Patient Characteristics, Treatment Patterns, and Factors of Biomarker Testing Among Patients with Advanced Non-Small Cell Lung Cancer (aNSCLC) in the US, 2012–2020
Mo Yang1, Joanna P. MacEwan1, Rebecca Hannold1, Monica McClain2, Richard M. O’Hara Jr2, Paul Paik2

INTRODUCTION
• Lung cancer is the leading cause of cancer deaths in the US1
• Approximately 65% to 70% of patients with NSCLC are diagnosed at advanced stages2
• Molecular profiles and immunologic status help determine treatment options and allow for individualized treatment for patients with aNSCLC

OBJECTIVES
• To describe patient characteristics, factors associated with biomarker testing, and treatment patterns in real-world US patients with aNSCLC

RESULTS

Patient characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Patients N=6,877</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at index, n (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>72.7 (10.0)</td>
<td></td>
</tr>
<tr>
<td>Range, n (%)</td>
<td>30–108</td>
<td></td>
</tr>
<tr>
<td>Black or African American</td>
<td>1,167 (17.0)</td>
<td>0.001</td>
</tr>
<tr>
<td>51-64 yrs</td>
<td>3,168 (46.1)</td>
<td></td>
</tr>
<tr>
<td>≥65 years</td>
<td>2,542 (37.0)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>2,585 (37.6)</td>
<td>0.001</td>
</tr>
<tr>
<td>Male</td>
<td>4,292 (62.4)</td>
<td></td>
</tr>
<tr>
<td>Former smoker</td>
<td>1,628 (23.7)</td>
<td></td>
</tr>
<tr>
<td>Current smoker</td>
<td>4,240 (61.7)</td>
<td></td>
</tr>
<tr>
<td>Never smoked tobacco</td>
<td>1,405 (20.4)</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>54 (0.8)</td>
<td></td>
</tr>
<tr>
<td>ECOG performance status, n (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>2,04 (0.3)</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>4,628 (68.3)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>770 (11.2)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>24 (0.3)</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>3,247 (47.2)</td>
<td></td>
</tr>
<tr>
<td>Brain metastasis*, n (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>5,027 (73.1)</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1,850 (26.9)</td>
<td></td>
</tr>
<tr>
<td>Histology at index, n (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-squamous</td>
<td>6,223 (90.5)</td>
<td></td>
</tr>
<tr>
<td>Squamous</td>
<td>1,762 (25.6)</td>
<td></td>
</tr>
</tbody>
</table>

Factors associated with biomarker testing

<table>
<thead>
<tr>
<th>Variable</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at index, n (%)</td>
<td></td>
</tr>
<tr>
<td>≤50 yrs</td>
<td>0.001</td>
</tr>
<tr>
<td>&gt;50 yrs</td>
<td></td>
</tr>
<tr>
<td>Sex, male</td>
<td>0.02</td>
</tr>
<tr>
<td>Female</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td></td>
</tr>
<tr>
<td>Age group at diagnosis, n (%)</td>
<td></td>
</tr>
<tr>
<td>≤64 yrs</td>
<td>0.03</td>
</tr>
<tr>
<td>&gt;64 yrs</td>
<td></td>
</tr>
<tr>
<td>Smoking status, n (%)</td>
<td></td>
</tr>
<tr>
<td>Never smoked tobacco</td>
<td>0.001</td>
</tr>
<tr>
<td>Former smoker</td>
<td></td>
</tr>
<tr>
<td>Current smoker</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>0.001</td>
</tr>
<tr>
<td>ECOG performance status, n (%)</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>0.001</td>
</tr>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>0.001</td>
</tr>
<tr>
<td>Histology at index, n (%)</td>
<td></td>
</tr>
<tr>
<td>Non-squamous</td>
<td>0.001</td>
</tr>
<tr>
<td>Squamous</td>
<td></td>
</tr>
</tbody>
</table>

CONCLUSIONS
• Men, Black patients, current smokers, patients with squamous histology, and patients with ECOG performance status of 2+ were less likely to be tested for biomarkers.

LIMITATIONS
• Generalizability to the overall aNSCLC and US population is limited since this study only includes patients within the TEMPUS CancerLinQ network
• The rate of biomarker testing could be underestimated, especially those with negative results, due to the nature of electronic health record data abstraction
• Rates of biomarker testing were likely affected by the introduction of PD-L1 and other targeted treatments during the observation period of this study (2012–2020)

METHODS
• This retrospective cohort study used the TEMPUS CancerLinQ oncology dataset with an observational period from January 1, 2012, to December 31, 2020
• Patients diagnosed with Stage IIB–C/IV NSCLC or an associated metastatic event during the observational period (index date) and ≥18 years of age were included
• Patients were excluded if there was missing sex or age information, histology results were inconsistent with NSCLC, or death occurred prior to other events of interest
• Biomarker testing for EGFR, KRAS, ALK, ROS1, BRAF, NTRK, MET, RET, or PD-L1 was analyzed
• Demographics and clinical characteristics, biomarker testing, and treatment patterns were summarized using descriptive statistics
• Patient characteristics associated with biomarker testing were evaluated using univariate logistic regressions. Odds ratios with 95% CIs and p values were reported

TREATMENT PATTERNS

Treatment patterns in patients with aNSCLC

<table>
<thead>
<tr>
<th>Treatment pattern</th>
<th>Patients n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1L</td>
<td>3,168 (46.1)</td>
</tr>
<tr>
<td>2L</td>
<td>4,240 (61.7)</td>
</tr>
<tr>
<td>3L</td>
<td>1,405 (20.4)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treatment patterns by line of treatment and drug class</th>
<th>Patients n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICI, ICI alone, TKI, or other</td>
<td>3,168 (46.1)</td>
</tr>
<tr>
<td>chemotherapy, chemotherapy with ICI</td>
<td>4,240 (61.7)</td>
</tr>
<tr>
<td>chemotherapy with ICI alone</td>
<td>1,405 (20.4)</td>
</tr>
</tbody>
</table>

Figures:
• Figure 1. Treatment patterns by line of treatment and drug class

DISCLOSURES:
• This study was supported by EMD Serono, Rockland, MA, USA
• The authors report no conflicts of interest
• The data presented here have not been published in any other form

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REFERENCES:

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