An Analysis of Hospitalization Metrics after Intravenous Ferric Derisomaltose (FDI) versus Usual Care (UC) in Patients with Iron Deficiency Anemia and Heart Failure Based on IRONMAN: FDI may Reduce Hospitalizations and Re-hospitalizations per Person

HSD20

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Background

In the IRONMAN randomized controlled trial (N=1137), there were fewer heart failure (HF)-related hospitalizations in patients with HF and iron deficiency (ID) treated with intravenous (IV) ferric derisomaltose (FDI) than with usual care (UC)[1]. IRONMAN was a prospective, open-label, blinded endpoint trial in adults with HF (left ventricular ejection fraction ≤45%) and iron deficiency defined as transferrin saturation <20% or serum ferritin <100 µg/L. Participants (who were recruited across 70 hospitals within the United Kingdom [UK]) were randomly assigned to receive either FDI or UC, and the dose of FDI administered to each patient was determined by patient bodyweight and serum hemoglobin levels.The primary endpoint in IRONMAN was recurrent hospital admission for HF and cardiovascular (CV) death, which was reduced by 18% for patients receiving FDI versus UC, while hospital admissions for HF alone were reduced by 20% in patients receiving FDI.

In the United States (US), HF is the leading cause of hospitalization in adults aged over 65 years;[2] 50% of patients are re-admitted to hospital within 6 months of discharge after HF hospitalization[2]. Reducing readmission rates following hospitalization due to HF could therefore lower healthcare costs, while potentially improving patient quality of life.

Objectives

The aim of the present analysis was to investigate the effect of treating patients with HF and iron deficiency anemia (IDA) with ≤1,000 mg of FDI versus UC on hospitalization metrics relevant to the US, using data from the IRONMAN randomized controlled trial.

Methods

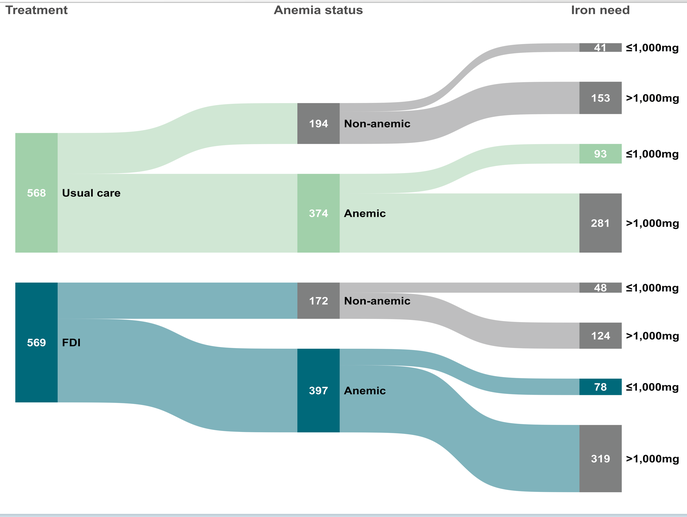
Individual-level data on hospitalization rates were obtained from a subgroup of participants in IRONMAN. These included patients who at randomization: (i) were anemic as per the World Health Organization (WHO) definition and (ii) needed ≤1,000 mg of iron based on baseline bodyweight and hemoglobin, consistent with the US FDA-approved label for FDI (Figure 1)[3]. Baseline characteristics of the eligible IRONMAN subgroup participants who met criterion (i) are presented in Table 1[3]. Significance was tested using a Cox proportional hazards model extended to include recurrent events. Parameters evaluated included all hospitalizations, and rehospitalization rates within 30 and 60 days.

Results

The IDA and iron dose criteria were applied to patients enrolled in the UC and FDI arms of the IRONMAN trial. For the FDI arm, 397 participants had anemia, of which 78 required ≤1,000 mg of iron (Figure 1). For the UC arm, 374 participants had anemia, of which 93 required ≤1,000 mg of iron (Figure 1).

Overall hospitalization rates were lower with FDI versus UC (1.28 versus 1.48 per person). There were 25 rehospitalizations within 30 days with UC (0.27 rehospitalizations per person) versus 8 with FDI (0.10 per person; p=0.07) (Figure 2). Patients in the UC arm experienced 38 rehospitalizations within 60 days (0.41 events per person), versus 21 with FDI (0.27 events per person; p=0.45) (Figure 2). Of the rehospitalizations within 60 days, 28 were attributable to CV events in the UC arm versus 13 in the FDI arm (0.30 per person versus 0.17 per person; p=0.32) (Table 2).

Figure 1. Eligible subgroup of participants in the IRONMAN trial



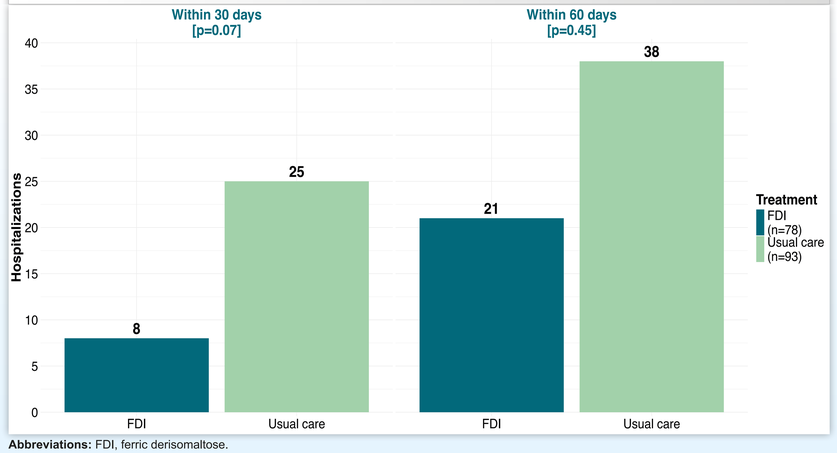
Abbreviations: FDI, ferric derisomaltose.

Table 1. Baseline characteristics of the IRONMAN trial subgroup with anemia

Characteristic	FDI (n=397)	Usual care (n=374)
Age, years	74 (68-81)	74 (68-80)
Sex, male	319 (80)	283 (76)
Body mass index, kg/m^2	29 (25-33)	28 (25-33)
Race		
White	356 (90)	343 (92)
Black	10 (3)	5 (1)
Asian	28 (7)	22 (6)
Other	3 (1)	4 (1)
NYHA functional classification		
II	213 (54)	194 (52)
III	175 (44)	174 (47)
IV	9 (2)	6 (2)
Iron biomarkers		
Hemoglobin, g/dL	11.6 (10.8-12.3)	11.4 (10.8-12.1)
TSAT, %	14 (10-18)	14 (9-19)
Ferritin, *u*g/L	49 (28-88)	47 (28-82)
TSAT <20%	307 (77)	296 (79)

Abbreviations: FDI, ferric derisomaltose; NYHA, New York Heart Association; TSAT, transferrin saturation.
Note: values are median (interquartile range) or number (%).

Figure 2. All rehospitalizations (≤30 days & ≤60 days) in the IRONMAN trial subgroup



Abbreviations: FDI, ferric derisomaltose.

Table 2. Rehospitalizations by type

Hospitalization type	FDI (n=78)	Usual care (n=93)
CV, within 30 days (%)	6 (7.7)	18 (19.4)
Non-CV, within 30 days (%)	2 (2.6)	7 (7.5)
CV, within 60 days (%)	13 (16.7)	28 (30.1)
Non-CV, within 60 days (%)	8 (10.3)	10 (10.8)

Abbreviations: CV, cardiovascular; FDI, ferric derisomaltose.

Conclusion

This *post hoc* subgroup analysis showed that treating patients with HF and IDA with FDI instead of UC resulted in reductions in the rate of hospitalizations and rehospitalizations per person, aligned with the findings of the broader IRONMAN trial. The subgroup analysis was not powered to detect differences in hospitalizations from a statistical point of view, but the results suggest that increasing the use of IV FDI in patients with HF and IDA may reduce hospital bed occupancy and rehospitalizations.

References

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2. Desai AS, Stevenson LW. Rehospitalization for Heart Failure. Circulation 2012;126(4):501–506; doi: 10.1161/CIRCULATIONAHA.112.125435.
3. Ray R, Ford I, Cleland JGF, et al. The impact of ferric derisomaltose on cardiovascular and noncardiovascular events in patients with anemia, iron deficiency, and heart failure with reduced ejection fraction. J Card Fail 2024;30(5):682–690; doi: 10.1016/j.cardfail.2023.10.006.

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