Impact of Resident & Student Pharmacist Intervention on Readmission Rates in Patients with Heart Failure with Reduced Ejection Fraction in an Internal Medicine Setting

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BACKGROUND

- Heart failure (HF) is a common illness that affects more than 6 million Americans, and this number is expected to continue rising[1]. If left unmanaged, HF can lead to serious outcomes, such as hospitalization and even death. Currently, we have Guideline-Directed Medication Therapy (GDMT), which has been proven to significantly reduce morbidity and mortality in patients with heart failure who have reduced ejection fraction (HFrEF)[2].
- GDMT includes angiotensin-converting enzyme inhibitors (ACEis)/angiotensin receptor blockers (ARBs)/angiotensin receptor neprilysin inhibitors (ARNIs), beta-blockers (BBs), mineralocorticoid receptor antagonists (MRAs) and sodium-glucose cotransporter-2 (SGLT2)[2].
- Medication adherence and patient understanding of medication benefits are barriers to optimizing regimens and maintaining good adherence.[3] Pharmacist involvement in multidisciplinary teams improves outcomes with decreased hospitalizations, increased medication adherence, and more patients receiving triple therapy (ACE/ARB, BB, MRA)[4,5,6].
- However, data are lacking on the impact of student and resident pharmacists on patient outcomes of patients with HFrEF in the LA County internal medicine hospital setting.

OBJECTIVE

Our study at LA General Hospital aims to determine if bedside counseling by student and resident pharmacists reduces hospitalization rates of HFrEF patients in internal medicine teams.

METHODS

Study Population

- Inclusion Criteria: Age ≥18 years, with diagnosis of HFrEF with ejection fraction (EF) of ≤40%, NYHA class II-IV, admission to IM team
- Exclusion criteria: recent surgery (within last 30 days)

Study Design

- Non-Randomized controlled

Data Collection:

- Gather a list of patients diagnosed with HFrEF admitted to an internal medicine team.
- Educate these patients about their Guideline-directed medical therapy (GDMT)
- Identify eligible patients who did not receive bedside counseling.
- Safely store collected data in the HIPAA-compliant Research Electronic Data Capture (REDCap) system.

Statistical Analyses: Descriptive statistics

RESULTS

Table 1. Demographic Data	
Age, mean (yr)	59
Gender	
Male	79%
Female	21%
Race	
White	17%
Asian	4%
African American	33%
Other	46%
Ethnicity	
Hispanic or Latino	42%
Not Hispanic or Latino	58 %
Unknown/Not reported	-
Domiciled	75 %

Table 2. Clinical Metrics	Intervention Group (%) (N=7)	Control Group (%) (N=17)
New HF diagnosis	2 (29%)	1 (6%)
Mean Ejection Fraction	31%	26%
Beta-Blocker	7 (100%)	10 (59%)
ACEi/ARB/ARNi	4 (57%)	6 (35%)
MRA	5 (71%)	5 (29%)
SGLT2	4 (57%)	8 (47%)
Loop diuretic	6 (86%)	15 (88%)

Table 3. Outcome	Intervention Group (N=7)	Control Group (N=17)
30-day readmission, n (%)	1 (14)	4 (23)
30 day ED visit, n (%)	0 (0)	5 (29)

Summary of Results:

- Three out of five patients presented to ED with symptoms of heart failure exacerbation, including shortness of breath, dyspnea, orthopnea, and lower extremity swelling.
- An higher proportion of ED visits was seen in the control group (29%) when compared to the intervention group (0%).
- All four patients with readmission in the control group were admitted due to heart failure exacerbation, indicated by symptoms reported upon presentation..
- The one patient in the intervention group was readmitted due to issues with picking up medications.
- After analyzing four readmitted patients, we discovered that only two consistently followed their medication regimen, while the other two reported missing their medications for two weeks or longer.

DISCUSSION / CONCLUSION

Discussion:

- Two common reasons that contribute to the readmission of patients with heart failure include suboptimal therapy regimen and non-adherence to prescribed medications.
- The control group, which did not receive the intervention, appeared to exhibit a slightly higher rate of readmission compared to the intervention group, but further analysis is needed to confirm this observation.
- Incorporating pharmacy residents and student pharmacists into the patient care team is logistically feasible and may help in optimizing care for patients with HFrEF.

Limitations:

- Limited sample size as a pilot study
- Restricted to LA General Hospital
- Unable to analyze if patient was admitted to an outside hospital (non-county facility)

Conclusion:

The pharmacist intervention, including GDMT-focused counseling, referral to HF PharmD for outpatient GDMT titration, and addressing medication queries before discharge may improve overall patient care.

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