

# Anemia and iron deficiency in pregnancy

**In pregnant women, screening for anemia and iron deficiency early and a trial of optimized oral iron therapy when indicated prevents obstetrical and neonatal complications and the need for parenteral iron therapy and blood transfusion.**

## Background

Iron deficiency anemia in pregnancy increases the risk of cesarean section, blood transfusions, abruption, fatigue, and mood concerns in the mother, as well as preterm delivery, low birth weight, and long term cognitive, motor, and memory issues in the new born.

## Screening

### Initial prenatal labs:

- CBC
- Ferritin
- B12 (if vegetarian, meat limited diet)
- If ferritin is elevated but patient is anemic consider full iron studies and evaluation of ferritin as an acute phase reactant and consider specialist referral

### At 24-28 weeks:

- Repeat above labs

Lab reference intervals do not necessarily reflect the values used for therapeutic decision making. For example, the reference interval for ferritin in female patients over 15 years is 20-300 ug/L, but in pregnant patients a ferritin less than 30 ug/L should be considered iron deficient.

In patients where anemia of inflammation is a concern, the decision to treat may include higher ferritin levels.

## Guidance

Classification of Anemia	Criteria in Pregnancy	Recommended Intervention
Iron Deficiency	Ferritin <30 µg/L	<ul style="list-style-type: none"><li>• Educate patient on high iron diet</li><li>• Consider Dietician referral</li><li>• 60 mg oral elemental iron daily</li></ul>
Iron Deficiency Anemia	Hb <110 g/L <b>and</b> ferritin <30 µg/L	<ul style="list-style-type: none"><li>• As above</li><li>• 200 mg oral elemental iron daily</li></ul>
Severe Anemia	Hb <80 g/L	<ul style="list-style-type: none"><li>• As above</li><li>• Parental Iron therapy is not recommended in first trimester of pregnancy★</li></ul>

★ Safety data exists for parenteral iron sucrose use in 2nd & 3rd trimester; safety data does not yet exist for parenteral iron isomaltoside in any trimester

## To improve oral iron absorption:

- Take in the morning on an empty stomach (1 hour before meals or 2 hours after)
- Take with an orange or vitamin C
- Avoid taking with calcium, antacids, dairy, or other medications or supplements

## To improve oral iron tolerance:

- Use intermittent dosing schedule (every other day)
- Start with low dose and increase slowly
- Use liquid formulations for smaller dose titrations
- Try another formulation (polysaccharide iron complex may have improved tolerability)

### Parenteral iron therapy may be considered after 14 weeks gestational age if one or more of the following:

- Severe iron deficiency anemia (Hb <80 g/L and ferritin <30 ug/L)
- Iron deficiency anemia diagnosis at >34 week gestational age (Hb <110 g/L and Ferritin <30 ug/L)
- Failed an adequate trial of oral iron
  - Hemoglobin increase of <20 g/L in 4 weeks
  - Unable to tolerate oral iron
- Unable to absorb oral iron (e.g., clinically active inflammatory bowel disease, bariatric surgery, etc.)

## Follow up

- Assess adherence to oral iron therapy
- Repeat CBC, ferritin, +/- B12 (if applicable) 4 weeks after initiation of oral iron
- If Hb has not risen by 20 g/L in 4 weeks, review oral iron adherence before initiating parenteral iron
- Continue iron supplementation for the whole pregnancy and at least 6 weeks postpartum
- Repeat CBC, ferritin, +/- B12 (if applicable) 6-8 weeks postpartum

## Sustainability

Appropriate use of healthcare resources is needed to ensure long-term sustainability as there are significant cost differences between oral and parenteral iron therapy.

## Safety

Oral iron is most commonly associated with gastrointestinal (GI) adverse effects. The occurrence of these events can be reduced and iron absorption can be increased with an alternative day or intermittent dosing schedule (e.g. 2-3 x week)<sup>2,3</sup>.

Parenteral iron has less GI adverse effects but an increased risk of hypersensitivity reactions. Counsel patients taking oral iron on constipation prevention and treatment<sup>4,5</sup>.

# References

1. SaskBlood Obstetric Anemia Screening and Treatment Algorithm
2. Stoffel NU, Cercamondi CI, Brittenham G, Zeder C, Geurts-Moespot AJ, Swinkels DW, Moretti D, Zimmermann MB. *Lancet Haematol.* 2017;4(11):e524. Epub 2017 Oct 9.
3. Peña-Rosas JP, De-Regil LM, Gomez Malave H, Flores-Urrutia MC, Dowswell T. Intermittent oral iron supplementation during pregnancy. *Cochrane Database of Systematic Reviews* 2015, Issue 10. Art. No.: CD009997. DOI: 10.1002/14651858.CD009997.pub2.
4. Muñoz M, Gómez-Ramírez S & Bhandari S (2018) The safety of available treatment options for iron- deficiency anemia, *Expert Opinion on Drug Safety*, 17:2, 149-159, DOI: 10.1080/14740338.2018.1400009
5. Waters, H., *Anemia in Adults.* McMaster Module Practice Based Small Group Learning Program. Vol 25(10) August 2017
6. SOGC workshop on anemia (March 2019)
7. Muñoz M., et. al., Patient blood management in obstetrics: management of anaemia and haematinic deficiencies in pregnancy and in the post-partum period: NATA consensus statement. *Transfusion Medicine.* 2018: 28 (1); 22–39
8. Toward Optimized Practice Iron Deficiency Anemia Committee. 2018 March. Iron deficiency anemia clinical practice guideline. Edmonton, AB:Toward Optimized Practice. Available from: [http://www. topalbertadoctors.org](http://www.topalbertadoctors.org)