

Frequently Asked Questions (FAQs): Iron and Blood Donation

For Donors and Parents

As a blood donor, you may wonder whether your body's iron levels are impacted by donating blood and what role iron plays in your health. Below is a list of FAQs related to iron and blood donation. The "Donor Resources" section on page 4 leads you to several resources with more information on iron and blood donation. These FAQs are not meant to provide you with all available information on iron and blood donation. **It is not a substitute for medical advice. Talk with your healthcare provider to learn more about your iron levels and blood donation.**

1. What is iron and why does my body need it?

Iron is a mineral that is found naturally in the human body, in many foods that we eat and in iron or multivitamin supplements.

Iron has many roles in the human body, such as, but not limited to:

- Helping to create new red blood cells (RBCs)
- Aiding in carrying oxygen throughout the body
 - Hemoglobin (Hb), a protein, carries oxygen throughout the body by being inside of RBCs. Iron is part of hemoglobin and helps it complete this task.
 - Fun fact: Hemoglobin is the reason why red blood cells are red in color!
- Supporting energy, healthy brain development and the immune system.

2. How are iron and blood donation related?

Since hemoglobin is part of RBCs, and iron is part of hemoglobin, each blood donation causes donors to lose some iron. Most of the body's iron is found in hemoglobin. However, some iron is found in other proteins in the body and is not lost by blood donation.

- Approximately 70% of iron found in the human body is contained in hemoglobin and myoglobin.
 - Similar to hemoglobin, myoglobin is a protein; however, myoglobin is located in muscles and binds to iron.
- Approximately 25% of iron is "stored" as ferritin.
 - Ferritin is the protein that stores iron.
- The remaining 5% of iron is involved in other bodily functions.¹

3. Are certain groups at risk of losing iron to below normal levels from blood donation?

All donors lose iron from blood donation. In some donors, these iron levels drop below what is considered normal (the normal range can vary by sex and age). Teenage donors, pre-menopausal women and frequent donors may be at a higher risk for losing iron, to below

¹ UCSF Medical Center. "Hemoglobin and Functions of Iron." [Available at: https://www.ucsfhealth.org/education/hemoglobin_and_functions_of_iron/]

normal levels, from blood donation.

Why are these groups at higher risk of dropping below normal levels of iron?

- Many teenagers have lower iron levels than adults prior to making any blood donations.
- Pre-menopausal women lose iron during menstruation and blood donation adds to this iron loss.
- Frequent donors are defined as women who donate whole blood two times or more in a 12-month period or men who donate whole blood three times or more in a 12-month period. Their iron store levels may not return to “normal” by the time of a second or third donation in a 12-month period.

4. How are iron levels measured?

Typically, iron levels in the blood are measured by the ferritin blood test. Even though iron is found in hemoglobin, testing your hemoglobin level is not the same as testing your body’s iron levels.

5. Do blood centers check my iron levels?

Although a few blood centers have started to perform ferritin testing, most blood centers do not.

6. Do blood centers test my hemoglobin?

Blood centers will test your blood’s hemoglobin levels when you donate; this tells them if you have enough red blood cells to be able to donate and also tells them that the blood you give has enough red blood cells to help a patient. The blood center will let you know if your result is abnormal and defer you from donating blood if your hemoglobin level is too low. For women, the minimum level of hemoglobin to donate is 12.5 g/dL and for men it is 13.0 g/dL. For normal hemoglobin levels, typically the men’s range is 13.5 to 17.5 g/dL and for women 12.0 to 15.5 g/dL.² **Even though iron is found in hemoglobin, testing your hemoglobin level is not the same as testing your body’s iron levels.**

7. How do I know if I have low iron?

The only way to truly know if you have low iron is to talk to your healthcare provider who will order a blood test for ferritin that will show your iron level. Having low iron may come with symptoms such as, but not limited to: feeling tired, difficulty concentrating, the feeling of “restless legs” – especially at night time, and/or desiring to eat non-food substances such as ice, chalk or other substances (known as pica). However, many people with low iron experience no symptoms.

8. What is the best way to replace iron following a blood donation?

Iron can be found in many iron-rich foods, such as:

- Chicken
- Turkey

² Mayo Clinic. “Iron deficiency anemia.” (November 2016). [Available at: <https://www.mayoclinic.org/diseases-conditions/iron-deficiency-anemia/diagnosis-treatment/drc-20355040>]

- Lamb
- Beef
- Tofu
- Spinach
- Lentils
- Oysters
- Beans (kidney, lima, navy)
- Molasses
- Whole wheat bread
- Peanut butter
- Brown rice

Depending on how often you donate blood, consuming foods high in iron may not be sufficient to maintain normal levels of iron.

Additionally, iron can be found in many multi-vitamins and in stand-alone iron supplements. Talk to your healthcare provider before you start taking any new vitamins or supplements.

9. Is taking iron supplements safe?

Talk to your healthcare provider before starting any new iron supplement. Taking high doses of iron may result in side effects such as, but not limited to, nausea, constipation and abdominal pain – but these side effects are not likely to occur when taking multivitamins that contain iron or when taking a low-dose (~19 mg) iron supplement. In addition, individuals with certain medical conditions or diseases should not take iron supplements. For example, individuals with hemochromatosis should not take iron supplements as they may already have too much iron in their body.

10. Is donating blood safe?

Blood donation remains fundamentally safe. For the vast majority of people, blood donation carries minimal risks and adverse reactions are rare.

Donor Resources

1. American Red Cross. "What Donors Should Know About Iron and Blood Donation." [Available at: <https://www.redcrossblood.org/learn-about-blood/iron-and-blood-donation>]
2. Blood Systems, Inc. "Iron Stores and Blood Donation." [Available at: http://www.bloodsystems.org/pdf/eBS_351F.pdf]
3. Bloodworks Northwest. "BE SAFe BE IRON STRONG!" [Available at: <https://www.bloodworksnw.org/wp-content/uploads/2017/04/20-9-173-00-effective-07-26-17.pdf>]
4. Bloodworks Northwest. "Here's what you need to know about iron." [Available at: <https://www.bloodworksnw.org/donate/need-to-know/iron>]
5. Carter BloodCare. "Now You Know Beans About Iron and Blood Donation." (August 2011) [Available at: <http://www.carterbloodcare.org/the-community-of-west-may-be-known-for-its-czech-culture-but-thanks-to-the-local-kiwanis-club-and-a-little-girl-named-feryn-this-tight-knit-community-may-now-be-known-for-the-long-lines-at-its-blood/>]
6. Carter BloodCare. "Why is Iron Important to Your Health?" (March 2013) [Available at: <http://www.carterbloodcare.org/why-is-iron-important-to-your-health/>]
7. Carter BloodCare. "Recipes to Boost Iron." (August 2013) [Available at: <http://www.carterbloodcare.org/recipes-to-boost-iron/>]
8. Carter BloodCare. "Restore Your Red Cells with Iron Rich Waffles." (April 2014) [Available at: <http://www.carterbloodcare.org/restore-your-red-cells-with-iron-rich-waffles/>]
9. Community Blood Center of the Ozarks. "Blood Donation, Hematocrit and Iron." [Available at: <https://www.cbco.org/iron-faq/>]
10. Indiana Blood Center. "Blood Donors Need to Be Strong as Iron." [Available at: <https://www.indianablood.org/DONORS/LEARN/Pages/DonorIron.aspx>]
11. Mayo Clinic. "Ferritin test". (February 2017) [Available at: <https://www.mayoclinic.org/tests-procedures/ferritin-test/about/pac-20384928>]
12. Mayo Clinic. "Iron deficiency anemia." (November 2016). [Available at: <https://www.mayoclinic.org/diseases-conditions/iron-deficiency-anemia/diagnosis-treatment/drc-20355040>]
13. NIH Blood Bank. "Iron and Blood Donation." [Available at: <https://clinicalcenter.nih.gov/blooddonor/iron.html>]
14. National Institutes of Health (NIH), Office of Dietary Supplements webpage "Iron, Dietary Supplement Fact Sheet." (February 2016). [Available at: <https://ods.od.nih.gov/factsheets/Iron-HealthProfessional/>]
15. National Institutes of Health, Office of Dietary Supplements. "Iron, Fact Sheet for Consumers." (February 2016). [Available at: <https://ods.od.nih.gov/factsheets/Iron-Consumer/>]
16. Oneblood. "Low Iron." [Available at: <https://www.oneblood.org/about-donating/blood-donor-basics/can-i-donate/low-iron.stml>]
17. UCSF Medical Center. "Hemoglobin and Functions of Iron." [Available at: https://www.ucsfhealth.org/education/hemoglobin_and_functions_of_iron/]