Real-World Treatment Patterns Among Patients With EGFR-Positive Metastatic Non–Small Cell Lung Cancer

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Introduction

- Lung cancer is the second most common cancer in the United States, and is a leading cause of cancer-related mortality, with an estimated 229,6410 new cases and 124,990 deaths projected in 2026[1]
- NSCLC is the most common lung cancer subtype, and accounts for approximately 80-85% of all lung cancers
  - NSCLC is a heterogenous group of epithelial malignancies, including adenocarcinoma, squamous cell carcinoma, and large cell carcinoma[1]
  - NSCLC shows significant clinical and molecular heterogeneity, including variability in genetic mutations, histological features, and tumor microenvironment; these factors influence prognosis and treatment outcomes[2]
- Approximately 60% of patients are diagnosed at an advanced stage of disease, which remains particularly challenging to treat and is associated with poor outcomes[2]
- Treatment of mNSCLC utilizes targeted therapy or chemotherapy, and is often guided by molecular profiling[3]
  - Mutations in the EGFR tyrosine kinase domain are a major oncogenic driver of NSCLC, promoting tumor growth and survival[3]
- Optimal treatment sequencing remains unclear in EGFR-mutated mNSCLC, presenting challenges in clinical decision-making[4]

Objective

- This research characterizes real-world treatment patterns among community and academic physicians and identifies reasons for treatment transitions, particularly among an EGFR-positive patient subgroup

Methods

- This retrospective observational study utilized Amplity AnswerY™, which is Amplity's proprietary real-world database and platform built from HIPAA-compliant transcriptions of US prescriber–patient visits. Using AI and NLP, it extracts, visualizes, and summarizes treatment discussions and clinical decisions. Since 2017, AnswerY has covered inpatient and outpatient care across more than 70 specialties. Prior to January 2025, AnswerY was known as Amplity Insights
- Patients who had mentioned diagnosis of mNSCLC and EGFR-positive disease from 2020-2025 were included and followed from 1L through 3L treatments
- Unstructured clinical narratives were processed using a hybrid NLP approach (rule-based and machine learning), supplemented by a large language model configured to ensure data privacy with no storage or reuse of inputs for training. Extracted variables were standardized, and a subset underwent manual review for validation
- Trends in prescribing habits and switching reasons were documented between lines of therapy

Strengths and Limitations

- Large number of patients with mNSCLC boosts confidence in the results of the overall mNSCLC population
- Among the large number of patients with mNSCLC, approximately 1 out of 5 were identified as having a known biomarker testing status
- The results captured by AnswerY reflect actual clinical practice as captured by chart notes rather than what should be done via guideline-directed therapy
- The treatment choice groups utilized in this analysis are mostly high-level and class-based, and thus are unable to reveal key insights into the agent-specific regimens utilized in clinical practice

Conclusions

- AnswerY identified that among all patients with mNSCLC, chemotherapy is the most common 1L treatment option
- Among the EGFR-positive subgroup a significant proportion of patients did not receive EGFR-targeted 1L treatment, despite being recommended by current treatment guidelines
- Empiric therapy prior to biomarker testing is favored in clinical practice, even when outcomes may be magnified by waiting for biomarker testing data
- AEs, although not the primary driver, account for a substantial proportion of treatment switches, highlighting the need for better tolerated therapies, combination strategies, and prophylactic measures
- These data illustrate a need for increased provider education on guideline-directed care in patients with EGFR-positive mNSCLC, the impact of biomarker testing on outcomes, and continued investigations into understanding barriers to real-world treatment protocol adherence

DISCLOSURES
DI, RV, FO, and MJ* are employees of Amplity, Inc.

*Presenting Author

ABBREVIATIONS

1L, first-line; 2L, second-line; 3L, third-line; AEs, adverse events; AI, artificial intelligence; EGFR, epidermal growth factor receptor; mNSCLC, metastatic non–small cell lung cancer; NLP, natural language processing; NSCLC, non–small cell lung cancer; PARP, poly (ADP-ribose) polymerase; PD-L1, programmed death-ligand 1; SD, standard deviation; TKI, tyrosine kinase inhibitor; VEGF, vascular endothelial growth factor.

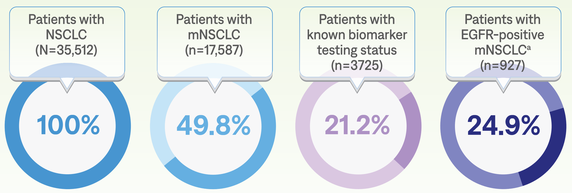
REFERENCES

1. American Cancer Society. Lung Cancer Overview | Lung Cancer Research & Statistics. www.cancer.org. Accessed March 30, 2026. https://www.cancer.org/cancer/types/lung-cancer/about.html
2. Restrepo JC, Martínez Guevara D, Pareja López A, et al. Identification and application of emerging biomarkers in treatment of non-small-cell lung cancer: systematic review. *Cancers (Basel).* 2024;16(13):2338.
3. Manoj MV, Mupparaju V RB, Thakur A, Sasidharan Pillai AK. EGFR mutations and tyrosine kinase inhibitors: structural insights and therapeutic advances. *ACS Omega.* 2026;11(8):12964-12978.
4. Abdayem P, Parisi C, Planchard D. First line and treatment sequencing in EGFR-mutated metastatic NSCLC: What is right for which patient? *Drugs.* 2026;86(3):335-357.

Patient Demographics

- AnswerY identified 17,587 patients from 3812 providers with mNSCLC, of which 927 patients from 387 providers were EGFR-positive
- The mean age of all patients with mNSCLC and the EGFR-positive subgroup was approximately 68 years. A majority of patients in both cohorts was White (87.1%/83.9%), and the geographic distribution of patients across the United States was similar in both groups
- **Figure 1** and **Table 1** show the baseline and clinical characteristics of the study cohort

Figure 1: Summary of Patient Attrition and Demographics



[a]Derived from the number of patients with a known biomarker testing status.

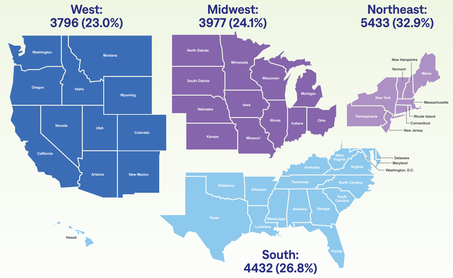


Table 1: Demographics for Patients with mNSCLC

	mNSCLC	EGFR-Positive mNSCLC
Total Number of Patients	17,587	927
Age		
Patients with record, n (%)	14,746 (83.8)	802 (86.5)
Mean (SD)	67.6 (11.0)	68.5 (11.6)
Gender		
Patients with record, n (%)	17,460 (99.3)	924 (99.7)
Male, n (%)	8820 (50.5)	356 (38.5)
Female, n (%)	8640 (49.5)	568 (61.5)
Ethnicity		
Patients with record, n (%)	9773 (55.6)	564 (60.8)
African-American, n (%)	973 (10.0)	50 (8.9)
Hispanic, n (%)	153 (1.6)	5 (0.9)
White, n (%)	8513 (87.1)	473 (83.9)

Real-world initial treatment of mNSCLC commonly utilizes chemotherapy, whereas patients with EGFR-mutated disease commonly receive targeted therapies

Treatment Patterns: All Patients

- **Figure 2** shows that in all patients with mNSCLC, chemotherapy alone (42.2%) and a chemotherapy + immunotherapy combination (27.4%) were the most common 1L choices
- The most common 1L-3L treatment sequence among patients reaching each line was chemotherapy alone, immunotherapy alone, then other therapies (42.2%/34.8%/40.1%). Treatment patterns as depicted in **Figure 3** show numerous and highly diffuse pathways that patients may follow when receiving treatment

Figure 2: 1L Treatment Choices Among Patients with mNSCLC (n=17,587)

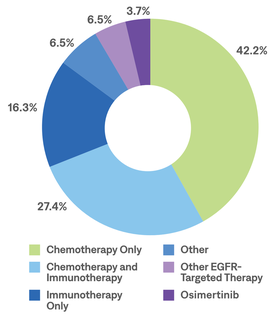
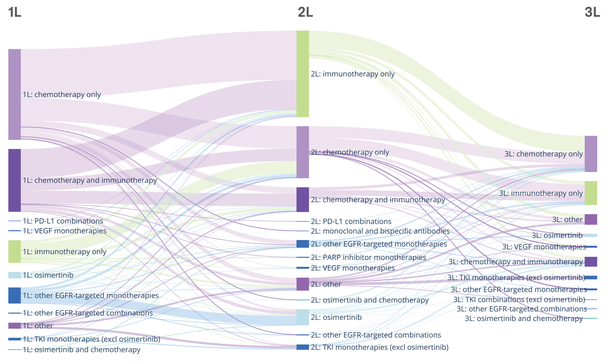


Figure 3: Treatment Patterns and Flow Among Patients with mNSCLC (n=17,587)



Treatment Patterns: EGFR-Positive

- **Figure 4** shows that among the EGFR-positive subgroup, osimertinib (29.3%) and other EGFR-targeted therapies (30.0%) were the most common 1L choices
- In the EGFR-positive subgroup, although EGFR-targeted therapies were common, approximately 39.7% of patients did not receive an EGFR-targeted therapy in 1L despite guideline recommendations
- In the same subgroup, the most common 1L-3L treatment sequence was an EGFR-targeted therapy excluding osimertinib, osimertinib, then other therapies (30.0%/29.1%/32.8%). Treatment patterns as depicted in **Figure 5** reveal that the presence of an EGFR mutation does not ease the complexity of treatment selection in mNSCLC

Figure 4: 1L Treatment Choices Among Patients with EGFR-Positive mNSCLC (n=927)

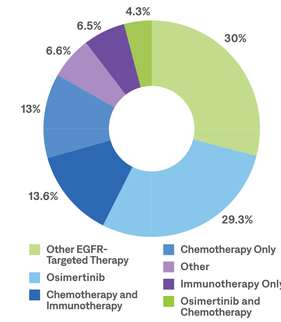
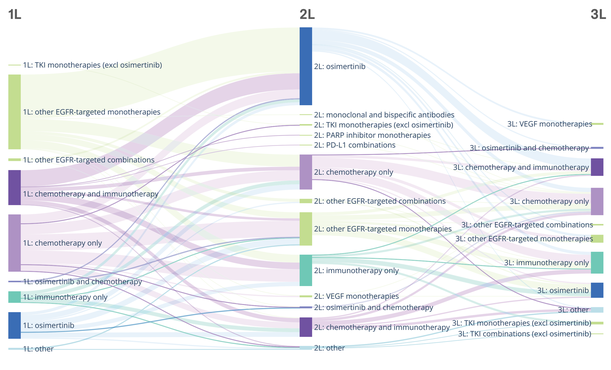


Figure 5: Treatment Patterns and Flow Among Patients with EGFR-Positive mNSCLC (n=927)

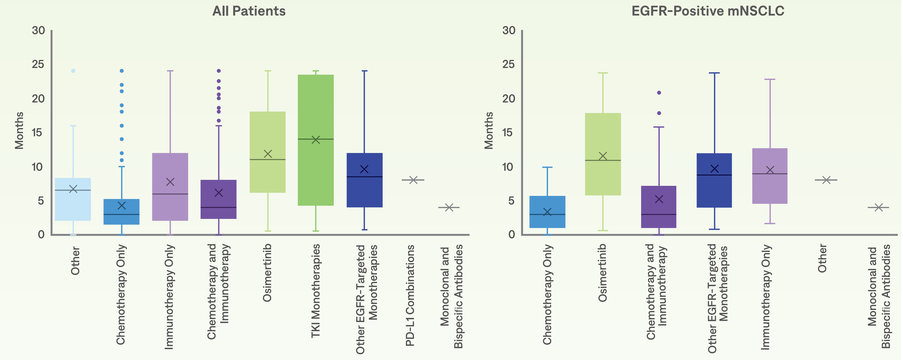


Across the mNSCLC cohort, patients spent a short time on 1L treatment and experienced frequent switching, likely driven by disease progression

Time on 1L Treatment

- **Figure 6** shows the time on 1L treatment for all patients with mNSCLC (n=948) and patients with EGFR-mutated mNSCLC (n=181). Horizontal lines and crosses represent median and mean time on 1L, respectively
- Overall, all patients with mNSCLC and those in the EGFR-positive subgroup demonstrated short times on 1L treatments. Furthermore, time on 1L chemotherapy and chemotherapy and immunotherapy is particularly lower than EGFR-targeted options, perhaps suggesting a treatment switch upon the return of biomarker results
- Among all patients with mNSCLC, those on TKI monotherapies demonstrated the highest mean time on 1L treatment followed by osimertinib and other EGFR-targeted therapies

Figure 6: Time on 1L Treatment in Patients with mNSCLC



Treatment Switches

- **Figure 7** shows the rates and reasons associated with 1L-2L and 2L-3L treatment switches among all patients with mNSCLC and those with EGFR-mutated mNSCLC
- Among all patients with mNSCLC and EGFR-positive for the break, treatment switches from 1L to 2L included disease progression (41.2%/30.9%), AEs (7.3%/9.3%), and planned transition (9.3%/ 2.0%)
- Most patients in both cohorts transitioning from 2L to 3L treatment was because of disease progression (23.1%/31.6%)

Figure 7: Treatment Switches Among Patients with mNSCLC

	mNSCLC		EGFR-positive	
	1L to 2L (n=11,066)	2L to 3L (n=4010)	1L to 2L (n=867)	2L to 3L (n=464)
Disease progression (%)	41.2	23.1	30.9	31.3
Planned treatment transition/completion (%)	9.3	3.3	2.0	2.2
Treatment toxicity/AEs (%)	7.3	5.8	9.3	9.1
Poor tolerability/intolerance (%)	2.2	1.0	1.6	0.2
Intercurrent medical events/complications (%)	1.7	1.2	1.3	0.4
Patient preference/refusal/nonadherence (%)	1.0	1.0	1.3	0.7
Poor performance status/comorbidities (%)	1.0	0.8	0.5	1.5
Molecular findings/biomarker-driven change (%)	0.3	0.2	1.3	0.0
Treatment strategy change (non-progression) (%)	0.2	0.1	1.6	0.9
Administrative/access issues (%)	0.1	0.0	0.1	0.2