



Iron Supplementation

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Introduction

Iron is an essential nutrient that our bodies need in order to function properly. It is naturally present in many foods, added to some food products and available as a dietary supplement for people with iron deficiency.

Iron is a component of haemoglobin, a protein in the blood that carries oxygen from our lungs throughout our bodies. Iron is also necessary for growth, development, normal cellular functioning, and synthesis of some hormones and connective tissue.^{1,2,3} Iron deficiency, with resultant anaemia, is probably the most widespread nutritional deficiency in the world.¹

Causes of iron deficiency

Causes of iron deficiency depend on age, gender and socio-economic status. Infants, adolescents and older people are most at risk.⁴ Iron deficiency may result from inadequate intake or absorption of dietary iron, increased need in periods of growth and increased losses.¹

Those at risk for low iron levels include^{1,4,5}:

- Adolescent girls or women who are menstruating, especially if they have heavy periods
- Women who are pregnant or who have just had a baby
- People with any type of bleeding in the intestines (for example, a bleeding ulcer) or who have gastrointestinal conditions that make it hard to absorb nutrients such as iron from food
- People with worm infections
- Vegetarians and vegans who do not obtain enough iron in their diet
- People who frequently donate blood

Iron-deficiency anaemia

Low iron levels over a long period of time may lead to iron-deficiency anaemia. Some patients with iron-deficiency anaemia may be asymptomatic. Others may have symptoms that include the following^{5,6,7}:

- Lack of energy
- Weakness
- Decreased exercise tolerance
- Fatigue
- Dizziness
- Headache
- Irritability
- Depression
- Shortness of breath
- Neurodevelopmental delay (children)
- Weight loss
- Pica and pagophagia (ice craving)
- Restless legs syndrome
- Pale tongue and spoon-shaped nails

Recommended intakes for iron

Table I lists the Recommended Dietary Allowances (RDAs) for non-vegetarians who are not iron-deficient. The RDAs for vegetarians are 1.8 times higher than for people who eat meat.³

Table I. RDA for iron by age and gender³⁻⁵

Age/Group	Life stage	Iron (mg/day)
Infants	Birth to 6 months	~0.27
	7–12 months	11
Children	1–3 years	7
	4–8 years	10
Males	9–13 years	8
	14–18 years	11
	19–50 years	8
	51+ years	8

Females	9–13 years	8
	14–18 years	15
	19–50 years	18
	51+ years	8
Pregnant women	14–18 years	27
	19–50 years	27
Lactating women	14–18 years	10
	19–50 years	9

^a = This value is an established adequate intake that is equivalent to the mean intake of iron in healthy, breastfed infants from birth to 6 months and is used when there is not enough information known to set a recommended daily allowance.

Note: Women who are pregnant or breastfeeding may need different amounts of iron and it is recommended to discuss an appropriate RDA with the doctor.

Sources of iron

Eating iron-rich foods is a key part of preventing and treating iron-deficiency anaemia. However, iron supplements may be needed in some patients to restore low iron stores in the body.⁷

Dietary Sources

Table II. Examples of iron-rich foods^{3-5,7}

Meat and seafood	Lean beef, poultry, pork, lamb, liver Shellfish (e.g. shrimp, oysters)
Vegetables	Spinach, broccoli, asparagus
Grains and legumes	Dried peas, dried beans, legumes, fortified cereals, wholegrain breads, brown rice, enriched pasta, tofu, soya beans
Fruits	Dried fruits (e.g. raisins, prunes, figs) Tomato juice, prune juice
Other foods	Egg yolk, nutritional yeast, molasses

Iron supplements

The dose of oral iron depends on patient age, the estimated iron deficit, the rapidity with which it needs to be corrected and potential side-effects.

The recommended daily dose for the treatment of iron deficiency in most adults is in the range of 150 to 200 mg of elemental iron daily.⁶

Oral iron preparations are usually in the form of soluble ferrous salts and include ferrous sulphate, gluconate or fumarate.⁴ Gastrointestinal (GI) side-effects are common with oral iron administration. These include constipation, nausea, vomiting, flatulence, diarrhoea, black/green or tarry stools and a metallic taste. As a result, compliance with oral iron

supplements may be low.^{3,6} Other forms of supplemental iron are available, such as ferric polymaltose which may be better tolerated.⁴

Table III. Factors that may affect the absorption and tolerability of oral iron

The absorption and tolerability of oral iron may be enhanced by attention to the following factors^{4,6,7}:

- Start therapy with a small dose. Gradually increasing the dose over several days may lessen side-effects.
- Side-effects such as GI symptoms may be minimised by administration with food. However, this reduces the absorption of the iron supplement.
- Patients experiencing GI side-effects may benefit from reducing the dose (e.g. to once daily), increasing the dosing interval (e.g. to every other day) or by switching to a formulation with a lower amount of elemental iron.
- Iron supplements should not be taken with tea, calcium supplements, calcium-containing foods and beverages (e.g. milk), coffee or together with high-fibre meals (e.g. breakfast cereals) as iron absorption may be reduced.
- Iron should be given two hours before or four hours after ingestion of antacids.
- It is usually recommended to co-administer a 250 mg ascorbic acid tablet or a half-glass of orange juice with iron to enhance its absorption.
- Iron salts in liquid form may discolour teeth and should be taken through a straw.

Conclusion

Iron supplementation plays a vital role in both the prevention and treatment of iron deficiency. The pharmacist's assistant can provide valuable input regarding selection of an appropriate supplement and the best use of such products.

References

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