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HTx Next Generation Health Technology Assessment

# 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

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# 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

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# What is Health Technology Assessment (HTA)?

World Health Organization

## Health technology assessment

### 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

rigorous

Decision-making

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# 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.*

*International Journal of Technology Assessment in Health Care*

**cambridge.org/thc**

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

Brian O'Rourke[1], Wija Oortwijn[2], Tara Schuller[3] and the International Joint Task Group

https://pubmed.ncbi.nlm.nih.gov/32398176/

HTAi™ HEALTH TECHNOLOGY

INAHTA

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# Health Technology

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)

- Medicines
- Diagnostics
- Devices
- Procedures
- Digital applications
- Service delivery

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# HTA process

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

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All Wales Medicines Strategy Group
Grŵp Strategaeth Meddyginiaethau Cymru Gyfan

Healthcare Improvement Scotland | Scottish Medicines Consortium

IQWiG Institute for Quality and Efficiency in Health Care

CADTH Evidence Driven.

eunethta
EUROPEAN NETWORK FOR HEALTH TECHNOLOGY ASSESSMENT

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# HTA process

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## Developing technology appraisal guidance

An overview of the development process.

1. Provisional appraisal topics chosen
2. Consultees and commentators identified
3. Scope prepared
4. Appraisal topics referred
5. Evidence submitted
6. Evidence Review Group (ERG) or assessment report prepared
7. Committee papers prepared
8. Appraisal committee
9. Appraisal consultation document (ACD) produced
10. Final appraisal determination (FAD) produced
11. Guidance issued

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**Guide to the methods of technology appraisal 2013**

Process and methods
Published: 4 April 2013
nice.org.uk/process/pmg9

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**Guide to the processes of technology appraisal**

April 2018

**Acknowledgements**

NICE is very grateful to everyone who contributed to the development of this guide (see section 7).

**Foreword**

The National Institute for Health and Care Excellence (NICE) provides guidance to the NHS in England on the clinical and cost effectiveness of selected new and established technologies. NICE carries out appraisals of health technologies at the request of the Department of Health and Social Care. Guidance produced by NICE on health technologies is also applied selectively in Northern Ireland and Wales.

This document is one of a series describing the processes and methods that NICE uses to carry out technology appraisals. It focuses on the technology appraisal processes (and provides an overview for organisations invited to contribute to an appraisal).

The documents in the series are:

- Guide to the processes of technology appraisal (this document).
- Guide to the methods of technology appraisal.
- Cancer Drugs Fund technology appraisal process and methods (addendum).

**NICE Decision Support Unit**

The University Of Sheffield.

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**Technical Support Documents**

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# 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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ISPOR
Improving healthcare decisions

The leading professional society for health economics and outcomes research (HEOR) globally. The Society's mission is to promote HEOR excellence **to improve decision making for health globally.**

VALUE IN HEALTH 21 (2018) 131–139

ELSEVIER

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/jval

# Defining Elements of Value in Health Care—A Health Economics Approach: An ISPOR Special Task Force Report [3]

CrossMark

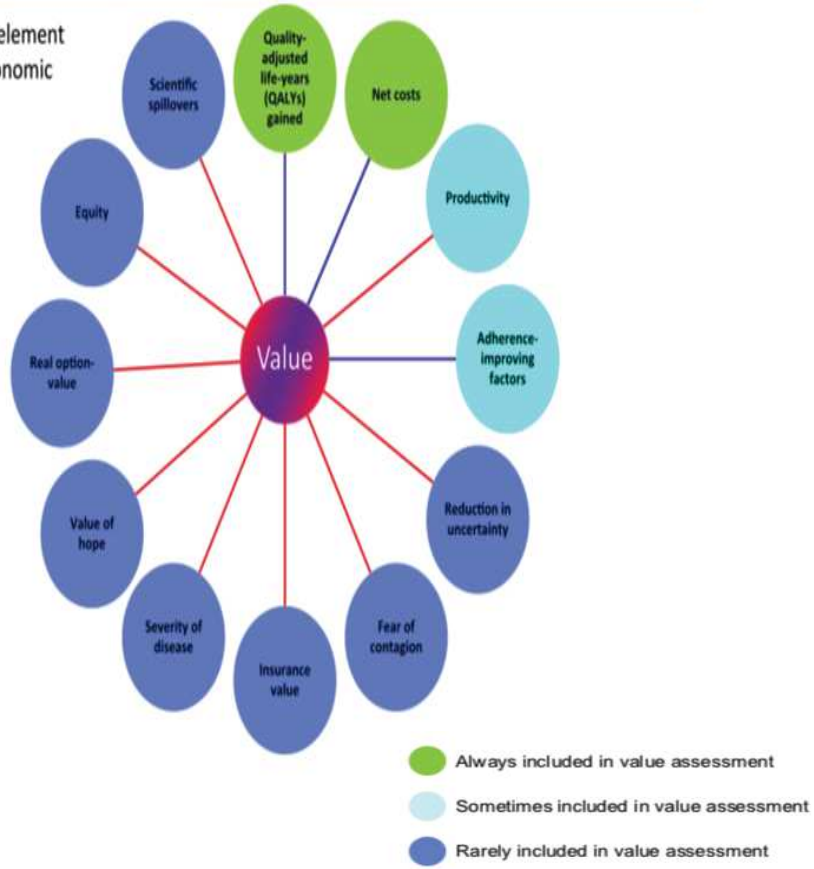
*Darius N. Lakdawalla, PhD[1,*], Jalpa A. Doshi, PhD[2], Louis P. Garrison Jr, PhD[3], Charles E. Phelps, PhD, MBA[4], Anirban Basu, PhD[3], Patricia M. Danzon, PhD[5]*

[1]*Schaeffer Center for Health Policy and Economics, University of Southern California, Los Angeles, CA, USA;* [2]*Division of General Internal Medicine, University of Pennsylvania, Philadelphia, PA, USA;* [3]*The Comparative Health Outcomes, Policy, and Economics (CHOICE) Institute, University of Washington, Seattle, WA, USA;* [4]*Economics, Public Health Sciences, Political Science, University of Rochester, Gualala, CA, USA;* [5]*The Wharton School, University of Pennsylvania, Philadelphia, PA, USA*

 This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement Nº 825162.

## Elements of Value

**Challenge:** Map each element into an underlying economic framework for value assessment.



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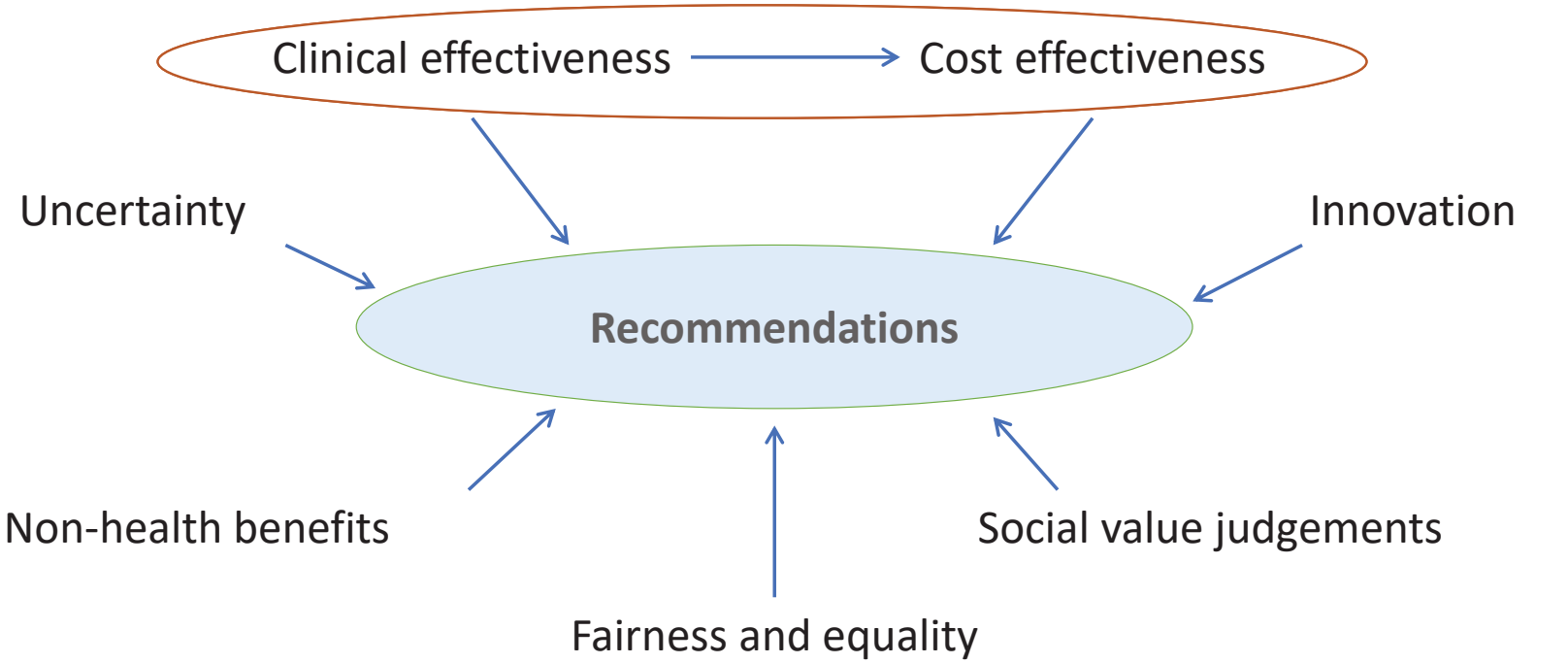


***Robust*** ***Consistent*** ***Transparent***

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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.

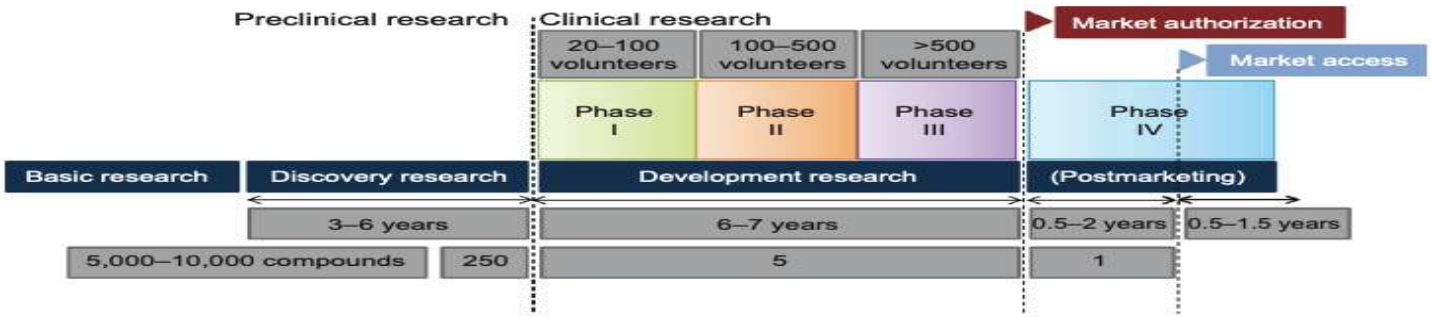


**Figure 1** Schematic representation of the drug development process with timeline, attrition rate, and sample sizes of clinical studies.
**Notes:** Timing of different stages and sample sizes vary according to different countries, manufacturers, and indications. Reprinted from *Drug Discov Today*, 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. 615–622. © 2012, with permission from Elsevier.[10]



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

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# 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.

Opportunity
Value
cost
Scarcity
Supply
Demand
Choice
Allocation
Trade-off

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# HTA Recommendations

- Single intervention
- Target population level
- Clinical effectiveness based on RCT evidence

**Methods development**

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# HTx: Next Generation Health Technology Assessment

## Horizon 2020 project funded by the European Union (2019-2023)

**Utrecht University (UU)**
Netherlands – Project Coordinator

**University of Maastricht (UM)**
Netherlands

**EURORDIS Rare Diseases Europe (EURORDIS)**
France

**University of Copenhagen (UoC)**
Denmark

**University of Oulu (UoO)**
Finland

**University of York (UoY)**
UK

**Medical University of Sofia (MUS)**
Bulgaria

**University of Bern (UBERN)**
Switzerland

**Universidad Politecnia de Madrid**
Spain

**European Organisation for Research and Treatment of Cancer (EORTC)**
Belgium

**Dental and Pharmaceutical Benefits Agency (TLV)**
Sweden

**National Health Care Institute (ZIN)**
Netherlands

**National Institute of Health and Care Excellence (NICE)**
UK

**Syreon Research Institute (SRI)**
Hungary

**Synapse research management (SYNAPSE)**
Spain



**HTx 2nd General Assembly**
**Bern, 6-7 February 2020**

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# 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**

# The HTx vision:

## a new generation of healthcare decision-making

**Imagine an individual patient who visits the doctor for a medical problem.** The
her 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 i
level of individuals and summarised at the subgroup and population level for t
**is what we envision as HTx.**

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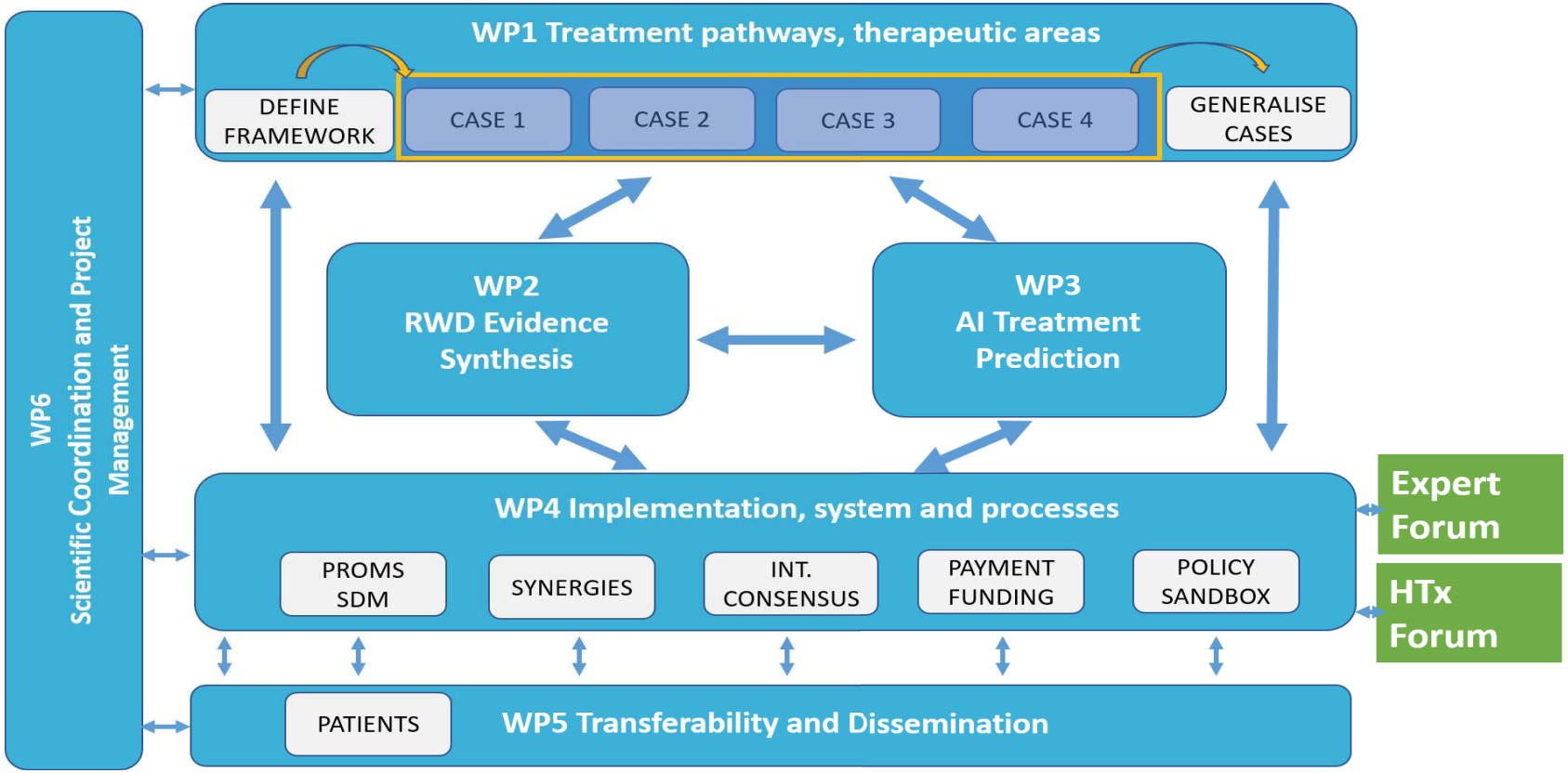
# Structure



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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*

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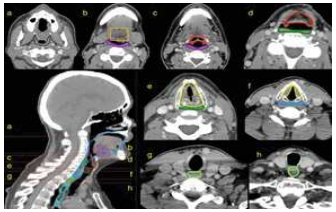
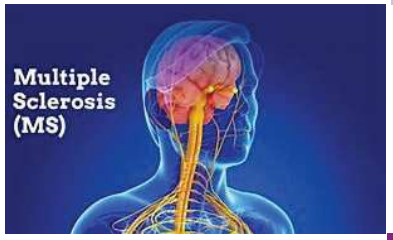
# Focus areas

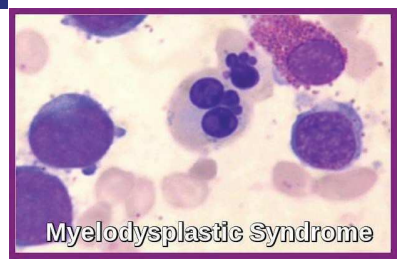


- **Proton Therapy** for **head and neck cancer**


- 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)

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# 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**

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# 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

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# Thank You!

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