

# Focus on Iron Supplementation

As a Dietitian in clinical practice, the area of iron supplementation feels like a giant gaping hole in nutritional knowledge. Iron deficiency anaemia (IDA) is common and a major cause of morbidity worldwide. A recent large survey suggested that 42% of Irish women could be at risk of iron deficiency! Yet, few people know how to take their iron supplement properly. Previous work with world class Olympic and Paralympic athletes really hit home the need to get this part of nutritional management right, whether altitude training or not.



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chronic inflammatory disorders such as rheumatoid arthritis can all contribute to lower iron levels.

**1.** IDA is common in young women due to menstrual losses, pregnancy and poor dietary intake of iron. Therefore, it's worth considering birth control or other reasons why a woman may not menstruate as they shouldn't be as likely to develop IDA as those that are bleeding monthly.

**2.** Confirmed IDA is uncommon in young men, unless they have an obvious reason for it such as IBD. So, if the person standing in front of you is a man or postmenopausal woman with newly diagnosed IDA, it's recommended that they be scoped.

**3.** Iron deficiency is common in the elderly, for lots of reasons. Do consider the fact that they may have advanced chronic kidney disease or chronic heart failure.

**4.** Watch out for medications that will impact iron status such as PPIs and calcium supplements.

If a person has IDA, and they're due a colonoscopy fairly imminently, you may suggest holding off on treatment till after their scope. This is simply because supplementation can slow down gut transit and stain the stool. This can make the work of a gastroenterologist harder.

What stops people from correcting IDA? You'll have heard this a 1000 times before, I'm sure "I can't take iron supplements as they irritate my gut". Let me explain the physiology. Iron is toxic when we take in too much, so our clever body releases a thing called hepcidin to stop our body absorbing too much. So, when a person takes an iron supplement, hepcidin is released. When hepcidin levels are high, the absorption of iron is blocked. So, if a person takes another dose of iron, the absorption is blocked by the hepcidin and the iron remains within the gut. If the iron is left within the gut, it annoys the gut and gut issues result. So, it's important to take the iron supplement when hepcidin is low to maximise absorption. If you maximise

absorption, more is absorbed which helps to restore the body's iron levels and less is leftover in the gut which helps to minimise adverse effects of supplementation.

## So how should someone take an iron supplement?

**1.** The initial treatment of IDA should be with one tablet per day of ferrous sulphate, fumarate or gluconate. They're affordable, readily available, safe and effective. Previously you may have suggested a split dose. We know now that lower doses and less frequent doses can be just as effective. It's also far more convenient!

## If they don't tolerate this, what do you do?

**2.** Research suggests that modified release preparations do not appear to be superior.

**3.** You could look at reducing the dose. In the past, when people had severe IDA, they were supplemented with more iron than people with less severe IDA. Interestingly, research suggests that a daily dose of 15 mg of iron was as effective as 50 mg or 150 mg in terms of the Hb response, with a lower incidence of adverse effects.

**4.** You could suggest they take their iron supplement every other day. Hepcidin increases after we take an iron supplement. For example, a study showed that supplementation with 60 mg of iron increased hepcidin levels for the next 24 hours and reduced subsequent iron absorption by 35 to 45 percent. Therefore, studies showed that the overall absorption of iron from 60 mg of elemental iron taken once a day was similar to that from 60 mg two times a day. While another study showed that the overall iron absorption from 200 mg on alternate days was almost twice that from the equivalent dosage of 100 mg on consecutive days. So, this may be the preferred approach if the person can remember to take it.

**5.** Hepcidin increases under a few different circumstances. For example, hepcidin increases from morning to night. Therefore, it's important to take it in the morning.

**6.** Hepcidin increases a few hours after exercise. The duration of exercise rather than the intensity seems more important. If the

person goes for a long run or cycle in the morning, they need to take their iron as soon as they get home.

**7.** However, iron supplements should not be taken with a meal. Take them on an empty stomach. Food can reduce bioavailability by up to 75%. Tea, coffee, calcium, flavonoids, oxalates, phytates and antacids all impact absorption.

**8.** Take the iron supplement with water. Although previously it was suggested to be beneficial to take in vitamin C at the same time as the iron supplement, a large randomised controlled trial disputed this. The inhibitory effect of tea on iron absorption is thought to dissipate within 60 min. So, again encourage people to hold off on their morning brew.

**9.** If someone has a chronic inflammatory disorder, consider referring to a Dietitian for an anti-inflammatory diet. Lowering inflammation could increase iron, making them feel a lot better from a two pronged approach.

Don't forget food! Food sources remain important when correcting iron with supplements. If supplements are used without changing the diets, iron stores could drop again due to poor intake.

So, based on the literature, a once daily dose of 50-100 mg of elemental iron, for example a one ferrous sulfate 200 mg tablet a day, taken in the morning on an empty stomach and with water may be the best option for initial treatment. If this isn't tolerated try alternate day supplementation. Oral ferric maltol is an option. However, oral ferric maltol may lead to much slower results as it has a relatively low iron content. Nonetheless, after a year of treatment, most people do recover their iron levels.

Iron replacement therapy, when done correctly, can be very effective. In a mere 2 weeks, a beneficial rise can be seen. Hb levels will normalise with iron replacement therapy in most cases. In an ideal world people should be monitored in the first 4 weeks for an Hb response. It's recommended that treatment should be continued for around 3 months after Hb levels have been brought within the desired range as this helps to adequately replete iron stores.

Iron deficiency anaemia makes a person feel poxy, and performance in all areas of life dip, whether a world class athlete or not. Symptoms include tiredness, lack of energy, shortness of breath, heart palpitations and pale skin. Less common symptoms include headaches, tinnitus, taste changes, feeling itchy, a sore tongue, hair loss, pica, dysphagia, spoon shaped nails and restless legs syndrome.

Simple questions can encourage a person to better understand their own blood results. Do they know what their haemoglobin (Hb) concentration was? Serum ferritin is incredibly useful but other blood tests like transferrin saturation back up this result. A false-normal ferritin is possible.

All those coming in contact with the general population while working within the health care sector need to know when to raise a red flag. It can save a life. IDA can be caused by a range of things including cancers. Interestingly, although not life threatening if discovered and managed, coeliac disease is found in 3 to 5 percentage of cases of IDA. Imagine, every 3 to 5 people in every 100 with IDA that you meet will probably have coeliac disease! So, gastrointestinal investigation becomes urgent in adults with a new diagnosis of IDA without obvious explanation. Chronic blood loss from the digestive, genitor-urinary and respiratory tract, malabsorption syndromes including H Pylori infection and surgery, and