Incorporating real-world evidence (RWE) using a Real-Time AI-assisted Living Systematic Literature Review (REAL-SLR) augments traditional SLRs: Case study in Non-Small-Cell Lung Cancer (NSCLC)

HTA79

Stacy Grieve, Rozee Liu, Anna Forsythe

Oncoscope-AI, Miami, FL, USA

OBJECTIVES

- Using a case-study in NSCLC, this study evaluates how a REAL-SLR approach incorporating both interventional and real-world evidence enhances the analysis of evolving treatment landscapes and improves efficiencies compared to traditional SLRs

BACKGROUND

- There is increasing emphasis on including real-world evidence (RWE) to aid in decision making for health technology assessments and market access strategies[1,2]
- However, the identification of RWE through systematic literature reviews adds time and resources required for traditional SLRs focused on interventional evidence only

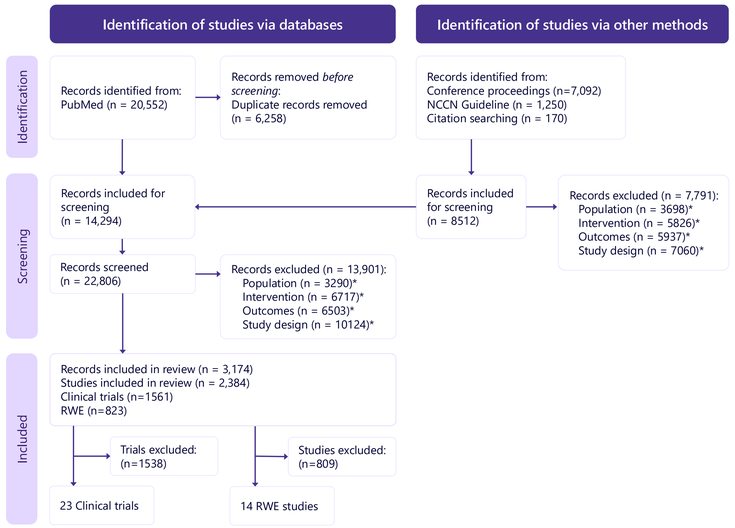
METHODS

- A REAL-SLR in NSCLC, was conducted following PRISMA guidelines. PubMed database was searched from January 2019 to March 16, 2026, with updates performed daily and studies selected using the Population/Intervention/Comparator/Study Design (PICOS) framework (**Table 1**). Abstracts published in congresses in 2025 from American Society of Clinical Oncology, European Society of Medical Oncology, European Lung Cancer Conference, and World Conference on Lung Cancer were included
- A proprietary artificial intelligence model was used during first title and abstract review. Second review and conflict resolution were conducted by human researchers. The REAL-SLR agentic AI model was trained to deliver individual PICOS decisions using prompt engineering and validated against human review (See MSR18, MSR22)
- Workflows, staffing requirements, and timelines were compared with a traditional SLR based on prior experience

Table 1. PICOS statement

Element	Inclusion
Patient population	• Patients diagnosed with non-small cell lung cancer who were previously treated with immune checkpoint inhibitors (ICI)s and continued or rechallenged with ICIs in subsequent treatment lines
Intervention and Comparators	• Any immune checkpoint inhibitor • Any comparator
Outcomes measures	• Overall survival (OS) and mortality • Progression-free survival (PFS) • Other progression measures (such as duration of response, time to progression, time to next treatment)
Study design	• Prospective interventional studies including randomized and non-randomized trials, any phase • Pooled analyses of trials • External control trials • Real-world evidence studies including prospective, retrospective, and case-control studies
Restrictions	• 2019-Current • English language

Figure 1. PRISMA diagram for the NSCLC REAL-SLR of post-progression evaluation of ICIs



*Reasons for exclusion were not mutually exclusive. During the Oncoscope review stage, each publication was evaluated against the inclusion and exclusion criteria for all four parameters of the PICOS framework. As a result, the sum of all excluded together for each PICOs criteria might exceed the total number of excluded

Figure 2. Difference in time and resources between traditional SLR and REAL-SLR

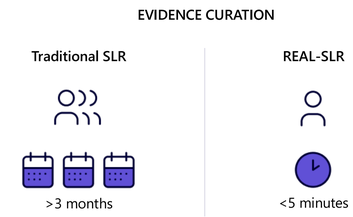


Figure 3. RWE fills evidence gap in clinical trial data for evaluating treatment options for patients progressing on ICIs

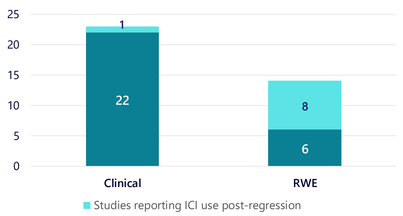


Table 2. RWE studies reporting on post-progression ICI efficacy

PMID	Year	Study Design	Sample Size	Population	Post-progression treatment	PFS	OS	Post-progression ICI vs. Non-ICI	Improved efficacy with Acquired or Primary resistance
41252810	2025	Retrospective	293	PDL1>50% +/- driver alterations	ICI+Chemo vs. Chemo	12.3 vs. 7.0 months; p<0.001	21.8 vs. 10.1 months; p= 0.007	Better	NA
41091025	2025	Retrospective	157	No driver alterations	ICI+/-Chemo+/-Targeted vs. Non-ICI interventions	PPS: Acquired resistance PPS: 37.2 vs. 15.3 months, p=0.023 PPS: Primary resistance PPS: 11.9 vs. 5.5 months, p=0.036	NR	Better	Acquired resistance
39226660	2025	Case control	507	No driver alterations	ICI combination vs. No ICI	12-month PFS: 24.4% vs. 6.7%; p<0.001	18-month OS: 40.4% vs. 6.4%; p<0.001	Better	NA
38617775	2024	Retrospective	224	No driver alterations	ICI+/-Chemo+/-Targeted vs. Non-ICI interventions	Overall: 5.33 vs. 4.40 months; p=0.715 Primary resistance vs. Acquired resistance: 3.68 vs. 5.91 months; p=0.014	NR	No difference	Acquired resistance
37197488	2023	Retrospective	94	NR	ICI+/-Chemo+/-Targeted vs. Non-ICI interventions	4.5 vs. 2.6 months; p=0.216 Primary vs. Acquired resistance: 3.2 vs. 4.6 months; p=0.038	14.4 vs. 8.3 months; p=0.188 Primary vs. Acquired resistance: 10.4 vs. 18.0 months; p=NR	No difference	Acquired resistance
39998635	2025	Retrospective	111	With/Without driver alterations	ICI+/-Chemo+/-Targeted vs. Non-ICI interventions	Without driver alterations: 4.7 vs. 1.3 months; p<0.01 With driver alterations: 3.5 vs. 4.0 months; p=NR Overall population, Acquired resistance: 4.7 vs. 3.4 months; p=0.55 Without driver alterations, Acquired resistance: 4.8 vs. 1.2 months; p=0.00086	Without driver alterations: 1.03 vs. 2.63 months, p<0.001 With driver alterations: 9.6 vs. 16.0 months; p=NR Overall population, Acquired resistance: 10.9 vs. 5.0 months; p=0.25 Without driver alterations, Acquired resistance: 11.9 vs. 2.6 months ; p=0.0056	Better	Acquired resistance
37975902	2023	Retrospective	40	NR	ICI+/-Chemo+/-Targeted	Acquired resistance vs. Primary resistance 7.0 months vs. 2.1 months; p=0.003	NR	NA	Acquired resistance
39617778	2024	Retrospective	104	NR	ICI+/-Chemo+/-Targeted	Acquired vs. Primary resistance: 9.2 vs. 3.4 months; p<0.001	Acquired vs. Primary resistance: 25.5 vs. 10.7 months; p=0.006	NA	Acquired resistance

RESULTS

- As of March 16, 2026, our REAL-SLR reviewed over 22,000 publications and selected 1561 clinical trials and 823 RWE studies for inclusion (**Figure 1**)
- 23 clinical trials and 14 RWE studies reported on post-progression ICI efficacy

REAL-SLR offers faster curation of clinical and real-world evidence

- While a traditional SLR involving two junior and one senior researcher requires >3 months of full-time evidence curation, accessing and retrieving studies from the REAL-SLR can be achieved in <5 minutes (**Figure 2**)

Case study: What are the treatment options for patients progressing on ICIs?

- Currently there are limited treatment options for patients progressing on first-line ICIs
- Evidence from RWE is emerging that continued ICI or ICI-rechallenge may benefit select patient populations
- A REAL-SLR identified 23 clinical trials evaluating ICI mono-or ICI-chemo combination therapies in patients previously treated with ICIs; only 1 clinical trial (4.3%) specifically evaluated if ICI rechallenge improved clinical outcomes (**Figure 3**)
- 14 RWE studies provided insights into ICI rechallenge post-progression with 8 studies (57%) specifically evaluating ICI rechallenge and factors associated with improved outcomes (**Figure 3**)

RWE insights into use of ICIs post-progression

- 8 studies evaluated if continued ICI treatment or ICI rechallenge impacted efficacy outcomes
- 6 studies compared continued ICI or ICI rechallenge to a non-ICI-based subsequent treatment
- 4/6 studies showed ICI rechallenge leads to longer overall survival (OS) or progression-free survival (PFS) compared to non-ICI subsequent treatment (**Table 3**)
- 6 studies compared if response to initial ICI treatment impacted efficacy of subsequent ICI treatments
- Acquired resistance refers to progression ≥6 months after start of initial ICI treatment; primary resistance refers to progression <6 months after start of initial ICI treatment
- 6/6 studies showed that those with acquired resistance to ICI had better PFS or OS compared to those with primary resistance (**Table 3**)

CONCLUSIONS

- Leveraging efficiencies from REAL-SLR, incorporation and assessment of RWE in an NSCLC dataset demonstrates how RWE can augment clinical SLRs by identifying treatment gaps
- Shifting from periodic manual reviews to a daily-updated model significantly reduces time and cost while maintaining decision-ready evidence

REFERENCES

1. Canadian Agency for Drugs and Technology in Health "Guidance for Reporting Real-World Evidence"; May 2023 https://www.cda-amc.ca/sites/default/files/RWE/MG0020/MG0020-RWE-Guidance-Report-Secured.pdf
2. National Insistute for Health and Care Excellence. "NICE real-world evidence framework. 23 June 2022. https://www.nice.org.uk/corporate/ecd9

ABBREVIATIONS

ICIs, immune checkpoint inhibitors; NSCLC, non-small cell lung cancer; PICOs, population, intervention, comparator, outcome, study design; PPS, post-progression survival; RWE, real-world evidence; SLR, systematic literature review

Presented at ISPOR 2026 | May 17-20, 2026 | Philadelphia, PA, USA | Poster Session 5

ONCOSCOPE AI
REAL-TIME ONCOLOGY LIBRARY

See more Oncoscope AI publications