EFFICACY AND SAFETY OF ACCELERATED INTRAVENOUS IRON SUCROSE ADMINISTRATION FOR HEART FAILURE IN AN INPATIENT SETTING

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BACKGROUND

- Fifty percent of patients with heart failure regardless of presence of anemia, have low levels of available iron leading to reduced exercise capacity, impaired quality of life, and poor prognosis.
- CONFIRM-HF determined that in ambulatory patients with symptomatic HF, LVEF less than or equal to 45%, and iron deficiency treatment with ferric carboxymaltose resulted in significantly prolonged 6-minute walk tests distance without an increase in adverse events.
- AFFIRM-AHF established that in hospitalized patients treatment with ferric carboxymaltose was safe and reduced the risk of HF hospitalizations.
- In 2017 the ACC/AHA guidelines were updated to include a IIb recommendation for the use of IV iron replacement in patients with NYHA Class II and III heart failure and iron deficiency.
- Based on the available evidence, in March of 2021 a new intravenous iron sucrose order panel went live at Northeast Georgia Medical Center.

Heart Failure Iron Sucrose Order Panel

Day One: Iron Sucrose 400 mg over 2.5 hours → Day Two: Iron Sucrose 300 mg over 1.5 hours → Day Three: Iron Sucrose 300 mg over 1.5 hours

OBJECTIVE

- The purpose of this study is to assess the short-term efficacy and safety of an accelerated intravenous iron regimen in hospitalized patients with heart failure

METHODS

- Conducted at Northeast Georgia Medical Center from March 2021 to August 2021
- The electronic health record was utilized to perform a retrospective chart review of 27 patients

Primary efficacy outcome
- Change in hemoglobin from baseline to 2 to 4 weeks after the final infusion

Primary safety outcome
- Occurrence of hypotension (defined Systolic blood pressure decline by > 20 mmHg from baseline within 4 hours after end of infusion)

METHODS (continued)

- Additional secondary outcomes:
  - Change in ferritin from baseline to 3 months after the final infusion
  - 30-day hospital readmission

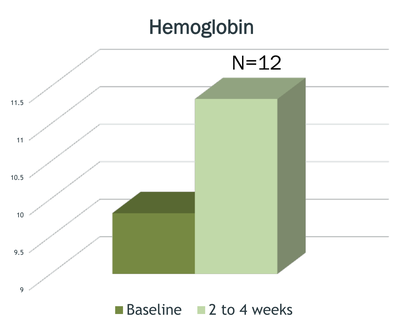
INCLUSION
- ≥ 18 years of age
- Heart failure diagnosis
- Admitted to designated cardiac care unit
- Iron deficiency defined as:
  - Ferritin < 100 µg/L
  - Ferritin 100-299 µg/L with transferrin saturation <20%

EXCLUSION
- Active bleeding
- Active infection
- Pregnancy

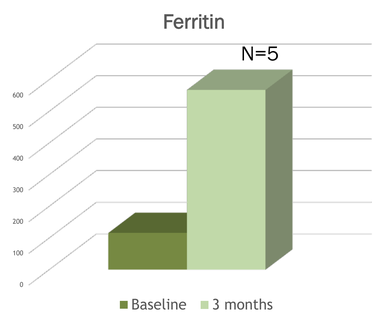
Baseline Characteristics

Demographic	N=27 (No %)
Age (years)	65.7 (44-88)
Gender	
Male	11 (40.7%)
Female	16 (59.35%)
Race	
White	21 (77.8%)
Black	5 (18.5%)
Hispanic	1 (4%)
Ejection Fraction	
20-30	10 (37%)
30-40	2 (7%)
40-50	3 (11.1%)
50-60	8 (29.6%)
60-70	4 (14.8%)
NYHA Class	
II-III	6 (22.2%)
III-IV	3 (11.1%)
Unknown	18 (66.7%)

RESULTS



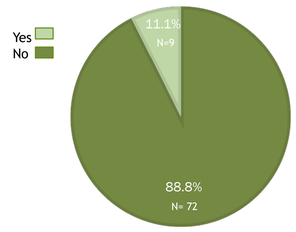
1.43 g/dL mean change from baseline



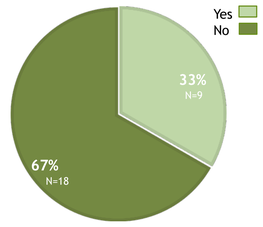
451.82 µg/L mean change from baseline

RESULTS (continued)

PERCENT OF DOSE WITH HYPOTENSION



PERCENT OF PATIENTS WITH HYPOTENSION



*No occurrences of hypotension required treatment

30-day Readmission Rate	Readmissions related to Heart Failure
29.6%	0.04%

DISCUSSION

- While hypotension occurred in 33% of the patients only 11.1% of doses resulted in hypotension. None of these instances resulted in symptomatic hypotension requiring treatment. There are confounding factors which must be considered when looking at occurrence of hypotension including varied timing of blood pressure measurements and concurrent use of antihypertensive medications.
- Although all patients completed treatment, data in regards to follow-up levels of hemoglobin and ferritin were limited. However, based on the evidence collected there was a positive impact on both hemoglobin and ferritin levels.
- Moving forward, implementing standardized blood pressure monitoring before, during, and after infusion would help to further confirm safety during administration. Additionally, ensuring that follow-up levels of hemoglobin and ferritin are obtained would allow further research into efficacy of the order panel.
- In conclusion, accelerated administration of iron sucrose appears to be safe and effective.

REFERENCES

1. Anand IS, Gupta P. Anemia and Iron Deficiency in Heart Failure: Current Concepts and Emerging Therapies. Circulation. 2018 Jul 3;138(1):80-98. doi: 10.1161/CIRCULATIONAHA.118.030099. PMID: 29967232.
2. Ponikowski P, van Veldhuisen DJ, Comin-Colet J, et al, CONFIRM-HF Investigators. Beneficial effects of long-term intravenous iron therapy with ferric carboxymaltose in patients with symptomatic heart failure and iron deficiency†. Eur Heart J. 2015 Mar 14;36(11):657-68. doi: 10.1093/eurheartj/ehu385. Epub 2014 Aug 31. PMID:25176939; PMCID: PMC4359359.
3. Ponikowski P, Kirwan BA, Anker SD, McDonagh T, et al; AFFIRM-AHF investigators. Ferric carboxymaltose for iron deficiency at discharge after acute heart failure: a multicentre, double-blind, randomised, controlled trial. Lancet. 2020 Dec 12;396(10266):1895-1904. doi: 10.1016/S0140-6736(20)32339-4. Epub 2020 Nov 13. PMID: 33197395.
4. Yancy CW, Jessup M, Bozkurt B, Butler J,,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. 2017 Aug 8;136(6):e137-e161. doi: 10.1161/CIR.0000000000000509. Epub 2017 Apr 28. PMID: 28455343. Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Failure Society of America. Circulation

Disclosure

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