

Determinants of First-Line-to-Second-Line Transition Timing in Advanced NSCLC: A Multicenter Real-World Analysis

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INTRODUCTION

Clinical context

Modern targeted therapy and immunotherapy have reshaped **1L** treatment, but *real-world* movement from **1L** discontinuation to **2L** initiation is rarely quantified.

Evidence gap

Trial endpoints such as **OS** and **PFS** do not capture *pathway delays* caused by progression tempo, toxicity, molecular testing, access to drugs, or patient preference.

Study question

We measured **1L→2L latency** and asked whether it functions as a *healthcare-pathway metric* or an independent **OS prognostic marker**.

METHODS

Cohort and setting

Multicenter real-world *advanced NSCLC* cohort from **three Shenzhen tertiary hospitals**; small-cell histology was excluded.

Analysis population

Primary latency model **N=380** with documented **1L end** date and **2L start** date.

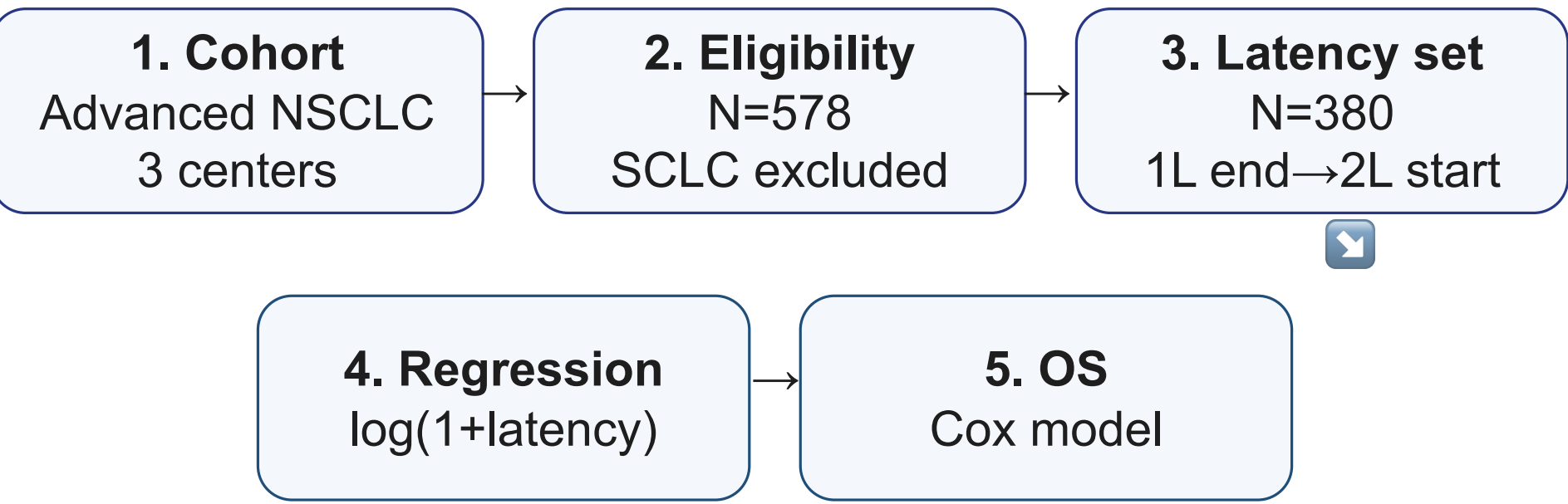
Endpoint definition

Primary endpoint was continuous **1L→2L latency**, defined as days from first-line treatment end to second-line treatment initiation.

Statistical approach

Right-skewed latency was modeled using multivariable **log(1+latency)** regression; **OS** relevance was tested by exploratory **Cox** modeling.

Workflow



BASELINE CHARACTERISTICS

Characteristic	Overall	TKI	ICI	CT/other
N	380	159	92	129
Age, median (range)	61 (31-88)	60 (33-83)	63 (34-82)	62 (27-87)
Male sex, n (%)	233 (61.3)	68 (42.8)	73 (79.3)	92 (71.3)
Ever smoker, n (%)	141 (37.1)	29 (18.2)	49 (53.3)	63 (48.8)
Never smoker, n (%)	212 (55.8)	115 (72.3)	40 (43.5)	57 (44.2)
Adenocarcinoma, n (%)	297 (78.2)	149 (93.7)	54 (58.7)	94 (72.9)
Squamous, n (%)	57 (15.0)	5 (3.1)	27 (29.3)	25 (19.4)
Stage IV, n (%)	329 (86.6)	155 (97.5)	77 (83.7)	97 (75.2)
Metastatic sites, median (IQR)	2.0 (1.0-3.0)	3.0 (1.0-4.0)	2.0 (1.0-3.0)	2.0 (1.0-3.0)
Bone metastasis, n (%)	209 (55.0)	103 (64.8)	45 (48.9)	61 (47.3)
Liver metastasis, n (%)	80 (21.1)	42 (26.4)	14 (15.2)	24 (18.6)
Brain metastasis, n (%)	136 (35.8)	75 (47.2)	24 (26.1)	37 (28.7)
1L duration, d, median (IQR)	27.0 (1.0-155.0)	30.0 (1.0-370.0)	36.5 (1.0-102.5)	21.0 (1.0-70.0)
1L→2L latency, d, median (IQR)	25.0 (5.0-110.8)	27.0 (1.0-146.0)	24.5 (10.2-59.2)	25.0 (7.5-114.0)
Death events, n (%)	169 (44.5)	69 (43.4)	37 (40.2)	63 (48.8)
OS from 1L, mo, median (IQR)	23.9 (13.0-40.4)	29.7 (18.0-45.6)	19.6 (10.1-29.2)	22.3 (11.3-35.9)

REFERENCES & ACKNOWLEDGEMENTS

Selected references

Soria et al. N Engl J Med. 2018; Gandhi et al. N Engl J Med. 2018; Khozin et al. Cancer. 2019.

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AI use disclosure

OpenAI Codex was used for poster layout, language, and formatting support. Statistical analyses, numerical results, and clinical interpretations came from the authors' materials and were not generated or altered by Codex. The authors retain responsibility for the final content and clinical judgment.

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RESULTS, CONCLUSIONS AND DISCUSSION

Key results

Latency: median **25.0 days**; IQR **5.0–110.8**; range **0–2,200**.

Shorter latency: longer **1L duration**, higher **metastatic burden**, and **TKI-containing 1L**.

Longer latency: **stage IV** vs III.

OS: no independent association (**HR 0.987**; **P=0.714**).

Clinical meaning

1L→2L latency is a pathway metric, not a validated prognostic marker.

Limitations

Conditional on documented 1L end and 2L start; same-day and extreme intervals may reflect date granularity.

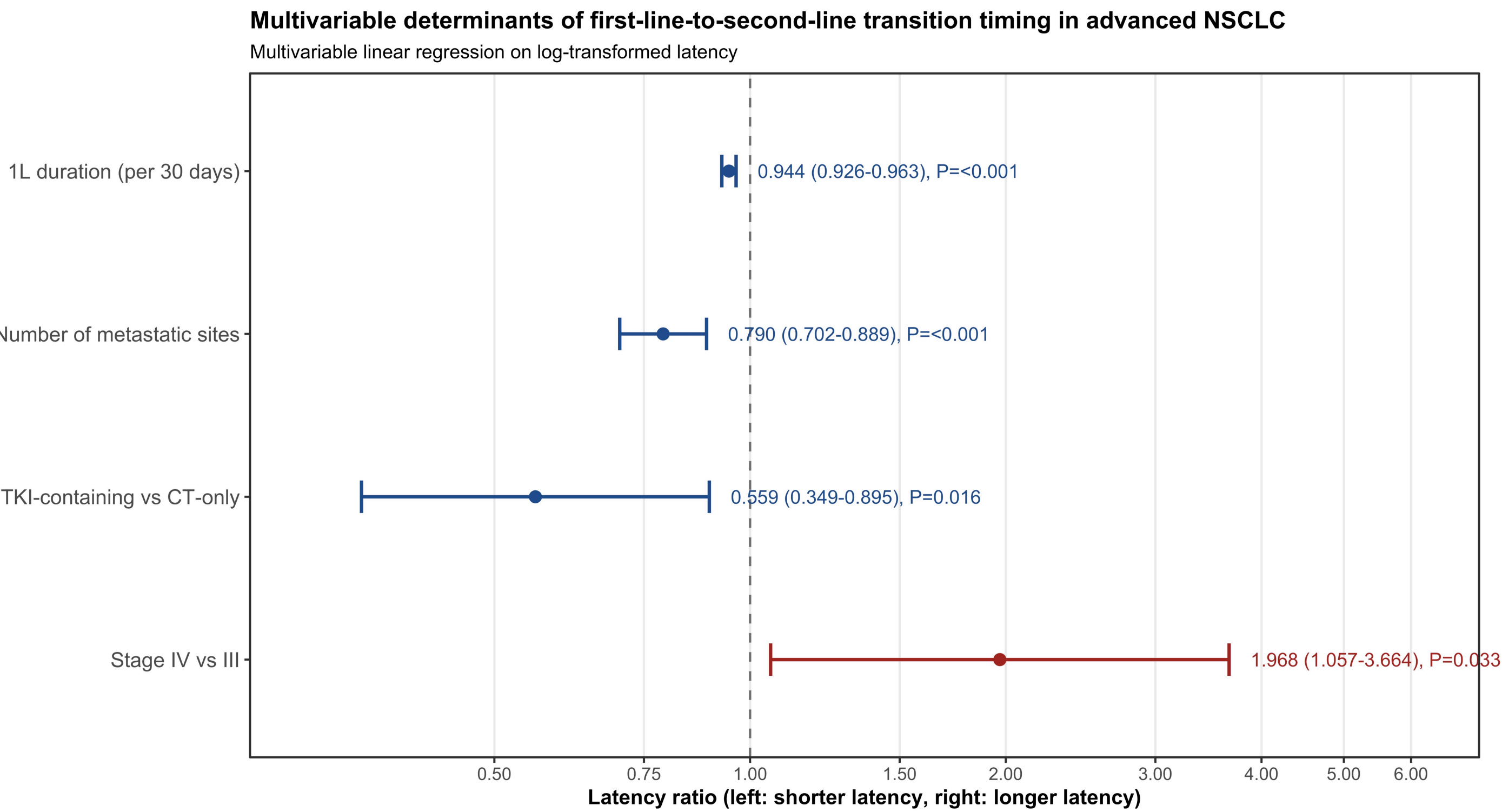


Figure 1. Multivariable determinants of 1L→2L transition latency.

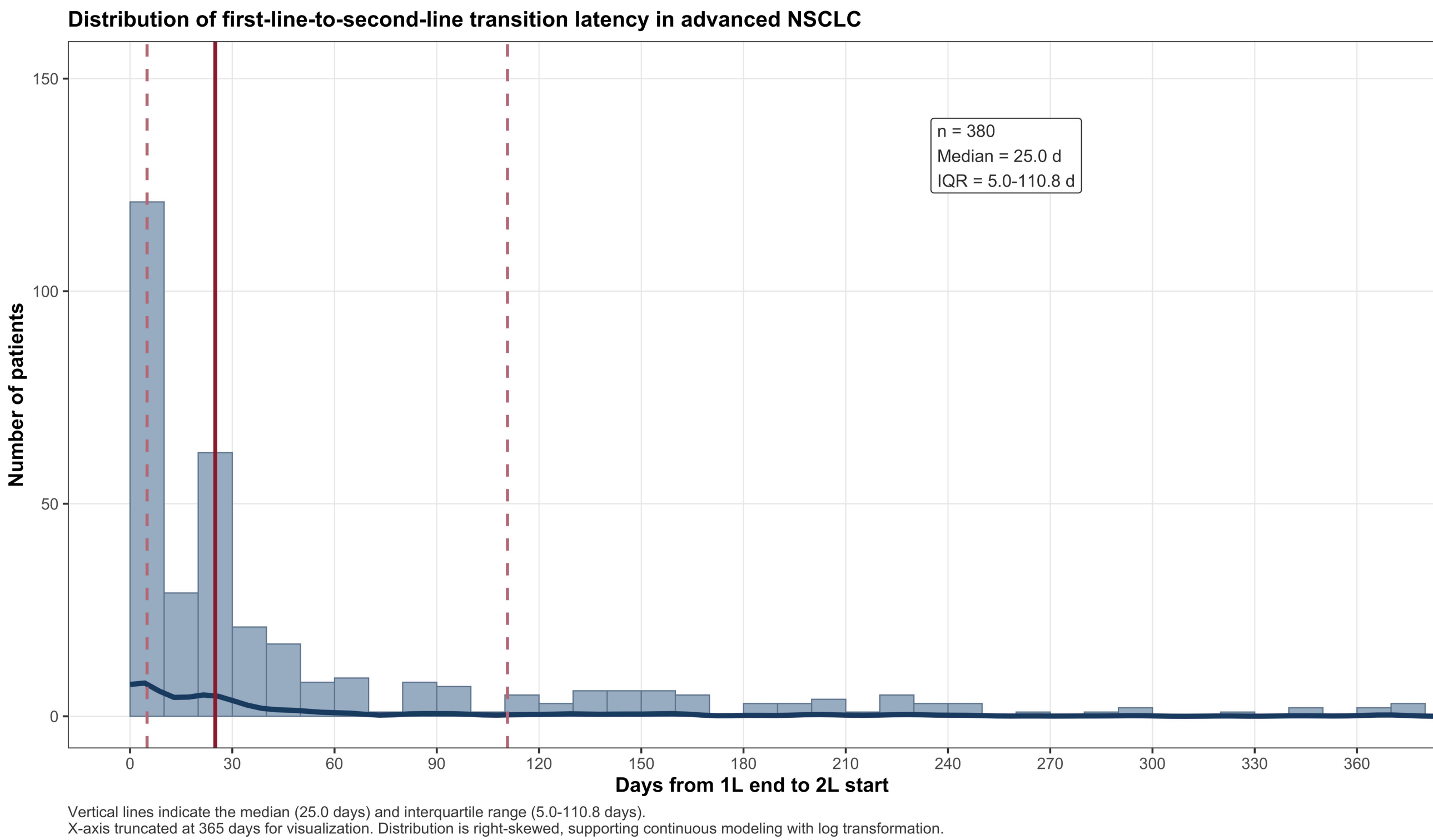


Figure 2. Distribution of 1L→2L transition latency.

Fig. 1 key

Shorter latency was associated with longer 1L duration (**0.944/30 d**, **P<0.001**), higher metastatic burden (**0.790/site**, **P<0.001**), and **TKI-containing 1L therapy** (0.559, **P=0.016**).

Stage IV vs III was associated with **longer latency** (**1.968**, **P=0.033**).

Fig. 2 key

Latency was strongly **right-skewed**: median **25.0 days**, IQR **5.0–110.8**.

Most transitions occurred within **days–weeks**; a small subgroup created a **long tail**.

X-axis truncated at **365 days**; full range **0–2,200**.