Healthcare Resource Utilization and Costs Among Patients With vs Without Biomarker Testing in Metastatic Colorectal Cancer (mCRC): A Real-World Claims Analysis

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Background

- Colorectal cancer is the second leading cause of cancer-related death in the U.S.
- The treatment landscape for metastatic colorectal cancer (mCRC) has evolved with the use of biomarker-driven therapies that enable precision medicine.
- NCCN guidelines recommend testing for key biomarkers including BRAF V600E, MSI/MMR, KRAS/NRAS, and HER2+ to guide therapy selection at diagnosis or treatment initiation.
- Biomarker results determine eligibility for targeted or immunotherapies that may lead to improved outcomes and cost-effective care.
- Despite strong guideline support, real-world biomarker testing remains suboptimal, with variation by payer type, provider practice, and patient demographics.
- Common barriers include lack of insurance coverage, long test turnaround times, insufficient tissue, and limited reflex testing in non-academic settings.
- Patients who do not receive timely testing may start less effective therapies, leading to avoidable costs and poorer outcomes.
- Understanding the healthcare resource utilization (HCRU) and total cost of care (TCOC) associated with biomarker testing can help inform payer strategies to improve adherence to guideline-directed care.

Objectives

- To understand the utilization of biomarker testing and evaluate all-cause healthcare resource utilization and total cost of care among patients with metastatic colorectal cancer (mCRC), stratified by biomarker testing (tested vs. non tested).

Methods

- A retrospective observational analysis was conducted using medical and pharmacy claims from between January 1, 2021, and June 30, 2025.
- Members were included if they had a diagnosis of colon cancer and metastatic disease (within ±60 days of each other) and ≥1 IV or oral systemic therapy claim, confirming active treatment.
- The index date was defined as the earliest systemic therapy claim.
- Members were required to have continuous enrollment ≥ 6 months before and after the index date.
- Members with a different cancer diagnosis during the same timeframe were excluded.
- Biomarker testing was identified using CPT codes for BRAF, MSI/MMR, KRAS/NRAS, and HER2+.
- A total of 458 members met inclusion criteria for the final analysis.

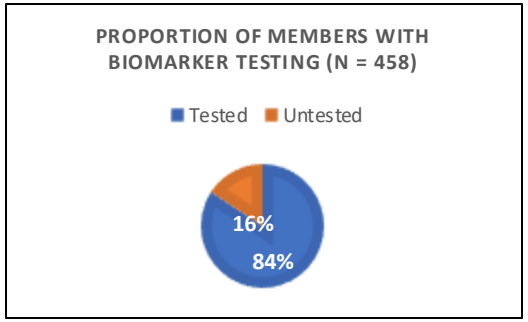

Figure 1: Proportion of Members with Biomarker Testing
Among 458 members with metastatic colorectal cancer, 84% (n=386) received biomarker testing while 16% (n=72) had no record of testing during the study period.

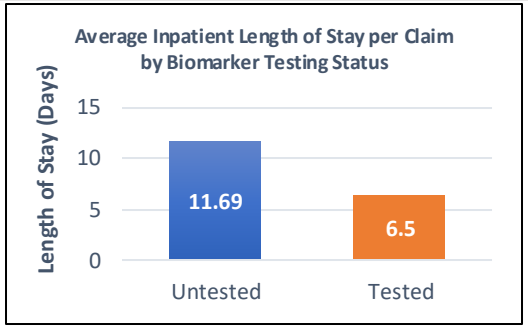

Figure 2: Average Inpatient Length of Stay by Biomarker Testing Status
Biomarker-tested members had a shorter average inpatient stay (6.5 vs 11.7 days) compared with untested members

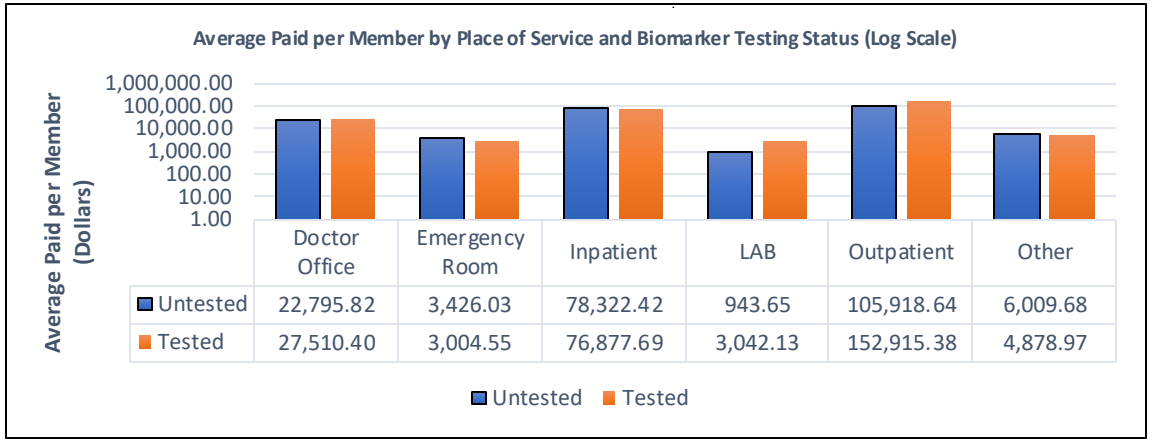

Figure 3: Average Paid per Member by Place of Service and Biomarker Testing Status
Outpatient services accounted for the highest costs among both cohorts, with biomarker-tested members showing greater average outpatient and laboratory expenditures

Average Healthcare Resource Utilization per Member by Place of Service and Biomarker Testing Status

	Doctor's Office	Emergency Room	Inpatient	LAB	Outpatient	Other
Tested	38.9	1.4	2.41	9.79	65.16	20.8
Untested	30.11	1.23	2.79	6.41	53.18	26.54

Table 1: Average Healthcare Resource Utilization per Member by Biomarker Testing Status
Biomarker-tested members had higher outpatient and laboratory utilization compared with untested members, while inpatient and emergency room use were similar across groups

Limitations

- The analysis used administrative claims data which may contain coding inaccuracies or omissions.
- Findings reflect one health plan and may not be generalizable.
- Limited sample size of untested patients may affect comparison precision and generalizability.
- The dataset did not include biomarker results, so treatment recommendations and therapy could not be confirmed.

Discussion

- The majority of members (84%) received biomarker testing, suggesting strong provider adherence to NCCN guidelines and integration of molecular testing into routine mCRC management.
- Tested members had higher outpatient and laboratory utilization compared with untested members, while inpatient and emergency room use were similar across groups.
- Average inpatient length of stay was notably shorter for tested members, reflecting lower inpatient utilization in this group.
- Average paid per member was higher for tested members in outpatient lab settings, possibly reflecting care associated with targeted therapy administration and ongoing monitoring.

Conclusion

- The results underscore the importance of timely and comprehensive biomarker testing to support optimal therapy selection and reduce acute hospital care.
- These findings align with the growing shift toward biomarker-driven targeted therapies, emphasizing the importance of timely testing and appropriate therapy selection as treatment pipelines evolve.
- As oncology continues shifting toward biomarker-driven treatment, further research using larger longitudinal datasets is warranted to evaluate long-term clinical and economic outcomes of biomarker-guided care.

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