

Why Checking Your Iron Level Is so Crucial for Optimal Health

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✓ Fact Checked

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STORY AT-A-GLANCE

- › Iron overload is incredibly common and likely as dangerous to your health as vitamin D deficiency, as it creates excessive free radicals that damage your mitochondrial DNA, cell membranes and electron transport proteins
- › Iron overload is easily diagnosed by measuring your serum ferritin. Lab normal levels are correct and should be between 20 and 80 ng/ml; between 40 and 60 ng/ml is the sweet spot
- › Iron overload is easy and inexpensive to treat. Most adult men and non-menstruating women would benefit by donating blood two to three times per year to keep their mitochondria healthy

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One in 3 reading this likely has a serious overload of a mineral that may be more dangerous to your health than lack of vitamin D. That mineral is iron.

Making matters worse, few physicians fully appreciate the danger of excess iron, which Gerry Koenig, former chairman of the Iron Disorders Institute and the Hemochromatosis Foundation,¹ discusses in this interview. Koenig's personal story is a powerful illustration of what can happen to someone with excess iron.

Approaching his 50th birthday, he'd lost a lot of weight, worked out, and felt healthy. By age 55, he was in good shape, but he did drink more than recommended. Eventually,

during a physical exam, he found out his liver enzymes were high.

"The doctor recommended I stop drinking," Koenig says. "I stopped drinking. But I got sick again ... Turned out I had hemolytic anemia. My red blood cells were breaking down.

I didn't know what that meant, nor, apparently, did my doctor. They never tested my iron ... Finally I had an episode where I went to the hospital. I had encephalopathy, a pretty serious condition ... They said I would need a new liver.

I didn't get an iron test until the eve of my liver transplant in 2005 ... By chance I ran across a Scientific American article. It described something called hemochromatosis, which I didn't know anything about. I decided I would have the test.

As it turns out, I have a single gene for one of the variants for hemochromatosis – C282Y. Because of that, I decided to look into it more and started researching it ... I've been doing that for the last 11 years."

Are You at High Risk for Iron Overload?

Most all adult men and non-menstruating women have damaging levels of iron. However, there is a genetic disorder called hemochromatosis which causes your body to accumulate excessive and dangerously damaging levels of iron.

If left untreated, it can damage your organs and contribute to cancer, heart disease, diabetes, neurodegenerative diseases and many other disorders.

The good news is iron overload is easy and inexpensive to treat. By monitoring your serum ferritin and/or gamma-glutamyl transpeptidase (GGT) levels, avoiding iron supplements and donating blood on a regular basis, you can avoid serious health problems.

Sadly, many doctors are severely underinformed about iron overload. Hence the problem tends to go undetected.

How High Is Too High?

The serum ferritin test measures your stored iron. I strongly recommend all adults to get your iron tested (serum ferritin test) on an annual basis. I believe iron overload is every bit as dangerous to your health as vitamin D deficiency.

Just don't make the mistake of going by what's considered "normal."² In some labs, a level of 395 nanograms per milliliter (ng/ml) falls within the normal range, which is FAR too high for optimal health. In reality, you're virtually guaranteed to develop disease at that level.

Ideally, your serum ferritin should be somewhere between 20 and 80 ng/ml, certainly no higher than that. As a general rule, somewhere between 40 and 60 ng/ml is the sweet spot for adult men and non-menstruating women.

Unfortunately, few besides children, premenopausal women who lose blood through monthly menstruation, and those with acute blood loss like a bleeding ulcer, have these ideal levels.

"Even some premenopausal women (if they're not under control) will go up to 60 or 70, which is dangerous if they get pregnant. There's a greater chance of poor outcomes in the pregnancy.

The U.S. is 35th in the world in infant survival. It's a terrible situation when you look at the numbers. There's no reason for this. There's no reason for us to have a population that's so unhealthy given the access to medical care that we have," Koenig says.

Again, if your iron level is high, the solution is to simply donate your blood. If you're an adult male, you'll want to donate blood two to three times a year once your levels are

normal. If ferritin levels are over 200 ng/ml, a more aggressive phlebotomy schedule is recommended.

Although your local blood bank may not realize this, U.S. legislation allows all blood banks to perform therapeutic phlebotomy for hemochromatosis or iron overload. All you need is a doctor's order.

Recommended Lab Tests

While a full iron panel that checks serum iron, iron-binding capacity and ferritin can be helpful, you really only need the serum ferritin test. It's fairly inexpensive – typically less than \$40. Your doctor can write you a prescription for the ferritin test, as well as a gamma-glutamyl transferase (GGT) test.

GGT measures liver enzymes, which can tell you if you have liver damage. It can also be used as a screening marker for excess iron. The free iron measured by GGT is also great indicator of sudden cardiac death.

"If you only took that marker (GGT), you have an indication of iron that's not well-bound. When you have iron in the serum, it's generally bound by transferrin, which carries two iron atoms through the serum.

Ferritin can hold 4,000 to 4,500 iron molecules and put those inside the cells. If those measures are high, they're risky, because you don't know how well your body is going to hold on to that iron when the cells fall apart over time hemolysis or catabolism.

Our diet is the biggest factor today that's really causing this problem. It's not so much that we're eating too much iron; it's that the iron we have in our body effectively can harm us. That's where the GGT comes in. It's a surrogate measure of free iron."

For women, a healthy GGT level is around 9 U/L, whereas the high end of "normal" GGT lab ranges are generally 40 to 45 U/L for women. For men, Koenig recommends a level

of 16 U/L (normal lab ranges for men is 65 to 70 U/L).³

"Women with GGT above 30 U/L have higher risk of cancers – breast cancer, all kinds of cancers – and they will have high risk of autoimmune disease," Koenig warns.

What Causes Excess Iron Buildup?

Besides having one or both genes for hemochromatosis, you may also end up with high iron levels for the simple fact that most people don't excrete iron very well. So what's the biology behind iron loading?

Ninety percent of the energy your body creates is by burning carbs or fat with oxygen in your mitochondria to produce adenosine triphosphate (ATP). You need oxygen to burn the fuel because it goes through the Krebs cycle. Ninety-five percent of the time, oxygen is converted to water.

But anywhere from 0.5 to 5% of the time, you're going to develop what's called a reactive oxygen species (ROS). The first one is superoxide, which then transforms to the next ROS, which is hydrogen peroxide.

Here's the key: when you have excess iron in your blood, the chemical reaction (Fenton's reaction) doesn't produce water. Instead, the excessive iron catalyzes the formation of hydroxyl free radicals, which are the most potent and destructive free radicals known to man. They will decimate your mitochondrial DNA, mitochondrial electron transport proteins and cellular membranes.

This is how iron overload accelerates every major disease we know of. That's how it causes the pathologies, especially in liver and cardiovascular disease. Believe me, very few health care professionals understand the molecular biology of this reaction, which is why virtually no one is sounding the alarm about excessive iron levels. This is why you need to share this article with your friends and family as you can literally save many of their lives.

It is absolutely vital to confirm that you have safe iron levels, and once they are in a safe range, continue to monitor them so they don't rise. Remember, you don't have to have hemochromatosis to be affected. According to Koenig, iron levels have literally DOUBLED in the general population over the past four decades.

"Serum ferritin was not measured for the first National Health and Nutrition Examination Survey (NHANES I,⁴ 1971 to 1974) was done. But during NHANES II⁵ (1976 to 1980), they measured ferritin. The male serum ferritin was under 100 nanograms per milliliter (ng/ml). Now the median is close to 200 ng/ml. In some minorities, it's a lot higher ...

If you look at the scales of premature death and infant mortality in African-Americans versus whites, that big difference can be accounted for by this one element. Hispanic-Americans live longer than white Americans. They also handle the iron a little bit better," Koenig says.

Beware of High Iron, High-Carb Diet Combination

If you eat a lot of net carbs (total carbs minus fiber), the situation is exacerbated. Unfortunately, most reading this are burning carbs as their primary fuel, which adds another 30 to 40% more ROS on top of the hydroxyl free radicals generated by the presence of high iron.

"What people generally have when they eat better, in terms of slowing those little fires down before they become a raging fire, are antioxidants," Koenig says. "The most important one is glutathione. If you don't have good cellular health, including glutathione, those fires (inflammation) will just self-ignite and you'll have a chain reaction of effects that go on until you're really sick.

That happened to me. I got peripheral neuropathy. They try to say it's a diabetic problem, and I never had diabetes. Both of my legs were on fire. The pain was unbelievable. You wind up going to a specialist for that, a neurologist. But when

the membranes on your neurological system essentially flare up and melt, the pain is unbearable. But nobody connected that to the iron."

Hemochromatosis, Another Iron-Damaging Disease

About 1 in 3.5 or an estimated 100 million people in the U.S. have the single gene for hemochromatosis. But not all of them get sick with an iron overload disorder. If you have both genes for hemochromatosis, then your risk of developing iron overload and associated health problems rises significantly.

Approximately 1 million people have the double gene variant (C282Y/C282Y), which is considered the genotype most predictive of liver disease complications. However, this only becomes a serious problem if significant iron overload occurs before a diagnosis is achieved and proper treatment can be administered.

Each year there are roughly 56,585 deaths from liver diseases;⁶ and in 2021 there were 9,234 liver transplants in the U.S.⁷ Most all of these cases are affected by excess iron, whether or not they have a hemochromatosis genotype.

The primary cause for liver transplantation and liver death is nonalcoholic fatty liver disease (NAFLD), a condition that can advance to nonalcoholic steatohepatitis (NASH) and cirrhosis. Excess dietary fructose is likely a primary contributor or initiator to NAFLD these days (especially in children and young adults), but high iron is another major culprit that triggers insulin resistance and disease progression.

Certainly, if you combine a high-sugar diet with excess iron, you're asking for trouble. That will create a powerfully poisonous, deadly synergy that will accelerate just about any pathology. If you've read this far, you probably know more about this problem than your physician. High iron simply isn't brought to their attention in the medical literature. The reason I know about it is because I've been personally affected.

My dad had beta-thalassemia and he gave me the gene, which is a form of hemolytic anemia (similar to sickle cell anemia). As a result of that, my red blood cells die faster

than normal, and I'm prone to excess iron. My dad had a ferritin level of 800 when I diagnosed him 20 years ago.

He would have died if we hadn't taken measures to correct it. When he was 90 he was hospitalized with pneumonia. His doctor did an iron test, which came back "low," despite being well over 200 ng/ml! They were about to give him an iron injection when my sister intervened and stopped them. Had she not been there, he might have ended up another [medical error statistic](#).

Key Treatment Points

To reiterate, the three keys to control this situation are:

1. Lower your net carb intake and increase your consumption of healthy fats, including animal-based omega-3, to switch over to fat-burning mode and protect your mitochondria. This will help to radically reduce reactive oxygen species (ROS) and secondary free radical production.
2. Regularly screen for iron overload with a serum ferritin or GGT level to confirm that you don't have excess iron, and if you do, donate blood to lower your levels.
3. If you are an adult male or non-menstruating woman, make sure that you donate your blood at least twice a year.

Relying on antioxidants to indiscriminately suppress ROS can backfire, as ROS also act as important signaling molecules. They're not all bad. They cause harm only when produced in excess. You're better off lowering the production of them rather than squelching them after they're produced.

So optimize your ROS levels biologically rather than relying on vitamins and supplements. Eating healthy fats can make a bigger difference than you might think, especially if you have high iron. Koenig explains:

"There was a very interesting group of studies on captive U.S. Navy dolphins. The dolphins had metabolic syndrome. Very, very high ferritin (serum iron).

They were unhealthy. Metabolic syndrome in any population is a sign of potential risk of going from diabetes to heart disease. They cured it by providing them good fish to have plenty of fats, where they had been getting fish with poor fats ...

If anybody remembers the film 'Lorenzo's Oil,' that's where children have brain damage as a result of having this metabolism that doesn't create a good mixture of fatty acids in the cell linings. If the cell linings are damaged, particularly if it happens in the brain ... you're going to get hurt ...

... If you have leakage of iron from subcells, lysosomes, and/or red blood cells (hemolysis) ... it will shoot the ferritin level up high as an indication of risk. That's when action should be taken. But it's hard to find specialists. We need a couple of thousand general practitioners who know about this."

Be Mindful of Food Combos That Promote Iron Retention

Here are a few other tips and suggestions regarding diet. Eating vitamin C-rich food with a meal that has iron will increase iron absorption. If you're anemic, this might be a good thing, but if you struggle with high iron, avoid combining foods high in vitamin C and iron. On the other hand, calcium will bind to iron, limiting absorption.

It impairs iron, so to speak, so if your iron is high, consider eating iron-rich foods with foods high in calcium. Interestingly, curcumin (derived from turmeric) acts as a potent chelator of iron and can be a useful supplement if your iron is elevated.

"For most people that works well. Your body is designed to not over-absorb non-heme iron, which is elemental iron. That's the iron inside vegetables and fruits. If you do something to enhance that absorption, the body will take it in.

The iron from meats you can't control very well. We're the only country in the developed world, together with Canada, to put 44 parts per million of elemental iron in our grains and flours. The other one is the U.K. They put 16.5 parts per million. That's a lot of iron, and [many] don't need it," Koenig says.

More Information

After testing, if either serum ferritin or GGT is elevated, you need to take action. The treatment couldn't be simpler. Unless you're a menstruating woman, simply donate blood two to three times a year. If you cannot donate blood due to restrictions for hemochromatosis, get your doctor to write you a prescription for therapeutic phlebotomy.

Every blood bank can do that for you and many will do it free of charge, so shop around. Otherwise, a typical charge ranges from \$30 to \$90, which is still fairly inexpensive considering the health benefits. Most people with moderate iron overload will require no more than two or three such treatments a year to keep this risk under control.

There's also a really informative book called "Dumping Iron: How to Ditch This Secret Killer and Reclaim Your Health," which is a well written and easy to understand resource. Remember, high iron may not only be as common, or more, than low iron. It's also more dangerous, and may actually be a factor in a significant number of diabetes, heart disease and cancer cases.

Unfortunately, nearly every physician is still clueless about this, and so you need to be your own advocate if you suspect (or know) your iron is too high.

I believe correcting elevated iron levels may be just as important, if not more so, than optimizing your vitamin D. If you have high iron, you definitely have the pedal to the metal when it comes to speeding up disease and aging. Koenig is a perfect example. He ended up needing a liver transplant as a result of iron overload. In conclusion, Koenig notes:

"If your doctor tells you that you have fatty liver disease, you probably have high iron, high ferritin. He probably will not test you for that. Get the test. You can see some benefit by donating blood, or changing your diet. On my website, I have about 700 publications. If you want to dig into it, it's a section. Find out how to reduce [your iron] by diet alone. It's been done and done successfully."

Sources and References

- ¹ [Hemochromatosis.org](#)
- ^{2, 3} [Irondisorders.org](#)
- ⁴ [NHANES I \(1971-1974\)](#)
- ⁵ [NHANES II \(1976-1980\)](#)
- ⁶ [CDC. Chronic Liver Disease and Cirrhosis](#)
- ⁷ [HRSA. Annual Data Report: Liver](#)