Artificial intelligence at NICE: what's the plan?

NICE's AI Statement of intent

NICE's position statement on artificial intelligence

Dr. Stephen Duffield
Associate Director RWE methods
ISPOR 2024: Tuesday 11th November
12:45 – 13:15

NICE National Institute for Health and Care Excellence

The health and care system is changing

We're seeing:

- health service pressures
- shared decision making
- growth in innovation
- vast amounts of data.

NICE is transforming too

NICE's core purpose remains the same: to help practitioners and commissioners get the best care to people fast, while ensuring value for the taxpayer.

But as the NHS transforms to meet future challenges, we need to play our part too.

NICE

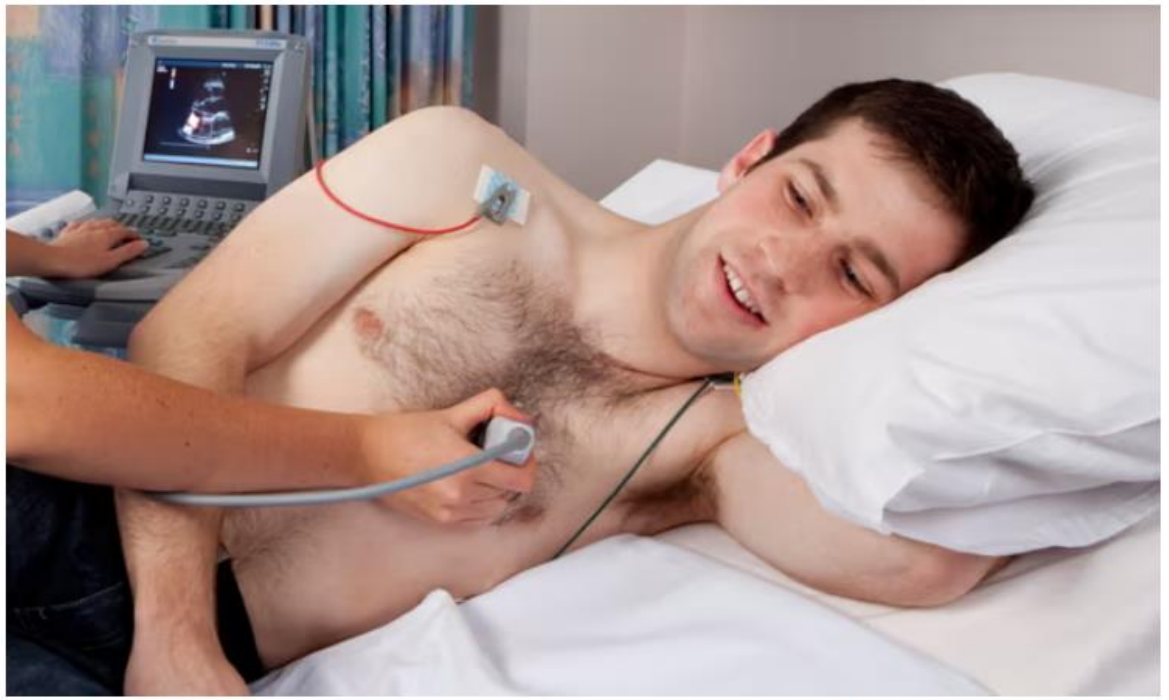
The times they are a-changin'…

NICE

Faster and mc
accurate or su
diagnostics

NHS in England to trial AI tool to predict risk of fatal heart disease

'Superhuman' technology known as Aire can detect potential problems doctors cannot see from ECG results



Aire has been trained on a dataset of 1.16m ECG test results from 189,539 patients. Photograph: MediC Pix/Alamy

Machine learning doubly robust methods in causal inference

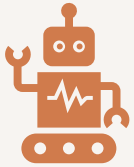
Productivity applications, meeting notes and actions, summarisation

Predictive tools for risk assessment and monitoring

The 3 priority areas for AI at NICE

Guidance

for technology developers on best practice for AI-based methods to support evidence generation



Evaluation

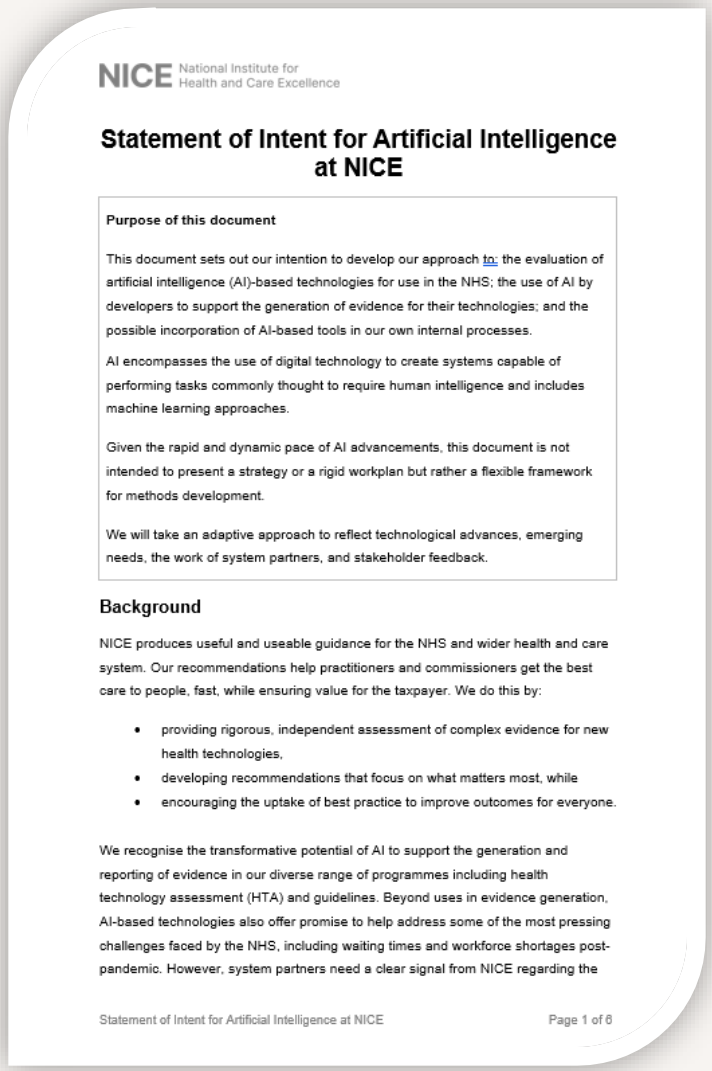
of technologies incorporating AI, e.g., certain clinical prediction models or digital health technologies

Use

of AI to support and improve the efficiency of NICE's internal business processes

NICE's Statement of Intent for AI

- Outlines our intent within the 3 priority areas: AI in evidence, HTA of AI tech, and use of AI
- Signals our approach to:
    - adopt an agile approach to a fast-moving field,
    - safely balance opportunities and risks
    - adhere to best practice and government standards, and
    - maintain our core principles that underpin NICE's work.
- Underscores the need to **collaborate with key experts and stakeholders** to develop evidence requirements and pilot new tools
- Published **on a dedicated AI-space on NICE's website**



NICE National Institute for Health and Care Excellence

Statement of Intent for Artificial Intelligence at NICE

Purpose of this document

This document sets out our intention to develop our approach to: the evaluation of artificial intelligence (AI)-based technologies for use in the NHS; the use of AI by developers to support the generation of evidence for their technologies; and the possible incorporation of AI-based tools in our own internal processes.

AI encompasses the use of digital technology to create systems capable of performing tasks commonly thought to require human intelligence and includes machine learning approaches.

Given the rapid and dynamic pace of AI advancements, this document is not intended to present a strategy or a rigid workplan but rather a flexible framework for methods development.

We will take an adaptive approach to reflect technological advances, emerging needs, the work of system partners, and stakeholder feedback.

Background

NICE produces useful and useable guidance for the NHS and wider health and care system. Our recommendations help practitioners and commissioners get the best care to people, fast, while ensuring value for the taxpayer. We do this by:

- providing rigorous, independent assessment of complex evidence for new health technologies,
- developing recommendations that focus on what matters most, while
- encouraging the uptake of best practice to improve outcomes for everyone.

We recognise the transformative potential of AI to support the generation and reporting of evidence in our diverse range of programmes including health technology assessment (HTA) and guidelines. Beyond uses in evidence generation, AI-based technologies also offer promise to help address some of the most pressing challenges faced by the NHS, including waiting times and workforce shortages post-pandemic. However, system partners need a clear signal from NICE regarding the

Statement of Intent for Artificial Intelligence at NICE Page 1 of 6

The 3 priority areas for AI at NICE

Guidance

for technology developers on best practice for AI-based methods to support evidence generation

Evaluation

of technologies incorporating AI, e.g., certain clinical prediction models or digital health technologies

Use

of AI to support and improve the efficiency of NICE's internal business processes

NICE's position statement on AI in evidence submissions

Why a position statement?

- NICE sets out its view on what NICE expects when AI methods are used to generate and report evidence considered by its evaluation programmes
- Indicate existing regulations, good practices, standards and guidelines to follow when using AI methods, where appropriate.

Provides more information and guidance about use of AI methods for:

- Systematic review and evidence synthesis
- Clinical evidence, including real-world data and analysis
- Cost-effectiveness evidence

NICE

Position statement… RWE and causal inference

- Seek early engagement
- Use explainable and common methods in the first instance - where potentially robust.
- The use AI for causal inference is a high-risk application of AI.
  - Include considered sensitivity analysis, check against other suitable methods, present results in the context of other available clinical evidence – consider plausibility.
  - Justify use and outline any assumptions (e.g., use PALISADE checklist)
- Apply other best practice guidance recommended by NICE (e.g. NICE's RWE framework).
- Ideally, the use of machine-learning methods should be accompanied by pre-specified outcome-blind simulations, conducted independently, to demonstrate statistical properties in similar settings and correct implementation.

NICE

Read the rest here!

Statement of intent: what next on best practice for AI-based methods for evidence generation

Outline best practice principles that enable scientific rigour and ethical considerations, as well as transparency

This means…

- **Gather insights** on current practices, challenges, and expectations regarding the use of AI in evidence generation, drawing input from expert advisors.
- **Prioritise topic areas** for development, such as guidance for assessing the quality and reliability of AI-generated evidence and considerations for bias, transparency, reproducibility, and ethical use.
- **Lead exploratory and applied research** activities, to develop relevant case studies applying AI in evidence generation and understand the implications for NICE's methods and processes, including in systematic reviews of evidence and economic modelling.
- **Consider aligning** with existing literature and guidelines on AI methodologies, and frameworks from other regulatory bodies and relevant organisations.
- **Support** technology innovators through the NICE Advice service.

Roadmap to multi-stakeholder buy in (methods)

Academic development

HEOR centers of excellence

Peer review

Robust evaluation in reputable journal

Collaboration

Refine and test methods with industry prior to inclusion in dossiers

HTA Pilot

For very novel methods, which are expected to be impactful, pilot studies can test, refine, and socialise for regulator/HTA settings

Early Scientific Advice

To assess likelihood of acceptance

Follow existing guidelines

ML methods are not exempt

NICE

Ongoing work…

NICE HTA lab on use of AI in Health Economic modelling

Pilot study looking at the use of NLP methods for data generation

Predict-RWE: framework to support evidence generation for clinical prediction models

Exploring the use of large language models for SLR

Pilot study considering evidence standards for AL/ML use for causal inference

SYNTHIA consortium on the potential uses for synthetic data in regulatory settings

NICE

Artificial intelligence (AI) at NICE

At NICE we understand the importance of responsible and effective use of artificial intelligence (AI).

We're identifying the potential benefits that AI can bring to the health and care system, and how it can be used in the development of our guidance and advice.

Our approach

AI is a dynamic and rapidly advancing field. To get ready for the transformative impact of this shift, we've outlined our approach in a statement of intent and a position statement.

NICE National Institute for Health and Care Excellence

Thank you.