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Comparison of Patients with Congestive Heart Failure With and Without a Primary Care Provider: A Retrospective Cohort Study

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Published In/Presented At

Hoeckele, S. McCambridge, M. Miller, M. (2019, March). *Comparison of Patients with Congestive Heart Failure With and Without a Primary Care Provider: A Retrospective Cohort Study*. Poster Presented at: 2019 SELECT Capstone Posters and Presentations Day. Kasych Family Pavilion, Lehigh Valley Health Network, Allentown, PA.

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Comparison of Patients with Congestive Heart Failure With and Without a Primary Care Provider: A Retrospective Cohort Study

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Background

Cardiovascular disease is among the leading causes of death in the United States, with congestive heart failure (CHF) affecting 2.4% of the United States population¹. Ambulatory management has significantly improved the prognosis of CHF patients with the emergence of medical and pharmacological therapies². Primary Care Physicians (PCPs) are uniquely qualified to manage chronic diseases such as CHF because they improve health in three ways: overall health is better in areas with more primary care physicians, individuals who receive care from their PCPs are healthier, and characteristics of primary care (as opposed to care by multiple specialists) are associated with better health.³ Last year, the Department of Quality and Patient Safety at Lehigh Valley Health Network (LVHN) implemented a network-wide pathway to manage ambulatory care for CHF patients discharged from the hospital. By comparing and contrasting metrics among CHF patients who have a PCP and those who do not, LVHN can revise this pathway to better target future interventions for CHF patients, improve care, and reduce cost.

Problem Statement

What are the differences and similarities in prognostic indicators between patients discharged from the hospital after a CHF-related inpatient encounter who have a PCP and those who do not have a PCP?

Methods

This retrospective cohort study utilized chart reviews to aggregate data. Prior to the start of this study, LVHN developed 2 dashboards using Tableau to aggregate real-time data from the Electronic Health Record: one to track all CHF inpatient encounters (Inpatient Pathway) and the other for ambulatory metrics (Ambulatory Pathway). In this internally designated quality improvement study, patient encounters were queried from the Inpatient dashboard, and then cross-referenced to the corresponding patient information in the Ambulatory dashboard. The inclusion criteria were all CHF-related inpatient encounters (by ICD-10 code) admitted between 11/1/2017 and 10/31/2018 (n=3,111). Encounters were divided into two cohorts based on whether or not the patients had a PCP upon discharge (Yes PCP, or No PCP).

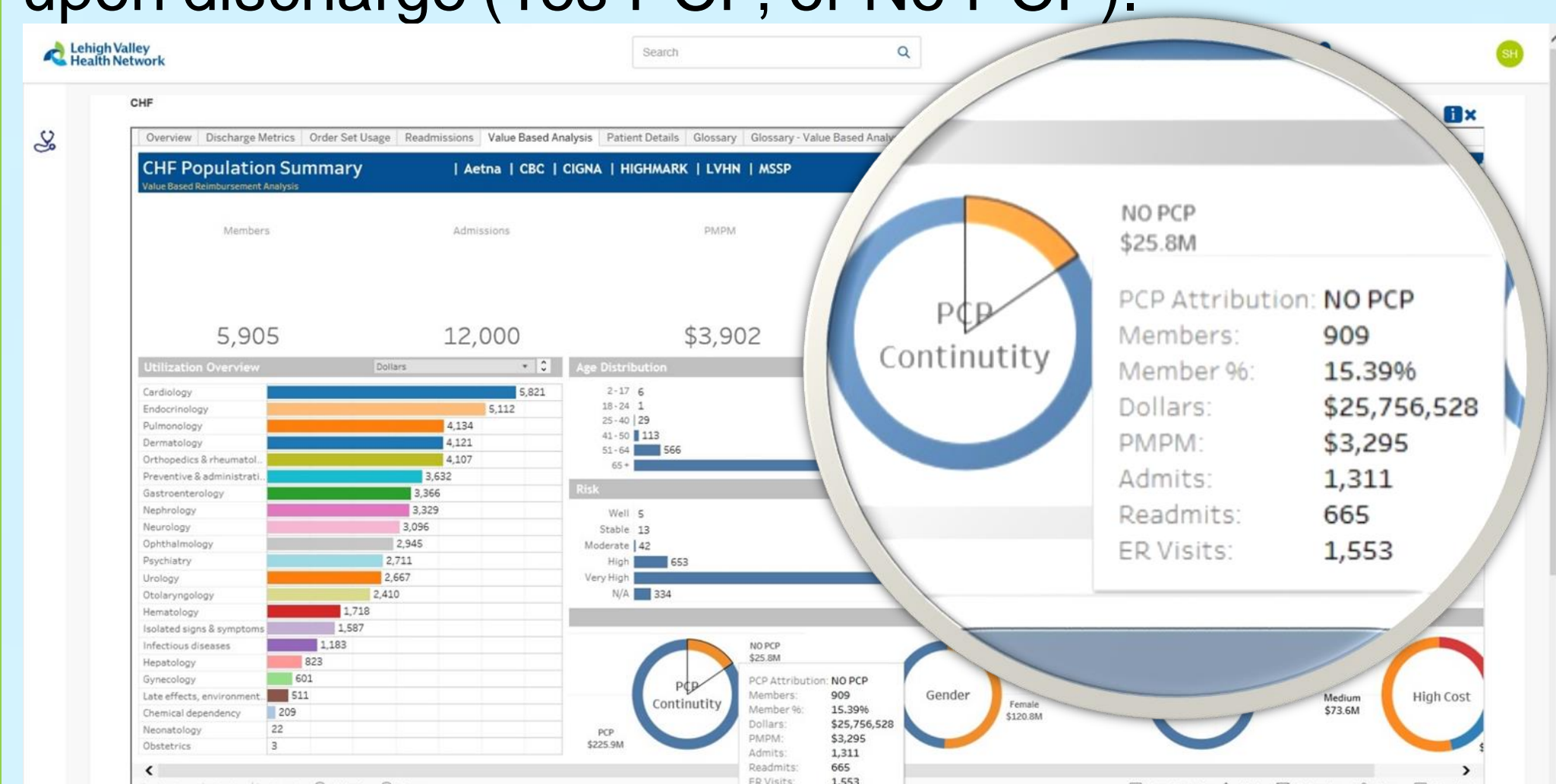


Figure 1: CHF Inpatient dashboard; claims data

Results

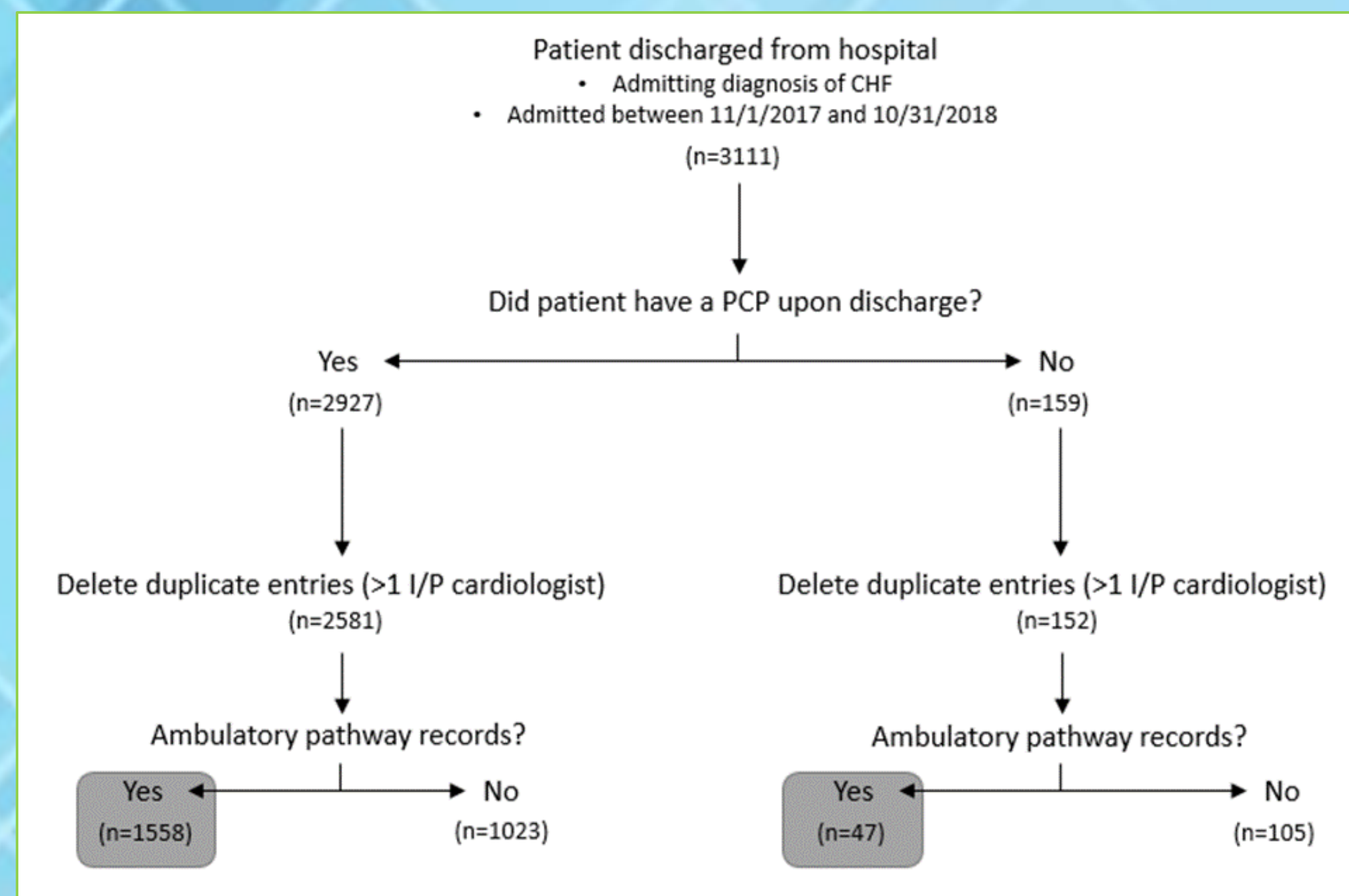


Figure 2: data collection, exclusion of duplicates, final cohorts

Before this study began, the number of patients discharged from the hospital with a diagnosis of CHF who did not have a PCP was estimated to be 15.4% based on financial claims data (see Figure 1). Over the 12-month period of this study, there were 3,111 encounters (see Figure 2). Some encounters needed to be removed due to an artifact of the data compilation process, reducing the number of encounters. At this point, the percentage of patients discharged without a PCP according to clinical data is 5.6% (152/2733) as shown in Figure 4. After excluding patients who were not found in the CHF Ambulatory Dashboard, the Yes PCP cohort contained 1,558 encounters and the No PCP encounters contained 47 encounters. Lastly, various real-time prognostic indicators were collected such as ejection fraction, medication use, most recent laboratory values, hospital and emergency department visits, referrals, and end-stage CHF indicators, as shown in Table 1. Due to the small sample size in the No PCP cohort, no p-values could be calculated for these metrics. Demographics of the 2 cohorts can be found in Figure 3.

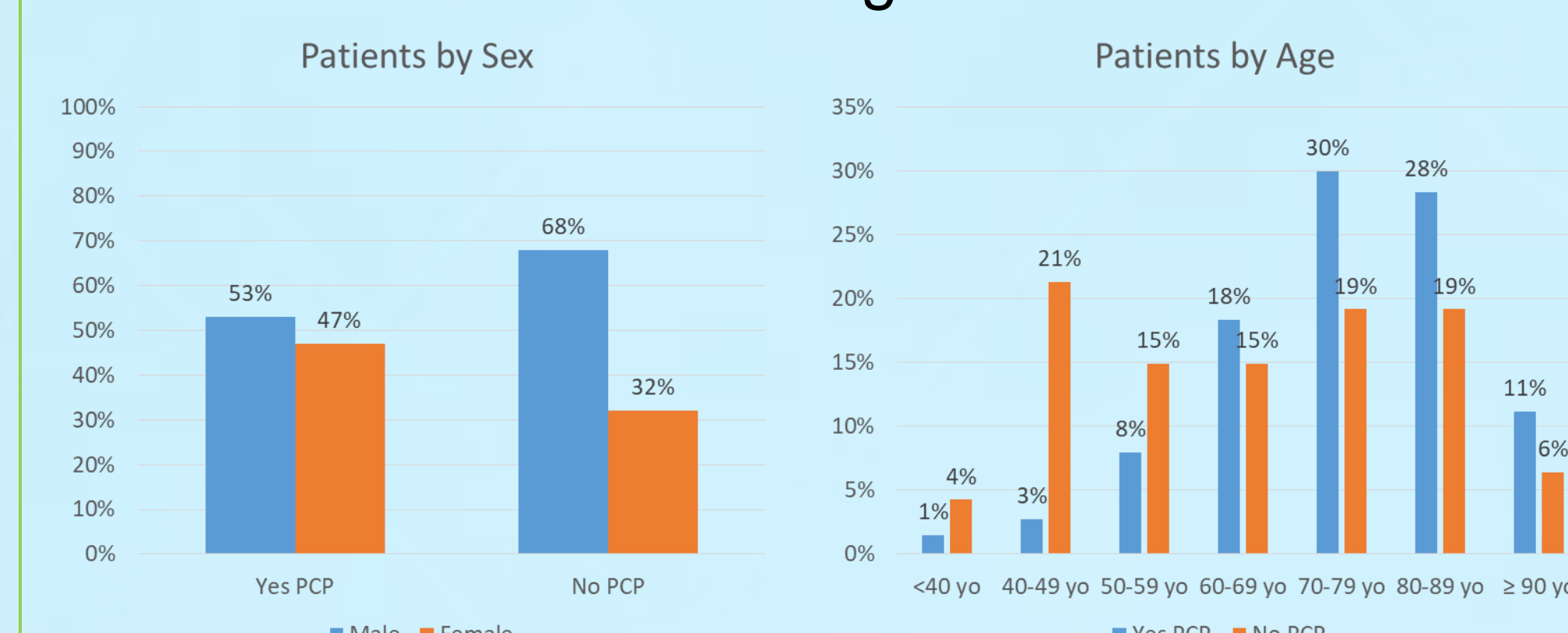


Figure 3: Patients in each cohort by sex and age

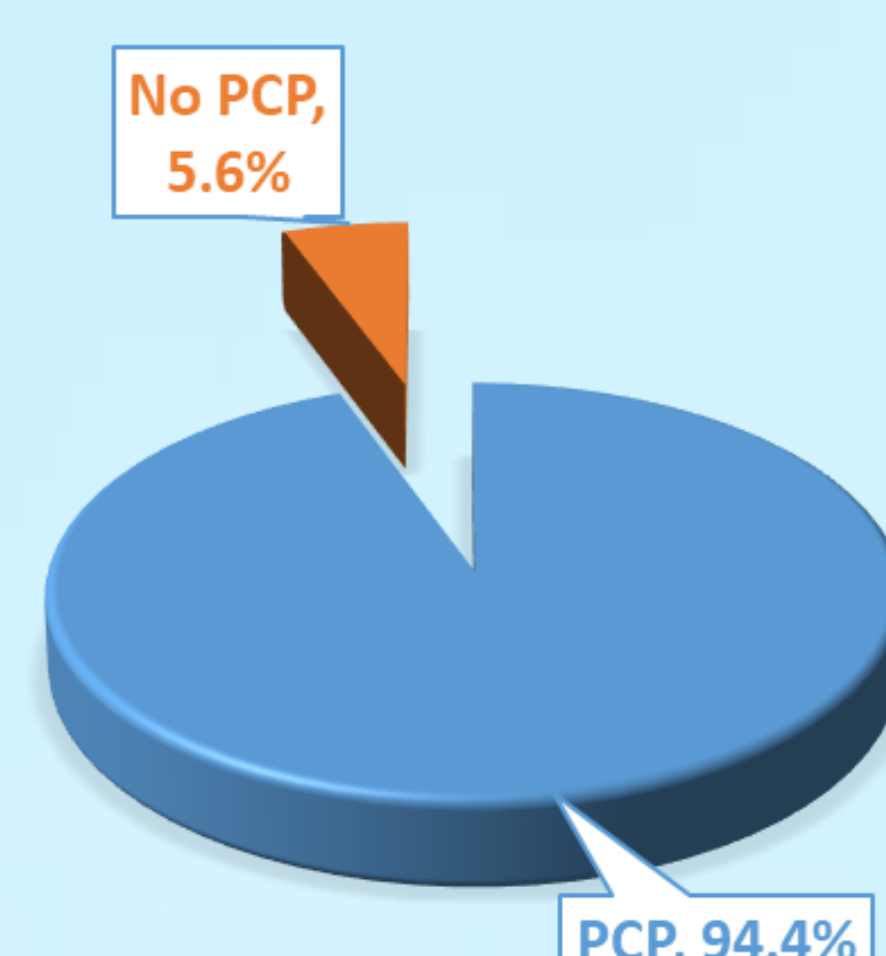


Figure 4: Percentage of patients in each cohort

	Yes PCP	No PCP
	Num	%age
Total	1558	47
Ejection Fraction		
Preserved EF (≥50)	916	59%
Reduced EF (<50)	604	39%
No Result	38	2%
Medication Use		
ARNI	102	7%
ACE/ARB	1192	77%
Beta blocker	1423	91%
Spirolactone	534	34%
Most Recent Labs		
Last Sodium <130	61	4%
Last Creatinine ≥1.5	456	29%
HbA1c ≥8.0 or no result	516	33%
Readmissions		
To Hospital within 30 days of discharge?	271	17%
ER visit in past 24 months?	872	56%
Referrals		
Outpatient cardiology	996	64%
Cardiac Care Team	829	53%
Palliative Care	17	1%
Hospital	41	3%
End-Stage Indicators		
Cardiac cachexia	51	3%
Pacemaker, defibrillator, other device	488	31%

Table 1: Prognostic indicators

Discussion

According to claims data obtained before the start of this study, the network estimated that 15.4% of patients discharged from the hospital with a CHF diagnosis did not have a PCP. However, when compared to the clinical data collected in this study, that percentage was found to be 5.6%. When comparing these two apparently discrepant numbers, the hospital administration places a greater emphasis on the clinical data. As important as it is to ensure that all patients have a PCP with whom they can receive follow-up care, this issue is not quite as urgent as previously estimated.

One limitation of this study however is that a significant number of patients discharged from the hospital could not be found in the CHF Ambulatory dashboard, and were therefore excluded from this study. Further endeavors would include manual chart review of these patients, especially for those in the "No PCP" cohort.

The SELECT curriculum places a large emphasis on health systems and quality improvement. This project represents a piece of a much larger, network-wide initiative to provide evidence-based care at a lower cost by implementing standardized treatment pathways.

Conclusions

Having patients with CHF regularly see a PCP is of utmost importance when managing them in an outpatient setting. LVHN is standardizing the way that they manage these patients by developing a network-wide ambulatory management pathway. As a result, administrative data suggested that as many as 15.4% of patients discharged from the hospital after a CHF-related encounter did not receive adequate follow-up with a PCP. However, the clinical data of this project showed that that number is much closer to 5.6%. Other interesting trends can be observed from the additional data collected in each cohort, but since the total number of patients without a PCP is so low, no p-values can be assigned.

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