

Can artificial intelligence be integrated to HTA decision-making? A qualitative discussion with evidence generation experts

HTA373



View all Parexel's posters at ISPOR Europe 2024

>>> Julio Sosa¹, Polina Solomonidou², Lucia Perez-Kempner³, Sangeeta Budhia²

1. Parexel International, Stockholm, Sweden
2. Parexel International, London, United Kingdom
3. Parexel International, Madrid, Spain

Background

- > The use of artificial intelligence (AI) promises a future where health technology assessment (HTA) processes can be faster and more efficient. Currently there are no frameworks on the use and acceptability of AI-based solutions by HTA agencies. Therefore, it is imperative to address this gap by understanding the expectations, preferences and challenges associated with the integration of AI into HTA processes in order to allow HTA agencies and manufacturers to prepare accordingly.
- > The aim of this study was to explore evidence generation experts' insights to understand the extent to which HTA agencies can prepare for integrating AI-based solutions in their evidence evaluation and decision-making processes.

Methods

- > Semi-structured, qualitative interviews were conducted with eight stakeholders from diverse professional functions, including experts on HTA process and decision-making, real-world evidence, health economics, literature reviews, and advanced analytics, to gather their insights on AI integration into HTA (Figure 1).
- > A thematic analysis of interview transcripts was conducted, with support of AI-based software (ParexelGPT), to identify key expectations, preferences, and challenges regarding the integration of AI-based solutions into HTA processes.

Figure 1. Active or former professional background functions of interviewees



Results

EXPECTATIONS

POTENTIAL USE:

- > AI is likely to be integrated first into tasks that require either more computational power or higher human labour, such as systematic literature reviews, economic modelling and report writing.

POTENTIAL BENEFITS:

- > AI-based solutions can potentially lead to more sophisticated and accurate models being developed whilst reducing the time and resources for assessment.

EXECUTION:

- > A time difference in the elaboration and adoption of technical guidelines by HTA bodies is expected. Internationally referenced HTA agencies (such as NICE and GBA) are most likely to shape future policy.
- > The introduction of AI-based solutions will most likely be an independent process from the JCA (Joint Clinical Assessment) implementation in Europe.

TECHNICAL CHALLENGES

- ⚠ Current AI-based solutions do not have the capacity to accurately select relevant/valid data sources as inputs. This can lead AI to generate biased outputs.
- ⚠ AI-based solutions need to be trained with existing data sets, which represents a limitation given that an AI tool cannot capture relationships that do not exist in a determined data set.
- ⚠ AI-based solutions can generate various outputs using the same inputs, which prevents the reproducibility of the analyses.
- ⚠ Due to technical complexity, the rationale and decision-making process of AI algorithms are not transparent.

EDUCATIONAL CHALLENGES

- ⚠ Limited knowledge and technical expertise within HTA agencies can impede their understanding and effective use of AI-based solutions, which is further exacerbated by the abundance of AI-based solutions available that would need to be validated.
- ⚠ The lack of consensus and technical guidance from HTA agencies represent obstacles to the use of AI-generated evidence.

PREFERENCES

TECHNICAL GUIDANCE:

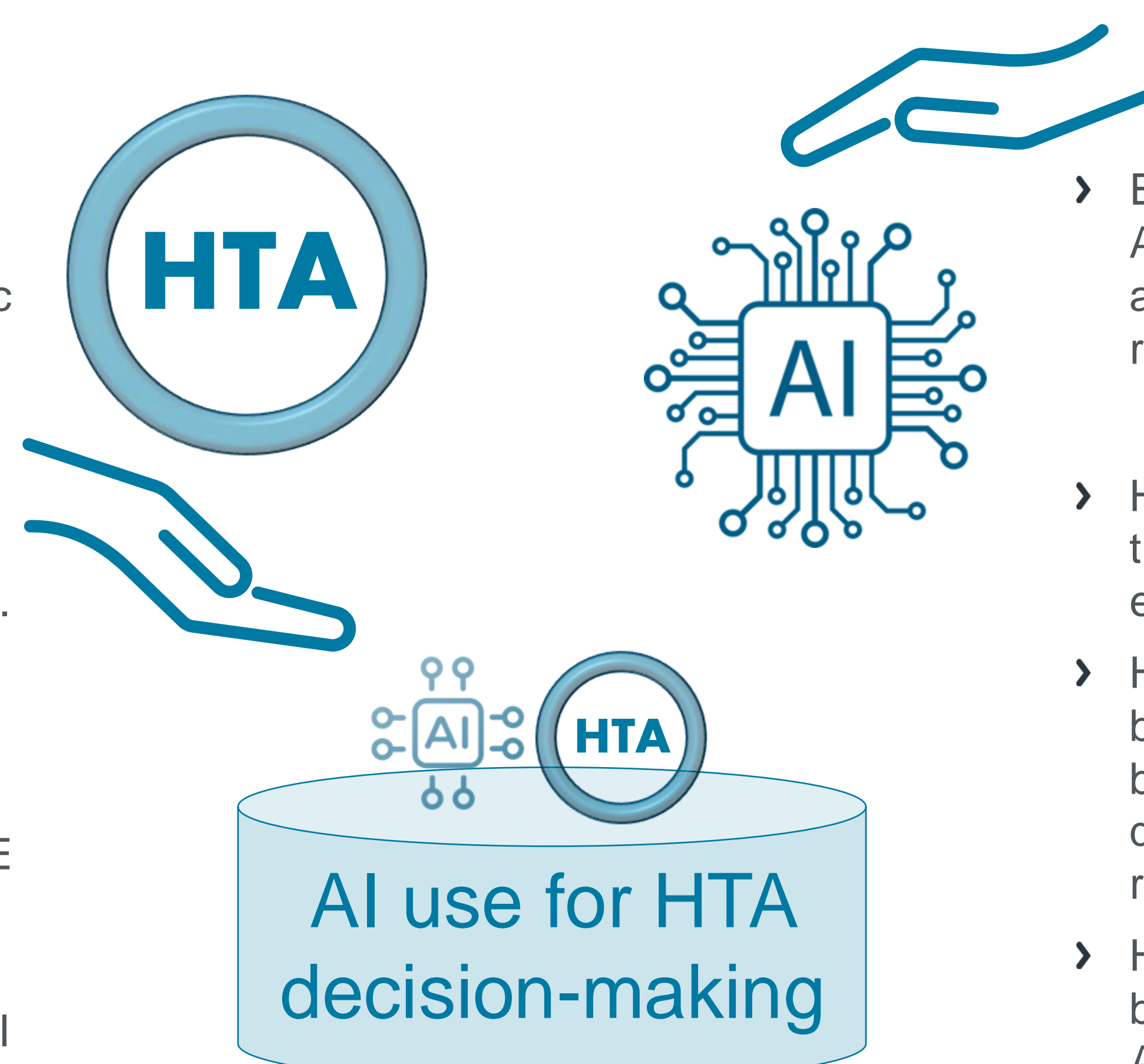
- > Explicit technical guidance by HTA agencies on the use of AI-generated evidence is expected, although it may not be a current high priority for these agencies due to limited resources and competing priorities.

PAYER PREFERENCES:

- > HTA agencies are expected to focus primarily on transparency, reliability, and reproducibility of AI-generated evidence to be considered for their assessments.
- > HTA agencies are expected to consider evidence that has been generated/processed using exclusively validated AI-based solutions, having undergone rigorous testing and demonstration of consistent accuracy, reliability, and reproducibility.
- > HTA agencies are expected to maintain the same quality benchmarks (validity, reproducibility, and transparency) for AI-generated evidence as they have applied to evidence from other technologies. They will not likely lower/adjust these standards for evidence coming from AI systems.

STRUCTURAL CHALLENGES

- ⚠ Geographical considerations could play a role in the acceptability of AI-generated evidence: countries might not be willing to use data generated or used to train AI-based solutions coming from different countries.
- ⚠ Using AI for health economic modelling may imply a considerable increase in energy consumption.
- ⚠ There is a potential population bias since governments and companies are currently using datasets from high-income countries, which does not allow for transferability of results to non-represented populations.



Conclusions

- > AI-based solutions have the potential of maximizing human resource rationalization and institutional efficiency, providing support for both manufacturers and HTA agencies.
- > HTA agencies are expected to focus primarily on the transparency, reliability, and reproducibility of AI-generated evidence. As guideline development may not be a priority for HTA agencies, manufacturers should expect disparities in timings for AI integration across agencies.
- > While AI-based solutions are expected to become a tool, the ultimate decision-maker will remain the HTA stakeholders. Consequently, for manufacturers, in-house AI expertise will still need to be accompanied with expertise on HTA drivers and processes for decision-making.
- > Cross-functional collaboration between AI technical experts and key HTA stakeholders (manufacturers, HTA bodies, the scientific community) will be crucial for understanding and incorporating AI-generated evidence.
- > In the coming years, AI is poised to revolutionize HTA. To maintain a competitive edge, manufacturers should proactively collaborate with experts who possess a dual understanding of HTA processes and AI capabilities. This strategic approach will ensure manufacturers are well-positioned to leverage AI advancements in the evolving HTA landscape.

REFERENCES

- [1] Mangat G, Piiikhwal N, Sharma S, Bergemann R. HTA194 Do Health Technology Assessment (HTA) Bodies Recommend the Conduct and Submission of Artificial Intelligence-Based Literature Reviews (AILRS)? Value in Health. 2023 Dec 1;26(12):S356.
- [2] Poirier, J. E., Kolasa, K., Vanderpuye-Orgle, J., & Bergemann, R. (2023). MSR110 The Use of Artificial Intelligence for the Development of Health Economic Models. Value in Health, 26(6), S296.
- [3] Liu, Q., Huang, R., Hsieh, J., Zhu, H., Tiwari, M., Liu, G., ... & Huang, S. M. (2023). Landscape analysis of the application of artificial intelligence and machine learning in regulatory submissions for drug development from 2016 to 2021. Clinical pharmacology and therapeutics, 113(4), 771-774.
- [4] European Medicines Agency 2023. Reflection paper on the use of Artificial Intelligence (AI) in 6 the medicinal product lifecycle.