Use of Real-time AI-assisted Living Systematic Literature Review (REAL-SLR) in prostate cancer (PC) enables on-demand access to pivotal clinical trial evidence

HTA63

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OBJECTIVES

- To develop Real-time AI-assisted Living Systematic Literature Review (REAL-SLR) to build an online library incorporating standardized search strategies and daily updates with AI-assisted screening and extraction of relevant interventional and surveillance clinical trials
- To describe and evaluate the efficiency of this tool in capturing practice-changing evidence on novel therapies in prostate cancer using 2025 as a case study

BACKGROUND

- Systemic literature reviews (SLRs) are essential to health economics and outcomes research (HEOR), but are commonly conducted through manual, ad hoc processes that are time- and resource-intensive and quickly become outdated
- With the delay in the traditional SLRs process, critical emerging evidence may not be captured in a timely manner, potentially impeding the translation of novel findings into practice

METHODS

- The Medline database was searched daily from 2021 onwards starting September 29, 2025 until December 31, 2025 using prostate cancer and clinical trial terms with observational studies excluded
- Abstracts from relevant conferences (ESMO, ASCO, and ASCO GU) were also screened for inclusion. The REAL-SLR was supplemented with records from NCCN and manual searches of clinicaltrials.gov
- Evidence was reviewed in compliance with Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA)/Cochrane guidelines using the Population, Intervention/Comparators, Outcomes, and Study design (PICOS) framework (**Table 1**)
- Operational efficiency was evaluated by comparing the workflows, staffing requirements, and timelines between the REAL-SLR and a conventional ad hoc manual SLR, focusing on abstracts added in the 2025 calendar year

Table 1. PICOS statement

Element	Inclusion
Patient population	• Patients diagnosed with PC
Intervention and Comparators	• Pharmacological interventions, surgical procedures, radiotherapy, bone marrow and cell transplant and any other therapy (drug or cell) for PC • Palliative care and observation as comparators only • Active surveillance
Outcomes measures	• Overall survival (OS) and mortality • Progression-free survival (PFS) • Other progression measures, such as Time to progression (TTP) or time to treatment failure (TTF), or metastases free survival (MFS). • Response Rate (including objective response [ORR], and other response) • Quality of Life (including Patient Reported Outcomes [PRO] and EQ-5D utility) • Safety / Toxicity (including adverse events [AEs] and discontinuations)
Study design	• Randomized Controlled Trials (RCT) • Single-arm and non-randomized trials • Externally controlled trials (ECT) • Pooled analyses of interventional studies
Restrictions	• English language

Figure 1. PRISMA diagram for the Prostate REAL-SLR

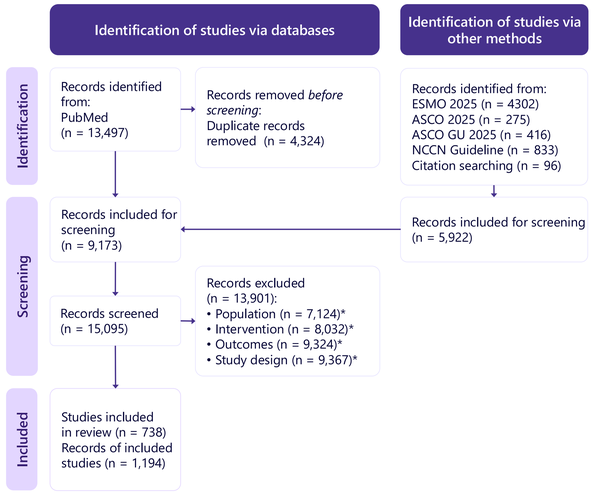
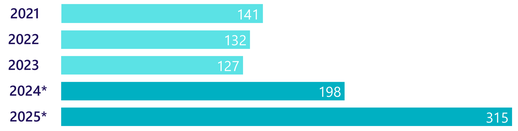


Figure 2. Number of publications included in the prostate cancer REAL-SLR by year



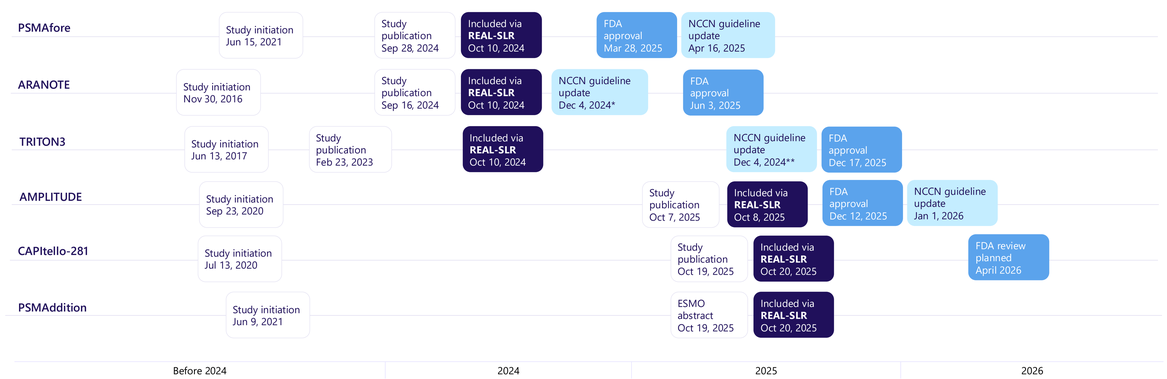
*The 2024 calendar year included abstracts from ASCO and the 2025 calendar year included abstracts from ASCO, ESMO, and ASCO GU. Congresses from previous years were not scraped as it was assumed the data would be published in peer-reviewed journals by 2026

Table 2. New studies published by year†

Year	New studies	Phase 2 or 3 RCT	Led to FDA approval	Practice-changing evidence
2021	102	37	1	-
2022	81	23	1	-
2023	80	25	4	-
2024	128	33	2	1
2025	177	52‡	1	2

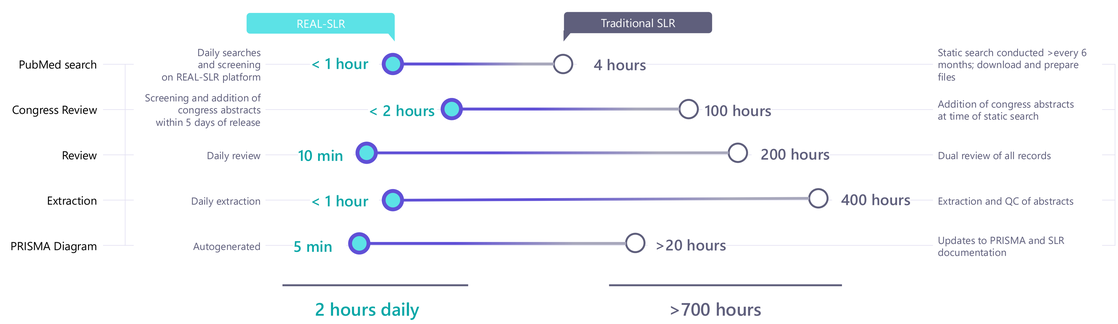
†New studies were defined as studies with their first publication in the calendar year cited
‡22 studies published at ASCO/ASCO GU/ESMO 2025

Figure 3. Timeline of studies published in 2025 leading to regulatory approval or guideline inclusion



Note. Primary publication date refers to the publication date of full-text manuscript, or conference abstract when full-text is not yet published
*Incorporated into NCCN guidelines prior to FDA approval based on prior recommendation on darolutamide+docetaxel in mCSPC
**Incorporated into NCCN guidelines prior to FDA approval based on prior recommendation for patients unfit for docetaxel only

Figure 4. Comparison of Traditional and REAL-SLR workflows for updating the prostate SLR



RESULTS

- In 2025, the REAL-SLR approach was applied to screen 15,095 records and added **1,195** new abstracts, with 57 from ASCO GU, 50 from ASCO, 43 from ESMO (**Figure 1**)
- A total of **913** publications published in 2021-2025 were included in the prostate cancer REAL-SLR (**Figure 2**)
  - Per year, 141 publications from 2021, 132 publications from 2022, 127 publications from 2023, 198 publications from 2024, and 315 publications from 2025
  - The 2024 calendar year included abstracts from ASCO and the 2025 calendar year included abstracts from ASCO, ESMO, and ASCO GU
  - From 2021-2025 there were nine FDA approvals (**Table 2 & 3**), including four interventions for new indications approved in 2025 and outlined in further detail in **Figure 4**
  - From 2021-2025 there were three practice-changing studies published that reported positive findings supporting new indications likely to receive FDA approval or guideline recommendations (**Table 2**). Two of these were published in 2025 and are outlined in detail in **Figure 4**
- **Key evidence was added upon publication and was immediately available via an interactive platform prior to approval or guideline adaptation, providing visibility of novel treatment options for patients and informing HEOR and market access activities in real-time**
- In 2025, the prostate cancer REAL-SLR identified four trials that led to the FDA approval of interventions for new indications and two studies with potentially practice-changing results (**Figure 3**)

FDA approvals:

  - [177Lu]Lu-PSMA-617 in patients with metastatic PSMA-positive CRPC with prior ARPI and no prior docetaxel from phase 3 RCT **PSMAfore** trial
  - Darolutamide monotherapy in metastatic CSPC from the phase 3 RCT **ARANOTE** trial
  - Rucaparib in patients with BRCA1/2-mutated metastatic CRPC with prior ARPI and no prior docetaxel from phase 3 RCT **TRITON3** trial
  - 1st line use of niraparib+abiraterone in BRCA1/2 mutated metastatic CSPC from phase 3 RCT **AMPLITUDE** trial

Potentially practice-changing studies:

  - 1st line use of capivasertib in PTEN-mutated CSPC from phase 3 RCT **CAPItello-281** trial
  - 1st line use of [177Lu]Lu-PSMA-617 in PSMA-positive metastatic CSPC from phase 3 RCT **PSAMAddition** trial

- Updates were conducted daily taking under 2 hours per day (**Figure 4**)
- The structured data from the 3 conferences (150 abstracts) in 2025 were included on the online platform within 5 days of publication via REAL-SLR
- A conventional SLR of the same size would require 12-14 weeks of full-time commitment from 2 junior and 1 senior researchers (**Figure 4**)
- The REAL-SLR approach provided immediate, on-demand access to structured data through an online platform with lower staffing requirements, saving >90% of total project time

CONCLUSIONS

- REAL-SLR enables timely, resource-efficient evidence synthesis for oncology HEOR and market access
- Transitioning from episodic manual reviews to a daily-updated model lowers costs and shortens timelines, while maintaining access to up-to-date, decision-ready evidence

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