

Information about

Iron Deficiency

Why do you need iron?

Iron is needed by all cells of your body; it helps cells use oxygen efficiently in order to function properly. The majority of body iron is found in red blood cells.

Iron's most important role in the body is as part of haemoglobin, the red pigment in your blood which carries oxygen from the lungs throughout the body, and myoglobin which transports oxygen in the muscles.

Iron is essential in the body for:

- red blood cell production
- a healthy immune system to help fight infection
- good mental function
- muscle strength
- energy production.

If you are healthy, small amounts of iron are lost each day as you shed skin and other cells, and whenever you bleed. Your body is unable to make iron therefore your iron needs must be fully supplied by the food you eat and the iron recycled from blood cells that die. To keep iron in balance, you need to absorb some iron each day.

Keeping the correct amount of iron stored in your body is a balancing act: too little iron can interfere with your vital functions and lead to anaemia; too much iron can lead to toxicity. The right amount of iron keeps you healthy and energetic. Iron deficiency is a much more common problem than iron overload.

What is iron deficiency?

If you do not absorb iron each day, your body's iron stores gradually run down. As your stores are used up, you become iron deficient. Over a long time, if iron deficiency is not corrected, you will develop iron-deficiency anaemia, a serious condition where red blood cell production falls and therefore decreases oxygen transport throughout the body.

Iron deficiency is the number one nutritional disorder in the world, in both poor and rich countries.

Women are more at risk of iron deficiency than men, because of periods and pregnancy.

Growing children are also at greater risk than men because of the iron needed during growth spurts.

Don't confuse the terms iron deficiency, iron-deficiency anaemia and anaemia: they are not the same. Iron deficiency is only one cause of anaemia, and in the early stages of iron deficiency, anaemia is not present.

To stay healthy, you need to absorb just a small amount of iron each day. However, as iron absorption is limited, in order to get that small amount of iron, you must consume much more than what you actually need from iron-rich foods.

Recommended dietary intake (RDI) of iron (mg each day)

Age	Male	Female	Pregnancy
Breastfed infants 0-6 months (bottle fed infants need 5-10 times this amount)	0.2	0.2	
7-12 months	11	11	
1-3 years	9	9	
4-18 years	10	10	
9-13 years	8	8	27
14-18 years	11	15	27
19-50 years	8	18	
> 51 years	8	8	

Source: Australian National Health and Medical Research Council (NHMRC) and the New Zealand Ministry of Health (MoH). Nutrient Reference Values for Australia and New Zealand including Recommended Dietary Intakes, 2006.

*Women's requirements go up when menstruation commences.

What happens if you have iron deficiency?

Because iron is important to the healthy functioning of all cells in your body, it is not surprising that iron deficiency has many adverse effects

Iron deficiency can cause:

- decreased memory, impaired learning and concentration
- impaired immune function
- decreased aerobic sports performance
- fatigue
- adverse pregnancy outcomes: risk of premature delivery and low birth weight baby
- infant motor and mental function delay which can last into young adulthood
- anaemia.

If you think you have iron deficiency, go to your doctor to check it out. It is NOT recommended to take iron supplements without first finding out whether you do have iron deficiency and what the underlying cause is. Although iron deficiency may simply be a problem with your diet, it may sometimes indicate a serious underlying disease.

What causes iron deficiency?

Iron deficiency results when your body's iron needs are not met by iron absorption from your diet.

The three common causes of iron deficiency are:

- blood loss
- not enough iron in your diet
- poor absorption of iron in your diet.

Are you losing iron from bleeding?

Blood loss = iron loss.

Excess blood loss can occur from:

- heavy menstrual periods for women
- regular blood donation
- unexpectedly large blood loss during or after an operation
- gastrointestinal conditions or disease (an ulcer, a colon polyp or even bowel cancer).

Do you have enough iron in your diet?

If you are a man over 40 years or a post-menopausal woman, iron deficiency may be the first sign of a serious bowel problem such as bowel cancer. In this situation, investigation of the intestinal tract is strongly recommended. Your doctor will discuss these investigations with you.

Although there is a plentiful supply of iron available in Australian diets, many people develop iron deficiency from not eating sufficient iron-rich foods.

Reasons for low dietary iron intake can include:

- your food preferences (more white meat or fish intake and little or no red meat)
- your dietary knowledge (being unaware of haem and non-haem iron)
- the cost of food and knowledge about food preparation
- dietary restrictions (vegetarian, vegan).

Is it possible you are just not absorbing the iron you eat?

The only common intestinal disorder which affects the absorption of iron is untreated coeliac disease. Everyone with iron deficiency should have tests to exclude coeliac disease. Your doctor can advise you about this condition and if you need the tests. People who have had gastric surgery, including obesity surgery (banding or bypass) may also develop iron deficiency because of absorption problems.

Are you at risk of iron deficiency?

You can run down your iron stores and have iron deficiency at any time in your life, but children, teenagers (especially girls) and pregnant and breastfeeding women are the most commonly affected because of the high iron needs of growth, pregnancy and lactation.

People most at risk of iron deficiency:

- babies given cow's milk instead of breast milk or iron-fortified formula
- children
- teenagers
- menstruating women, especially with heavy periods
- pregnant and breastfeeding women
- indigenous Australians
- refugees
- recent migrants from poor countries
- hospitalised and institutionalised patients, including elderly people in aged-care homes
- people who repeatedly crash diet
- vegetarians (especially vegans)
- endurance athletes

Even if you are in a high-risk group for iron deficiency, you will still need to have other causes of iron deficiency ruled out. The tests recommended will depend on your individual situation such as your age, gender, diet, family history and the severity of the iron deficiency.

What are the signs of iron deficiency?

Iron deficiency develops gradually and without any obvious symptoms until anaemia develops. It is easy to mistake signs of iron deficiency with being generally run-down.

Some signs to watch out for:

- fatigue, feeling tired, listless and weak
- breathlessness
- difficulty with aerobic exercise
- susceptibility to infections
- behavioural problems in children
- decreased work and school performance
- decreased ability to concentrate
- decreased libido.

How does your doctor diagnose iron deficiency?

Talk to your doctor if you think you might have iron deficiency. Iron deficiency is confirmed or ruled out by simple blood tests. If you are iron deficient, your doctor will ask you about your diet, your health and any medicine you are taking. Other tests will be needed to find out what is causing the iron deficiency.

You should never take over-the-counter iron supplements if you think you are low in iron. Talk to your doctor first. If your doctor thinks that you might have too little iron in your blood, iron studies of your blood samples are done to assess your body's iron stores before treatment.

How is iron deficiency treated?

Treatment for iron deficiency includes adding iron-rich foods to your diet and, in some cases, may also mean taking oral iron supplements under your doctor's supervision, or having intravenous iron in hospital if the deficiency is severe or if you cannot take iron tablets.

It is usually difficult to correct iron deficiency with an iron-rich diet alone, although an iron-rich diet is helpful in preventing iron deficiency from recurring.

Iron deficiency can be easily and successfully corrected. Your doctor will advise you on the best treatment. You will start replacement iron even while a cause of the iron deficiency is being investigated.

Iron supplements

Iron supplements should not be taken without medical supervision. Your body does not excrete much iron and you could poison yourself if you take more than the recommended dose. Inappropriate use of iron supplements can also interfere with your body's zinc and copper absorption and can have effects on your immune system.

An iron-rich diet

You need a diet rich in iron to prevent your iron stores running down. Although iron is found in many different foods, some sources of iron are better absorbed than others. The best sources of iron are foods with high iron content and high iron availability. Red meat is the best dietary source of iron.

Haem and non-haem iron.

Haem iron

Haem iron is absorbed much more easily than non-haem iron. It is found in foods from animal sources, especially meat, fish and poultry.

Sources of haem iron: red meats (beef, lamb, veal, pork) and other meats such as poultry and fish. The redder the meat, the higher the iron content. Organ meats (liver, kidney) and foods made from these (e.g. pate) are also rich sources of haem iron.

Non-haem iron

Non-haem iron is not as readily absorbed as haem iron. It is found in plant foods such as rice, maize, black beans, soybeans, wheat, vegetables, fruit and nuts. Red meat also contains non-haem iron.

Sources of non-haem iron: eggs, nuts, dried fruit, wholemeal pasta and bread, iron-fortified breakfast cereal, dried beans and lentils, and dark leafy green vegetables (spinach, silver beet, broccoli).

The facts

- iron deficiency is common in the community
- you can have iron deficiency without having anaemia
- anaemia usually means more severe and longer lasting iron deficiency
- iron deficiency can and should be corrected
- your doctor will always try to find the reason for your iron deficiency
- iron deficiency may be a sign of a serious disease
- you should never just take iron supplements without having proven iron deficiency

See your doctor if you think you have iron deficiency

Digestive Health Foundation

The DHF is an educational body committed to promoting better health for all Australians by promoting education and community health programs related to the digestive system.

The DHF is the educational arm of the Gastroenterological Society of Australia (GESA), the professional body representing the specialty of gastrointestinal and liver disease. Members of the Society are drawn from physicians, surgeons, scientists and other medical specialties with an interest in gastrointestinal (GI) disorders. GI disorders are the most common health-related problems affecting the community.

Research and education into gastrointestinal disease are essential to contain the effects of these disorders on all Australians.

Further information on a wide variety of gastrointestinal conditions is available on our website - www.gesa.org.au

dhf

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