

Cleveland Clinic ready to push AI concepts to clinical practice

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The Cleveland Clinic's Center for Clinical Artificial Intelligence (CCAI) will not feature robots greeting visitors at the door, says its new director, but it will leverage new technology to improve diagnosis, prognosis and treatment planning.

The center is meant to be an international “hub of collaboration,” bringing together experts from pathology, radiology, oncology, information technology, computer science and genetics and providing programmatic and technology support for initiatives in augmented intelligence (AI), often called “artificial intelligence.”

“We’re not in it because AI is cool, but because we believe it can advance medical research and collaboration between medicine and industry—with a focus on the patient,” said Aziz Nazha, MD, an AMA member and an assistant professor at the Cleveland Clinic Lerner College of Medicine of Case Western Reserve University.

AI holds promise for health care improvement, but physicians’ perspective is needed in its development.

Learn more about the AMA’s commitment to helping physicians harness augmented intelligence in medicine in ways that safely and effectively improve patient care.

Focusing on hope over hype

Dr. Nazha is aware of the hype surrounding AI.

“Some say if you sprinkle a little AI on your jacket, it becomes a cool jacket,” he said, adding that he is also concerned about the wrong AI models getting applied to the wrong patient populations. So he is working to bridge the “huge disconnect” between physicians and computer scientists.

“You can’t just say to physicians, ‘We have this great algorithm and we want you to use it,’” Dr. Nazha said. “Health care data is different than banking data.”

A goal of the center is to develop a new generation of physician-data scientists and medical researchers, and Dr. Nazha notes that the AI predictive models he uses were built by himself or by students in his lab who he taught how to code.

His own interest in AI developed during his hematology and oncology fellowship at the Cleveland Clinic in 2013.

“I am a leukemia doctor,” Dr. Nazha said. “My research focus was incorporating genomic data and clinical data into patient care.”

Dr. Nazha shared his patients' frustration with how they were given chemotherapy drugs without really knowing whether they would work, and how it took some patients up to six months to respond to therapy. But, with his colleagues, Dr. Nazha used AI to find genomic biomarkers to predict whether individual patients would not respond to a particular treatment—such as the oncology drug azacitidine (marketed as Vidaza).

They also developed a personal prediction model for patients with Myelodysplastic syndromes (MDS) that outperformed current prognosis scoring systems. Dr. Nazha presented findings of their work at the American Society for Hematology's 2018 annual meeting.

"Determining prognosis in oncology is one of the most important parts of our job," Dr. Nazha said in a news release prior to the meeting. "All oncology patients want to know long they are going to live."

The Cleveland Clinic used AI to leverage clinical data from 1.6 million patients to better predict patients' lengths of stay and readmission rates.

"But a prediction itself is insufficient," Dr. Nazha said. "If we can intervene, we can change the prognosis and make things better."

Nothing hidden in black box

A recent *JAMA* Viewpoints essay identified the elements needed for physician acceptance of an AI-supported decision-support system. The authors noted that these systems must save and not waste clinicians' time, must be easy to use, and that the basis for any recommendation be transparent and not hidden in a "black box."

Dr. Nazha agreed.

"We opened the black box," he said.

AI is used to extract variables that lead to different outcomes for patients with the same conditions, and then findings suggested by AI are validated in the lab.

"I make sure the variables identified in the model make sense to me clinically," he said, adding that using AI in this way to focus on individual patients could lead to shorter hospital stays and lower health care costs.

The center is just getting started, but its launch has received international attention and generated excitement over the potential health care uses for AI and personalized predictions and treatment.

“It’s amazing the great ideas people have at our organization,” Dr. Nazha said. “My job is to take these great ideas and make them real to advance patient care.”

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