

Iron

Fact Sheet for Consumers



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National Institutes of Health
Office of Dietary Supplements

What is iron and what does it do?

Iron is a mineral that the body needs for growth and development. Your body uses iron to make hemoglobin, a protein in red blood cells that carries oxygen from the lungs to all parts of the body, and myoglobin, a protein that provides oxygen to muscles. Your body also needs iron to make some hormones and connective tissue.

How much iron do I need?

The amount of iron you need each day depends on your age, your sex, and whether you consume a mostly plant-based diet. Average daily recommended amounts are listed on the next page in milligrams (mg). Vegetarians who do not eat meat, poultry, or seafood need almost twice as much iron as listed in the table because the body doesn't absorb nonheme iron in plant foods as well as heme iron in animal foods.

Life Stage

Recommended Amount

Birth to 6 months	0.27 mg
Infants 7–12 months	11 mg
Children 1–3 years	7 mg
Children 4–8 years	10 mg
Children 9-13 years	8 mg
Teens boys 14-18 years	11 mg
Teens girls 14-18 years	15 mg
Adult men 19-50 years	8 mg
Adult women 19-50 years	18 mg
Adults 51 years and older	8 mg
Pregnant teens	27 mg
Pregnant women	27 mg
Breastfeeding teens	10 mg
Breastfeeding women	9 mg

What foods provide iron?

Iron is found naturally in many foods and is added to some fortified food products. You can get recommended amounts of iron by eating a variety of foods, including the following:

- Lean meat, seafood, and poultry.
- Iron-fortified breakfast cereals and breads.
- White beans, lentils, spinach, kidney beans, and peas.
- Nuts and some dried fruits, such as raisins.

Iron in food comes in two forms: heme iron and nonheme iron. Nonheme iron is found in plant foods and iron-fortified food products. Meat, seafood, and poultry have both heme and nonheme iron.

Your body absorbs iron from plant sources better when you eat it with meat, poultry, seafood, and foods that contain vitamin C, such as citrus fruits, strawberries, sweet peppers, tomatoes, and broccoli.

What kinds of iron dietary supplements are available?

Iron is available in many multivitamin-mineral supplements and in supplements that contain only iron. Iron in supplements is often in the form of ferrous sulfate, ferrous gluconate, ferric citrate, or ferric sulfate. Dietary supplements that contain iron have a statement on the label warning that they should be kept out of the reach of children. Accidental overdose of iron-containing products is a leading cause of fatal poisoning in children under 6.

Am I getting enough iron?

Most people in the United States get enough iron. However, certain groups of people are more likely than others to have trouble getting enough iron:

- Teen girls and women with heavy periods.
- Pregnant women and teens.
- Infants (especially if they are premature or low-birthweight).
- Frequent blood donors.
- People with cancer, gastrointestinal (GI) disorders, or heart failure.

What happens if I don't get enough iron?

In the short term, getting too little iron does not cause obvious symptoms. The body uses its stored iron in the muscles, liver, spleen, and bone marrow. But when levels of iron stored in the body become low, iron deficiency anemia sets in. Red blood cells become smaller and contain less hemoglobin. As a result, blood carries less oxygen from the lungs throughout the body.

Symptoms of iron deficiency anemia include tiredness and lack of energy, GI upset, poor memory and concentration, and less ability to fight off germs and infections or to control body temperature. Infants and children with iron deficiency anemia might develop learning difficulties.

Iron deficiency is not common in the United States. But it can occur in people who do not eat meat, poultry, or seafood; lose blood; have GI diseases that interfere with nutrient absorption; or eat poor diets.

What are some effects of iron on health?

Scientists are studying iron to understand how it affects health. Iron's most important contribution to health is preventing iron deficiency anemia and resulting problems.

Pregnant women

During pregnancy, the amount of blood in a woman's body increases, so she needs more iron for herself and her growing baby. Getting too little iron during pregnancy increases a woman's risk of iron deficiency anemia and her infant's risk of low birthweight, premature birth, and low levels of iron. Getting too little iron might also harm her infant's brain development

Women who are pregnant or breastfeeding should take an iron supplement as recommended by an obstetrician or other healthcare provider.

Infants and toddlers

Iron deficiency anemia in infancy can lead to delayed psychological development, social withdrawal, and less ability to pay attention. By age 6 to 9 months,

full-term infants could become iron deficient unless they eat iron-enriched solid foods or drink iron-fortified formula

Anemia of chronic disease

Some chronic diseases – such as rheumatoid arthritis, inflammatory bowel disease, and some types of cancer – can interfere with the body's ability to use its stored iron. Taking more iron from foods or supplements usually does not reduce the resulting anemia of chronic disease because iron is diverted from the blood circulation to storage sites. The main therapy for anemia of chronic disease is treatment of the underlying disease.

Can iron be harmful?

Yes, iron can be harmful if you get too much. In healthy people, taking high doses of iron supplements (especially on an empty stomach) can cause an upset stomach, constipation, nausea, abdominal pain, vomiting, and fainting. High doses of iron can also decrease zinc absorption. Extremely high doses of iron (in the hundreds or thousands of mg) can cause organ failure, coma, convulsions,

and death. Child-proof packaging and warning labels on iron supplements have greatly reduced the number of accidental iron poisonings in children.

Some people have an inherited condition called hemochromatosis that causes toxic levels of iron to build up in their bodies. Without medical treatment, people with hereditary hemochromatosis can develop serious problems such as liver cirrhosis, liver cancer, and heart disease. People with this disorder should avoid using iron supplements and vitamin C supplements

The upper limits for iron from foods and dietary supplements are listed below. A doctor might prescribe more than the upper limit of iron to people who need higher doses for a while to treat iron deficiency.

Ages	Upper Limit
Birth to 12 months	40 mg
Children 1–13 years	40 mg
Teens 14–18 years	45 mg
Adults 19+ years	45 mg

Are there any interactions with iron that I should know about?

Yes, iron supplements can interact or interfere with medicines and other supplements you take. Here are several examples:

- Iron supplements can reduce the amount of levodopa that the body absorbs, making it less effective. Levodopa, found in Sinemet[®] and Stalevo[®], is used to treat Parkinson's disease and restless leg syndrome.
- Taking iron with levothyroxine can reduce this medication's effectiveness. Levothyroxine (Levothroid[®], Levoxyl[®], Synthroid[®], Tirosint[®], and Unithroid[®]) is used to treat hypothyroidism, goiter, and thyroid cancer.
- The proton pump inhibitors lansoprazole (Prevacid[®]) and omeprazole (Prilosec[®]) decrease stomach acid, so they might reduce the amount of nonheme iron that the body absorbs from food.
- Calcium might interfere with iron absorption. Taking calcium and iron supplements at different times of the day might prevent this problem.

Tell your doctor, pharmacist, and other healthcare providers about any dietary supplements and prescription or over-the-counter medicines you take. They can tell you if the dietary supplements might interact with your medicines or if the medicines might interfere with how your body absorbs, uses, or breaks down nutrients.

Iron and healthful eating

People should get most of their nutrients from food, advises the federal government's *Dietary Guidelines for Americans*. Foods contain vitamins, minerals, dietary fiber and other substances that benefit health. In some cases, fortified foods and dietary supplements may provide nutrients that otherwise may be consumed in less-than-recommended amounts. For more information about building a healthy diet, refer to the *Dietary Guidelines for Americans* and the U.S. Department of Agriculture's MyPlate.

Where can I find out more about iron?

For general information on iron:

- Office of Dietary Supplements Health Professional Fact Sheet on Iron
- Iron, MedlinePlus®

For more information on food sources of iron:

- U.S. Department of Agriculture's (USDA's) National Nutrient Database
- Nutrient list for Iron (listed by food or by iron content), USDA

For more advice on buying dietary supplements:

- Office of Dietary Supplements Frequently Asked Questions: Which brand(s) of dietary supplements should I purchase?

For information about building a healthy diet:

- MyPlate
- *Dietary Guidelines for Americans*

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