Real-World Data on Long-term Outcomes Among Adult Patients With Myopericarditis-related Heart Failure

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Objectives

- Heart failure (HF) is one of the leading causes of morbidity and mortality in the United States.[1]

- Myocarditis and pericarditis coexist, with an incidence of 22-27.7/100,000, leading to higher rates of HF hospitalizations.[2-4] Myopericarditis (MPC) with predominant pericardial involvement when not managed promptly leads to serious complications including HF.[5-6]

- Real-world evidence on long-term outcomes of MPC among a large cohort of HF patients from hospital-based facilities is limited.

- This study assessed the burden of MPC-HF at index visit and in the year after index discharge.

Methods

- **Study Design**: Retrospective matched cohort study

- **Data Sources:** 1) HIPAA compliant, statistically de-identified Premier Healthcare Database (PHD), a large, all-payer administrative database from a large network of US-based hospitals
2) General mortality data linked to PHD

- **Patient Selection Criteria:** Adult inpatients (≥18 years), primary discharge diagnosis of HF during 1/2019-6/2023

- **Exposure:** First visit with a diagnosis of myocarditis or pericarditis during study period in patients with HF (index visit)

- **Outcomes:** Clinical events, healthcare resource utilization (HCRU) and cost in patients with MPC-related HF at index and within 1-year following index discharge

- **Analysis:** Matched cohorts (with and without MPC) created using propensity score matching and outcomes compared between the two cohorts by regression analysis

Results

- Among 87,819 inpatients with HF, the prevalence of MPC was 2.9%.

- Following 1:3 matching, a total of 10,168 patients with HF (61 years median age, 16.4% Black, 50.3% female, 8.2% Hispanic, 46.8% on Medicare, 30.2% with CCI ≥5) from 839 hospitals were included.

- Covariates balanced by propensity score matching (ASMD <0.10) and baseline characteristics shown by MPC status (MPC: 2,544, no MPC: 7,624) in Table 1.

Table 1. BASELINE CHARACTERISTICS OF PATIENTS WITH HF BY MPC STATUS

Characteristic	After Propensity Score Matching			
	No MPC-HF	MPC-HF	ASMD	p-value
	N = 7,624[1]	N = 2,544[1]		
Age				0.9
18-34	835 (11.0%)	282 (11.1%)	0.0015	
35-49	1,396 (18.3%)	488 (19.2%)	0.0226	
50-64	2,159 (28.3%)	708 (27.8%)	0.0104	
65-79	2,065 (27.1%)	675 (26.5%)	0.0119	
80+	1,169 (15.3%)	391 (15.4%)	0.0015	
Sex				>0.9
Male	3,792 (49.7%)	1,263 (49.6%)	0.0009	
Female	3,832 (50.3%)	1,281 (50.4%)	0.0009	
Race-Ethnicity				0.4
Hispanic	616 (8.1%)	216 (8.5%)	0.0146	
NH-Black	1,090 (14.3%)	383 (15.1%)	0.0205	
NH-Other	1,472 (19.3%)	508 (20.0%)	0.0162	
NH-White	4,446 (58.3%)	1,437 (56.5%)	0.0361	
Payor				0.4
Medicare	3,586 (47.0%)	1,171 (46.0%)	0.0192	
Medicaid	1,714 (22.5%)	592 (23.3%)	0.0189	
Commercial	1,710 (22.4%)	556 (21.9%)	0.0155	
Other	614 (8.1%)	225 (8.8%)	0.0281	
Hosp Bed Size				0.5
1 to 299	2,456 (32.2%)	836 (32.9%)	0.0144	
300 to 499	1,844 (24.2%)	641 (25.2%)	0.0238	
500+	3,275 (43.0%)	1,051 (41.3%)	0.0343	
Unknown	49 (0.6%)	16 (0.6%)	0.0025	
Hosp Region				>0.9
Northeast	1,405 (18.4%)	471 (18.5%)	0.0020	
Midwest	1,618 (21.2%)	541 (21.3%)	0.0013	
South	3,314 (43.5%)	1,089 (42.8%)	0.0136	
West	1,287 (16.9%)	443 (17.4%)	0.0143	
Teaching Status				0.7
Teaching	4,485 (58.8%)	1,484 (58.3%)	0.0108	
Non-teaching	3,139 (41.2%)	1,060 (41.7%)	0.0108	
Population				0.4
Urban	6,979 (91.5%)	2,316 (91.0%)	0.0179	
Rural	645 (8.5%)	228 (9.0%)	0.0179	
CCI Conditions				0.6
1-2	2,814 (36.9%)	917 (36.0%)	0.0188	
3-4	2,526 (33.1%)	842 (33.1%)	0.0006	
5+	2,284 (30.0%)	785 (30.9%)	0.0201	
APR-DRG Severity				>0.9
Minor	49 (0.6%)	17 (0.7%)	0.0032	
Moderate	2,019 (26.5%)	673 (26.5%)	0.0000	
Severe	3,608 (47.3%)	1,202 (47.2%)	0.0010	
Extreme	1,948 (25.6%)	652 (25.6%)	0.0006	

MPC = myopericarditis
ASMD = absolute standardized difference
CCI = Charlson Comorbidity Index
APR DRG = all patient refined diagnosis related group

- A diagnosis of dilated cardiomyopathy, arrythmia, mechanical ventilation and heart transplantation were significantly associated with MPC HF during index encounter (OR range: 1.2 to 2.68, p<0.01).

- MPC HF (vs. no MPC HF) stayed significantly longer in the hospital and in ICU and incurred higher median hospital costs (p<0.001).

- Death rates were similar between the two cohorts at index discharge.
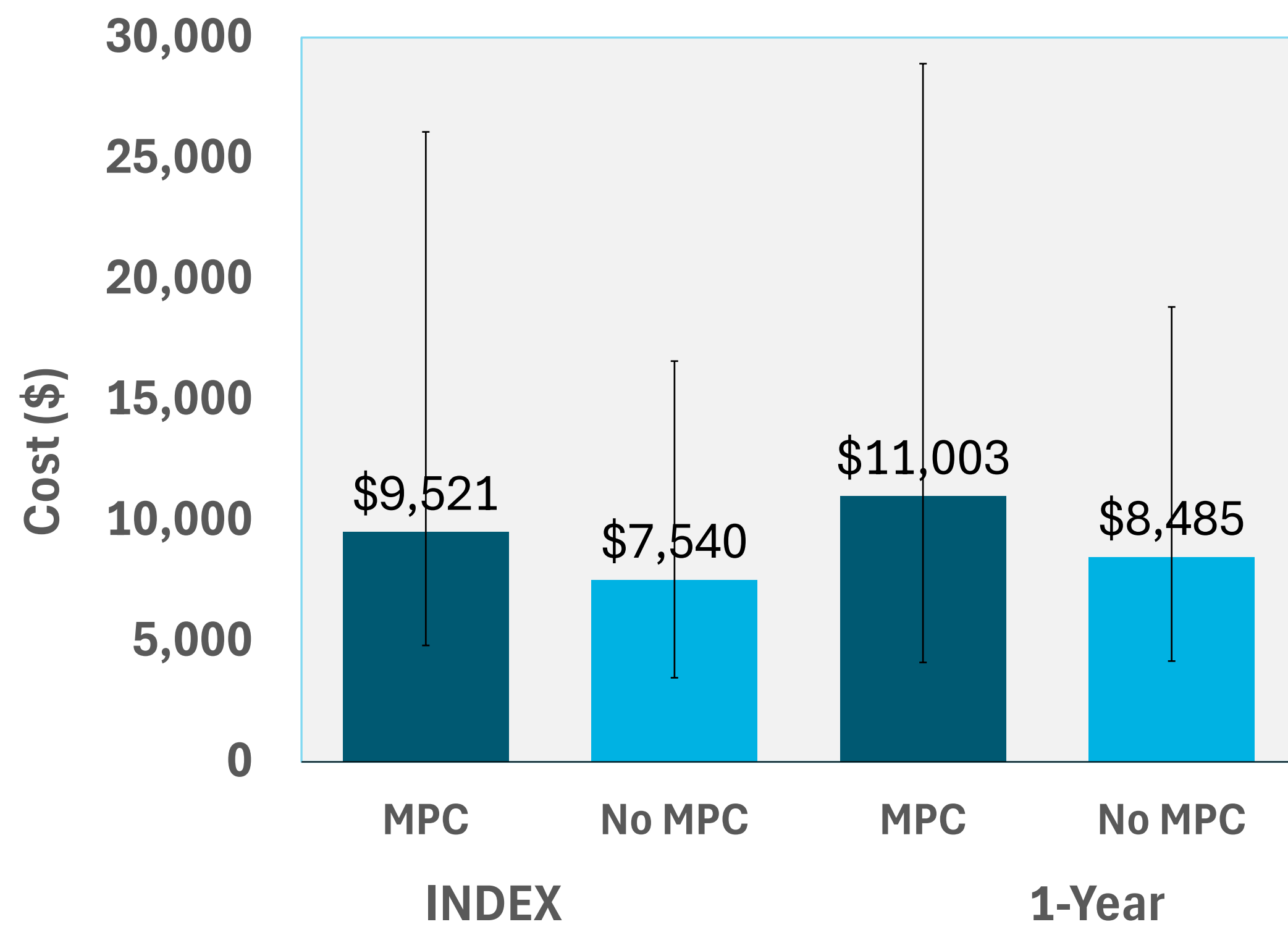
Results

Clinical Outcomes at Index
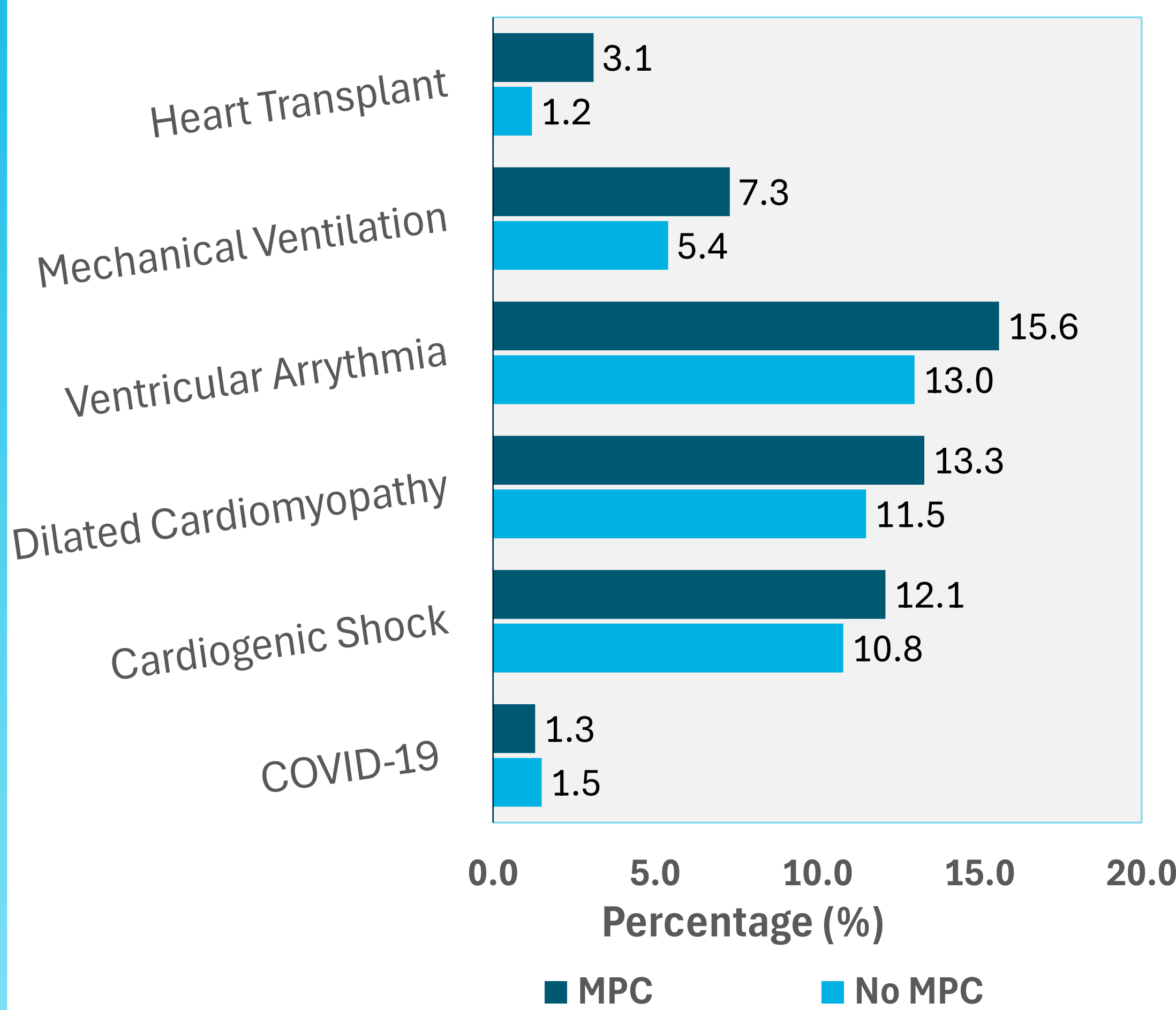
Median Length of Stay (IQR)
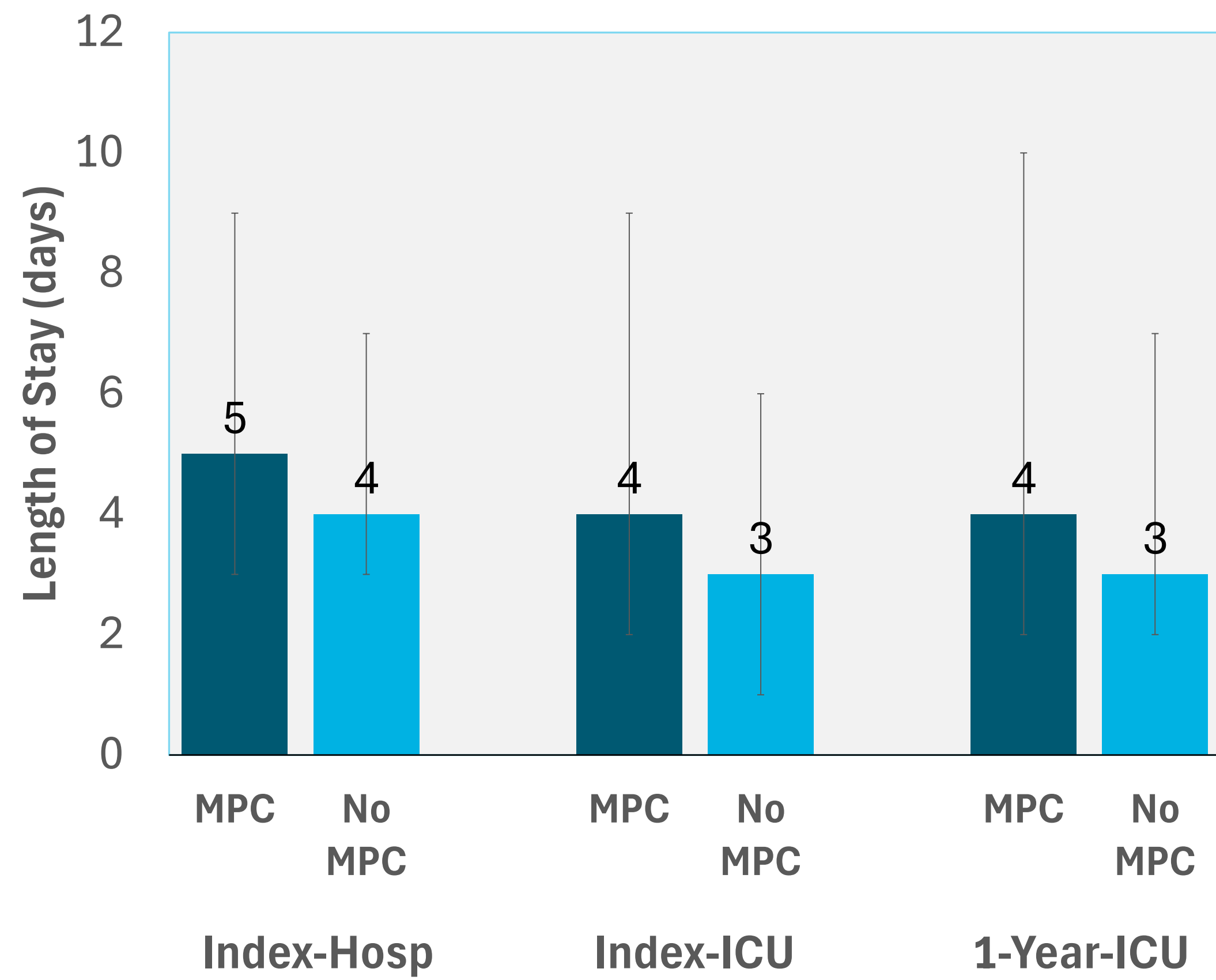
Median ICU COST (IQR)

Within one-year after index discharge (alive, MPC: 2,115 vs. no MPC: 6,374 patients):

- MPC HF (vs. no MPC HF) was significantly associated with increased odds of heart transplantation (OR: 1.98, 95% CI: 1.48-2.63, p<0.001), pericardiocentesis (OR: 3.5, 95% CI: 1.17-11.0, p=0.02), but lower odds of ER visits (OR: 0.90, 95% CI: 0.82-0.99).

- Both cohorts had similar death (3%) and readmission rates (34%), p>0.05.

- MPC HF (vs. no MPC HF) patients had significantly longer ICU length of stay, mean: 9.8 vs. 6.6 days (p<0.001) and higher median ICU cost, $11,003 vs. $8,485 (p<0.001).

- **Strength:** Ability to provide contemporary, real-world, long-term data on clinical course of patients with MPC-related HF.

- **Limitation:** Patients cannot be followed across different treatment settings.

Conclusion

This study highlights that myocarditis/pericarditis was associated with increased long-term morbidity and cost and higher utilization of healthcare services in patients with Heart Failure.

References

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Acknowledgement