health benefits, they are similar to the DASH research diet and consistent with most of the measures of adherence to Mediterranean-type eating patterns.

Recommended amounts and limits in the USDA Food Patterns at 12 calorie levels, ranging from 1,000 calories to 3,200 calories, are shown in Appendix 7. Patterns at 1,000, 1,200, and 1,400 calorie levels meet the nutritional needs of children ages 2 to 8 years. Patterns at 1,600 calories and above meet needs for adults and children ages 9 years and older. Individuals should follow a pattern that meets their estimated calorie needs (Appendix 6).

The USDA Food Patterns emphasize selection of most foods in nutrient-dense forms—that is, with little or no solid fats and added sugars. A maximum limit for calories from solid fats and added sugars in each pattern allows for some foods that have a higher level of solid fat, or a small amount of added solid fat or added sugars. Figure 5-2 provides examples of both nutrient-dense and of more typical choices in each food group, and the resulting difference in calorie content. If choices that are not nutrient dense are routinely eaten, total calories will be overconsumed due to increased calories from solid fats and added sugars. If all food and beverage choices were

76. Vegetarian patterns do not include any meat or seafood.

TABLE 5-1. Eating Pattern Comparison: Usual U.S. Intake, Mediterranean, DASH, and USDA Food Patterns, Average Daily Intake at or Adjusted to a 2,000 Calorie Level

Pattern	Usual U.S. Intake Adults ^a	Mediterranean Patterns ^b Greece (G) Spain (S)	DASH ^b	USDA Food Pattern
Food Groups				
Vegetables: total (c)	1.6	1.2 (S) - 4.1 (G)	2.1	2.5
Dark-green (c)	0.1	nd ^c	nd	0.2
Beans and peas (c)	0.1	<0.1 (G) - 0.4 (S)	See protein foods	0.2
Red and orange (c)	0.4	nd	nd	0.8
Other (c)	0.5	nd	nd	0.6
Starchy (c)	0.5	nd - 0.6 (G)	nd	0.7
Fruit and juices (c)	1.0	1.4 (S) - 2.5 (G) (including nuts)	2.5	2.0
Grains: total (oz)	6.4	2.0 (S) - 5.4 (G)	7.3	6.0
Whole grains (oz)	0.6	nd	3.9	≥3.0
Milk and milk products (Dairy products) (c)	1.5	1.0 (G) - 2.1 (S)	2.6	3.0
Protein foods:				
Meat (oz)	2.5	3.5 (G) - 3.6 (S) (including poultry)	1.4	1.8
Poultry (oz)	1.2	nd	1.7	1.5
Eggs (oz)	0.4	nd - 1.9 (S)	nd	0.4
Fish/seafood (oz)	0.5	0.8 (G) - 2.4 (S)	1.4	1.2
Beans and peas (oz)	See vegetables	See vegetables	0.4 (0.1 c)	See vegetables
Nuts, seeds, and soy products (oz)	0.5	See fruits	0.9	0.6
Oils (g)	18	19 (S) - 40 (G)	25	27
Solid fats (g)	43	nd	nd	16 ^d
Added sugars (g)	79	nd - 24 (G)	12	32 ^d
Alcohol (g)	9.9	7.1 (S) - 7.9 (G)	nd	nd ^e

^a Source: U.S. Department of Agriculture, Agricultural Research Service and U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. What We Eat In America, NHANES 2001-2004, 1 day mean intakes for adult males and females, adjusted to 2,000 calories and averaged.

^b See the DGAC report for additional information and references at www.dietaryguidelines.gov.

^c nd = Not determined.

^d Amounts of solid fats and added sugars are examples only of how calories from solid fats and added sugars in the USDA Food Patterns could be divided.

^e In the USDA Food Patterns, some of the calories assigned to limits for solid fats and added sugars may be used for alcohol consumption instead.

TABLE 5-2. USDA Food Patterns—Food Groups and Subgroups

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

in forms typically consumed rather than nutrient-dense forms, intake from the food groups and oils in the 2,000-calorie pattern would actually be about 2,400 calories, or 400 calories above the target calorie level.

The USDA Food Patterns recommend selecting a variety of foods within each food group. This allows for personal choice, and helps to ensure that the foods and beverages selected by individuals over time provide a mix of nutrients that will meet their needs. Recommended weekly intake amounts are specified for the five vegetable subgroups (dark-green, red and orange, beans and peas, starchy, and other vegetables). In the protein foods group, 8 or more ounces per week of seafood is recommended (less in patterns for young children), and in the grain group, selecting at least half of all grains as whole grains is recommended. In the fruit and

dairy groups, there are no quantitative recommendations for making selections within the group. However, selecting more fruit rather than juice, and more fat-free or low-fat vitamin D-fortified milk or yogurt than cheese is encouraged.

FOR MORE INFORMATION
See **Chapter 4** and **Appendix 7** for more information about specific food choices within food groups and subgroups.

Vegetarian adaptations of the USDA Food Patterns

The USDA Food Patterns allow for additional flexibility in choices through their adaptations for vegetarians—a vegan pattern that contains only plant foods and a lacto-ovo vegetarian pattern that includes milk and milk products and eggs. The adaptations include changes in the protein foods group and, in the vegan adaptation, in the dairy group.

The changes made in the protein foods group at the 2,000 calorie level are shown in Table 5-3. The vegan dairy group includes calcium-fortified beverages and foods commonly used as substitutes for milk and milk products. Complete patterns at all calorie levels are shown in Appendices 8 and 9. These vegetarian variations represent healthy eating patterns, but rely on fortified foods for some nutrients. In the vegan patterns especially, fortified foods provide much of the calcium and vitamin B₁₂, and either fortified foods or supplements should be selected to provide adequate intake of these nutrients.

DASH Eating Plan

The DASH Eating Plan was developed based on findings from the DASH research studies. It limits saturated fatty acids and cholesterol and focuses on increasing intake of foods rich in potassium, calcium, magnesium, protein, and fiber. The DASH Eating Plan also is very consistent with Dietary Guidelines recommendations and with most measures of adherence to Mediterranean-type eating patterns. It is rich in fruits, vegetables, fat-free or low-fat milk and milk products, whole grains, fish, poultry, seeds, and nuts. It contains less sodium, sweets, added sugars, and

sugar-containing beverages, fats, and red meats than the typical American diet. The DASH Eating Plan food groups⁷⁷ and amounts recommended at seven calorie levels are shown in Appendix 10. Sample menus for the DASH Eating Plan at the 2,000 calorie level⁷⁸ provide either 2,300 mg or 1,500 mg of sodium and include nutrient-rich foods to meet other nutrient recommendations.

CHAPTER SUMMARY

This chapter integrates the individual recommendations from each previous chapter of the *Dietary Guidelines for Americans, 2010* into healthy eating patterns. Research on overall eating patterns, such as Mediterranean and DASH patterns, has documented the health benefits of following an eating pattern that applies most of these recommendations. The evidence shows that following such an eating pattern can meet a person's nutrient needs within their calorie needs and provide substantial health benefits. The USDA Food Patterns and the DASH Eating Plan apply these Dietary Guidelines recommendations and provide flexible templates for making healthy

TABLE 5-3. Average Daily Amounts in the Protein Foods Group in the USDA Food Pattern at the 2,000 Calorie Level and Its Vegetarian Adaptations

Food Category	USDA Food Pattern	Lacto-ovo Adaptation	Vegan Adaptation
Meats (e.g., beef, pork, lamb)	1.8 oz-eq ^a	0 oz-eq	0 oz-eq
Poultry (e.g., chicken, turkey)	1.5 oz-eq	0 oz-eq	0 oz-eq
Seafood	1.2 oz-eq	0 oz-eq	0 oz-eq
Eggs	0.4 oz-eq	0.6 oz-eq	0 oz-eq
Beans and peas ^b	N/A	1.4 oz-eq	1.9 oz-eq
Processed soy products	<0.1 oz-eq	1.6 oz-eq	1.4 oz-eq
Nuts and seeds ^c	0.5 oz-eq	1.9 oz-eq	2.2 oz-eq
Total per day	5.5 oz-eq	5.5 oz-eq	5.5 oz-eq

^a Amounts shown in ounce-equivalents (oz-eq) per day. These are average recommended amounts to consume over time.

^b Beans and peas are included in the USDA Food Patterns as a vegetable subgroup rather than in the protein foods group. Amounts shown here in the vegetarian patterns are additional beans and peas, in ounce-equivalents. One ounce-equivalent of beans and peas is ¼ cup, cooked. These amounts do not include about 1½ cups per week of beans and peas recommended as a vegetable in all of the 2,000 calorie patterns.

^c Each ounce-equivalent of nuts is ½ ounce of nuts, so on a weekly basis, the 2,000 calorie patterns contain from 2 ounces to 8 ounces of total nuts.

77. Food groups in the DASH Eating Plan are Grains; Vegetables; Fruits; Fat-free or Low-fat Milk and Milk Products; Lean Meats, Poultry, and Fish; and Nuts, Seeds, and Legumes.

78. Sample menus and additional information on the DASH Eating Plan are available at http://www.nhlbi.nih.gov/health/public/heart/hbp/dash/new_dash.pdf.

choices within and among various food groups. They include recommended amounts from all food groups, targets for total calorie intake and limits on calories from solid fats and added sugars. Individuals can use or adapt these healthy eating patterns to suit their personal and cultural preferences.

An overall healthy eating pattern also needs to account for all foods and beverages consumed, whether at home or away from home. Beverages are currently a major source of calories, and many do not provide essential nutrients. Therefore, water or other

calorie-free beverages, along with fat-free or low-fat milk and 100% fruit juice, are recommended to meet total water needs.

Because a healthy eating pattern provides for most or all nutrient needs, dietary supplements are recommended only for specific population subgroups or in specific situations. A healthy eating pattern needs to not only promote health and help to decrease the risk of chronic diseases, but it also should prevent foodborne illness, so food safety recommendations need to be followed.