Treatment Patterns, Healthcare Resource Utilization, and Healthcare Costs Among Patients With Metastatic Gastric/Gastroesophageal Junction Cancer in Commercially Insured Patients in the United States

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BACKGROUND

- Gastric cancer, including gastroesophageal junction cancer (G/GEJC), is the fifth most commonly diagnosed cancer worldwide, with an estimated 968,784 new cases and 660,175 deaths in 2022.[1,2]
- For patients with HER2-negative advanced G/GEJC, standard first-line (1L) treatment with platinum-fluoropyrimidine doublet chemotherapy provides a median survival of approximately one year.[3-5] The addition of nivolumab, approved in the U.S. on April 16, 2021, has demonstrated improved survival; however, its efficacy is primarily observed in patients with a PD-L1 combined positive score (CPS) of ≥5.[6] More recently, the survival benefits demonstrated in pivotal studies have led to the approvals of pembrolizumab, zolbetuximab, and tislelizumab.
- Previous studies, based on data from before the availability of immune checkpoint inhibitors, suggested that the average cost for advanced G/GEJC patients ranged from $26,904 to $72,778 per patient, highlighting a significant economic burden.[7-9]
- This study examines real-world patient characteristics, treatment patterns, healthcare resource utilization (HCRU), and costs among commercially insured patients with metastatic G/GEJC (mG/GEJC), utilizing recent data from April 16, 2021 to March 31, 2024. Thus, these findings reflect real-world outcomes following the introduction of immune checkpoint inhibitors.

METHODS

- A retrospective observational cohort study was conducted using the Merative™ MarketScan© Commercial and Medicare Databases. The study utilized data spanning from January 1, 2015 to March 31, 2024. This study included patients who initiated 1L systemic anticancer therapy between April 16, 2021, and February 29, 2024.
- Inclusion Criteria
  - Patients (age ≥18 years) with at least one inpatient (IP) or two outpatient (OP) claims 30 days apart with a diagnosis code for G/GEJC
  - Patients with at least one IP or one OP claim with diagnosis code for secondary malignant neoplasm 30 days prior, or any time after the first observed diagnosis for G/GEJC, as a proxy for a mG/GEJC diagnosis
  - Patients who received at least one non-HER2-targeted systemic anticancer therapy within 60 days prior to and 90 days after their mG/GEJC diagnosis. The date of the first observed systemic anticancer therapy was identified as the initiation of 1L therapy, and the index date
  - Patients with continuous health insurance enrollment for at least 6 months before and 1 month after the index date
- Exclusion Criteria
  - Patients who received HER2-targeted therapy
  - Patients with other primary cancers (≥1 diagnosis of other primary cancers excluding non-melanoma skin cancer during any time prior to the index date)
  - Patients who underwent gastrectomy, esophagogastrectomy, or esophagostomy within 6 months before or after the index date
  - Patients who participated in a clinical trial
- Data analysis
  - Patient characteristics were assessed during the 6-month baseline period prior to the index date
  - Outcomes were assessed during the follow-up period between the index date and the date of death, end of continuous enrollment, or study end date (March 31, 2024), whichever occurred first. All analyses were descriptive

RESULTS

Figure 1. Patient selection flow chart

Patients diagnosed with mG/GEJC (January 1, 2015 – March 31, 2024) who received at least one systemic anticancer regimen within 60 days prior to and 90 days after their first metastatic G/GEJC diagnosis.
N = 6,258

↓

Patients with ≥60-day washout period with no systemic treatment prior to the index date to ensure the index date captures the initiation of a regimen.
N = 5,145

↓

Patients aged ≥18 years at the index date
N = 5,139

↓

Patients with continuous enrollment 180 days prior to and 30 days after the index date
N = 4,009

↓

Patients without a diagnosis of other primary cancers, therapies specific to HER2-positive G/GEJC, history of gastrectomy, esophagojejunostomy, esophagostomy, and those who did not participate in clinical trials
N = 1,290

↓

Patients with an index date from April 16, 2021 to February 29, 2024
N = 328

Abbreviations: HER2, human epidermal growth factor receptor 2; G/GEJC, gastric or gastroesophageal junction cancer.

RESULTS (Continued)

Table 1. Baseline characteristics

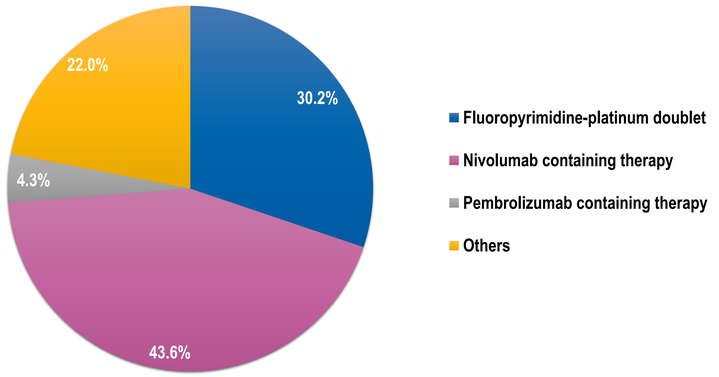
Characteristic, n (%)	N = 328
Age (years), mean (SD)	58.3 (11.6)
Male gender	237 (72.3)
Geographic region	
South	133 (40.5)
Northcentral	79 (24.1)
Northeast	66 (20.1)
West	50 (15.2)
Insurance plan indicator	
PPO	170 (51.8)
HMO	56 (17.1)
Others or unknown	102 (31.1)
Metastasis site[1] (not mutually exclusive)	
Lymph nodes	166 (50.6)
Peritoneum	122 (37.2)
Liver	113 (34.5)
NCICI, mean (SD)	0.2 (0.3)
Top 3 NCI comorbidities	
Liver disease, mild	79 (24.1)
Peptic ulcer disease	66 (20.1)
Diabetes (without complications)	65 (19.8)

- This study included 328 patients, with a mean age of 58 years. Most patients were male (72.3%), and a higher proportion lived in the South (40.5%) geographically. The most common metastasis sites were lymph nodes (50.6%), peritoneum (37.2%), and liver (34.5%). The most common comorbidities were mild liver disease (24.1%), peptic ulcer disease (20.1%), and diabetes without complications (19.8%).

Note: [1] The tablet shows metastatic sites with at least 10% occurrence.

Abbreviations: HMO: Health maintenance organization, N: number of patients, NCI: National Cancer Institute, NCICI: National Cancer Institute comorbidity index, PPO: Preferred provider organization, SD: standard deviation.

Figure 2. Treatment regimens in 1L



Note: Others include other chemotherapy and off-label regimens.

Treatment Patterns

- Among 328 patients who received 1L therapy, 115 (35.1%) patients received second-line therapy (2L), and 36 (11.0%) received third-line therapy (3L). The median duration of 1L and 2L therapies was comparable at 2.9 months and 3.0 months, respectively, while the median duration for 3L therapy was 2.1 months.
- 1L therapy:
  - During the follow-up period, chemotherapy alone was the most common 1L treatment (49.1%), with fluoropyrimidine-platinum doublet chemotherapy as the predominant regimen (30.2%), particularly fluorouracil and oxaliplatin (FOLFOX, 28.0%). The second most common chemotherapy regimen was carboplatin and paclitaxel (8.5%).
  - Nivolumab-containing therapy was the second most frequently used treatment (43.6%), with 36.9% of patients receiving nivolumab plus FOLFOX. Pembrolizumab in combination with FOLFOX was administered to 2.1% of patients, while 4.3% received pembrolizumab overall.
- 2L therapy:
  - Nivolumab-containing therapy was the most frequently used 2L regimen (47.0%), followed by ramucirumab with chemotherapy (23.5%), chemotherapy alone (21.7%), and pembrolizumab with chemotherapy (4.3%). Among patients receiving chemotherapy alone, fluoropyrimidine-platinum doublet accounted for 40%.
- 3L therapy:
  - Ramucirumab with and without chemotherapy was the most commonly administered 3L regimen (36.1%), followed by chemotherapy alone (33.3%).

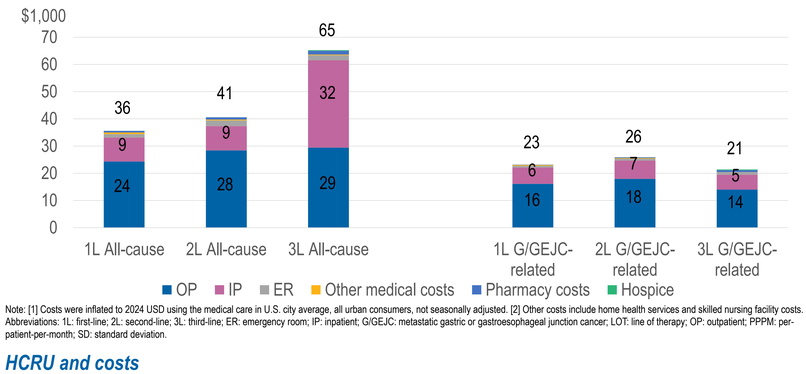
Table 2. All-cause and mG/GEJC-related HCRU in 1L, PPPM

HCRU, PPPM, mean (SD)	All-cause HCRU	mG/GEJC-related HCRU
IP[1]		
Number of IP admissions	0.2 (0.4)	0.2 (0.4)
Total IP days	1.3 (3.0)	0.8 (2.7)
OP		
Number of OP visits	7.5 (4.0)	4.3 (3.7)
ER		
Number of ER visits	0.4 (0.6)	0.2 (0.5)
Hospice		
Number of hospice episodes	0.0 (0.2)	0.0 (0.1)
Total hospice days	0.1 (1.0)	0.1 (0.9)
Other visits[2]		
Number of other visits	0.9 (1.1)	0.6 (1.0)

Notes: [1] ICU visits were included in the IP visits. [2] Other visits include home health services and skilled nursing facilities.

Abbreviations: 1L: first-line; ER: emergency room; HCRU: healthcare resource utilization; ICU: intensive care unit; IP: inpatient; LOT: line of therapy; mG/GEJC: metastatic gastric or gastroesophageal junction cancer; OP: outpatient; PPPM: per-patient-per-month; SD: standard deviation.

Figure 3. All-cause and mG/GEJC-related healthcare costs by LOT, PPPM



Note: [1] Costs were inflated to 2024 USD using the medical care in U.S. city average, all urban consumers, not seasonally adjusted. [2] Other costs include home health services and skilled nursing facility costs. Abbreviations: 1L: first-line; 2L: second-line; 3L: third-line; ER: emergency room; IP: inpatient; G/GEJC: metastatic gastric or gastroesophageal junction cancer; LOT: line of therapy; OP: outpatient; PPPM: per-patient-per-month; SD: standard deviation.

HCRU and costs

- Outpatient visits were the most frequently utilized service across all lines of therapy (LOTs) for both all-cause and G/GEJC-related HCRU, with the highest usage observed in 1L (7.5 and 4.3 visits per patient per month (PPPM), respectively). Hospice use was minimal across all LOTs, with the lowest utilization observed in 1L and 2L.
- The all-cause PPPM costs were $35,620 for 1L, $40,622 for 2L, and $65,253 for 3L, while mG/GEJC-related PPPM costs were $23,161 for 1L, $25,903 for 2L, and $21,413 for 3L.
- Outpatient care represented the largest share of both all-cause and mG/GEJC-related costs (65.5%–69.9%), except for 3L all-cause costs, where it was the second largest cost component (45.1%) (Figure 3).
- Despite its relatively low utilization, inpatient care was the second-highest cost category. This trend was consistent across all LOTs, except for all-cause costs in 3L (Figure 3).

CONCLUSIONS

- Our study has characterized treatment patterns, HCRU, and costs in commercially insured patients with mG/GEJC following the approval of the first immune checkpoint inhibitor.
- Most patients (64.9%) did not receive treatment beyond 1L. Despite the approval of nivolumab, chemotherapy alone remained the most commonly used 1L regimen, while nivolumab-containing therapy became the most frequently used regimen in 2L.
- Healthcare costs for patients with mG/GEJC were higher than those reported for other advanced solid tumors among commercially insured patients. For comparison, the PPPM costs in the 1L setting were reported as $13,746 for prostate cancer, $17,218 for breast cancer, and $22,633 to 32,215 for lung cancers.[10-13]
- Healthcare costs increased substantially following the approval of the first immune checkpoint inhibitor compared to prior reports using pre-approval data, with average PPPM costs in the 1L ranging from $16,242 in a SEER-Medicare analysis (2000-2009) to $16,977 in an analysis of the IQVIA Adjudicated Closed Claims database (2016- 2019).[7,14]
- This study is limited by its short follow-up period and small sample size. Additionally, the use of data immediately following the approval of the first immunotherapy may not accurately represent long-term patterns, as the adoption of new medications typically occurs gradually over time.
- Despite increased treatment options, the 1L treatment of mG/GEJC remains associated with short treatment duration and high economic burden, suggesting significant remaining unmet need.

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