Future of Health Technology Assessment

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Disclaimers

• No Conflicts of Interest to declare
• Views expressed are my own and not those of NICE
Outline

• Health Technology Assessment (HTA)
  • What, Why and How?
  • Current status and need for change

• Next Generation Health Technology Assessment (HTx) project
  • Project outline
  • Focus areas
  • Key outputs
What is Health Technology Assessment (HTA)?

**HTA Definitions**

There are many definitions of HTA. All emphasize its role as a tool supporting decision making at different level of the healthcare system, its multidisciplinary nature and its strong reliance on transparent scientific rigorous methods.

Scientific \hline rigorous

Decision-making
Definition

- **HTA** is a *multidisciplinary process* that uses *explicit* methods to determine the *value* of a *health technology* at *different points in its lifecycle*. The purpose is to *inform decision-making* in order to promote an *equitable*, *efficient*, and *high-quality* health system.

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The new definition of health technology assessment: A milestone in international collaboration

Brian O’Rourke¹, Wija Oortwijn² ☯, Tara Schuller³ ☯ and the International Joint Task Group

[https://pubmed.ncbi.nlm.nih.gov/32398176/]
A health technology is an intervention developed to prevent, diagnose or treat medical conditions; promote health; provide rehabilitation; or organize healthcare delivery.

The intervention can be a test, device, medicine, vaccine, procedure, program or system. (Definition from the HTA Glossary)
HTA process

The process is **formal, systematic** and **transparent**, and uses **state-of-the-art methods** to consider the **best available evidence**.
### HTA process

**Developing technology appraisal guidance**

An overview of the development process.

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
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<tbody>
<tr>
<td>1.</td>
<td>Provisional appraisal topics chosen</td>
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<tr>
<td>2.</td>
<td>Consultees and commentators identified</td>
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<tr>
<td>3.</td>
<td>Scope prepared</td>
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<td>4.</td>
<td>Appraisal topics referred</td>
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<td>5.</td>
<td>Evidence submitted</td>
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<td>6.</td>
<td>Evidence Review Group (ERG) or assessment report prepared</td>
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<td>7.</td>
<td>Committee papers prepared</td>
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<td>8.</td>
<td>Appraisal committee</td>
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<td>9.</td>
<td>Appraisal consultation document (ACD) produced</td>
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<td>10.</td>
<td>Final appraisal determination (FAD) produced</td>
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<tr>
<td>11.</td>
<td>Guidance issued</td>
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</table>
Value

- The **dimensions of value** for a health technology may be assessed by examining the **intended and unintended consequences** of using a health technology **compared to existing alternatives**.

- These dimensions often include **clinical effectiveness**, **safety**, **costs** and **economic implications**, **ethical**, **social**, **cultural** and **legal** issues, **organisational** and **environmental** aspects, as well as wider implications for the **patient**, **relatives**, **caregivers**, and the **population**.

- The **overall value** may vary depending on the **perspective** taken, the **stakeholders** involved, and the **decision context**.

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Recommendations

Clinical effectiveness → Cost effectiveness

Uncertainty

Innovation

Non-health benefits

Social value judgements

Fairness and equality

Robust  Consistent  Transparent

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Timing

- HTA can be applied at **different points in the lifecycle of a health technology**, i.e. **pre-market, during market approval, post-market**, through to the **disinvestment** of a health technology.

![Diagram](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4234281/)

**Figure 1.** Schematic representation of the drug development process with timeline, attrition rate, and sample sizes of clinical studies.

**Notes:** Timing of different stages and sample sizes vary according to different countries, manufacturers, and indications. Reprinted from *Drug Discov Today*, 17. van Nooten F, Holmstrom S, Green J, Wiklund I, Odeyemi IA, Wilcox TK. Health economics and outcomes research within drug development: challenges and opportunities for reimbursement and market access within biopharma research. 613–622. © 2012, with permission from Elsevier.™

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https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4234281/
Why?

To ensure the best use of the scarce healthcare system resources

• No health care system in the world can provide every effective intervention. **Resources are limited** and **wants are limitless** (Scarcity)

• If you provide more of one service, you have to provide less of another. **(Opportunity cost)**

• **Choices and trade-offs** have to be made.
HTA Recommendations

• Single intervention

• Target population level

• Clinical effectiveness based on RCT evidence

Methods development
HTx: Next Generation Health Technology Assessment
Horizon 2020 project funded by the European Union (2019-2023)

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HTx 2nd General Assembly
Bern, 6-7 February 2020
Next Generation HTA (HTx)

- To facilitate the development of methodologies to deliver more customized information on the effectiveness and cost-effectiveness of complex and personalised combinations of health technologies.

- To provide methods to support personalised treatment advice that will be shared with patients and their physicians.
Imagine an individual patient who visits the doctor for a medical problem. Their use of different health technologies, such as medical devices, e-health outcomes.

Adequate clinical studies and real-world data analysis have resulted in a real-patient can use to obtain person-centered information in a user-friendly associated with a range of possible strategies to manage the patient’s ailment.

The same information is made available to HTA agencies whose decisions are informed by the level of individuals and summarised at the subgroup and population level for the HTx.
Structure

WP1 Treatment pathways, therapeutic areas
- DEFINE FRAMEWORK
  - CASE 1
  - CASE 2
  - CASE 3
  - CASE 4
- GENERALISE CASES

WP2 RWD Evidence Synthesis

WP3 AI Treatment Prediction

WP4 Implementation, system and processes
- PROMS SDM
- SYNERGIES
- INT. CONSENSUS
- PAYMENT FUNDING
- POLICY SANDBOX

WP5 Transferability and Dissemination

WP6 Scientific Coordination and Project Management

Expert Forum
HTx Forum

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Focus areas

- Prediction modelling on the basis of data using different study designs (RCT, RWD etc) (WP2)
- Health-econometric tools to take into account effects and costs (WP2)
- Develop AI/ML methods to forecast individual patient treatment outcomes (WP3)

_Focus on combinations (and/or sequences) of health technologies not evaluated in RCT as such_
Focus areas

- **Proton Therapy** for head and neck cancer

- Monitoring and treatment pathways in **diabetes** (T1DM and T2DM)

- **Pharmacological treatments** for relapsing remitting multiple sclerosis (MS)

- Different **treatment** modalities in patients with myelodysplastic syndrome (MDS)
Outputs

• **Clear methods** developed for these disease areas:
  • Are **practically used** in healthcare practice
    • By **HTA organisations** to facilitate HTA for personalised treatments (including support appropriate use);
    • By **healthcare providers** as part of new guidelines – For individual patients and their clinicians
  • Provides a **general framework that can help other groups** to develop methods for specific disease areas
  • Has a **clear link to national reimbursement and pricing processes**
Concluding remarks

• Next generation HTA will increasingly consider:
  • Combinations and sequences of treatments
  • Individualised treatments using AI-based prediction models and genetic testing
  • Methods’ development is key to future-proofing HTA
Thank You!

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