

Determinants of Delay in EGFR Inhibitor Initiation in Patients with Non-Small Cell Lung Cancer

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INTRODUCTION

- Delays in obtaining test results are a major barrier to timely treatment initiation.
- Patient characteristics and comorbidities may also contribute to delays between epidermal growth factor receptor (EGFR) testing and tyrosine kinase inhibitor (TKI) initiation.
- This study aimed to identify demographic and clinical factors associated with delayed EGFR TKI initiation.

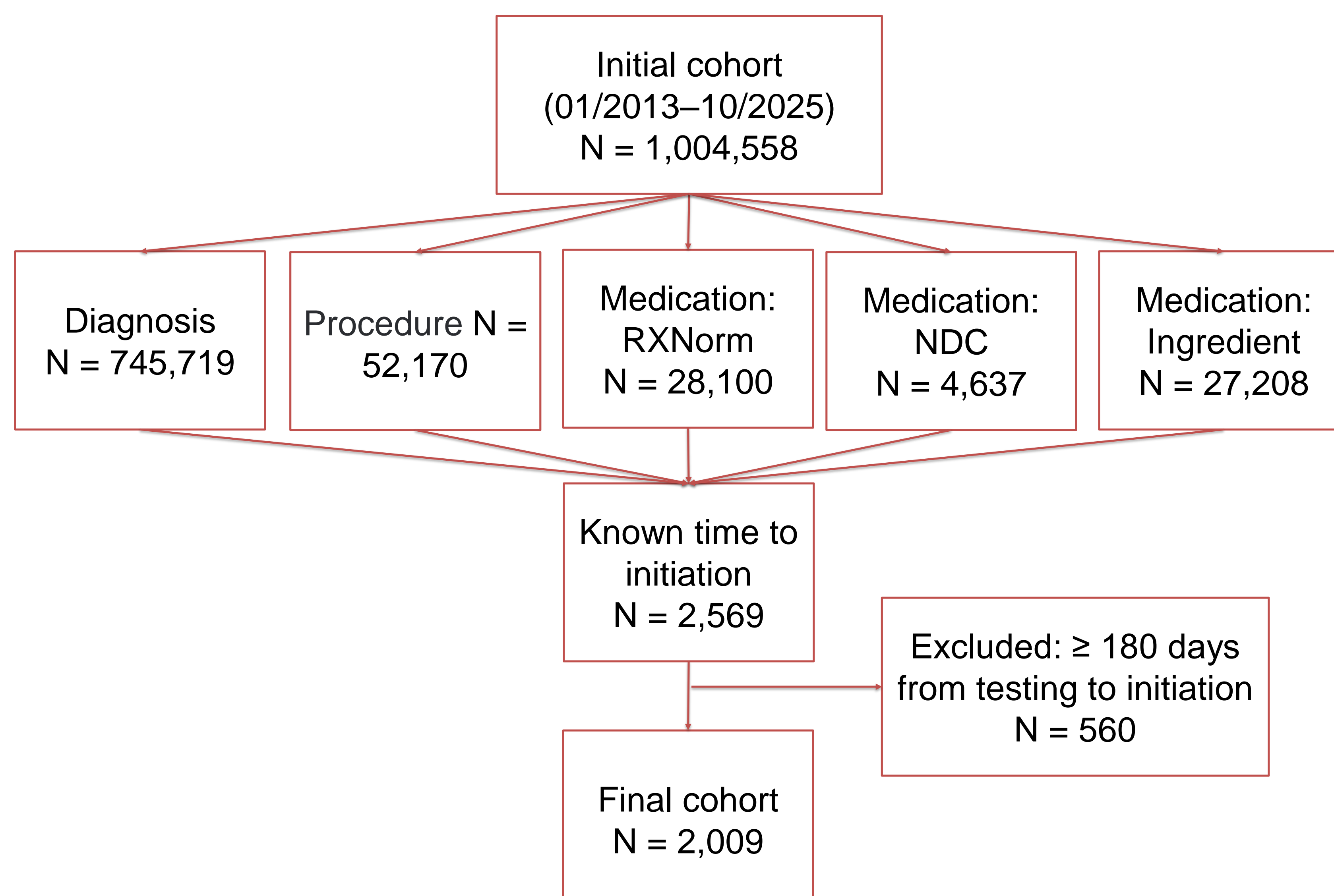
METHODS

- Data:** TriNetX Research Network (01/2013–10/2025).
- EGFR TKI:** erlotinib, gefitinib, afatinib, dacomitinib, and osimertinib.
- Study Population:** Adults (≥18 years) with non-small cell lung cancer (NSCLC) who underwent EGFR testing and initiated EGFR TKI therapy.
- Delayed Initiation Definition:**
 - Early:** EGFR TKI initiation within 21 days of EGFR testing
 - Late:** EGFR TKI initiation beyond 21 days after EGFR testing
- Determinants of Testing-to-Treatment Interval:**

Patient demographics	Clinical factors
<ul style="list-style-type: none"> Age Sex Race Ethnicity 	<ul style="list-style-type: none"> EGFR Testing Methods Charlson Comorbidity Index Concurrent medications

- Statistical Analysis:**
 - Descriptive:** Chi-square tests for group differences.
 - Regression:** Multivariable logistic regression for determinants of delayed initiation (reporting adjusted ORs and 95% CIs).
 - Trends:** Annual median intervals were assessed.

Cohort Selection



RESULTS

Table 1. Results of Multivariable Logistic Regression

Predictor	Comparison	Adjusted OR (95% CI)	p-value
Age	>65 vs ≤65	1.15 (0.95–1.39)	0.156
Sex	Female vs Male	1.13 (0.92–1.37)	0.245
Race	Asians & Others vs White	0.81 (0.63–1.03)	0.079
	Black vs White	1.10 (0.80–1.52)	0.555
	Unknown vs White	0.73 (0.47–1.12)	0.151
Ethnicity	Hispanic or Latino vs Not Hispanic or Latino	0.84 (0.56–1.27)	0.406
	Unknown vs Not Hispanic or Latino	1.38 (0.99–1.93)	0.057
Testing method	EGFR Multi-Gene Testing vs EGFR Single-Gene Testing	1.02 (0.84–1.25)	0.818
	Cancer*	0.84 (0.62–1.14)	0.265
Charlson Comorbidity Index	Metastatic solid tumor	0.70 (0.52–0.94)	0.019
	Congestive heart failure	1.10 (0.68–1.78)	0.700
	Chronic obstructive pulmonary disease	1.23 (0.97–1.56)	0.090
	Diabetes mellitus without complications	1.40 (1.00–1.96)	0.049
	Myocardial infarction	1.30 (0.78–2.17)	0.306
	Chronic kidney disease	0.88 (0.61–1.27)	0.491
	Peripheral vascular disease	1.21 (0.88–1.66)	0.237
	Cerebrovascular disease	1.02 (0.73–1.42)	0.910
	Diabetes mellitus with chronic complications	0.54 (0.33–0.90)	0.017
	Mild liver disease	0.91 (0.34–2.49)	0.860
	Rheumatologic disease	1.08 (0.62–1.88)	0.784
	Moderate to severe liver disease	0.97 (0.41–2.27)	0.935
	Dementia	1.10 (0.61–1.99)	0.747
	Peptic ulcer disease	1.07 (0.32–3.64)	0.913
	Hemiplegia or paraplegia	0.96 (0.48–1.93)	0.904
	Human immunodeficiency virus	2.27 (0.39–13.15)	0.361
	Concomitant medication	Nervous system	0.74 (0.55–1.01)
Blood and blood-forming organs		1.01 (0.70–1.45)	0.965
Respiratory system		0.83 (0.60–1.15)	0.270
Alimentary tract and metabolism		0.75 (0.51–1.08)	0.124
Dermatologicals		0.94 (0.73–1.22)	0.649
Anti-infectives for systemic use		0.77 (0.63–0.95)	0.015
Cardiovascular system		1.41 (1.09–1.83)	0.010
Systemic hormone		1.08 (0.87–1.35)	0.485
Sensory organs		1.15 (0.85–1.55)	0.365
Musculo-skeletal system		0.85 (0.67–1.08)	0.187
Various		1.06 (0.85–1.33)	0.609
Genitourinary system and sex hormones		1.37 (1.09–1.72)	0.008
Antineoplastic and immunomodulating agents		1.70 (1.22–2.37)	0.002
Antiparasitic products, insecticides, and repellents	0.98 (0.61–1.58)	0.933	

*Excluding lung cancer diagnosis (ICD-10 C34.X).

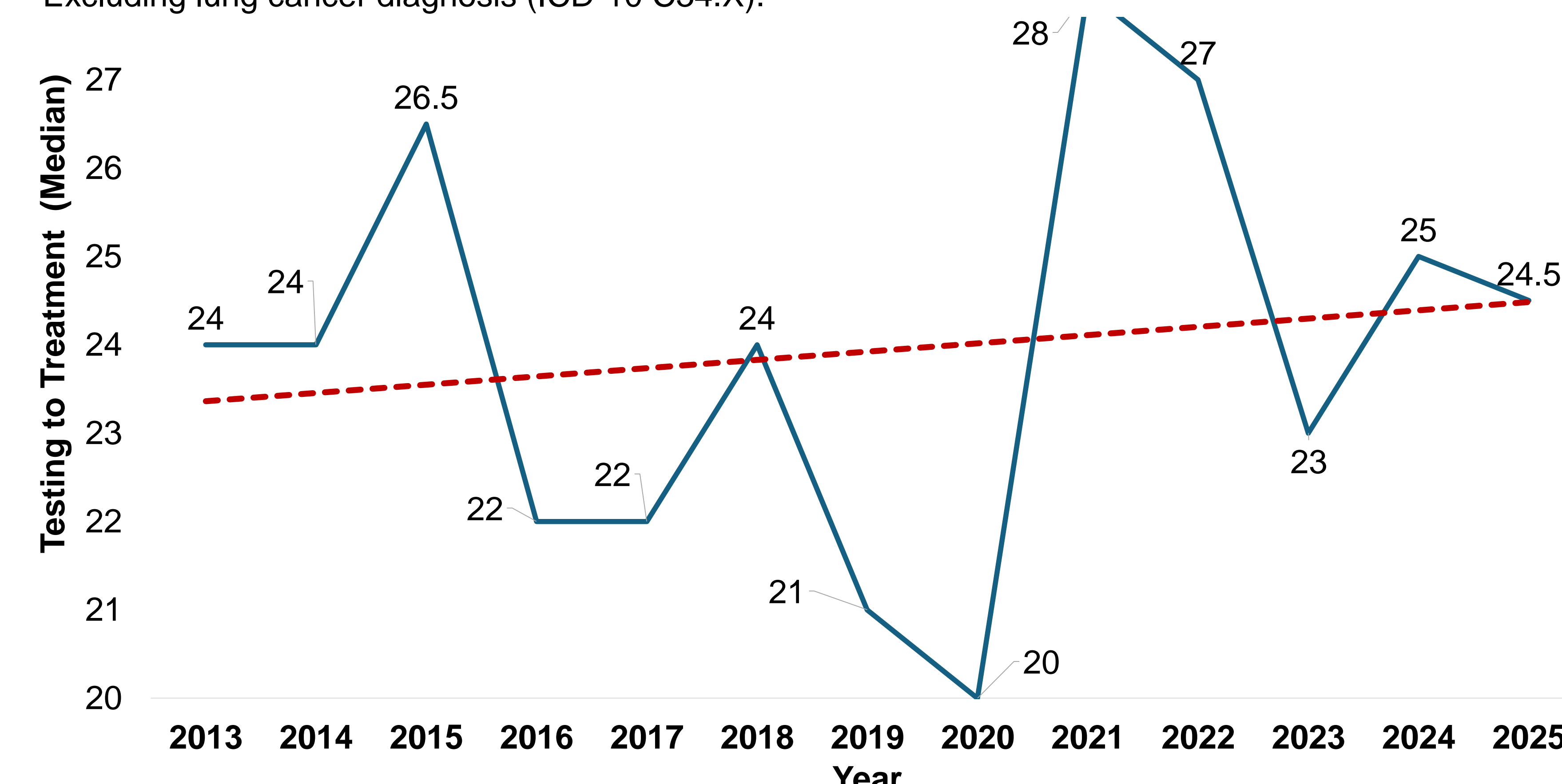


Figure 1. Annual Median Testing-to-Treatment Interval

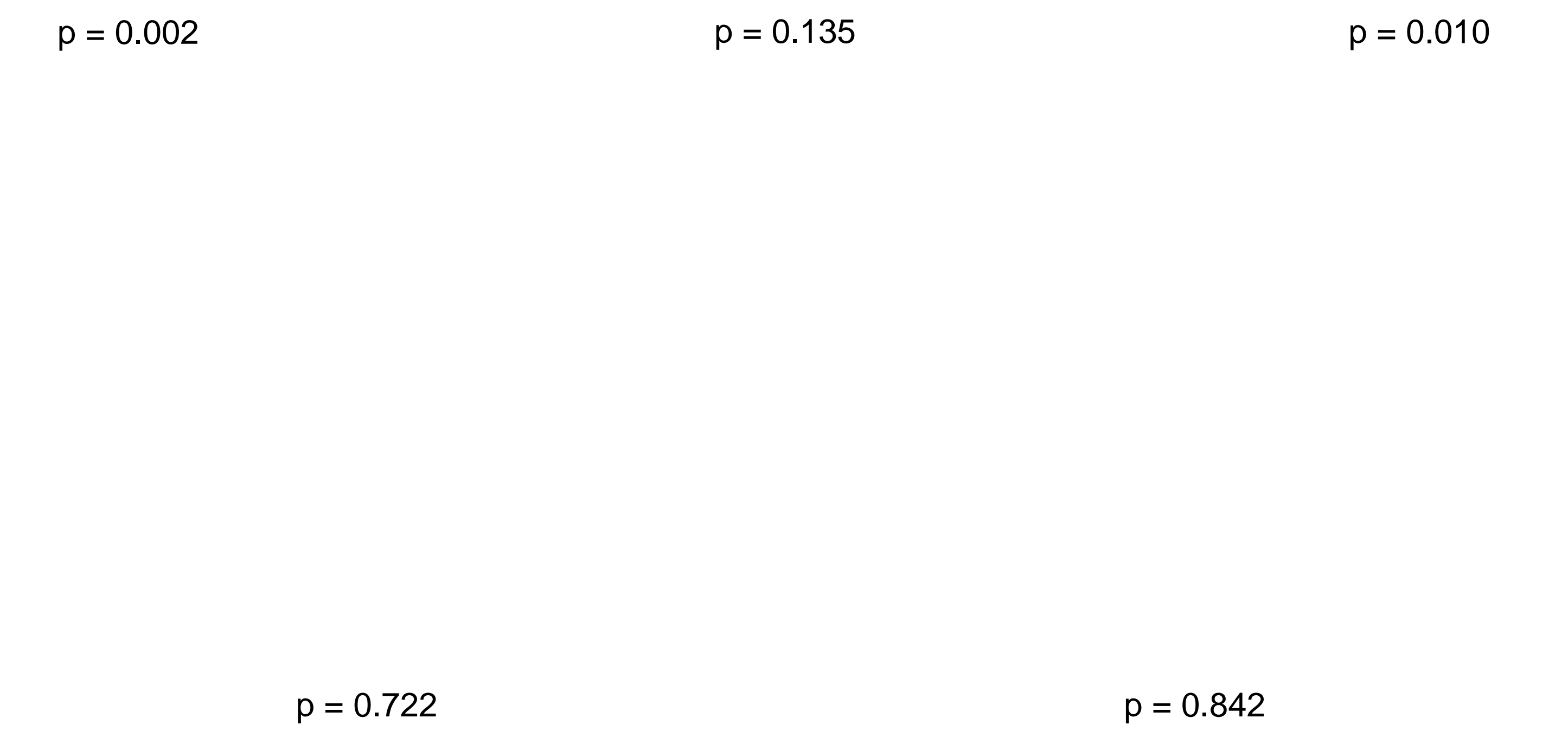


Figure 2. Stratified distribution of EGFR testing-to-treatment intervals

DISCUSSION

- Decreased risk of delay:** Patients with metastatic solid tumors, diabetes with chronic complications, or using systemic anti-infectives.
- Increased risk of delay:** Patients with uncomplicated diabetes, or receiving cardiovascular, genitourinary and sex hormone, or antineoplastic and immunomodulating medications.
- Clinical Implication:** Patients at increased risk of delayed EGFR TKI initiation may warrant closer monitoring.

LIMITATIONS & FUTURE DIRECTION

Limitations

- Retrospective design limits causality.
- Unmeasured confounders may influence results.
- Potential missing data or misclassification inherent to EHR databases.

Future Direction

- Evaluate the impact of delayed EGFR TKI initiation on long-term clinical outcomes.

ACKNOWLEDGEMENT & CONTACT

- Zuhair A. Alqahtani, PharmD, MSc, PhD, James L. Winkle College of Pharmacy, University of Cincinnati, OH
- Supported by UC Cancer Center Pilot Grant.
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