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Descriptive Comparison of Patient Characteristics and Treatment Patterns in Metastatic NSCLC: US and France Cohorts to Inform Transportability

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Background

- In health technology assessments, international real-world data is frequently used to address the scarcity of local evidence, despite a strong preference for local data.
- The central challenge lies in balancing the need for robust data with the risk of introducing uncertainty due to cross-country differences in healthcare systems, patient populations, and treatment practices.
- The study aims to compare metastatic non-small cell lung cancer (mNSCLC) patient and treatment characteristics between France and the US.
- This comparison will inform future transportability analysis to assess whether the findings from one country (the study sample such as the US) can be applied or transportable to another (the external target population such as France), after adjusting for population differences.

Methods

- **Data sources:** US and France nationwide longitudinal electronic health record (EHR)-derived databases
  - ✔ **US data from the advanced NSCLC Flatiron Health Research Database:** includes individual patient-level data (IPD) from ~280 US cancer clinics (~800 sites of care; primarily community oncology settings), curated via manual and technology-enabled abstraction.[1]
  - ✔ **France data from the UNICANCER ESME-Lung Cancer database:** includes IPD from 38 medical centers (20 comprehensive cancer centers from Unicancer network and 18 University or General hospitals), curated via manual abstraction.[2,3]
- **Setting:** The study included 25,529 adult patients in France and 41,082 in the US diagnosed with mNSCLC from 01 January 2015 to 31 December 2023, who initiated a first-line (1L) therapy outside a clinical trial (Table 1).
- **Statistical analysis:** We summarized demographic, clinical, and biomarker characteristics at metastatic diagnosis or 1L initiation and, described 1L treatment patterns by histology and key biomarker status.

Table 1. Patient selection

Patients, No.	US	France
All patients in the EHR-derived database (all lung cancer stage, all histologies, all period)	105,550	61,139
Squamous or non-squamous mNSCLC diagnosed between 2015-2023	59,261	33,379
Adult patients who initiated a 1L therapy after 2015	42,880	27,133
No evidence of clinical trial during 1L	41,082	25,529

Results

- Patient demographics and disease presentation differed across countries (Table 2):
  - ✔ Patient population in France was younger (median 65 vs 69 years) and had more males than in the US (62% vs 50%).
  - ✔ The majority of patients were diagnosed at Stage IV in both countries with a higher proportion observed in France (90% vs 81%).
- In both cohorts, patients had mostly non-squamous histology and about 70% of patients had ECOG PS 0-1 at 1L treatment initiation. PS data was missing more frequently in France than in the US (34% vs 17%) (Table 2).
- Prevalence of actionable genetic alterations was largely consistent (Figure 2):
  - ✔ In both countries, a similar and broadly stable biomarker positivity rate across the years of 1L initiation was observed for PD-L1, EGFR and KRAS (Figure 1).
- Treatment patterns during the study period differed, but 1L treatment selection seems to be evolving in the same way:
  - ✔ In France, platinum-based chemotherapy was the most common 1L therapy across both histologies (Figure 3).
  - ✔ The US adopted broader use of 1L immunotherapy earlier than France (Figures 2 and 3).
  - ✔ Over time, in both countries, the preferred 1L therapy is changing from platinum-based chemotherapy to immunotherapy-based (Figure 2).

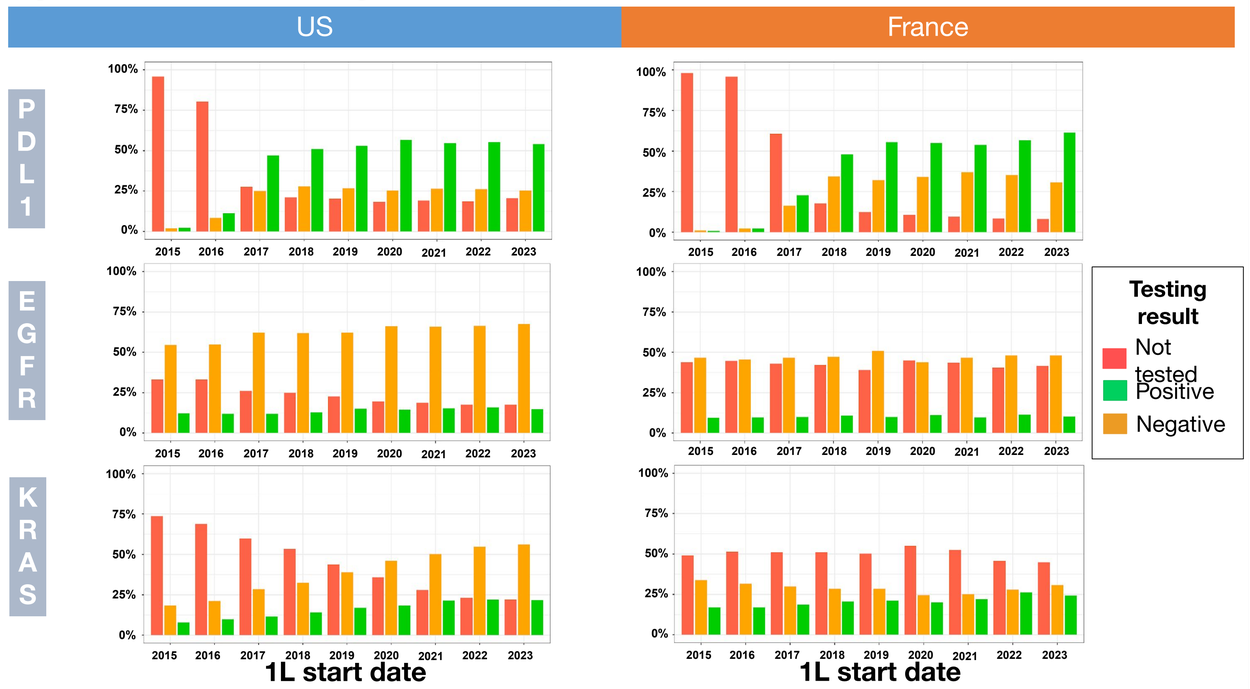
Table 2. Demographics of patients included in the study

Characteristic[a]	US			France		
	Overall N = 41,082	Squamous N = 8,866	Non-squamous N = 32,216	Overall N = 25,529	Squamous N = 3,987	Non-squamous N = 21,542
Age at 1L, median (IQR), y	69 (62, 76)	71 (64, 77)	69 (62, 76)	65 (58, 72)	68 (62, 74)	65 (57, 72)
Sex, No. (%)						
Female	20,368 (50)	3,287 (37)	17,081 (53)	9,599 (38)	858 (22)	8,741 (41)
Male	20,713 (50)	5,579 (63)	15,134 (47)	15,930 (62)	3,129 (78)	12,801 (59)
Unknown	1	0	1	0	0	0
Metastatic status, No. (%)						
De novo[b]	33,083 (81)	6,772 (76)	26,311 (82)	22,943 (90)	3,397 (85)	19,546 (91)
Recurrent or Progressive	7,999 (19)	2,094 (24)	5,905 (18)	2,586 (10)	590 (15)	1,996 (9)
ECOG PS[c] at 1L, No. (%)						
0	8,524 (25)	1,548 (21)	6,976 (26)	3,618 (21)	486 (19)	3,132 (22)
1	15,996 (47)	3,433 (46)	12,563 (48)	8,255 (49)	1,266 (49)	6,989 (49)
2+	9,402 (28)	2,440 (33)	6,962 (26)	4,976 (30)	849 (32)	4,127 (29)
Unknown	7,160	1,445	5,715	8,680	1,386	7,294
Smoking status, No. (%)						
No history of smoking	6,570 (16)	395 (5)	6,175 (19)	3,190 (13)	194 (5)	2,996 (15)
History of smoking	34,435 (84)	8,456 (95)	25,979 (81)	21,318 (87)	3,637 (95)	17,681 (85)
Unknown	77	15	62	1021	156	865

Abbreviations: IQR, Interquartile range; PS, Performance Status. | [a]Percentage was calculated by excluding patients with unknown values; [b]The disease is considered as *de novo* when the initial diagnosis was stage IV or if the time from initial to metastatic diagnosis was ≤ 6 months; [c]ECOG PS measures available 30 days before or up to 7 days after 1L initiation were considered.

Results (continued)

Figure 1. Biomarker testing distribution by Year of 1L initiation



* All biomarker testing results available before or up to 90 days after the mNSCLC diagnosis have been considered. PD-L1 testing rate is described in the overall population while EGFR and KRAS testing rates are described in the non-squamous subpopulation according to the guidelines

Figure 2. Major 1L treatment patterns By Year of 1L initiation

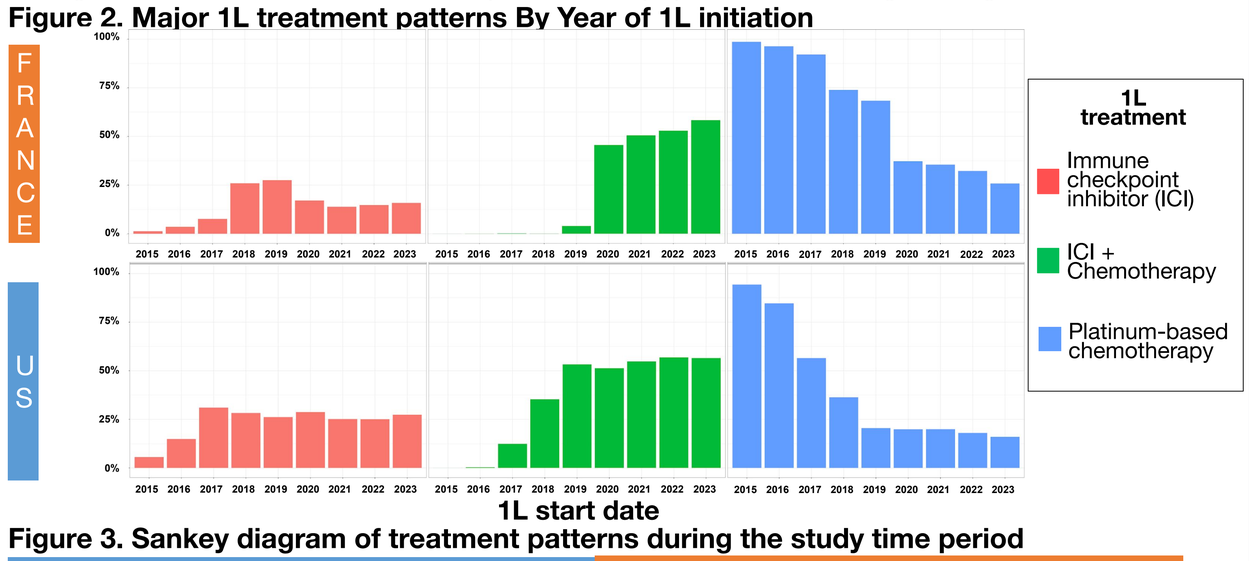
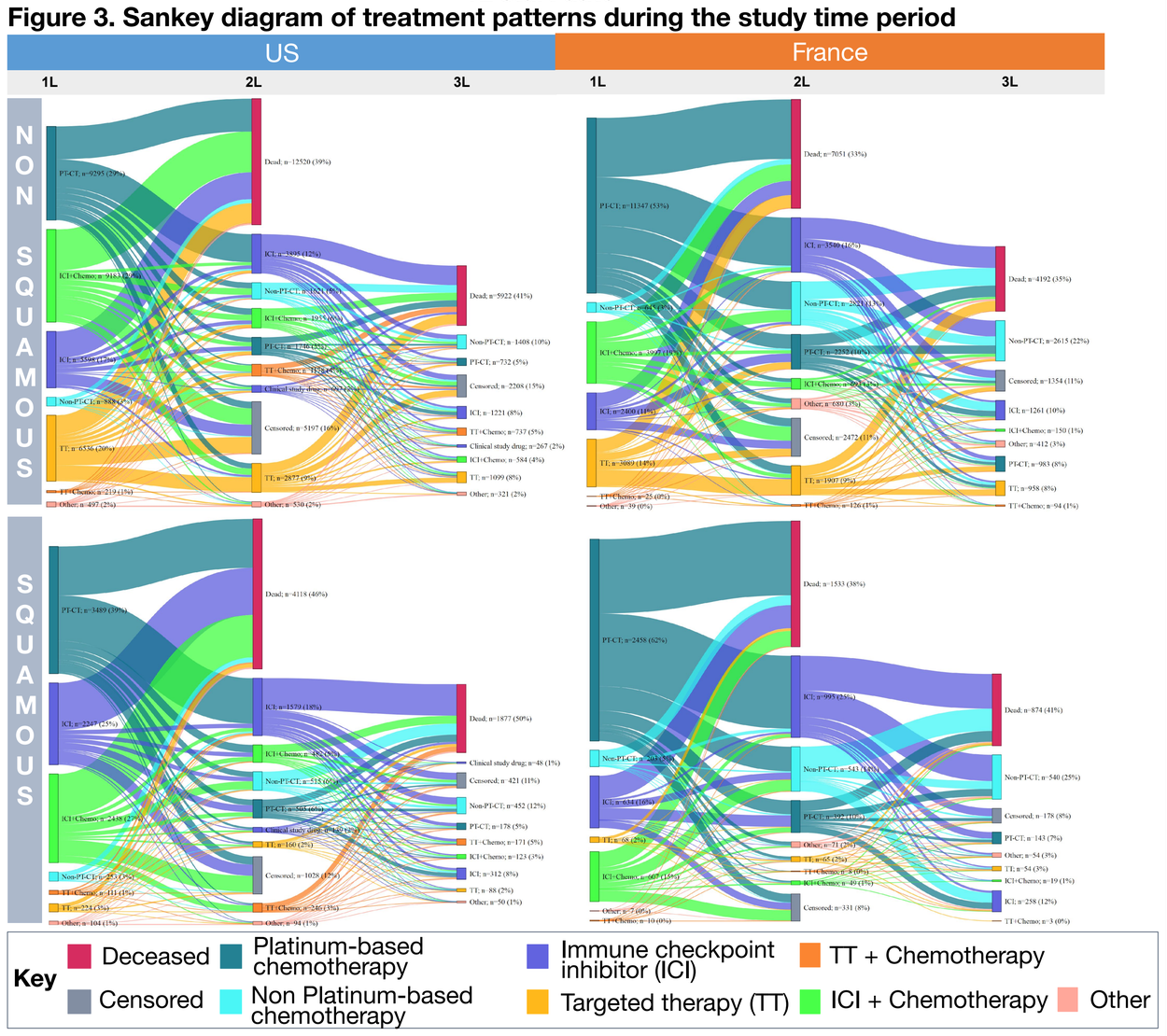


Figure 3. Sankey diagram of treatment patterns during the study time period



Conclusion

- While there are some differences in patient demographics and initial treatment patterns, the disease profile, biomarker rates, and the overall evolution of 1L treatment selection are largely consistent between France and the US, based on two large EHR databases.
- These findings are crucial for guiding population adjustment in future transportability analyses of outcomes between the US and France. However, they do not presuppose the ability to transport outcomes between these two countries.

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