Clinical outcomes after onset of heart failure with left ventricular ejection fraction ≥40% in the US

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Introduction

- Heart failure (HF) with preserved ejection fraction is acknowledged as the area of CV medicine that has the largest unmet need.
- In the recent FINEARTS–HF trial, finerenone reduced the risk of worsening HF events/cardiovascular (CV) death in HF patients with LVEF ≥40%.
- We aimed to describe the profile of patients with HF who might be eligible for future treatment with finerenone, their healthcare resource use (HCRU), mortality, and CV outcomes.

Methods

- We conducted a retrospective cohort study using the US Optum® de-identified electronic health record (EHR) dataset.
- We included patients aged ≥18 years with a first inpatient or outpatient HF diagnosis (ICD-10 codes) from Jan 2020 to Dec 2023. Patients were required to have ≥1 LVEF value of 5–95% primarily derived using natural language processing of unstructured physician notes within ±90 days of the first HF code. The index date was the date of first HF diagnosis or index LVEF value, whichever came second.
- We excluded patients with <365 days continuous data before the index date and those with a previous record of heart transplant or semi-permanent ventricular assist device.
- Patients were followed from the index date until 31 Dec 2023, 1 year after follow-up, use of a ventricular assist device or heart transplant, or death, whichever came first.
- We evaluated patient characteristics in the year before the index date, and HCRU, all-cause mortality, CV outcomes in the first year of follow-up. This was undertaken for the base cohort (LVEF ≥40%) and the following four subcohorts:

	Eligibility criteria
Patients with T2D	Application of diabetes phenotyping algorithm[a], and classification of T1D/T2D using a combination of ICD-10 codes + abnormal lab result or prescription for a diabetes-targeting medication, in the year before the index date.
Patients with CKD	ICD-10-CM code for CKD or two CKD qualifying events[b] ≥90 days apart in the year before the index date.
Patients with T2D + CKD	Patients meeting the T2D and CKD criteria above.
Patients meeting the FINEARTS–HF trial criteria	Aged ≥40 years at the index date, ≥1 eGFR value in the year before the index date, index eGFR value ≥25ml/min/1.73m^2.

[a] Developed by Sun & Hernandez-Boussard for extraction of diabetes patients from EHRs.
[b] Clinical lab values of either 25 ≤ eGFR < 90 ml/min/1.73m^2 *or* 30 mg/g ≤ UACR ≤ 5000 mg/g.

Results

Patient characteristics

- The base cohort included a total 201,343 patients with incident HF and LVEF ≥40%; median (Q1, Q3) age at the index date was 73 (63, 81) years; 50% were male. Race distribution was 79% White, 14% African–American, 2% Asian, 5% missing.
- Median (Q1, Q3) follow-up was 11.1 (3.2, 23.5) months.
- Baseline treatments (in the year before the index date) included steroidal MRAs (5%) and SGLT2is (3%).
- Prevalence of baseline comorbidities was high (**Fig 1**).

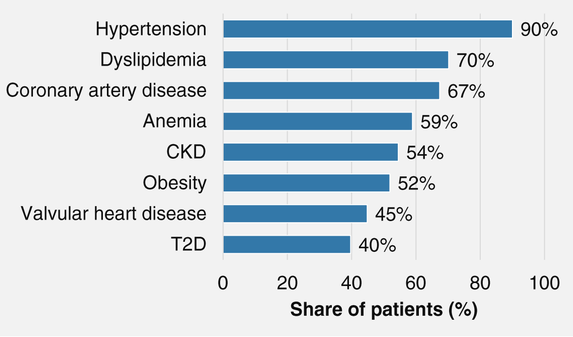

Fig 1. Comorbidities (in the year before the index date) among the base cohort of HF patients (LVEF ≥40%).

Healthcare resource use

- During the first year after HF diagnosis, 63% of patients had an all-cause hospitalization, 55% had a CV hospitalization, and 33% had a HF hospitalization – higher rates were observed in patients with CKD and T2D at baseline (**Fig 2**).
- The mean (SD) number of days hospitalized was 7 (±13); 5.7 (±11) for CV hospitalizations, and 3 (±8) for HF hospitalizations.

All-cause mortality and CV outcomes

- A total of 14% of patients died within the first year of follow-up, corresponding to a mortality rate of 21 per 100 person-years (**Fig 3**).
- Mortality rates and incidence rates of CV events were highest among the CKD and CKD + T2D subcohorts (**Fig 3**).

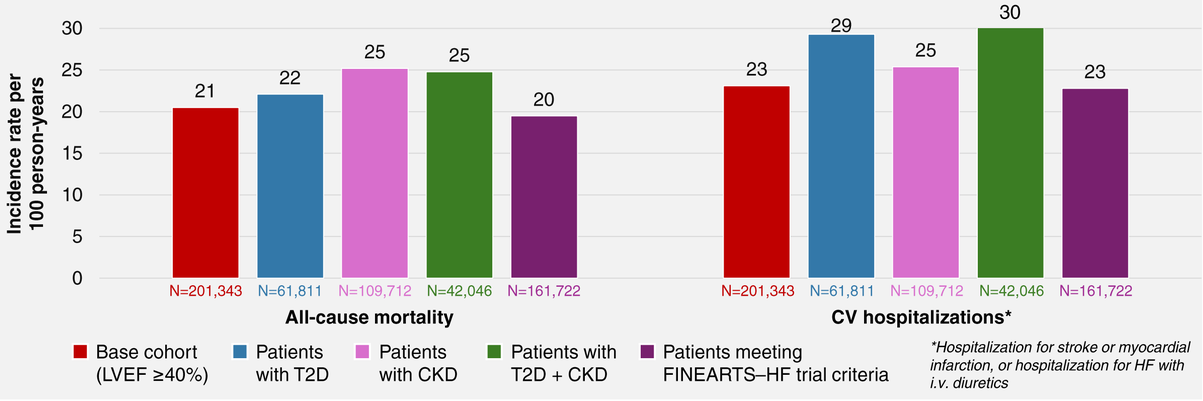

Fig 3. All-cause mortality rates and incidence rates of CV hospitalizations in the first year after HF diagnosis.

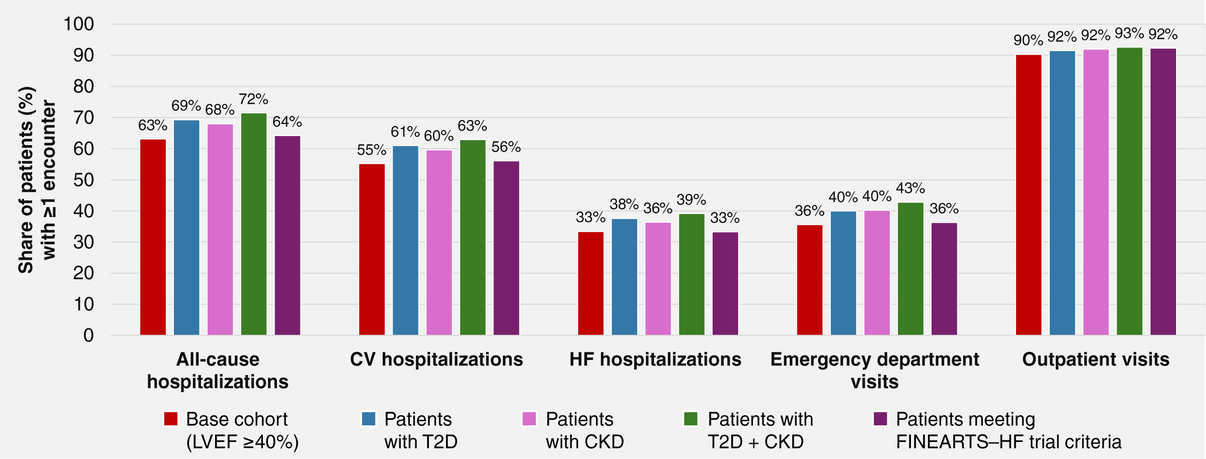

Fig 2. Healthcare resource use in the first year after HF diagnosis.

Conclusion

- These findings from real-world clinical practice in the US suggest that patients with newly-diagnosed HF and LVEF ≥40% have high HCRU and a high risk of CV events, particularly those with comorbid CKD.
- HCRU and incidence rates of CV outcomes were higher in newly-diagnosed HF patients with pre-existing CKD and T2D.
- The care and outcomes of these patients could potentially be improved with new available treatments.

CL reports research support from NovoNordisk & Roche Diagnostics; consulting fees from Alnylam Pharma, AnaCardio AB, Applied Therapeutics, AstraZeneca, Bayer, Biopeutics, Boehringer Ingelheim, Boston Scientific, Bristol Myers Squibb, Corteria, CPC Clinical Research, Cytokinetics, Eli Lilly, Impulse Dynamics, Intellia Therapeutics, Janssen Research & Development LLC, Medscape/WebMD Global LLC, Merck, Novartis, Novo Nordisk, Quidel Corporation, Radcliffe Group Ltd., Roche and Us2.ai; and is the co-founder & non-executive director of Us2.ai. GF reports consulting for Abbott, Amgen, AstraZeneca, Bayer, Boehringer Ingelheim, Cytokinetics, Eli Lilly, Johnson & Johnson, Medtronic, Merck, Novartis, & Pfizer. YMF, AH, CS, SH, KR, AM, RK are Bayer employees. SvBM is a former Bayer employee. SG works for Syneos Health, which has received research funding from Bayer.

Presented at the Heart Failure Society of America, 26–29 September 2025, Minneapolis, Minnesota, USA

Acknowledgement: We thank EpiMed Communications for support in the development of this poster, funded by Bayer AG.