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Anemia

The unchangeable price of everything more precious and valuable is blood - Auliq Ice

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Affecting primarily women of child-bearing age, teenagers and young children. anemia is probably the most common nutritional problem in the world resulting in a signifigant cost to society. According to WHO, pregnant women and children are particularly vulnerable with anemia contributing to 20% of all deaths during pregnancy.

But..."If you've got anemia, that might be good news.

Does such a statement sound weird to you? That's to be expected: For years we've been told that anemia and iron deficiency are nothing short of evil. They should be treated as soon as possible, with any means possible: hence the 108-milligram iron pills sold in many pharmacies.

Yes, it is true that anemia can be a crippling condition and that, when severe, it can cause heart failure. But a growing pile of clinical evidence shows that low iron stores and mild anemia may be beneficial in some cases, by offering protection from infections such as malaria and tuberculosis, and by helping combat chronic diseases including cancer.

"Anemia is a body's genetically programmed response to illness. You can [see this effect] in many animals, even fish," says Ryan Zarychanski, a University of Manitoba physician and scientist who researches the adaptive and helpful aspects of iron deficiency and anemia.

The terms "iron deficiency" and "anemia" are sometimes used interchangeably, but the two conditions are slightly different. With iron deficiency, the body does not have enough iron, which helps make red blood cells. (It can be present without anemia, if the iron stores are not too severely depleted.) Anemia, on the other hand, is a condition in which either the number of red blood cells is too low or those blood cells don't have enough hemoglobin, a protein that helps move oxygen from the lungs to other parts of the body.

While iron deficiency anemia is the most common type of the condition, anemia can have many causes, including genetic disorders, a shortage of vitamin B12 or folic acid, infection and cancer. According to the World Health Organization, iron deficiency anemia affects about a billion people across the planet.

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How can iron deficiency, and even consequent anemia, protect us from infections? "With rare exception, bacteria need iron to grow," Zarychanski explains. "If you take away the iron, the bacteria can't multiply, which means your body can more easily overcome illness, especially infection."

This was most famously hinted at in 2003, in a large trial of iron supplementation for children in Tanzania. The study was halted early because the kids who had been given iron supplements developed a much higher risk of severe malaria than those given a placebo. As a result, the World Health Organization stopped recommending universal iron supplementation for children in malaria-endemic areas. According to Hal Drakesmith, a molecular immunologist at the University of Oxford who studies the role of iron in human immunity but was not connected to this study: "There is now pretty good evidence that iron deficiency could protect against severe malaria in children."

Studies have also suggested that iron can make tuberculosis worse. A lab experiment conducted in 2005 showed that giving mice iron-removing compounds limited the growth of the TB-causing bacteria. In other trials, people with tuberculosis fared worse when they received iron supplements.

Meanwhile, a 2007 investigation in Gambia demonstrated that elevated levels of iron were associated with a higher rate of death in people with HIV infection, while a 2013 study showed that children given iron to reduce anemia were more likely than others to develop diarrhea and respiratory conditions.

According to Zarychanski, iron deficiency is our "innate antimicrobial strategy." Once infected, humans appear to be programmed to reduce production of iron so that bacteria or viruses don't have enough of this nutrient to grow.

Scientists speculate that this may have helped our ancestors survive epidemics. Even in an era of antibiotics, such a strategy may still be useful, especially where pathogens are abundant and health care is poor. "There is evidence that low-iron states or even anemia could be beneficial in a setting where there is a big burden of infectious disease," Drakesmith says.

In addition, when too much iron enters a human body, the delicate balance of bacteria in the gut can be upset. As Drakesmith explains, lactobacilli, one of the "good" bugs that help digestion, don't require iron to grow, while the "bad" ones, such as salmonella and E.coli, do need it to grow.

In states of iron overload - which can be caused by diet, taking supplements or from genetic disorders - pathogenic bacteria can multiply and overwhelm the protective ones. A study of Kenyan infants published this year showed that iron fortification can result in considerably more diarrhea.

Beyond that, says Suzy Torti, a professor of molecular biology at the University of Connecticut, "in a local environment such as the gut that sees iron every day, excessive intake may increase cancer risk." She adds that "there is now a pretty convincing body of literature" connecting high intake of dietary iron with colon cancer. Not only does iron damage DNA by promoting oxidative stress - a disturbance in the balance between free radicals and antioxidants, which can cause cancer - it also stimulates the growth of tumors once they have begun, studies suggest.

Zarychanski suggests that anemia that commonly accompanies severe conditions such as cancer, heart disease and autoimmune disorders is an adaptive physiologic mechanism that helps us fight illness. In three separate studies, transfusing blood to treat anemia was found to cause more harm than good. Patients with myocardial infarction, for example, were more likely to have another heart attack within 30 days.

On the flip side, a 2008 clinical trial showed that bloodletting - which reduces iron stores - decreased cancer risk among otherwise healthy people with peripheral arterial disease.

Does that mean the medieval cure of bloodletting to combat illness wasn't completely misguided? "I've often thought there was something in there," admits Torti, adding that the potential utility of such a treatment depends on when, how and to whom it is administered.

Researchers say that future treatments for some diseases may involve using the iron hunger of pathogens and cancer cells against them. "Bacteria can become resistant to antibiotics, but what they can't do is avoid their need for iron to grow," Drakesmith says. "This is potentially another way of attacking them. Even if a minor iron deficiency develops, that wouldn't be too bad if it really helps to slow down the infection."

A 2008 study conducted on mice showed that iron chelators (compounds that remove iron from the body) limited the growth of bacteria. Similar treatment may be beneficial in cancer. "Targeted iron-depleting agents that could get to tumors and withdraw the iron from them could have a therapeutic potential," Torti says.

Does that all mean we should ditch iron-rich foods such as spinach when we get the flu? No, the scientists say. "We do know that restoring iron deficiency with iron treatments does improve fatigue," Drakesmith says.

And while iron deficiency and mild anemia may sometimes be good, there's a fine line between benefits and costs, and that line is still being measured. "Just like a fever that gets too high, severe anemia can, after all, be a debilitating and detrimental condition," Zarychanski says."

Source: Marta Zaraska, How having anemia could actually be a good thing, Washington Post, November 26, 2014.

Anemia: Know the Symptoms of This Potentially Life-Threatening Condition (http://www.huffingtonpost.com/dr-karen-becker/anemia_b_4604533.html)

There are three causes of anemia: blood loss, destruction of red blood cells (hemolytic anemia), and insufficient production of red blood cells (aplastic anemia).

Anemia: What's Really Going On and Why We Should Think Twice About Iron Supplements (http://primaldocs.com/members-blog/anemia-whats-really-going-on/)

Let's talk about anemia, iron, and iron supplements. There's a lot more to this issue than meets the eye. I know a lot of doctors automatically prescribe iron for anemia, but the situation is much more complex than that, and there are indeed cases where supplemental iron can even make matters worse. Indeed, one of the first places we should look in the presence of anemia is the gut. Let's see why.

How having anemia could actually be a good thing (http://www.nzherald.co.nz/lifestyle/news/article.cfm?c_id=6&objectid=11364670)

If you've got anemia, that might be good news. Does such a statement sound weird to you? That's to be expected: For years we've been told that anemia and iron deficiency are nothing short of evil. They should be treated as soon as possible, with any means possible: hence the 108-milligram iron pills sold in many pharmacies.

How Selfies Could Detect a Common Deadly Disease (http://www.huffingtonpost.com/julielynn-wong-md/how-selfies-could-detect-_b_6239706.html)

More than half of the cases of anaemia are caused by low iron levels and can be treated with iron supplements, according to global health experts. But easy-to-use, reliable, and cheap methods to detect anaemia and monitor the effects of treatment are still needed.

Anemia In-Depth Report (http://www.nytimes.com/health/guides/disease/anemia/print.html)

Anemia is not a single disease but a condition, like fever, with many possible causes and many forms. Causes of anemia include nutritional deficiencies, inherited genetic defects, medication-related side effects, and chronic disease. It can also occur because of blood loss from injury or internal bleeding, the destruction of red blood cells, or insufficient red blood cell production. The condition may be temporary or long-term, and can manifest in mild or severe forms.

Blood Tests for Anaemia (https://www.suburbandiagnostics.com/blood-tests-for-anaemia)

Though different types of anemia have different causes, the signs and symptoms can be very similar. Mild or moderate forms of anemia may cause few, if any, symptoms.

Hematology.org (http://www.hematology.org/Patients/Anemia/)

Many people are at risk for anemia because of poor diet, intestinal disorders, chronic diseases, infections, and other conditions. Women who are menstruating or pregnant and people with chronic medical conditions are most at risk for this disease. The risk of anemia increases as people grow older. People who engage in vigorous athletic activities, such as jogging or basketball, may develop anemia as a result of red blood cells breaking down in the bloodstream.

Pets and Anemia (http://www.huffingtonpost.com/dr-karen-becker/anemia_b_4604533.html)

Rarely is anemia related to iron deficiency in pets, as it is in many women. Iron supplementation should be avoided, unless your pet is one of the very rare cases where actual iron deficiency is present.

Red-Blooded Doctors Cure Anemia (http://news.harvard.edu/gazette/1998/01.22/Red-BloodedDoct.html)

In what can only be described as a disgusting experiment, Castle ate red meat, made himself vomit, and then had patients eat it. But it worked -- his regurgitated stomach contents were as effective as liver. The stomach, he decided, normally contains an "intrinsic factor" that together with an "extrinsic factor" in meat is necessary for red blood cell formation. Later it was determined that this "intrinsic factor" allowed the absorption of what was, in 1948, isolated and named vitamin B12 -- found abundantly in liver.

The Many Varieties of Anemia (http://samadimd.com/common-diseases/2016/3/29/the-many-varieties-of-anemia)

"Anemic" is one of those words that has broken away from the strictly medical lexicon and into the mainstream vocabulary. In the Wall Street Journal or The New York Times it means "weak" or "faint," but in The Merck Manual or The Physicians' Desk Reference, it refers to the world's most common blood disorder that affects about a quarter of the planet's population.

The Most Common Disease You've Never Heard Of (http://www.huffingtonpost.com/randall-amster/the-most-common-disease-y_b_241635.html)

Nearly half a billion people on the planet -- around one out of every fifteen individuals -- are afflicted with a condition that is largely unknown in the popular consciousness.

Why an iron fish can make you stronger (http://www.bbc.com/news/health-32749629)

When Canadian science graduate Christopher Charles visited Cambodia six years ago he discovered that anaemia was a huge public health problem...Dr Charles had a novel idea. Inspired by previous research which showed that cooking in cast iron pots increased the iron content of food, he decided to put a lump of iron into the cooking pot, made from melted-down metal.

Your Guide to Anemia (http://www.nhlbi.nih.gov/files/docs/public/blood/anemia-yg.pdf)

People of all ages, races, and ethnicities can develop anemia at some point in their lives. There are many types of anemia, and they are linked to a variety of diseases and conditions. Some types of anemia are very common, and some are very rare.

KidsHealth (http://kidshealth.org/kid/health_problems/blood/anemia.html)

A person may get anemia if: •not enough RBCs are made •too many RBCs are destroyed •too many RBCs are lost (from bleeding)

LifeExtension.com (http://www.lifeextension.com/protocols/heart-circulatory/blood-disorders/page-02)

The World Health Organization estimates that 2 billion people – about 30% of the global population – are anemic as a consequence of iron deficiency, making iron-deficiency anemia one of the most prevalent nutritional conditions worldwide.

MayoClinic.org (http://www.mayoclinic.org/diseases-conditions/anemia/basics/definition/con-20026209)

There are many forms of anemia, each with its own cause. Loss of blood is the most common cause of anemia. Anemia can be temporary or long term, and it can range from mild to severe. Treatments for anemia range from taking supplements to undergoing medical procedures. You may be able to prevent some types of anemia by eating a healthy, varied diet.

MedicineNet.com (http://www.medicinenet.com/anemia/article.htm)

Anemia is caused by either a decrease in production of red blood cells or hemoglobin, or an increase in loss or destruction of red blood cells.
 Some patients with anemia have no symptoms. Others may feel tired, easily fatigued, appear pale, a feeling of heart racing, short of breath, and/or worsening of heart problems.

MedlinePlus (http://www.nlm.nih.gov/medlineplus/anemia.html)

If you have anemia, your blood does not carry enough oxygen to the rest of your body. The most common cause of anemia is not having enough iron. Your body needs iron to make hemoglobin. Hemoglobin is an iron-rich protein that gives the red color to blood. It carries oxygen from the lungs to the rest of the body. Anemia has three main causes: blood loss, lack of red blood cell production, and high rates of red blood cell destruction.

Patient.co.uk (http://www.patient.co.uk/health/anaemia-leaflet)

Lack of iron is the most common cause of anaemia in the UK. This is called iron-deficiency anaemia. There are many other causes of anaemia. These include the following: Lack of certain vitamins such as folic acid and vitamin B12. Red blood cell problems such as thalassaemia, sickle cell anaemia and other causes of haemolytic anaemia. In these conditions the red cells are fragile and break easily in the bloodstream. Bone marrow problems and leukaemia are uncommon, but can cause anaemia. Other conditions such as rheumatoid arthritis and chronic kidney disease can also cause anaemia.

ScienceDaily (http://www.sciencedaily.com/news/health_medicine/anemia/)

Your source for the latest research news.

WHO (http://www.who.int/topics/anaemia/en/)

Anaemia is a condition in which the number of red blood cells or their oxygen-carrying capacity is insufficient to meet physiologic needs, which vary by age, sex, altitude, smoking, and pregnancy status. Iron deficiency is thought to be the most common cause of anaemia globally, although other conditions, such as folate, vitamin B12 and vitamin A deficiencies, chronic inflammation, parasitic infections, and inherited disorders can all cause anaemia. In its severe form, it is associated with fatigue, weakness, dizziness and drowsiness. Pregnant women and children are particularly vulnerable.

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