Assessing the Value of Artificial Intelligence Through the Lens of Multiple Stakeholders – the role of Health Technology Assessment

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Health Technology Assessment and AI

- 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, high-quality health system

- AI is the simulation of human intelligence processes by machines, including learning, reasoning, and self-correction by exploiting exhaustive data sets from complex systems
- AI is seen as a **strategic lever** to improve access, quality, and efficiency of care and services and to build learning and value-based health systems

Strengths and opportunities of AI for HTA

- AI is increasingly used in health care for:
  - assisting clinical decision making, radiological and pathological analysis, early prediction, monitoring of health risks
  - service organization (e.g., flow optimization, triage, and resource allocation)
  - patient management and follow-up (e.g., drug administration and compliance)
  - health insurance fraud detection
- AI is also being integrated into HTA conduct including, but not limited to, horizon scanning (identification of emerging technologies) and systematic literature searches

Rise in AI also poses challenges to HTA

- Challenges identified by HTAi Global Policy Forum:
  - Quality and acceptability of real-world data
  - Governance and accountability issues
  - Transferability issues
  - **How to inform decision-making**

Sources: Oortwijn W, on behalf of the HTAi Global Policy Forum. Real-world evidence in the context of health technology assessment processes - from theory to action. Background Paper. December 2018. https://htai.org/wp-content/uploads/2019/02/HTAiGlobalPolicyForum2019_BackgroundPaper.pdf

Oortwijn, W., Sampietro-Colom, L., & Trowman, R. (2019). How to Deal with the Inevitable: Generating Real-World Data and Using Real-World Evidence for HTA Purposes – From Theory to Action. International Journal of Technology Assessment in Health Care, 35(4), 346-350. doi:10.1017/S0266462319000400

Assessing the value of AI to inform decision-making

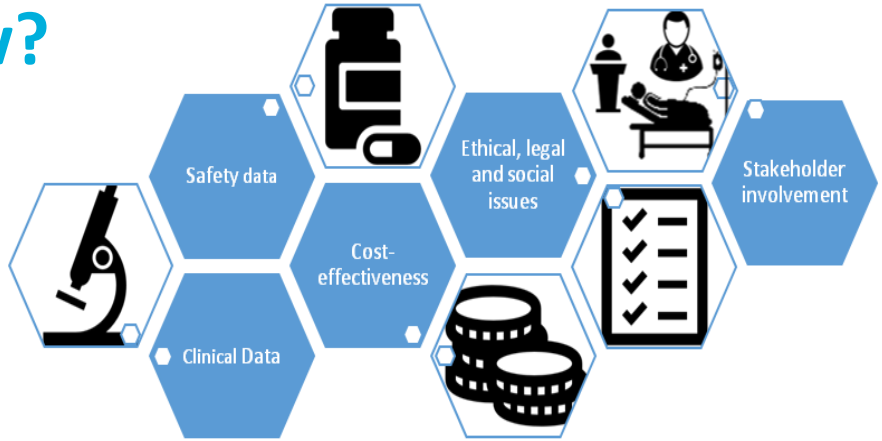
- AI-based systems should be seen as a health system transformation lever, rather than a discrete set of technological devices

- Could bring significant changes and impacts: technological, clinical, human and cognitive, professional and organizational, economic, legal, and ethical impacts

- Assessment of AI's value proposition should go beyond technical performance and cost logic by performing a **holistic analysis of its value in real-world context and input from all stakeholders**

Source: Alami H, Lehoux P, Auclair Y, de Guise M, Gagnon M, Shaw J, Roy D, Fleet R, Ag Ahmed M, Fortin J Artificial Intelligence and Health Technology Assessment: Anticipating a New Level of Complexity J Med Internet Res 2020;22(7):e17707; URL: https://www.jmir.org/2020/7/e17707 DOI: 10.2196/17707

How?



VALIDATE

Values in doing assessments of healthcare technologies

https://validatehta.eu

With the support of the Erasmus+ Programme of the European Union

Identify and analyze different perspectives and values

- An early dialogue between stakeholders is needed to identify the evidence required to inform decision making by:

- **Focusing on what (people are trying to achieve or to avoid) and why**: i.e., reveal what general values are considered important (e.g., fairness, autonomy) and how they are brought to bear on the practice of health care (how they are specified)

- Aims to clarify how AI changes the practice of health care from the perspective of **shared values**. It reveals the nature of any potential value conflicts, and how these might be resolved

What are we aiming to achieve with AI?

- Value assessment could be based on:

(1) better quality and experience of care and services for patients;

(2) a better state of health and well-being for the entire population;

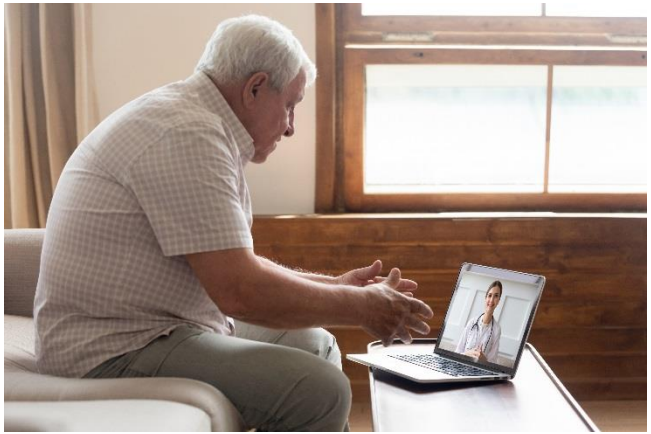
(3) reducing costs for responsible and sustainable resource management;

(4) a better quality of work and satisfaction of health care providers; **and**

(5) equity and inclusion to avoid exacerbating health disparities in the population

Example from the Netherlands

- HTA Agency: National Health Care Institute (ZIN)
- Should we reimburse AI-based telecare for patients with mental conditions?



What sort of things might happen?

- Does the nature of mental care change? If so, in what way?
- Could it lead to overlooking things more often, to neglect?
- Is productivity increased?
- Does it improve accessibility to care?
- Does it help to contain expenditures?
- Does it lead to a certain indifference on the part of the health care provider?
- Could telecare be a promising way of reducing the burden of mental illness, given our understanding of the key underlying causes?
- ….

What makes such things important (why)?

- Recognition of the suffering that may be associated with mental illness
- Impact, for instance on people's capability
- Fairness, solidarity to publicly fund this care

How can we get to know these things better?

All sorts of studies may help to establish which of these claims and concerns are warranted, including randomised controlled trials and ethnographic studies of changes in the practice of mental care associated with the use of telecare, e.g.,

- Pols J, The heart of the matter: about good nursing and telecare. Health Care Analysis 2010; 18 (4): 374 – 388.
- Salisbury C et al, Effectiveness of an integrated telehealth service for patients with depression: a pragmatic randomised controlled trial of a complex intervention. The Lancet Psychiatry 2016; 3 (6): 515 – 525.
- Bountavongh M et al, Economic evaluation of home-based telebehavioural health care compared to in-person treatment delivery for depression. J Telemedicine Telecare 2018; 24 (2): 84 – 92.

What is the result of such HTA?

- Explain which aspects may be considered relevant, and why
- Explain what was done to retrieve, critically appraise, and interpret the available evidence
- Point out which of the claims and concerns seem to be warranted by the evidence
- Identify any uncertainties, conflicting evidence, gaps in knowledge, etc
- Draw attention to possible conflicting values: reasons why we might want to go ahead with this technological development, and reasons why we might want to be holding back
- Suggest possible ways of how such conflict might be resolved

Concluding remarks

- HTA is not a matter of collecting *the* facts, but a matter of collecting facts that are considered to be

  (1) plausibly associated with the use of a health technology in a specific context,

  (2) relevant in view of values to which we are committed, and

  (3) amenable to methods of inquiry that are held to produce reliable knowledge and understanding

- With regard to AI this requires building trust to ensure stakeholder engagement to guide AI developments, rapidly generate knowledge in a real-world context of care and services, and draw lessons to translate them into action

THANK YOU!

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