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CHARACTERIZING HEALTHCARE COSTS IN MEDICARE BENEFICIARIES WITH A NEW DIAGNOSIS OF METABOLIC DYSFUNCTION-ASSOCIATED STEATOHEPATITIS (MASH) WITH COMPENSATED CIRRHOSIS

N. ATREJA[1], F. LOBO[1], Y. KIM[1], D. NUNAG[2], A. EPSTEIN[2], Z. MARCUM[2]

1. Madrigal Pharmaceuticals, West Conshohocken, PA
2. Medicus Economics, Milton, MA

Madrigal

INTRODUCTION

- Metabolic dysfunction-associated steatohepatitis (MASH), a progressive subtype of metabolic dysfunction-associated steatotic liver disease (MASLD), is projected to impact over 115 million people globally.[1-3]
- Patients with MASH may progress to more advanced liver disease states, including compensated cirrhosis (CC).[4-5]
- Current studies on the economic burden of MASH with CC demonstrate a high economic burden but are limited by focusing on short-term (annual) costs and only report average costs, without examining heterogeneity across the cost distribution.

AIM

- To examine total healthcare spending in the 3 years after a new diagnosis of MASH and compensated cirrhosis and identify characteristics associated with higher spending.

METHODS

- We conducted a retrospective cohort study using the 100% Medicare fee-for-service data, sampling beneficiaries aged ≥65, continuously enrolled for any 4-year period between 01/01/2016–12/31/2023 (1-year baseline, 3-year follow-up).
- Compensated cirrhosis was defined by ≥1 inpatient or ≥2 outpatient claims (any position) for cirrhosis (ICD-10-CM: K74.4–K74.6, I85.00, I85.10, I85.9, I98.2) and MASH (K75.81), occurring ≤90 days apart in either order.
- Mean total healthcare costs per beneficiary were calculated over the 3-year follow-up and inflation-adjusted to 2023 dollars.
- Beneficiaries were stratified into quartiles (Q) based on total costs (Q1, lowest; Q4, highest).
- Baseline characteristics were compared using x^2 (categorical) and ANOVA (continuous) tests.

RESULTS

- The sample consisted of 3,726 Medicare beneficiaries with a new diagnosis of compensated cirrhosis.
- Beneficiaries had a mean age of 72.1 years, 66.1% were female, and 11.3% were dual eligible for Medicare and Medicaid (**Table 1**).

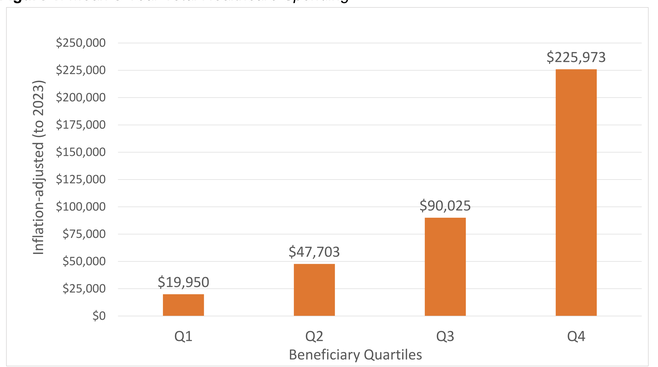
***Table 1**. Baseline Characteristics*

Baseline characteristics by 3-year total spending quartile for MASH with Compensated Cirrhosis[1]	Q1 n=932 (25%)	Q2 n=931 (25%)	Q3 n=932 (25%)	Q4 n=931 (25%)	Total n=3,726 (100%)	*P*-value
Demographics & SES	-	-	-	-	-	-
Age, mean (sd)	71.4 (4.4)	71.7 (4.8)	72.3 (5.2)	72.8 (5.4)	72.1 (5.0)	<0.001
Female sex, n (%)	582 (62.4)	621 (66.7)	614 (65.9)	647 (69.5)	2,464 (66.1)	0.015
Race and ethnicity, n (%)[2]	-	-	-	-	-	0.361
Non-Hispanic White	795 (85.3)	812 (87.2)	820 (88.0)	796 (85.5)	3,223 (86.5)	-
Black/African-American	14 (1.5)	11 (1.2)	15 (1.6)	21 (2.3)	61 (1.6)	-
Asian/Pacific Islander	28 (3.0)	17 (1.8)	13 (1.4)	19 (2.0)	77 (2.1)	-
Hispanic	65 (7.0)	57 (6.1)	53 (5.7)	56 (6.0)	231 (6.2)	-
Index year, n (%)	-	-	-	-	-	0.220
2017	207 (22.2)	198 (21.3)	231 (24.8)	251 (27.0)	887 (23.8)	-
2018	243 (26.1)	246 (26.4)	227 (24.4)	231 (24.8)	947 (25.4)	-
2019	248 (26.6)	260 (27.9)	241 (25.9)	224 (24.1)	973 (26.1)	-
2020	234 (25.1)	227 (24.4)	233 (25.0)	225 (24.2)	919 (24.7)	-
Medicare-Medicaid dual eligibility, n (%)	58 (6.2)	72 (7.7)	101 (10.8)	189 (20.3)	420 (11.3)	<0.001
Healthcare resource use	-	-	-	-	-	-
Count rx drugs, mean (sd)	8.7 (4.4)	11.4 (5.1)	13.6 (5.8)	16.2 (7.4)	12.5 (6.4)	<0.001
GLP-1 prevalence, n (%)	15 (1.6)	56 (6.0)	112 (12.0)	103 (11.1)	286 (7.7)	<0.001
Any inpatient hospitalization, n (%)	94 (10.1)	146 (15.7)	217 (23.3)	278 (29.9)	735 (19.7)	<0.001
Clinical characteristics	-	-	-	-	-	-
Elixhauser Comorbidity Index, mean (sd)	4.7 (2.3)	5.8 (2.6)	6.8 (3.0)	7.8 (3.5)	6.3 (3.1)	<0.001
Diabetes Complications Severity Index, mean (sd)	1.2 (1.4)	1.8 (1.7)	2.3 (1.8)	2.9 (2.1)	2.0 (1.9)	<0.001

[1] Sample limited to beneficiaries with 36 months of follow up
[2] Patients whose race/ethnicity was categorized as other, unknown, or missing were excluded from the table but included in the overall study population
[3] Dual eligibles qualify for both Medicare (likely due to age or disability) and Medicaid (based on low income or limited assets)
Abbreviations: GLP, glucagon-like peptide; Q, quartile; rx, prescription; sd, standard deviation, SES, socioeconomic status

- Mean (standard deviation [SD]) total 3-year healthcare costs were $95,891 ($108,188) and were highly skewed (mean [SD], Q1: $19,950 [$7,658]; Q2: $47,703 [$9,118]; Q3: $90,025 [$16,707]; Q4: $225,973 [$146,228]; **Figure 1**).
- Beneficiaries in the highest-spending quartile (Q4) were responsible for 59% of total spending, while those in the lowest-spending quartile (Q1) contributed 5%.
- Beneficiaries in the highest-spending quartile (Q4) were more likely to be dual eligible for Medicare/Medicaid coverage compared to those in the lower-spending quartiles (Q4: 20.3% vs Q1: 6.2%; *P*<0.001; **Table 1**).
- Compared to those in the lower-spending quartiles (Q1–Q3), beneficiaries in the highest-spending quartile (Q4) also had more unique medications (Q4: 16.2 vs Q1: 8.7), more GLP-1 agonist use (Q4: 11.1% vs. Q1: 1.6%), greater prevalence of hospitalization (Q4: 29.9% vs. Q1: 10.1%), and greater comorbidity, all measured in the baseline period (*P*<0.001 for all; **Table 1**).

***Figure 1**. Mean 3-Year Total Healthcare Spending*



CONCLUSIONS

- In Medicare fee-for-service, total healthcare costs in the 3 years after a new diagnosis of MASH with compensated cirrhosis were high overall and highly concentrated, with a quarter of beneficiaries accounting for 59% of total spending.
- Baseline characteristics, including dual-eligibility status, healthcare resource use, and comorbidity, differed across cost quartiles.
- Targeting early identification and treatment for compensated cirrhosis in the costliest patients may translate into meaningful savings for payers.

LIMITATIONS

- Claims-based measurement of cirrhosis (for inclusion) likely resulted in some misclassification
- Continuous enrollment requirement likely resulted in some selection bias
- Generalizability limited only to Medicare fee-for-service beneficiaries meeting the selection criteria

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- Medicus previously developed an umbrella study protocol that covers studies related to patterns of care and costs for chronic diseases in Medicare. The WCG Institutional Review Board (IRB) determined that this protocol was exempt from IRB oversight and approved the request for a waiver of HIPAA authorization.

CONTACT INFORMATION