Real-World Treatment Patterns of Metastatic Non-Small Cell Lung Cancer (mNSCLC) Patients Receiving Epidermal Growth Factor Receptor Tyrosine Kinase Inhibitors (EGFR TKIs)

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BACKGROUND

- Several EGFR TKIs have been approved for the treatment of EGFR mutation-positive metastatic NSCLC (mNSCLC). The recommended first-line (1L) treatment is the 3rd generation EGFR TKI osimertinib.[1]
- Osimertinib is the most recently approved EGFR TKI for 1L use (approved in 2018) and real-world evidence on 1L osimertinib treatment duration compared to other EGFR TKIs remains a gap.
- This retrospective observational study describes real-world treatment patterns of mNSCLC patients using EGFR TKIs in the 1L setting in the United States.

METHODS

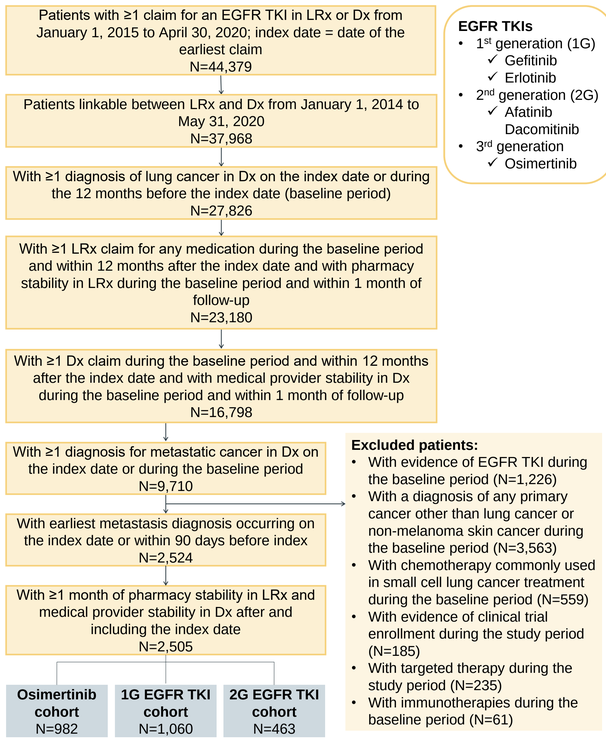
Data source

- IQVIA's prescription claims (LRx) and medical claims (Dx) databases during the study period from January 1, 2014 to May 31, 2020.

Patient selection

- Patients were selected (**Figure 1**) and were stratified into 3 mutually exclusive cohorts based on index EGFR TKI.

Figure 1. Patient attrition



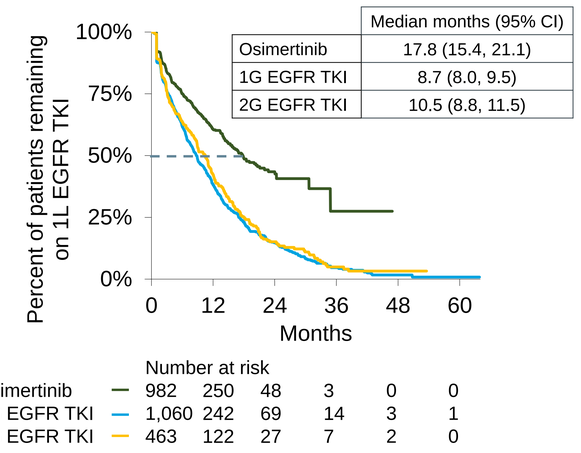
Abbreviations: Dx, medical claims database; LRx, prescription claims database

Statistical analysis

- Kaplan-Meier analysis was used to estimate median 1L treatment duration. Patients without evidence of discontinuation were censored at the end of follow-up or the end of the study period, whichever occurred earliest. Treatment discontinuation was defined as a gap of >60 days in medication supply for EGFR TKI. The associated follow-up time was estimated using the reverse Kaplan-Meier method.

In this real-world study, the median duration of 1L osimertinib was 17.8 months.

Figure 3. 1L treatment duration, stratified by 1L EGFR TKI



Abbreviations: CI, confidence interval
All log-rank p-values for comparisons with osimertinib <0.0001.

The median durations of 1L 1G and 2G EGFR TKIs were 8.7 months and 10.5 months, respectively.

DISCUSSION

Limitations

- There are several limitations inherent to a retrospective study using claims databases, including potential misclassification of diagnosis records, data entry error, lack of clinical data on disease staging and mutation status, and lack of insight into the treatment decision-making process.
- A key limitation of this study is the shorter follow-up period for the osimertinib cohort, due to its relatively recent approval in the 1L setting compared to other EGFR TKIs.
- Continuous enrollment cannot be confirmed in the open claims databases; however, proxies for continuous enrollment were applied for defining follow-up time.

Future directions for research

- Future studies with longer follow-up are recommended to understand treatment patterns after progression on EGFR TKIs, mainly osimertinib, given it is the most widely used EGFR TKI in the 1L treatment of EGFR-mutated mNSCLC.

RESULTS

Patient characteristics

- Baseline characteristics were generally similar across all cohorts **(Table 1**).

1L treatment patterns

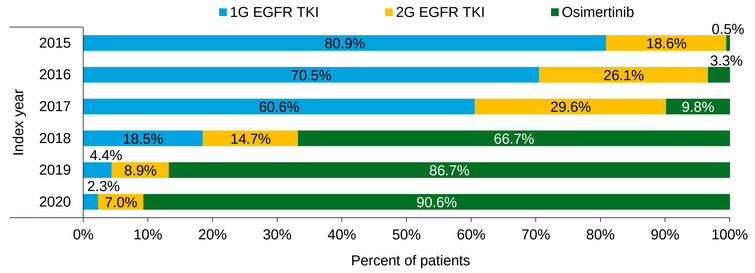
- Nearly all (>97%) 1L EGFR TKIs were used as monotherapy.
- Patterns in EGFR TKI prescription fills changed over time; by 2020 (January through April), osimertinib accounted for 90.6% of 1L EGFR TKIs **(Figure 2)**.
- The associated follow-up time for the Kaplan-Meier analysis in **Figure 3** was shorter for the osimertinib cohort (9.8 months) compared to patients with 1G (20.5 months) or 2G (19.3 months) EGFR TKI.

Table 1. Patient baseline characteristics

Measures		Osimertinib N=982	1G EGFR TKI N=1,060	2G EGFR TKI N=463
Age, median (Q1, Q3)		66 (59, 75)	69 (61, 78)	68 (59, 75)
Age group, n (%)	18-44	33 (3.4)	27 (2.5)	15 (3.2)
	45-64	393 (40.0)	337 (31.8)	176 (38.0)
	65-74	308 (31.4)	336 (31.7)	150 (32.4)
	≥75	248 (25.3)	360 (34.0)	122 (26.3)
Female, n (%)		659 (67.1)	685 (64.6)	302 (65.2)
Geographic region, n (%)	Northeast	192 (19.6)	171 (16.1)	67 (14.5)
	Midwest	185 (18.8)	223 (21.0)	88 (19.0)
	South	342 (34.8)	309 (29.2)	190 (41.0)
	West	241 (24.5)	256 (24.2)	90 (19.4)
	Other/unknown	22 (2.2)	101 (9.5)	28 (6.0)
Payer type, n (%)	Commercial	610 (62.1)	538 (50.8)	291 (62.9)
	Medicare, including Medicare Part D	347 (35.3)	487 (45.9)	169 (36.5)
	Other*	25 (2.5)	35 (3.3)	3 (0.6)
Modified CCI, median (Q1, Q3)**		1 (0, 3)	2 (1, 3)	2 (1, 3)
Number of unique metastasis sites, median (Q1, Q3)		1 (1, 2)	1 (1, 2)	1 (1, 2)
Evidence of CNS metastasis, n (%)		382 (38.9)	343 (32.4)	165 (35.6)

Abbreviations: Q1, quartile 1; Q3, quartile 3; CCI, Charlson comorbidity index; CNS, central nervous system;
*Other payer type includes Medicaid, cash payments, and unspecified
**Modified to exclude any malignancy and metastatic solid tumor

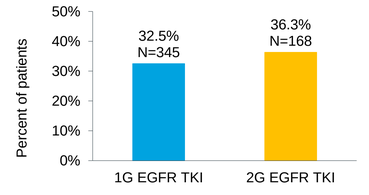
Figure 2. Distribution of index years in the EGFR TKI cohorts



2L treatment patterns

- 2L treatment patterns after 1L osimertinib were not described due to limited follow-up among this cohort.
- Less than half of 1G or 2G EGFR TKI patients reached 2L treatment **(Figure 4)**.
- 2L osimertinib monotherapy accounted for 58.3% and 60.7% of 2L treatments following 1G or 2G EGFR TKI, respectively.
- Chemotherapy or IO therapy without EGFR TKI were the next most common 2L treatments (11.3% and 8.9% of 2L treatments following 1G or 2G EGFR TKI, respectively).

Figure 4. Frequency of observed 2L treatment after 1L 1G or 2G EGFR TKI



REFERENCES
1. Hanna et al. J Clin Oncol. 2021;39:1040-1091.

DISCLOSURES
Rahul Shenolikar is currently employed by AstraZeneca and owns AstraZeneca stock. Sizhu Liu was employed by AstraZeneca at the time of the study. IQVIA received funding from AstraZeneca to conduct this study.

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