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Elevating the Patient Perspective: Quantifying First-Line Preferences in Locally Advanced/Metastatic Non-Small Cell Lung Cancer (NSCLC) Using the Threshold Technique

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Conclusions

This study advances the understanding of patient preferences in the evolving 1L LA/met NSCLC treatment landscape, where new treatment combinations offer distinct profiles of efficacy and toxicity.

Patient preferences are likely to play an increasing role in treatment selection as more 1L LA/met NSCLC treatment options become available.

The results of this study show that while preferences for chemotherapy versus non-chemotherapy regimens vary, SE risks are important factors in patients decision-making.

- When presented with hypothetical 1L scenarios, 70-90% of surveyed patients with advanced NSCLC preferred chemo-free regimens, indicating a strong inclination toward avoiding chemotherapy when viable alternatives exist.
- Threshold analysis revealed meaningful variation in risk tolerance: patients showed higher MARs for fatigue and hematological AEs, suggesting greater acceptance of these risks, while venous thromboembolism consistently had the lowest MAR, indicating lower tolerance.

PFS did not have a major impact on respondent preferences, suggesting inelastic preferences for PFS within the hypothetical range tested.

These insights highlight the importance of integrating patient-defined benefit-risk trade-offs into personalized, patient-centered treatment strategies in the evolving 1L LA/met NSCLC landscape.

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Disclosures

Marco Boeri, Debdeep Chattopadhyay, and **Divya Mohan** are employees of OPEN Health. OPEN Health received funding from J&J to conduct the study used to create this poster. **Pratyusha Vadagam, Ellen Janssen,** and **Iris Lin** are employees of Johnson & Johnson, the sponsor of this study, and own company stock/stock options. All authors participated in the design of the study, in the analysis and interpretation of data, and in creating this poster.

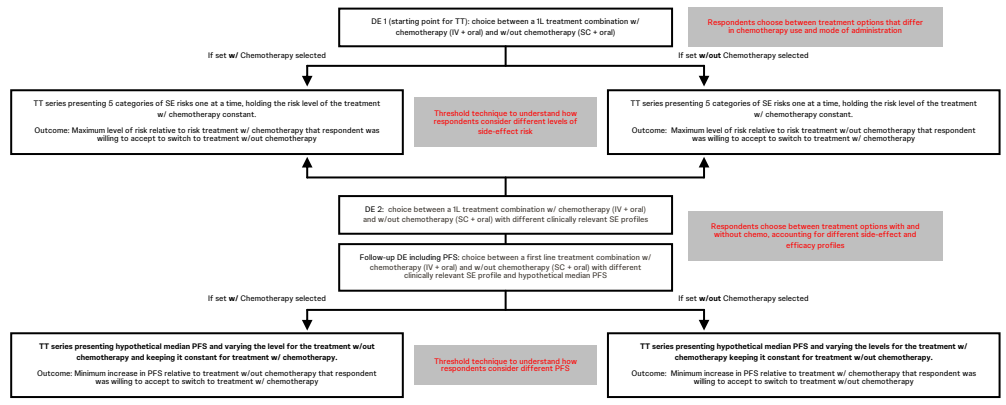
Background

- The management of non-small cell lung cancer (NSCLC) has evolved significantly with the introduction of newer treatment combinations featuring novel mechanisms of action.
  - These newer therapies have been shown to improve survival and quality of life in many patients.[1]
- Due to the varying characteristics of newer treatment combinations, particularly in first line (1L) locally advanced, metastatic NSCLC (LA/met NSCLC) targeting specific gene mutations, treatment decisions have become increasingly complex, often involving weighing the different benefits and risks.
- Understanding patient preferences and perceptions about 1L treatment options is therefore crucial, as treatment decisions involve preferences and tradeoffs between risks and benefits.
- Although patient preferences have been explored in the past for NSCLC using discrete choice experiments, including attributes such as treatment effectiveness, safety, and quality of life,[2-6] there is limited evidence on preferences for newer targeted therapies in advanced NSCLC.
- This study aimed to address this gap by exploring how patients with LA/met NSCLC value the trade-offs between treatment characteristics.

Methods

- A cross-sectional, non interventional online survey was administered among patients with LA/met NSCLC between February to March 2025.
- 150 respondents were recruited for the online survey after screening for eligibility.
- The recruiting agency used a network of physicians to recruit. Respondents took approximately 15-20 minutes to complete the survey.
- Inclusion Criteria: Adults (18 years of age or older); Physician-confirmed diagnosis of LA/met NSCLC (i.e., stage IIIB, IIIC, or IV); Resident in the US; Able to fluently read, speak, understand the material, and give consent in English.
- The survey included questions regarding respondents' demographics, experience with NSCLC, and types of treatment.
- Respondents were provided with a general description of different types of treatment options, mode of administration, and side effects associated with 1L NSCLC treatments.
- Preferences were elicited based on a combination of direct elicitation (DE) questions and threshold technique (TT)[7,8] as summarized in **Figure 1**.
- Importance of mode of administration was assessed prior to the DE questions.
- A preliminary DE question identified respondents' preferences for a treatment set with and without chemotherapy, assuming the same risks and mode of administration.
- In the DE1 used as a starting point for the TT series, respondents were asked if they would select a treatment with chemotherapy administered as an infusion + oral (IV + oral) combination or a treatment without chemotherapy administered as a subcutaneous injection (SC + oral) as their 1L treatment if everything else was the same (**Figure 2**).
- DE questions were analyzed using descriptive statistics such as frequency and proportion of respondents that chose each profile.
- TT was then presented varying the risks of specific side effects (SE) (hematological, dermatological, gastrointestinal, venous thromboembolism [VTE], and fatigue) to identify the maximum acceptable risk (MAR) for each SE based on respondents' selection on DE1. Descriptive statistics and interval regression analyses were conducted to estimate the MAR for each SE. A preference heterogeneity analysis was further used to assess the impact of covariates.
  - Among those who selected treatment with chemotherapy on DE1: the threshold represents the minimum reduction in risk for each AE from the clinically relevant starting point needed for respondents to accept a treatment without chemotherapy instead of their preferred option (with chemotherapy) as 1L of treatment.
  - Among those who selected treatment without chemotherapy on DE1: the threshold represents the maximum acceptable increase in risk for each AE from the clinically relevant starting point needed for respondents to accept a treatment with chemotherapy instead of their preferred option (without chemotherapy) as 1L of treatment.
- DE2 assessed any change in preferences from DE1 based on the clinically relevant side effect profile presented using descriptive statistics (**Figure 3**).
- At the end, a similar TT exercise was also conducted in which a hypothetical progression-free survival (PFS) range was presented based on respondents' choice on DE2, and a regression analysis was conducted to estimate the threshold at which the two alternatives were equally desirable to respondents.
- The mean PFS threshold represents the minimum increase in PFS relative to the PFS of the treatment option chosen in DE1 to switch from their preferred option.

Figure 1. Study design; A mix of direct elicitation and threshold technique



DE: Direct elicitation, TT: threshold technique

Results

Respondent Demographics and NSCLC Experience

- Respondent demographics are detailed in **Table 1**.
- Respondents' history with lung cancer and treatment experience is described in **Table 2**.

Table 1: Descriptive statistics (N = 150)

Characteristic	N (%)
Total Sample size	150 (100%)
Age, Mean (SD)	63.0 (8.9)
Gender,	
Male	81 (54%)
Female	69 (46%)
Racial background	
Black or African American	36 (24%)
White	87 (58%)
Hispanic, Latino, or Spanish	12 (8%)
Other	15 (10%)
Smoking status	
Current smoker	76 (50.7%)
Smoked in the past	37 (24.7%)
Never smoked	30 (20%)
Prefer not to answer	7 (4.7%)
Region of residence	
North-east	77 (51.3%)
Mid-west	5 (3.3%)
South	56 (37.3%)
West	12 (8%)

Table 2: Respondents' history with lung cancer and treatment experience (N = 150)

Characteristic	N (%)
Stage of NSCLC	
Stage IIIB	65 (43.3%)
Stage IIIC	39 (26%)
Stage IV	46 (30.7%)
Clinician-reported EGFR mutation status	
EGFR-positive	100 (66.7%)
EGFR-negative	50 (33.3%)
Time since lung cancer diagnosis	
Less than 6 months	7 (4.7%)
6 months to less than 1 year	24 (16%)
1 year to less than 2 years	53 (35.3%)
2 years to less than 5 years	42 (28%)
More than 5 years	24 (16%)
Current NSCLC treatment*	
Radiotherapy	11 (7.3%)
Chemotherapy#	79 (52.7%)
Immunotherapy#	28 (18.7%)
Targeted therapy#	70 (46.7%)
None	4 (2.7%)
Previous NSCLC treatments*	
Radiotherapy	14 (9.3%)
Chemotherapy#	96 (64%)
Immunotherapy#	22 (14.7%)
Targeted therapy#	32 (21.3%)
None	24 (16%)

*Not mutually exclusive, #given as monotherapy or in combination therapy

Importance of mode of administration

- 102 (68%) considered mode of administration either very important or important.
- The SC non-chemotherapy option was most frequently ranked first (58%), while the IV, chemotherapy-containing option was most often ranked last (60%).

Direct elicitation

- 76.7% reported a preference for a treatment set without chemotherapy in a preliminary DE question
- **Figures 2** and **3** present the initial and final DE questions along with respondent preferences for treatment sets with and without chemotherapy.

Figure 2: Direct elicitation to set up the TT series (DE1)

Characteristic	Treatment Set Containing Chemotherapy		Treatment Set NOT Containing Chemotherapy	
How the treatment is taken	Chemotherapy IV once every 2-4 weeks for 1 to 2 hours	Targeted therapy Oral tablets taken every day	Targeted therapy Injections under your skin once every 2-4 weeks	Targeted therapy Oral tablets taken every day
Response	N=38 (25.33%)		N=112 (74.67%)	

Figure 3: Direct elicitation question after the TT series (DE2)

Characteristic	Treatment Set Containing Chemotherapy		Treatment Set NOT Containing Chemotherapy	
How the treatment is taken	Chemotherapy IV once every 2-4 weeks for 1 to 2 hours	Targeted therapy Oral tablets taken every day	Targeted therapy Injections under your skin once every 2-4 weeks	Targeted therapy Oral tablets taken every day
Risk of severe blood-related side effects	35% (35 out of 100 people)		2% (2 out of 100 people)	
Risk of severe skin-related side effects	10% (10 out of 100 people)		30% (30 out of 100 people)	
Risk of having diarrhea, nausea, and/or vomiting	45% (45 out of 100 people)		25% (25 out of 100 people)	
Risk of blood clot formation in your veins	0% (0 out of 100 people)		5% (5 out of 100 people)	
Risk of feeling tired and sleepy	30% (30 out of 100 people)		3% (3 out of 100 people)	
Response	N=16 (10.67%)		N=134 (89.33%)	

Threshold Analysis

- **Table 3** shows the results from the interval regression, identifying the mean threshold at which respondents perceived the treatment options equally desirable, beyond which they switched from their initial preferred treatment (**Figure 2**) to the other option. Risk starting points are informed by clinically relevant 1L treatment options.
- Those who initially preferred treatment with chemotherapy were most sensitive to change in VTE risk with a lowest mean threshold, while those who initially preferred treatment without chemotherapy were most sensitive to change in gastrointestinal SE risk with a lowest mean threshold.

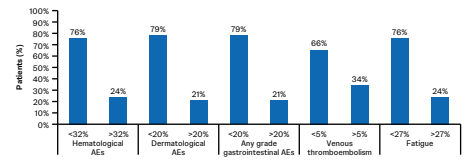
Table 3: Interval regression analysis (constant only) to identify the maximum acceptable risk for each AE included

Risk included in the threshold	Risk starting point: Reference profile (with chemo)	Risk starting point: Target profile (without chemo)	Mean Threshold (% points)	95% CI
Among respondents who selected infusion option with chemotherapy in the initial direct elicitation (n = 38)				
Fatigue	30%	3%	14.4	(9.66 – 19.12)
Hematological AEs	35%	3%	14.1	(9.44 – 18.76)
Any grade gastrointestinal AE	45%	25%	12.9	(8.13 – 17.75)
Dermatological AEs	30%	10%	10.0	(6.74 – 13.35)
Venous thromboembolism	5%	0%	3.0	(2.17 – 3.72)
Among respondents who selected injection option without chemotherapy in the initial direct elicitation (n = 112)				
Hematological AEs	3%	35%	22.8	(20.50 – 25.14)
Fatigue	3%	30%	16.3	(13.63 – 19.02)
Dermatological AEs	10%	30%	16.1	(13.43 – 18.85)
Venous thromboembolism	0%	5%	14.9	(12.01 – 17.82)
Any grade gastrointestinal AE (diarrhea, nausea or vomiting)	25%	45%	10.7	(8.47 – 12.88)

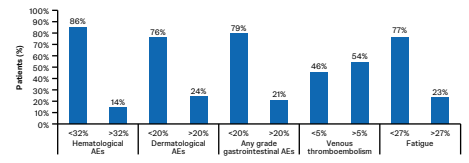
Figure 4 shows the proportion of respondents who have a threshold above or below the clinically relevant baseline levels for each risk included in the study. The X-axis represents the difference in mean threshold between the two arms. Across almost all risks, most respondents had a MAR below the mean threshold difference– meaning they were more sensitive to risk levels and were likely to pick the treatment selected in DE1 in the TT, even when the risk of the preferred treatment was higher than the treatment not preferred. This was reversed for venous thromboembolism among the respondents who preferred the set without chemotherapy.

Figure 4. Proportion of individuals on Each Side of the Baseline included in the final DE question, for Each Risk

A. Switch from chemotherapy to non-chemotherapy (i.e., the treatment set with chemotherapy was chosen in the initial DE), N=38.



B. Switch from chemotherapy to non-chemotherapy (i.e., the treatment set with chemotherapy was chosen in the initial DE), N=38.



- **Table 4** shows the results of the interval regression on PFS. The model's output is the mean PFS threshold that makes respondents indifferent between the two alternatives:
  - Among respondents who preferred treatment with chemotherapy in the final DE question (DE3) with a complete SE profile (N = 16), 13 (81%) did not switch to treatment without chemotherapy even if they were presented with ~9 months of increased PFS.
  - Among respondents who preferred treatment without chemotherapy in the final DE question (DE3) with a complete SE profile (N = 134), 119 (89%) did not switch to treatment with chemotherapy even if they were presented with ~5 months of increased PFS.

Table 4: Results of the constant-only interval regression for minimum acceptable PFS

Risk included in the threshold	Median PFS starting point: Reference profile (with chemo)	Median PFS starting point: Target profile (without chemo)	Mean Threshold (% points)	95% CI
Selected infusion option with chemotherapy in the final direct elicitation with all risks (n = 16)				
Median PFS	24 months	27 months	8.40	(6.76 – 10.03)
Selected injection option without chemotherapy in the final direct elicitation with all risks (n = 134)				
Median PFS	27 months	24 months	5.83	(5.66 – 6.01)

Preference heterogeneity analysis:

- Stepwise regression identified limited significant covariates influencing risk thresholds (MAR). Most of the demographic and clinical variables did not impact the MAR and were therefore not included in the final model.

Table 5. List of covariates affecting risk thresholds

	Hematological AEs	Dermatological AEs	Any grade gastrointestinal AE (diarrhea, nausea or vomiting)	Venous thromboembolism	Fatigue
Respondents who preferred treatment w/chemotherapy	**Included in final model (Impact)**	**Included in final model (Impact)**	**Included in final model (Impact)**	**Included in final model (Impact)**	**Included in final model (Impact)**
Age	Yes (+)	No	Yes (+)	No	No
EGFR +ve	No	No	No	No	No
Region (not northeast)	No	No	No	No	No
Gender (female)	No	No	No	No	No
Race (Hispanic or black)	No	No	No	No	Yes (+)
Marital status (married)	Yes (-)	No	Yes (-)	No	Yes (-)
Current smoker	Yes (+)	Yes (+)	Yes (+)	No	No
Change in employment status due to NSCLC	No	No	No	No	No
Time to hospital	No	Yes (-)	No	No	No
Number of years since diagnosis	Yes (-)	Yes (-)	Yes (-)	No	Yes (-)
Respondents who preferred treatment w/out chemotherapy	**Included in final model (Impact)**	**Included in final model (Impact)**	**Included in final model (Impact)**	**Included in final model (Impact)**	**Included in final model (Impact)**
Age	No	No	No	No	No
EGFR +ve	No	No	No	No	Yes (+)
Region (not northeast)	No	No	Yes (+)	No	No
Gender (female)	No	Yes (-)	No	No	Yes (-)
Race (Hispanic or black)	No	No	No	No	No
Marital status (married)	No	No	No	No	No
Current smoker	No	No	No	No	No
Change in employment status due to NSCLC	Yes (+)	Yes (+)	No	Yes (+)	Yes (+)
Time to hospital	No	No	No	Yes (-)	No
Number of years since diagnosis	No	No	No	Yes (+)	No

Yes, indicates a statistical significance at a p-value < 0.05, + represents higher willingness to accept the SE or higher mean threshold for the SE

Preference heterogeneity analysis:

- Subgroup analysis was also conducted by EGFR mutation status and chemotherapy experience on the risk thresholds (PFS threshold derivation was not feasible due to minimal changes in treatment choices across subgroups).
  - Risk tolerance varied by subgroup: EGFR+ and chemotherapy-naïve individuals generally showed higher thresholds for adverse events,
  - Fatigue and hematological adverse events had the highest mean threshold estimates across most subgroups, indicating greater acceptance of these risks. This was consistent with the overall results.

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