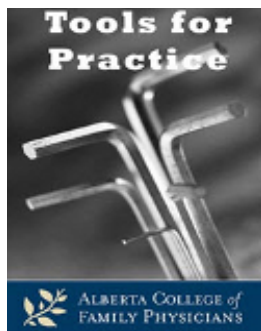


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Iron-ing Out the Wrinkles in Anemia Management

Clinical Question: Are newer oral iron formulations (iron polysaccharide complex or heme iron polypeptide) better than ferrous salts for iron deficiency anemia (IDA)?

Bottom Line: Newer iron formulations appear inferior to older ferrous salts. Ferrous salts improve hemoglobin up to 10-20g/L more and perhaps one in five more attaining IDA resolution at 3 months. Evidence that newer formulations have less adverse effects is inconsistent.

Evidence:

- Randomized controlled trials. Differences statistically significant unless indicated.
 - General population adults:
 - 80 patients (92% female, mean age 39):¹ iron polysaccharide (Niferex™) versus ferrous fumarate, both ~150mg/day elemental iron. After 12 weeks:
 - Ferrous fumarate improved hemoglobin (28.4g/L) more than iron polysaccharide (6g/L), and had better serum ferritin, mean corpuscular volume, and transferrin saturation but more nausea (31% versus 3%).
 - 80 children (mean age 23 months):² Iron polysaccharide (NovaFerrum™) versus ferrous sulfate, both 3mg/kg/day elemental iron.
 - At 12 weeks, ferrous sulphate improved hemoglobin more (10g/L), resolved IDA (29% vs 6%, Number Needed to Treat=5), caused less diarrhea (35% versus 58%).
 - Smaller trials of adults (n=43)³ and premature infants (n=32)⁴: iron polysaccharide and ferrous salts were no different in hemoglobin improvement after 4-6 weeks.
 - Subgroups:
 - Dialysis patients: At 6 months, ferrous salts no different from newer formulations on transferrin saturation^{5, 6} or proportion of iron-replete patients.⁵
 - Ferritin ~ (160µg/L) better with ferrous sulfate than heme iron (Proferrin ES™).⁵

- Post-gastric bypass (n=14):⁷ Ferrous sulfate improved hemoglobin after 8 weeks, but heme iron (Proferrin ES™) did not.
- Blood Donors (n=97):⁸ and pregnant patients (n=90)⁹: Heme iron with ferrous fumarate (Hemofer™) no different from higher doses ferrous fumarate alone in achieving anemia outcomes; ^{8,9} ferrous fumarate alone caused more constipation (35% versus 14%).⁸

Context:

- Multiple limitations including underpowered,^{2,4,6-9} multiple outcomes,¹⁻⁹ non-intention-to-treat.^{1,2,5}
- Approximate costs/month for 100mg elemental iron/day¹⁰: ferrous fumarate/sulphate (generics \$5-10), ferrous fumarate (Palafer™ \$35), iron polysaccharide complexes (Feramax™ \$35).
- To reduce iron-related gastrointestinal upset: lower dose¹¹; use another ferrous salt (incidence of adverse effects: ferrous gluconate 30%, sulfate 32%, fumarate 47%);¹² alternate day dosing.¹³

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Disclosures:

Authors do not have any conflicts of interest to declare

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