

Nutrient Recommendations for Adults

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Research shows that adults are interested in their health and, as a result, want to know about the nutrients they need. This NebGuide presents nutrient recommendations for adults age 19 and older.

Research shows that many adults are interested in their health and, as a result, are interested in recommended nutrient intakes. The nutrient recommendations discussed in this document are for men and women 19 years of age and older, excluding pregnant and lactating women.

The basic premise of the Dietary Guidelines for Americans is that nutrient needs should be met primarily through consuming foods. In certain cases, fortified foods and dietary supplements may be useful in providing nutrients that otherwise might be consumed in less than recommended amounts.

The 2010 Dietary Guidelines for Americans encompass two concepts:

- Maintain calorie balance over time to achieve and sustain a healthy body weight.
- Focus on consuming nutrient-dense foods and beverages.

An essential nutrient is one required for normal body functioning and should be included in your diet for proper

body functioning. Essential nutrients can be divided into two categories: macronutrients and micronutrients. Macronutrients supply your body with energy and include carbohydrate, fat, and protein. Micronutrients release the energy in your body and include vitamins and minerals.

Carbohydrates, fats, and proteins provide the energy (calories) in food. According to the Institute of Medicine, to reach adequate food energy (calories), nutrients, and low risk of chronic diseases, an eating plan should provide:

- 45-65 percent of calories from carbohydrates
- 20-35 percent of calories from fats
- 10-35 percent of calories from proteins

Achieving and sustaining appropriate body weight across the lifespan is vital to maintaining good health and quality of life. Calorie balance over time is the key to weight management. To maintain the same body weight, calories consumed must equal calories expended. The total number of calories a person needs each day varies by age, gender, height, weight, and level of physical activity. In addition, a desire to lose, maintain, or gain weight affects how many calories should be consumed. *Table 1* provides estimated total calorie needs for weight maintenance based on age, gender, and physical activity level.

Table 1. Estimated Calorie Needs Per Day by Age, Gender, and Physical Activity Level^a
Estimated amounts of calories needed to maintain calorie balance for various gender and age groups at three different levels of physical activity. The estimates are rounded to the nearest 200 calories. An individual's calorie needs may be higher or lower than these average estimates.

Gender	Age (Years)	Physical Activity Level ^b		
		Sedentary ^c	Moderately Active ^c	Active ^c
Female ^d	19 - 30	1,800 - 2,000	2,000 - 2,200	2,400
	31 - 50	1,800	2,000	2,200
	51+	1,600	1,800	2,000 - 2,200
Male	19 - 30	2,400 - 2,600	2,600 - 2,800	3,000
	31 - 50	2,200 - 2,400	2,400 - 2,600	2,800 - 3,000
	51+	2,000 - 2,200	2,200 - 2,400	2,400 - 2,800

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

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

^cThe calorie ranges shown are to accommodate needs of different ages within the group. For children and adolescents, more calories are needed at older ages. For adults, fewer calories are needed at older ages.

^dEstimates for females do not include women who are pregnant or breast-feeding.

Source: Dietary Guidelines for Americans, 2010.

Table II. Daily values for fat, sodium, carbohydrate, and fiber.

<i>Food Component</i>	<i>2,000 calorie diet</i>	<i>2,500 calorie diet</i>	<i>Basis for Daily Value</i>
Total Fat (g)	65	80	30% of calories or less
Saturated Fat (g)	20	25	10% of calories or less
Cholesterol (mg)	300	300	300 mg
Sodium (mg)	2400	2400	2400 mg
Total Carbohydrate (g)	300	375	60% of calories
Fiber (g)	25	30	10-13 g per 1000 calories

Table III. Recommended dietary allowances and adequate intakes of vitamins and minerals for adults^a (also daily values for food labels). (When recommended intakes are different for women than for men, the recommendations are given as Men/Women.)

<i>VITAMINS</i>													
<i>Age (yr)</i>	<i>Vitamin A (mg RAE)^b</i>	<i>Vitamin D (mg)^c</i>	<i>Vitamin E (mg)^d</i>	<i>Vitamin K (mg)</i>	<i>Vitamin C (mg)</i>	<i>Thiamin (mg)</i>	<i>Riboflavin (mg)</i>	<i>Niacin (mg)^e</i>	<i>Vitamin B₆ (mg)</i>	<i>Folate (mg)^f</i>	<i>Vitamin B₁₂ (mg)</i>	<i>Pantothenic Acid (mg)</i>	<i>Biotin (mg)</i>
19-30	900/700	15	15	120/90	90/75	1.2/1.1	1.3/1.1	16/14	1.3	400 ^g	2.4	5	30
31-50	900/700	15	15	120/90	90/75	1.2/1.1	1.3/1.1	16/14	1.3	400 ^g	2.4	5	30
51-70	900/700	15	15	120/90	90/75	1.2/1.1	1.3/1.1	16/14	1.7/1.5	400	2.4 ^h	5	30
70+	900/700	20	15	120/90	90/75	1.2/1.1	1.3/1.1	16/14	1.7/1.5	400	2.4 ^h	5	30
Daily Value ⁱ	1000	?	20	80	60	1.5	1.7	20	2.0	400	6.0	10	300
19-30	900/700	5	15	120/90	90/75	1.2/1.1	1.3/1.1	16/14	1.3	400 ^g	2.4	5	30

<i>MINERALS</i>								
<i>Age (yr)</i>	<i>Calcium (mg)</i>	<i>Phosphorus (mg)</i>	<i>Magnesium (mg)</i>	<i>Fluoride (mg)</i>	<i>Iron (mg)</i>	<i>Zinc (mg)</i>	<i>Iodine (mg)</i>	
19-30	1000	700	400/310	4/3	8/18	11/8	150	
31-50	1000	700	420/320	4/3	8/18	11/8	150	
51-70	1000	700	420/320	4/3	8	11/8	150	
70+	1200	700	420/320	4/3	8	11/8	150	
Daily Value ⁱ	1000	1000	400	ND ^j	18	15	150	

<i>MINERALS (Continued)</i>							
<i>Age (yr)</i>	<i>Selenium (mg)</i>	<i>Chromium (mg)</i>	<i>Copper (mg)</i>	<i>Manganese (mg)</i>	<i>Molybdenum (mg)</i>	<i>Potassium (mg)</i>	<i>Sodium (mg)</i>
19-30	55	35/25	900	2.3/1.8	45	4700	1500
31-50	55	35/25	900	2.3/1.8	45	4700	1500
51-70	55	30/20	900	2.3/1.8	45	4700	1300
70+	55	30/20	900	2.3/1.8	45	4700	1200
Daily Value ⁱ	70	120	2000	2.0	75	3500	2400

^aSource: National Academy of Sciences, 1997, 1998, 2000, 2001, 2003, 2004. Recommendations are given as Recommended Dietary Allowances for vitamin A, vitamin E, vitamin C, thiamin, riboflavin, niacin, vitamin B₆, folate, vitamin B₁₂, phosphorus, magnesium, iron, zinc, iodine, selenium, copper, and molybdenum and as Adequate Intakes for the other nutrients.

^bAs retinol activity equivalents (RAE); 1 RAE = 1 mg retinol, 12 mg β-carotene, 24 mg α-carotene, or 24 mg β-cryptoxanthin. To calculate RAE from RE of provitamin A carotenoids in foods, divide the RE by 2. For preformed vitamin A in foods or supplements and for provitamin A carotenoids in supplements, 1 RE = 1 RAE.

^c1 mg = 40 IU; this is in absence of adequate exposure to sunlight.

^dAs α-tocopherol; 15 mg α-tocopherol from food = 22 IU from natural-source vitamin E or 33 IU of the synthetic form.

^eAs niacin equivalents (NE); 1 mg niacin = 60 mg tryptophan.

^fAs dietary folate equivalents (DFE); 1 DFE = 1 mg food folate = 0.6 mg of folic acid from fortified food or as a supplement consumed with food = 0.5 mg of a supplement taken on an empty stomach.

^gAll women capable of becoming pregnant should consume 400 mg from supplements or fortified foods in addition to intake of food folate from a varied diet.

^hAs 10-30 percent of older people may malabsorb food-bound vitamin B₁₂, it is advisable for those older than 50 years to meet their Recommended Dietary Allowance mainly by consuming foods fortified with vitamin B₁₂ or a supplement containing vitamin B₁₂.

ⁱAdults and children 4 or more years of age.

^jDaily Values have not been determined.

Recommended Nutrient Intakes

Nutrient recommendations are given as Recommended Dietary Allowances (RDA) and Adequate Intakes (AI). The RDA is designed to meet the needs of almost all (97.5 percent) healthy individuals in a particular life stage and gender group. When no RDA is established, AI are set and are believed to cover needs for all individuals in a group. The RDA and AI are intended to be used as goals for individual dietary intakes.

The information on food labels is listed by Percent (%) Daily Values. The Daily Values for some nutrients are given in grams (g) or milligrams (mg) based on a 2,000 calorie diet. The statement “*Your daily values may be higher or lower depending on your calorie needs*” is added to the label to clarify that based on your individual needs, you may need more or less of each nutrient. Daily Values for total and saturated fat, cholesterol, sodium, carbohydrate, and fiber are given in *Table II*. Food labels must be on all processed food products. Nutrition labeling is voluntary for raw foods. Labeling information about protein, vitamin A, vitamin C, iron, calcium, and sodium is required while labeling about other vitamins and minerals is optional.

The RDA or AI of vitamins and minerals for adults is given in *Table III*. While choline is not listed in the table, it is an essential nutrient. The AI for choline is 550 mg daily for men and 425 mg daily for women. A Daily Value for choline has not been established.

Adequate Nutrients Within Calorie Needs

Consuming a wide variety of nutritious foods is necessary to provide all needed nutrients while staying within caloric needs. In the United States, intakes of vegetables, fruits, whole grains, milk products, and oils are lower than recommended. As a result, dietary intakes of several nutrients, including potassium, dietary fiber, calcium, and vitamin D, are low enough to be of public health concern for both adults and children.

Potassium: The consumption of a potassium-rich diet tends to decrease sodium’s effects on blood pressure, may reduce the risk of developing kidney stones, and perhaps reduce age-related bone loss. Dietary sources of potassium are found in all food groups, particularly in vegetables, fruits, and milk and milk products.

Dietary Fiber: Consuming foods high in dietary fiber is beneficial in providing a feeling of fullness and is important in promoting healthy stools. Also, dietary fiber that occurs naturally in foods may help reduce the risk of cardiovascular disease, obesity, and type 2 diabetes, so diets high in fiber-rich foods are recommended. Foods rich in fiber include whole grain cereals and breads, dried beans and peas, seeds, nuts, and raw fruits and vegetables.

Calcium: Adequate calcium intake is important for bone health, nerve transmission, healthy blood vessels, and muscle contractions. Age groups of particular concern due to low calcium intake from food include children age 9 and older, adolescent girls, adult women, and adults age 51 and older. Foods rich in calcium include milk and milk products, fortified cereals, calcium-fortified beverages,

tofu, bony fish, kale, Chinese cabbage, almonds, broccoli, dried figs, and sesame seeds.

Vitamin D: Adequate vitamin D status is important for bone health. Foods rich in vitamin D are fortified foods, including fluid milk and some yogurts. Other foods and beverages, such as breakfast cereals, margarine, orange juice, and soy beverages, also are commonly fortified with this nutrient. Natural sources of vitamin D include some kinds of fish (e.g., salmon, herring, mackerel, and tuna) and egg yolks, which have smaller amounts.

Adults should eat foods that limit their intakes of sodium, saturated fatty acids, trans fatty acids, cholesterol, solid fats, and added sugars. Many adults have intakes of the following nutrients that are higher than recommended:

Sodium: Sodium is found in table salt and processed foods, though some processed foods are made and labeled as sodium-free or low-sodium. When sodium intake is higher than needed, edema (swelling of hands, feet, and legs) may occur. High sodium intakes have been associated with high blood pressure and stroke. Some people are more susceptible to salt-induced hypertension than others. Americans should reduce their sodium intake to less than 2,300 mg. African Americans; individuals with hypertension, diabetes, or chronic kidney disease; and individuals age 51 or older tend to be more responsive to the blood pressure-raising effects of sodium than others. These individuals should reduce their sodium intake to 1,500 mg per day.

Fats: Dietary fats are found in both plant and animal foods. Fats supply calories and essential fatty acids, and help in the absorption of the fat-soluble vitamins A, D, E, and K. The Institute of Medicine established 20-35 percent of total energy intake as the acceptable range for total fat intake. This range is associated with reduced risk of chronic diseases, such as cardiovascular disease, while providing for adequate intake of essential nutrients. Americans consume more solid fats but less oil than is desirable. Because oils are a concentrated source of calories, replace solid fats with oils rather than add oil to the diet. Fatty acids are categorized as being saturated, monounsaturated, or polyunsaturated; fats contain a mixture of these different kinds of fatty acids.

Solid Fats: Fats with a high percentage of saturated and/or trans fatty acids are solid at room temperature and are referred to as “solid fats.” Common solid fats include butter, beef fat, chicken fat, pork fat (lard), stick margarine, and shortening. Solid fats are abundant in the diets of Americans and contribute to excess calorie intake.

Saturated Fatty Acids: The body uses some saturated fatty acids for physiological and structural functions, but it makes more than enough to meet those needs. Therefore, people have no dietary requirements for dietary saturated fat. A higher intake of most dietary saturated fatty acids is associated with higher levels of blood total cholesterol and low-density lipoprotein

(LDL) cholesterol. Higher total and LDL cholesterol levels are risk factors for cardiovascular disease. Major sources of saturated fatty acids in the American diet include cheese, pizza, grain-based desserts, dairy-based desserts, meat, chicken, and many chicken and meat mixed dishes.

Trans Fatty Acids: Trans fatty acids are found naturally in some foods, and others are formed during food processing. Trans fats are not essential to the diet. Americans should keep their intake of trans fatty acids as low as possible because diets high in trans fatty acids increase the risk for cardiovascular disease. Trans fats are produced when vegetable oils are hydrogenated into soft solids. Processed foods (bakery products, margarine, fried potatoes) provide about 80 percent of the trans fats in the American diet, compared to 20 percent that occur naturally in foods from animal sources.

Cholesterol: The body uses cholesterol for physiological and structural functions, but it makes enough for these purposes, so people do not need to eat sources of dietary cholesterol. Dietary cholesterol has been shown to raise blood LDL cholesterol levels in some individuals. However, this effect is reduced when saturated fatty acid intake is low. The potential negative effects of dietary cholesterol are relatively small compared to those of saturated and trans fatty acids. Cholesterol is found only in animal foods such as eggs, egg mixed dishes, cheese, dairy products, chicken and chicken mixed dishes, beef and beef mixed dishes, and all types of beef burgers.

Added Sugars: The majority of sugars in typical American diets are sugars added to foods during processing, preparation, or at the table. Beverages are a common source of added sugar. The body's response to sugars does not depend on whether the sugars are naturally present or added to a food. Added sugars supply calories but few, if any, essential nutrients and contribute an average of 16 percent of the total calories in American diets. Reducing the consumption of these sources of added sugars will lower the calorie content of the diet, without compromising its nutrient adequacy.

Alcohol: The consumption of alcohol can have beneficial or harmful effects, depending on the amount consumed, age, and other characteristics of the person consuming the alcohol. Alcohol is high in calories (7 calories per gram) and has minimal nutrient content.

Additional nutrients of concern for specific groups:

- Vitamin B₁₂ in adults over age 50
- Iron in women of child-bearing age
- Folate in women of child-bearing age

Vitamin B₁₂: Adults over the age of 50 have reduced ability to absorb vitamin B₁₂ from food, but they are able to absorb the form found in fortified foods and dietary supplements. Therefore, individuals age 50 and older are encouraged to include foods fortified with vitamin B₁₂, such as fortified cereals, or take dietary supplements.

Iron: Women of child-bearing age frequently are iron deficient and should eat foods high in heme-iron (lean meat, poultry, and seafood) and/or consume iron-rich plant foods or iron-fortified foods along with sufficient vitamin C. Women who are pregnant are advised to take an iron supplement as recommended by a health care provider.

Folate: Women of child-bearing age should consume synthetic folic acid from fortified foods or dietary supplements in addition to food forms of folate. Folic acid reduces the risk of neural tube defects in babies. All women capable of becoming pregnant are advised to consume 400 mcg of folic acid daily, and women who are pregnant are advised to consume 600 mcg of folic acid daily. Foods that are rich in folate include green leafy vegetables, organ meats, sprouts, dried beans, and folate-fortified orange juice.

Resources

Institute of Medicine. Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids. Washington, (DC): The National Academies Press; 2002.
Dietary Guidelines for Americans, 2010.

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This publication has been peer reviewed.

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51-70	900/700	15	15	120/90	90/75	1.2/1.1	1.3/1.1	16/14	1.7/1.5	400	2.4 ^h	5	30
70+	900/700	20	15	120/90	90/75	1.2/1.1	1.3/1.1	16/14	1.7/1.5	400	2.4 ^h	5	30
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<i>MINERALS (Continued)</i>							
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Saturated Fatty Acids: The body uses some saturated fatty acids for physiological and structural functions, but it makes more than enough to meet those needs. Therefore, people have no dietary requirements for dietary saturated fat. A higher intake of most dietary saturated fatty acids is associated with higher levels of blood total cholesterol and low-density lipoprotein

(LDL) cholesterol. Higher total and LDL cholesterol levels are risk factors for cardiovascular disease. Major sources of saturated fatty acids in the American diet include cheese, pizza, grain-based desserts, dairy-based desserts, meat, chicken, and many chicken and meat mixed dishes.

Trans Fatty Acids: Trans fatty acids are found naturally in some foods, and others are formed during food processing. Trans fats are not essential to the diet. Americans should keep their intake of trans fatty acids as low as possible because diets high in trans fatty acids increase the risk for cardiovascular disease. Trans fats are produced when vegetable oils are hydrogenated into soft solids. Processed foods (bakery products, margarine, fried potatoes) provide about 80 percent of the trans fats in the American diet, compared to 20 percent that occur naturally in foods from animal sources.

Cholesterol: The body uses cholesterol for physiological and structural functions, but it makes enough for these purposes, so people do not need to eat sources of dietary cholesterol. Dietary cholesterol has been shown to raise blood LDL cholesterol levels in some individuals. However, this effect is reduced when saturated fatty acid intake is low. The potential negative effects of dietary cholesterol are relatively small compared to those of saturated and trans fatty acids. Cholesterol is found only in animal foods such as eggs, egg mixed dishes, cheese, dairy products, chicken and chicken mixed dishes, beef and beef mixed dishes, and all types of beef burgers.

Added Sugars: The majority of sugars in typical American diets are sugars added to foods during processing, preparation, or at the table. Beverages are a common source of added sugar. The body's response to sugars does not depend on whether the sugars are naturally present or added to a food. Added sugars supply calories but few, if any, essential nutrients and contribute an average of 16 percent of the total calories in American diets. Reducing the consumption of these sources of added sugars will lower the calorie content of the diet, without compromising its nutrient adequacy.

Alcohol: The consumption of alcohol can have beneficial or harmful effects, depending on the amount consumed, age, and other characteristics of the person consuming the alcohol. Alcohol is high in calories (7 calories per gram) and has minimal nutrient content.

Additional nutrients of concern for specific groups:

- Vitamin B₁₂ in adults over age 50
- Iron in women of child-bearing age
- Folate in women of child-bearing age

Vitamin B₁₂: Adults over the age of 50 have reduced ability to absorb vitamin B₁₂ from food, but they are able to absorb the form found in fortified foods and dietary supplements. Therefore, individuals age 50 and older are encouraged to include foods fortified with vitamin B₁₂, such as fortified cereals, or take dietary supplements.

Iron: Women of child-bearing age frequently are iron deficient and should eat foods high in heme-iron (lean meat, poultry, and seafood) and/or consume iron-rich plant foods or iron-fortified foods along with sufficient vitamin C. Women who are pregnant are advised to take an iron supplement as recommended by a health care provider.

Folate: Women of child-bearing age should consume synthetic folic acid from fortified foods or dietary supplements in addition to food forms of folate. Folic acid reduces the risk of neural tube defects in babies. All women capable of becoming pregnant are advised to consume 400 mcg of folic acid daily, and women who are pregnant are advised to consume 600 mcg of folic acid daily. Foods that are rich in folate include green leafy vegetables, organ meats, sprouts, dried beans, and folate-fortified orange juice.

Resources

Institute of Medicine. Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids. Washington, (DC): The National Academies Press; 2002.
Dietary Guidelines for Americans, 2010.

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