

Investigation and management of iron deficiency in patients hospitalised with heart failure

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Background

- Heart failure (HF) accounts for 5% of NHS medical emergency admissions¹
- Iron deficiency (ID) and/or anaemia are common in HF – associated with increased hospitalisation and death²
- PO iron replacement is ineffective in rapidly correcting ID and is therefore not recommended²
- Meta-analyses have demonstrated significant benefits in cardiovascular hospitalisations and death in patients treated with IV iron^{3,4}, including in hospitalised patients (AFFIRM-AHF⁵ & IRONMAN⁶)
- Chronic inflammation in HF upregulates hepcidin leading to increased ferritin and reduced bioavailability of iron causing *functional ID* (TSAT <20% with ferritin 100-299ng/ml)
- Other patients may have *true* or *absolute ID* – defined as ferritin <100ng/ml⁷
- Previous Trust audit showed poor compliance with ESC guidelines concerning iron status assessment and administration⁸

INTRAVENOUS IRON SUPPLEMENTATION IS RECOMMENDED IN SYMPTOMATIC PATIENTS WITH HFrEF AND HFmrEF AND IRON DEFICIENCY TO ALLEVIATE HF SYMPTOMS AND IMPROVE QoL⁷

Aim and Methods

- Aim: assess compliance with ESC guidelines in inpatients admitted to Cardiology with symptomatic heart failure regarding assessment and management of iron deficiency
- Data were collected for all inpatient admissions to the Cardiology wards at the John Radcliffe Hospital with symptomatic heart failure
- Data collected using electronic patient records including demographic characteristics, presence of anaemia or CKD, lowest haemoglobin during admission, assessment of iron status, treatment of ID (where indicated)
- Outcome data included length of stay in hospital and inpatient mortality
- The first cycle assessed the period of 1/9/24 to 30/9/24
- Intervention:** teaching session to all Cardiology resident doctors concerning iron assessment and administration in HF
- Re-audit then evaluated the period of 1/2/25 to 31/3/25

Table 1. Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
Inpatient admission to a Cardiology ward	HF not classed as HFrEF, HFmrEF or HFpEF (e.g. high output heart failures)
Admitted with symptomatic LV systolic dysfunction or HFpEF	Active bleeding
Must have been admitted under Cardiology during the hospital stay	Existing use of IV iron / ESAs / RRT via the renal specialist team
Discharged between cycle dates	Underlying haematological disorder/haemolytic anaemia

Results

Table 2. Patient characteristics by cycle

Patient characteristic	N (%) unless stated		
	Cycle 1 (Sept 24)	Cycle 2 (Feb-Mar 25)	Total
Number of patients	35	73	108
Median age at admission (IQR)	73 (60-81)	74 (62-80)	73.5 (60.5-80.5)
Male	19 (54.3)	49 (67.1)	68 (63.0)
Female	16 (45.7)	24 (32.9)	40 (37.0)
CKD (eGFR <60)	23 (65.7)	40 (54.8)	63 (58.3)
Median length of stay in days (IQR)	4.38 (2.46-9.79)	4.83 (2.83-8.67)	4.79 (2.48-8.73)
Inpatient mortality	4 (11.4)	6 (8.2)	10 (9.3)
HFrEF (EF ≤ 40%)	14 (40.0)	41 (56.2)	55 (50.9)
HFmrEF (EF 41-49%)	18 (51.4)	18 (24.7)	21 (19.4)
HFpEF (EF ≥ 50%)	3 (8.6)	14 (19.2)	32 (29.6)
On PO iron prior to admission	2 (5.7)	7 (9.6)	9 (8.3)

Fig 1. Frequency of anaemia and assessment of iron studies by cycle and overall

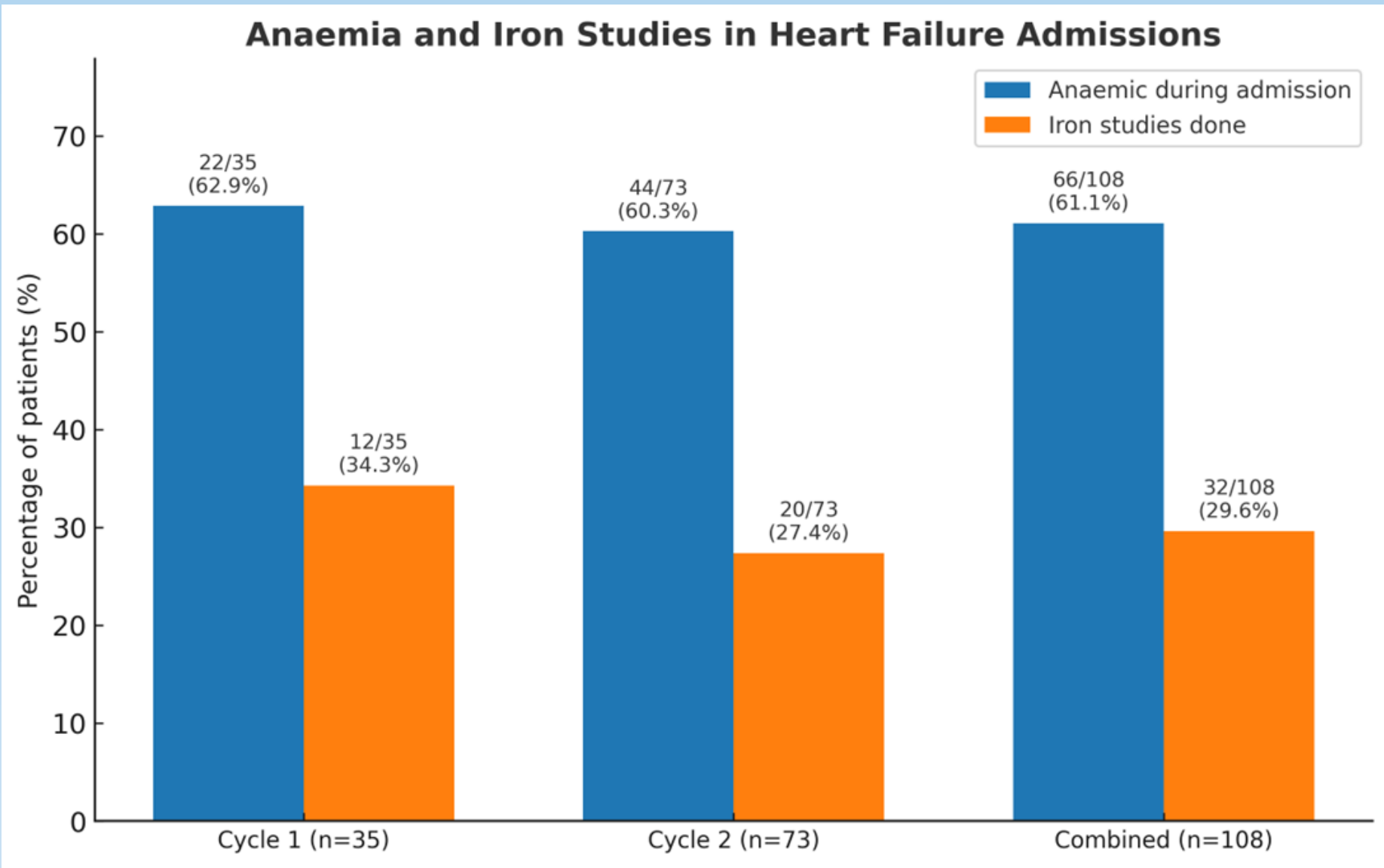
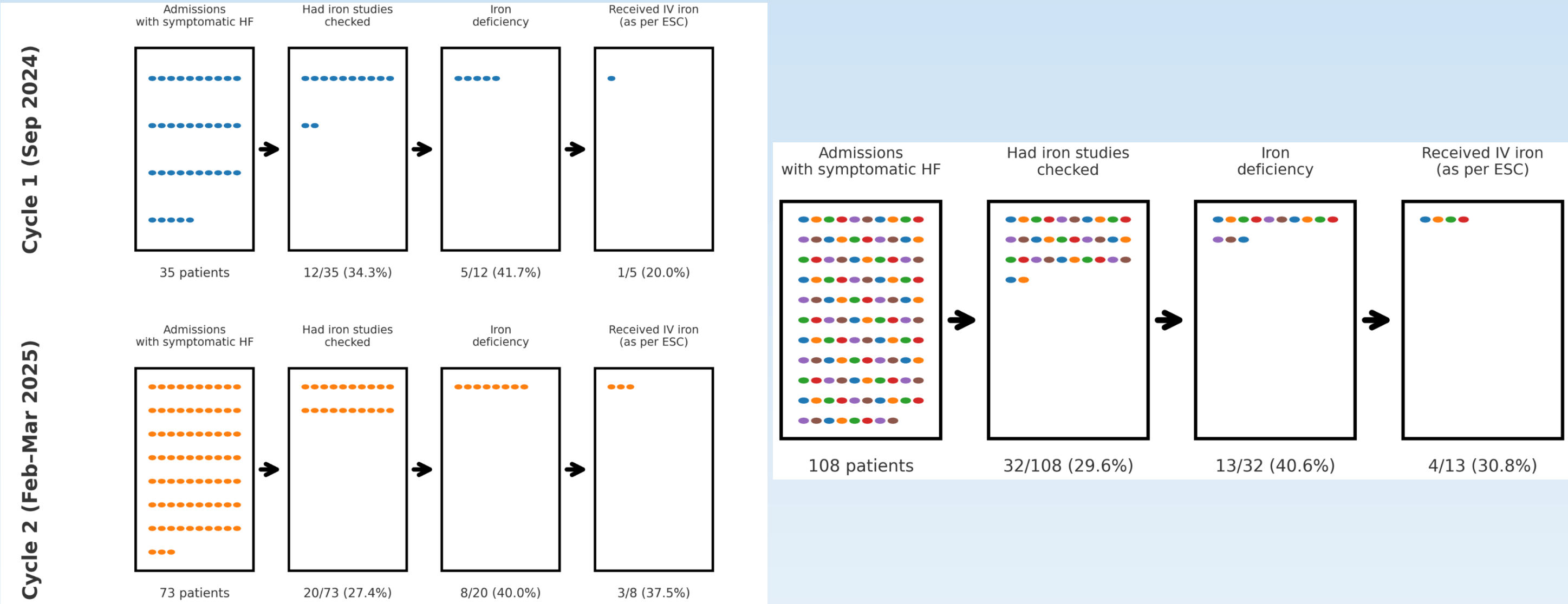


Fig 2. Assessment and administration of IV iron in symptomatic HF patients



Conclusions

- Our findings demonstrate poor compliance with ESC guidelines – **Fewer than one third of patients with symptomatic HF admitted under Cardiology had iron studies checked**
- **Of those eligible, fewer than 1 in 3 received IV iron**
- These patients are missing out on a potentially beneficial treatment which stems from a failure to assess and treat
- Future planned interventions to tackle this include:
 1. Liaising with HF specialist nurses to arrange community and ambulatory iron administration
 2. Liaising with Pharmacy teams to ensure IV iron availability
 3. Development of a HF Careset within the electronic record to prompt iron study assessment
 4. Inclusion of iron studies on a HF discharge checklist

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