Assessing Differences in Clinical Burden Across Payers for Non-Obstructive Hypertrophic Cardiomyopathy

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INTRODUCTION

- There is no evidence on the association of payer coverage and cardiovascular (CV) outcomes in patients with non-obstructive hypertrophic cardiomyopathy (nHCM).
- This study explored these associations using Optum claims and electronic medical record data.

METHODS

Study Design

- Retrospective cohort study of adult patients with nHCM in Optum's Market Clarity database from January 1, 2013, through December 31, 2021 (Index date = first nHCM diagnosis).
- Market clarity includes administrative claims and electronic medical record data.

Inclusion criteria

- ≥18 years of age as of the index date.
- ≥2 medical claims with a diagnosis code for nHCM (ICD-9: 425.11 or 425.18; ICD-10: I42.2) in any position on different dates of service ≥30 days apart during the patient identification period.
- Baseline continuous enrollment (CE) with medical and pharmacy benefits for 6 months prior to the index date.
- Follow-up CE with medical and pharmacy benefits for ≥6 months after (and including) the index date.

Exclusion criteria

- Medical claim of obstructive HCM (ICD-9: 425.1; ICD-10: I42.1).
- Evidence of septal reduction therapy (alcohol septal ablation and septal myectomy) during the study period and pharmacotherapy during the baseline period.
- Evidence of Fabry disease or amyloidosis during the study period.
- Missing age, gender, and unknown or "other" geographic region.

Study Outcomes

- CV outcomes, including atrial fibrillation (AF), stroke, heart failure (HF), ventricular tachycardia (VT), ventricular fibrillation (VF), sudden cardiac arrest (SCA), CV hospitalization (CVH), and CV readmission (CVHR), and all-cause mortality.
- CV outcomes were assessed over a variable follow-up period from index date to death, health plan disenrollment, or study end.

Statistical Methods

- Event rates per 100,000 person-years (PY) to estimate risk of CV outcomes.
- Kaplan–Meier analysis to evaluate risk of mortality.
- Outcomes were analyzed by payer type: Commercial (reference group), Medicare, Medicaid, Other, and Unknown/Missing.
- All tests were 2-sided α=0.05.

RESULTS

- Among 9842 patients with nHCM (mean age: 60.6 ± 16.2 years; 46.2% were female; 74.2% were non-Hispanic White), 50.0% had Commercial, 28.4% had Medicare, 7.6% had Medicaid, 13.6% had Unknown/Missing, and 0.4% had Other type of insurance (**Table 1**).
- Compared with patients with Commercial insurance (**Table 2**), patients with:
  - Medicare had significantly greater rates of AF (relative risk [RR] 1.79), stroke (RR 2.42), HF (RR 2.06), CVH (RR 2.28), and CVHR (RR 1.47; all *P*<0.001), but a lower rate of VT (RR 0.84; *P*=0.003) and no difference in rate of SCA.
  - Medicaid had greater rates of stroke (RR 1.95; *P*<0.001), HF (RR 1.61; *P*<0.001), SCA (RR 1.89; *P*=0.002), CVH (RR 1.57; *P*<0.001), and CVHR (RR 1.48; *P*<0.001).
  - Unknown/Missing insurance had greater rates of AF (RR 1.23; *P*<0.001), stroke (RR 1.36; *P*<0.001), CVH (RR 1.20; *P*=0.004), and CVHR (RR 1.19; *P*=0.047).
  - Other insurance had a greater rate of HF (RR 2.16; *P*=0.004).
- All-cause mortality was highest among patients with Medicare (14.1%; *P*<0.001), followed by patients with Other (9.1%), Medicaid (6.4%), Unknown/Missing (5.2%), and Commercial (4.0%) insurance type (**Figure 1**).

Limitations

- Real-world data in this study utilized ICD-9 and ICD-10 coding for disease identification and study outcomes and may be subject to inconsistencies without patient-level genetic and anatomical confirmation.
- Due to the descriptive nature of this study, these results only include unadjusted analyses.

Table 1: Baseline patient demographics and characteristics

Patient characteristic	Commercial n=4922	Medicare n=2790	Medicaid n=754	Other n=36	Unknown/Missing n=1340
Age (continuous), mean ± SD, y	55.9 ± 15.3	73.4 ± 9.3	49.2 ± 15.5	61.3 ± 16.4	57.8 ± 15.4
Age group, y					
18–39	729 (14.8)	28 (1.0)	222 (29.4)	4 (11.1)	166 (12.4)
40–54	1305 (26.5)	86 (3.1)	234 (31.0)	3 (8.3)	330 (24.6)
55–64	1576 (32.0)	190 (6.8)	194 (25.7)	13 (36.1)	407 (30.4)
65–74	743 (15.1)	1125 (40.3)	66 (8.8)	9 (25.0)	233 (17.4)
75+	569 (11.6)	1361 (48.8)	38 (5.0)	7 (19.4)	204 (15.2)
Female	2012 (40.9)	1607 (57.6)	364 (48.3)	19 (52.8)	543 (40.5)
US region					
Northeast	1546 (31.4)	605 (21.7)	181 (24.0)	12 (33.3)	419 (31.3)
Midwest	1950 (39.6)	1313 (47.1)	375 (49.7)	10 (27.8)	504 (37.6)
South	1090 (22.2)	629 (22.5)	139 (18.4)	12 (33.3)	289 (21.6)
West	336 (6.8)	243 (8.7)	59 (7.8)	2 (5.6)	128 (9.6)
Race/ethnicity					
White, non-Hispanic	3773 (76.7)	2089 (74.9)	351 (46.6)	19 (52.8)	1074 (80.2)
Black/African American	851 (17.3)	528 (18.9)	318 (42.2)	12 (33.3)	207 (15.5)
Asian, non-Hispanic	110 (2.2)	39 (1.4)	27 (3.6)	1 (2.8)	27 (2.0)
Hispanic	188 (3.8)	134 (4.8)	58 (7.7)	4 (11.1)	32 (2.4)
CCI score (continuous), mean ± SD	1.1 ± 1.6	1.9 ± 2	1.7 ± 2.1	1.4 ± 1.7	1.1 ± 1.6
Comorbidities					
Coronary artery disease	962 (19.5)	861 (30.9)	180 (23.9)	12 (33.3)	254 (19.0)
Pulmonary hypertension	142 (2.9)	170 (6.1)	31 (4.1)	2 (5.6)	36 (2.7)
Hyperthyroidism	28 (0.6)	29 (1.0)	7 (0.9)	0 (0.0)	9 (0.7)
Hypothyroidism	463 (9.4)	507 (18.2)	68 (9.0)	3 (8.3)	129 (9.6)
Bradyarrhythmia	242 (4.9)	219 (7.9)	59 (7.8)	0 (0.0)	75 (5.6)
HF	637 (12.9)	663 (23.8)	177 (23.5)	9 (25.0)	194 (14.5)
Chronic kidney disease	387 (7.9)	580 (20.8)	90 (11.9)	6 (16.7)	118 (8.8)
AF	544 (11.1)	578 (20.7)	68 (9.0)	2 (5.6)	217 (16.2)
Hypertension	2318 (47.1)	1945 (69.7)	409 (54.2)	23 (63.9)	643 (48.0)
Obstructive sleep apnea	529 (10.8)	344 (12.3)	87 (11.5)	5 (13.9)	143 (10.7)
Diabetes type 2	884 (18)	850 (30.5)	211 (28.0)	11 (30.6)	266 (19.9)
Obesity	809 (16.4)	481 (17.2)	199 (26.4)	6 (16.7)	163 (12.2)
Myocardial fibrosis	108 (2.2)	103 (3.7)	40 (5.3)	0 (0.0)	10 (0.8)

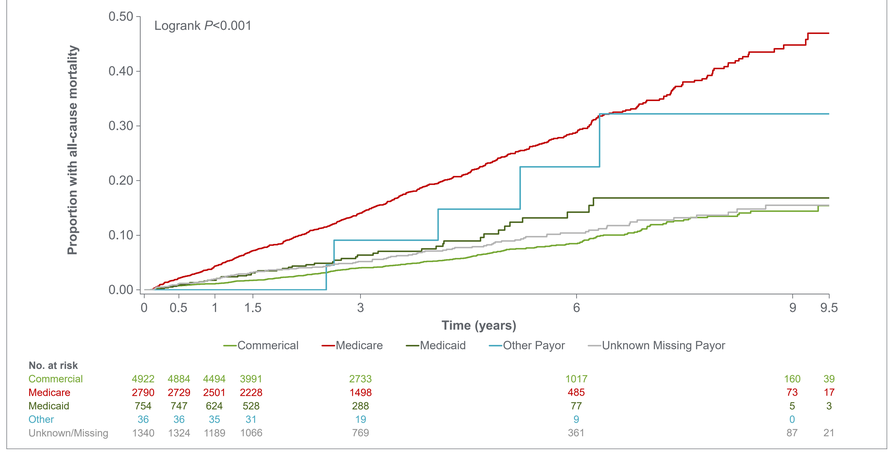
All data are n (%) unless otherwise indicated.
AF, atrial fibrillation; CCI, Charlson Comorbidity Index; HF, heart failure.

Table 2: Rate of CV outcomes in patients with nHCM, by payer type

CV outcome	Commercial n=4922	Medicare n=2790			Medicaid n=754			Other n=36			Unknown/Missing n=1340		
	Rate per 100,000 PY	Rate per 100,000 PY	RR[a]	*P* value[b]	Rate per 100,000 PY	RR[a]	*P* value[b]	Rate per 100,000 PY	RR[a]	*P* value[b]	Rate per 100,000 PY	RR[a]	*P* value[b]
AF	9,429.83	16,906.06	1.79	<0.001	8,551.96	0.91	0.245	9,217.06	0.98	0.983	11,587.02	1.23	<0.001
Stroke	3,244.41	7,856.80	2.42	<0.001	6,337.23	1.95	<0.001	3,921.65	1.21	0.636	4,405.16	1.36	<0.001
HF	12,694.55	26,199.39	2.06	<0.001	20,446.51	1.61	<0.001	27,463.45	2.16	0.004	13,251.06	1.04	0.392
VT	32,077.61	27,040.93	0.84	0.003	34,476.22	1.07	0.489	21,301.78	0.66	0.277	34,010.45	1.06	0.407
VF	2,165.00	1,840.28	0.85	0.339	4,131.01	1.91	0.015	1,807.23	0.83	0.964	1,567.23	0.72	0.140
SCA	845.46	1,043.59	1.23	0.097	1,594.58	1.89	0.002	725.00	0.86	0.986	633.51	0.75	0.117
CVH	6,330.61	14,454.25	2.28	<0.001	9,910.50	1.57	<0.001	6,936.75	1.10	0.758	7,598.01	1.20	0.004
CVHR[c]	18,765.52	27,617.25	1.47	<0.001	27,792.93	1.48	<0.001	28,508.08	1.52	0.354	22,255.68	1.19	0.047

[a] Reference group for RR was patients with Commercial insurance (n=4922).
[b] All tests were 2-sided α=0.05.
[c] Among patients with CVH.
AF, atrial fibrillation; CV, cardiovascular; CVH, CV hospitalization; CVHR, CV readmission; HF, heart failure; nHCM, non-obstructive hypertrophic cardiomyopathy; PY, person-years; RR, relative risk; SCA, sudden cardiac arrest; VF, ventricular fibrillation; VT, ventricular tachycardia.

Figure 1: All-cause mortality by payer type in patients with nHCM



nHCM, non-obstructive hypertrophic cardiomyopathy.

CONCLUSIONS

- Insurance type significantly influences CV outcomes and all-cause mortality in patients with nHCM; patients with Medicare and Medicaid experienced higher risks as compared with those with commercial insurance.
- These findings underscore the importance of addressing disparities in care to improve outcomes for patients with nHCM across different payer groups.

Disclosures

MB, PG, SS: Employees of and own stock in Cytokinetics, Incorporated. **KB, QA, AB:** Employees of Optum/UHG, who were consultants for Cytokinetics, Incorporated, for this study. **QA, AB:** Shareholders of UHG Stock. **NR:** Consultant/speaking honoraria from Roche Diagnostics and Zoll, Inc., and is supported by the National Heart, Lung, and Blood Institute of the National Institutes of Health under Award Number K23HL166961 (the content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health). **AO:** Consultant/advisor fees from Cytokinetics, Incorporated, Bristol Myers Squibb/MyoKardia, and Pfizer.

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