

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
- Current studies on the economic burden of non-cirrhotic MASH demonstrate a high economic burden, but are limited by reporting average costs, without examining variation across the cost distribution, and have focused on short-term (annual) costs.

AIM

- To examine total healthcare spending in the 3 years after a new diagnosis of non-cirrhotic MASH 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).
- MASH (ICD-10-CM: K75.81) was identified by ≥1 inpatient or ≥2 outpatient claims (any position); those with cirrhosis codes 360 days before or 90 days after the index date were excluded.
- 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 across quartiles using χ^2 tests for categorical variables and ANOVA tests for continuous variables.

CHARACTERIZING HEALTHCARE COSTS IN MEDICARE BENEFICIARIES WITH A NEW DIAGNOSIS OF NON-CIRRHOTIC METABOLIC DYSFUNCTION-ASSOCIATED STEATOHEPATITIS

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RESULTS

- The sample consisted of 26,927 Medicare beneficiaries with a new diagnosis of non-cirrhotic MASH.
- Beneficiaries had a mean age of 71.8 years, 63.9% were female, and 10.2% were dual eligible for Medicare and Medicaid (**Table 1**).

Baseline characteristics by 3-year total spending quartile for MASH ¹						
	Q1 n=6,732 (25%)	Q2 n=6,732 (25%)	Q3 n=6,732 (25%)	Q4 n=6,731 (25%)	Total n=26,927 (100%)	P-value
Demographics & SES	-	-	-	-	-	-
Age, mean (sd)	71.1 (4.5)	71.6 (4.7)	71.9 (5.0)	72.4 (5.2)	71.8 (4.9)	<0.001
Female sex, n (%)	4,233 (62.9)	4,417 (65.6)	4,342 (64.5)	4,224 (62.8)	17,216 (63.9)	0.001
Race and ethnicity, n (%) ²	-	-	-	-	-	<0.001
Non-Hispanic White	5,558 (82.6)	5,740 (85.3)	5,745 (85.3)	5,634 (83.7)	22,677 (84.2)	-
Black/African-American	167 (2.5)	190 (2.8)	198 (2.9)	230 (3.4)	785 (2.9)	-
Asian/Pacific Islander	308 (4.6)	226 (3.4)	179 (2.7)	202 (3.0)	915 (3.4)	-
Hispanic	414 (6.1)	367 (5.5)	383 (5.7)	430 (6.4)	1,594 (5.9)	-
Index year, n (%)	-	-	-	-	-	0.002
2017	1,655 (24.6)	1,803 (26.8)	1,687 (25.1)	1,712 (25.4)	6,857 (25.5)	-
2018	1,773 (26.3)	1,697 (25.2)	1,740 (25.8)	1,593 (23.7)	6,803 (25.3)	-
2019	1,759 (26.1)	1,740 (25.8)	1,721 (25.6)	1,792 (26.6)	7,012 (26.0)	-
2020	1,545 (23.0)	1,492 (22.2)	1,584 (23.5)	1,634 (24.3)	6,255 (23.2)	-
Medicare-Medicaid dual eligibility, n (%) ³	442 (6.6)	528 (7.8)	687 (10.2)	1,096 (16.3)	2,753 (10.2)	<0.001
Healthcare resource use	-	-	-	-	-	-
Count rx drugs, mean (sd)	6.6 (3.8)	9.4 (4.6)	11.7 (5.4)	14.8 (7.1)	10.6 (6.1)	<0.001
GLP-1 prevalence, n (%)	32 (0.5)	126 (1.9)	424 (6.3)	753 (11.2)	1,335 (5.0)	<0.001
Any inpatient hospitalization, n (%)	344 (5.1)	549 (8.2)	892 (13.3)	1,577 (23.4)	3,362 (12.5)	<0.001
Clinical characteristics	-	-	-	-	-	-
Elixhauser Comorbidity Index, mean (sd)	3.2 (2.0)	4.3 (2.3)	5.2 (2.6)	6.6 (3.2)	4.8 (2.9)	<0.001
Diabetes Complications	-	-	-	-	-	-
Severity Index, mean (sd)	0.8 (1.2)	1.3 (1.4)	1.7 (1.7)	2.5 (2.0)	1.6 (1.7)	<0.001

¹ Sample limited to beneficiaries with 36 months of continuous enrollment during 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

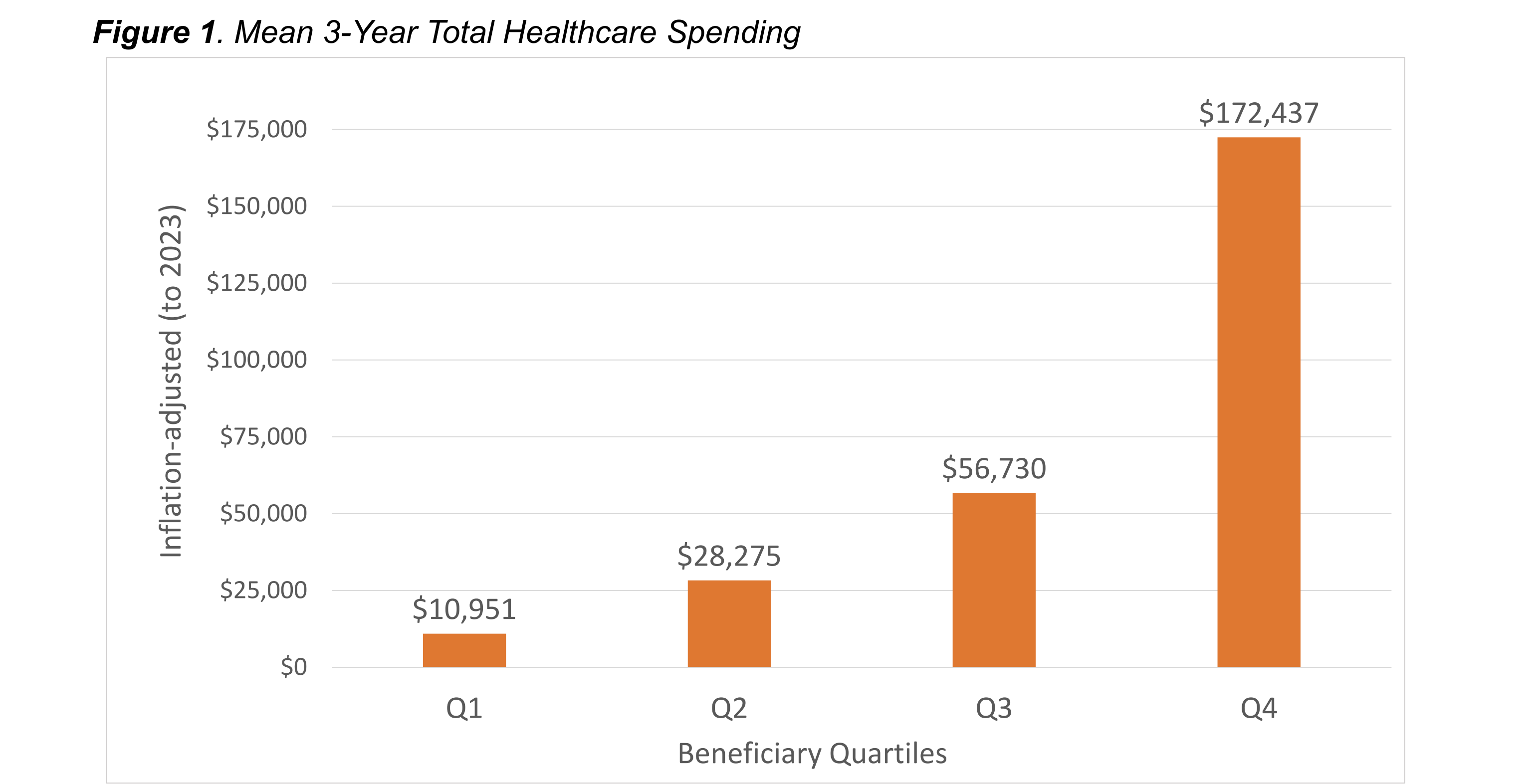
LIMITATIONS

- Claims-based measurement of cirrhosis (for exclusion) 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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- Mean (standard deviation [SD]) total 3-year healthcare costs were \$67,094 (\$88,775) and were highly skewed (mean [SD], Q1: \$10,951 [\$4,410]; Q2: \$28,275 [\$5,891]; Q3: \$56,730 [\$11,559]; Q4: \$172,437 [\$124,406]; **Figure 1**).
- Beneficiaries in the highest-spending quartile (Q4) were responsible for 64% of total spending, while those in the lowest-spending quartile (Q1) contributed 4%.
- 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: 16.3% vs Q1: 6.6%; $P<0.001$; **Table 1**).
- Compared to those in the lower-spending quartiles (Q1–Q3), beneficiaries in the highest-spending quartile (Q4) also had more medications (Q4: 14.8 vs Q1: 6.6), more GLP-1 agonist use (Q4: 11.2% vs. Q1: 0.5%), greater prevalence of hospitalization (Q4: 23.4% vs. Q1: 5.1%), and greater comorbidity, all measured in the baseline period ($P<0.001$ for all; **Table 1**).



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- NA, FL, and YK are all employees of Madrigal Pharmaceuticals.
- DN, AE, and ZM are all employees of Medicus Economics, LLC.
- The authors thank Avery Mohan of Medicus Economics, LLC for assistance drafting this poster.
- 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.

CONCLUSIONS

- In Medicare fee-for-service, total healthcare costs in the 3 years after a new diagnosis of non-cirrhotic MASH were high overall and highly concentrated, with a quarter of beneficiaries accounting for 64% of total spending.
- Baseline characteristics, including dual-eligibility status, healthcare resource use, and comorbidity, differed across cost quartiles.
- Early identification and treatment of MASH in the highest-cost patients stands to generate substantial cost savings for healthcare payers.

CONTACT INFORMATION

