ARTIFICIAL INTELLIGENCE IN HEALTH CARE NEEDS SCRUTINY TO ELIMINATE BIAS

KATHY CURRAN, JD

"Health care in the United States is marked by extraordinary change," begins the Preamble to the *Ethical and Religious Directives for Catholic Health Care Services*. For those working in Catholic health care, we are called to assess and incorporate that change in a way that reflects the full dignity of the human person and improves our ability to preserve health and cure illness. We are on the cusp of a new area of extraordinary change with the increasing use of processes of care utilizing artificial intelligence (AI). New and lightning-fast ways of gathering and using health care data present opportunities for better diagnosis, treatment and patient engagement. But they also raise significant ethical issues, including the risk of further exacerbating and embedding health disparities and inequities in our nation.

The term "artificial intelligence" covers a range of technologies that model or simulate human cognitive abilities and include processes such as rule-based expert systems, machine learning, natural language processing and robotics. Using "if-then" rules for clinical decision support and electronic health records is common now, but as the data sets and number of rules increase, the systems can become unwieldy and break down. Machine learning is a more sophisticated form of AI in which computer programs learn from data and algorithms to make inferences and come to conclusions that have not been directed by human input. Deep learning and neural networks use many levels of variables and features to predict outcomes at a level of complexity that can be difficult or impossible for the human user to understand or explain. Another technology, natural language processing, programs computers to decipher and analyze data related to language, such as speech recognition and translation. All of these technologies could be incorporated into physical robots that already can perform simple tasks like delivering supplies in hospitals and more complex functions, such as surgical interventions.[1]

The power of AI to improve individual health through enhanced quality of care and better outcomes has already been demonstrated and is likely to continue to increase. AI can assist with all aspects of the patient care experience. For instance, AI tools are used to analyze patient intake history, risk factors, treatment goals, symptoms and medical condition and make diagnoses, identify possible complications and project treatment outcomes. The AI-generated information assists and supports the doctor in her work, and the patient can access the system to communicate with the physician. One health care system created an algorithm using patient demographic data, medical history and other details from continuous monitoring to detect signs of sepsis in order to warn caregivers, saving an estimated 8,000 lives over five years.[2]

AI is also being used to give patients more direct control over the management of their health. Earlier and more precise diagnoses can give patients more treatment options. Precision or personalized medicine refers to the ability to tailor treatments to the specific genetic, environmental and other factors that are unique to a patient. With AI-supported precision medicine, that information can be gathered and compared to thousands or millions of other pieces of data about the disease and its management to give a patient more detailed information about his condition and to predict the best options for the patient, instead of

offering only more generalized protocols. This is proving particularly powerful in cancer therapy.[3] Patient-facing forms of AI, such as smartwatches and health care apps allow patients to take more control over managing their own health care. Devices can monitor body processes, provide alerts and give access to methods of behavior change that will work for them.

AI technology has also been used in the palliative care setting to facilitate end-of-life planning and decision making. Researchers at Stanford University developed an algorithm, which is based on and learns from the medical records of millions of patients at hospitals associated with Stanford School of Medicine, that can predict whether a patient is likely to die within 12 months. This information allows palliative care teams to reach out to patients and invite them and their families to talk about end-of-life goals and preferences before a medical crisis occurs.[4]

The promise and potential of AI to improve health care systems and patient outcomes certainly exists — but so do the ethical risks it poses. Biases that subsist in the underlying data or the people who create the algorithms can be "baked into" the AI systems and influence the outcomes produced. Health inequity is a persistent and lingering legacy of the systemic racism and social prejudices that have far too often been prevailing characteristics in our nation's history. CHA and the Catholic health ministry have committed to the Confronting Racism by Achieving Health Equity initiative to identify and address health inequity and its root causes in our organizations, our communities and our nation's health system. It is imperative that as we harness the power of AI, we are vigilant in ensuring it does not deepen and further entrench racial and ethnic biases that harm the health of the patients we serve.

For example, a system that analyzes the data from all clinical trials for a particular condition to find the best possibility for a given patient would contain inherent racial and gender biases because the subjects for clinical trials are overwhelmingly male and white.[5] This could lead to inappropriate clinical recommendations for some patients. Additionally, an algorithm used by one health care system to identify sicker patients to enroll in a care management program for extra health services routinely excluded Black patients who were sicker than qualified white patients. The algorithm used health care costs as a proxy for illness, and health care spending is lower on Black patients because of structural inequalities in access to care.[6] This is just one example of how overreliance on flawed algorithms could result in individual patients not getting the care they need.

A study in the *New England Journal of Medicine* identified 13 diagnostics algorithms that incorporated assumptions based on race or ethnicity, which are used by doctors to make clinical decisions about treating patients. One example discussed was an algorithm used to predict the risk of vaginal birth following a previous cesarean section (C-section) which assigned higher risk scores for women who were Black or Hispanic. Black women have higher rates of C-sections, higher mortality and worse outcomes than white women, and algorithms like this can contribute to and worsen these disparities. As the authors wrote, "Many of these race-adjusted algorithms guide decisions in ways that may direct more attention or resources to white patients than to members of racial and ethnic minorities."[7]

Another concern is whether the promise of AI will be available to everyone. Precision medicine can be very costly. AI could worsen the injustices that already exist in our system limiting health care to certain groups including low-income communities.

Another concern is whether the promise of AI will be available to everyone. Precision medicine can be very costly. AI could worsen the injustices that already exist in our system, limiting health care to certain groups including low-income communities. When the state of Arkansas began using algorithms to determine how many hours of in-home attendant care would be provided to elderly and disabled Medicaid beneficiaries, thousands

of low-income people lost care they needed to function and survive.[8]

The starting point for Catholic health care as it engages the challenges and promise of AI should be, as always, the fundamental dignity of the human person and our call to advance Jesus' mission of compassion and healing. We have committed to the We Are Called initiative, and it is our responsibility to ensure that our own use of AI tools does not create unintentional instances of inappropriate or unjust care for our patients. The We Are Called initiative is the Catholic health ministry's commitment to concerted and coordinated efforts to achieve equity in our own health systems, facilities and communities and to advocate systemic change in the wider health care sector and our society. For more details, visit https://www.chausa.org/cha-we-are-called/.

As Catholic health systems become more directly involved in entities that develop AI and machine-learning products, they should use their influence to ensure the technology is free from discriminatory biases and assumptions. Furthermore, in our advocacy for policies that ensure access to quality health care services for all and end racial and ethnic disparities in health outcomes, we must be ready to call on policymakers to ensure that AI is developed and used equitably as its role in health care grows.

AI tools, if developed properly, could play a powerful role in improving health outcomes. But we must ensure that it is not built on data or assumptions that reflect and perpetuate existing biases or structures of systemic racism.

KATHY CURRAN is senior director, public policy, for the Catholic Health Association, Washington, D.C.

NOTES

1. Jessica Morley et al., "The Debate on the Ethics of AI in Health Care: A Reconstruction and Critical Review," SSRN, November 2019, https://www.academia.edu/40918327/The_Debate_on_the_Ethics_of_AI_in_Health_Care_a_Reconstruction_and_Critical_Review; Thomas Davenport and Ravi Kalakota, "The Potential for Artificial Intelligence in Health Care," *Future Healthcare Journal* 6, no. 2 (June 2019): 94-98, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6616181/.
2. "5 Ways AI is Improving Care Delivery," American Hospital Association, https://www.aha.org/aha-center-health-innovation-market-scan/2019-12-10-5-ways-ai-improving-care-delivery.
3. Thomas Davenport and Ravi Kalakota, "The Potential for Artificial Intelligence in Health Care," *Future Healthcare Journal* 6, no. 2 (June 2019): 94-98, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6616181/.
4. Kris Newby, "Compassionate Intelligence: Can Machine Learning Bring More Humanity to Health Care?," *Stanford Medicine*, Summer 2018, https://stanmed.stanford.edu/2018summer/artificial-intelligence-puts-humanity-health-care.html.
5. Morley et al., "Ethics of AI in Health Care."
6. Ziad Obermeyer et al., "Dissecting Racial Bias in an Algorithm Used to Manage the Health of Populations," *Science* 366, no. 6464 (October 25, 2019): 447-453, https://science.sciencemag.org/content/366/6464/447.
7. Darshali A. Vyas, Leo G. Eisenstein and Davis S. Jones, "Hidden in Plain Sight—Reconsidering the Use of Race Correction in Clinical Algorithms," *New England Journal of Medicine* 383, no. 9 (August 27, 2020): 874-882.
8. Jacob Rosenberg, "DHS Rule Change Threatens Disabled Care," *Arkansas Times*, October 12, 2017, https://arktimes.com/news/arkansas-reporter/2017/10/12/dhs-rule-change-threatens-disabled-care.

JOURNAL OF THE CATHOLIC HEALTH ASSOCIATION OF THE UNITED STATES www.chausa.org

HEALTH PROGRESS®

Reprinted from *Health Progress*, Fall 2021, Vol. 102, No. 4