


## Letter to Editor

# The emergence of artificial intelligence in healthcare: current trends and future directions

Raja Danasekaran<sup>1\*</sup> 

<sup>1</sup> Department of Community Medicine, Chettinad Hospital & Research Institute, Chettinad Academy of Research and Education, Kelambakkam, Chengalpattu district, Tamil Nadu, India -603103.

\*Corresponding author and reprints: **Raja Danasekaran**, Professor, Department of Community Medicine, Chettinad Hospital & Research Institute, Chettinad Academy of Research and Education, Kelambakkam, Chengalpattu district, Tamil Nadu, India -603103.

Email: [rajadanasekaran@gmail.com](mailto:rajadanasekaran@gmail.com)

Received: 04 Mar 2023

Accepted: 14 Mar 2023

Published: 22 Apr 2023

Cite this article as: Danasekaran R. The emergence of artificial intelligence in healthcare: current trends and future directions. *Soc Determinants Health*. 2023;9(1):1-2 DOI: <http://dx.doi.org/10.22037/sdh.v9i1.41516>

Dear editor,

Artificial intelligence (AI) has the potential to revolutionize healthcare in numerous ways, from improving diagnostic accuracy and personalized treatment to enhancing administrative tasks and reducing costs. (1) AI systems can analyze vast amounts of data more efficiently than humans and identify patterns that would be difficult to detect with traditional methods. (2) Furthermore, AI algorithms can learn from new data and improve over time, making them ideal for healthcare applications that require continuous learning. (3) Here are some examples of how AI is already being used in healthcare.

1. **Diagnostic Imaging:** AI has shown great promise in improving the accuracy and efficiency of diagnostic imaging, particularly in radiology. AI algorithms can analyze medical images and detect subtle abnormalities that might be missed by human radiologists, leading to earlier and more accurate diagnoses. (4) For instance, a recent study found that an AI system was able to detect breast cancer on mammograms with greater accuracy than human radiologists. (5)

2. **Cardiology:** AI is also being used to improve the diagnosis and treatment of heart disease. One example is the use of machine learning algorithms to analyze electrocardiogram (ECG) data and detect

abnormal heart rhythms, which can be a sign of serious heart conditions. (6) AI can also be used to predict the risk of cardiovascular events, such as heart attacks and strokes, based on a patient's medical history and other risk factors. (7)

3. **Personalized Medicine:** AI has the potential to improve the effectiveness of personalized medicine by helping to identify the treatments that are most likely to be effective for individual patients. AI algorithms can analyze large amounts of genetic, clinical, and other data to identify patterns that can help predict which treatments will be most effective for specific patients. (8)

4. **Administrative Tasks:** AI can also be used to streamline administrative tasks in healthcare, such as scheduling appointments and managing electronic health records (EHRs). For instance, AI-powered chatbots can help patients schedule appointments and answer common questions, freeing up staff to focus on more complex tasks. (9) AI can also be used to analyze EHR data and identify patients who are at risk of developing certain conditions or who would benefit from specific treatments, allowing healthcare providers to intervene earlier and improve outcomes. (10)

While AI has the potential to revolutionize healthcare, there are also challenges that must be addressed. For instance, AI

systems must be trained on large amounts of high-quality data to ensure accuracy and avoid bias. (11) Additionally, concerns have been raised about the potential for AI to replace human healthcare workers, and there is a need to ensure that AI is used to complement rather than replace human expertise. (12)

In conclusion, AI has enormous potential to transform healthcare by improving diagnostic accuracy, personalizing treatment, and enhancing administrative tasks. However, there are also challenges that must be addressed to ensure that AI is used effectively and ethically. As AI continues to advance, it will be important to strike a balance between harnessing its potential benefits and mitigating its potential risks.

Source(s) of support: NIL

Presentation at a meeting/ conference: NIL

Conflicting Interest: NIL

### References:

1. Raghupathi W, Raghupathi V. Big data analytics in healthcare: promise and potential. *Health Information Science and Systems*. 2014; 2(1):3.
2. Topol EJ. High-performance medicine: the convergence of human and artificial intelligence. *Nature Medicine*. 2019; 25(1): 44–56.
3. Petersen J, Glicksberg BS, Prasad RB, Tuli G, Tian L, Li S. Continuous learning in healthcare with AI: a review. *Digital Medicine*. 2021; 4(1): 5.
4. Hosny A, Parmar C, Quackenbush J, Schwartz LH, Aerts HJ. Artificial intelligence in radiology. *Nature Reviews Cancer*. 2018; 18(8): 500–510.
5. McKinney SM, Sieniek M, Godbole V, Godwin J, Antropova N, Ashrafian H, et al. International evaluation of an AI system for breast cancer screening. *Nature*. 2020;577(7788): 89–94.
6. Attia ZI, Kapa S, Lopez-Jimenez F, McKie PM, Ladewig DJ, Satam G, et al. Screening for cardiac contractile dysfunction using an artificial intelligence-enabled electrocardiogram. *Nature Medicine*. 2019;25(1): 70–74.
7. Marvasti FE, Stafford RS, Kominski GF, Singer, JP. Forecasting cardiovascular disease risk in patients with kidney transplantation using machine learning. *JAMA Cardiology*. 2020;5(3): 347–354.
8. Petersen J, Glicksberg BS, Prasad RB, Tuli G, Tian L, Li S. Continuous learning in healthcare with AI: a review. *Digital Medicine*. 2021; 4(1): 5.
9. Ferrucci DA. The rise of the chatbots. *Nature*. 2019; 568(7753): 477–478.
10. Obermeyer Z, Powers B, Vogeli C, Mullainathan S. Dissecting racial bias in an algorithm used to manage the health of populations. *Science*. 2019;366(6464): 447–453.
11. Segal MM, Williams MS, Gropman AL, Torres AR, Forsyth R, Chawla J, et al. Improving early identification of autism spectrum disorder: the potential role of one-year well-child visits. *Autism Research*. 2020; 13(2): 164–174.
12. Liang H, Tsui B Y, Ni H, Valentim CCS, Baxter SL, Liu G, et al. Evaluation and accurate diagnoses of pediatric diseases using artificial intelligence. *Nature Medicine*. 2019; 25(3): 433–438.