Healthcare Resource Utilization and Costs of Obstructive Hypertrophic Cardiomyopathy in a US Managed Care Population

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BACKGROUND

- Hypertrophic cardiomyopathy (HCM) is the most common monogenetic heart disease worldwide[1]
- Obstructive hypertrophic cardiomyopathy (oHCM) is present in about 2/3 of patients with HCM[2]
- There are limited economic data describing healthcare resource utilization (HCRU) and cost of care for oHCM
- Total cost of illness for oHCM remains relatively unknown in the United States

OBJECTIVE

- To quantify HCM-related HCRU and costs of care for patients with oHCM in a nationwide managed care population

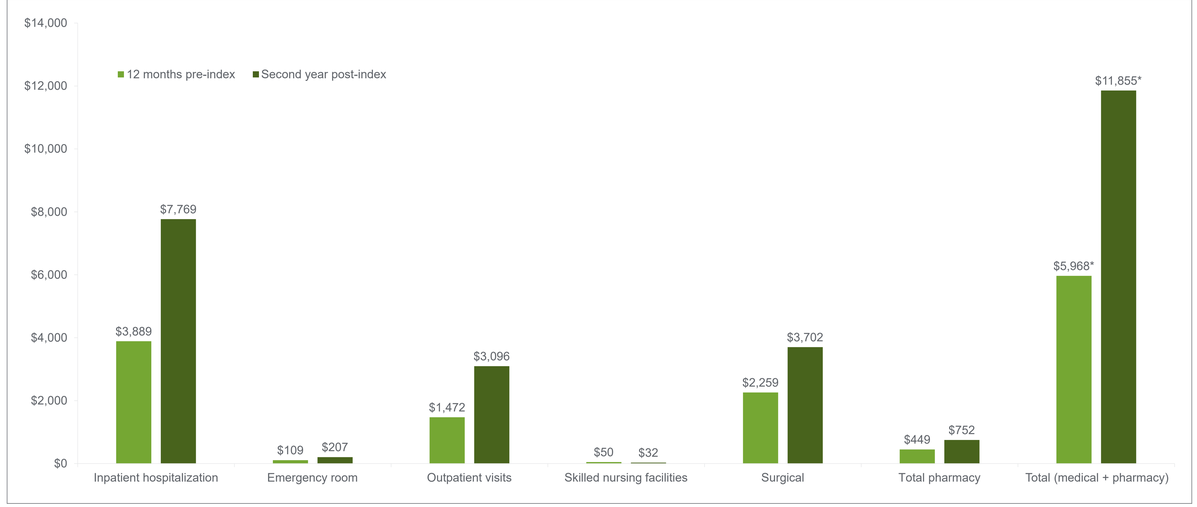
METHODS

- Retrospective study using longitudinal medical and pharmacy claims data representing over 50 million US commercially insured and Medicare Advantage members from the HealthCore Integrated Research Database during 2012–2020
- Adult patients (≥ 18 years) with ≥ 2 oHCM diagnoses were identified. Index date was the first oHCM diagnosis date during January 1, 2013 to January 31, 2018
- HCRU and costs were reported at the 12-month period before index date and over the 2-year post-index period
- Healthcare medical encounters were considered as HCM-related if claims contained *International Classification of Diseases, Ninth Revision/Tenth Revision, Clinical Modification (ICD-9/10-CM)* diagnosis codes for any HCM or atrial and ventricular arrhythmias diagnoses, and ICD procedures
- Costs included inpatient, outpatient, emergency room, and pharmacy (2019 $ US), and were the sum of plan paid, patient paid, and any coordination of benefit
  - Diagnostic procedures included coronary angiography, myocardial imaging (echo-transthoracic echocardiograms and transesophageal echocardiograms, perfusion, computed tomography, magnetic resonance imaging, positron-emission tomography, cardiac stress testing, electrocardiography (12-lead, Holter), and genetic testing
  - Surgical procedures included septal myectomy/ablation, mitral valve surgery, implantable pacemaker, implantable cardioverter-defibrillator or cardiac resynchronization therapy, and heart transplantation
  - HCM-related prescription including beta blockers, verapamil, diltiazem, antiarrhythmic medications, and anticoagulation medications

RESULTS

- 26% of patients with oHCM (N = 1,841; 63 ± 15 years; 52% male) were ≥ 75 years of age, followed by 25% of patients 55–64 years (**Figure 2**)
- HCM-related prescription fills increased from pre-index (69%; mean fills = 5.3) to 2-year follow-up (80%; mean fills = 7.2)
- Mean number of HCM-related outpatient and cardiology visits increased (2.3 vs 5.7; 0.6 vs 1.4, respectively) at second year post-index; 61% of patients had had at least one cardiology visit at 2-year follow-up (**Table**)
- 8% of patients had had at least one HCM-related inpatient hospitalization before index (mean = 0.11 visits, length of stay = 5.4 days), increasing to 16% after 2 years (mean = 0.25 visits, length of stay = 6.5 days) (**Table**)
- Total HCM-related costs increased from $5,968 to $11,855 at 2-year follow-up, largely driven by inpatient hospitalization costs ($3,889 vs $7,769) and surgical costs ($2,259 vs $3,702) (**Figure 1**)
- Pharmacy costs were generally low but also increased over time ($449 vs $752) (**Figure 1**), as did HCM-related outpatient visit costs (**Figure 3**): outpatient visit ($1,472 vs $3,096), cardiologist office visit ($79 vs $171), diagnostic procedure ($628 vs $1,349) (**Figure 1**)

Figure 1. Healthcare costs for oHCM (2019 $ US)



*Total costs (medical + pharmacy) do not include surgical costs

Figure 2. Age categories

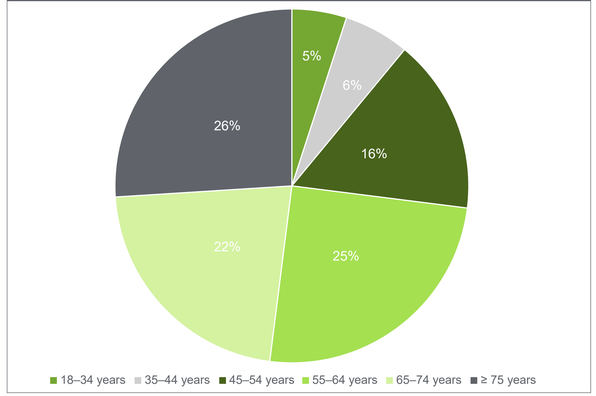


Figure 3. Outpatient visit costs for oHCM

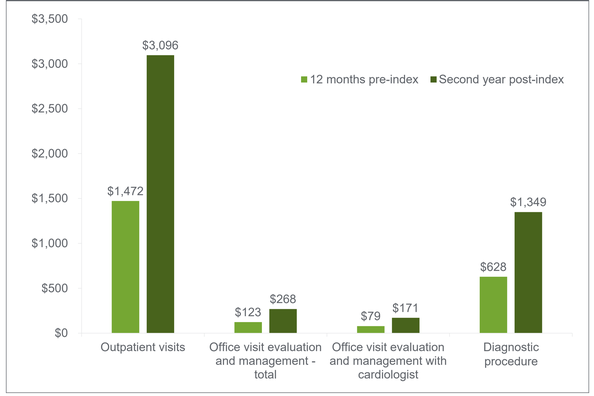


Table. HCM-related HCRU

	oHCM patients (N = 1,841)	
	12 months pre-index	Second year follow-up
Inpatient hospitalization		
≥ 1 visit, n (%)	155 (8)	302 (16)
Number of visits, mean (SD)	0.11 (0.43)	0.25 (0.71)
Length of stay, mean (SD)	5.4 (5.60)	6.5 (7.49)
Emergency room visits		
≥ 1 visit, n (%)	70 (4)	115 (6)
Number of visits, mean (SD)	0.05 (0.26)	0.08 (0.34)
Outpatient visits		
≥ 1 visit, n (%)	689 (37)	1,449 (79)
Number of visits, mean (SD)	2.3 (5.74)	5.7 (13.47)
Physician office visits		
≥ 1 visit, n (%)	578 (31)	1341 (73)
Number of visits, mean (SD)	1.1 (2.72)	2.3 (3.00)
Cardiologist office visits		
≥ 1 visit, n (%)	459 (25)	1,129 (61)
Number of visits, mean (SD)	0.6 (1.81)	1.4 (1.94)
Skilled nursing facilities visits		
≥ 1 visit, n (%)	< 10	14 (0.8)
Prescription drug fills		
Patients with ≥ 1 fill, n (%)	1,262 (69)	1,477 (80)
Number of fills, mean (SD)	5.3 (5.86)	7.2 (6.41)

SD, standard deviation

CONCLUSIONS

- In this nationwide US claims study, there was a trend towards increasing HCM-related costs over a 2-year period after oHCM diagnosis. This was driven mostly by inpatient hospitalization and surgical costs
- Among physician office visits over the follow-up period, over half of visits were with a cardiologist
- Medication use was high, but costs were low, possibly reflecting use of generic multi-indication drugs for oHCM management
- This is the first study to quantify HCM-related HCRU and total cost of care and provides benchmark economic data for management and evaluation for patients with oHCM

References

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2. Maron et al. (2016). *Am J Cardiol*. 117(10):1651–1654.

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