EE365

Real-World Healthcare Resource Utilization in First-Line Treated Japanese Patients With Advanced Non–Small-Cell Lung Cancer

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Background

- Immunotherapy (IO) was introduced as first-line (1L) treatment for advanced non–small-cell lung cancer (NSCLC) in Japan when pembrolizumab monotherapy became available for select patients on Feb. 15, 2017
- In December 2018, access to pembrolizumab monotherapy was expanded and immune checkpoint inhibitor (ICI) plus chemotherapy regimens (including pembrolizumab- and atezolizumab-based combinations) were introduced; rapid real-world uptake followed, together with additional IO combination approvals[1]
- Infusions are administered in both hospitals and outpatient infusion centers in Japan. Historically, inpatient administration was used more often to better manage supportive-care needs[2]
- Published healthcare resource utilization (HCRU) data for advanced NSCLC in Japan remain limited following IO expansion; inpatient care has historically accounted for a large proportion of medical costs with average hospital stays longer relative to many other countries[2]

Objective

- To describe HCRU for advanced NSCLC by regimen type after ICI-chemotherapy introduction in Japan

Methods

Methods are summarized in the table below.

Table 1. Study design, eligibility, follow-up, outcomes, and analysis

Element	Details
Design	Prospective observational chart review
Setting	23 hospitals across Japan
Population	Adults (≥20 years) with confirmed advanced NSCLC (stage IIIB-C/IV) initiating 1L therapy per usual care; consent per local ethics requirements
Exclusions	1L clinical trial participation; actionable genomic alterations[a] on or before treatment start
Enrollment	Nov. 5, 2019 to Nov. 26, 2021
Index	1L treatment start (index); observed dates Nov. 15, 2019 to Dec. 9, 2021
Follow-up	Minimum potential follow-up 2 years (study ended Dec. 8, 2023); patient-weeks = (earliest of next line start or end of study – index + 1) / 7
Sample size	Observed N = 987 (consented with 1L start)
Data source	Chart review including patient/clinical characteristics, treatment, HCRU
HCRU outcomes	Number of hospitalizations (per patient and per patient-week), length of stay; number of outpatient visits (per patient and per patient-week)
Hospitalizations	1) All; 2) NSCLC treatment admission only (no surgery or procedures); 3) emergency room (ER) admission
Outpatient visits	1) All; 2) For infusion (visit to infusion center)
Analysis	Descriptive statistics only (no hypothesis testing); reported overall and by the three most common 1L regimen types in Japan

NSCLC, non–small-cell lung cancer; HCRU, healthcare research utilization.

[a]Actionable genomic alterations include *EGFR, ALK, ROS1, BRAF, NTRK; MET* from 6/1/2020; *RET* from 12/1/2021.

Results

Patients and treatment distribution

- Observed overall population: N = 987; median age 71 (range: 33-92); 83% male, 34% squamous
- 1L treatment distribution: 16% received ICI-monotherapy (ICI-mono); 48% ICI-chemotherapy (ICI-chemo); 19% platinum doublet; 17% other treatments
- Median follow-up: 14.5 months (range: <0.1-48.4)

Hospitalizations

- Hospital admissions: 3.34, 5.06, and 7.11 per 100 patient-weeks for patients who received ICI-mono, ICI-chemo, and platinum doublet, respectively
- Proportion of patients with at least one hospital admission due to systemic treatment was 74.8%, with ICI-mono, 88.5% for ICI-chemo, and 87.8% for platinum doublet
- Median LOS during 1L therapy was 13, 12, and 14 days for ICI-mono, ICI-chemo, and platinum doublet, respectively
- Hospitalizations with ER admission occurred in 8.4% of ICI-mono patients, 7.8% of ICI-chemo, and 8.5% of platinum doublet patients
- Frequency of hospitalizations with ER admission was 0.16, 0.15, and 0.39 per 100 patient-weeks for ICI-mono, ICI-chemo, and platinum doublet, respectively

Outpatient visits

- Outpatient visits were 32.8 per 100 patient-weeks with ICI-mono, 37.3 for ICI-chemo, and 43.7 for the platinum doublet
- Among outpatient visits, infusion center visits were 15.4, 18.1, and 13.1 per 100 patient-weeks for ICI-mono, ICI-chemo, and the platinum doublet, respectively

HCRU results are further summarized in **Table 2**.

Table 2. HCRU during first-line therapy by commonly used regimens

	All (n = 987)	ICI-Monotherapy (n = 155)	ICI-Chemotherapy (n = 477)	Platinum Doublet (n = 188)
	n (%)[a]	n (%)[a]	n (%)[a]	n (%)[a]
Hospitalizations				
All				
Patients with any	946 (95.8)	142 (91.6)	468 (98.1)	178 (94.7)
Total number	2,367	300	1,337	387
Number/100 patient-weeks (95% CI)[b]	4.91 (4.72, 5.11)	3.34 (2.97, 3.74)	5.06 (4.80, 5.34)	7.11 (6.42, 7.85)
LOS (days), median (range)	13.0 (1, 199)	13.0 (1, 89)	12.0 (1, 158)	14.0 (2, 112)
With ER admission[c]				
Patients with any	79 (8.0)	13 (8.4)	37 (7.8)	16 (8.5)
Total number	88	14	40	21
Proportion of all (%)[d]	88/2,367 (3.7)	14/300 (4.7)	40/1,337 (3.0)	21/387 (5.4)
Number/100 patient-weeks (95% CI)[b]	0.18 (0.15, 0.22)	0.16 (0.09, 0.26)	0.15 (0.11, 0.21)	0.39 (0.24, 0.59)
For treatment administration only[e]				
Patients with any	847 (85.8)	116 (74.8)	422 (88.5)	165 (87.8)
Total number	1,626	181	935	285
Proportion of all (%)[d]	1,626/2,367 (68.7)	181/300 (60.3)	935/1,337 (69.9)	285/387 (73.6)
Number/100 patient-weeks (95% CI)[b]	3.37 (3.21, 3.54)	2.02 (1.73, 2.33)	3.54 (3.32, 3.77)	5.23 (4.64, 5.88)
Outpatient visits				
All				
Patients with any	894 (90.6)	139 (89.7)	443 (92.9)	162 (86.2)
Total number	18,154	2,946	9,851	2,381
Number/100 patient-weeks (95% CI)[b]	37.7 (37.13, 38.22)	32.8 (31.64, 34.02)	37.3 (36.57, 38.05)	43.7 (41.98, 45.51)
For infusion[f]				
Patients with any	769 (77.9)	125 (80.7)	388 (81.3)	131 (69.7)
Total number	7,967	1,385	4,785	714
Proportion of all (%)[g]	7,967/18,154 (43.9)	1,385/2,946 (47.0)	4,785/9,851 (48.6)	714/2,381 (30.0)
Number/100 patient-weeks (95% CI)[b]	16.5 (16.17, 16.90)	15.4 (14.62, 16.26)	18.1 (17.61, 18.64)	13.1 (12.17, 14.11)

HCRU, healthcare research utilization; ICI, immune checkpoint inhibitor; LOS, length of stay; CI, confidence interval; ER, emergency room.

[a]Unless otherwise specified.

[b]Poisson confidence interval.

[c]With ER admission = Hospital admission through the ED (also included in all).

[d]Total number of hospitalization types divided by total number of all-cause hospitalizations (%).

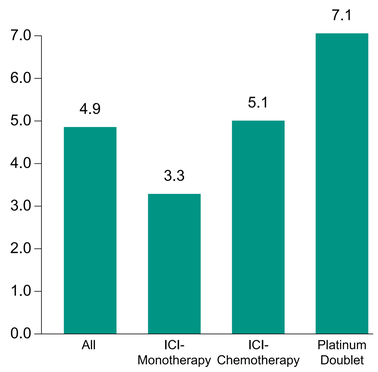
[e]For treatment administration only = Admission for NSCLC treatment (also included in all), with no surgery or procedure.

[f]For infusion = Outpatient visits coded as a visit to infusion center (also included in all).

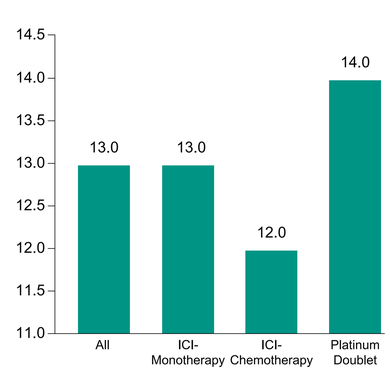
[g]Number for infusion divided by total number of all-cause outpatient visits (%).

Figure 1. HCRU in 1L for patients overall (n = 987) and by regimen type: ICI-monotherapy (n = 155), ICI-chemotherapy (n = 477), and platinum doublet (n = 188)

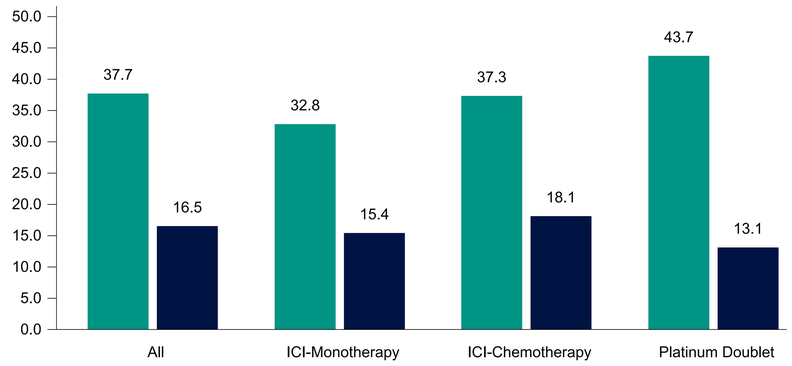
A. Number of hospitalizations per 100 patient-weeks



B. Median hospitalization LOS (days)



C. Number of outpatient visits (all and for infusion) per 100 patient-weeks



HCRU, healthcare research utilization; ICI, immune checkpoint inhibitor; LOS, length of stay.

Conclusions

- We described HCRU among patients with advanced NSCLC receiving commonly used regimens in Japan's real-world setting following the expansion of ICI-monotherapy and introduction of ICI-chemotherapy regimens in December 2018
- When platinum-based chemotherapy was the primary 1L standard of care, a real-world study reported hospital admissions rates of 8.91 (non-squamous, EGFR/ALK negative, or unknown) and 6.13 (squamous) per 100 patient-weeks; outpatient infusion center visits were only 1.37 and 3.52 per 100 patient-weeks, respectively[3]
- Our results are consistent with no increase in HCRU after the introduction of ICI-chemotherapy regimens in Japan compared to the pre-IO era, including among patients who received ICI added to the same platinum doublet backbone used historically
- Continued movement toward outpatient treatment administration and decreased hospitalizations was observed[2,3]
- Results show HCRU patterns vary by 1L regimen type, suggesting practice in Japan is evolving with the introduction of novel treatments; however, these results should be interpreted cautiously
- Observed variation may reflect treatment-specific differences in: 1) baseline patient characteristics, 2) hospital-based treatment administration, or 3) clinical outcomes. Additional research is needed to explore the relative impact of each factor
- The study period overlapped with the COVID-19 pandemic, when patients and hospitals may have avoided unnecessary visits and hospitalizations, thereby impacting observed HCRU
- Our results create a historical baseline for evaluating the real-world impact of future therapies

References

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Disclosures

Conflicts of interest

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Melissa L. Santorelli is an employee of Merck Sharp & Dohme LLC, a subsidiary of Merck & Co., Inc., Rahway, NJ, USA, who may own stock and/or hold stock options in Merck & Co., Inc., Rahway, NJ, USA.

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