Innovations in Health Technology are made Possible by Artificial Intelligence

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Abstract

The automating mundane processes, lowering healthcare costs, increasing access to healthcare delivery, better identifying patient requirements, and supporting doctors in their decision-making, the application of Artificial Intelligence (AI) has the potential to transform the healthcare system. Governments and health authorities must control AI and conduct adequate Health Technology Assessments for these advantages to emerge (HTA). The challenge posed by AI Health Technologies (AIHT) to conventional regulatory and review systems has been emphasised by numerous authors. We conducted a thorough evaluation of the literature on the difficulties presented by AIHTs in HTA and health regulation in order to inform and assist HTA organisations and regulators in adjusting their processes to AIHTs. Five dimensions are used to express this exceptionalism: 1) The unique characteristics of AIHT; 2) Their systemic effects on healthcare and the health sector; 3) The elevated expectations for AI in health; 4) The new ethical, social, and legal challenges that result from implementing AI in the health sector; and 5) The new evaluative constraints that AI poses to HTA. As a result, due to their technological features and possible effects on society as a whole, AIHTs are thought to be extraordinary. There are compelling arguments in favour of taking into account the exceptional features of AIHTs, particularly given that their effects on the healthcare system will be much greater than those of drugs and medical devices, as the implementation of AI by governments and health organisations carries the risk of creating new challenges and amplifying those already present. There is a window of opportunity for HTA agencies and scholars to evaluate AIHTs' exceptionalism and to strive towards exclusively deploying clinically, economically, and socially acceptable AIHTs in the healthcare system when AIHTs start to be more widely used.

Introduction

The implementation of applications of Artificial Intelligence (AI) in healthcare depends on Health Technology Assessment (HTA). HTA typically necessitates a thorough analysis of the characteristics, outcomes, and impacts of health technologies. This enables for the evaluation of the clinical, financial, social, organisational, and ethical implications. Clinicians, patients, hospital managers, and third-party payers (such as public or private health insurers) may think about implementing and paying for this technology in their healthcare system or environment if it has received a favourable evaluation from a health regulator or an HTA agency. However, AI is not just another health technology, and many critics consider it to be particularly difficult and complex to appraise. For instance, AI Health Technologies (AIHT) adoption inside the healthcare system is frequently done quite quickly after their invention, therefore there isn't currently as much data on their efficacy and consequences as would be required by traditional HTA for many other health technologies. Additionally, as they process

data, the AI systems used in the healthcare systemcontinue to learn and develop over time. Additionally, as AI systems need to be trained on and fed with enormous volumes of data, privacy, security, informed permission, data stewardship, and control over data utilisation become concerns. The use of AI in health is anticipated to change how we interact with technology, as well as how we identify, prevent, and cure illnesses. This may improve healthcare efficiency by automating mundane tasks and lowering healthcare expenses, increasing access to healthcare delivery, focusing on patients' needs more precisely, and supporting doctors' decision-making. Governments and health authorities must effectively regulate AI and conduct adequate Health Technology Assessments for these benefits to manifest (HTA). However, both scholars and government officials continue to disagree on the exact concept of Artificial Intelligence (AI) in the context of health. A broad definition of Artificial Intelligence (AI) in the context of health is a field concerned with the creation of algorithms and systems that attempt to mimic human cognitive processes, such as learning and problem-solving, with applications in the support of medical decision-making, pharmacovigilance, prediction, and diagnosis. In fact, certain AIHTs, such AI-driven devices to identify eye problems, have already received FDA approval. At every level, from the individual clinical interaction to society as a whole, risks and harms associated with AI in healthcare are discussed. Interestingly, the fact that a sizable portion of AIHTs benefit from regulatory fast-track and do not undergo HTA assessment is one indicator that present HTA methods are not yet adequately fitted.

Health companies are faced with a large diversity of AI solutions that have not yet undergone extensive HTA, despite the fact that these solutions have a significant deal of promise to increase efficiency. The assessment of the Ethical, Legal, And Social Implications (ELSI) that AIHTs may include is further challenged by these new technologies, as many writers have noted, further obstructing the already inadequate evaluation processes of AI Health Technologies (AIHTs). We undertook a thorough review of the literature on the ethical, legal, and social problems posed by AIHTs in HTA in order to inform and assist HTA organisations in adjusting their evaluation processes to AIHTs. After discussing the review's approach, we will give a thorough overview of the difficulties unique to AI that must be taken into account in order to appropriately address AIHTs' inherent and contextual peculiarities within the context of HTA. This will bring up solutions for HTA as well as potential explanations for this peculiarity. Overall, the goal of this review is to increase knowledge and awareness while allowing HTA practises to be informed.

Conclusion

Review of has made it possible to pinpoint five characteristics of AIHTs that make them distinctive from an HTA perspective: their nature, their scope, their enhanced expectations, their new ethical concerns, and their new evaluative constraints. Most significantly, we are largely in an era of conjecture; while certain applications have started to make their way into the healthcare system, the highly expected revolution is still a ways off. This is what underlay the promises of AI, the hype, and the exceptionalism. The validity and scope of the exceptionalism perspective will be proven by the passage of time. But regardless of whether exceptionalism holds true, HTA must undoubtedly adjust to the widespread introduction of AI in the healthcare industry. This must be accomplished by taking into account the five facets of uniqueness and their numerous ramifications, which have the potential to jeopardise the suitability, effectiveness, and relevance of existing and upcoming HTA infrastructure and procedures. Our findings should help HTA stakeholders identify the areas where they should focus their attention in particular and make adjustments to their policy architecture and procedures in order to become flexible enough to adopt a regulatory posture capable of appreciating the unique traits and effects that AIHTs pose in the health sector.