Poster EE43

Melissa Bauer, PhD, MPH, CPH
melissa.bauer@novartis.com

Health care resource utilization (HCRU) and associated costs of first-line systemic therapy (1LT) for locally advanced or metastatic non-small cell lung cancer (a/mNSCLC) - a secondary analysis of claims data from the United States (US)

Alexander I. Spira,[1,2] Stefanie Knoll,[3] Timothy W. Smith,[3] Andrew Scotchmer,[4] Melissa Bauer[5]

[1]Virginia Cancer Specialists Research Institute, Fairfax, Virginia, USA;
[2]NEXT Oncology, Fairfax, Virginia, USA;
[3]Novartis Pharmaceuticals Corporation, East Hanover, New Jersey, USA;
[4]Novartis Pharmaceuticals, London, UK;
[5]Novartis Pharma AG, Basel, Switzerland;

Study funded by Novartis

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KEY FINDINGS & CONCLUSIONS

- The treatment landscape for locally advanced or metastatic NSCLC (a/mNSCLC) is changing rapidly, with several novel therapies approved in recent years.[1-3]
- As a result, HCRU and associated costs of first-line systemic therapy for patients diagnosed with a/mNSCLC have changed over time.
- This study describes HCRU and costs associated with first-line systemic, immuno-based treatment for a/mNSCLC in the US as of 01 January 2019, based on Optum's de-identified Clinformatics® Data Mart Database (CDM).
- The presented health economic evidence will help inform reimbursement decisions for new first-line therapies for the treatment of a/mNSCLC.

Poster presented at the 2023 Meeting of ISPOR – The Society for Health Economics and Outcomes Research held on 08–10 May 2023 in Boston, Massachusetts, USA.

INTRODUCTION

- Several novel therapies for a/mNSCLC have been available since 2015, and PD-1/PD-L1 inhibitors have shown to improve clinical outcomes in squamous and non-squamous NSCLC patients without targetable mutations.[1-3]
- Up-to-date cost data are important for developing robust health economic models to support reimbursement decisions for new therapies. This includes treatments for populations without mutations who are not indicated for targeted therapies, as HCRU and costs may differ in these patients compared with patients with these mutations requiring targeted treatment.
- The primary objective of this database study was to describe HCRU and associated healthcare costs among adults who initiated 1L systemic, immuno-based treatment for a/mNSCLC during 01 January 2019 - 30 June 2021 in the US, as recorded in Optum's de-identified Clinformatics® Data Mart Database (CDM).
- Secondary objectives included to describe these patients' demographic and clinical characteristics at 1L treatment initiation and to estimate the time to 1L treatment discontinuation (TTD).

METHODS

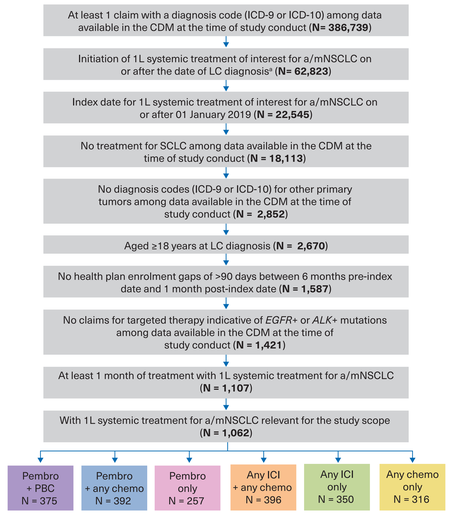
- This was a real-world, non-interventional cohort study analyzing a secondary data source of commercially insured adults or adults covered under Medicare in the US, who received 1L treatment for a/mNSCLC.
- Data were analyzed from the administrative claims database CDM, among patients initiating 1L treatment for a/mNSCLC during 01 January 2019 – 30 June 2021.
- Patient selection criteria (**Figure 1**) were developed based on a validated case-finding algorithm for identifying patients with a/mNSCLC[4], which was updated based on the authors' clinical experience.
- The primary endpoint was total costs (USD) associated with HCRU of the total sample.
- All endpoints were assessed using descriptive analyses.
- Costs were estimated per patient per month (PPPM) and inflated to 2021 costs using the medical care component of the US consumer price index (CPI) version June 2021.
- A planned sample size of ~1,000 patients was estimated to provide a 95% confidence interval (CI) for mean PPPM costs of USD 18,133–22,079, which was considered sufficient precision to derive meaningful study results (see supplementary materials under the QR code for further details).
- In this descriptive analysis, patients were stratified by type of 1L systemic therapy of interest, and costs were stratified by medical costs (further stratified by LC-related costs and non-LC-related costs), and pharmacy costs.
- Secondary endpoints included type and frequency of HCRU, patient characteristics, and TTD.[5,6]

RESULTS

Patient attrition

- After applying all patient selection criteria, 1,062 patients of the CDM were eligible for inclusion in the study, and stratified into six groups by 1L systemic therapy for a/mNSCLC (**Figure 1**).

Figure 1. Patient attrition from the CDM



Treatment groups were not mutually exclusive.
[a]Index treatment defined as 1L systemic therapy for a/mNSCLC initiated at least 120 days after surgery date (among patients with LC surgery) or initiated after LC diagnosis (among patients without LC surgery). Index date is the date of the first claim for this 1L systemic therapy for a/m NSCLC.

Patient characteristics

- Patient characteristics at initiation of 1L systemic therapy for a/mNSCLC (*i.e.*, index date) for the overall study population are shown in **Table 1**.
- The mean age was similar across treatment groups.
- Chronic pulmonary disease was the most prevalent NCI comorbidity followed by peripheral vascular disease.
- Most patients had NCI Index 0.5 or 1 across all treatment groups, except in the pembrolizumab only and immunotherapy only groups where 36.6% and 34.9% of patients, respectively, were classified as NCI over 1.5.
- The proportion of Medicare enrollees was lowest in the chemotherapy plus immunotherapy group (80.8%), and highest in the immunotherapy only group (91.4%).

Table 1. Patient characteristics at initiation of 1L systemic therapy for a/mNSCLC

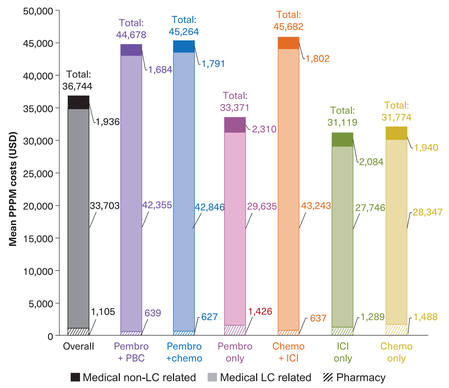
Characteristics at initiation of 1L systemic treatment for a/mNSCLC[a]	Total (N = 1,062)
Mean age (SD) [range]	71 (8) [30, 90]
Female, n (%)	517 (48.7%)
Region of residence – South, n (%)	489 (46.0%)
Insurance type – Medicare, n (%)	915 (86.2%)
Without high BMI[b] , n (%)	799 (75.2%)
NCI Comorbidity – Chronic Pulmonary Disease, n (%)	824 (77.6%)
NCI Comorbidity – Peripheral Vascular Disease, n (%)	401 (37.8%)
Mean NCI Index (SD) [range]	1.1 (0.67) [0, 3.8]
NCI Index 0.5 or 1, n (%)	403 (37.9%)

[a]Patient characteristics from -365 days to +90 days from index date were considered, with the record closest to the index date selected for analysis.
[b]Based on patient having a claim with an ICD-10 diagnosis code for obesity.

Healthcare costs associated with 1L systemic therapy for a/mNSCLC

- In the overall sample and across all treatment groups:
  - Mean PPPM total medical costs (LC related and non-LC related combined) were greater than mean PPPM pharmacy costs.
  - Mean PPPM LC-related medical costs were greater than non-LC-related medical costs (**Figure 2**).

Figure 2. Costs associated with 1L systemic therapy for a/mNSCLC - overall and by treatment group



Total healthcare costs (sum of all medical costs and pharmacy costs) are shown at the top of each bar. Pharmacy costs could not be stratified by LC-related and non-LC-related costs as this information was not captured in the CDM.

HCRU associated with 1L systemic therapy for a/mNSCLC

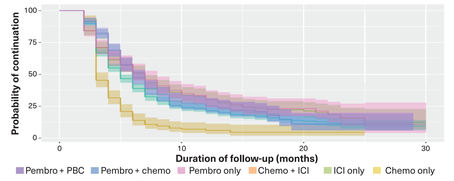
- In the overall sample and across all treatment groups, the mean PPPM number of outpatient visits was greater than mean PPPM number of inpatient visits, and greater than mean PPPM number of ER visits, especially among patients treated with chemotherapy only (**Figure 3, left panels**).
- Mean per patient length of hospital stay was shortest for patients receiving 1L systemic treatment with chemotherapy only (0.81 days), and longest for those receiving pembrolizumab only (1.26 days).
- When assessing mean PPPM costs by HCRU type, outpatient visits were associated with greater costs than inpatient visits or ER visits in the overall sample and across all treatment groups (**Figure 3, right panels**).

Figure 3. HCRU and costs associated with type of HCRU during 1L systemic therapy for a/mNSCLC - overall and per treatment group

Time to discontinuation of 1L systemic therapy for a/mNSCLC

- In the overall sample, mean TTD of 1L systemic therapy for a/mNSCLC was 5.1 months, with a median (IQR) of 3.4 months (2.17, 6.13) (**Figure 4**).
- Patients receiving 1L treatment for a/mNSCLC with chemotherapy only had the shortest mean TTD (3.3 months), whereas patients treated with pembrolizumab only or chemotherapy plus immunotherapy had the longest mean TTD (6.4 and 6.3 months, respectively) (see supplementary materials under the QR code for further details).

Figure 4. Kaplan-Meier plot for time to treatment discontinuation with 1L systemic therapy for a/mNSCLC by treatment group



Median time to discontinuation (TTD) of 1L treatment for a/mNSCLC (months) with 95% confidence intervals. TTD was calculated using the earliest of: (1) the last day of 1L treatment for a/mNSCLC per days' supply and the date of the most recent claim of this treatment, and (2) date of death.

Discussion

- Previous studies on the economic burden of a/mNSCLC cover periods up to June 2019.[7,8] In our study, which covers the period from January 2019 to June 2021, HCRU and associated costs of current 1L therapies for a/mNSCLC in the US were higher than previously reported using earlier follow-up periods.
- Our findings help assess the relative impact of the disease burden among patients with a/mNSCLC indicated for immuno-based therapy, and understand the value of different treatment choices. In turn, our findings help inform reimbursement decisions for new 1L therapies for the treatment of a/mNSCLC.
- Our estimates of TTD may be a proxy for real-world progression-free survival during 1L systemic treatment among patients with a/mNSCLC indicated for immuno-based therapy.
- Limitations:
  - Use of claims data as an indirect measure of treatment and HCRU may not necessarily reflect actual treatment exposure or performed procedure. Additionally, administrative claims data may be subject to coding errors and data omissions, and information like disease severity is not captured in administrative claims databases.
  - This descriptive analysis was not powered to detect statistically significant differences across treatment groups. This analysis also did not control for confounding factors that may account for differences observed in HCRU, costs, and TTD across treatment groups.
  - Future analyses of costs should be inflated to the most recent CPI at the time of study reporting.
  - Due to the nature of claims data, patients receiving targeted therapy for a/mNSCLC may have been included in the sample despite excluding patients with a claim for *EGFR*- or *ALK*- targeted therapies.
  - The CDM is representative of the commercially insured US population and Medicare Advantage population but may not be generalizable to the entire US population.

Abbreviations

1L, first-line; a/mNSCLC, advanced or metastatic non-small cell lung cancer; CDM, Optum's de-identified Clinformatics® Data Mart Database; chemo, chemotherapy; CPI, consumer price index; ER, emergency room; HCRU, health care resource utilization; ICD-9, International Classification of Diseases-9 (1979-98); ICD-10, International Classification of Diseases-10 (1999-present); ICI, immune checkpoint inhibitor; LC, lung cancer; NCI, National Cancer Institute; PBC, platinum-based chemotherapy; PD-1, programmed cell death protein 1, PD-L1, programmed death-ligand 1; pembro, pembrolizumab; PFS, progression-free survival; PPPM, per patient per month; TTD, time to treatment discontinuation.

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Acknowledgements

We thank the following individuals for their expertise in health economics, medical and research methodology, and analytic programming (all were employees of Novartis at the time of providing their contribution): Beilei Cai, Fen Ye, Parisa Asad, Isabelle Gilloteau, Jorge Martinalbo, Loren Stagg, Nydia Caro, Rahul Chetlangia. Medical writing support under the direction of the authors was provided by Isabella Kaufmann and Marie-Catherine Mousseau of Novartis Pharmaceuticals.

Disclosures

AIS: Grants or contracts: LAM Therapeutics, Roche, AstraZeneca, Boehringer Ingelheim, Astellas Pharma, MedImmune, Novartis, Newlink Genetics, Incyte, AbbVie, Ignyta, Trovagene, Takeda, Macrogenics, CytomX Therapeutics, Astex Pharmaceuticals, Bristol Myers Squibb, Loxo, Arch Therapeutics, Gritstone, Plexxikon, Amgen, Daiichi Sankyo, ADCT, Janssen Oncology, Mirati Therapeutics, Rubius, Synthekine, Mersana, Blueprint Medicines. Consulting fees: Incyte, Amgen, Novartis, Mirati Therapeutics, Gritstone Oncology, Jazz Pharmaceuticals, Takeda, Janssen Research & Development, Mersana, Gritstone Bio, Daiichi Sankyo/AstraZeneca, Array BioPharma, AstraZeneca/MedImmune, Merck, Bristol Myers Squibb, Blueprint Medicines. Payment or honoraria: CytomX Therapeutics, AstraZeneca/MedImmune, Merck, Takeda, Amgen, Janssen Oncology, Novartis, Bristol Myers Squibb, Bayer. Stock/stock options: Eli Lilly. SK, TWS, AS, and MB are employees of Novartis or were employees of Novartis at the time of study conduct. SK, and TWS held stock/stock options from Novartis at the time of study conduct and/or continue to hold stock/stock options from Novartis.