

Iron Deficiency Anemia – Summary Notes for Family Medicine Forum November 13, 2015

Session Faculty: Dr Yulia Lin, Hematology & Transfusion Medicine, Sunnybrook Health Sciences Centre and Dr. Dominick Shelton, Department of Emergency Medicine, Sunnybrook Health Sciences Centre

Learning Objectives

1. Recognize iron deficiency anemia (IDA)
2. Prescribe treatment for IDA
3. Manage patients with IDA in the Office and Emergency Department

How common is IDA?

- ~5% of women have IDA
- ~14% in pregnancy
- Responsible for as much as 1/3 of anemia in older patients

What are some of the consequences of anemia?

- Symptoms of anemia: fatigue, weakness, dyspnea, chest pain (with worsening anemia)
- Specific to IDA: pica, restless leg syndrome
- But even in iron deficiency without anemia, there may be impaired cognition, decreased exercise tolerance, altered mood

How to diagnose IDA?

- Anemia is defined as hemoglobin (Hb) less than 120 g/L in women and 130 g/L in men.
- Iron deficiency is defined as:
 - Ferritin < 30 ug/L; OR
 - Ferritin < 100 ug/L AND transferrin saturation < 20%
- A low MCV < 80 fL when it was previously normal (80-100 fL) is also a clue to iron deficiency
- Ferritin is a measure of iron stores but may be falsely elevated in inflammation → in these cases, order a TSAT to determine if a component of IDA is present (TSAT < 20%)

How to manage IDA?

- Always remember to look for the cause of IDA
 - The most common cause is ongoing blood loss typically from a GI or GU or Gyne source
 - Other causes include increased iron requirements (treatment with erythropoietin, pregnancy, post-bleeding recovery), inadequate absorption (celiac disease, inflammatory bowel disease, bowel resection, antacids, *H. pylori*, tannins)
- Oral iron supplementation should be first-line (diet alone is insufficient to replace losses)
 - Ferrous gluconate 300mg po OD (contains 35 mg elemental Fe) – covered by ODB
 - Ferrous sulfate 300mg po OD (contains 60 mg elemental Fe)
 - Ferrous fumarate 300mg po OD (contains 100mg elemental Fe) – covered by ODB
 - Should be taken on an empty stomach with vitamin C 500mg PO daily
 - Side effects: GI, epigastric pain, nausea, vomiting, constipation, diarrhea
- If not tolerated, can consider alternative oral iron – not covered by ODB
 - Feramax 150mg po OD (contains 150 mg elemental iron)
 - Proferrin 398 mg po OD (contains 11 mg elemental iron)
 - More expensive with decreased side effects
 - Not clear that these are more effective than oral iron salts
- Can see an increase as high as Hb 5-10 g/L per week (if oral iron tolerated and effective)
- Need to treat for at least 3 months to replace the iron stores

When should I consider intravenous iron?

- There may be several reasons why oral iron might not work for IDA
 - Oral iron is not well tolerated due to GI side effects
 - Oral iron absorption is poor (infection, inflammation, other medications)
 - Oral iron is not effective (e.g. ongoing bleeding)
 - Severe anemia (e.g. hemoglobin less than 90 g/L)
 - Short timeline to surgery (less than 3-4 weeks)
- There are various formulations of iv iron available and there should be a policy at your institution of which one to use in different clinical settings
- Contraindications: active infection
- Side effects: serious allergic reactions, including anaphylaxis, are rare; hypotension 1-2%, metallic taste, headache, nausea, vomiting, diarrhea, abdominal pain, arthralgias, infusion site reactions
- Typically given on a weekly basis depending on the type of iv iron
- Expected increase in Hb of 5-10 g/L per week
- Venofer (iron sucrose) is now on the list of EAP drugs and so approval can be obtained for EAP coverage in patients who cannot tolerate oral iron or where oral iron has not been effective
- Accessibility and cost are issues – outpatient treatment not always covered by hospital

Why should I try to avoid a red blood cell transfusion?

- Risks of transfusion include:
 - Common: fevers and hives (1 in 100)
 - Serious: transfusion-related associated circulatory overload (1 in 700), transfusion-related acute lung injury (1 in 10,000), serious allergic reaction (1 in 40,000), acute hemolytic reaction (1 in 40,000), bacterial contamination (1 in 250,000)
 - Viral: Hepatitis B (1 in 1.7 million), Hepatitis C (1 in 6.7 million), HIV (1 in 8 million)
- But also the risks of transfusion that we often don't talk about
 - Alloimmunization to red blood cell antigens which could put future pregnancies at risk for hemolytic disease of the fetus and newborn
 - Alloimmunization to HLA antigens which would affect the patient's future transplant candidacy
- And to the system, the cost of one RBC unit is \$423 whereas the cost of a dose of iv iron can range from \$145 (300mg) to \$230 (500mg)

When is a red blood cell transfusion indicated for patients with IDA?

- Although every patient case should be considered carefully, typical recommendations for red blood cell transfusion in patients with IDA include
 - Symptomatic patient (lightheaded, syncope, chest pain, dyspnea) with hemoglobin less than 90 g/L
 - Asymptomatic patient with very severe anemia (e.g. hemoglobin less than 50 g/L)

At Sunnybrook, we have been working on a quality improvement project to ensure appropriate transfusion for patients with IDA in the Emergency Department. For further information on this project or supporting resources, please contact us at yulia.lin@sunnybrook.ca or dominick.shelton@sunnybrook.ca