

BACKGROUND

Heart failure (HF) affects about 6 million adult US residents with high rate of hospitalization and 5-year mortality. Since the 1980's evidence has supported management with beta-blockers and renin angiotensin aldosterone system inhibitors (RAASi). More recently, randomized trials demonstrated improved clinical outcomes with newer therapies such as angiotensin receptor-neprilysin inhibitors (ARNI) in 2014 and sodium-glucose cotransporter-2 inhibitors (SGLT2i) in 2018. Guidelines were updated in 2021 for European Society of Cardiology and recently, 2022 for American Heart Association/ American College of Cardiology, to endorse these newer therapies as first-line medications to improve clinical outcomes.^{1,2}

AHA/ACC, ESC Heart Failure Guidelines

	HFrEF no DM	HFrEF and DM	HFpEF no DM	HFpEF and DM
ESC 2021	<ul style="list-style-type: none"> ACEi/ARB/ARNI Beta Blocker MRA SGLT2i Loop Diuretic CVD management 	<ul style="list-style-type: none"> ACEi/ARB/ARNI Beta Blocker MRA SGLT2i Diuretics as needed CVD management 	<ul style="list-style-type: none"> CVD management Diuretics as needed 	<ul style="list-style-type: none"> CVD management SGLT2i Diuretics as needed
ACC/AHA 2022	<ul style="list-style-type: none"> ACEi/ARB/ARNI Beta Blocker MRA SGLT2i Diuretics as needed CVD management 	<ul style="list-style-type: none"> ACEi/ARB/ARNI Beta Blocker MRA SGLT2i Diuretics as needed CVD management 	<ul style="list-style-type: none"> CVD management Diuretic as needed SGLT2i ARB/ARNI MRA 	<ul style="list-style-type: none"> CVD management Diuretic as needed SGLT2i Diuretics as needed

HFrEF heart failure with reduced ejection fraction, HFpEF heart failure with preserved ejection fraction, MRA mineralocorticoid receptor antagonist

OBJECTIVE

The objective was to assess use of GDMT in patients with recent HF encounters, with and without type 2 diabetes (T2D) or chronic kidney disease (CKD) in a real-world cohort.

METHODS

Demographic and clinical data were extracted from TriNetX for adults with healthcare outpatient encounters in 2021 with a primary diagnosis of HF within the UC Health System. The dataset comprised an anonymized extract of electronic medical records (EMRs) including diagnoses, procedures, medications and laboratory values. A waiver of informed consent was provided by the IRB. T2D was defined by International Classification of Diseases (ICD) – 10 codes. CKD was defined as most recent eGFR ≤ 59 ml/min/1.73m². Medication prescriptions filled were categorized as beta-blockers, angiotensin converting enzyme inhibitors/angiotensin receptor blockers (ACEi/ARB), MRA, ARNI, or SGLT2i.

RESULTS

The cohort included 10170 patients who had at least 1 healthcare encounter in 2021 with a primary diagnosis of HF, including 4400 (43%) with T2D and 4420 (43%) with more than mild CKD. Mean age was 71 years, 45% were women, 8% Black and 10% Latino. Co-morbidities were prevalent, including hypertension (74% and 87%), hyperlipidemia (54% and 77%), coronary artery disease (56% and 66%) and peripheral artery disease (13% and 20%) in patients without and with diabetes, respectively. Use of ACEi/ARB and beta-blockers was high among patients with or without T2D or CKD (Figures 1 and 2). About half were receiving MRA. In contrast, ARNI use was low, particularly among patients with CKD and SGLT2i use was low, particularly among those without T2D.

Figure 1. GDMT in HF patients with or without diabetes

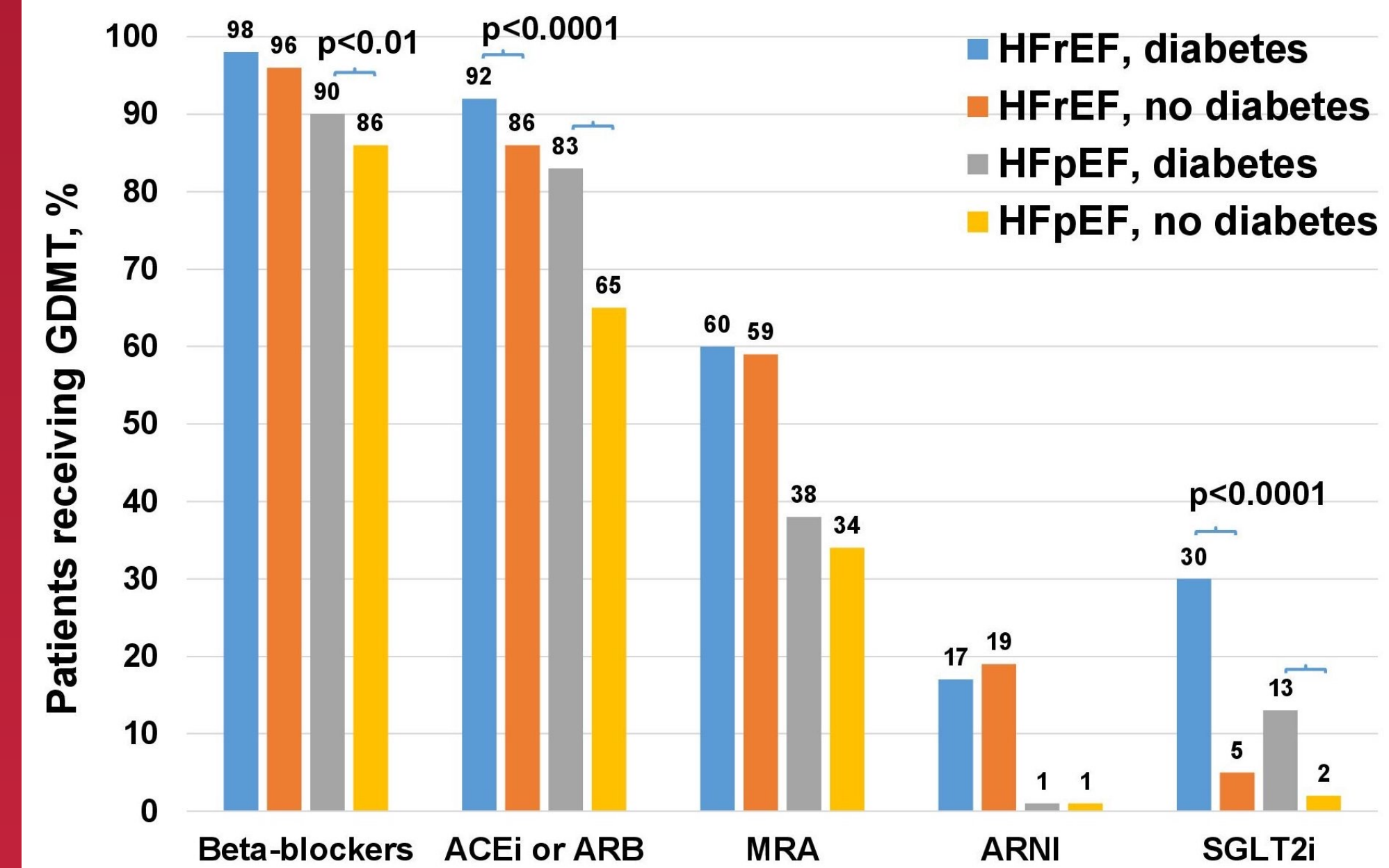
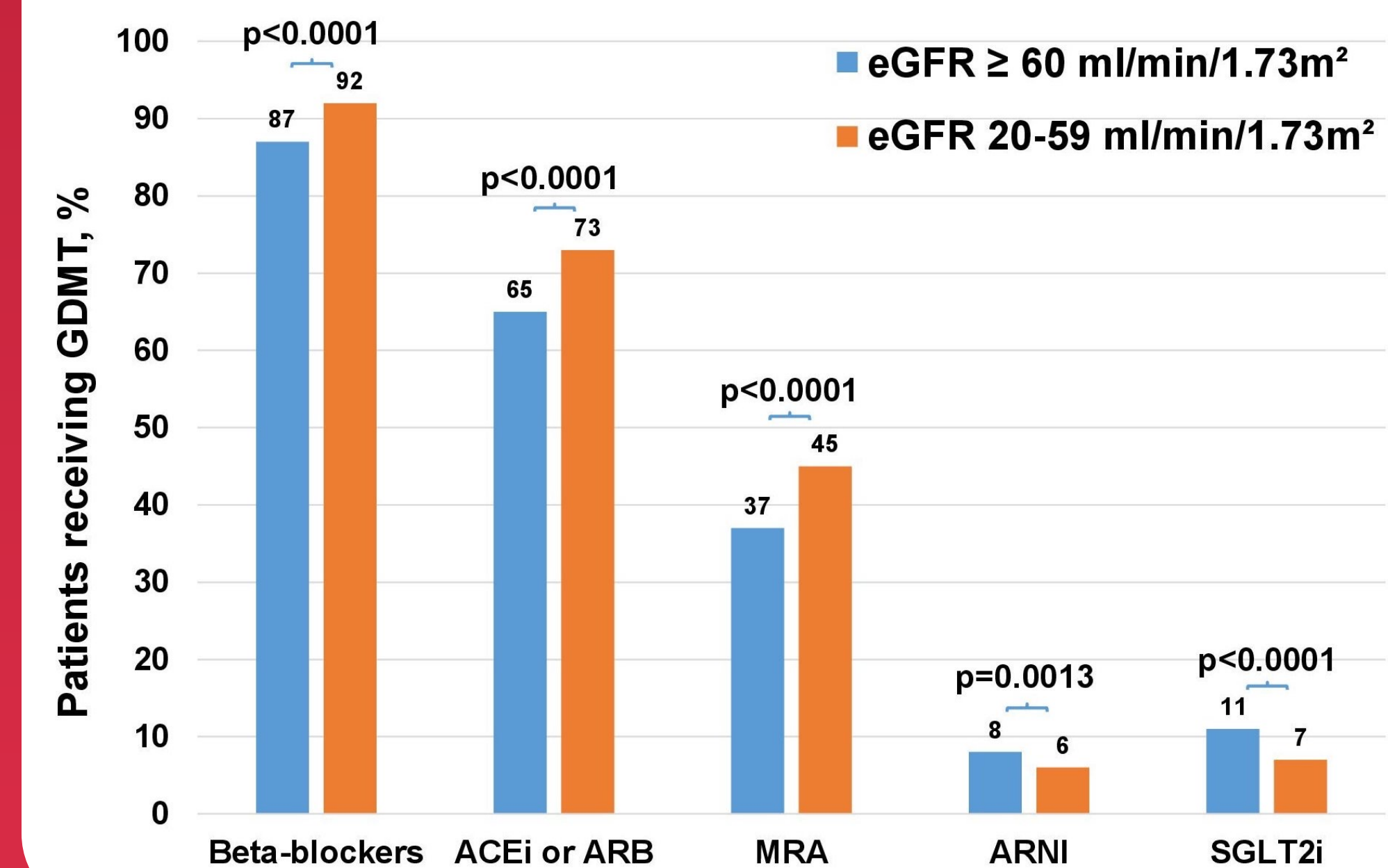


Figure 2. GDMT in HF patients with or without CKD



DISCUSSION

This 2021 real world cohort reflects clinical practice in a diverse population including rural and urban residents. In the 40 years since trials supporting use of ACEi/ARB, MRA and beta-blockers for HF were completed, uptake of these legacy agents has become widespread. Despite the 6-8 years elapsed since demonstration of the efficacy and safety of ARNI and SGLT2i, and their inclusion in guidelines, prescription of these newer agents remains infrequent in 2021. SGLT2i use was particularly low in those without T2D and use of both ARNI and SGLT2i was infrequent among patients with more than mild CKD.

CONCLUSION

- Prescription of ARNI and SGLT2i in patients with HF remains low in 2021 despite their inclusion in HF recent guidelines.
- Efforts to accelerate uptake of newer guideline-directed medical therapies are needed to improve HF outcomes, particularly among patients with T2D and those with CKD.

REFERENCES

- 1) McDonagh TA, et al ESC Scientific Document Group. 2021 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure. Eur Heart J. 2021 Sep 21;42(36):3599-3726.
- 2) Heidenreich PA, et al. 2022 AHA/ACC/HFSA Guideline for the Management of Heart Failure: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. Circulation. 2022 May 3;145(18):e895-e1032.

FINANCIAL DISCLOSURES

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