Impact of an interprofessional heart failure clinic on patient outcomes

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Background

- Heart failure (HF) is a common and costly cardiovascular disease that imposes a heavy burden on patients and healthcare systems.
- Team-based or interprofessional care in a HF clinic may reduce the burden of care and positively impact HF patient outcomes.
- Although previous studies have been published, a majority were conducted at Veteran Affairs (VA) medical centers or internationally.
- With differences in patient population and geographical area, it is unclear whether these findings can be correlated to a community HF clinic.

Objectives

- Investigate whether the interprofessional effort of the community outpatient HF clinic at Hendrick Medical Center has an impact on improving patient outcomes, primarily HF-related hospital readmissions
- Characterize patterns of morbidity and mortality in patients enrolled in a community hospital-based HF clinic versus general population of HF patients admitted to a community hospital
- Examine whether patients were at target therapeutic dosing with their HF medications

Methods

- Retrospective, single-center, chart review study at Hendrick Medical Center in Abilene, Texas.
- Sunrise Management System Electronic Medical Record was utilized to evaluate patients admitted to the HF clinic from January 2016 to January 2018 with a focus on baseline characteristics, medication changes, and the primary and secondary outcomes that occurred a year prior to clinic admission, during clinic admission for a 12-month period, and a year following their initial visit.
- Patients were included if they were age $\geq$ 18 years, admitted during the study period, and had a diagnosis of heart failure
- Patients were excluded if they were pregnant or did not meet any of the inclusion criteria.
- Patients were grouped by the number of clinic visits they attended.
- Descriptive statistics was used to analyze the data.

Study Outcomes

- **Primary**: number of patients with HF-related hospital readmissions after one year of enrollment in the HF clinic
- **Secondary**: number of patients with HF-related ED visits, number of patients with all-cause readmissions, number of patients with all-cause ED visits, number of patients with hospital admissions prior to HF clinic admission, mortality, number of doses of IV diuretics given in clinic, number of patients at therapeutic dosing with their HF medications

Results

- There were 377 total patients screened with 158 patients excluded and 219 patients included meeting the inclusion criteria.
- **Table 1: Baseline characteristics**

Characteristic	HF Clinic Patients
Age – year	66 $\pm$ 14.9
Male sex – no. of pts	122 (55.7%)
Body weight – kg	94.1 $\pm$ 26.9
Body-mass index – kg/m^2	33 $\pm$ 8.4
New HF diagnosis – no. of pts	39 (17.8%)
Ejection fraction > 40% – no. of pts	60 (27.4%)
Ejection fraction $\leq$ 40% – no. of pts	159 (72.6%)

- For patients with an EF of $\leq$ 40% and 2 or more visits, 32 patients (20.1%) were at target dosing with their ACEI/ARB/ARNIs, 10 patients (6.3%) with their beta-blockers, and 71 patients (44.6%) with their aldosterone antagonists at last clinic visit.
- There were 97 patients that received IV diuretics at the clinic. The number of IV diuretic doses that a patient received ranged from 1-27 over the course of a 12-month clinic period.
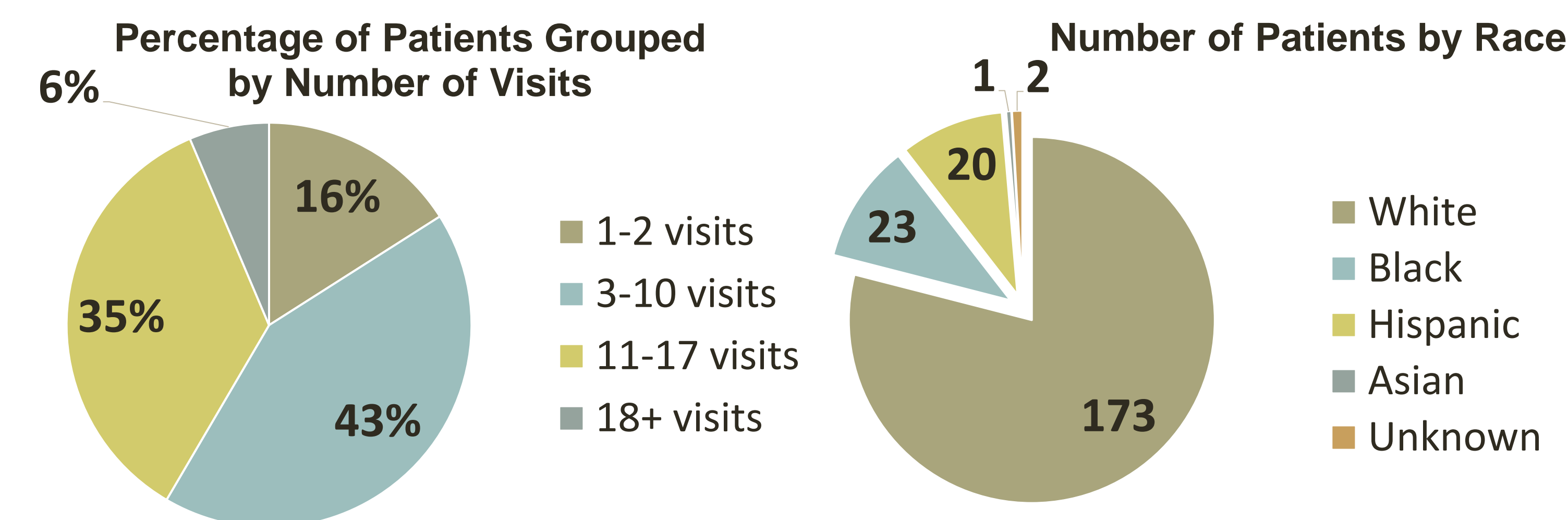

Percentage of Patients Grouped by Number of Visits: 6% 18+ visits, 16% 1-2 visits, 43% 3-10 visits, 35% 11-17 visits

Number of Patients by Race: White 173, Black 23, Hispanic 20, Asian 1, Unknown 2

- **Table 2: Number of patients with HF-related admissions and ED visits**

Groups	Baseline HF-Admits	Baseline HF-ED	During HF-Admits	During HF-ED	*Post HF-Admits	Post HF-ED
1-2 visits	18 (51.4%)	0 (0%)	5 (14.3%)	1 (2.6%)	2 (5.7%)	2 (5.7%)
3-10 visits	67 (72%)	13 (13.9%)	28 (30.1%)	8 (8.6%)	20 (21.5%)	9 (9.7%)
11-17 visits	59 (76.6%)	7 (9.1%)	17 (22%)	5 (6.5%)	13 (16.9%)	6 (7.8%)
18+ visits	11 (78.6%)	4 (28.6%)	6 (42.9%)	1 (7.1%)	0 (0%)	0 (0%)

*Highlighted portion indicates the primary outcome in comparison to baseline

Results (Continued)

- **Table 3: Number of patients with all-cause admissions and ED visits**

Groups	Baseline - Admits	Baseline - ED	During - Admits	During - ED	Post - Admits	Post - ED
1-2 visits	15 (42.9%)	6 (17.1%)	16 (45.7%)	9 (25.7%)	6 (17.1%)	7 (20%)
3-10 visits	52 (55.9%)	32 (34.4%)	40 (43%)	11 (11.8%)	23 (24.7%)	15 (16.1%)
11-17 visits	9 (11.7%)	5 (6.5%)	8 (10.4%)	4 (5.2%)	6 (7.8%)	11 (14.3%)
18+ visits	9 (64.3%)	7 (50%)	7 (50%)	9 (64.3%)	4 (28.6%)	3 (21.4%)

- **Table 4: Patient mortality:** 17 deaths total with 10 cardiovascular-related

Groups	Mortality During	CV-Related	Mortality After	CV-Related
1-2 visits	1	0	1	1
3-10 visits	6	3	5	4
11-17 visits	0	0	2	2
18+ visits	0	0	0	0

Discussion

- The number of patients with HF-related admissions decreased from baseline for all groups.
- The number of patients with HF-related ED visits also decreased from baseline for all groups, with exception to the 1-2 visits group.
- The number of patients with HF-related admissions may have decreased due to patients receiving IV diuretics during clinic preventing an ED visit or hospital admission, saving costs.
- Patients with only 1-2 visits had insufficient data in the EMR which made it difficult to compare patient outcomes with other groups.
- Several patients within all groups were lost to follow-up.

Conclusion

- The number of patients with HF-related hospital readmissions decreased from baseline for all patient groups which could be attributed to the number of patients receiving IV diuretics during clinic preventing an ED visit or hospital admission.
- A follow-up study comparing HF clinic patients to a matched control group based on severity of HF, baseline characteristics, and medications is needed to determine whether there is truly a difference on patient outcomes.

Disclosures

- The authors of this study do not have any conflicts of interest.