3RD PLACE FOR HIGHEST SCORE DURING THE ABSTRACT REVISION PROCESS FOR ORIGINAL RESEARCH (4 WAY TIE!!!)

ORIGINAL RESEARCH

04. National Trends Reveal Hypertension as the Dominant Driver of Cardiovascular Readmissions

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https://www.youtube.com/watch?v=hJIcIJ1w8oM&list=PLhqNq3xJClbafO0Y5bvBcgMmXpgzJxd44&index=5&t=17759s

Introduction: Cardiovascular (CV) hospital readmissions significantly burden the U.S. healthcare system, particularly among patients with heart failure. While previous studies have evaluated all-cause readmission, there is limited understanding of the specific CV diagnoses responsible for short- and long-term hospital returns. This study aimed to identify the leading CV-specific diagnoses contributing to 30-day and 1-year readmissions following an index hospitalization for heart failure to inform targeted interventions and reduce repeat hospitalizations.

Methods: We conducted a retrospective cohort analysis using the Nationwide Readmissions Database (NRD) from 2016 to 2022. A total of 31,886,859 weighted hospitalizations were included. Adult patients (≥18 years) admitted with a primary diagnosis of heart failure were included. The primary outcome was CV-specific readmission within 30 days and 1 year, based on ICD-10 codes for heart failure/pulmonary edema, hypertension and hypertensive crisis, myocardial infarction, arrhythmias/conduction disorders, stroke, pulmonary circulation disorders, and venous thromboembolism. Survey-weighted descriptive statistics, stratified by 30-day and 1-year CV-specific readmission status, identified leading diagnoses. Adjusted models accounted for demographics, comorbidity burden (Charlson Comorbidity Index), and hospital characteristics. Chi-square tests and phi-coefficients (φ) quantified associations, with statistical significance set at $p < 0.001$.

Results: Among patients initially hospitalized for heart failure, hypertension or hypertensive crisis accounted for the majority of CV-specific readmissions at both 30 days (64.8%) and 1 year (65.1%). Recurrent heart failure or pulmonary edema was the second most common cause, followed by arrhythmias, acute myocardial infarction, and stroke. All comparisons versus hypertension or hypertensive crisis were statistically significant ($p < 0.001$; $\varphi = 0.53–0.69$). These diagnostic patterns remained consistent over time.

Conclusion: Hypertension-related complications and recurrent decompensated heart failure are the predominant causes of early and late CV-specific readmissions. These findings emphasize the need for robust post-discharge blood pressure control and longitudinal heart failure management. By identifying high-yield targets for intervention, this study supports the development of more effective care models aimed at reducing the CV readmission burden in this vulnerable population.

Table 1. Thirty-Day and One-Year Readmission Rates Across Cardiovascular Conditions Compared with Hypertension

N = 31,886,859	30-Day Readmission				
	% (N)	SE	$\chi^2(1)$ vs. HTN	p-values vs. HTN	φ-coefficient vs. HTN
Acute Myocardial Infarction	5.90 (1,881,325)	0.024	24,202,174	< 0.001	0.62
Arrhythmias / Conduction	9.24 (2,946,346)	0.030	21,108,975	< 0.001	0.58
Heart Failure / Pulmonary Edema	12.90 (4,113,504)	0.035	18,076,867	< 0.001	0.53
Hypertension / Hypertensive Crisis (HTN)	64.80 (20,662,685)	0.049			
Pulmonary Circulation	0.62 (197,699)	0.008	29,836,652	< 0.001	0.68
Stroke / Transient Ischemic Attack	5.61 (1,788,853)	0.024	24,486,831	< 0.001	0.62
Venous Thromboembolism	0.84 (267,850)	0.009	29,581,492	< 0.001	0.68
	1-Year Readmission				
Acute Myocardial Infarction	6.37 (2,031,193)	0.017	23,946,025	< 0.001	0.61
Arrhythmias / Conduction	8.79 (2,802,855)	0.020	21,700,892	< 0.001	0.58
Heart Failure / Pulmonary Edema	12.10 (3,858,310)	0.023	18,896,344	< 0.001	0.54
Hypertension / Hypertensive Crisis	65.10 (20,758,345)	0.034			
Pulmonary Circulation	0.61 (194,510)	0.006	30,057,395	< 0.001	0.69
Stroke / Transient Ischemic Attack	6.14 (1,957,853)	0.017	24,168,617	< 0.001	0.62
Venous Thromboembolism	0.79 (251,906)	0.006	29,848,196	< 0.001	0.68

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