Effect of the COVID-19 Pandemic on Cardiopulmonary Rehabilitation Patients

Edward Kiger, PharmD Candidate and Cassandra Maynard, PharmD, BCPS

Southern Illinois University Edwardsville School of Pharmacy

BACKGROUND

- The COVID-19 pandemic has presented the healthcare system with many unheard-of barriers to providing patient care
- In spring and early summer 2020, various outpatient and elective services at SSM St. Mary's, including the cardiopulmonary rehabilitation program, were halted due to precautions surrounding the pandemic
- Cardiopulmonary rehabilitation programs address modifiable risk factors for cardiovascular disease through incorporation of exercise training, counseling to reduce stress, and education on heart-healthy living
- Patients typically visit these programs 3 times per week over 12 weeks (36 total visits)

OBJECTIVES

- To identify what impact the COVID-19 pandemic has had on patients that had their participation in a cardiopulmonary rehabilitation program interrupted relating to their all-cause hospital readmission rates

METHODS

Study Design

- Retrospective cohort study
- Data was collected from a single center: SSM Health St. Mary's Hospital – St. Louis

Study Sample

- Cohort A included patients that had access to a full, uninterrupted course of cardiopulmonary rehabilitation
- All Cohort A patients were enrolled and completed rehabilitation before COVID-19 precautions interfered with the program
- Cohort B included patients that were originally enrolled in the cardiopulmonary rehabilitation program but had their participation interrupted due to precautions and restrictions surrounding the COVID-19 pandemic
- Patients were excluded if no baseline demographic information or past medical history were available through retrospective chart review or if they were 90 years of age or older

METHODS

Primary outcome – all-cause hospital readmission rates

- A hospital readmission was considered any inpatient admission to a hospital occurring during enrollment in the cardiopulmonary rehabilitation program and up to 30 days after completion of the program
- Enrollment was defined as the time from the patient's 1st visit to their 36th visit

Statistical Analysis

- A χ^2 test along with relative risk and 95% confidence interval were utilized to assess the difference between cohorts in the primary outcome
- A required sample size of 200 was calculated based on an expected incidence of the primary outcome of 10% in Cohort A and 25% in Cohort B
- To reduce the incidence of Type I and II errors, α and power were set at 0.05 and 80%, respectively

RESULTS

Table 1. Patient Demographics

Characteristic	Cohort A N = 34 N (%)	Cohort B N = 33 N (%)	Overall N = 67 N (%)
Age			
18-39	1 (3)	0 (0)	1 (2)
40-64	15 (44)	12 (36)	27 (40)
65-89	18 (53)	21 (64)	39 (58)
Sex			
Male	25 (74)	18 (55)	43 (64)
Female	9 (26)	15 (45)	24 (36)
Indication(s) for Cardiopulmonary Rehabilitation*			
MI	12 (35)	14 (42)	26 (39)
CAD	20 (59)	21 (64)	41 (61)
HF	8 (24)	7 (21)	15 (22)
Other	21 (62)	16 (48)	37 (55)

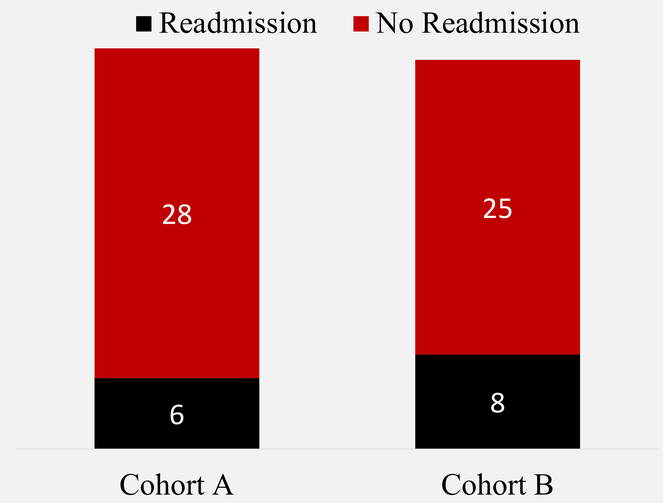
*Patients may have multiple indications for cardiopulmonary rehabilitation so sum may be greater than 100%

RESULTS

Table 2. Readmission Rates By Cohort

Primary Outcome	Cohort A N = 34 N (%)	Cohort B N = 33 N (%)	Overall N = 67 N (%)	Relative Risk (95% CI, P-value)
Readmission	6 (18)	8 (24)	14 (21)	1.37 (0.53 to
No Readmission	28 (82)	25 (76)	53 (79)	3.53, P = 0.51)

Figure 1. Readmission Rates By Cohort



CONCLUSION

- Although a small difference in hospital readmission rates was found between groups, this difference was not found to be statistically significant
- Readmission rates may have been directly affected by the COVID-19 pandemic as patients may have been hesitant to seek medical attention
- Not all patients in Cohort B had completed a full course of rehabilitation when this data was collected, so hospital readmission rates may actually be higher than recorded within this group
- Although patients in Cohort B were not able to enter the healthcare facility while outpatient services were suspended, attempts to advise these patients were still made through alternative means

References:
1. What is Cardiac Rehabilitation? www.heart.org. Accessed August 3, 2020. https://www.heart.org/en/health-topics/cardiac-rehab/what-is-cardiac-rehabilitation
2. Cardiac Rehabilitation | NHLBI, NIH. Accessed August 3, 2020.
3. Mudrick DW, Shaffer L, Lalonde M, et al. Cardiac Rehabilitation Participation Reduces 90-Day Hospital Readmissions After Acute Myocardial Infarction or Percutaneous Coronary Intervention. *J Am Coll Cardiol*. 2013;61(10 Supplement):E1418. doi:10.1016/S0735-1097(13)61418-7