



YOUR GUIDE TO  
**Vitamin &  
Mineral**  
SUPPLEMENTS

# Contents

---

<b>Vitamin and mineral basics</b> . . . . .	<b>2</b>
<b>The risks and benefits of supplements</b> . . . . .	<b>4</b>
<b>Supplements vs. whole foods</b> . . . . .	<b>6</b>
<b>Who should take supplements?</b> . . . . .	<b>8</b>
<b>Vitamins and minerals: How much do you need?</b> . . . . .	<b>11</b>
<b>Vitamins and minerals: Understanding the lingo</b> . . . . .	<b>12</b>
<b>Choosing and using supplements</b> . . . . .	<b>14</b>
<b>Overview of 10 key vitamins and minerals</b> . . . . .	<b>16</b>
Vitamin A . . . . .	16
Vitamin B-9 (folate and folic acid) . . . . .	18
Vitamin B-12 (cobalamin) . . . . .	19
Vitamin C (ascorbic acid). . . . .	20
Vitamin D (calciferol) . . . . .	21
Vitamin E (tocopherol) . . . . .	23
Calcium . . . . .	24
Iron. . . . .	26
Magnesium. . . . .	27
Potassium . . . . .	28
<b>The final word</b> . . . . .	<b>30</b>

# Vitamin and mineral basics

Vitamins and minerals are substances your body needs in small amounts for normal growth, function and health. Together, vitamins and minerals are called micronutrients. Your body can't make most micronutrients, so you must get them from the foods you eat or, in some cases, from supplements.

---

## Vitamins

You need vitamins for normal body functions, mental alertness and resistance to infection. They enable your body to process proteins, carbohydrates and fats. Certain vitamins also help you produce blood cells, hormones, genetic material and chemicals in your nervous system.

The 14 essential vitamins fall into two categories:

- **Fat-soluble.** Vitamins A, D, E and K. They're stored in your body's fat. Vitamins A and D are also stored in your liver. Some fat-soluble vitamins, such as vitamins A and D, can build up in your body and cause problems.
- **Water-soluble.** Vitamin C, choline, biotin and the seven B vitamins: thiamin (B-1), riboflavin (B-2), niacin (B-3), pantothenic acid (B-5), pyridoxine (B-6), folate (B-9) and cobalamin (B-12). They're stored in the body to a lesser extent than are fat-soluble vitamins.

A vitamin may occur in different forms. For example, vitamin A occurs as retinol in animal products and as carotenoids in plants. This may account for different results seen in nutrition studies. Nutrition experts are exploring the roles that each vitamin form plays in health.

## Minerals

Your body also needs minerals. Major minerals (those needed in larger amounts) include calcium, phosphorus, magnesium, sodium, potassium and chloride. Calcium, phosphorus and magnesium are important in the development and health of bones and teeth. Sodium, potassium and chloride, known as electrolytes, are important in regulating the water and chemical balance in your body. In addition, your body needs smaller amounts of chromium, copper, fluoride, iodine, iron, manganese, molybdenum, selenium and zinc. These are all necessary for normal growth and health.

## The right balance

Having the right balance of vitamins and minerals in your body is essential. Prolonged vitamin or mineral deficiencies can cause health problems, such as night blindness (vitamin A deficiency), pernicious anemia (vitamin B-12 deficiency) and anemia (iron deficiency). A poor diet can contribute to these deficiencies. However, too much of some vitamins and minerals from high-dose supplements can cause toxic reactions.

# The risks and benefits of supplements

Scientific evidence shows that some dietary supplements are beneficial for overall health and for managing some health conditions. For example, calcium and vitamin D are important for keeping bones strong and reducing bone loss.

---

However, supplements aren't risk-free. They can have strong effects in the body. Supplements can also interact with prescription medications in ways that might cause problems. Here are just a few examples:

- Vitamin K can reduce the ability of the blood thinner warfarin (Coumadin, Jantoven) to prevent blood from clotting.
- Antioxidant supplements, like vitamins C and E, might reduce the effectiveness of some types of cancer chemotherapy.

Supplements are most likely to cause problems when used in high doses or when multiple supplements are used in combination. It's also important to keep in mind that you're getting vitamins and minerals in the foods you eat. In fact, a growing number of foods, such as breakfast cereals and beverages, have added vitamins and minerals. So you could be getting more than you think of some vitamins and minerals. Taking more than you need is expensive and



increases the risk of side effects. For example, getting too much vitamin A can cause headaches and liver damage, and reduce bone strength.

It's a good idea to talk with your doctor if you're considering supplements. Your doctor can help you determine which supplements, if any, might be valuable for you. And be sure to keep a list of the supplements you take and share the list with all of your health care providers.

# Supplements vs. whole foods

You can get your entire daily requirement of vitamin C by just popping a pill. You can get the same amount by eating a large orange. So which is better? In most cases, the orange.

---



Whole foods — such as fruits, vegetables, grains and dairy products — have three main benefits you can't get in a pill:

- **Whole foods are complex.** They contain a variety of the nutrients your body needs — not just one. An orange, for example, provides vitamin C as well as beta carotene, calcium and other nutrients. Vitamin C supplements lack these other nutrients. Similarly, a glass of milk provides you with protein, vitamin D, riboflavin, calcium, phosphorus and magnesium. If you take only calcium supplements and skip calcium-rich foods, such as dairy products, you may miss all the other nutrients you need for healthy bones.
- **Whole foods provide dietary fiber.** Fiber is important for digestion, and it helps prevent certain diseases. Soluble fiber (found in beans, some grains, and some fruits and vegetables) and insoluble fiber (found in whole grains and some fruits and vegetables) may help prevent heart disease, diabetes and constipation.

- **Whole foods contain other substances that may be important for good health.** Fruits and vegetables, for example, contain naturally occurring chemicals (phytochemicals) that may help protect you against major concerns such as cancer, heart disease, osteoporosis and diabetes. Although it's not yet known precisely what role phytochemicals play in nutrition, research shows many health benefits from eating more fruits, vegetables and grains. If you depend on supplements rather than eating a variety of whole foods, you miss the potential benefits of phytochemicals.
- **Whole foods contain vitamins in their many forms.** As mentioned earlier, vitamin A as retinol occurs only in animal products; plants contain hundreds of carotenoids that the body can convert into vitamin A.

Concentrate on getting your nutrients from a variety of foods, not supplements. Whole foods provide an ideal mix of nutrients, fiber and other food substances. It's likely that all of these work in combination to keep you healthy.



# Who should take supplements?

The best way to get the vitamins and minerals you need is through a nutritionally balanced diet. However, a vitamin or mineral supplement may be appropriate in some situations.

---

Ask your doctor about vitamin and mineral supplements if you fall into one of these groups:

- **Adults age 50 or older.** Although most people in this age group consume adequate amounts of vitamin B-12, their need for it is greater because the ability to absorb natural B-12 from food declines with age. If you fall into this category, you should eat foods fortified with vitamin B-12, such as fortified cereals, or take a multivitamin that contains B-12 or a separate B-12 supplement.
- **Postmenopausal women.** For some women, it's difficult to get the recommended amounts of calcium and vitamin D without supplementation. Both calcium and vitamin D supplements help protect against osteoporosis and the risk of fractures.
- **People who eat a poor or very low calorie diet.** Some older adults have poor appetites, as well as decreased ability to taste and smell. And depression or problems with teeth and dentures can inhibit eating. If you don't eat the recommended daily servings of fruits, vegetables and other healthy foods, taking a multivitamin-mineral supplement may be reasonable. But your best course

of action is to adopt better eating habits. If you eat less than 1,000 calories a day, you may benefit from a multivitamin-mineral supplement. A very low calorie diet limits the types and amounts of foods you eat and, over time, the types and amounts of nutrients you need to maintain health. Very low calorie diets should only be undertaken with guidance from your doctor.

- **Vegans and vegetarians.** If you've eliminated all animal products from your diet, you may need more vitamin B-12. In addition, if you don't eat dairy products and don't get 15 minutes of sun on your skin two to three times a week, you may need to supplement your diet with calcium and vitamin D.
- **People with digestive problems.** If you have liver, gallbladder, intestine, pancreas or kidney disease, or you've had surgery on your digestive tract, you may not be able to digest or absorb nutrients properly. In such cases, your doctor may recommend that you take a vitamin or mineral supplement. A supplement may also be prescribed if you take antacids, antibiotics, laxatives, diuretics or other medications that interfere with how your body uses nutrients.
- **People who smoke.** Smoking can cause a deficiency of vitamins and minerals, such as vitamin B-6, vitamin C, vitamin E and folate. But supplements won't make up for the major health risks caused by smoking. It is also important to note that incidence of lung cancer increased for smokers taking beta carotene supplements. Talk to your doctor about how to stop smoking.
- **People who drink alcohol in excess.** Long-term excessive alcohol consumption can impair intake, digestion and absorption of thiamin, folic acid and vitamins A, D

and B-12, as well as increase the loss of minerals such as zinc and magnesium. Excessive drinking is defined as more than two drinks a day for men or more than one drink a day for women or anyone age 65 or older.

- **Women who are pregnant or who may become pregnant.** Pregnant women should take prenatal vitamins that include iron or a separate iron supplement. Women who may become pregnant should get 400 micrograms (mcg) a day of folic acid from fortified foods or supplements, in addition to eating foods that naturally contain folate. It should be noted that excessive supplemental vitamin A as retinol during the first trimester of pregnancy has been associated with birth defects. Women who are planning on becoming pregnant should discuss any supplements they take with their doctors.



# Vitamins and minerals: How much do you need?

If you decide to use a supplement, look for one that doesn't exceed the Daily Value (DV) for each vitamin and mineral. The following chart shows the DVs for adults based on a diet of 2,000 calories a day.

<b>Nutrient</b>	<b>Daily Value</b>	<b>Nutrient</b>	<b>Daily Value</b>
Biotin	300 mcg	Sodium	2,400 mg
Calcium	1,000 mg	Vitamin A	5,000 IU
Chloride	3,400 mg	Vitamin B-1 (thiamin)	1.5 mg
Chromium	120 mcg	Vitamin B-2 (riboflavin)	1.7 mg
Copper	2 mg	Vitamin B-3 (niacin)	20 mg
Iodine	150 mcg	Vitamin B-6	2 mg
Iron	18 mg	Vitamin B-9 (folic acid)	400 mcg
Magnesium	400 mg	Vitamin B-12	6 mcg
Manganese	2 mg	Vitamin C	60 mg
Molybdenum	75 mcg	Vitamin D	400 IU
Pantothenic acid	10 mg	Vitamin E	30 IU
Phosphorus	1,000 mg	Vitamin K	80 mcg
Potassium	3,500 mg	Zinc	15 mg
Selenium	70 mcg		

Source: Food and Drug Administration, 2011

# Vitamins and minerals: Understanding the lingo

---

To understand product labels, you need to know the following terms:

---

**Adequate Intake (AI).** This term is used when there isn't enough data to establish a Recommended Dietary Allowance. An AI is a recommended intake level of certain nutrients based on estimates of how much healthy people may need.

---

**Daily Value (DV).** Set by the Food and Drug Administration, DV is used on food and supplement labels. DV is based on a 2,000-calorie-a-day diet, but your DV may be higher or lower, depending on your calorie needs. For example, to maintain weight, estimated calorie needs for women older than 50 are 1,600 calories if sedentary, 1,800 if moderately active, 2,000 to 2,200 if active. Estimated calorie needs for men older than 50 are 2,000 calories if sedentary, 2,200 to 2,400 if moderately active, 2,400 to 2,800 if active. So if you're active, you may need more calories and nutrients. If you're sedentary or trying to lose weight, you'll need fewer.

---

**Percent Daily Value (%DV).** This term tells you what percentage of the DV one serving of a food or supplement supplies. For example, if the label on your multivitamin bottle shows that 30 percent of the DV for vitamin E is provided, you'll need another 70 percent from other sources throughout the day to meet the recommended goal.



---

**Dietary Reference Intakes (DRIs).** Developed by the Institute of Medicine, these values are intended to be a guide for good nutrition. They expand upon and replace the Recommended Dietary Allowance (RDA).

---

**Recommended Dietary Allowance (RDA).** This term tells you the average dietary intake level that is sufficient to meet the nutrient requirements of nearly all healthy people by sex, age and physical condition, such as pregnancy.

---

**Tolerable Upper Intake Level (UL).** This term tells you the highest average daily nutrient intake level likely to pose no risk of adverse health effects for nearly all people in a particular life stage and sex group. As intake increases above the UL, the potential risk of adverse health effects increases.

# Choosing and using supplements

Before taking vitamin or mineral supplements, check with your doctor, especially if you have health problems or take medication. Some supplements may interfere with medications. Vitamins E and K, for example, aren't recommended if you're taking blood-thinning medications (anticoagulants), because they can complicate the proper control of blood thinning.

---

If you decide to take a vitamin or mineral supplement, here are some factors to consider:

- **Check the label.** Read labels carefully. Product labels can tell you what the active ingredient or ingredients are, which nutrients are included, the serving size — for example, capsule, packet or teaspoonful — and the amount of nutrients in each serving.
- **Avoid megadoses.** Most cases of nutrient toxicity stem from high-dose supplements. Choose a multivitamin-mineral supplement that provides about the DV of all the vitamins and minerals instead of one that supplies, for example, 500 percent of one vitamin and only 20 percent of another. The exception to this is calcium. Calcium-containing supplements don't provide 100 percent of the DV. If they did, the tablets would be too large to swallow.
- **Watch what you eat.** Vitamins and minerals are being

added to a growing number of foods, including breakfast cereals and beverages. If you're also taking supplements, you may be getting more than you realize of certain nutrients. Taking more than you need is expensive and can raise your risk of side effects. For example, too much iron can cause nausea and vomiting, and may damage the liver and other organs.

- **Look for expiration dates.** Supplements can lose potency over time, especially in hot and humid climates. If a supplement doesn't have an expiration date, don't buy it.
- **Check for alerts and recalls.** The Food and Drug Administration (FDA) keeps a list of dietary supplements that are under regulatory review or that have been reported to cause adverse effects. If you're taking a supplement, it's a good idea to check the FDA website periodically for updates.



# Overview of 10 key vitamins and minerals

Although Americans are generally well nourished, many don't get recommended levels of vitamins A, C, D and E, magnesium, and potassium. Calcium, iron, and vitamins B-9 and B-12 are nutrients of concern for specific groups, such as pregnant women or older adults. Here's what you need to know about these 10 vitamins and minerals.

---

## Vitamin A

### Recommended Dietary Allowance for Adults

---

	Men	Women	Pregnant	Breast-feeding
Age 19 or older	3,000 IU or 900 mcg/day	2,330 IU or 700 mcg/day	2,565 IU or 770 mcg/day	4,335 IU or 1,300 mcg/day

**Tolerable Upper Intake Level:** 10,000 international units (IU) or 3,000 mcg/day for adults

**Food sources:** Animal sources include whole milk, fat-free milk fortified with vitamin A, whole eggs and liver (beef and poultry). Plant sources include dark green leafy vegetables and orange and yellow fruits and vegetables, such as carrots, sweet potatoes, spinach, cantaloupe, mangos and apricots, as well as vegetable soup and tomato juice. One carrot (7½ inches) provides about 8,666 IU.

**Why you need it:** Vitamin A is a fat-soluble vitamin that plays a role in healthy vision, bone and tissue growth, and reproduction. It also helps to regulate your immune system, which prevents and fights infections. Inadequate vitamin A can cause vision impairment, especially at night.

**What the research says:** Your body can convert plant sources of beta carotene into vitamin A, but animal sources of vitamin A (retinol) are better absorbed. So vegetarians who don't eat eggs or dairy products need at least five daily servings of fruits and vegetables rich in beta carotene. Studies suggest that most Americans get enough vitamin A. Vitamin A deficiency is rare in the United States — it's more often associated with malnutrition in developing countries. But people with certain diseases, such as celiac disease, Crohn's disease or pancreatic disorders, may have trouble absorbing vitamin A, so their doctors may recommend supplements. Some studies suggest a link between diets that are rich in vitamin A and beta carotene from food — not supplements — and a lower risk of some types of cancer.

**Cautions:** Too much vitamin A stored in the body may increase the risks of birth defects and liver abnormalities and reduce bone mineral density, leading to osteoporosis. Taking high doses of vitamin A for prolonged periods may increase your risk of hip fractures, so it's best not to exceed the RDA. Carotenoids — from foods, not from supplements — which convert to vitamin A, are generally considered safe.

## Vitamin B-9 (folate and folic acid)

### Recommended Dietary Allowance for Adults

	Men	Women	Pregnant	Breast-feeding
Age 19 or older	400 mcg/day	400 mcg/day	600 mcg/day	500 mcg/day

**Tolerable Upper Intake Level:** 1,000 mcg/day for adults

**Food sources:** Citrus juices and fruits, beans, nuts, seeds, liver, dark green leafy vegetables, and fortified grain products are good sources.

**Why you need it:** Folate, also called vitamin B-9, occurs naturally in foods. Folic acid is the synthetic form of folate and is found in fortified breads and cereals and in supplements. This water-soluble vitamin is important in red blood cell formation, protein metabolism, growth and cell division. It's also very important in pregnancy.

**What the research says:** Women who may become pregnant should take folic acid to prevent birth defects, but other groups may also benefit from a folic acid supplement. People who abuse alcohol, take medications such as anticonvulsants, or have malabsorption or liver disease may need a folic acid supplement.

**Cautions:** Folic acid and vitamin B-12 interact with one another. For this reason, folic acid from fortified foods and supplements shouldn't exceed 1,000 mcg a day to avoid a vitamin B-12 deficiency. Folic acid supplements can correct

anemia associated with vitamin B-12 deficiency but not the nervous system changes that result from B-12 deficiency. See your doctor before taking a folic acid supplement, particularly if you have anemia.

## Vitamin B-12 (cobalamin)

### Recommended Dietary Allowance for Adults

	Men	Women	Pregnant	Breast-feeding
Age 14 or older	2.4 mcg/day	2.4 mcg/day	2.6 mcg/day	2.8 mcg/day

**Tolerable Upper Intake Level:** No upper limit has been determined, but the potential for toxicity from vitamin B-12 is likely very low.

**Food sources:** Meat, fish, shellfish, poultry, eggs and dairy products, and some fortified breakfast cereals are good sources. A 3-ounce serving of salmon contains about 5 mcg of vitamin B-12.

**Why you need it:** This water-soluble vitamin plays essential roles in red blood cell formation, cell metabolism and nerve function. Deficiency can cause permanent nerve damage resulting in numbness and tingling in hands and feet, and balance problems. Deficiency can also cause anemia, depression, confusion, poor memory and dementia.

**What the research says:** Your ability to absorb vitamin B-12 from animal foods declines as you age. That's why people 50 or older may need to take a supplement or eat fortified foods.

If you have vitamin B-12 deficiency (pernicious anemia) or have had a portion of your gastrointestinal tract surgically removed, your body can't absorb enough of an oral vitamin. In such cases, your doctor will likely recommend vitamin B-12 injections. Vegetarians who don't eat eggs or dairy products also should consider taking B-12 supplements.

**Cautions:** No adverse effects have been linked with high levels in healthy people. But don't consume more than the RDA unless your doctor advises. See your doctor before taking a vitamin B-12 supplement if you have anemia with no known cause or if you are taking medications.

## Vitamin C (ascorbic acid)

### Recommended Dietary Allowance for Adults

	Men	Women	Pregnant	Breast-feeding
Age 19 or older	90 mg/day	75 mg/day	85 mg/day	120 mg/day
Adult smokers	125 mg/day	110 mg/day		

**Tolerable Upper Intake Level:** 2,000 mg/day for adults

**Food sources:** Citrus juices and fruits, strawberries, tomatoes, potatoes, green and red peppers, broccoli, and spinach are good sources.



**Why you need it:** Vitamin C is a water-soluble vitamin that maintains skin integrity, helps heal wounds and is important in immune functions. It also has antioxidant properties, helping to limit cell damage caused by free radicals — molecules associated with aging and certain diseases.

**What the research says:** Studies have shown that people who eat foods high in vitamin C have lower rates of cancer and heart disease, though it's unclear whether taking vitamin C supplements produces similar benefits. Although taking vitamin C won't keep you from getting colds, taking it regularly — not just when you feel sick — might make your colds shorter or less severe.

**Cautions:** Taking 2,000 milligrams (mg) a day of vitamin C may cause mild diarrhea. It may also interfere with blood glucose testing, stool tests for blood and other laboratory tests. See your doctor before taking a vitamin C supplement if you have gout, kidney stones, sickle cell anemia or iron storage disease.

## Vitamin D (calciferol)

### Recommended Dietary Allowance for Adults

	Men	Women	Pregnant	Breast-feeding
Ages 19 to 50	600 IU or 15 mcg/day			
Ages 51 to 70	600 IU or 15 mcg/day	600 IU or 15 mcg/day		
Age 71 or older	800 IU or 20 mcg/day	800 IU or 20 mcg/day		

**Tolerable Upper Intake Level:** 4,000 IU or 100 mcg/day for adults

**Food sources:** Fatty fish, such as salmon, and fish-liver oil are among the best natural sources. However, fortified foods provide most of the vitamin D in the American diet. Almost all milk is fortified, and breakfast cereals and orange juices are sometimes fortified. One cup (8 fluid ounces) of vitamin D-fortified milk contains about 100 IU.

**Why you need it:** Vitamin D is a fat-soluble vitamin that is necessary for calcium absorption. Without sufficient vitamin D, bones can become thin, brittle or misshapen.

**What the research says:** Your body gets vitamin D from dietary sources, but it can also generate its own when sunlight converts a chemical in your skin into a usable form of the vitamin. However, some people don't get enough vitamin D, and this can be due to lack of exposure to sunlight, less efficient conversion of the vitamin in their skin, or reduced liver or kidney function. If you don't drink milk or if you have dark skin, are at risk of osteoporosis, or rarely go outside, consider taking a vitamin D supplement to meet your daily requirement. Studies show that people who supplement their diets with a combination of vitamin D and calcium slow bone loss and reduce the number of fractures. Vitamin D is being studied for its possible connections to several diseases and medical problems, including diabetes, hypertension and autoimmune conditions such as multiple sclerosis. Research is also under way to explore the role of vitamin D and cancer risk, and vitamin D and risk of falls in older adults.

**Cautions:** Taking more than the UL of vitamin D for a prolonged time increases your risk of side effects. These may include nausea, headache, excessive urination, high blood pressure, deposits of calcium in soft tissues and kidney damage.

## Vitamin E (tocopherol)

### Recommended Dietary Allowance for Adults

	Men	Women	Pregnant	Breast-feeding
Age 14 or older	15 mg/day (22 IU/day) natural source	15 mg/day (22 IU/day) natural source	15 mg/day (22 IU/day) natural source	19 mg/day (28 IU/day) natural source
	or	or	or	or
	33 IU/day synthetic source*	33 IU/day synthetic source*	33 IU/day synthetic source*	42 IU/day synthetic source*

\*The natural source is called d-alpha-tocopherol on the supplement label. The synthetic source is called dl-alpha-tocopherol on the label.

**Tolerable Upper Intake Level:** 1,000 mg/day (1,500 IU/day) natural source or 1,100 IU/day synthetic source for adults

**Food sources:** Nuts, seeds, vegetable oils, wheat germ and whole-grain products are good sources. Two tablespoons of peanut butter have about 2 mg of vitamin E.

**Why you need it:** Vitamin E is a fat-soluble vitamin that protects red blood cells and is important for the immune system. It also has antioxidant properties, helping to prevent cell damage by neutralizing free radicals — molecules believed to be associated with aging and certain diseases.

**What the research says:** Research suggests that vitamin E supplements don't provide the same health benefits as dietary sources. The cause for differing results may be that supplements usually contain only one form of vitamin E (alpha-tocopherol), whereas foods contain many forms. Many claims have been made about the potential for vitamin E to prevent cancer, heart disease and cognitive decline, but solid evidence for these benefits is lacking.

**Cautions:** Concerns have been raised about the safety of high doses of vitamin E, including doses lower than the recommended UL. In studies involving middle-aged or older adults with chronic health problems, vitamin E supplementation appears to be linked to a small but significant increase in death rates. Check with your doctor before taking a vitamin E supplement, especially if you use prescription medications such as blood thinners, or have medical conditions, including anemia or bleeding disorders, cystic fibrosis, intestinal problems or liver disease.

## Calcium

### Recommended Dietary Allowance for Adults

	Men	Women	Pregnant	Breast-feeding
Ages 19 to 50	1,000 mg/day	1,000 mg/day	1,000 mg/day	1,000 mg/day
Ages 51 or older	1,000 mg/day	1,200 mg/day		
Age 71 or older	1,200 mg/day	1,200 mg/day		

**Tolerable Upper Intake Level:** 2,500 mg/day for ages 19 to 50; 2,000 mg/day for those age 51 or older

**Food sources:** Milk and milk products, fish with bones that are eaten, calcium-fortified tofu, calcium-fortified fruit juice, calcium-fortified cereals, greens (collards, spinach, turnips, kale), green soybeans (edamame), and broccoli. One cup (8 fluid ounces) of milk contains about 300 mg of calcium. One cup of cooked spinach has about 240 mg of calcium.

**Why you need it:** Calcium is a mineral important for strong teeth and bones, and for muscle and nerve function.

**What the research says:** Studies suggest that calcium supplements, if taken regularly, help prevent osteoporosis by reducing bone loss. In addition, supplementation with calcium plus vitamin D has been shown to reduce fractures in older adults. Some research suggests that calcium supplementation might help prevent colorectal cancer, but more studies are needed.

**Cautions:** Some studies have found an association between high amounts of calcium intake and prostate cancer. However, calcium from supplements has not been associated with increased prostate cancer risk. So men should be careful to keep total calcium from food and supplements combined below the UL. Too much calcium from supplements, but not food, has been associated with an increased risk of kidney stones.

# Iron

## Recommended Dietary Allowance for Adults

	Men	Women	Pregnant	Breast-feeding
Ages 19 to 50	8 mg/day	18 mg/day	27 mg/day	9 mg/day
Ages 51 or older	8 mg/day	8 mg/day*		

\*Includes postmenopausal women and women who have had a hysterectomy

**Tolerable Upper Intake Level:** 45 mg/day for adults

**Food sources:** There are two types of dietary iron: heme and nonheme. Heme iron is better absorbed, but most dietary iron is nonheme iron.

- Heme iron is found in meat, seafood and poultry. A 3-ounce serving of beef contains 3 mg of iron.
- Nonheme iron is found in beans, lentils, peas and dark green leafy vegetables such as spinach. It is also added to foods such as breakfast cereals. One cup of kidney beans has about 5 mg of iron.

**Why you need it:** Iron is a mineral that is an essential constituent of blood and muscle, and it is important for the transport of oxygen.

**What the research says:** When there isn't enough iron in your diet, too few red blood cells are made to adequately carry oxygen. This condition is called iron deficiency anemia. People at greatest risk are women of childbearing age, women with heavy menstrual bleeding, teenage girls and

people with certain gastrointestinal conditions. In addition, vegetarians who don't eat animal products may need to make an effort to choose iron-rich and fortified foods or consider taking an iron supplement.

**Cautions:** Iron deficiency is uncommon in adult men and postmenopausal women. If you're in that group, don't take iron supplements unless they've been prescribed by your doctor because of the risk of iron overload. Don't take iron if you have acute hepatitis, hemosiderosis or hemochromatosis (conditions involving excess iron in the body), or if you've had repeated blood transfusions. In some people, iron supplements can cause side effects such as nausea, vomiting, constipation, diarrhea, dark-colored stools or abdominal pain. Taking the supplement in divided doses and with food may help avoid or limit these side effects.

## Magnesium

### Recommended Dietary Allowance for Adults

	Men	Women	Pregnant	Breast-feeding
Ages 19 to 30	400 mg/day	310 mg/day	350 mg/day	310 mg/day
Age 31 or older	420 mg/day	320 mg/day	360 mg/day	320 mg/day

**Tolerable Upper Intake Level:** 350 mg/day of supplemental magnesium for adults

**Food sources:** Nuts, legumes, dark green vegetables and whole, unrefined grains are good sources. One cup of cooked spinach has about 150 mg of magnesium.

**Why you need it:** Magnesium is essential to good health and helps maintain nerve and muscle function, supports a healthy immune system, and keeps bones strong.

**What the research says:** Having enough magnesium stored in the body may protect against disorders such as cardiovascular disease and immune dysfunction. Using certain diuretics and other drugs can increase the loss of magnesium. So can intestinal surgery and chronic diseases such as Crohn's disease and gluten sensitivity enteropathy. Older adults also are at risk of magnesium deficiency. There is also interest in the role of magnesium in preventing and managing disorders such as hypertension, cardiovascular disease and diabetes.

**Cautions:** Dietary magnesium does not pose a health risk; however, large doses of supplements can cause side effects such as diarrhea and abdominal cramping. The risk of toxicity is increased in people with kidney disease and those who take large doses of magnesium-containing laxatives and antacids. Talk to your doctor before taking supplements.

## Potassium

### Adequate Intake for Adults

	Men and women	Pregnant	Breast-feeding
Ages 19 or older	4,700 mg/day	4,700 mg/day	5,100 mg/day

\*Adequate Intake is used because the Recommended Dietary Allowance has not been established.

**Tolerable Upper Intake Level:** None established

**Food sources:** Oranges, bananas, apricots, potatoes (especially with skin), tomatoes, spinach, beans, peas and nuts are good sources. One medium banana has about 500 mg of potassium.

**Why you need it:** Potassium, along with sodium and calcium, helps regulate body functions including heart rhythm, blood pressure, water balance, digestion, nerve impulses and muscle contractions.

**What the research says:** Dietary potassium can lower blood pressure by blunting the adverse effects of sodium. Other possible benefits of following a potassium-rich eating plan include reduced risk of developing kidney stones and decreased bone loss. Available evidence does not support claims that potassium supplements can prevent cancer.

**Cautions:** Potassium supplements are usually needed only for people who have specific medical conditions or for those who take medications that affect their potassium levels. Don't take potassium supplements unless your doctor recommends them. Too much potassium can lead to serious health effects, including heart attack. Blood levels should be monitored if you're taking potassium or a medication that affects potassium levels.

# The final word

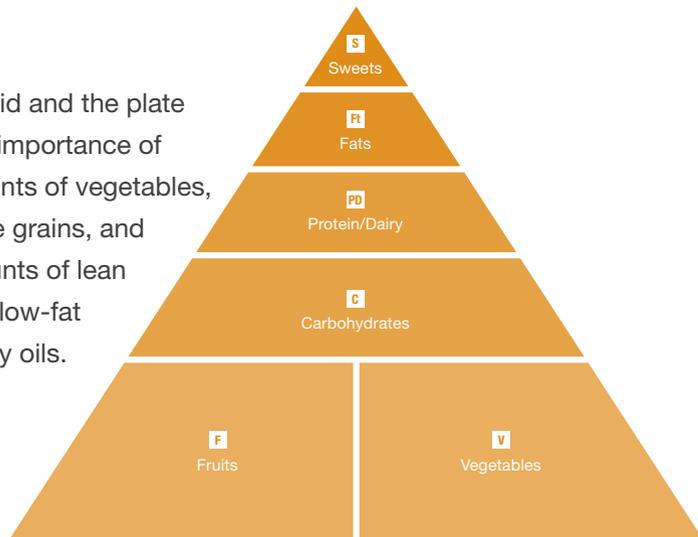
The Dietary Guidelines for Americans are explicit in saying that nutrients should come primarily from foods. Foods provide not only essential vitamins and minerals but also dietary fiber and other naturally occurring substances that may have positive health effects.

---

So if you want to improve your nutritional health, first look for ways to improve your diet. The Department of Agriculture's website has tools such as MyPlate to help you make healthy food choices.

Another great resource is the Mayo Clinic Healthy Weight Pyramid, which emphasizes lower calorie foods that help you feel full. The pyramid illustrates the types and amounts of foods you need to eat every day from five key food groups: vegetables, fruits, carbohydrates, protein and dairy, and fats.

Both the pyramid and the plate emphasize the importance of generous amounts of vegetables, fruits and whole grains, and adequate amounts of lean animal protein, low-fat dairy and healthy oils.



# The owner's manual for the human body

Your body — you only get one and it has to last you a lifetime. It deserves the greatest care and attention you and your doctor can give it.

Drawing on the knowledge and experience of more than 3,600 Mayo Clinic physicians and health professionals, this comprehensive family medical reference offers *reliable, easy-to-understand information* to care for yourself and those you love.

Imagine the wisdom and the expertise of one of the world's most respected medical institutions — carefully edited for ease of use, condensed into one comprehensive volume, and at your fingertips night and day.

With more than 1.5 million copies sold, *Mayo Clinic Family Health Book* is one of the most trusted health books ever published.



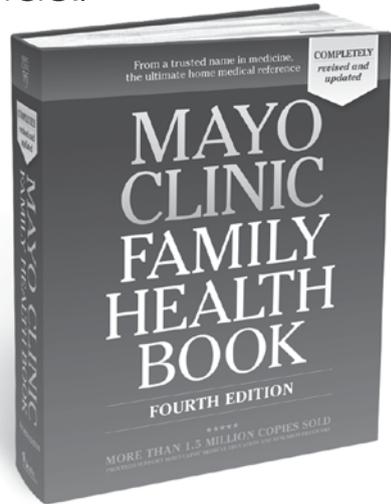
**Nothing is more precious than your family's health.**

Proceeds help support vital Mayo Clinic programs, including medical education and research.

**Order your own copy today.**

This book is available wherever books are sold. For more information on this book and other Mayo Clinic publications, visit

[www.Store.MayoClinic.com](http://www.Store.MayoClinic.com)



- » 1,423 pages of practical information
- » Scores of color illustrations and photos
- » Practical tips and proven approaches for lifelong wellness
- » First aid and emergency care
- » Making sense of your symptoms
- » Diseases and disorders — 20 chapters in all
- » Dozens of medical tests and treatments explained
- » Medications guide to more than 500 drugs
- » How to prepare for and protect yourself from a flu epidemic
- » And much more

“My family uses this book almost weekly to learn about illnesses we, other family members or friends have. We find it easy to understand and very helpful.”

— David A., San Angelo, Texas

# Visit our online bookstore

for a wide selection of books, newsletters and DVDs developed by Mayo Clinic doctors and editorial staff.

Discover practical, easy-to-understand information on topics of interest to millions of health-conscious people like you ...

- ▶ ***Mayo Clinic Health Letter*** — our award-winning monthly newsletter filled with practical information on today's health and medical news
- ▶ ***Mayo Clinic Family Health Book*** — the ultimate home health reference
- ▶ ***The Mayo Clinic Diet: Eat Well, Enjoy Life, Lose Weight*** — step-by-step guidance from Mayo Clinic weight-loss experts to learn how to break unhealthy habits and discover a healthier, happier you!
- ▶ ***Mayo Clinic Book of Alternative Medicine*** — the new approach to combining the best of natural therapies and conventional medicine
- ▶ ***Mayo Clinic Book of Home Remedies*** — discover how to prevent, treat or manage more than 120 common health conditions at home
- ▶ ***Mayo Clinic on Digestive Health*** — learn how to identify and treat digestive problems before they become difficult to manage
- ▶ ***Plus much more!***

Mayo Clinic brings you more of the health information you're looking for!

Learn more at:

[www.Store.MayoClinic.com](http://www.Store.MayoClinic.com)

U.S., Canada and International order processing available.

Mayo Clinic is a not-for-profit medical practice. Proceeds from your purchase of Mayo Clinic newsletters and books are used to further medical education and research at Mayo Clinic. You not only get the answers to your questions on health, you become part of the solution.

More information is available at [www.MayoClinic.com](http://www.MayoClinic.com). To find out about our products and how to purchase them, contact us at 800-291-1128.

**MAYO CLINIC** | [mayoclinic.org](http://mayoclinic.org)  
200 First Street SW | Rochester, MN 55905

©2011 Mayo Foundation for Medical Education and Research.  
All rights reserved. MAYO, MAYO CLINIC and the triple-shield Mayo logo are trademarks and service marks of MFMER. | **MC4112-07rev1011**

**Item No. 682307**