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Health Tips From Your Gastroenterologist

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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 is means? Here is a brief rundown.

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

Cells need oxygen
The human body is made up of billions of small cells which are grouped together in the 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, production of heat, motion, circulation, digestion, and so forth. Individually, each small cell is much like a tiny machine which requires many things to do its job - including oxygen The oxygen obviously comes from the air that 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 blood stream is a river of fluid called plasma. It is in constant motion pulsing forward within your arteries and veins with each beat of your heart. Floating within this river are three types of living cells each with a specific job.

Red Blood Cells
RBCs are produced in the bone marrow and make up the majority 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 amazing to realize that your heart only pumps about 3 ounces of blood with each beat, but over 24 hours moves about 3000 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 mostly made of iron, a natural mineral. Just 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 that due to insufficient iron is, of course, called iron deficiency anemia. It has nothing to do with leukemia or cancer of the bone marrow. Iron deficiency anemia is universally the most common form of anemia affecting about 5% of American women and 2% of men. It

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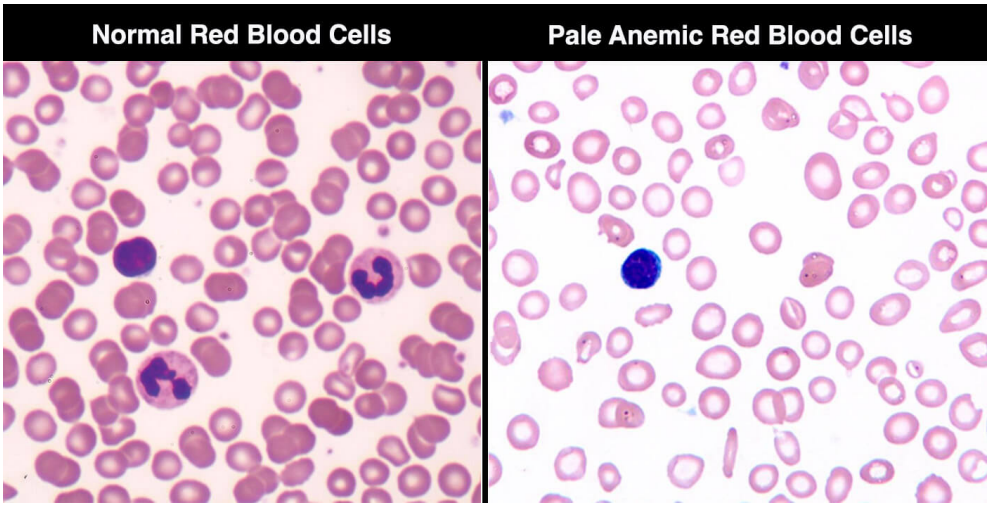
is nothing new for its manifestations have been found described in manuscripts that are more than 3,000 years old.

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 a 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 a period of 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 *pica*. These individuals may find themselves uncontrollably eating 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 the recycling of 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 you will eventually 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, breast feeding, 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.

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.

In fact, it is quite common to acquire significant iron deficiency anemia due to chronic slow loss of blood from the digestive tract. It only takes about 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.

So 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, Crohns disease, colitis, hemorrhoids and others.

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

The point is that if you are 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.

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. In fact, it takes about 11 pounds of red meat to provide the same iron content as one high dose iron supplement. So, if you have iron deficiency anemia, your doctor will probably also suggest an iron supplement. 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. Extra 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 on a regular basis 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 absorption of iron and should not be taken at the same time as iron supplements.

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.

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 is persistent, most respond to a daily dose of Miralax stool softener, usually a capful in a glass of juice once daily.

Iron Infusions When treating severe iron deficiency anemia or when oral iron supplements are not well tolerated or not effective, iron can be given directly into the bloodstream via an intravenous infusion into a vein, allowing 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 to take iron
When an individual with iron deficiency anemia begins iron supplements, the bone marrow acts like a shut-down factory going back to work on overtime. The new iron is used to make more hemoglobin which allows 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 iron stores are fully replenished. This may take up to six months in severe cases. One way to see that this has been accomplished is the ferritin (iron) level in the blood. 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.* Menstruating and lactating women, however, need 2.0 mg of iron per day. 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. You should not take doses higher than this without talking with a doctor first. There is no normal mechanism for your body to excrete excess iron. Taking too much iron can actually be unhealthy and cause long-term negative 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. In fact, 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 as a result of 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 breast feeding. 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 replenished with iron supplements. Most patients respond well to oral iron supplements, but iron infusions are also available.