



# At what ferritin level is IDA diagnosed?

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**Karima Khamisa MD, FRCPC**

**Assistant Professor, Division of Hematology, The Ottawa Hospital**

**Consultant Haematologist, The Ottawa Hospital (Civic Campus)**





# At what ferritin level is IDA diagnosed?

- Serum ferritin is widely considered the first best test in working up the patient with suspected iron deficiency anemia in the ambulatory care setting
- There is significant variation in what is considered the lower limit of a normal ferritin level.
- Different laboratories across different jurisdictions have different assays and use different levels of ferritin to express the lower limit of the reference interval.

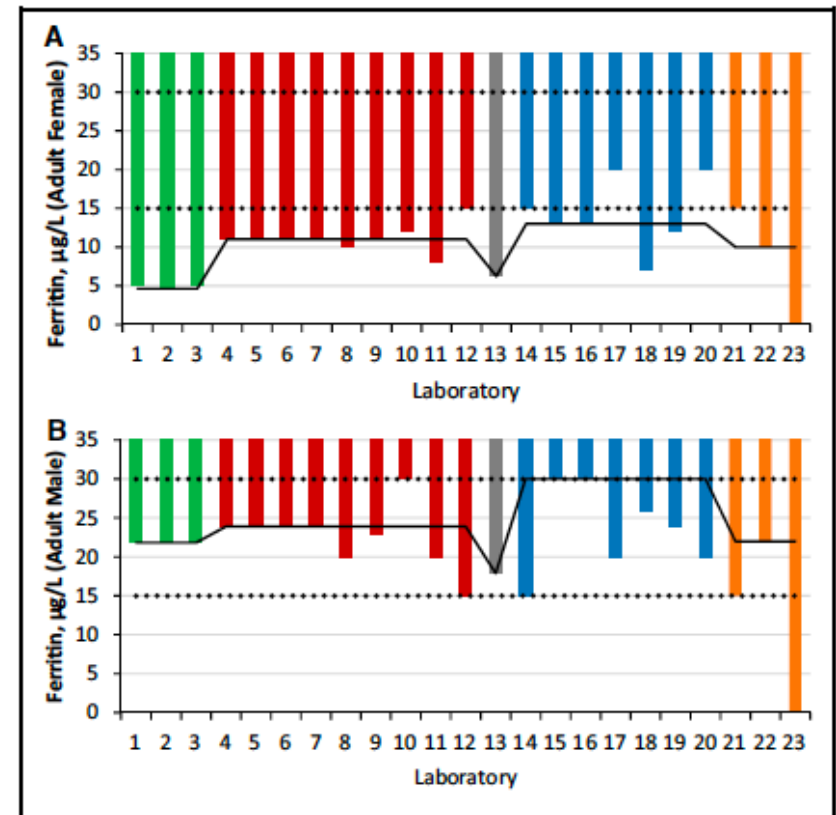


Survey of the laboratory medicine community, with 23 clinical laboratories across North America

52 027 unique patient ferritin values over a 5-year period (2013-2017) were analysed

**18/23** surveyed laboratories reported reference intervals in women that were below the minimum recommendation cut-off of 15 mg/L.

Ferritin reference intervals show wide variation in the reported lower limits



Colors represent different assay vendors

# At what ferritin level is IDA diagnosed?

I would use the serum ferritin level of:

- 30 mcg/L as per many clinical guidelines to diagnose a patient with iron deficiency anemia

Some guidelines recommend:

- A serum ferritin level of 50 mcg/L or less to diagnose a patient with iron deficiency.



# At what ferritin level is IDA diagnosed?

It is important to note the limitations of the serum ferritin:

## **Serum ferritin:**

- Is an acute phase reactant
- Can be increased in conditions of inflammation or infection

## **To aid in the diagnosis of IDA of such patients:**

- Transferrin saturation

# At what ferritin level is IDA diagnosed?


**Helpful in the diagnosis if IDA:**

- Transferrin saturation of  $< 20\%$

Patient with a **normal Hb** but **low ferritin level** may **still benefit from treatment** with iron supplementation as they may present with a number of **non-hematologic symptoms of iron deficiency** :

- Hair loss
- Restless legs
- Muscle aches

**For a patient with a serum ferritin  $< 30$  mcg/L and/or a transferrin saturation  $< 20\%$  = iron deficiency.**



# What is the first treatment option for IDA?

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# What is the first treatment option for IDA?

The corner stone of managing iron deficiency anemia is actually ensuring you address the underlying cause.

## Common underlying causes in women:

- Significant menstrual loss
- Gastro-intestinal causes in post-menopausal women or older women

Once these are addressed through a referral to a specialist or through your own clinical assessment, **the next step is actually giving supplementation** of oral iron in order to **increase the hemoglobin level**.



# What is the first treatment option for IDA?

## IRON SALTS:

- Inexpensive & effective
- There is evidence that every other day dosing of oral iron salts is effective in mild cases of anemia or iron deficiency with normal hemoglobin levels.
- Take 300 mg p.o. on empty stomach with vitamin C
- GI side effects (up to 30%): nausea, vomiting, constipation or green and black stools

There are different formulations currently available in Canada for oral supplementation.

Iron salts	Dose (mg)	Elemental Iron (mg)	Cost*
Ferrous gluconate	300	35	\$0.10
Ferrous sulfate	300	60	\$0.04
Ferrous fumarate	300	100	\$0.10-0.35

\*Estimates: Costs may differ across Canada

Adapted from: Zeller MP, et al. *CMAJ*. 2017; 189(10):E409; Tolkien Z, et al. *PLoS One*. 2015; 10(2): e0117383; DeLoughery TG. *Acta Haematol*. 2019; 142(1):8-12; Auerbach M, et al. UpToDate. Last Updated July 2020. Stoffel NU et al. *Lancet Haematol*. 2017;4(11) :e524-e533.

# What is the first treatment option for IDA?

## Other oral formulations

Oral iron	Dose (mg)	Elemental Iron (mg)	Cost*
Polysaccharide	150	150	\$0.56-0.70
Heme iron	398	11	\$0.77

- More expensive than oral iron salts
- Not entirely free of gastric side effects (nausea, constipation, vomiting)
- No evidence that more effective than oral iron salts

\*Estimates: Costs may differ across Canada


Adapted from: Zeller MP, et al. *CMAJ*. 2017; 189(10):E409; Tolkien Z, et al. *PLoS One*. 2015; 10(2): e0117383; DeLoughery TG. *Acta Haematol*. 2019; 142(1):8-12; Auerbach M, et al. UpToDate. Last Updated July 2020. Stoffel NU et al. *Lancet Haematol*. 2017;4(11):e524-e533.

# What is the first treatment option for IDA?

If patients cannot tolerate oral iron in any form = consider IV iron

Typically:

- A 3-month course of oral iron is recommended
- A patient's hemoglobin should increase by 5 to 10 g per week when taking oral iron daily
- Treatment should continue until ferritin and TSAT levels are:
  - 50 to 100 mcg/L range
  - TSAT > 20%
- We need to ensure that hemoglobin is back to normal values.



# When would you consider intravenous iron formulations to treat iron deficiency?

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Karima Khamisa MD, FRCPC

Assistant Professor, Division of Hematology, The Ottawa Hospital

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# When would you consider intravenous iron formulations to treat iron deficiency?

- In patients that have a sub-optimal response to oral iron
- When a patient takes oral iron:
  - hemoglobin should increase by 5 to 10 g/L per week
  - re-check hemoglobin and ferritin levels after a month of oral iron treatment

**If that does not occur, then you would want to consider IV iron.**

# When would you consider intravenous iron formulations to treat iron deficiency?

**For a rapid response, or if the patient has severe anemia**



Use IV iron to boost iron levels and hemoglobin

**If the patient is in need of a surgical procedure, within the next 6 weeks**



IV iron should be considered

**Additionally, if the patient has absorptive issues, such as gastric bypass surgery, where they can't absorb oral iron:**



IV iron should be considered

# When would you consider intravenous iron formulations to treat iron deficiency?

Specific indications for intravenous iron therapy:

- Intolerance, non-response, poor adherence to oral iron
- Rapid or significant correction of anemia and/or iron deficiency needed
- Medical and surgical conditions with decreased absorption (cause cannot be treated)
- Iron-refractory iron deficiency anemia (IRIDA)
- **Chronic heart failure (systolic, NYHA class II–IV)**
- **Chronic kidney disease (dialysis, or with erythropoietic stimulating agents)**
- Inflammatory bowel disease (active disease or hemoglobin <100 g/L)
- Preoperatively (surgery scheduled in <6 weeks)
- Postoperatively
- Pregnancy (second trimester if hemoglobin <105 g/L and third trimester)

NHYA: New York Heart Association

Cappellini MD, et al. *J Intern Med.* 2020; 287(2):153-70; Auerbach M, et al. *Treatment of iron deficiency anemia in adults.* UpToDate; DeLoughery TG. *Acta Haematol.* 2019;142(1):8-12.