The Evolution of A.I. in Health
Where Humans Meet Machines

Health care costs in the United States have become so burdensome that some Americans say they are cutting back on essentials like food and gas in order to pay their medical bills. Despite high rates of spending, the United States is not the healthiest country in the world. Luckily, A.I. promises to disrupt the health care sector with "precise, effective, and timely interventions for people," Michal Lev-Ram, Editor-at-Large, *Fortune*, said, opening an hour-long conversation on A.I. in health care. The event convened experts from government, technology, and academia to discuss how A.I. can benefit our health care system and how we can "overcome the hurdle of making A.I. systems easy to work with [in order to] get real uptake," as Lev-Ram put it.

"The power of A.I. became clear to me over the past few years [through] the pandemic," Dr. David Gruen, Chief Medical Officer, Imaging, Merative, began. The pandemic demonstrated two key points, according to Gruen: health is more important to the economy than we realized, and health care can move at "warp speed" when necessary. Now that we've been shown the importance of our nation's health, and we know that health care can evolve more quickly than we knew, how will we choose to move forward? Gruen hopes that, with A.I., we can pivot from health systems to what he calls systems of health, where data combines with physician expertise to prevent disease. "To me, the power of A.I. is that we are now able to bring together [the social determinants of health and personal history] through the power of computing and come up with better outcomes," he concluded.

Dr. Tina Hernandez-Boussard, Associate Professor, Stanford University, echoed this insight. "We often have clinicians [and] caretakers come to us with this need to help synthesize the increasing amount of information they have on a patient," Hernandez-Bousard explained. With a population that is growing older and sicker, Hernandez-Bousard said, the promise of A.I. is to guide clinicians in their decision making.

"From the private sector standpoint… there's all this data that nobody can possibly mine through quickly to come up with a direction," Carolyn Staats, Director of Innovation, Information Systems Department, Sonoma County, added. In an emergency like a fire, flood, or pandemic, all of which Staats has faced in her time with Sonoma County, A.I. could help decision makers quickly find data that helps them respond. Additionally, Staats said, A.I. can help guide treatment for populations with complex needs, such as those experiencing co-occurring mental health disorders, chronic illness, and homelessness. "We want to look at what [interventions and services] are really being successful overall for these clients. This is where we really want A.I. to come in," she stated.

Hernandez-Boussard highlighted a significant barrier to integrating A.I. within health care, which is trust in the health care system. "There is a huge trust barrier that has grown wider [through the pandemic]. It really has broken the trust between diverse populations and our health care systems," she said. This is crucial because health care systems are both capturing data and implementing the decisions or predictions that A.I. creates. For example, Hernandez-Bousard explained that adding social determinants of health would improve our algorithms, but many patients, especially from diverse communities, are reluctant to share this kind of data or are not captured through traditional surveys. "I think that one of the problems is we just don't have a systematic way of capturing that data," she asserted. Hernandez-Boussard emphasized that trust must be built to obtain that data.
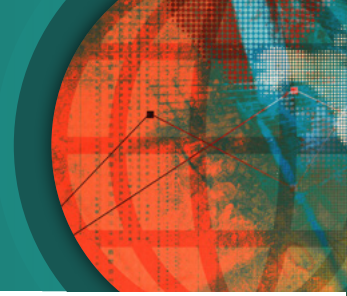
Bringing together the issues of interoperability and social determinants of health, Staats added that social determinants of health data is often stored in governmental systems that are difficult to access. "A lot of the social determinants of health are captured in government [at] the county level," Staats said. "They're siloed because of funding." Once data can be shared, Staats noted, it will not be enough to simply analyze and share it; people will also have to be shown how they will benefit because of it.

On the topic of trust, one audience member asked the panelists to comment on how to gain buy-in of clinicians who can be skeptical of new technology. "The more information you can give, the more [clinicians] trust it," Hernandez-Boussard offered. If you give a clinician a recommended treatment from an algorithm with no further explanation, she described, it is typically hard to convince them of the algorithm's utility. Instead, she recommended providing information and context to explain how the outcome or prediction was made. "Explainability goes a very long way," Hernandez-Boussard stated. In addition to explainability, Gruen emphasized the importance of showing clinicians how the data can benefit their work. "Clinicians are desperate for tools that make our lives easier and help us do what we went to school for: make lives better," he said.

Closing the session, Gruen returned the discussion to the big-picture benefits and promise of A.I. in health care. "I think pivoting from health systems to systems of health [with A.I.] means ultimately pivoting our health care system from a reactive one, where we treat people with disease, to a proactive one, where we provide health care before people get sick. [This] will allow us to go from worst to first on those global scales where we spend way too much money, and the outcomes are not what we want."

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