



AI WILL RESHAPE HEALTHCARE, WE WILL DETERMINE IF IT'S FOR BETTER OR WORSE

The observation, "There are decades where nothing happens, and there are weeks where decades happen" might have been originally uttered in the 19th or 20th century. Its origins unclear, the quote has been variously ascribed to Communist revolutionaries and a Mexican author.¹ Regardless, the line has grown increasingly appropriate for the healthcare industry in the past two years.

Once slow to change, healthcare organizations have been forced to transform immediately as they confronted the largest health crisis of the digital age. These enterprises and their partners deployed mature and emerging technologies to supplement the valiant efforts of healthcare workers in this battle against the global pandemic.

AI can enable care providers in turning the present linear patient journey approach to a more preventive and personalized patient-centered 360-degree methodology

On the mature side, U.S. caregivers pivoted to telehealth and telemedicine, which had been used to limited degrees for decades before March 2020. But when U.S. regulators loosened standards in response to COVID-19's spread, telehealth usage increased 154% from the prior year.²

On the emerging side, artificial intelligence (AI) has shown promise for scientists, healthcare practitioners, and public health authorities — even with this limited experience. Care providers can use AI as a tool to transform the current approach of linear patient journeys to a patient-centered 360-degree methodology that promises more preventive, personalized and outcome-based medicine.

Healthcare can move fast with technology, as demonstrated by the rapid scale up of telehealth during the COVID-19 pandemic. But AI remains an emerging technology, and the healthcare sector is still cautious. Thus far, industry pioneers have more often applied AI to acute and emergency response situations. Systemic applications of AI will take greater time, effort, and consideration to avoid black-box system problems and confirmation bias. AI can only be integrated into the healthcare ecosystem if it is applied in an ethical, patient-centered, and efficient manner.

AI assisting humans to provide better, faster, and safer medicine

Early examples show that healthcare AI delivers its strongest benefits when care providers use it as a tool to augment the work of healthcare professionals. For example, AI has the power to address two related challenges in combating disease: the shortage of pathologists and human error.

In acute and emergency healthcare thinly staffed hospitals in the developing world have used AI to handle some diagnoses, allowing doctors and medical professionals to refocus on patient care. "These professionals are now more deeply engaged in helping patients understand their conditions, ensuring that they take their medicines and

convincing them to change their diets and habits. They also act as coaches, providing the moral and psychological support that is key to recovery," journalist Fareed Zakaria writes in his book "Ten Lessons for a Post-Pandemic World."³

Further, AI has found success in conventional clinical settings: reading X-rays and MRI scans more accurately than human radiologists. Health startup Ibex Medical Analytics has created AI and machine learning technology that allows pathologists to view and analyze tissue samples more efficiently and accurately. It routinely detects misdiagnosed and misgraded cancers on digitized slides, which helps doctors offer a more targeted cancer treatment and reduce diagnostic error rates.⁴ This points toward a future where large datasets and AI-powered tools will assist human decision-making.

The speed, safety, and cost-efficiency provided by AI are also promising in areas such as drug development, manufacturing, trials, and prescriptions. Vaccine development historically has taken decades, but scientists had trial doses ready 66 days after reviewing the new coronavirus' genetic code. Technology boosted the lightning pace of COVID-19 vaccine development, but that achievement was built on at least 15 years of research into the techniques that delivered results so quickly, safely, and effectively.⁵



Health enterprises are using AI across the cycle of care to:



Identify disease clusters.



Develop vaccines for emerging and novel pathogens.



Allocate vaccine supply and monitor vaccine effects across patient groups.



Track cases, manage disease and predict future outbreaks.



Support training.



Update records.

AI systems hold the potential to even further accelerate the pace of vaccine development. Designing specific antivirals involves extracting and processing terabytes of data about virus behavior, a job AI is well-suited to tackle.⁶ And because AI improves with deeper data, the technology could offer an incentive for drug companies to share data earlier and more liberally in vaccine discovery efforts.

Although AI is less established in pharmaceutical manufacturing, the same power of precision over large datasets has rich potential. In particular, AI can improve predictive maintenance, which reduces downtime on production lines. Also, the technology can make those lines more efficient by studying the flow properties of component materials and modeling compounds down to the molecular level.⁷

While cutting-edge technology supported quick COVID-19 vaccine development, it was possible due to decades of research that delivered safe and effective techniques

From a health insurers' point of view, AI systems already speed up contract management, claims processing, and reimbursement for customers. Companies are also rolling out tools that can help clients interpret simple

symptoms. Users in Germany, Italy, and Hong Kong can already benefit from such a "symptom checker" service, connected with access to teleconsultation or an appointment system with recommended practitioners. These technologies can be used for physical and mental health issues.

AI powering a shift toward a preventive approach to health

Despite agreement on its importance, prevention has always been the most neglected part of collective and individual health policies. In the face of limited resources, healthcare funds and physicians' time gets spent first on treatment, with little left for prevention.

In the near future, the combination of large amounts of data and powerful AI systems could help tip the balance more toward prevention. The current approach to health can be transformed by what is called the P4 concept — predictive, preventive, personalized, and participatory healthcare.⁸ Ultimately, this may make disease treatment radically more cost-effective by personalizing care to each person's unique condition and experience, and by treating the causes and symptoms of disease.

Accelerating adoption of responsible AI

To reach this new level, providers must deploy AI across their full healthcare ecosystem and integrate it with partners in every step of the cycle of care. This can only be accomplished via cloud computing systems. Infosys' Cloud Radar 2021 survey found that companies only begin to realize the value of AI and data in the cloud when they have shifted 80% or more of their business functions to AI-enable cloud systems.⁹

Still, the maximum value can be reached only with AI scaled (or democratized) across the entire enterprise. This scale also strengthens AI via deeper learning from broader datasets. At the same time, human hands must govern AI in order to guide it away from bias and toward explainability. Deploying AI in an explainable and responsible fashion will give humans interacting with it more reason to trust AI, and better answers for subjects, regulators and other stakeholders.¹⁰

Healthcare organizations are already using AI and machine learning in powerful ways. But these tools must be applied judiciously. Companies that use AI must guard against errors, bias, and potential legal liability. To deliver responsible AI, insurers and their technology partners must develop and use AI tools that are reliable, explainable and fair.

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Authors

Venky Ananth

*Infosys Senior Vice President and Industry
Head for Healthcare*

Chad Watt

Infosys Knowledge Institute

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