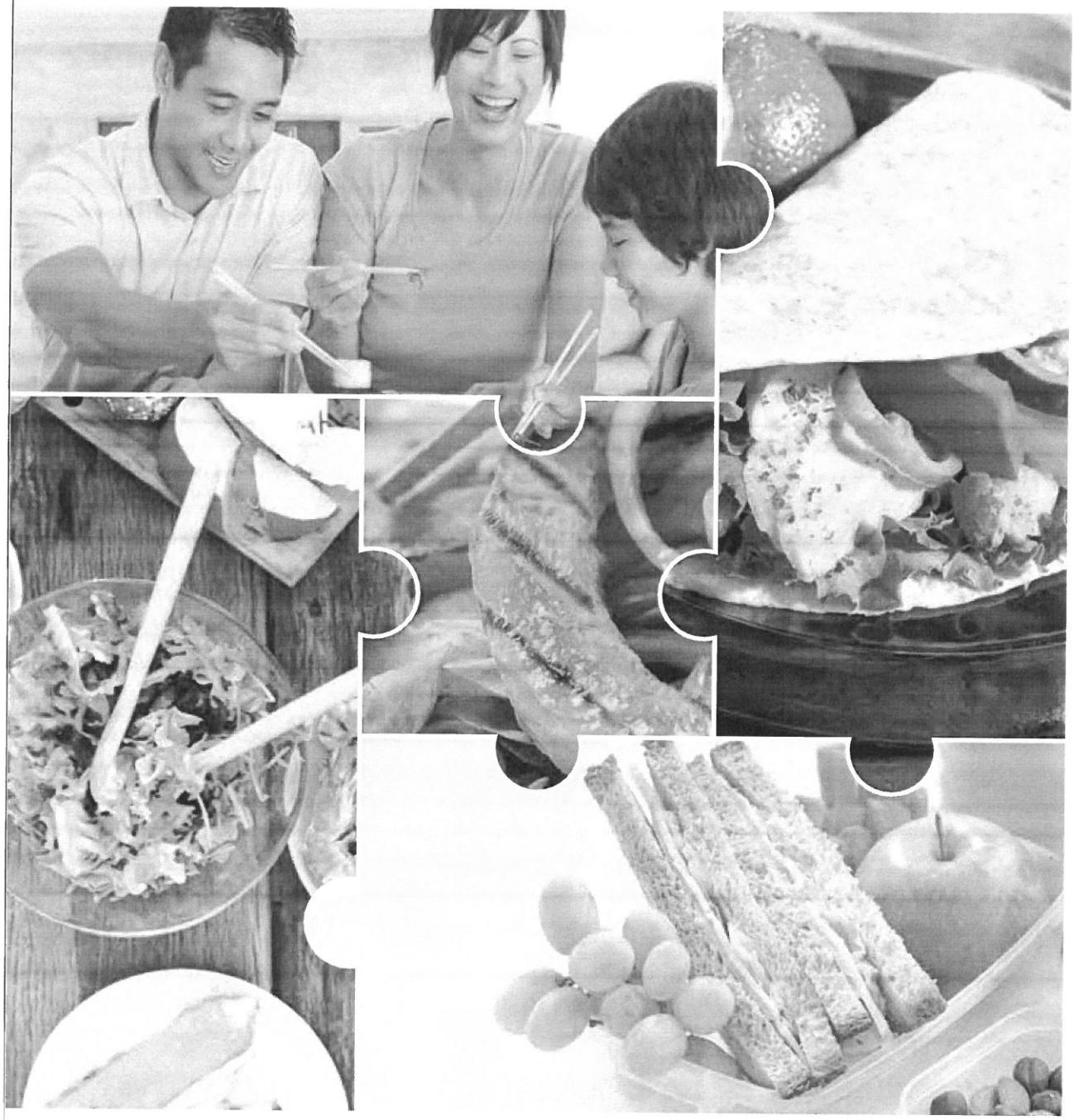
CHAPTER 3

Everyone Has a Role in Supporting Healthy Eating Patterns



Introduction

The previous chapters describe the characteristics of healthy eating and physical activity patterns, and it is clear that across all population groups, the vast majority of people in the United States are not meeting these recommendations. In general, Americans are consuming too many calories, are not meeting food group and nutrient recommendations, and are not getting adequate physical activity. In practice, aligning with the *Dietary Guidelines* (see Aligning With the *Dietary Guidelines for Americans*: What Does This Mean in Practice? in the Introduction) at the population level requires broad, multisectoral coordination and collaboration. This collective action is needed to create a new paradigm in which healthy lifestyle choices at home, school, work, and in the community are easy, accessible, affordable, and normative. Everyone has a role in helping individuals shift their everyday food,[1] beverage, and physical activity choices to align with the *Dietary Guidelines*.

The *Dietary Guidelines* provides recommendations that professionals, especially policymakers, can translate into action to support individuals. This chapter discusses a number of considerations related to translating the *Dietary Guidelines* into action, including the significance of using multiple strategies across all segments of society to promote healthy eating and physical activity behaviors; the development of educational resources that deliver information in a way that is compelling, inspiring, empowering, and actionable for individuals; and the need to focus on individuals where they are making food and beverage choices.

About This Chapter

This chapter focuses on the fifth Guideline:

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 Social-Ecological Model (**Figure 3-1**) is used as a framework to illustrate how sectors, settings, social and cultural norms, and individual factors converge to influence food and physical activity choices. The chapter describes contextual factors that influence eating as well as physical activity behaviors and identifies opportunities for professionals, including policymakers, to implement strategies that can help individuals align with the *Dietary Guidelines*.

Creating & Supporting Healthy Choices

As shown in the Social-Ecological Model, a multitude of choices, messages, individual resources, and other factors affect the food and physical activity choices an individual makes, and these decisions are rarely made in isolation. The following section describes the various components in the Social-Ecological Model and how they play a role in influencing the decisions individuals make about foods and physical activity. Ideas for engaging these components in collaborative ways to influence individual decisions, and ultimately social and cultural norms and values to align with the *Dietary Guidelines*, are provided.

The Social-Ecological Model

Consistent evidence shows that implementing multiple changes at various levels of the Social-Ecological Model is effective in improving eating and physical activity behaviors. For example, strong evidence from studies with varying designs and generally consistent findings demonstrates that school policies designed to enhance the school food setting leads to improvements in the purchasing behavior of children, resulting in higher dietary quality of the food consumed during the school day. For adults, moderate evidence indicates

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

that worksite nutrition policies can improve dietary intake, and approaches targeting dietary intake and physical activity can favorably affect weight-related outcomes. These examples demonstrate how support and active engagement from various segments of society are needed to help individuals change their eating and physical activity behaviors and achieve positive outcomes. Approaches like these have the potential to improve population health if they can be incorporated into existing organizational structures and maintained over time. Among the components of the Social-Ecological Model, sectors and settings influence change at the population level and are addressed first in this discussion.

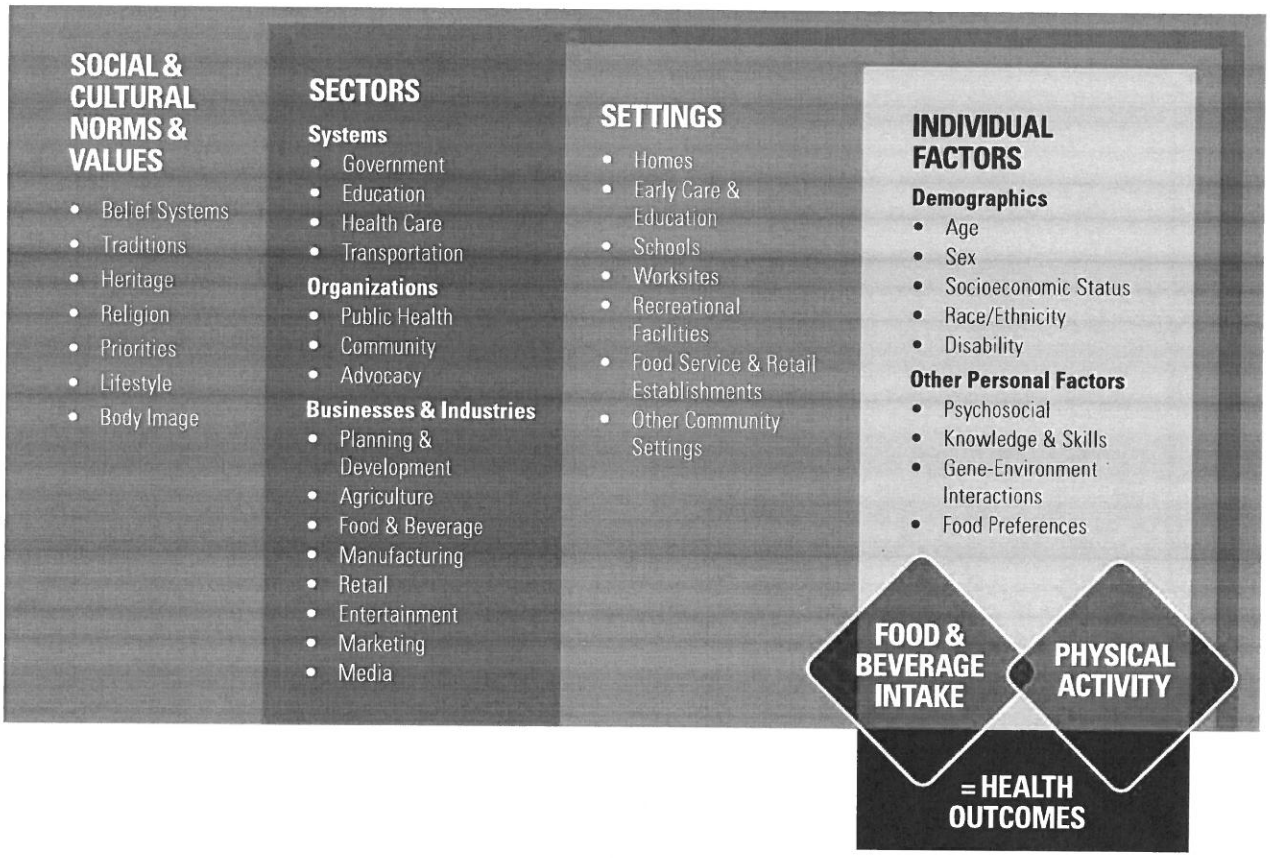
Sectors

Sectors include systems (e.g., governments, education, health care, and transportation), organizations (e.g., public health, community, and advocacy), and businesses and industries (e.g., planning and development, agriculture, food and beverage, retail, entertainment, marketing, and media).

Figure 3-1.

A Social-Ecological Model for Food & Physical Activity Decisions

The Social-Ecological Model can help health professionals understand how layers of influence intersect to shape a person's food and physical activity choices. The model below shows how various factors influence food and beverage intake, physical activity patterns, and ultimately health outcomes.



DATA SOURCES: Adapted from: (1) Centers for Disease Control and Prevention. Division of Nutrition, Physical Activity, and Obesity. National Center for Chronic Disease Prevention and Health Promotion. Addressing Obesity Disparities: Social Ecological Model. Available at: http://www.cdc.gov/obesity/health_equity/addressingtheissue.html. Accessed October 19, 2015. (2) Institute of Medicine. Preventing Childhood Obesity: Health in the Balance, Washington (DC): The National Academies Press; 2005, page 85. (3) Story M, Kaphingst KM, Robinson O Brien R, Glanz K. Creating healthy food and eating environments: Policy and environmental approaches. Annu Rev Public Health 2008; 29:253-272.

These sectors all have an important role in helping individuals make healthy choices because they either influence the degree to which people have access to healthy food and/or opportunities to be physically active, or they influence social norms and values. Positive influences on social norms and values can occur through effective health promotion and marketing strategies.

Professionals in these sectors have many opportunities to identify and develop strategies that help individuals align their choices with the *Dietary Guidelines*. Strategies could include supporting policy and/or program changes, fostering coalitions and networks, developing or modifying products and menus, and/or creating opportunities to be physically active. To ensure widespread adoption of these sectoral efforts, complementary efforts can include training, education, and/or motivational strategies.

Settings

Individuals make choices in a variety of settings, both at home and away from home. Away-from-home settings include early care and education programs (e.g., child care, preschool), schools, worksites, community centers, and food retail and food service establishments. These organizational settings determine what foods are offered and what opportunities for physical activity are provided. Strategies to align with the *Dietary Guidelines* that are implemented in these settings can influence individual choices and have the potential for broader population-level impact if they are integrated with strategies by multiple sectors. In combination, sectors and settings can influence social norms and values.

Social & Cultural Norms & Values

Social and cultural *norms* are rules that govern thoughts, beliefs, and behaviors. They are shared assumptions of appropriate behaviors, based on the values of a society, and are reflected in everything from laws to personal expectations. With regard to nutrition and physical activity, examples of norms include preferences for certain types of foods, attitudes about acceptable ranges of body weight, and values placed on physical activity and health. Because norms and values are prevalent within a community or setting, changing them can be difficult. However, changes to sectors and settings—as previously discussed—can have a powerful effect on social and cultural norms and values over time and can align with the *Dietary Guidelines*.

Individual Factors

Individual factors are those that are unique to the individual, such as age, sex, socioeconomic status, race/ethnicity, the presence of a disability, as well as other influences, such as physical health, knowledge and skills, and personal preferences. Education to improve individual food and physical activity choices can be delivered by a wide variety of nutrition and physical activity professionals working alone or in multidisciplinary teams. Resources based on systematic reviews of scientific evidence, such as the *Dietary Guidelines* and the *Physical Activity Guidelines for Americans*, provide the foundation for nutrition and public health professionals to develop programs and materials that can help individuals enhance their knowledge, attitudes, and motivation to make healthy choices.

All food and beverage choices are part of an individual's eating pattern. Professionals can work with individuals in a variety of settings to adapt their choices to develop a healthy eating pattern tailored to accommodate physical health, cultural, ethnic, traditional, and personal preferences, as well as personal food budgets and other issues of accessibility. Eating patterns tailored to the individual are more likely to be motivating, accepted, and maintained over time, thereby having the potential to lead to meaningful shifts in dietary intake, and consequently, improved health.

Opportunities To Align Food Products & Menus With the *Dietary Guidelines*

During the past few decades, food products and menus have notably evolved in response to consumer demands and public health concerns. The food and beverage and food service sectors and settings have a unique opportunity to continue to evolve and better align with the *Dietary Guidelines*. Reformulation and menu and retail modification opportunities that align with the *Dietary Guidelines* include offering more vegetables, fruits, whole grains, low-fat and fat-free dairy, and a greater variety of protein foods that are nutrient dense, while also reducing sodium and added sugars, reducing saturated fats and replacing them with unsaturated fats, and reducing added refined starches. Portion sizes also can be adapted to help individuals make choices that align with the *Dietary Guidelines*. Food manufacturers are encouraged to consider the entire composition of the food, and not just individual nutrients or ingredients when developing or reformulating products. Similarly, when developing or modifying menus or retail settings, establishments can consider the range of offerings both within and across food groups and other dietary components to determine whether the healthy options offered reflect the proportions in healthy eating patterns. In taking these actions, care should be taken to assess any potential unintended consequences so that as changes are made to better align with the *Dietary Guidelines*, undesirable changes are not introduced.

Meeting People Where They Are: Contextual Factors & Healthy Eating Patterns

As previously described, the Social-Ecological Model provides a framework for how individuals make food and physical activity choices (where, what, when, why, and how much) each day. Understanding individual choices and motivators and the context that affects them can help professionals identify which strategies are most likely to be effective to promote healthy choices aligned with the *Dietary Guidelines*.

The scientific literature has described a number of specific circumstances that can limit an individual's or family's capacity to choose a healthy diet. These contextual factors—food access, household food insecurity, and acculturation—are particularly important for millions of individuals living in the United States. As appropriate, professionals can consider these critical factors when developing strategies and providing education to enhance interventions.

Food Access

Having access to healthy, safe,[2] and affordable food choices is crucial for an individual to achieve a healthy eating pattern. Food access is influenced by diverse factors, including proximity to food retail outlets (e.g., distance to a store or the number of stores in an area), individual resources (e.g., income or personal transportation), and neighborhood-level resources (e.g., average income of the neighborhood and availability of public transportation). Race/ethnicity, socioeconomic status, geographic location, and the presence of a disability also may affect an individual's ability to access foods to support healthy eating patterns.

Innovative approaches are emerging to improve food access within communities. These include creating financing programs to incentivize grocery store development; increasing the availability of foods to support healthy eating patterns in retail outlets, including corner stores, bodegas, farmers markets, mobile markets, shelters, food banks, and community gardens/cooperatives; and creating new pathways for wholesale distribution through food hubs.

Food access is important in all settings where people make choices. Improving food access in settings, such as schools, worksites, early care and education programs, and food retail, may include changing organizational policies to improve the availability and provision of healthy food choices, developing or updating nutrition standards for food service operations, and educating customers about how to identify healthy choices, such as through point-of-purchase information. Changes to food options within a setting should not be done in isolation but with consideration of the overall mix of foods provided (e.g., in cafeterias, at meetings, in vending machines, concession stands and elsewhere).

To help everyone make choices that align with the *Dietary Guidelines*, professionals are encouraged to identify ways to improve food access. Ultimately, individual choices will be enhanced when sectors and settings ensure the accessibility of safe, affordable, and healthy food choices.

Household Food Insecurity

In the United States, about 48 million individuals live in households that experience food insecurity, which occurs when access to nutritionally adequate and safe food is limited or uncertain. Food insecurity can be temporary or persist over time. Living with food insecurity challenges a household's ability to obtain food and make healthy choices and can exacerbate stress and chronic disease risk. Government and nongovernment nutrition assistance programs play an essential role in providing food and educational resources to help participants make healthy food choices within their budget. Food insecurity persists in the United States, and maintaining current programs, networks, and partnerships is crucial in addressing the problem. Exploring innovative new strategies could provide opportunities to reach more individuals, families, and households experiencing food insecurity. For example, sectors can create networks and partnerships to deliver food and other resources to reach people who are in need and when community services are scarce. Individuals who are supported in this way are better able to obtain and make healthy food choices that align with the *Dietary Guidelines*.

Acculturation

The United States continues to evolve as a nation of individuals and families who emigrate from other countries. Individuals who come to this country may adopt the attitudes, values, customs, beliefs, and behaviors of a new culture as well as its dietary habits. Healthy eating patterns are designed to be flexible in order to accommodate traditional and cultural foods. Individuals are encouraged to retain the healthy aspects of their eating and physical activity patterns and avoid adopting behaviors that are less healthy. Professionals can help individuals or population groups by recognizing cultural diversity and developing programs and materials that are responsive and appropriate to their belief systems, lifestyles and practices, traditions, and other needs.

[2] See Appendix 14. Food Safety Principles and Guidance for guidance on food safety principles and practices.

Multi-Component Versus Multi-Level Strategies To Influence Food & Physical Activity Choices

Evidence demonstrates that both multi-component and multi-level changes must be implemented to effectively influence public health. Multi-component changes are those that use a *combination of strategies* to promote behavior change. These strategies can be employed across or within different settings. For example, a multi-component obesity prevention program at an early care and education center could target classroom education around nutrition and physical activity, ensure the continued nutritional quality of meals and snacks served, make improvements to the mealtime setting, increase opportunities for active play, and initiate active outreach to parents about making positive changes at home.

Multi-level changes are those that *target change at the individual level as well as additional levels*, such as in community, school, and retail settings. For example, strategies to reduce sodium intake could include providing individual education on how to interpret sodium information on food labels or restaurant menus (e.g., sodium versus salt), reformulating foods and meals to reduce sodium content in retail and food service establishments, and conducting public health campaigns to promote the importance of reducing sodium intake.

Many strategies for implementing these types of multi-component and multi-level actions have shown promise to positively influence food and physical activity choices. For example, moderate evidence indicates that multi-component school-based programs can improve dietary intake and weight status of school-aged children. Fundamental to the success of such actions is tailoring programs to meet the needs of the individual, the community, and/or the organization so as to increase the chances of affecting social and cultural norms and values over time.

Strategies for Action

To shift from current eating patterns to those that align with the *Dietary Guidelines*, collective action across all segments of society is needed. As previously described, these actions must involve a broad range of sectors, occur across a variety of settings, and address the needs of individuals, families, and communities. These actions include identifying and addressing successful approaches for change; improving knowledge of what constitutes healthy eating and physical activity patterns; enhancing access to adequate amounts of healthy, safe, and affordable food choices; and promoting change in social and cultural norms and values to embrace, support, and maintain healthy eating and physical activity behaviors.

The following examples of strategies exemplify the concerted action needed. It is important to note that no one strategy is likely to be the primary driver to improve individual and population lifestyle choices. Evidence demonstrates that multiple changes both within and across all levels of the Social-Ecological Model are needed to increase the effectiveness of interventions.

Sectors—Examples Include:

- Foster partnerships with food producers, suppliers, and retailers to increase access to foods that align with the *Dietary Guidelines*.
- Promote the development and availability of food products that align with the *Dietary Guidelines* in food retail and food service establishments.
- Identify and support policies and/or programs that promote healthy eating and physical activity patterns.
- Encourage participation in physical activity programs offered in various settings.

Settings—Examples Include:

- Expand access to healthy, safe, and affordable food choices that align with the *Dietary Guidelines* and provide opportunities for engaging in physical activity.
- Adopt organizational changes and practices, including those that increase the availability, accessibility, and consumption of foods that align with the *Dietary Guidelines*.
- Provide nutrition assistance programs that support education and promotional activities tailored to the needs of the community.
- Implement educational programs tailored to individuals and change organization practices, approaches, and/or policies to support healthy food choices where food decisions are being made, including at early care and education programs, schools, worksites, and other community settings.
- Encourage opportunities in the workplace for regular physical activity through active commuting, activity breaks, and walking meetings.

Using MyPlate as a Guide To Support Healthy Eating Patterns

The *Dietary Guidelines* is developed and written for a professional audience. Therefore, its translation into actionable consumer messages and resources is crucial to help individuals, families, and communities achieve healthy eating patterns. MyPlate is one such example (**Figure 3-2**). MyPlate is used by professionals across multiple sectors to help individuals become more aware of and educated about making healthy food and beverage choices over time. Created to be used in various settings and to be adaptable to the needs of specific population groups, the MyPlate symbol and its supporting consumer resources at ChooseMyPlate.gov bring together the key elements of healthy eating patterns, translating the *Dietary Guidelines* into key consumer messages that are used in educational materials and tools for the public.

Figure 3-2. Implementation of the *Dietary Guidelines* Through MyPlate

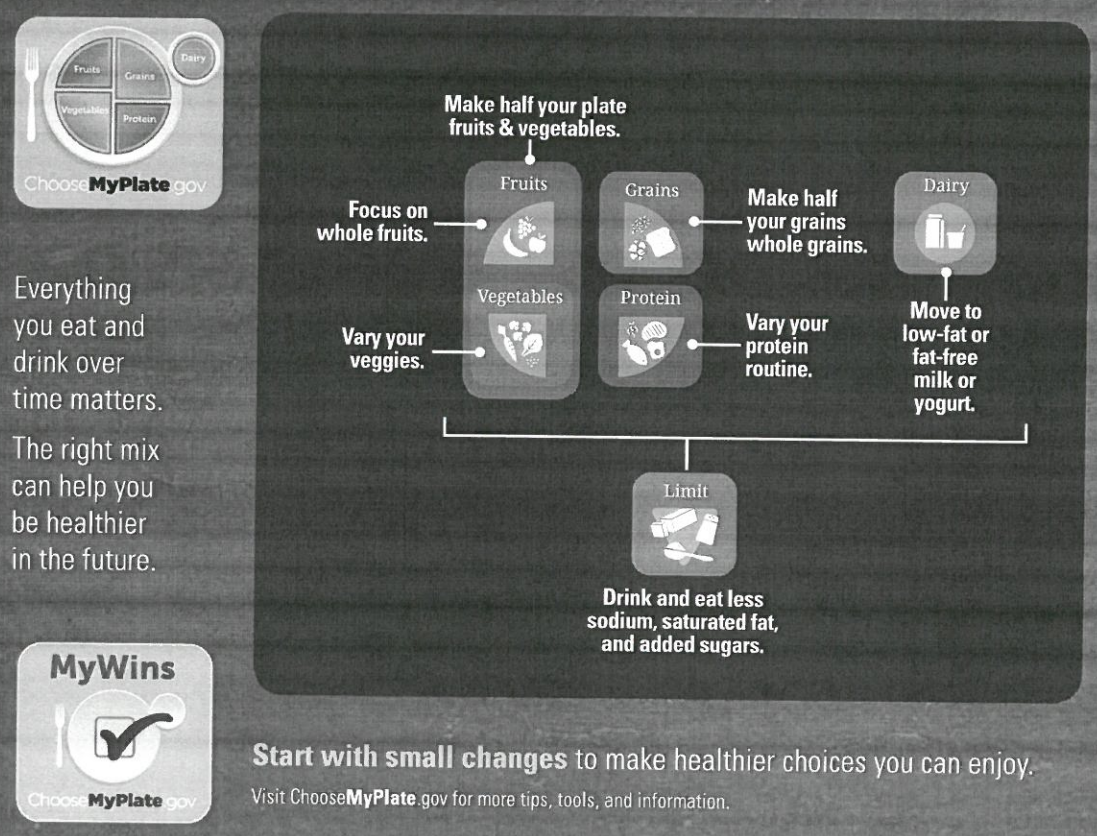


Figure 3-3.

Strategies To Align Settings With the *2015-2020 Dietary Guidelines*

Americans make food and beverage choices in a variety of settings at home, at work, and at play. Aligning these settings with the *2015-2020 Dietary Guidelines* will not only influence individual choices—it can also have broader population level impact when multiple sectors commit to make changes together.

Figure 3-3. *(continued...)*

Strategies To Align Settings With the *2015-2020 Dietary Guidelines*

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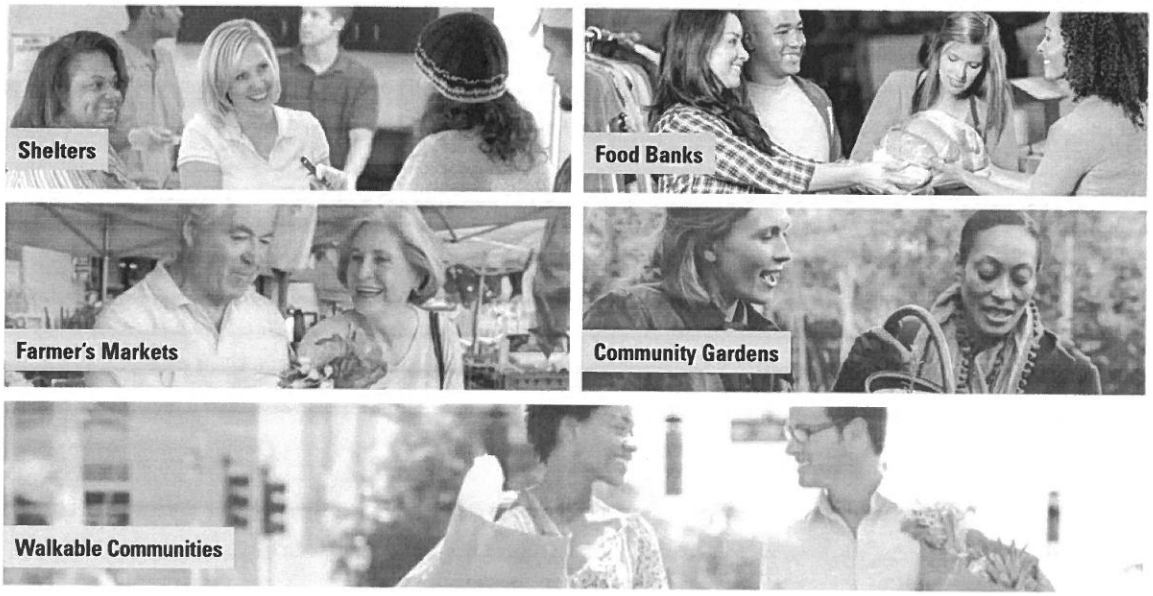
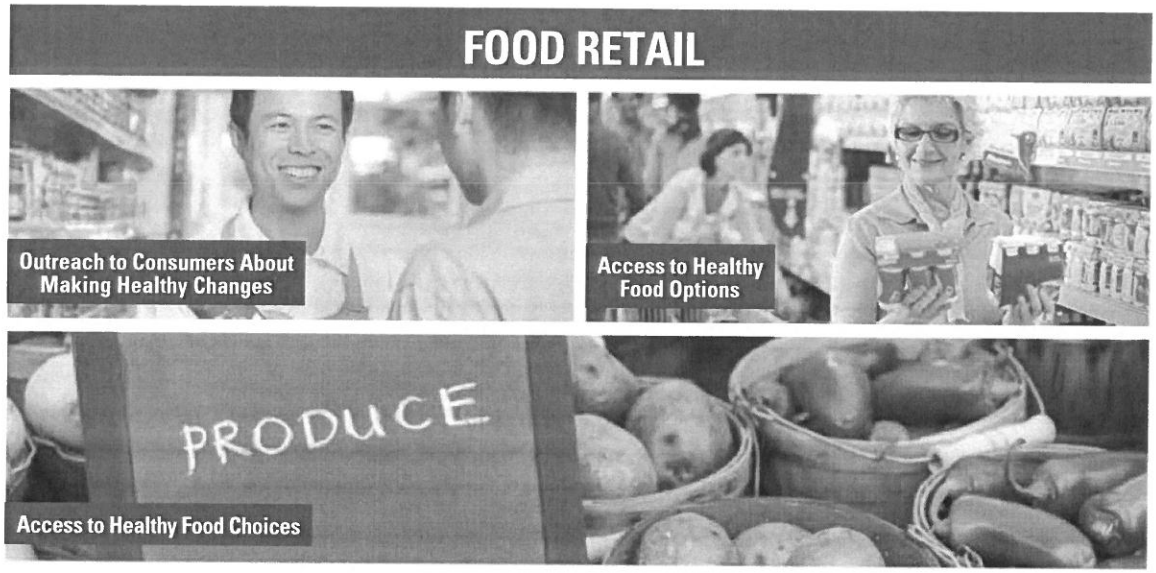
WORKSITE

COMMUNITY





Professionals Working With Individuals—Examples Include:

- Help individuals become more aware of the foods and beverages that make up their own or their family's eating patterns and identify areas, such as modifying recipes and/or food selections, where they can make shifts to align with the *Dietary Guidelines*.
- Teach skills like gardening, cooking, meal planning, and label reading that help support healthy eating patterns.
- Suggest ways that individuals can model healthy eating behaviors for friends and family members.
- Develop plans to help individuals limit screen time and time spent being sedentary and increase physical activity to meet the *Physical Activity Guidelines for Americans*.

This is not an all-inclusive list; many strategies are available that can result in shifts to improve dietary intake and, ultimately, improve health. Professionals should help individuals understand that they can adapt their choices to create healthy eating patterns that encompass all foods and beverages, meet food group and nutrient needs, and stay within calorie limits.

Summary

Concerted efforts among professionals within communities, businesses and industries, organizations, governments, and other segments of society are needed to support individuals and families in making lifestyle choices that align with the *Dietary Guidelines*. Professionals have an important role in leading disease-prevention efforts within their organizations and communities to make healthy eating and regular physical activity an organizational and societal norm. Changes at multiple levels of the Social-Ecological Model are needed, and these changes, in combination and over time, can have a meaningful impact on the health of current and future generations.

Appendix 1.

Physical Activity Guidelines for Americans

In addition to consuming a healthy eating pattern, regular physical activity is one of the most important things Americans can do to improve their health. The *Physical Activity Guidelines for Americans*,[1] released by the U.S. Department of Health and Human Services, provides a comprehensive set of recommendations for Americans on the amounts and types of physical activity needed each day. Adults need at least 150 minutes of moderate-intensity physical activity and should perform muscle-strengthening exercises on 2 or more days each week. Youth ages 6 to 17 years need at least 60 minutes of physical activity per day, including aerobic, muscle-strengthening, and bone-strengthening activities (see **Table A1-1** for additional details). Just as individuals can achieve a healthy eating pattern in a variety of ways that meet their personal and cultural preferences, they can engage in regular physical activity in a variety of ways throughout the day and by choosing activities they enjoy. **Table A1-2** provides a list of Federal resources, including handouts, online assessments, trackers, and interactive websites. These can be used to help motivate consumer audiences to make healthy physical activity choices.

Table A1-1.
Physical Activity Guidelines for Americans Recommendations

Age	Recommendations
6 to 17 Years	Children and adolescents should do 60 minutes (1 hour) or more of physical activity daily. • **Aerobic:** Most of the 60 or more minutes a day should be either moderate[a]- or vigorous-intensity[b] aerobic physical activity, and should include vigorous-intensity physical activity at least 3 days a week. • **Muscle-strengthening:**[c] As part of their 60 or more minutes of daily physical activity, children and adolescents should include muscle-strengthening physical activity on at least 3 days of the week. • **Bone-strengthening:**[d] As part of their 60 or more minutes of daily physical activity, children and adolescents should include bone-strengthening physical activity on at least 3 days of the week. • It is important to encourage young people to participate in physical activities that are appropriate for their age, that are enjoyable, and that offer variety.

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

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

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

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

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

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

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

Table A1-2.

Federal Physical Activity Resources

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

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

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

Appendix 2.

Estimated Calorie Needs per Day, by Age, Sex, & Physical Activity Level

The total number of calories a person needs each day varies depending on a number of factors, including the person's age, sex, height, weight, and level of physical activity. In addition, a need to lose, maintain, or gain weight and other factors affect how many calories should be consumed. Estimated amounts of calories needed to maintain calorie balance for various age and sex groups at three different levels of physical activity are provided in **Table A2-1**. These estimates are based on the Estimated Energy Requirements (EER) equations, using reference heights (average) and reference weights (healthy) for each age-sex group. For children and adolescents, reference height and weight vary. For adults, the reference man is 5 feet 10 inches tall and weighs 154 pounds. The reference woman is 5 feet 4 inches tall and weighs 126 pounds.

Estimates range from 1,600 to 2,400 calories per day for adult women and 2,000 to 3,000 calories per day for adult men. Within each age and sex category, the low end of the range is for sedentary individuals; the high end of the range is for active individuals. Due to reductions in basal metabolic rate that occur with aging, calorie needs generally decrease for adults as they age. Estimated needs for young children range from 1,000 to 2,000 calories per day, and the range for older children and adolescents varies substantially from 1,400 to 3,200 calories per day, with boys generally having higher calorie needs than girls. These are only estimates, and approximations of individual calorie needs can be aided with online tools such as those available at www.supertracker.usda.gov.

Table A2-1.

Estimated Calorie Needs per Day, by Age, Sex, & Physical Activity Level

Males

Age	Sedentary[a]	Moderately Active[b]	Active[c]
2	1,000	1,000	1,000
3	1,000	1,400	1,400
4	1,200	1,400	1,600
5	1,200	1,400	1,600
6	1,400	1,600	1,800
7	1,400	1,600	1,800
8	1,400	1,600	2,000

Females[d]

Age	Sedentary[a]	Moderately Active[b]	Active[c]
2	1,000	1,000	1,000
3	1,000	1,200	1,400
4	1,200	1,400	1,400
5	1,200	1,400	1,600
6	1,200	1,400	1,600
7	1,200	1,600	1,800
8	1,400	1,600	1,800

Males

Age	Sedentary[a]	Moderately Active[b]	Active[c]
9	1,600	1,800	2,000
10	1,600	1,800	2,200
11	1,800	2,000	2,200
12	1,800	2,200	2,400
13	2,000	2,200	2,600
14	2,000	2,400	2,800
15	2,200	2,600	3,000
16	2,400	2,800	3,200
17	2,400	2,800	3,200
18	2,400	2,800	3,200
19-20	2,600	2,800	3,000
21-25	2,400	2,800	3,000
26-30	2,400	2,600	3,000
31-35	2,400	2,600	3,000
36-40	2,400	2,600	2,800
41-45	2,200	2,600	2,800
46-50	2,200	2,400	2,800
51-55	2,200	2,400	2,800
56-60	2,200	2,400	2,600
61-65	2,000	2,400	2,600
66-70	2,000	2,200	2,600
71-75	2,000	2,200	2,600
76 & Up	2,000	2,200	2,400

Females[d]

Age	Sedentary[a]	Moderately Active[b]	Active[c]
9	1,400	1,600	1,800
10	1,400	1,800	2,000
11	1,600	1,800	2,000
12	1,600	2,000	2,200
13	1,600	2,000	2,200
14	1,800	2,000	2,400
15	1,800	2,000	2,400
16	1,800	2,000	2,400
17	1,800	2,000	2,400
18	1,800	2,000	2,400
19-20	2,000	2,200	2,400
21-25	2,000	2,200	2,400
26-30	1,800	2,000	2,400
31-35	1,800	2,000	2,200
36-40	1,800	2,000	2,200
41-45	1,800	2,000	2,200
46-50	1,800	2,000	2,200
51-55	1,600	1,800	2,200
56-60	1,600	1,800	2,200
61-65	1,600	1,800	2,000
66-70	1,600	1,800	2,000
71-75	1,600	1,800	2,000
76 & Up	1,600	1,800	2,000

[a] Sedentary means a lifestyle that includes only the physical activity of independent living.

[b] Moderately Active means a lifestyle that includes physical activity equivalent to walking about 1.5 to 3 miles per day at 3 to 4 miles per hour, in addition to the activities of independent living.

[c] Active means a lifestyle that includes physical activity equivalent to walking more than 3 miles per day at 3 to 4 miles per hour, in addition to the activities of independent living.

[d] Estimates for females do not include women who are pregnant or breastfeeding.

SOURCE: Institute of Medicine. Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids. Washington (DC): The National Academies Press; 2002.

Appendix 3.

USDA Food Patterns: Healthy U.S.-Style Eating Pattern

The Healthy U.S.-Style Pattern is based on the types and proportions of foods Americans typically consume, but in nutrient-dense forms and appropriate amounts. It is designed to meet nutrient needs while not exceeding calorie requirements and while staying within limits for overconsumed dietary components.

The methodology used to develop and update this Pattern continues to be grounded in that of the food guides USDA has developed for the last 30 years. This methodology includes using current food consumption data to determine the mix and proportions of foods to include in each group, using current food composition data to select a nutrient-dense representative for each food, and calculating nutrient profiles for each food group using these nutrient-dense representative foods. As would be expected, most foods in their nutrient-dense forms do contain some sodium and saturated fatty acids. In a few cases, such as whole-wheat bread, the most appropriate representative in current Federal databases contains a small amount of added sugars. Detailed information about the representative foods, nutrient profiles, and Patterns is available on the USDA Center for Nutrition Policy and Promotion website.[1]

Amounts of each food group and subgroup are adjusted as needed, within the limits of the range of typical consumption when possible, to meet nutrient and *Dietary Guidelines* standards while staying within the limits for calories and overconsumed dietary components. Standards for nutrient adequacy aim to meet the Recommended Dietary Allowances (RDA), which are designed to cover the needs of 97 percent of the population, and Adequate Intakes (AI), which are used when an average nutrient requirement cannot be determined. The Patterns meet these standards for almost all nutrients. For a few nutrients (vitamin D, vitamin E, potassium, choline), amounts in the Patterns are marginal or below the RDA or AI standard for many or all age-sex groups. In most cases, an intake of these nutrients below the RDA or AI is not considered to be of public health concern. For more information on potassium and vitamin D, see Chapter 2, Underconsumed Nutrients and Nutrients of Public Health Concern.

The Healthy U.S.-Style Pattern is the base USDA Food Pattern. While the Healthy U.S.-Style Pattern is substantially unchanged from the base USDA Food Pattern of the 2010 edition of the *Dietary Guidelines*, small changes in the recommended amounts reflect updating the Patterns based on current food consumption and composition data. The Healthy U.S.-Style Pattern includes 12 calorie levels to meet the needs of individuals across the lifespan. To follow this Pattern, identify the appropriate calorie level, choose a variety of foods in each group and subgroup over time in recommended amounts, and limit choices that are not in nutrient-dense forms so that the overall calorie limit is not exceeded.

[1] For additional information and technical tables, see: U.S. Department of Agriculture. Center for Nutrition Policy and Promotion. USDA Food Patterns. Available at: http://www.cnpp.usda.gov/USDAFoodPatterns.

Table A3-1.

Healthy U.S.-Style Eating Pattern: Recommended Amounts of Food From Each Food Group at 12 Calorie Levels

Calorie Level of Pattern[a]	1,000	1,200	1,400	1,600	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200
Food Group[b]	**Daily Amount[c]** of Food From Each Group (vegetable and protein foods subgroup amounts are per week)											
Vegetables	**1 c-eq**	**1½ c-eq**	**1½ c-eq**	**2 c-eq**	**2½ c-eq**	**2½ c-eq**	**3 c-eq**	**3 c-eq**	**3½ c-eq**	**3½ c-eq**	**4 c-eq**	**4 c-eq**
Dark-Green Vegetables (c-eq/wk)	½	1	1	1½	1½	1½	2	2	2½	2½	2½	2½
Red & Orange Vegetables (c-eq/wk)	2½	3	3	4	5½	5½	6	6	7	7	7½	7½
Legumes (Beans & Peas) (c-eq/wk)	½	½	½	1	1½	1½	2	2	2½	2½	3	3
Starchy Vegetables (c-eq/wk)	2	3½	3½	4	5	5	6	6	7	7	8	8
Other Vegetables (c-eq/wk)	1½	2½	2½	3½	4	4	5	5	5½	5½	7	7
Fruits	**1 c-eq**	**1 c-eq**	**1½ c-eq**	**1½ c-eq**	**1½ c-eq**	**2 c-eq**	**2 c-eq**	**2 c-eq**	**2 c-eq**	**2½ c-eq**	**2½ c-eq**	**2½ c-eq**
Grains	**3 oz-eq**	**4 oz-eq**	**5 oz-eq**	**5 oz-eq**	**6 oz-eq**	**6 oz-eq**	**7 oz-eq**	**8 oz-eq**	**9 oz-eq**	**10 oz-eq**	**10 oz-eq**	**10 oz-eq**
Whole Grains[d] (oz-eq/day)	1½	2	2½	3	3	3	3½	4	4½	5	5	5
Refined Grains (oz-eq/day)	1½	2	2½	2	3	3	3½	4	4½	5	5	5

Table A3-1. *(continued...)*

Healthy U.S.-Style Eating Pattern: Recommended Amounts of Food From Each Food Group at 12 Calorie Levels

Calorie Level of Pattern[a]	1,000	1,200	1,400	1,600	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200
Food Group[b]	**Daily Amount[c]** of Food From Each Group (vegetable and protein foods subgroup amounts are per week)											
Dairy	2 c-eq	2½ c-eq	2½ c-eq	3 c-eq	3 c-eq	3 c-eq	3 c-eq	3 c-eq	3 c-eq	3 c-eq	3 c-eq	3 c-eq
Protein Foods	2 oz-eq	3 oz-eq	4 oz-eq	5 oz-eq	5 oz-eq	5½ oz-eq	6 oz-eq	6½ oz-eq	6½ oz-eq	7 oz-eq	7 oz-eq	7 oz-eq
Seafood (oz-eq/wk)	3	4	6	8	8	8	9	10	10	10	10	10
Meats, Poultry, Eggs (oz-eq/wk)	10	14	19	23	23	26	28	31	31	33	33	33
Nuts Seeds, Soy Products (oz-eq/wk)	2	2	3	4	4	5	5	5	5	6	6	6
Oils	15 g	17 g	17 g	22 g	24 g	27 g	29 g	31 g	34 g	36 g	44 g	51 g
Limit on Calories for Other Uses, Calories (% of Calories)[e,f]	150 (15%)	100 (8%)	110 (8%)	130 (8%)	170 (9%)	270 (14%)	280 (13%)	350 (15%)	380 (15%)	400 (14%)	470 (16%)	610 (19%)

[a] Food intake patterns at 1,000, 1,200, and 1,400 calories are designed to meet the nutritional needs of 2- to 8-year-old children. Patterns from 1,600 to 3,200 calories are designed to meet the nutritional needs of children 9 years and older and adults. If a child 4 to 8 years of age needs more calories and, therefore, is following a pattern at 1,600 calories or more, his/her recommended amount from the dairy group should be 2.5 cups per day. Children 9 years and older and adults should not use the 1,000-, 1,200-, or 1,400-calorie patterns.

[b] Foods in each group and subgroup are:

- Vegetables
  - Dark-green vegetables: All fresh, frozen, and canned dark-green leafy vegetables and broccoli, cooked or raw: for example, broccoli; spinach; romaine; kale; collard, turnip, and mustard greens.
  - Red and orange vegetables: All fresh, frozen, and canned red and orange vegetables or juice, cooked or raw: for example, tomatoes, tomato juice, red peppers, carrots, sweet potatoes, winter squash, and pumpkin.
  - Legumes (beans and peas): All cooked from dry or canned beans and peas: for example, kidney beans, white beans, black beans, lentils, chickpeas, pinto beans, split peas, and edamame (green soybeans). Does not include green beans or green peas.

- Starchy vegetables: All fresh, frozen, and canned starchy vegetables: for example, white potatoes, corn, green peas, green lima beans, plantains, and cassava.
- Other vegetables: All other fresh, frozen, and canned vegetables, cooked or raw: for example, iceberg lettuce, green beans, onions, cucumbers, cabbage, celery, zucchini, mushrooms, and green peppers.

- 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, quinoa, popcorn, and brown rice.
  - Refined grains: All refined-grain products and refined grains used as ingredients: for example, white breads, refined grain cereals and crackers, pasta, and white rice. Refined grain choices should be enriched.
- Dairy
  - All milk, including lactose-free and lactose-reduced products and fortified soy beverages (soymilk), yogurt, frozen yogurt, 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 seafood, meats, poultry, eggs, soy products, nuts, and seeds. Meats and poultry should be lean or low-fat and nuts should be unsalted. Legumes (beans and peas) can be considered part of this group as well as the vegetable group, but should be counted in one group only.

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

- Vegetables and fruits, 1 cup-equivalent is: 1 cup raw or cooked vegetable or fruit, 1 cup vegetable or fruit juice, 2 cups leafy salad greens, ½ cup dried fruit or vegetable.
- Grains, 1 ounce-equivalent is: ½ cup cooked rice, pasta, or cereal; 1 ounce dry pasta or rice; 1 medium (1 ounce) slice bread; 1 ounce of ready-to-eat cereal (about 1 cup of flaked cereal).
- Dairy, 1 cup-equivalent is: 1 cup milk, yogurt, or fortified soymilk; 1½ ounces natural cheese such as cheddar cheese or 2 ounces of processed cheese.
- Protein Foods, 1 ounce-equivalent is: 1 ounce lean meat, poultry, or seafood; 1 egg; ¼ cup cooked beans or tofu; 1 Tbsp peanut butter; ½ ounce nuts or seeds.

[d] Amounts of whole grains in the Patterns for children are less than the minimum of 3 oz-eq in all Patterns recommended for adults.

[e] All foods are assumed to be in nutrient-dense forms, lean or low-fat and prepared without added fats, sugars, refined starches, or salt. If all food choices to meet food group recommendations are in nutrient-dense forms, a small number of calories remain within the overall calorie limit of the Pattern (i.e., limit on calories for other uses). The number of these calories depends on the overall calorie limit in the Pattern and the amounts of food from each food group required to meet nutritional goals. Nutritional goals are higher for the 1,200- to 1,600-calorie Patterns than for the 1,000-calorie Pattern, so the limit on calories for other uses is lower in the 1,200- to 1,600-calorie Patterns. Calories up to the specified limit can be used for added sugars, added refined starches, solid fats, alcohol, or to eat more than the recommended amount of food in a food group. The overall eating Pattern also should not exceed the limits of less than 10 percent of calories from added sugars and less than 10 percent of calories from saturated fats. At most calorie levels, amounts that can be accommodated are less than these limits. For adults of legal drinking age who choose to drink alcohol, a limit of up to 1 drink per day for women and up to 2 drinks per day for men within limits on calories for other uses applies (see Appendix 9. Alcohol for additional guidance); and calories from protein, carbohydrate, and total fats should be within the Acceptable Macronutrient Distribution Ranges (AMDRs).

[f] Values are rounded.