

Balancing the Benefits and Risks of Artificial Intelligence in Medicine: Implications for Clinical Practice and Ethics

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LETTER TO EDITOR

Artificial Intelligence (AI) is a rapidly developing field that significantly impacts many areas of medicine. The term AI refers to the use of computer systems to model intelligent behavior with minimal human intervention. AI uses various techniques, including machine learning, deep learning, neural networks, natural language processing, and computer vision, to simulate human intelligence (Shinde PP and Shah S, 2018; Hamet P and Tremblay J, 2017). AI has a wide range of applications in medicine, including robotics, medical diagnosis, statistics, and human biology (Hamet P and Tremblay J, 2017).

There is no doubting the significant contributions that science and technology have made to medical science in the form of radiology equipment, Computed Tomography (CT) scanners, Magnetic Resonance Imaging (MRI) machines, and X-ray tools that have significantly facilitated disease diagnosis. One of the significant advancements that have made the work of a doctor and surgeon considerably easier is Artificial Intelligence (AI) and robotics. AI can gather patient data in one location, giving medical professionals access to information about their history and present health issues and enabling the best possible disease diagnosis. AI in medicine has evolved from the da Vinci surgical system, a robotic surgical system that uses AI technology to assist surgeons in performing minimally invasive procedures with high precision (Hamet P and Tremblay J, 2017), to advancements that include the detection of atrial fibrillation through devices like the Kardia and smart watches, AI-assisted techniques for detecting cancer, polyps, and abnormal structures during endoscopy, and even the diagnosis of epilepsy and interpretation of pulmonary function tests, all of which help to reduce doctors' workloads and improve patient outcomes (Al Tinawi B, *et al.*, 2019).

It is becoming increasingly apparent that AI has limitations in patient care, specifically its inability to show empathy towards patients, an essential aspect of healthcare. Additionally, the accuracy and fairness of AI systems depend on the quality of data used to train them. If the data is biased, then the outputs of the AI system may also be biased. Due to its inability to empathize with patients

and the potential for biased outputs, it is crucial to establish a certification process for AI software, similar to the rigorous training and certification processes physicians undergo. This would ensure that AI software used in healthcare is reliable, accurate, and trustworthy and meets high safety and efficacy standards. Beyond technical concerns, there exist ethical considerations surrounding the integration of AI in medicine, necessitating a careful balancing of its potential benefits against potential threats to patient privacy, autonomy, and the responsible use of technology. The maturation of clinical AI systems is poised to increase their use and deployment in healthcare, bringing forth new social, economic, and legal considerations. For example, the potential for AI to supplant healthcare workers in performing routine tasks is likely to reshape the healthcare workforce and have implications for existing reimbursement frameworks. Additionally, if medical AI applications are involved in malpractice cases, the legal system will need to provide unequivocal guidance on which entity bears the liability burden (Shortliffe EH, 1987).

Technology is everything. It affects how we live. However, we certainly can influence its evolution and direction, ensure it aligns with our values and affects our lives positively. AI is a developing field with numerous advantages, but we should not disregard the fact that it has negative impacts on the healthcare system too. Therefore, we need to figure out how to employ AI productively without having it turn against us.

REFERENCES

1. Shinde PP, Shah S. A review of machine learning and deep learning applications. *Int Conf Comput Commun Control Autom.* 2018; 1-6.
2. Hamet P, Tremblay J. Artificial intelligence in medicine. *Metabolism.* 2017; 69: S36-S40.
3. Al Tinawi B, Jessop M, Salkini MW. Utilizing da Vinci® surgical system to treat challenging urinary stones. *Urol Ann.* 2019; 11(3): 304.
4. Shortliffe EH. Computer programs to support clinical decision making. *JAMA.* 1987; 258(1): 61-66.