Insurance complexity and restriction in real-world cancer patient cohorts

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INTRODUCTION

- Real world data (RWD) are valuable for drug development and regulatory decision-making.
- However, heterogeneity in insurance coverage by payer can impact drug utilization and is often not considered in RWD studies.
- This study leverages two novel measures of insurance coverage of supportive medications for oncology treatment-related toxicities to characterize the relationship between payer policies and drug utilization in RWD cancer cohorts.

METHODS

- Using data from Tempus AI, Komodo, and Tufts Center for the Evaluation of Value and Risk in Health (CEVR), we linked patient-level clinical and health claims data to temporally accurate coverage policies.
- We evaluated patients with non-small cell lung cancer (NSCLC), colorectal cancer (CRC), and breast cancer (BC) treated with chemotherapy with one year of continuous insurance coverage after first chemotherapy treatment.
- Payers, indications, and medications can be found in Table 1: Study Characteristics.
- We assessed commercial payers' coverage policies for specialty medications used to treat nausea and vomiting (NV) and neutropenia per NCCN toxicity guidelines in the year following treatment initiation (Table 1, Figure 1).
- We used two metrics of coverage: the Complexity Score (Table 2a) and the Coverage Restriction Summary Score(Table 2b).
- We explore the association between medication and scores, accounting for toxicity type, using Fisher's exact test(Figure 2).

Scoring Systems

Table 2a: Coverage Complexity Score

Variable	Explanation	Possible Score
Word count of coverage text	Quartiles	(0-3)
# of criteria/line breaks/bullets	Quartiles	(0-3)
Baseline test/documentation requirement	Captures requirement to submit documentation	(0,2)
Multiple documents	single document (0) multiple documents (2)	(0,2)
		Total = (0-10)

An overall score of 0 indicates minimal complexity, while a score of 10 denotes highly complex coverage

Table 2b: Coverage Restriction Summary Score

Variable	Requirement	Yes	Score
Subgroup Restriction	Does plan impose a subgroup restriction?	2	(0,2)
Combination Restriction	Does plan impose a combination restriction?	1	(0,1)
Other Restriction	Does plan impose any other type of restriction?	1	(0,1)
Prescriber Requirement	Does plan impose a subscriber requirement?	1	(0,1)
Non-First Line Therapy	Relative to FDA-recommended line of therapy	Payer line ≤ FDA line Payer line – FDA line = 1 Payer line – FDA line = 2 Payer line - FDA line > 3	(0-3)
			Total = (0-8)

An overall score of 0 is a minimally restrictive policy and 8 is a policy we consider to be heavily restrictive

Table 1: Study Characteristics

Payers	Aetna, Anthem, Blue Cross Blue Shield of MA, Blue Cross Blue Shield of MI, Blue Cross Blue Shield of NC, Blue Cross Blue Shield of TN, CareFirst, Centene, Cigna, Health Care Service Corporation, Highmark, Independent Blue Cross, United
Indications	Chemotherapy induced nausea and vomiting, neutropenia
Brand Names	Aloxi, Emend, Fulphila, Neulasta, Neupogen, Nivestym, Nyvepria, Sustol, Udenyca, Zarxio, Ziextenzo

SUMMARY

- Clinicians face complex and restrictive policies when providing care which impacts receipt of guideline-recommended treatments for neutropenia and nausea and vomiting
- Future work should explore if the relationships identified impact clinical outcomes including persistence and survival

RESULTS

Table 3: Patient Characteristics

Characteristic	Breast, N = 2,724	Colorectal, N = 2,482	Lung, N = 4,052
Year of Primary Diagnosis			
2018	207 (7.6%)	185 (7.5%)	286 (7.1%)
2019	251 (9.2%)	235 (9.5%)	426 (11%)
2020	253 (9.3%)	209 (8.4%)	433 (11%)
2021	293 (11%)	302 (12%)	521 (13%)
2022	192 (7.0%)	291 (12%)	471 (12%)
2023	119 (4.4%)	140 (5.6%)	322 (7.9%)
Not Captured	1,409 (52%)	1,120 (45%)	1,593 (39%)
Year of Stage 3B+ Diagnosis			
2018	162 (5.9%)	165 (6.6%)	208 (5.1%)
2019	222 (8.1%)	237 (9.5%)	341 (8.4%)
2020	256 (9.4%)	221 (8.9%)	369 (9.1%)
2021	297 (11%)	306 (12%)	438 (11%)
2022	275 (10%)	309 (12%)	398 (9.8%)
2023	192 (7.0%)	149 (6.0%)	294 (7.3%)
Not Captured	1,320 (48%)	1,095 (44%)	2,004 (49%)
Number of Distinct Payers			
1	2,557 (94%)	2,382 (96%)	3,950 (97%)
2	163 (6.0%)	100 (4.0%)	102 (2.5%)
3	4 (0.1%)	0 (0%)	0 (0%)
Number of Enrollment Windows			
1	1,742 (64%)	1,740 (70%)	3,086 (76%)
2	689 (25%)	559 (23%)	807 (20%)
3	218 (8.0%)	142 (5.7%)	134 (3.3%)
4+	75 (2.8%)	41 (1.7%)	25 (0.6%)
Number of Treatment Regimens			
1	322 (12%)	560 (23%)	1,036 (26%)
2	476 (17%)	597 (24%)	1,166 (29%)
3	395 (15%)	483 (19%)	788 (19%)
4+	1,531 (56%)	842 (34%)	1,062 (26%)

Figure 1: Coverage Score Characteristics Vary Within Insurers and Medications Over Time

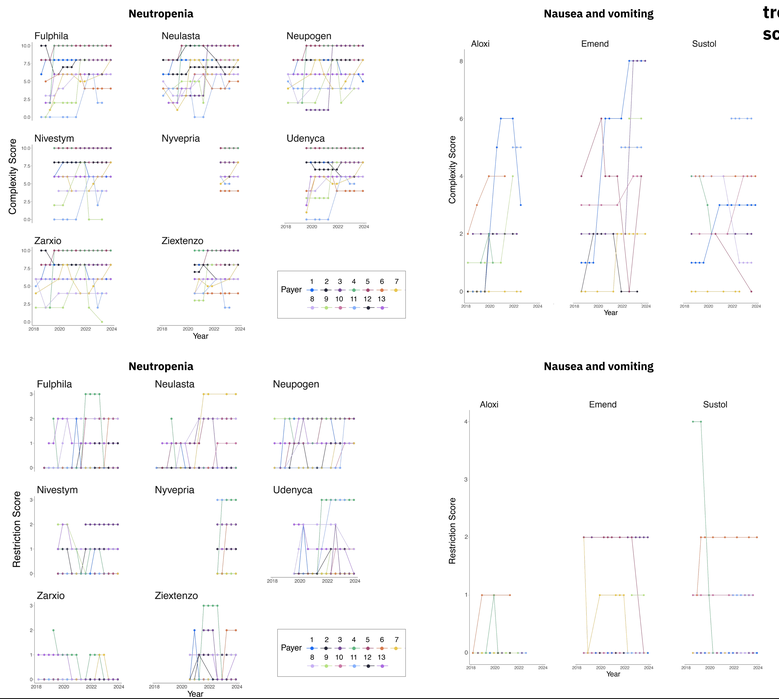
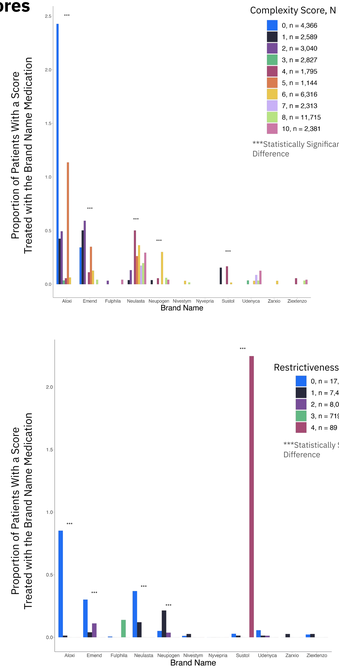


Figure 2: Receipt of Treatment Varies by Complexity and Restrictiveness Score, with higher utilization of treatments with low complexity and restrictiveness scores



ACKNOWLEDGMENTS: We thank Dana DeSantis from the Tempus Science Communications team for poster development.

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