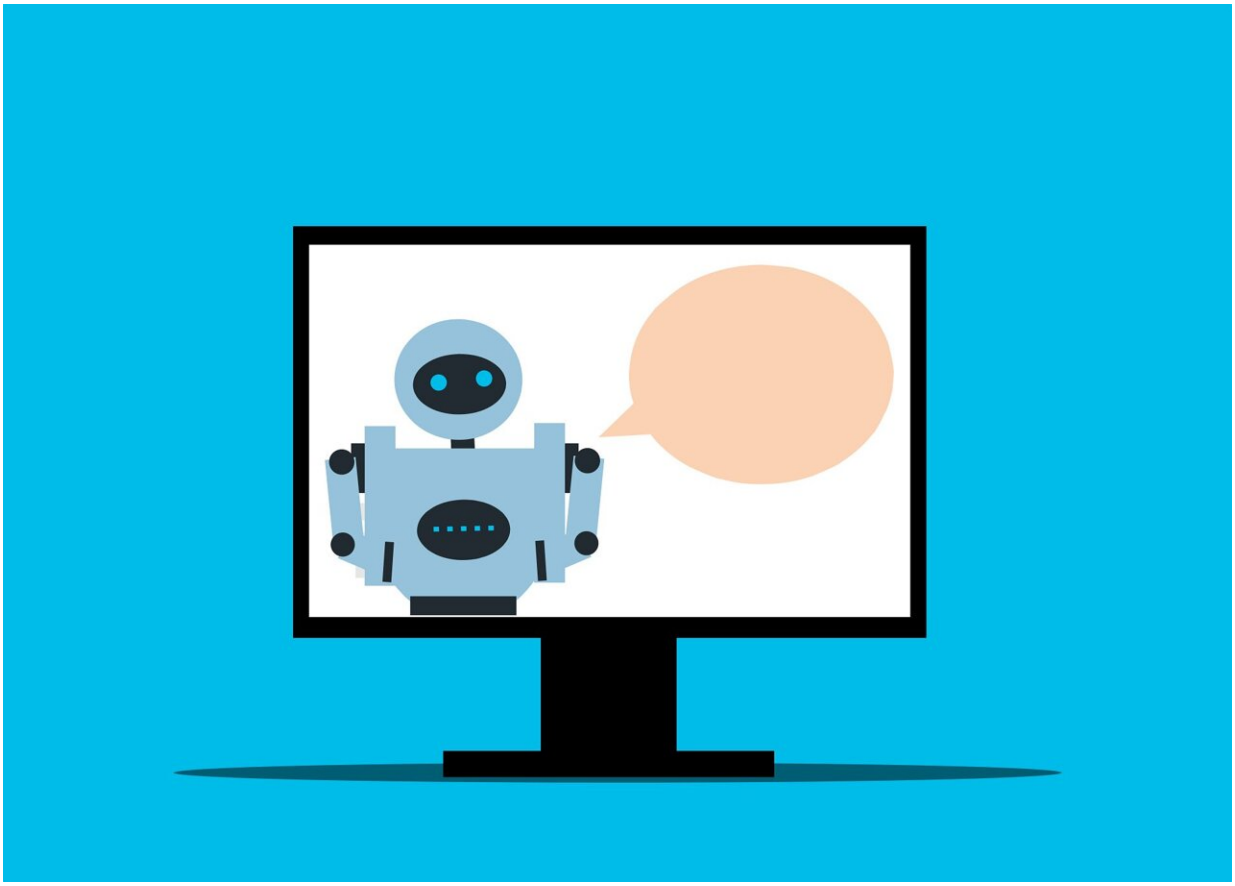
New framework for using AI in health care considers medical knowledge, practices, procedures, values

November 27 2023



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Health care organizations are looking to artificial intelligence (AI) tools

to improve patient care, but their translation into clinical settings has been inconsistent, in part because evaluating AI in health care remains challenging. In a new article, researchers propose a framework for using AI that includes practical guidance for applying values and that incorporates not just the tool's properties but the systems surrounding its use.

The article was written by researchers at Carnegie Mellon University, The Hospital for Sick Children, the Dalla Lana School of Public Health, Columbia University, and the University of Toronto. It is published in the journal *Patterns*.

"Regulatory guidelines and institutional approaches have focused narrowly on the performance of AI tools, neglecting knowledge, practices, and procedures necessary to integrate the model within the larger social systems of medical practice," explains Alex John London, K&L Gates Professor of Ethics and Computational Technologies at Carnegie Mellon, who co-authored the article. "Tools are not neutral—they reflect our values—so how they work reflects the people, processes, and environments in which they are put to work."

London is also Director of Carnegie Mellon's Center for Ethics and Policy and Chief Ethicist at Carnegie Mellon's Block Center for Technology and Society as well as a faculty member in CMU's Department of Philosophy.

London and his co-authors advocate for a conceptual shift in which AI tools are viewed as parts of a larger "intervention ensemble," a set of knowledge, practices, and procedures that are necessary to deliver care to patients. In previous work with other colleagues, London has applied this concept to pharmaceuticals and to autonomous vehicles. The approach treats AI tools as "sociotechnical systems," and the authors' proposed framework seeks to advance the responsible integration of AI

systems into health care.

Previous work in this area has been largely descriptive, explaining how AI systems interact with human systems. The framework proposed by London and his colleagues is proactive, providing guidance to designers, funders, and users about how to ensure that AI systems can be integrated into workflows with the greatest potential to help patients.

Their approach can also be used for regulation and institutional insights, as well as for appraising, evaluating, and using AI tools responsibly and ethically. To illustrate their framework, the authors apply it to the development of AI systems developed for diagnosing more than mild diabetic retinopathy.

"Only a small majority of models evaluated through clinical trials have shown a net benefit," says Melissa McCradden, a Bioethicist at the Hospital for Sick Children and Assistant Professor of Clinical and Public Health at the Dalla Lana School of Public Health, who co-authored the article. "We hope our proposed framework lends precision to evaluation and interests regulatory bodies exploring the kinds of evidence needed to support the oversight of AI systems."

More information: Melissa D. McCradden et al, A normative framework for artificial intelligence as a sociotechnical system in healthcare, *Patterns* (2023). DOI: 10.1016/j.patter.2023.100864

Provided by Carnegie Mellon University