

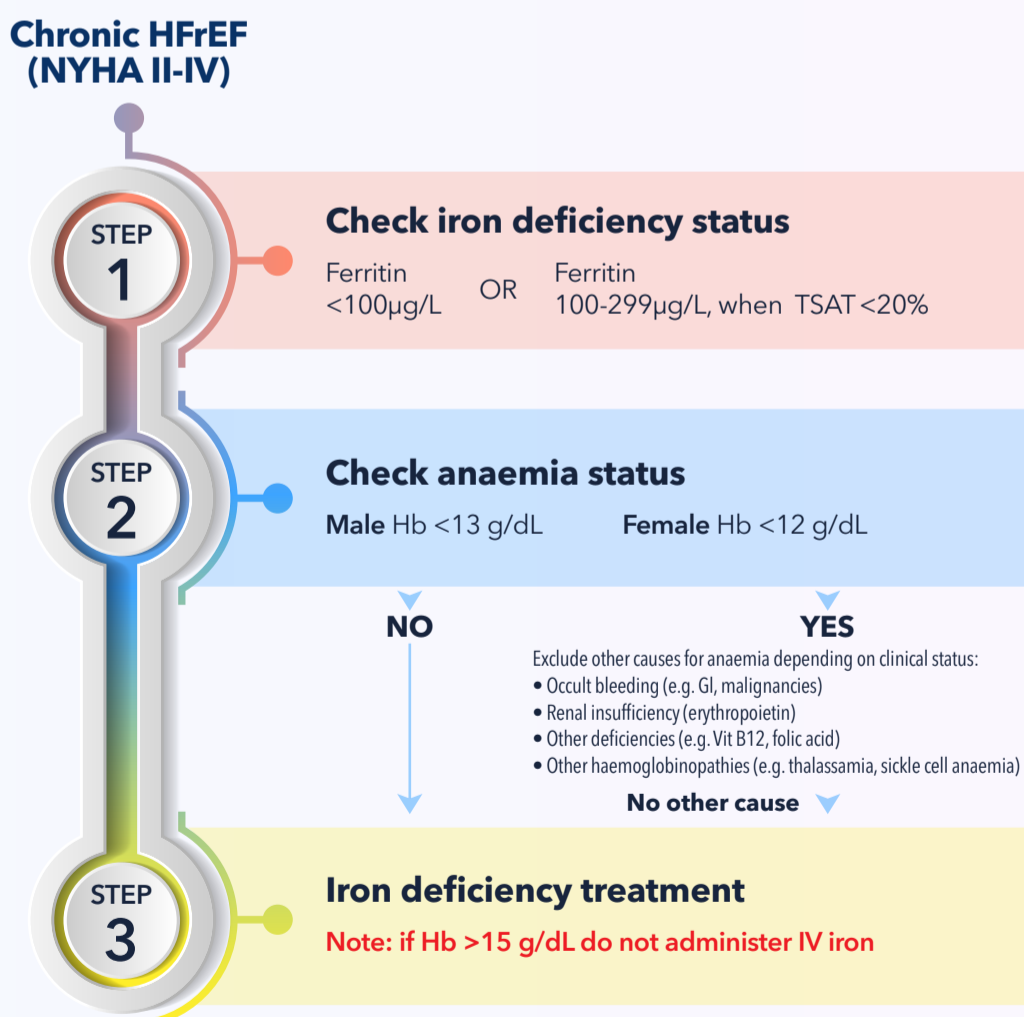
## Tests and lab findings for iron deficiency:

- Peripheral smear (microcytosis, hypochromasia widening of the central pallor accounting for >1/3 of the total RBC diameter, anistocytosis)
- 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	2017 ACC/AHA/HFSA Focused Update of the U.S. Guideline for Management of HF	2021 ESC Guidelines for Diagnosis and Treatment of Acute and Chronic HF
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%)

## 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

### REFERENCES:

- McDonagh, Theresa, et al. "Screening, diagnosis and treatment of iron deficiency in chronic heart failure: putting the 2016 European Society of Cardiology heart failure guidelines into clinical practice." *European journal of heart failure* 20.12 (2018): 1664-1672.
- Yancy, Clyde W., et al. "2017 ACC/AHA/HFSA focused update of the 2013 ACCF/AHA guideline for the management of heart failure: a report of the American College of Cardiology/American Heart Association
- Task Force on Clinical Practice Guidelines and the Heart Failure Society of America. " *Journal of the American College of Cardiology* 70.6 (2017): 776-803.
- McDonagh, Theresa A., et al. "2021 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure." *European heart journal* (2021): ehab368.