

Global Landscape of Artificial Intelligence in Health Technology Assessment: Trends, Governance, and Emerging Practices

Eon Ting¹, Matthew Badin¹, Vivian Vuong¹, Nishu Gai², Mir-Masoud Pourrahmat², Luka Ivkovic², Thomas Haugli-Stephens³, Johanna Jacob⁴, Mir Sohail Fazeli²

¹ AstraZeneca, Mississauga, Ontario, Canada; ² Evidinno Outcomes Research Inc, Vancouver, BC, Canada; ³ AstraZeneca AS, Oslo, Norway; ⁴ AstraZeneca AB, Stockholm, Sweden

Introduction

- Artificial Intelligence (AI) and machine learning (ML) are increasingly being integrated into health technology assessments (HTAs) to enhance systematic reviews, real-world evidence generation, and economic modelling, with potential to improve efficiency and evidence quality^{1,2}
- However, adoption remains uneven across agencies, creating uncertainty for global HTA submissions and highlighting the need to assess the current landscape of AI acceptability and use³

Objective

- To provide a comprehensive overview of AI/ML adoption, guidance, and governance across international HTA agencies

Methods

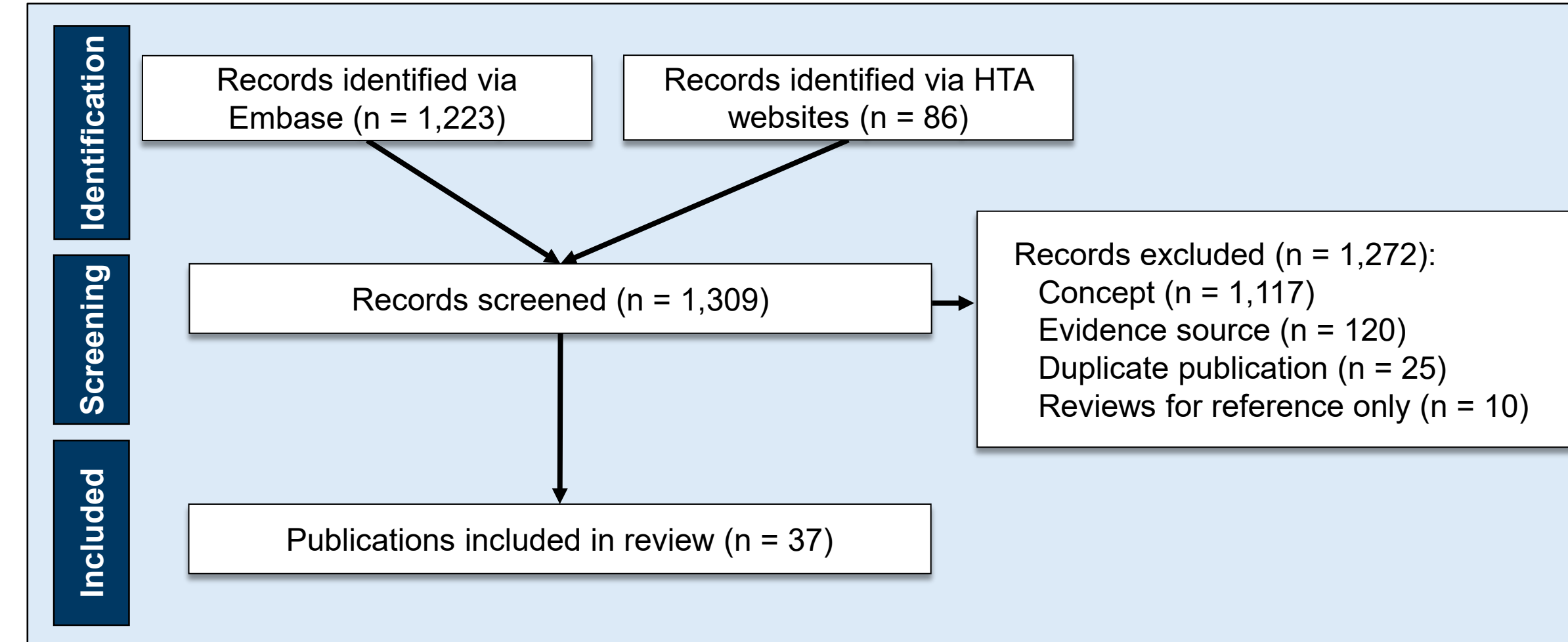
- A targeted literature review of HTA websites⁴ was conducted to identify guidance documents, policy statements, and opinions on use of AI and ML in United States (US)* Canada, Europe including EUnetHTA/JCA, and Asia-Pacific
 - Initial HTA website searches along with supplementary search of Embase, bibliographies of previous reviews, and gray literature were performed on December 11, 2024,⁴ and updated on October 1, 2025, to capture newly available evidence
- Publications on AI/ML approaches recommended/accepted/used by HTA agencies across therapeutic area were identified using PCC framework (Population, Concept, Context)⁵

Results

Publication Selection

- Review included 37 publications (n=37; **Figure 1**), comprising evidence identified in the previous review⁴ and newly retrieved records: 36 from HTA agency websites and 1 from Embase
 - The Embase record was a NICE paper on AI/ML in screening

Figure 1. PRISMA flow diagram



Publication Characteristics

- Ten HTA agencies provided AI/ML guidance (**Figure 2 and 3**), mainly from CDA-AMC (Canada; n=7),⁶⁻¹² followed by HAS (France; n=6),¹³⁻¹⁸ NICE (UK; n=6),¹⁹⁻²⁴ IQWiG (Germany; n=6),²⁵⁻³⁰ FIMEA (Finland; n=4),³¹⁻³⁴ NIPH (Norway; n=3),³⁵⁻³⁷ EUnetHTA/JCA (Europe; n=2),^{38,39} KCE (Belgium; n=1),⁴⁰ PBAC (Australia; n=1),⁴¹ and INESSS (Canada; n=1)⁴²

Figure 2. Included publications on use of AI/ML by HTA agencies

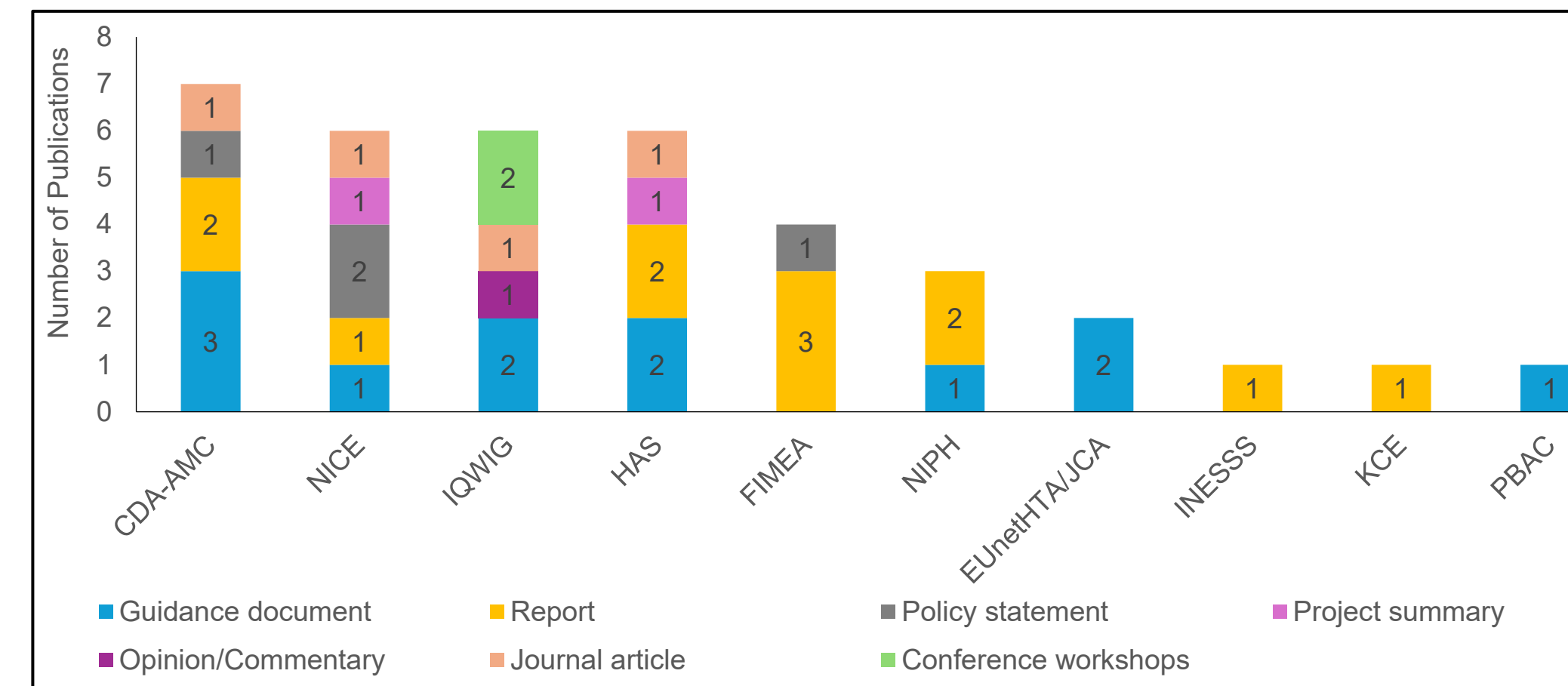
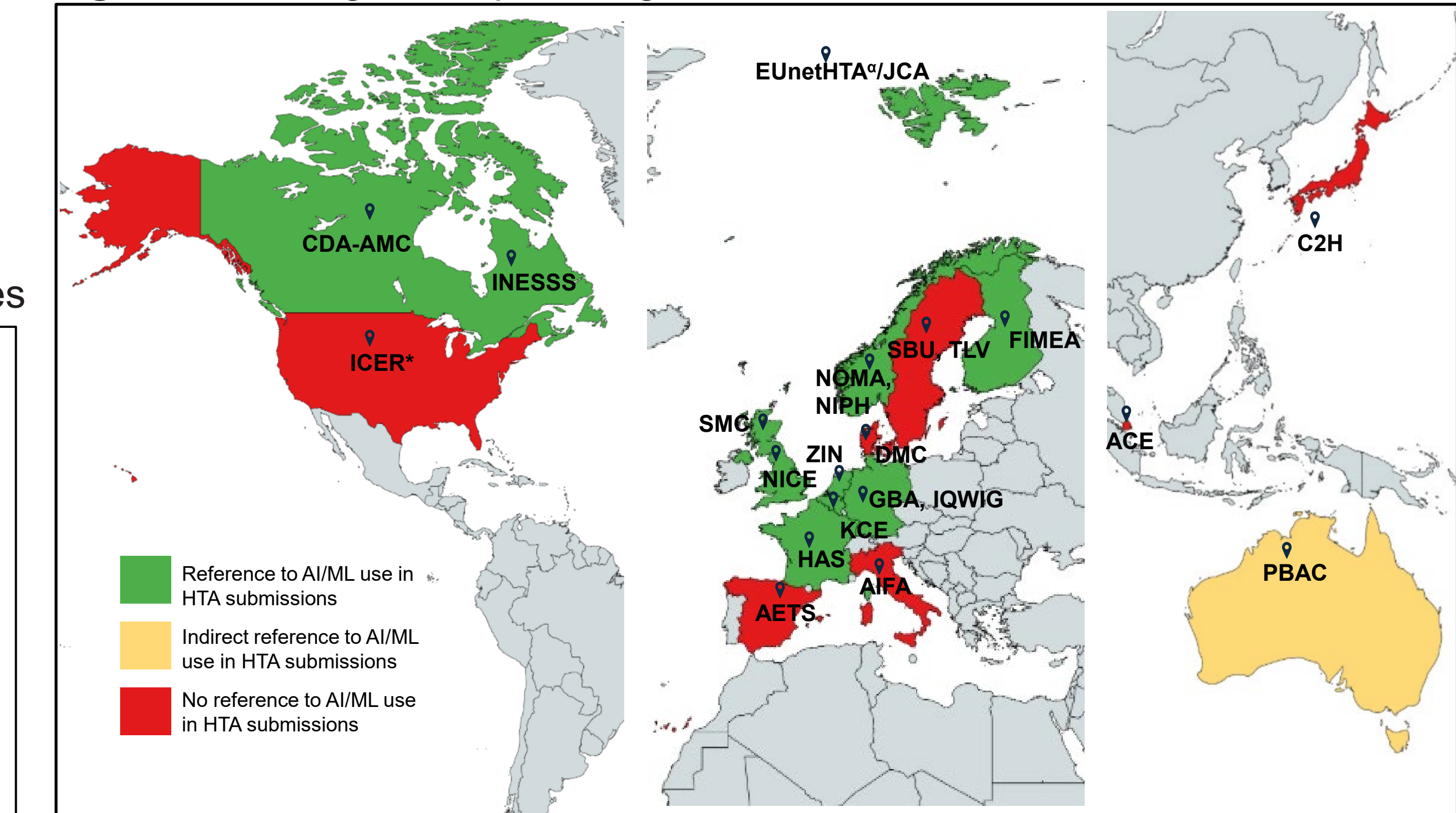


Figure 3. HTA agencies providing references to use of AI/ML in submissions



Results (continued) HTA agencies are acknowledging AI/ML in submissions, particularly for literature reviews and evidence synthesis (n=17), real-world evidence generation (n=9), economic modeling (n=3), and indirect treatment comparison (n=3); Seven HTA agencies are adopting AI/ML for internal use

	NICE	CDA-AMC	NIPH	IQWiG	EUnetHTA/JCA	HAS	KCE	FIMEA
Literature Review and Evidence Generation	AI/ML in search & screening; ML classifiers to expedite study identification; ¹⁹ “human-in-the-loop” , ²⁰ ethical, technical, and regulatory compliance emphasized ²⁰	AI for search strategy, automated data extraction, ^{8,11} Position statement <i>augment human efforts and updated AI definition aligned with Canadian AI governance</i> ¹¹	Dedicated ML implementation for search and screening ; ³⁵ semi-automated data extraction and LLM exploration ³⁷	ML filters/classifiers allowed ²⁵ with demonstrated sensitivity ; cautious adoption ²⁶	Endorses validated study filters (≥95% sensitivity); supports RCT classifiers ³⁹	Developing AI trust framework ; ¹⁵ monitoring automation tools; ^{13,14} cautious stance ¹⁵	Evaluated AI across full SLR lifecycle ; flags reproducibility risks of semantic search ⁴⁰	No formal guidance reported
Health Economic Modelling	AI/ML for model construction, calibration, parameter estimation, simulation optimization, report generation; ^{20,22,23} human oversight emphasized and proposed initial best-practice principles ²³	Aligns with NICE ; AI supports dataset interrogation, model building, calibration, simulation optimization ¹¹			No formal guidance reported			
Real-World Evidence	AI/ML for RWD extraction, curation, feature selection for causal inference; must comply with RWE reporting standards ²⁰	AI for structured data, population selection, causal effect estimation ; ¹¹ method choice remains investigator-driven ^{6,7}	Exploring generative AI for registry tabular extraction ³⁷	Permission granted for RWD use in AI/ML analyses ²⁹		No formal guidance reported		Evaluated AI vs traditional Adverse Drug Reaction processing ³²
Indirect Treatment Comparison	LLM prompts for code generation in network meta-analysis ²⁰	Mirrors NICE ; ¹¹ growing interest in ChatGPT and similar AI platforms to support systematic review processes, but emphasizes cautious use ¹⁰	No formal guidance reported		ML/statistical models may support propensity score estimation ³⁸		No formal guidance reported	
For Internal Purposes	AI for efficiency, accuracy, quality; staff upskilling; ²⁰ automation in COVID-19 surveillance ²⁴	Evaluation instrument for AI search tools; ¹⁰ tool assessment for fit-for-purpose applications (but only under human supervision); ¹² staff training ¹¹	Active ML infrastructure and workforce development ³⁶	Ongoing tool evaluations ³⁰ and expert forums ²⁸	No formal guidance reported	Emphasizes staff training ; ¹⁶ identified 49 AI initiatives across 25 HTAs ¹⁷	Promotes shared repositories and responsible AI guidance ⁴⁰	Internal RWD/AI/ML network; ³¹ Internal automation rollout and staff training ³³

INESSS evaluated GPT-4 for literature screening, finding a ranking strategy with 100% sensitivity and reasonable specificity;⁴² PBAC referred Cochrane Handbook, which highlights AI tools like RCT Classifier and Screen4Me for streamlining study selection of RCTs.⁴¹ No relevant documents were found for the Netherlands (ZIN), Scotland (SMC), Italy (AIFA), Spain (AETS), Sweden (SBU, TLV), Denmark (DMC), Singapore (ACE), or Japan (C2H). No guidance documents were identified for ICER (US).*

Italicized text highlights new updates compared with previously published information in the ISPOR 2026 poster (MSR109 Artificial Intelligence Integration in Health Technology Assessments: A Review of Global Policies and Practices).

Structured guidance
Exploratory Stage
No/limited guidance

Real Time Example And Key Takeaways

Real Time Examples

- TA962 used a Natural Language Processing model to conduct systematic literature review update⁴³
- TA1071 used AI-assisted searches to identify treatment effect modifiers⁴⁴

AI/ML Adoption

- Comprehensive guidance for literature reviews: AI tools for systematic reviews are well-developed
- Guidance for other HEOR applications remains limited

Human Oversight

- “Human in the loop” is strongly advocated
- Automation is feasible for structured tasks (screening, data extraction), but modeling and reasoning tasks require human judgment

Limited Internal Efficiency Gains

- Despite timeline pressures, AI is rarely used to accelerate HTA processes
- Suggests cautious adoption where quantitative reasoning and regulatory compliance are critical

Conclusions

- AI/ML adoption in HTAs is expanding but remains uneven across agencies. NICE and CDA-AMC currently provide the most structured policy direction, while many other agencies are still in early or exploratory stages.
- To enable scalable and trustworthy implementation, the field needs standardized frameworks, stronger cross-agency collaboration, and continuous evaluation to ensure transparent, ethical, and harmonized use of AI/ML across HTA processes.

References

- Fluorence R, et al. *Value Health* 2025;28(2):175-183. doi: 10.1016/j.jval.2024.10.3846
- Kasreddy E, et al. *Value in Health Regional Issues* 2025. doi: 10.1016/j.vhri.2025.101539
- Zemplyny A, et al. *Front Public Health* 2023;11:1068121. doi: 10.3389/fpubh.2023.1068121
- Ting E, et al. *Poster presentation: International Society for Pharmacoeconomics and Outcomes Research (ISPOR) 2025*, Montreal, Quebec, Canada
- Joanna Briggs Institute. *JBI Manual for Evidence Synthesis*. 10.2.4 Inclusion criteria. 2024. Accessed 2024-12-20
- CDA-AMC. *Guidance for Reporting Real-World Evidence*. 2023. Accessed 2024-12-20
- CDA-AMC. *Guidance for Reporting Real-World Evidence: Response to Stakeholder Feedback*. 2023. Accessed 2024-12-20
- CDA-AMC. *An Overview of Clinical Applications of Artificial Intelligence*. 2018. Accessed 2024-12-20
- CDA-AMC. *Development of an Evaluation Instrument on Artificial Intelligence Search Tools for Evidence Synthesis*. 2024. Accessed 2024-12-20
- CDA-AMC. *Methods Guide for Health Technology Assessment*. 2025. Accessed 2025-10-06
- CDA-AMC. *Position Statement on the Use of Artificial Intelligence in the Generation and Reporting of Evidence*. 2025. Accessed 2025-10-06
- Featherstone R, et al. *Cochrane evidence synthesis and methods*. 2025;3(5):e70045. doi: 10.1002/cesm.70045
- HAS. *Recherche documentaire*. 2024. Accessed 2025-10-06
- HAS. *Choices in methods for economic evaluation*. 2020. Accessed 2024-12-20
- HAS. *Quel potentiel de l'IA pour le screening d'articles ?* Evaluation à partir des bases de revues rétrospectives de la HAS. 2025. Accessed 2025-10-06
- HAS. *Intelligence artificielle pour la revue de littérature à la HAS*. 2025. Accessed 2025-10-06
- Matthieu D, et al. *Cartographie des initiatives en cours dans les agences sanitaires concernant l'utilisation des outils d'IA pour la revue de littérature*. Haute Autorité de Santé; 2025-03-27
- HAS. *2025-2030 Strategic Project*. 2025. Accessed 2025-10-06
- NICE. *Developing NICE guidelines: the manual*. 2024. Accessed 2024-12-20
- NICE. *Developing NICE guidelines: the manual*. 2024. Accessed 2024-12-20
- NICE. *Use of AI in evidence generation: NICE position statement*. 2024. Accessed 2024-12-20
- NICE. *Statement of intent for artificial intelligence (AI)*. 2024. Accessed 2024-12-20
- NICE. *HTA projects*. 2025. Accessed 2024-12-20
- NICE. *Generative artificial intelligence (AI) in health economic modelling*. 2025. Accessed 2025-10-06
- Sood M, et al. *medRxiv* 2022. doi: 10.1101/2022.06.13.22276242
- IQWiG. *General Methods Version 7.0*. 2023. Accessed 2024-12-20
- IQWiG. *Allgemeine Methoden Entwurf für Version 8.0*. 2025. Accessed 2025-10-06
- IQWiG. *Information Retrieval Meeting (IRM 2024)*. 2022; Cologne, Germany. Accessed 2025-10-06
- IQWiG. *Information Retrieval Meeting (IRM 2024)*. Software and data skills for information specialists. 26 April 2024. Cologne, Germany. Accessed 2025-10-06
- GBA. *Des Gemeinsamen Bundesauschusses gemäß § 8 Kapitel 1, Abschnitt 1, Absatz 1 Verfahrensordnung (VerfO) Entscheidung über die Gewährung der sekundären Datenutzung*. 2021. Accessed 2024-12-20
- Waffenschmidt S, et al. *Systematic reviews*. 2023;12(1):161. doi: 10.1186/s13643-023-02334-x
- FIMEA. *Supporting innovation and development of infrastructure*. 2023. Accessed 2025-02-10
- FIMEA. *FIMEA to use artificial intelligence to process adverse reaction reports*. Accessed 2025-10-06
- FIMEA. *Infrastructure development and support for innovation*. Accessed 2025-10-06
- FIMEA. *Use of artificial intelligence at FIMEA*. Accessed 2025-10-06
- NIPH. *Implementing machine learning in an evidence synthesis group: recommendations based on a three-year implementation process*. 2024. Accessed 2025-10-06
- NIPH. *Implementation of Machine Learning in Cluster for Reviews and Health Technology Assessments: Results for ML 3.0*. 2024. Accessed 2025-10-06
- NIPH. *Implementation of machine learning in division for health services: strategy proposal from 2024*. Accessed 2025-10-06
- JCA. *Methodological Guideline for Quantitative Evidence Synthesis: Direct and Indirect Comparisons 2024*. Accessed 2024-12-20
- EUnetHTA. *Process of information retrieval for systematic reviews and health technology assessments on clinical effectiveness*. 2019. Accessed 2024-12-20
- KCE. *Expedited Scientific Research and Reporting (ERSO) at KCE*. 2024. Accessed 2025-10-06
- PBAC. *Guidelines for preparing a submission to the Pharmaceutical Benefits Advisory Committee*. 2016. Accessed 2024-12-20
- INESSS. *Développement et évaluation d'un outil logiciel basé sur GPT-4 pour l'aide au tri de documents dans le cadre de revues de la littérature : une preuve de concept 2024*. Accessed 2024-12-20
- TA962. *Olaparib for maintenance treatment of BRCA mutation-positive advanced ovarian, fallopian tube or peritoneal cancer after response to first-line platinum-based chemotherapy*. 2024. Accessed 2025-03-04
- TA1071. *Atezolizumab for adjuvant treatment of resected non-small-cell lung cancer*. 2025. Accessed 2025-03-04

* HTA Agencies of Interest: Agency for Care Effectiveness (ACE); Agencia de Evaluación de Tecnologías Sanitarias (AETS); Agenzia Italiana del Farmaco (AIFA); Canada's Drug Agency (CDA-AMC); Center for Outcomes Research and Economic Evaluation for Health (C2H); Danish Medicines Council (DMC); European Network for Health Technology Assessment (EUnetHTA); Finnish Medicines Agency (FIMEA); Gemeinsamer Bundesauschuss (GBA); Haute Autorité de Santé (HAS); Institute for Clinical and Economic Review (ICER); Institut National d'Excellence en Santé et Services Sociaux (INESSS); Institut für Qualität und Wirtschaftlichkeit im Gesundheitswesen (IQWiG); Joint Clinical Assessment (JCA); Belgium Health Care Knowledge Centre (KCE); National Institute for Health and Care Excellence (NICE); Norwegian Institute of Public Health (NIPH); Norwegian Medical Products Agency (NOMA); Pharmaceutical Benefits Advisory Committee (PBAC); Swedish Agency for Health Technology Assessment and Assessment of Social Services (SBU); Scottish Medicines Consortium (SMC); Dental and Pharmaceutical Benefits Agency (TLV); Zorginstituut Nederland (ZIN).

* ICER is an independent, nonprofit organization without statutory HTA status or formal regulatory or reimbursement authority, but was included in this review as the closest functional equivalent to an HTA agency in the United States.

* EUnetHTA officially ceased operations in September 2023.

Acknowledgements

This study was conducted by Evidinno Outcomes Research Inc., funded by AstraZeneca.

Disclosures

Eon Ting, Matthew Badin, Vivian Vuong, Thomas Haugli-Stephens, and Johanna Jacob are employees and/or shareholders of AstraZeneca. Nishu Gai, Mir-Masoud Pourrahmat, Luka Ivkovic, and Mir Sohail Fazeli are employed by Evidinno Outcomes Research Inc.