



IN BRIEF:

# Your Guide to Anemia

*Prevent • Treat • Control*

*Healthy Lifestyle Changes*

Iron-Deficiency Anemia  
Pernicious Anemia  
Aplastic Anemia  
Hemolytic Anemia

# *Anemia*

Anemia is a blood disorder. Blood is a vital liquid that your heart constantly pumps through your veins and arteries and all throughout your body. When something goes wrong in your blood, it can affect your health and quality of life.

Many types of anemia exist, such as iron-deficiency anemia, pernicious anemia, aplastic anemia, and hemolytic anemia. The different types of anemia are linked to various diseases and conditions.

Anemia can affect people of all ages, races, and ethnicities. Some types of anemia are very common, and some are very rare. Some are very mild, and others are severe or even life-threatening if not treated aggressively. The good news is that anemia often can be successfully treated and even prevented.

## **What Causes Anemia?**

Anemia occurs if your body makes too few red blood cells (RBCs), destroys too many RBCs, or loses too many RBCs. RBCs contain hemoglobin, a protein that carries oxygen throughout your body. When you don't have enough RBCs or the amount of hemoglobin in your blood is low, your body doesn't get all the oxygen it needs. As a result, you may feel tired or have other symptoms.

In some types of anemia, such as aplastic anemia, your body also doesn't have enough of other types of blood cells, such as white blood cells (WBCs) and platelets. WBCs help your body's immune system fight infections. Platelets help your blood clot, which helps stop bleeding.

Many diseases, conditions, and other factors can cause anemia. For example, anemia may occur during pregnancy if the body can't meet its increased need for RBCs. Certain autoimmune disorders and other conditions may cause your body to make proteins that destroy your RBCs, which can lead to anemia. Heavy internal or external bleeding—from injuries, for example—may cause anemia because your body loses too many RBCs.

The causes of anemia can be acquired or inherited. "Acquired" means you aren't born with the condition, but you develop it. "Inherited" means your parents passed the gene for the condition on to you. Sometimes the cause of anemia is unknown.

## **Diagnosing Anemia**

People find out they have anemia in a variety of ways. You may have symptoms and go to your doctor, who discovers the anemia through blood tests. Or, your doctor might find out you have anemia as a result of tests done for another reason.

Your doctor will likely ask about your medical and family histories, do a physical exam, and recommend tests or procedures to find out whether you have anemia, what is causing it, and how severe it is. This



**U.S. Department of Health and Human Services**  
National Institutes of Health  
National Heart, Lung, and Blood Institute

# Possible Signs and Symptoms of Anemia

- Tiredness or weakness
- Pale or yellowish skin
- Faintness or dizziness
- Increased thirst
- Sweating
- Weak and rapid pulse, rapid breathing
- Shortness of breath
- Lower leg cramps
- Heart-related symptoms (abnormal heart rhythms, heart murmur, enlarged heart, heart failure)

information will help your doctor treat the anemia and its underlying cause. Most anemias are treatable, so an accurate diagnosis is important.

## *Medical and Family Histories*

Your doctor will want to know about your signs and symptoms and how long you've had them. He or she also may ask whether you've had an illness that can cause anemia. You also may be asked about your diet, any medicines or supplements you take, and whether you have a family history of anemia or anemia-related conditions.

## *Physical Exam*

A physical exam can confirm signs and symptoms and provide information about what organs or body systems may be involved. As part of a physical exam, your doctor may check the color of your skin, gums, and nail beds and look for signs of bleeding or infection. He or she may listen to your heart and lungs, feel your abdomen, or do a pelvic or rectal exam to check for internal bleeding.

## *Tests and Procedures*

Your doctor will recommend tests to identify the type of anemia you may have and its severity. Often, the first test is a complete blood count (CBC), which provides useful information about your blood. Depending on the CBC results, your doctor may recommend further tests of your blood or bone marrow (the soft tissue inside bones that makes blood cells).

## **Treating Anemia**

Anemia often is easily treated. The treatment your doctor chooses will depend on the type of anemia you have, its cause, and how severe it is.

The main goals of treatment are to:

- Raise your RBC count or hemoglobin level to improve your blood's ability to carry oxygen
- Treat the underlying condition causing your anemia
- Prevent complications of the anemia, such as heart or nerve damage
- Relieve symptoms and improve your quality of life

If you have a mild or moderate anemia with no symptoms—or if your anemia isn't getting worse—you may not need treatment. Some anemias are treated with dietary changes and nutritional supplements. Other anemias are treated with medicines, procedures, surgery, or blood transfusions (for severe anemia).

## **Preventing or Controlling Anemia**

You can take steps to prevent or control anemia. These actions can give you greater energy and improve your health and quality of life. Here are a few simple things you can do.

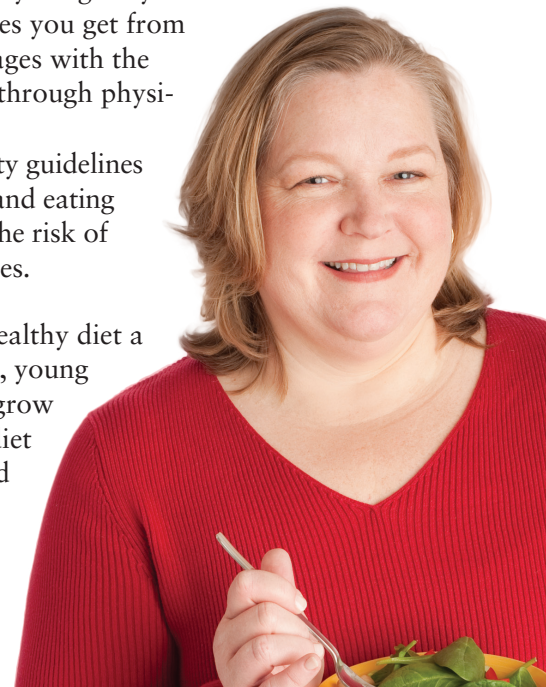
### *Follow a Healthy Diet*

Following a healthy diet ensures that you get enough of the nutrients that your body needs to make healthy blood cells. These nutrients include iron, vitamin B12, folate, and vitamin C. These nutrients are found in a variety of foods. Healthy eating also is good for your overall health.

The basics of healthy eating:

- Focus on nutrient-dense foods and beverages—vegetables, fruits, whole grains, fat-free or low-fat dairy products, seafood, lean meats and poultry, eggs, beans and peas, and nuts and seeds.
- Limit your intake of salt, solid fats, added sugars, and refined grains.
- Maintain a healthy weight by balancing the calories you get from foods and beverages with the calories you use through physical activity.
- Follow food safety guidelines when preparing and eating foods to reduce the risk of foodborne illnesses.

Make following a healthy diet a family goal. Infants, young children, and teens grow rapidly. A healthy diet supports growth and development and can help prevent anemia. Have



# Information About

## Specific Types of Anemia

### Iron-Deficiency Anemia

Your body needs iron to make hemoglobin, the protein in RBCs that carries oxygen. The main way you get iron is from food. At certain times—such as during pregnancy, growth spurts, or blood loss—your body may need to make more RBCs than usual. Thus, your body needs more iron than usual. Iron-deficiency anemia occurs if your body can't keep up with its need for iron.

#### Groups at risk

- Infants and children, adolescents, and women of childbearing age
- People who have certain diseases and conditions, such as Crohn's disease, celiac disease, or kidney failure
- People who don't get enough iron from the foods they eat
- People who have internal bleeding

**Treatment:** Iron supplements and dietary changes (eating food rich in iron and vitamin C, which increases iron absorption from food).

### Pernicious Anemia

Vitamin B12 and folate (another B vitamin) are needed to make healthy RBCs. Your body absorbs these vitamins from foods. Pernicious anemia occurs if your body can't make enough RBCs because it can't absorb enough vitamin B12 from food.

#### Groups at risk

- People who have conditions that prevent them from absorbing vitamin B12
- People who don't get enough vitamin B12 in their diets

**Treatment:** Vitamin B12 supplements and dietary changes (eating foods rich in vitamin B12, such as meat; fish; eggs; dairy products; and breads, cereals, and other foods fortified with vitamin B12).

### Aplastic Anemia

The term "anemia" usually refers to a condition in which your blood has a lower than normal number of RBCs. However, some types of anemia, such as aplastic anemia, cause lower than normal numbers of other blood cells, too. Aplastic anemia can occur if your bone marrow is damaged and can't make enough RBCs, WBCs, and platelets. The causes of aplastic anemia can be acquired or inherited.

#### Groups at risk

- People undergoing radiation or chemotherapy, exposed to toxins, or taking certain medicines
- People who have diseases or conditions that damage the bone marrow

**Treatment:** Depends on the cause of the anemia. Treatments may include blood transfusions, medicines, blood and marrow stem cell transplants, and lifestyle changes.

### Hemolytic Anemia

Normally, RBCs have a lifespan of about 120 days. Your body constantly makes new RBCs to replace ones that die. Sometimes, RBCs are destroyed before their normal lifespan is up. Hemolytic anemia occurs if your body can't make enough RBCs to replace those destroyed. Acquired hemolytic anemia occurs if your body gets a signal to destroy RBCs even though they are normal. Inherited hemolytic anemia is related to problems with the genes that control RBCs.

#### Groups at risk

- Risk groups differ depending on the cause and type of hemolytic anemia.

**Treatment:** Depends on the cause of the anemia. Treatments may include blood transfusions, medicines, surgery and procedures, and lifestyle changes.

healthy foods at home, and show your children how to make healthy choices when they're away from home.

Also, help your parents or other older relatives enjoy a healthy, nutrient-rich diet. Anemia is common in older adults because of chronic (ongoing) diseases, lack of iron, and poor diet.

### *Avoid Substances That Can Cause or Trigger Anemia*

Contact with chemicals or toxins in the environment can cause some types of anemia. Other types of anemia are triggered by certain foods or cold temperatures. If you have one of these types of anemia, avoid these triggers if you can.

With some types of anemia, you'll want to reduce your chances of getting an infection. To do this, wash your hands often, avoid people who have colds, and stay away from crowds.

### **Work With Your Doctor**

Visit your doctor if you have signs or symptoms of anemia. If you're diagnosed with anemia, follow your doctor's advice about diet, supplements, medicines, and other treatments.

Visit your doctor regularly for checkups and ongoing care, and tell him or her about any new or changing symptoms.

Older children and teens who have severe anemia may have an increased risk of injury or infection. Talk with your doctor about ways to keep them as healthy as possible and whether they need to avoid certain activities.

Girls and women who have heavy menstrual periods may need regular screenings and followup with their doctors to prevent or control iron-deficiency anemia.

### **Talk To Your Family**

Some types of anemia—such as pernicious anemia, Fanconi anemia, or thalassemia—can be inherited. If you've been diagnosed with one of these kinds of anemia, talk to your family members. Suggest they visit their doctors for a checkup to see whether they also might have anemia.

If you have children or teens who have anemia, talk to them about how they can take an active role in their own care. Encourage them to learn about their condition and make decisions with their doctor. This can help young people feel more in control and have a more positive outlook about their health.

### **Clinical Trials**

The National Heart, Lung, and Blood Institute (NHLBI) supports research aimed at learning more about blood diseases and disorders, including anemia. Common

types of anemia are generally straightforward and easily treated. As a result, the NHLBI's clinical research on anemia focuses on a few specific, rarer types of the disorder. Research on these and other blood disorders continues to be an important priority for the NHLBI.

The NHLBI's research efforts often depend on the willingness of volunteers to take part in clinical trials. Clinical trials test new ways to prevent, diagnose, or treat various diseases and conditions. You can take part in a clinical trial to gain access to new treatments before they're widely available and help add to scientific knowledge.

For more information about clinical trials related to anemia, talk with your doctor. You also can visit the following Web sites to learn more about clinical research and to search for clinical trials:

- [www.clinicaltrials.gov](http://www.clinicaltrials.gov)
- [clinicalresearch.nih.gov](http://clinicalresearch.nih.gov)
- [www.nhlbi.nih.gov/studies/index.htm](http://www.nhlbi.nih.gov/studies/index.htm)

### **To Learn More**

The National Heart, Lung, and Blood Institute (NHLBI) provides information about the causes, prevention, diagnosis, and treatment of anemia and other blood diseases. The NHLBI also provides dependable information about heart and lung diseases and conditions and sleep disorders. Resources include numerous publications, tools, and the NHLBI Web site.

#### **NHLBI Health Information Center**

P.O. Box 30105  
Bethesda, MD 20824-0105  
Phone: 301-592-8573  
TTY: 240-629-3255  
Fax: 301-592-8563  
Web site: [www.nhlbi.nih.gov/health/infoctr/index.htm](http://www.nhlbi.nih.gov/health/infoctr/index.htm)

#### **NHLBI Web Site**

The NHLBI Web site offers health education materials, health assessment tools, and resources for patients, the public, and health professionals.  
[www.nhlbi.nih.gov](http://www.nhlbi.nih.gov)

#### **Diseases and Conditions A-Z Index**

The NHLBI's Diseases and Conditions Index (DCI) provides complete, dependable, plain-language information about heart, lung, and blood diseases and sleep disorders.  
[www.nhlbi.nih.gov/health/dci/index.html](http://www.nhlbi.nih.gov/health/dci/index.html)

#### **USDA ChooseMyPlate.gov**

The U.S. Department of Agriculture's (USDA's) ChooseMyPlate.gov Web site has information, tips, and resources to help you learn more about healthy eating.  
[www.choosemyplate.gov](http://www.choosemyplate.gov)



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