NICE National Institute for Health and Care Excellence

HTA66

The Future of AI-Enabled Health Technology Assessment

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BACKGROUND

NICE's Health Technology Assessment (HTA) Innovation Laboratory is a policy sandbox for exploring new methods. AI is emerging across HTA, but its likely direction, value and implications remain uncertain.

This future-looking project brought together stakeholder perspectives and research evidence to examine three possible directions for use of AI: automation, including 'living HTA'; personalisation of HTA using AI; and reasoning-oriented and agentic AI for more complex analytical workflows.

METHODS

- Three multistakeholder workshops with participants from academia, industry, AI developers, HTA groups and NICE committees.
- Expert presentations, technology demonstrations and facilitated discussions of opportunities, risks and practical challenges.
- A scoping review examined how AI tools perform against human reviewers in literature-review tasks [MSR164]
- A landscape review examined emerging applications of AI in HTA, their methodological limitations and governance considerations [HTA287]

Automation and living HTA

Stakeholders considered how AI could be used to improve efficiency in HTA methods through automation.

Stakeholders supported automation of structured, lower-risk tasks, particularly literature screening and data extraction.

Automation could support living HTA, where assessments are updated as new evidence emerges. Stakeholders favoured incremental, human-supervised updating.

Personalisation of HTA using AI

Stakeholders considered how AI could support more individualised clinical and cost-effectiveness estimates.

Stakeholders saw potential to identify differences in treatment effects between patient groups, but raised concerns about validation, limited trial evidence, and equity.

Skills gaps in causal-AI were a major barrier, and causal-AI methods were considered unready for mainstream use.

Reasoning and agentic AI

Stakeholders considered how AI could support decision-making functions through reasoning capabilities.

Stakeholders saw potential for reasoning-oriented AI to identify uncertainties, anticipate challenges and support report preparation.

Support depended on clear added value and appropriate human oversight; trust remained divided where AI use involved methodological judgement.

Readiness, risk and impact

Stakeholders saw opportunities for AI across HTA, but applications differed in readiness, risk and potential value. Lower-risk, structured tasks were considered more suitable for earlier exploration.

Proportionate oversight

Stakeholders favoured staged, proportionate adoption, with evaluation and oversight reflecting intended use, consequences of error and confidence in system reliability. AI could offer value beyond efficiency, including greater consistency and robustness, but could also increase review burdens.

Conditions for confidence

Across applications, confidence depended on transparency, scrutiny and accountable human judgement. Stakeholders were asked what would need to be in place for them to feel confident using AI-enabled HTA methods, described in the themes below:

Standards

- Agree standards for transparency, auditability and reporting of AI use in HTA.
- Align approaches internationally.
- Develop clear guidance on acceptable and responsible AI use.

Evaluation

- Define performance expectations and appropriate comparators
- Benchmark AI against existing methods
- Test prospectively and using shadow evaluation
- Monitor performance as systems evolve

Safeguards

- Match human oversight to the consequences of error and confidence in system reliability.
- Maintain traceability and auditability so AI-supported analyses can be scrutinised.
- Keep decisions and accountability with humans.

Skills

- Build AI literacy across the HTA ecosystem.
- Develop skills to interpret, scrutinise and challenge AI-supported analyses.
- Maintain core methodological expertise as AI changes how HTA work is done.

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