

PRACTICE | FIVE THINGS TO KNOW ABOUT ...

Treating iron deficiency

Michelle P. Zeller MD, Madeleine Verhovsek MD

■ Cite as: *CMAJ* 2017 March 13;189:E409. doi: 10.1503/cmaj.160153

1 Treating iron deficiency begins with addressing the cause

A detailed history should be performed to determine the cause of iron deficiency (Figure 1). Fecal occult blood testing and/or referral for esophagogastroduodenoscopy or colonoscopy should be considered for men or postmenopausal women.¹

2 Oral iron replacement is first-line therapy

Oral iron replacement includes an iron-rich diet and/or iron salts (ferrous fumarate, sulfate or gluconate), polysaccharide-iron complex or heme iron polypeptide. Iron salts require an acidic environment for optimal absorption and should be taken on an empty stomach with orange juice, and not with antacids, calcium or polyphenols (found in wine, tea and coffee). Once-daily or every-other-day dosing may improve tolerability and absorption.²

3 Supplement selection depends on elemental iron dose, tolerability and cost

Patients with poor iron absorption or ongoing blood loss often require prolonged treatment (e.g., 100 mg elemental iron for 6–12 mo). It takes two to three months of 30 mg daily of elemental iron to replace iron lost during blood donation (about 250 mg) in healthy nonanemic donors.³ Polysaccharide-iron complex or heme iron polypeptide, which can be taken with meals, may be considered in patients unable to tolerate iron salts. Transfusion is rarely indicated, unless the patient is acutely symptomatic (e.g., angina, dyspnea or syncope).

4 Intravenous iron is second-line therapy

Intravenous iron can be considered if there is no response to two different forms of oral iron for three months, there are intolerable adverse effects or the patient is at risk of requiring urgent transfusion.^{1,4} Intravenous iron is costly, administered in specialized infusion settings and carries a very small risk of severe allergic reaction.^{1,5} Intramuscular iron, though more accessible, can cause permanent tattooing, allergic reactions and pain, with limited hematologic response.

5 Dosing of intravenous iron depends on the patient's iron deficit

Studies of intravenous iron for iron deficiency used a modified Ganzoni formula (weight in kg × [(150 – current hemoglobin in g/L) ÷ 10] × 2.4 + 500) to calculate a patient's iron deficit.⁴ Evidence supports providing a 1500-mg cumulative dose of intravenous iron (e.g., iron sucrose 300 mg every 7–14 d × 5 doses) because this was the average iron deficit noted in study patients.⁴

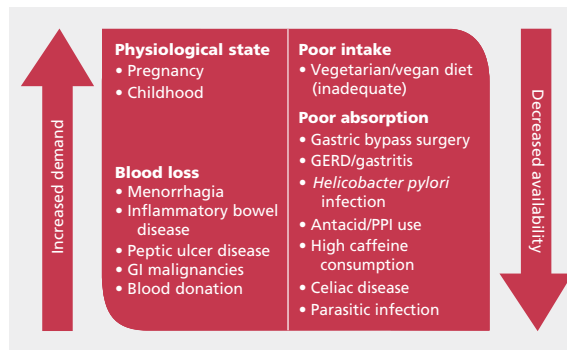


Figure 1: Causes of iron deficiency anemia.¹ GERD = gastroesophageal reflux disease, GI = gastrointestinal, PPI = proton pump inhibitor.

References

1. Lopez A, Cacoub P, Macdougall IC, et al. Iron deficiency anaemia. *Lancet* 2016;387:907-16.
2. Moretti D, Goede JS, Zeder C, et al. Oral iron supplements increase hepcidin and decrease iron absorption from daily or twice-daily doses in iron-depleted young women. *Blood* 2015;126:1981-9.
3. Kiss JE, Brambilla D, Glynn SA, et al. Oral iron supplementation after blood donation. *JAMA* 2015;313:575-83.
4. Koch TA, Myers J, Goodnough LT. Intravenous iron therapy in patients with iron deficiency anemia: dosing considerations. *Anemia* 2015; article ID 763576. doi:10.1155/2015/763576.
5. Auerbach M, Macdougall IC. Safety of intravenous iron formulations: facts and folklore. *Blood Transfus* 2014;12:296-300.

Competing interests: Michelle Zeller reports personal fees and nonfinancial support from the Pfizer Advisory Board. No other competing interests were declared.

This article has been peer reviewed.

Affiliations: Division of Hematology and Thromboembolism (Zeller, Verhovsek), Department of Medicine, McMaster University, Hamilton, Ont.; Canadian Blood Services (Zeller), Ottawa, Ont.

Correspondence to: Michelle Zeller, zeller@mcmaster.ca