Patient and physician preferences for perioperative treatment attributes in potentially resectable non-small cell lung cancer

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Background

- Lung cancer is a leading cause of cancer-related mortality worldwide, with non-small cell lung cancer (NSCLC) accounting for approximately 80%-85% of all lung cancer cases.[1-3]
- Treatment decision-making in potentially resectable NSCLC increasingly involves balancing perioperative efficacy outcomes, surgical considerations, and treatment-related risks. Prior preference research has primarily focused on NSCLC broadly or on advanced/metastatic disease,[4-6] and little is known about preferences in resectable NSCLC or alignment between patient and physician preferences in this setting.
- Qualitative research has suggested that patients and physicians may differ in how they prioritize key outcomes such as event-free survival (EFS) and pathological complete response (pCR).[7] To our knowledge, this is the first quantitative preference study focused specifically on perioperative treatment decision-making in potentially resectable NSCLC.

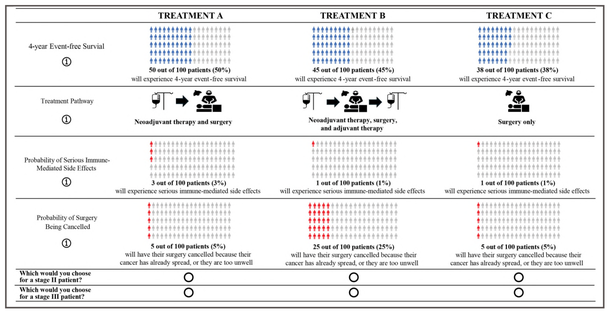
Objective

- This study investigated patient and physician preferences for key neoadjuvant and perioperative treatments in the resectable NSCLC setting. This included:
 - Quantifying their willingness to trade-off between treatment attributes.
 - Understanding how treatment-related risks are accepted in exchange for benefits.
 - Exploring how preferences might differ among patients and physicians.

Methods

- A cross-sectional survey, including a discrete choice experiment (DCE) and thresholding exercise (TE), was developed using insights from a targeted literature review and dedicated qualitative interviews.
- Patients with potentially resectable, non-metastatic NSCLC and physicians regularly treating patients with resectable NSCLC in the US, Germany, and Japan were recruited—through partnering with specialized health research organizations—from August to October 2025 to complete the online survey.
- In the DCE, patients and physicians selected their preferred option between three alternatives: two hypothetical treatments (representing neoadjuvant or perioperative treatment pathways) and a fixed treatment option (representing a surgery-only treatment pathway) in each of 11 choice tasks. Physicians evaluated clinical scenarios for stage II and stage III NSCLC (**Figure 1**).
- In the TE, participants were required to choose between two hypothetical alternatives differing only between two attributes. Physicians were randomly assigned to respond for a stage II or stage III patient.

Figure 1. Example DCE Task Choice (Physician)



- Each hypothetical treatment option was described by four attributes (**Table 1**). An experimental design was used to vary the attribute levels across alternatives and tasks.

Table 1. Attributes and Levels

Attribute Name	DCE Levels	TE Level Range	Level source
Probability of no recurrence or progression at 4 years	60% 55% 50% 45% Opt-out option (fixed): 38%	-	CheckMate 816[8] CheckMate 77T[9] NATCH[10,11]
Treatment pathway	Treatment before surgery only Treatment before and after surgery Opt-out option (fixed): Surgery only	-	Relevant options
Probability of serious immune-mediated side effects	6% 3% 1% Opt-out option (fixed): 1%	0%-6%	CheckMate 816[8] CheckMate 77T[9] KEYNOTE-671[12]
Probability of surgery being cancelled	5% 15% 25% Opt-out option (fixed): 5%	1%-25%	CheckMate 816[8] CheckMate 77T[9] KEYNOTE-671[12] NATCH[10,11]
Pathologic complete response	-	2%-26%	CheckMate 816[8] CheckMate 77T[9] KEYNOTE-671[12]

Abbreviations: DCE = discrete choice experiment; TE = thresholding exercise

Methods (cont'd)

- Preferences were analyzed using mixed logit models estimated in utility and marginal-rate-of-substitution space. Clinically relevant relative attribute importance (cRAI) was calculated using estimated preference weights applied across clinically observed treatment differences from pivotal trials. DCE and thresholding data were integrated using treatment-related risk as a common numeraire. Interaction models explored observed preference heterogeneity.

Results

Participants

- Three hundred and thirty-six patients (US: n=174, 51.8%; Germany: n=69, 20.5%; Japan: n=93, 27.7%) and 314 physicians (US: n=69, 22.0%; Germany: n=40, 12.7%; Japan: n=205, 65.3%) completed the online survey.
- Nearly two-thirds of patients had stage III NSCLC (n=206, 61.3%) and had previously undergone surgical resection (n=202, 60.1%). Physicians specialized in pulmonology (n=173, 55.1%), oncology (n=65, 20.7%), thoracic surgery (n=57, 18.2%), or radiology (n=17, 5.4%), and predominantly practiced in academic/university hospital (n=133, 42.4%) or community hospital (n=126, 40.1%) settings. Brief descriptive characteristics are presented in **Table 2** and **Table 3**.

Table 2. Descriptive Characteristics for the Overall Patient Sample

Characteristic	Patients (N = 336)
Country	
US	174 (51.8%)
Germany	69 (20.5%)
Japan	93 (27.7%)
Gender	
Male	195 (58.0%)
Female	138 (41.1%)
Other / prefer not to say	3 (0.9%)
Race / ethnicity (US only)[a]	
White	145/174 (83.3%)
Black or African American	25/174 (14.4%)
Asian	5/174 (2.9%)
Hispanic or Latino	25/174 (14.4%)
Age, years	
Mean (SD)	60.0 (12.3)
Cancer stage	
Stage II	130 (38.7%)
Stage III	206 (61.3%)
Surgical history (patients)	
Previously resected	202 (60.1%)
Surgery planned	126 (37.5%)
Surgery not planned	8 (2.4%)
Education (patients)	
Some university or below	108 (32.1%)
University degree or higher	228 (67.9%)
Health insurance (patients)	
Government-funded	190 (56.5%)
Private or employer-provided	142 (42.3%)
None / other	4 (1.2%)
Modified self-reported ECOG status (patients)	
ECOG 0–1	228 (67.9%)
ECOG ≥2	108 (32.1%)

Abbreviations: ECOG = Eastern Cooperative Oncology Group

[a]Race and ethnicity were collected in the US only; percentages are based on US subsamples, and categories are not mutually exclusive.

Table 3. Descriptive Characteristics for the Overall Physician Sample

Characteristic	Physicians (N = 314)
Country	
US	69 (22.0%)
Germany	40 (12.7%)
Japan	205 (65.3%)
Gender	
Male	280 (89.2%)
Female	30 (9.6%)
Other / prefer not to say	4 (1.2%)
Race / ethnicity (US only)[a]	
White	47/69 (68.1%)
Black or African American	4/69 (5.8%)
Asian	12/69 (17.4%)
Hispanic or Latino	3/69 (4.3%)
Specialty	
Pulmonology	173 (55.1%)
Medical oncology	65 (20.7%)
Thoracic surgery	57 (18.2%)
Radiology	17 (5.4%)
Other	2 (0.6%)
Practice setting[b]	
Academic / university hospital	133 (42.4%)
Community hospital	126 (40.1%)
Group practice	85 (27.1%)

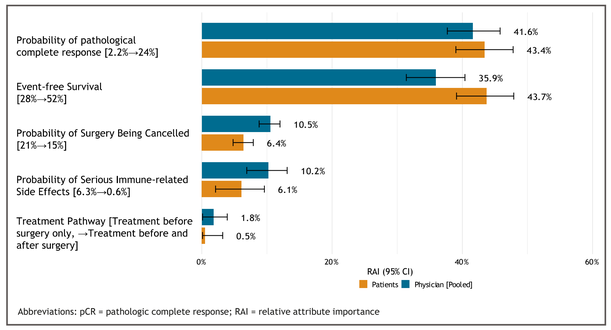
[a]Race and ethnicity were collected in the US only; percentages are based on US subsamples, and categories are not mutually exclusive.

[b]Multiple responses allowed for physician practice setting; percentages may sum to >100%.

Preference Results

- Improvement in efficacy was the dominant driver of patient and physician preferences.
- In the DCE, 4-year EFS was the most influential treatment attribute. When DCE and thresholding results were integrated in the cRAI analysis, 4-year EFS and pCR accounted for 87.1% and 77.5% of the total cRAI among patients and physicians, respectively (**Figure 2**).
- Reductions in the risks of surgery cancellation and serious immune-related side effects were also valued, with both risks weighted similarly on a per-percentage point basis.

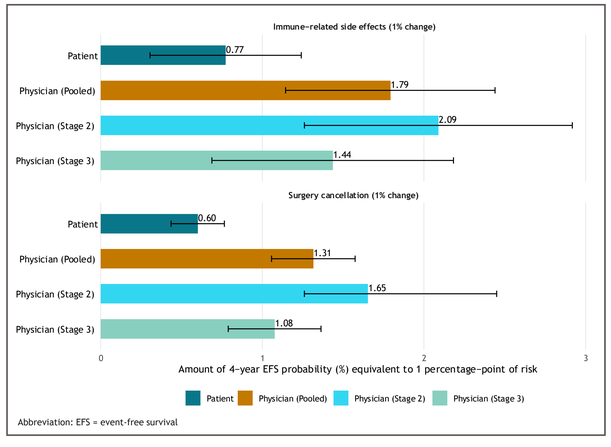
Figure 2.Clinical Relative Attribute Importance (Patient and Physician)



Abbreviations: pCR = pathologic complete response; RAI = relative attribute importance

- Physicians demonstrated lower risk tolerance than patients, requiring approximately 2.2-2.3 times greater improvements in 4-year EFS to accept a 1% increase in surgery cancellation or immune-related side effects (**Figure 3**).

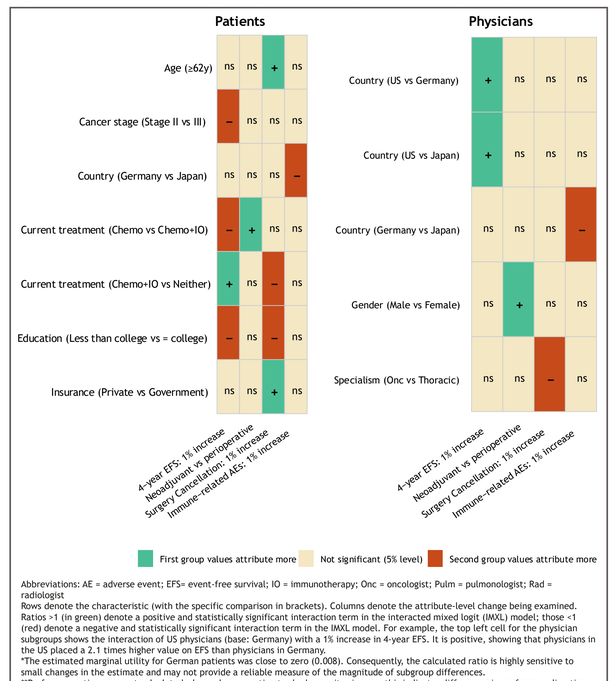
Figure 3. Minimum Acceptable Benefit for Additional Risk (Patient and Physician)



Abbreviation: EFS = event-free survival

- Compared with physicians responding for stage II, physicians responding for stage III were significantly more likely to prefer perioperative treatment, were approximately one-third less sensitive to surgery cancellation risk and were less likely to select surgery alone.
- Preference heterogeneity was observed among patients by age, education, cancer stage, current treatment, and insurance status.
- Patients with stage II NSCLC valued 4-year EFS about half as much as those with stage III NSCLC ($P<0.001$).
- Patients aged <62 years valued the probability of surgery cancellation about twice as much as patients aged ≥62 years ($P<0.01$).
- Patients on chemotherapy and immunotherapy valued 4-year EFS about twice as much as patients on chemotherapy only ($P<0.001$).
- Among physicians, preferences differed by country and specialty, with physicians in the US valuing EFS approximately twice as much compared with those in Germany or Japan (**Figure 4**).
 - Female physicians significantly preferred to avoid a neoadjuvant (vs. perioperative) treatment pathway, whereas male physicians were indifferent ($P<0.01$). The resulting comparison implies male physicians, compared with female physicians, preferred neoadjuvant treatment.
 - Thoracic surgeons were approximately one-third more concerned by the probability of surgery cancellation compared with oncologists ($P<0.05$).

Figure 4. Preference Heterogeneity Schematic (Patient and Physician)



Abbreviations: AE = adverse event; EFS= event-free survival; IO = immunotherapy; Onc = oncologist; Pulm = pulmonologist; Rad = radiologist

Rows denote the characteristic (with the specific comparison in brackets). Columns denote the attribute-level change being examined. Ratios >1 (in green) denote a positive and statistically significant interaction term in the interacted mixed logit (IMXL) model; those <1 (red) denote a negative and statistically significant interaction term in the IMXL model. For example, the top left cell for the physician subgroups shows the interaction of US physicians (base: Germany) with a 1% increase in 4-year EFS. It is positive, showing that physicians in the US placed a 2.1 times higher value on EFS than physicians in Germany.

*The estimated marginal utility for German patients was close to zero (0.008). Consequently, the calculated ratio is highly sensitive to small changes in the estimate and may not provide a reliable measure of the magnitude of subgroup differences.

**Preference ratios were not calculated when subgroup estimates had opposite signs, as this indicates differences in preference direction rather than magnitude alone.

Conclusions

- Treatment preferences in potentially resectable NSCLC were driven primarily by perioperative efficacy, with patients and physicians placing greater value on improvements in 4-year EFS and pCR than on treatment pathway, surgery cancellation risk, or serious immune-mediated side effect risk.
- Although patients and physicians prioritized efficacy, physicians demonstrated lower tolerance for treatment-related risks than patients, and preferences varied according to patient and physician characteristics.
- Differences between patient and physician preferences, particularly in willingness to accept treatment-related risks in exchange for efficacy benefits, underscore the importance of patient-centered discussions and shared decision-making when selecting perioperative treatment strategies.

Limitations

- We note the study has several limitations, including that the DCE and TE are hypothetical stated preference tools. pCR and EFS were assessed in complementary preference tools and data subsequently linked. Furthermore, for physicians the tools simplified complex perioperative treatment decisions into hypothetical Stage II/III patient scenarios and therefore findings may not fully reflect real-world decision-making where additional clinical or contextual information may influence choices. Finally, the smaller patient sample size, while in line with typical sample sizes for healthcare DCEs, may mean findings are not generalizable to the wider resectable NSCLC patient population.

References

1. Molina JR, et al. *Mayo Clin Proc*. 2008;83(5):584-594.
2. Siegel RL, et al. *CA Cancer J Clin*. 2016;66(1):7-30.
3. Torre LA, et al. *CA Cancer J Clin*. 2015;65(2):87-108.
4. Liu F, et al. *Front Public Health*. 2021;9:653450.
5. MacEwan JP, et al. *MDM Policy Pract*. 2020;5(1):2381468320922208.
6. Le H, et al. *Lung Cancer*. 2026;211:108850.
7. Quaife M, et al. *Value Health*. 2025;28(6, Supplement 1):S335-S336.
8. Forde PM, et al. *N Engl J Med*. 2022;386(21):1973-1985.
9. Brazel D, Nagasaka M. *Med*. 2024;5(8):852-855.
10. Felip E, et al. *J Clin Oncol*. 2010;28(19):3138-3145.
11. Felip E, Martinez-Marti A. *Ann Oncol*. 2012;23(9):2211-2214.
12. Wakelee H, et al. *N Engl J Med*. 2023;389(6):491-503.

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