



Improving Iron Deficiency Detection in Heart Failure: Leveraging Electronic Health Record Screening Tools

THE CASE FOR ROUTINE SCREENING

Iron deficiency (ID) is one of the most common comorbidities in heart failure (HF) patients, with up to 68% of chronic HF patients having ID.¹ In acute HF, rates as high as 80% have been reported.² Patients across the HF spectrum may be affected. In HF with preserved ejection fraction (HFpEF), ID may be more common than in HF with mid-range (HFmrEF) or reduced EF (HFrEF).³ ID, with or without a concomitant diagnosis of anemia, has been found to be an independent risk factor for increased hospitalizations, mortality, as well as decreased exercise capacity and lower quality of life (QoL). A greater understanding of the pathophysiology of iron deficiency has been achieved in recent years, and it is now

believed that ID may be more than simply a comorbidity of HF, but rather a potential contributor to HF development and progression.⁴ Treating ID with IV iron has been found to have numerous benefits including improved functional status, QoL and reduced hospitalizations.⁵ Given the risks associated with ID in so many HF patients, and the benefits associated with detection and subsequent treatment of this condition, routine screening of HF patients for ID is of the utmost importance. Various frameworks for screening have been proposed, including annual screening of all HF patients, and screening of patients with a new HF diagnosis or worsening symptoms. Yet, ID in HF remains both underdiagnosed and undertreated.⁶

CURRENT SCREENING CHALLENGES AND THE NEED FOR AUTOMATION

Despite the impacts of ID in HF, awareness of this condition in this setting remains low, even among specialist providers. This is outlined in our own data, as well as previously published reports of diagnostic delays and overlooked opportunities to address ID in patients with HF.^{7,8} The reasons for the persistent underdetection of ID in HF are numerous. Cardiologists and other providers involved in the management of heart failure patients have many competing priorities as it relates to HF management, including symptom management and initiation and titration of multiple mortality-reducing medications.⁹ They may overlook ID screening, or view it as potential problem in the realm of another specialty such as

hematology, although ID can be identified and treated by many members of the health care team. Additionally, there is not a strong consensus on the ideal diagnostic criteria for ID in HF patients, and optimal diagnostic markers remain an area of active research.⁵ Providers may also associate ID with anemia in HF patients and only screen for low hemoglobin, despite that fact that ID with or without anemia can have detrimental effects in HF patients.⁴ Given the multitude of challenges and competing priorities faced by clinicians in the screening of HF patients for ID, the use of automation, such as automated screening tools within electronic health records (EHRs) may provide a solution.

ELECTRONIC HEALTH RECORD TOOLS: THE MONTEFIORE MEDICAL CENTER APPROACH

In a recently published abstract, an EHR tool developed to identify hospitalized patients with ID and HF, as part of the Hospital Readmission Reduction Program (HRRP) at Montefiore Medical Center in Bronx, NY, was described.¹⁰ A preexisting EHR census report identifying hospitalized patients with HF was modified, such that it would identify hospitalized patients with acute decompensated HF (ADHF) that also met laboratory criteria for ID. Criteria in this study was modeled after the AFFIRM-AHF study population; with ejection fraction <50%, Hgb < 13 mg/dL, ferritin <300 mg/dL, and TSAT <20%. During a 2-week period in April 2021, 261 patients were admitted for ADHF, and ID was accurately detected using the above criteria in 30 patients. Acute care utilization was found to be notable in patients with ID; in the previous year 30% of

patients had two or more hospitalizations, 23.3% had at least one hospitalization for ADHF and 16.7% had least one emergency department visit for worsening HF. Study authors concluded that this EHR tool easily identified patients with ID and HF, and discussed the potential of expanding the HRRP clinical pathway by adding iron repletion interventions in an attempt to help decrease acute care utilization in this patient population.¹⁰ This clinical program case study demonstrates the successful implementation of automated, EHR screening tools that can be used to identify HF patients that are candidates for iron repletion. Other methods utilizing the EHR to improve ID detection in HF patients include the use of interprofessional e-Consults and clinical decision support alerts to prompt testing for ID in heart failure order sets.^{11,12}



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