

Burden of Liver Cancer Among Medicaid-Insured Patients: A Retrospective Analysis of a National All-Payer Claims Database

American College of Gastroenterology (ACG) October 20-25, 2023

Jordan J. Karlitz,¹ Yihang Liu,² Parul Gupta,² Gideon Aweh,² Karen C. Chung¹ | ¹GRAIL, LLC, Menlo Park, CA, USA; ²STATinMED, LLC, Dallas, TX, USA

INTRODUCTION

- The Medicaid program is the largest entitlement program in the United States, providing health insurance to low-income populations
- Research indicates that Medicaid enrollees with cancer are more likely to be diagnosed at an advanced stage, less likely to receive cancer-directed treatments, and experience worse survival compared to individuals with private health insurance¹
- Although liver cancer is the third-leading cause of cancer-related deaths, there is limited real-world assessment of liver cancer burden in the US Medicaid population

OBJECTIVE

- Provide an update focusing on liver cancer incidence and mortality using nationally representative Medicaid data to support population health management and resource planning

METHODS

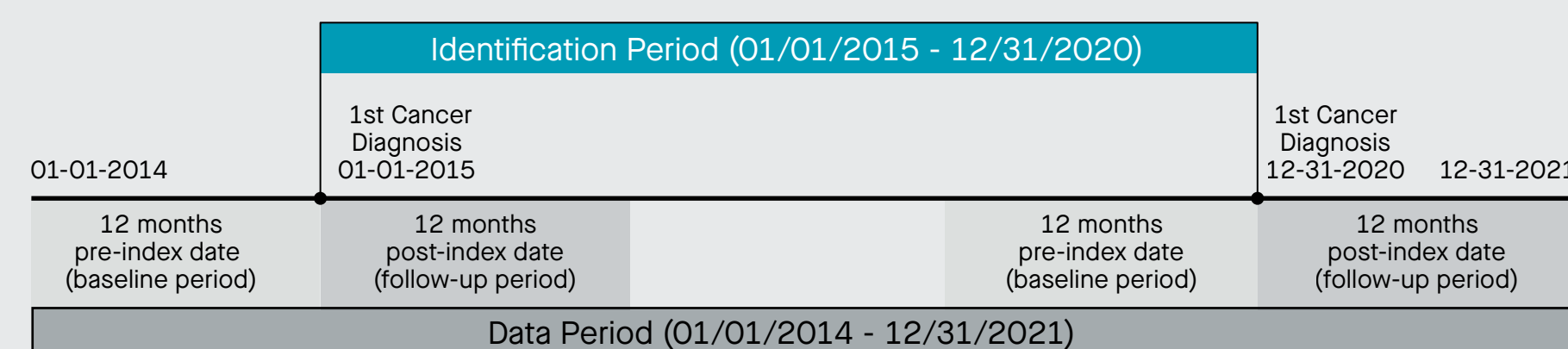
Study Design

- This retrospective observational study used the STATinMED RWD Insights all-payer medical and pharmacy claims database, which provides insight into approximately 80% of the US healthcare system²
- Medicaid-insured patients ≥18 years old with ≥1 inpatient claim, or ≥2 outpatient claims ≥30 days apart, with International Classification of Diseases, 9th/10th Revision, Clinical Modification (ICD-9/10 CM) cancer diagnosis codes were identified from 01/01/2015 – 12/31/2020 (Figure 1)
- ICD-9/10 CM cancer diagnosis codes for incident liver cancer diagnosis were included in the analysis
- The first date of cancer diagnosis was defined as the index date
- All patients had medical benefits 12 months pre-index date (baseline) and post-index date (follow-up)

Statistical Analysis

- Incidence, baseline patient characteristics, and 12-month mortality during the follow-up period were assessed
- All incidence rates were calculated by dividing the appropriate RWD Insights Medicaid population and were stratified by metastatic status, age group, and sex
- Descriptive analyses were conducted for the eligible patient population
 - Means and standard deviations were computed for continuous variables; frequency and percentages were generated for categorical variables
 - Differences between groups were compared using t-test for continuous variables and Chi-square test for categorical variables
- All analyses were conducted with SAS version 9.4 software (SAS Institute, Cary, NC); all statistical tests were two-sided, with $p < 0.05$

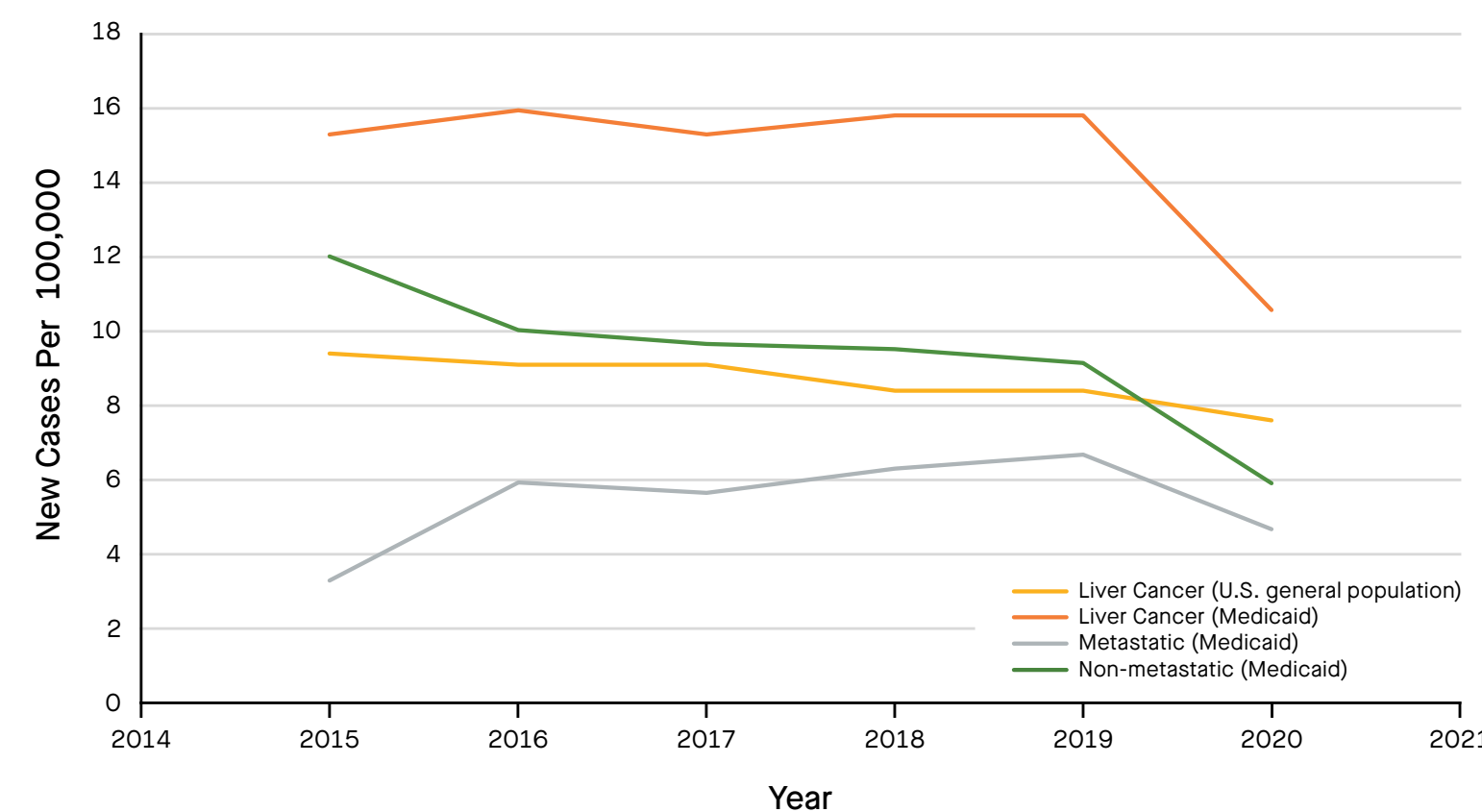
Figure 1. Study Design



KEY RESULTS: MEDICAID-INSURED PATIENTS HAD A HEIGHTENED BURDEN OF LIVER CANCER COMPARED TO NATIONAL ESTIMATES

- The annual incidence of liver cancer was relatively stable from 2015-2019 at 16 per 100,000 (Figure 2), in contrast to 9 per 100,000 in the general population, based on the US Surveillance, Epidemiology, and End Results (SEER) Program data³
- In 2020, the liver cancer incidence rate declined significantly to 11 per 100,000, which could be attributed to restricted access to healthcare due to COVID-19 (Figure 2)

Figure 2. Incidence of Liver Cancer by Year in the US Medicaid Population (2015–2020)



- Liver cancer incidence increased significantly starting at age 50 (Figure 3)
- Another increase in incidence was observed at age 65 (Figure 3), potentially due to increased detection of pre-clinical cancers as patients may have opted to participate in cancer screening following Medicare coverage

Figure 3. Incidence of Liver Cancer by Sex and Age in the US Medicaid Population (2015–2020)

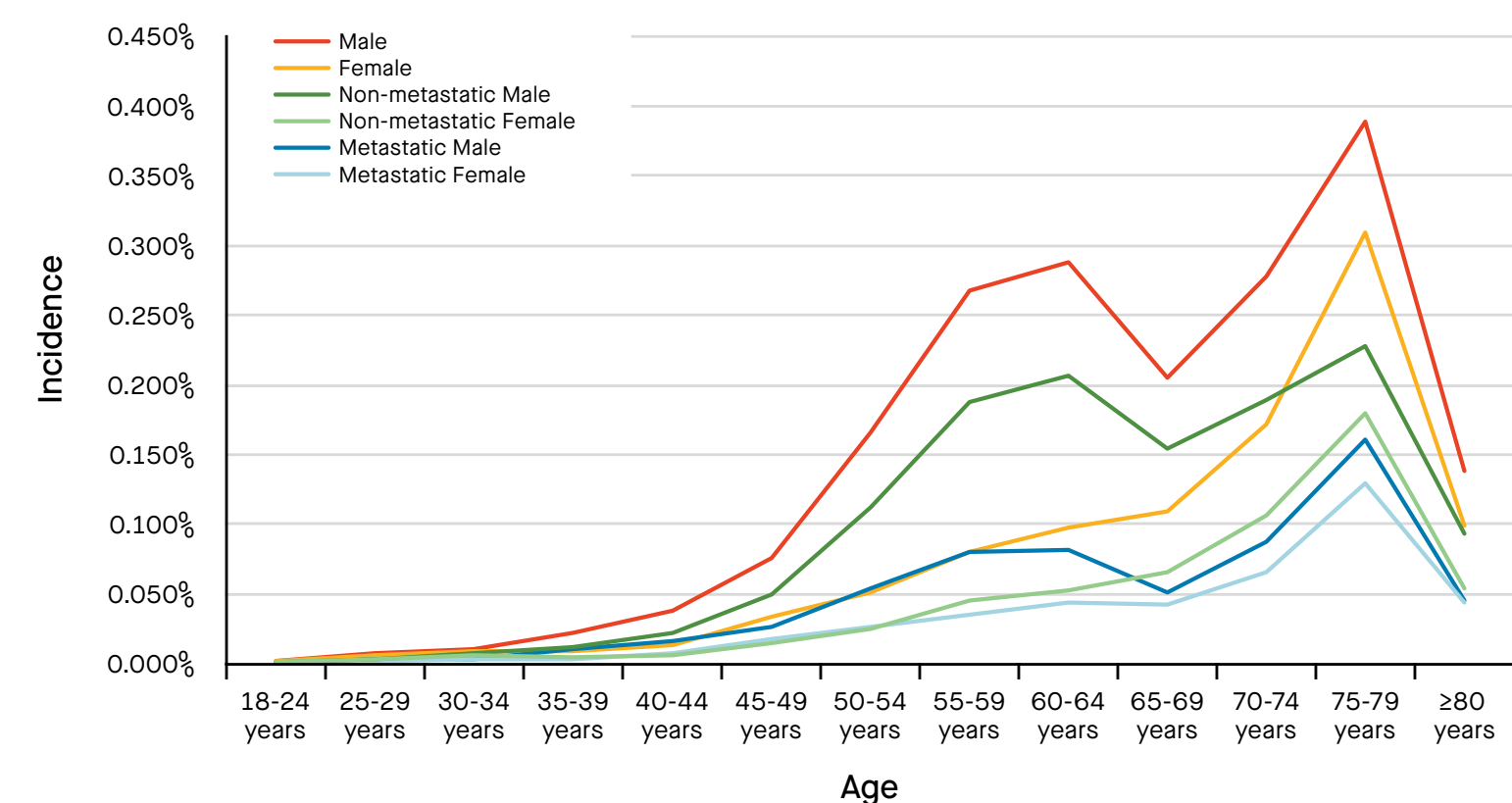


Table 1. Patient and Clinical Characteristics in the US Medicaid Population (2015–2020)

		Metastatic (n=3,579)	Non-Metastatic (n=6,197)	p-value
Baseline Patient Characteristics				
Age at Diagnosis (years)	Mean (SD)	57.0 (10.5)	57.8 (10.2)	0.0003
Sex, n (%)	Male	1,832 (51.2)	4,068 (65.6)	<0.0001
	Female	1,747 (48.8)	2,129 (34.4)	<0.0001
Race, n (%)*	White	1,218 (80.2)	1,897 (81.6)	0.0005
	Black	248 (16.9)	354 (15.4)	0.0159
	Asian	41 (2.4)	112 (2.5)	0.0111
	Other	9 (0.6)	8 (0.6)	0.1618
Smoking Status, n (%)	Yes	1,153 (32.2)	2,178 (35.2)	0.0032
	No	2,426 (67.8)	4,019 (64.8)	0.0032
Quan-Charlson Comorbidity Index Score	Mean (SD)	1.5 (2.7)	2.6 (3.5)	<0.0001
Follow-up Clinical Characteristics				
Anti-cancer Treatment, n (%)	No therapy	746 (35.0)	3,172 (51.2)	<0.0001
	Surgery	1,018 (47.8)	2,520 (40.7)	<0.0001
	Chemotherapy	893 (41.9)	1,452 (23.4)	<0.0001
	Radiotherapy	699 (32.8)	913 (14.7)	<0.0001
	Antimetabolites	443 (20.8)	154 (2.5)	<0.0001
	Hormone therapy	16 (0.8)	8 (0.1)	<0.0001
12-Month Mortality, n (%)		1,449 (40.5)	2 (0.03)	<0.0001

*For patients with available data.

- Out of 9,776 patients newly diagnosed with liver cancer, 3,579 (36.6%) presented with metastases at the time of diagnosis (Table 1)
 - The proportion of patients with metastases at diagnosis more than doubled from 21% in 2015 to 44% in 2020
- Compared to the 6,197 patients with non-metastatic liver cancer, the 3,579 patients with metastatic liver cancer exhibited decreased comorbidity, based on lower mean Quan-Charlson Comorbidity Index (CCI) scores (1.5 vs 2.6, $p < 0.0001$) (Table 1)
 - They were also more likely to be slightly younger (57.0 vs 57.8 years, $p = 0.0003$), female (48.8% vs 34.4%, $p < 0.0001$), black (16.9% vs 15.4%, $p = 0.0159$) and non-smokers (67.8% vs 64.8%, $p = 0.0032$)
- Approximately half of the patients (47.1%) with liver cancer did not receive any form of anti-cancer treatment during the 12 months following their diagnosis: 35.0% of those with metastases and 51.2% with non-metastatic liver cancer (Table 1)
 - Surgery was the predominant treatment choice for patients with liver cancer (43.4%), followed by chemotherapy (28.5%), and radiotherapy (20.5%) (Table 1)
 - Patients with metastases had significantly greater utilization of all types of anti-cancer treatments compared to those without metastases
- Overall, 15% of patients died within 12 months post liver cancer diagnosis; an overwhelmingly high mortality rate was observed in patients with metastases versus patients with non-metastatic liver cancer (40.5% vs 0.03%, $p < 0.0001$) (Table 1)

CONCLUSIONS

- There is a high burden of liver cancer among US Medicaid-insured patients, with the proportion of advanced stage disease more than doubling in recent years
- The burden of advanced stage disease was highest in younger patients, females, and in black populations
- While a high proportion of patients did not receive cancer treatment, patients with metastases had significantly increased utilization of all types of anti-cancer treatments compared to those without metastases
- Earlier cancer detection in the Medicaid population may attenuate the burden of advanced stage liver cancer

References

- Walker GV, et al. *J Clin Oncol*. 2014;32(28):3118-25.
- Real-World Data for Real-World Evidence. STATinMED. <https://statinmed.com/data>. Accessed August 28, 2023.
- The Surveillance, Epidemiology, and End Results (SEER) Program. <https://seer.cancer.gov/statfacts/html/livibd.html>. Accessed August 28, 2023.

Disclosures

KC and JK are current employees of GRAIL, LLC, with equity in the company. YL, PG, and GA are current employees of STATinMED Research, which is a paid consultant to GRAIL, LLC. JK discloses consultancy/ownership interest in GastroGirl/GlonDEMAND; KC discloses stock ownership in Baxter Healthcare, Bayer Pharmaceuticals, Bristol Myers Squibb, Gilead, and Illumina, Inc.

Acknowledgements

Funded by GRAIL, LLC. Writing, editorial, and graphic assistance provided by Prescott Medical Communications Group (Chicago, IL).

