CENTER FOR DIGESTIVE HEALTH & NUTRITION
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Iron Deficiency Anemia

Anemia - you may have heard this word before. You know it's something medical dealing with the blood, but do you really know what it means? Let's take a closer look…

Cells Need Oxygen

The human body is made up of billions of tiny cells grouped in various specialized organs such as the lungs, heart, liver, etc. These cells work behind the scenes 24/7 to keep you healthy and active. Day and night, they quietly perform many functions, such as growth and repair of tissues, heat production, motion, circulation, digestion, etc. Individually, each small cell is much like a tiny machine that requires many things to do its job - including oxygen. The oxygen comes from the air you breathe. The problem is: How do you deliver oxygen down to each and every cell?

Your Bloodstream

The answer lies in your circulatory system or bloodstream. Your bloodstream is a river of fluid called plasma. It is in constant motion, pulsing forward within your arteries and veins with each heartbeat. Floating within this river are three types of living cells, each with a specific job.

- **Red Blood Cells (RBC)**
  Carry Oxygen
- **White Blood Cells (WBC)**
  Fight infection
- **Platelets**
  Stop bleeding when injured

Red Blood Cells

RBCs are produced in the bone marrow and comprise most of the cells in your blood. As your blood constantly circulates, these red blood cells act like "oxygen delivery boys," picking up a load of oxygen as they travel through your lungs and dropping off the oxygen when they travel past the cells. They repeat this journey over and over thousands of times each day. It is incredible to realize that your heart only pumps about 3 ounces of blood with each beat, but over 24 hours, it moves over 2500 gallons of blood.

Hemoglobin
Red blood cells excel at oxygen delivery because they are made of a special red-colored pigment called hemoglobin, which selectively grabs oxygen molecules. Each red blood cell contains several hundred hemoglobin molecules. Hemoglobin is mainly made of iron, a natural mineral. Like a factory needs steel to make cars, your bone marrow needs iron to create hemoglobin and new red blood cells. But you need just the right amount. Too much iron is toxic to the body and can lead to organ damage. However, if iron levels are too low, hemoglobin production drops, and fewer red blood cells are created.

Iron Deficiency Anemia
When the number of red blood cells falls below normal, this is called anemia. There are many types of anemia, but iron deficiency anemia is due to insufficient iron. It has nothing to do with leukemia or cancer of the bone marrow. Iron deficiency is universally the most common form of anemia, affecting about 5% of American women and 2% of men. It is nothing new, for its manifestations have been described in manuscripts over 3,000 years old.

What is normal?
Your bloodstream needs a certain number of red blood cells, white blood cells, and platelets to function properly. Your doctor can order blood tests to measure the number of each cell type in your blood and compare it to the normal levels. This blood test is called a Complete Blood Count, or CBC. One common way to estimate the number of red blood cells is to measure the amount of hemoglobin present in the blood - expressed in grams of hemoglobin per 100 cc of blood. A low Hemoglobin is another sign of anemia. Men with Hemoglobin measurements less than 14 and less than 12 for women are considered anemic.

What are the symptoms of iron deficiency anemia?
One problem is that iron deficiency anemia is very sneaky. It usually develops very slowly over many months or even years. There are no symptoms in the early stages. By the time you do have symptoms, the anemia may be severe. When present, symptoms of iron deficiency include fatigue, muscle weakness, rapid heartbeat, and shortness of breath. It can cause chest pain, as the heart is forced to work harder and faster to compensate. Other signs of iron deficiency anemia are a pale complexion and hair loss. Some patients report a sore red tongue and brittle fingernails.

There is one symptom of iron deficiency anemia that is quite unusual. When specifically questioned, some patients report odd food cravings, a condition called picaphagia, "*pica*" for short. These individuals may uncontrollably eat large amounts of ice, starch, and even dirt and clay. When the anemia is treated, these odd cravings disappear. The cause is not known.

What causes iron deficiency?
It's all based on a delicate balance between how much iron enters your body and how much you lose daily. Iron is normally obtained through the food in your diet and by recycling iron from old red blood cells. Each day, you absorb about 1 mg of iron from your diet and lose about an equal amount in the stool and sweat. If you don't absorb enough iron from your diet, the iron level will

slowly drop, and eventually, you will become anemic. On the other hand, if you lose more iron than you absorb, the iron level will also drop, causing anemia. Common causes of excessive iron loss are pregnancy, breastfeeding, and heavy menstrual periods. Another less common cause is frequent blood donation. This can sometimes deplete the body's iron stores and lead to mild anemia.

Losing blood from the digestive tract
However, all men and post-menopausal women have no reason to develop iron deficiency anemia since they do not have monthly blood loss. Iron deficiency anemia in a man or post-menopausal woman suggests that they are losing blood from somewhere else - most often from the digestive system.

It is common to acquire significant iron deficiency anemia due to chronic slow blood loss from the digestive tract. It only takes 1 to 2 teaspoons of blood loss daily to exceed iron absorption. If the amount of blood lost each day is this small, the blood is digested with the food, mixed with the stool, and not readily visible.

Many do not realize that you can lose small amounts of blood each day and have bowel movements that look entirely normal. This slow, invisible loss of blood is called occult bleeding. Possible causes of occult blood loss from the digestive system include a large hiatal hernia, acid reflux, peptic ulcers, gastritis, stomach and colon polyps, stomach and colon cancer, Crohn's disease, colitis, hemorrhoids, and others. *The point is that if you are a non-menstruating woman or a man and you have iron deficiency anemia, you need to see your doctor. He will often refer you to a digestive disease specialist or gastroenterologist for further evaluation.*

Impaired Iron Absorption
Some individuals become anemic due to poor iron absorption from their diet. Iron malabsorption may be seen in celiac disease (gluten allergy), after weight loss surgery, or on a strict vegan diet.

How does your doctor know?
Diagnosing iron deficiency anemia requires a thorough medical evaluation. Your doctor will begin by taking a detailed medical history and asking about symptoms, dietary habits, and any potential sources of blood loss. They may perform a physical examination to look for signs of anemia, such as pale skin or a rapid heartbeat. Stool specimens are often checked for signs of hidden “occult” bleeding.

Blood tests are essential for confirming the diagnosis. A *complete blood count* (CBC) is a standard initial test that measures red blood cell count, *hemoglobin* levels, and other key indicators of anemia. Additional tests, known as *iron studies*, provide a more detailed look at the body’s iron status. These include *serum iron*, which measures the amount of iron in the blood, and *ferritin*, which reflects the body’s iron storage levels. Blood tests to *screen for celiac disease* are often performed.

In cases where the cause of anemia is unclear, further investigations may be needed. For instance, a *colonoscopy and upper endoscopy* can help identify sources of bleeding in the gastrointestinal tract, such as ulcers or polyps. Colon cancer must be excluded. Women with heavy menstrual bleeding may require a gynecological evaluation to rule out underlying conditions.

Treatment

After your doctor finds and treats the cause of your iron deficiency, he can prescribe appropriate therapy to get your iron levels back to normal and correct the anemia. Eating more iron-rich foods is often suggested. These include raisins, meats (liver is the highest source), fish, poultry, eggs (yolk), legumes (peas and beans), and whole-grain bread. While increasing the iron content of your diet can be helpful, this is an inefficient way to boost your iron stores. It takes about 11 pounds of red meat to provide the same iron content as one high-dose iron supplement. So, your doctor will suggest an iron supplement if you have iron deficiency anemia. These come in three basic forms.

Multivitamins with iron The most common are multivitamin supplements that also contain a low dose of iron for daily maintenance. Many brands are available. These are best for women who are not anemic but have extra blood loss from monthly periods. Additional iron is also needed during pregnancy and lactation because normal dietary intake cannot supply the required amount. The usual dose of iron in these supplements is 10 - 20 mg of ferrous sulfate, which delivers about 1 - 2 mg. of elemental iron to your system. Anyone who donates blood regularly should consider such a low-dose daily supplement.

Higher dose iron supplements When treating significant iron deficiency anemia, a higher dose supplement is required to maximize iron absorption. Many brands are available. A common one is FeoSol. Most are inexpensive, effective, and available without a prescription. Most have about 300 mg of elemental iron per capsule. Milk and antacids may interfere with iron absorption and should not be taken simultaneously as iron supplements. Constipation is common with higher-dose oral iron supplements. This can be avoided by eating fibrous foods like fruits and vegetables, whole grains products, and drinking plenty of water during the day – at least 32 oz. If constipation persists, most respond to a daily dose of Miralax stool softener, usually a capful in a glass of juice once daily. Vitamin C seems to increase intestinal absorption of iron. We advise our patients to take a 500 mg vitamin C tablet with each iron pill. Do not be alarmed if your bowel movements turn dark green or black when taking high-dose iron supplements. This is normal and has no significance.

Iron Infusions When treating severe iron deficiency anemia or when oral iron supplements are not well tolerated or ineffective, iron can be given directly into the bloodstream via an intravenous infusion into a vein. Bypassing the digestive tract allows the body to quickly absorb the iron and increase the red blood cell count. Two commonly used iron infusion medications are **Injectafer** and **Ferrlecit**. Both are fast-acting iron infusions that provide high doses of iron to the body. Most patients require several infusions a few weeks apart. Minor infusion reactions are common, but serious infusion reactions are quite rare. Both Injectafer and Ferrlecit have been

proven to be safe and effective treatments for iron deficiency anemia, and your doctor can help determine which one may be best for you.

How long should you take iron?

When an individual with iron deficiency anemia begins iron supplements, the bone marrow acts like a shut-down factory returning to work overtime. The new iron makes more hemoglobin, allowing red blood cell production to soar. Most patients will see their anemia improve within a few weeks with a gradual rise in the Hemoglobin blood test as shrunken iron-deficient red blood cells are replaced with healthy, full-sized cells. Within 8 weeks, the anemia is usually gone. However, treatment should continue daily until the body's iron stores are fully replenished. This may take up to six months in severe cases. One way to see this has been accomplished is the blood's ferritin (iron) level. A ferritin level over 50 usually assures that the body's iron stores have been replenished.

Prevention of iron deficiency

The daily dietary iron requirement for all men and women after menopause is about 1.0 mg daily. The average American diet is usually enough to meet these needs. Men do not need extra iron supplements. If they take a multivitamin-mineral supplement, it should *not* contain iron. However, menstruating and lactating women need 2.0 mg of iron daily. During pregnancy, the requirement rises to about 3.0 mg. per day. *Since the intestines absorb only 10% of the iron in the diet, an oral intake of 20 mg to 30 mg of iron is needed to meet these requirements.* Only take doses higher than this after talking with a doctor first. *There is no normal mechanism for your body to excrete excess iron. Taking too much iron can be unhealthy and cause long-term adverse effects.*

Iron can be deadly

If you have iron-containing vitamins or higher-dose iron supplements, be sure to keep them out of the reach of children. Iron is poison for small children. Iron is the leading cause of poisoning deaths in children under six. Keep pills in their original childproof bottle and close it tightly right after use. Put the bottle in an out-of-reach place right after use. Keep the bottle out of sight of children at all times.

Summary

Iron deficiency anemia is the most common form of anemia and may occur due to poor iron intake or chronic blood loss. It usually develops silently over a long period of time. It is expected in women of childbearing age due to iron losses from menstruation, pregnancy, and breastfeeding. However, iron deficiency anemia in a man or a post-menopausal woman is often a sign of chronic blood loss from the digestive tract. Even mild cases warrant careful investigation to rule out colon cancer, peptic ulcer disease, and other causes of occult bleeding. The underlying cause must be treated, and iron stores must be replenished with iron supplements.

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December 2024

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The Center for Digestive Health & Nutrition is a private medical practice comprised of experienced Gastroenterologists, Nurse Practitioners, and staff members dedicated to preventing and treating digestive disorders. Our physicians have been serving the needs of those in Western Pennsylvania and surrounding areas since 1977, having cared for tens of thousands of individuals with digestive problems. Our mission is to deliver high-quality gastroenterology services efficiently and cost-consciously. We realize the very sensitive nature of GI illness and understand the necessity of providing our services in an environment that stresses patient privacy and confidentiality and where patient satisfaction is the goal. Appointments can be conveniently scheduled online via our website above. Learn more about digestive issues on Instagram @thedigestivetract

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Under the Microscope

The difference is obvious when a drop of blood is viewed under the microscope. The patient with iron deficiency has fewer RBCs, which are all quite pale due to the lack of iron.