TESTS AND DIAGNOSIS OF IRON DEFICIENCY

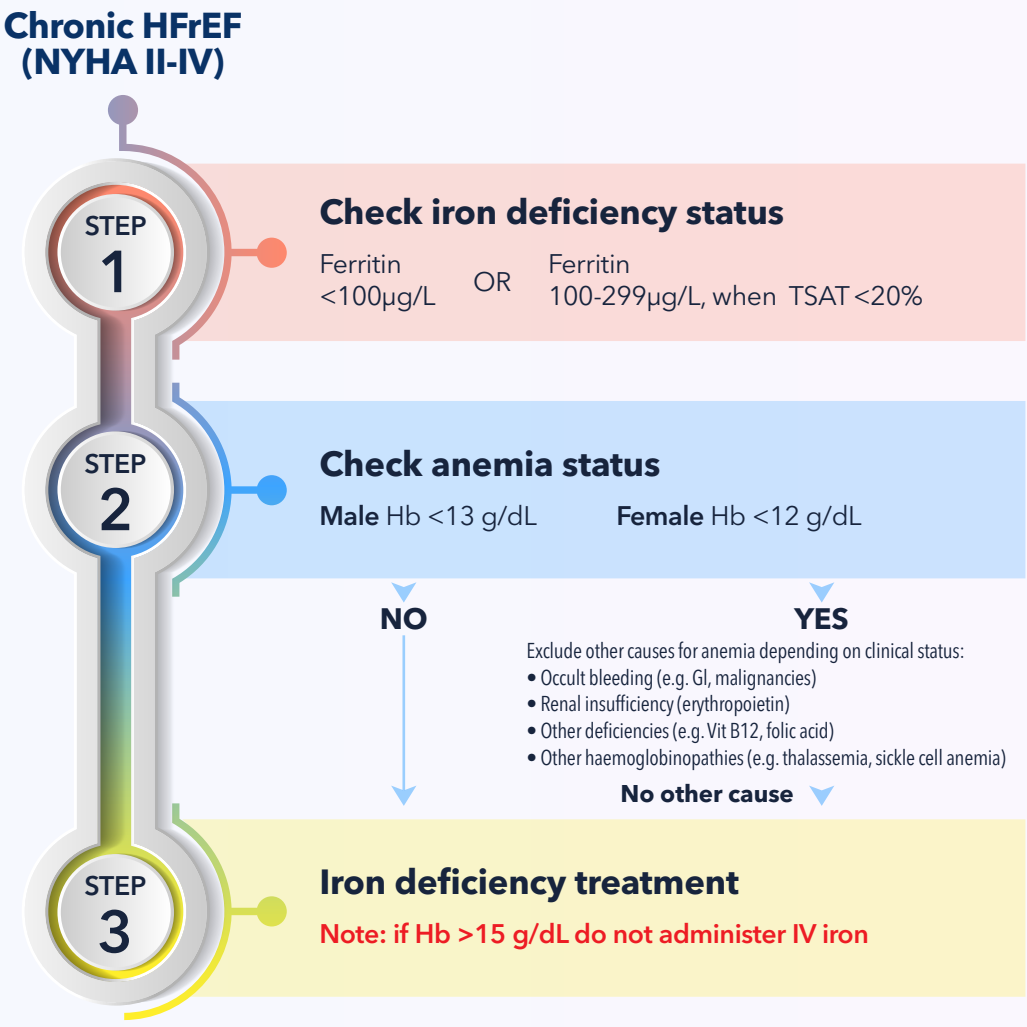
Tests and lab findings for iron deficiency:

- Peripheral smear (microcytosis, hypochromasia widening of the central pallor accounting for >1/3 of the total RBC diameter, anisocytosis)
- Red cell indices
  a. Mean corpuscular volume (MCV) : measurement of the average size of a single red blood cell (↓ MCV <80 fl)
  b. Mean corpuscular hemoglobin (MCH) : calculation of the average amount of hemoglobin inside a single red blood cell (↓ MCH)
  c. ↑ Red cell distribution width (RDW) (anisocytosis), platelets
  d. ↓ Mean corpuscular hemoglobin concentration - MCHC (<32g/dL), RBC, Hb, Hct
- Serum ferritin (↓ ferritin)
- Serum iron/transferrin = iron saturation (↓ iron saturation <20%)
- Soluble transferrin receptor (sTfR) (facilitates intracellular import of iron; ID induces the expression and release of the transferrin receptor to the circulation)
- Bone marrow iron stain (Prussian blue)

Accepted definition for ID in HF:
↓ Ferritin < 100 ug/L OR 100-300 ug/L and TSAT < 20 %

Guideline	2022 AHA/ACC/HFSA Guideline for the Management of Heart Failure	2021 ESC Guidelines for Diagnosis and Treatment of Acute and Chronic HF	2023 HFSA Scientific Statement on Iron Deficiency in Heart Failure
Criteria	Ferritin <100 ng/ml or ferritin 100-300 ng/ml if TSAT < 20%	It is recommended that all patients with HF be regularly screened for anemia and iron deficiency with a full blood count, serum ferritin concentration, and TSAT (Ferritin <100ng/ml or ferritin 100-300ng/ml if TSAT <20%)	Although further investigation is warranted to determine optimal definitions of ID, the use of a ferritin of <100 ug/L or Tsat of <20% with a ferritin of 100–300 µg/L to define ID in HF clinical trials that have shown improvement in functional capacity with treating ID lends validity to the use of this definition at present.

Algorithm for Screening, Diagnosis and Treatment Decision for Iron Deficiency in Patients with Heart Failure



Hb = hemoglobin, Hct = hematocrit, HFrEF = heart failure with reduced ejection fraction, NYHA = New York Heart Association HF functional classification, RBC = red blood cell, TSAT = transferrin saturation

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