CONDITION

Iron deficiency anemia

Iron deficiency anemia occurs when too little iron limits healthy red blood cell production.

WHAT IT IS
Anemia caused by insufficient iron

BODY SYSTEM
Blood and circulation

MAIN SYMPTOMS
Tiredness, weakness, shortness of breath, headaches

WHAT CAUSES IT
Blood loss, poor absorption, low intake, increased need

HOW IT IS DIAGNOSED
Blood count, ferritin, and iron studies

MAIN TREATMENT
Iron replacement and treatment of the cause

CAN IT BE CURED?
Sometimes - when iron loss and its cause are corrected

IS IT AN EMERGENCY?
Sometimes - with chest pain or severe breathing difficulty

LONG-TERM OUTLOOK
Usually good when the underlying cause is treated

Overview

Iron deficiency anemia is a condition in which your body does not have enough iron to make healthy red blood cells. Red blood cells contain hemoglobin, a protein that carries oxygen from your lungs to the rest of your body.

When iron supplies fall, your body first uses iron stored in tissues. If the shortage continues, red blood cells become smaller and carry less hemoglobin. Your muscles, brain, and other organs may then receive less oxygen than they need.

Iron deficiency can develop slowly. Some people do not notice symptoms until the anemia becomes more marked. It is important to find out why iron levels are low rather than treating the blood test alone. Common explanations include menstrual bleeding, bleeding from the digestive tract, pregnancy, poor iron absorption, or not getting enough iron from food.

Iron deficiency and iron deficiency anemia are related but not identical. You can have low iron stores before you develop anemia. A blood test is needed to tell the difference.

Symptoms

Mild iron deficiency anemia may cause few or no symptoms. When symptoms occur, they often become more noticeable during exercise or other physical activity.

Common symptoms include:

Some people develop cravings for non-food substances, especially ice. This is called pica . Restless legs, in which you feel a strong urge to move your legs, can also be associated with iron deficiency.

Less common signs include cracks at the corners of the mouth, a sore tongue, hair shedding, or thin, brittle, spoon-shaped nails. These signs can have other causes and do not confirm iron deficiency by themselves.

Symptoms are influenced by how low the hemoglobin is, how quickly it fell, your age, and whether you have another condition affecting your heart or lungs.

- Tiredness, weakness, or reduced stamina
- Shortness of breath during activity
- Headaches, dizziness, or difficulty concentrating
- A fast or noticeable heartbeat
- Pale skin or paler tissue inside the lower eyelids
- Feeling unusually cold

Causes and risk factors

Blood loss is a common cause. Menstrual periods may gradually use more iron than the body can replace, particularly when bleeding is heavy or lasts many days. Pregnancy and childbirth also increase iron needs and can involve blood loss.

Bleeding from the stomach or intestines may be visible, but it is often hidden. Possible causes include ulcers, inflammation, hemorrhoids, bowel polyps, and, less commonly, cancer. Medicines that can irritate the digestive tract or increase bleeding, such as some anti-inflammatory medicines or blood thinners like warfarin or apixaban , may contribute. Do not stop a prescribed medicine without medical advice.

Other causes include:

Plant foods contain a form of iron that is less easily absorbed than iron from meat and seafood. A vegetarian or vegan diet does not automatically cause anemia, but careful food choices may be needed.

Iron deficiency is sometimes present alongside anemia from inflammation, kidney problems, or another long-term condition. This can make blood test results harder to interpret.

- A diet containing too little available iron
- Reduced absorption after stomach or intestinal surgery
- Celiac disease, which damages the small intestine
- Inflammatory bowel conditions
- Frequent blood donation
- Repeated nosebleeds or another source of ongoing bleeding
- Increased iron needs during pregnancy or periods of rapid growth

Diagnosis

Diagnosis begins with a blood test called a complete blood count , or CBC. It measures hemoglobin and provides information about the number, size, and appearance of red blood cells. Iron deficiency often produces small, pale red blood cells, but cell size may still be normal in its early stages.

A ferritin test measures a protein that stores iron. A low ferritin level strongly supports iron deficiency. However, ferritin can rise during infection, inflammation, liver problems, or other illness. A result that appears normal may therefore not rule out iron deficiency in every situation.

Other iron studies may include transferrin saturation, which estimates how much iron is available for making red blood cells. Tests for inflammation, vitamin deficiencies, kidney function, or celiac disease may be used when the cause is uncertain.

Finding the cause is part of the diagnosis. The appropriate assessment depends on factors such as your age, menstrual history, pregnancy status, digestive symptoms, medicines, diet, and family history. It may include a stool test, pelvic assessment, or an examination of the stomach and bowel using a flexible camera. These tests are not needed for everyone.

Treatment and management

Treatment usually has two parts: replacing iron and addressing why it became low. Replacing iron without dealing with continued bleeding or poor absorption may lead to repeated anemia.

Oral iron is commonly used. It is available in several forms, including ferrous salts. A clinician or pharmacist can explain how to take the chosen product and how long it is likely to be needed. Treatment often continues after hemoglobin improves so the body can rebuild its iron stores.

Oral iron may cause nausea, stomach discomfort, constipation, diarrhea, or dark stools. Taking it with food may reduce stomach upset, although food can also reduce absorption. Tea, coffee, calcium supplements, and some medicines can interfere with absorption when taken at the same time. Your treatment plan can account for these issues.

Dark stools are common with iron tablets. Black, sticky, tar-like stools, especially with weakness, pain, or vomiting blood, may instead indicate digestive bleeding and need urgent assessment.

Intravenous iron delivers iron through a vein. It may be considered when oral iron is not tolerated, is not absorbed, has not worked adequately, or when iron needs to be replaced more quickly. It is given in a monitored setting because infusion reactions can occur.

A blood transfusion is not routine treatment for stable iron deficiency anemia. It may be used in selected cases of severe anemia, major ongoing bleeding, or serious symptoms. A transfusion provides red blood cells but does not necessarily correct the reason iron was lost.

Food can support recovery and help prevent recurrence. Sources of iron include meat, seafood, beans, lentils, iron-fortified cereals, tofu, nuts, seeds, and dark green vegetables. Vitamin C-rich foods can help the body absorb iron from plant sources. Diet alone may not replace iron quickly enough once anemia is established.

Follow-up blood tests are usually needed to check whether hemoglobin is rising and iron stores are being restored. If the expected improvement does not occur, possible explanations include continued blood loss, difficulty taking the treatment, poor absorption, or another cause of anemia.

Medicines commonly used for this include ferric carboxymaltose and ferrous fumarate . Which one suits you, if any, is a decision for you and your doctor.

Complications

Untreated iron deficiency anemia can reduce exercise tolerance, concentration, and ability to manage daily activities. It may also worsen symptoms of an existing heart or lung condition.

Severe anemia makes the heart work harder to deliver oxygen. This can lead to a persistently fast heartbeat and, in vulnerable people, heart strain or heart failure. These complications are not typical of mild, gradually treated anemia.

During pregnancy, iron deficiency anemia is associated with a higher risk of complications for the pregnant person and baby, including premature birth and low birth weight. Pregnancy-related anemia should be assessed and monitored as part of maternity care.

In children, prolonged iron deficiency may affect attention, learning, and development. Children with possible anemia need age-appropriate testing and treatment rather than an adult iron product or dose.

Prevention

Not every case can be prevented. Bleeding, pregnancy, digestive conditions, surgery, or poor absorption may cause iron deficiency even with a balanced diet.

You may be able to lower the chance of deficiency or recurrence by eating a range of iron-containing foods and by having persistent bleeding assessed. If you donate blood regularly, follow the donation service's advice about donation intervals and iron testing.

Heavy menstrual bleeding can often be managed, which may reduce ongoing iron loss. Digestive conditions such as celiac disease also need specific treatment to improve absorption.

Do not take iron supplements simply because you feel tired. Tiredness has many causes, and excess iron can be harmful. Supplements should also be stored securely away from children because accidental ingestion can cause serious poisoning.

Living with it and what to expect

Recovery usually takes time. Some people notice improved energy within weeks of starting effective treatment, while others improve more slowly. Hemoglobin may recover before the body's iron stores are fully replaced.

You may need treatment for several months, along with repeat blood tests. The schedule depends on the severity of the anemia, its cause, and how you respond. Side effects can make oral iron difficult to continue, but changing the formulation or treatment approach may help.

Iron deficiency can return if the underlying reason continues. This is more likely with ongoing heavy periods, repeated digestive bleeding, poor absorption, or increased iron needs. Some

people therefore need longer-term monitoring or repeated treatment.

Most people can continue work, school, and usual activities, adjusting strenuous exercise if it triggers marked breathlessness, dizziness, or a racing heartbeat. Once iron levels and hemoglobin recover, activity tolerance often improves. The long-term outlook is generally good when the source of iron loss is found and treated, although no single course can be guaranteed.

When to get medical help

Arrange a routine medical appointment if you have ongoing tiredness, reduced exercise tolerance, frequent headaches, pica, or other possible symptoms of anemia. Testing is also appropriate if you have heavy periods, repeated blood donation, persistent digestive symptoms, or a history of low iron.

Seek prompt medical advice if you notice blood in your stool, ongoing black or tar-like stool when you are not taking iron, blood in your urine, unexplained weight loss, difficulty swallowing, or a clear change in bowel habits. These symptoms have several possible causes, but they should not be ignored.

Get urgent or emergency help for:

A fast heartbeat or worsening shortness of breath also needs prompt assessment, particularly if you have heart or lung problems.

- Chest pain
- Severe difficulty breathing, especially at rest
- Fainting or new confusion
- Vomiting blood
- Heavy bleeding that will not stop
- Black, tar-like stool with weakness, dizziness, or abdominal pain

Common questions

Is iron deficiency anemia the same as low iron?

Not exactly. Low iron means your iron stores are reduced. Anemia means your hemoglobin has also fallen below the expected range. Low iron can exist before anemia develops.

Can iron deficiency anemia be a sign of cancer?

Sometimes hidden digestive bleeding is caused by a cancer, but there are many more common explanations, including heavy periods, ulcers, medicines, and poor absorption. The need for digestive testing depends on your age, symptoms, bleeding history, and other risk factors.

How long does iron deficiency anemia take to improve?

Blood production may begin responding soon after effective treatment, but symptoms and hemoglobin often improve over weeks. Rebuilding iron stores usually takes longer. Follow-up blood tests show whether treatment is working.

Why do iron tablets make my stool dark?

Unabsorbed iron can turn stool dark green or black. This is a common treatment effect. Sticky, tar-like stool, especially with pain, dizziness, or weakness, may indicate bleeding and needs urgent assessment.

Can I treat iron deficiency anemia with food alone?

Food is important, but established anemia often requires iron replacement because diet may not provide enough iron quickly enough. The source of any blood loss or absorption problem also needs attention.

Why is my iron still low after taking supplements?

Possible reasons include continued bleeding, poor absorption, side effects that make treatment difficult to take, interactions with food or medicines, or an incorrect initial diagnosis. Repeat testing and further assessment can help identify the reason.

Sources

- NHS. Iron deficiency anaemia
- National Institutes of Health Office of Dietary Supplements. Iron: Fact Sheet for Health Professionals
- Snook J, Bhala N, Beales ILP, et al. British Society of Gastroenterology guidelines for the management of iron deficiency anaemia in adults. Gut . 2021;70:2030-2051
- Ko CW, Siddique SM, Patel A, et al. AGA Clinical Practice Guidelines on the Gastrointestinal Evaluation of Iron Deficiency Anemia. Gastroenterology . 2020;159:1085-1094 34847-2/fulltext)
- Camaschella C. Iron-Deficiency Anemia. The New England Journal of Medicine . 2015;372:1832-1843