# Where is AI in Evidence Synthesis for NICE HTA SA105 Submissions?

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## INTRODUCTION

- Interest in applying Artificial Intelligence (AI) in medical research and evidence generation has grown significantly in recent years, offering new tools for automating literature reviews, classifying studies, extracting data, and visualizing complex results[1,2]
- These advances have the potential to overcome the limitations of conventional review processes, enhancing efficiency, reducing resource burden, and improving the rigour, accuracy, and transparency of evidence generation and assessment[2,3]
- In recognition of this growing trend and the transformative role of AI, the National Institute for Health and Care Excellence (NICE) issued a comprehensive position statement in August 2024, which outlines the key principles and expectations for the use of AI-driven approaches in evidence generation and submissions across its evaluation programs[4]
- The NICE statement underscores the need for transparency, methodological rigor, and trust in the application of AI to evidence generation. It advocates the careful use of AI to support, not replace, human expertise, and provides guidance on regulatory standards and best practices to promote responsible adoption within Health Technology Assessment (HTA)[4]
- This study aimed to investigate the extent to which AI technologies have been utilized in NICE UK HTA submissions, specifically for conducting systematic literature reviews (SLRs), over recent years

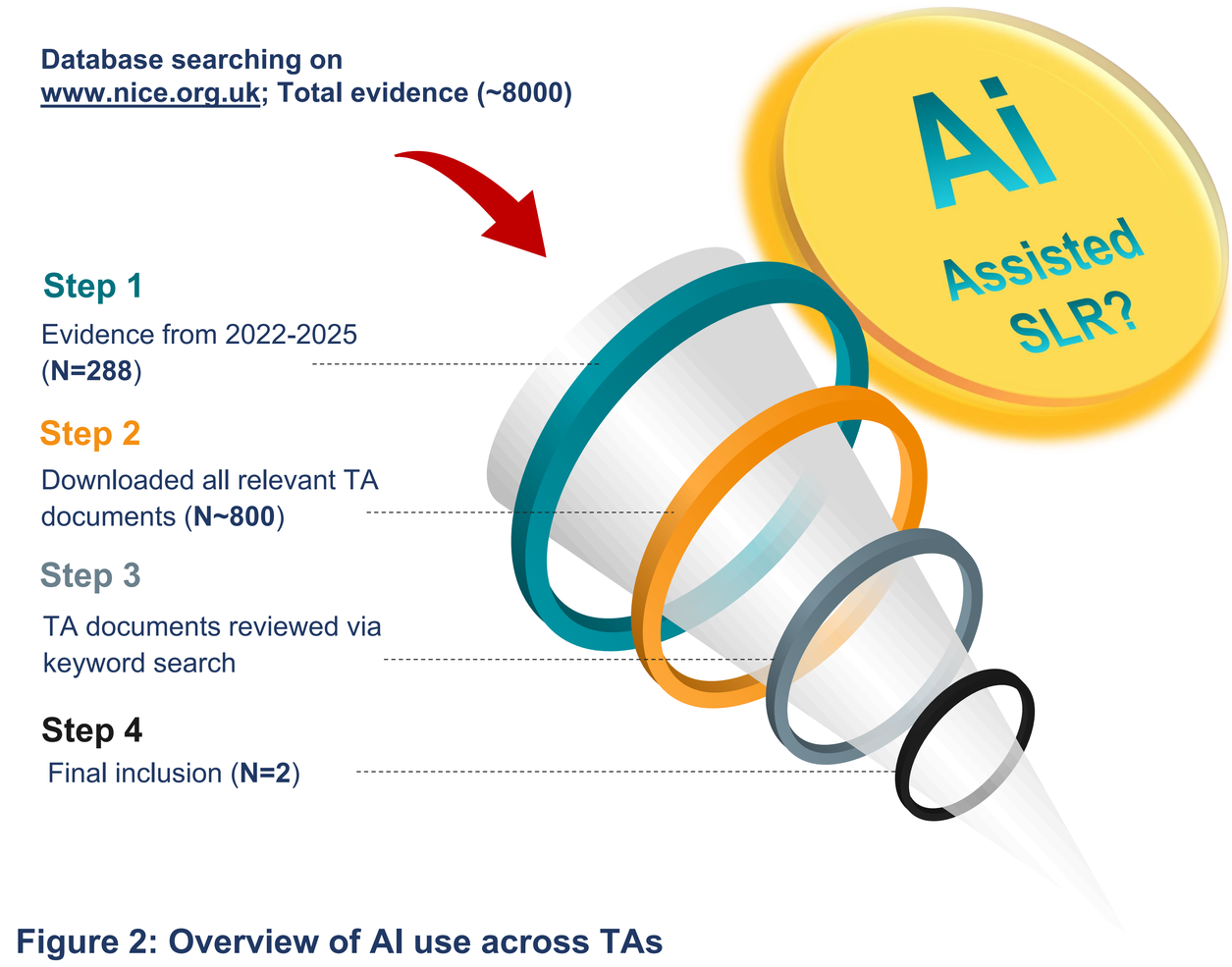
## METHODS

- A comprehensive review was carried out covering all NICE HTA submissions published within the last three years, i.e., June 2022 to June 2025, ensuring a complete coverage of the most recent trends and practices. **Figure 1** illustrates the workflow used to identify AI utilization in NICE HTA submissions in recent years
- Committee papers, committee slides, and associated guidance documents were retrieved and systematically reviewed manually
- A structured keyword strategy was used to identify HTA submissions, focusing on terms related to AI
- Through this screening process, documents that contained explicit references to the use of AI or automation technologies in the conduct of SLRs were identified and shortlisted
- The selected documents were then reviewed in detail to capture insights on:
  - ❑ The specific scope of AI application (e.g., screening, data extraction, synthesis)
  - ❑ The objectives of AI integration (e.g., efficiency, consistency, scalability)
  - ❑ The context of use, including how AI supported or complemented existing SLR methodologies in HTA submissions

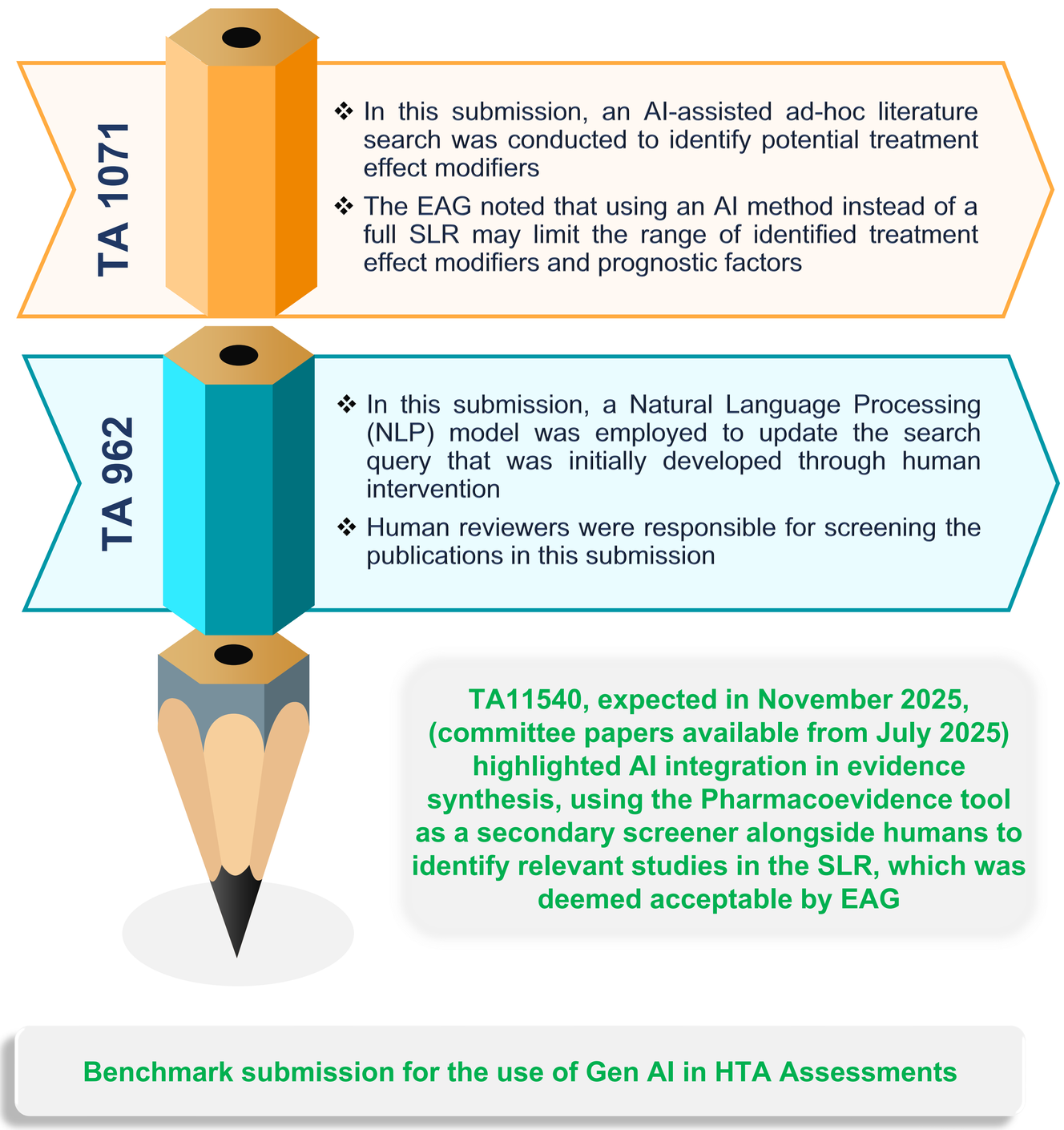
## RESULTS

- A total of 288 technology appraisals (TAs) were identified between June 2022 and June 2025 across all indications
- Approximately 800 documents, including committee papers, presentation slides, and associated guidance, were downloaded and systematically reviewed to identify the applications of AI within the evidence synthesis process
- A comprehensive search was employed using a predefined list of AI-related keywords to ensure both sensitivity and specificity.
- The keywords included AI, automation, automated, machine learning, large language models (LLM), generative pre-trained transformer (GPT), natural language processing (NLP), etc., in the context of evidence synthesis
- By June 2025, only two TAs had reported using AI at intermediate stages of the SLR process and were therefore included. **Figure 2** provides a detailed overview of the stages and methods of AI application across the included TAs
- Until June 2025, no TA had reported the comprehensive use of AI in conducting SLRs. However, TA11540, expected to be published in November 2025 (committee papers available from July 2025), post-search period, demonstrated the use of the **Pharmacoevidence tool** as a secondary screener to identify relevant publications, which was deemed acceptable by the evidence assessment group (EAG)

### Figure 1: Workflow for identifying AI use in NICE HTA submissions




### Figure 2: Overview of AI use across TAs




**TA11540, expected in November 2025, (committee papers available from July 2025) highlighted AI integration in evidence synthesis, using the Pharmacoevidence tool as a secondary screener alongside humans to identify relevant studies in the SLR, which was deemed acceptable by EAG**

**Benchmark submission for the use of Gen AI in HTA Assessments**

## CONCLUSIONS

- ❖ Despite NICE 2024 position paper emphasizing the importance of responsible use of AI in evidence generation, its integration and application in NICE HTA submissions remain limited
- ❖ Between 2022 and 2025, only two NICE appraisals reported the use of AI, both in supplementary capacity. The ongoing TA11540, expected publication in November 2025, highlighted the use of the Pharmacoevidence® AI/ML tool as a secondary reviewer to manage large citation volumes, while maintaining compliance with NICE and Cochrane standards
- ❖ This indicates a significant opportunity to leverage AI in evidence generation, to improve the efficiency, rigour, and timeliness future submissions, supporting more transparent, informed, and accelerated decision-making in NICE HTA

**References**

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**Disclosure:** BS, RD, and PR are employees of Pharmacoevidence. DM is affiliated with Gilead Sciences, Inc. KD is affiliated with Otsuka Pharmaceutical Development & Commercialization, Inc. (Princeton, NJ, USA), DT is affiliated with Hoffmann-La Roche AG (Mississauga, ON, Canada) and AK is formerly associated with Otsuka Pharmaceutical Development & Commercialization, Inc. (Princeton, NJ, USA), at the time of conducting this research

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