

Robots of Today, Doctors of Tomorrow: AI's Ability to Transform Medicine

“Hello. Welcome to Dr. Ai's Office. I will be your virtual doctor today. What seems to be bothering you?” To many, the premise of walking into a doctor's office is already a nightmare filled with gleaming white lights and sterile metal machines. But imagine that instead of being greeted by a receptionist, briefed by a nurse, and examined by a doctor, that this was an entirely humanless process, conducted exclusively by robots. This may seem like a terrifyingly dystopian idea, but with the rising abilities of Artificial Intelligence, or AI for short, this may be a destined part of our near future.

As AI improves and nears, or even surpasses, human-like accuracy in many areas, the big question in bioethics, medicine, and computer science is, “*Will AI replace doctors?*” On one side of the discussion, there are people like Dr. Jörg Goldhahn, an ETH Zurich professor, who have been vocal proponents for the melding of AI and patient care. On the other hand, many researchers like Dr. Vanessa Rampton and Dr. Giatgen A. Spinas, maintain that, although extensive, AI will simply never have the capacity to replace doctors in the administration of care. Despite equal—and impressive—educational levels on both sides of the conversation, the dividing factor between the two main perspectives comes down to weighing the importance of compassion, a uniquely human trait, versus clinical accuracy, where AI excels. Dr. Goldhahn, and others who agree with him, believe that clinical accuracy is of sole importance to a patient (Goldhahn et al.). However, Dr. Rampton, Dr. Spinas, and those who agree with them believe that in every circumstance, the human touch is irreplaceable and necessary (Goldhahn et al.). This rift in thinking runs wide and deep, but in fact, it represents a false dichotomy. We don't need to choose between accuracy and compassion, and we don't need to choose between AI and doctors. We can, and should, have both. To do this, the tasks within healthcare must be balanced

between AI and human physicians, so that AI can work as a supplement to doctors, not a replacement for them. So while AI's lack of humanity precludes it from taking over the qualitative aspects of medicine, its capacity for quantitative accuracy makes it an unbeatable tool that has the potential to improve healthcare in many diverse ways.

Physicians choose to pursue a career that is dynamic, multifaceted, and human to its very core. It is crucial to recognize that the job of a doctor is much more than just diagnosing patients; it is also to heal, support, and care for others with grace and goodness. In his paper "What Does it Mean to be a Physician?," Dr. Micheal Whitcomb, a chief figure in medical educational research, identifies three essential characteristics needed to be a doctor: a doctor must be caring, inquisitive, and civic-minded. He notes that working in the healthcare field necessitates care—connecting with patients on a deeper level and comforting them in times of mental vulnerability and physical distress. Medicine also requires inquisitiveness—the overwhelming intellectual curiosity that is rooted in a genuine passion for learning. The last aspect of medicine identified by Dr. Whitcomb is civic-mindedness. This means going above and beyond, and caring for not just a single patient, but for an entire community of people. These three aspects make up the crux of the doctor-patient relationship, and they are defining aspects of what it means to be a physician.

But additionally, these three characteristics are defining aspects of what it means to be human. While Dr. Whitcomb identified these features as a suggestion to medical schools for how to train more successful doctors, this sentiment can be carried over to the idea of AI in medicine as well. These three characteristics, being caring, inquisitive, and civic-minded, are inherent to the human experience. They are intangible feelings that can only come from the spark of human to human interactions. While projects such as BINA48 have attempted to reconstruct both the

hardware and the software that wires true human beings, these projects are still in their early stages, where progress is slow, and the hurdles are large. As for now, and without a paradigm-shifting leap forward in technology, these three aspects, as expressed by Dr. Whitcomb, are integral parts of being a doctor that AI is unable to replicate.

However, from a quantitative analysis standpoint, there are many ways in which AI outperforms traditional doctors. One important example is AI's superiority to human medical professionals in reading tests and making diagnoses. According to collaborative work between cardiologists and AI specialists in quantifying the performance of AI when detecting ventricular hypertrophy, a dangerous thickening of the heart's walls, AI was almost twice as accurate as traditional physicians (Kwon et al.). This true leap forward in diagnostic medicine is strong evidence for integrating AI into healthcare. While AI wouldn't be able to perform more qualitative tasks, such as interacting with patients, it is clear that it would excel at examining numbers. It is what AI is built to do, and it is one metric on which technology has already surpassed human expertise.

But quantitative analyses and diagnostics aren't the only spaces in which AI can improve healthcare: in a somewhat roundabout way, AI has the potential to improve doctor-patient relationships, despite its inability to embody Whitcomb's traits. Delegating specific tasks to AI will allow doctors the time and flexibility that is needed to create more meaningful relationships with their patients. Within the last decade or so, stemming from an increase in paperwork and a growing reliance on the Electronic Health Record, doctor-patient relationships have become strained. As reported in The Harris Poll, a nationally conducted poll of primary care physicians, over 85% of physicians report that they want more time with patients. Due to increasing managerial duties, these doctors feel that they are spending more time being an administrator

than being a doctor. This is where AI can step in. If AI is integrated into the healthcare system as a way to support doctors and take over a number of their managerial and administrative duties, there will be more time left for doctors to be doctors. By simply allowing AI to conduct the tasks that it naturally excels, it can become the perfect tool to help physicians strengthen the parts of healthcare that are intrinsically and solely human. With increased time, doctors can focus on the art of medicine: building trust with a patient, caring for them holistically, and healing, not just curing them. In this way, AI can improve doctor-patient relationships, which leads to better care.

When doctors have more time and are able to form stronger bonds with their patients, their outcomes noticeably improve. Hence, working towards bettering this fundamental relationship is essential to improving the future of healthcare. As stated by Dr. John Kelley, a psychologist at Massachusetts General Hospital, regarding his research on doctor-patient relationships, "a good relationship fosters better communication, which improves diagnosis. It also encourages people to tell their doctors about symptoms they might not otherwise disclose" (Harvard Health Letter). Furthermore, as Dr. Kelley found in a meta-analysis of thirteen randomized controlled trials studying the doctor-patient relationship, the effect of a positive relationship on a patient's outcome is even stronger than some commonly prescribed treatments, such as taking aspirin prophylactically to prevent heart attacks (Kelley et al.). This is strong data that support the clinical importance of the qualitative doctor-patient relationship, and it shows just how crucial maintaining and improving this aspect of medicine is.

If AI can be implemented effectively, with the goal of not taking over medicine, but of balancing AI-driven and physician-driven tasks, outcomes of patients will be improved. With AI as a part of our healthcare system, not only will diagnostic improvements advance patient care, but also, just as importantly, AI will open up a doctor's schedule and allow for them to focus on

building the positive human-to-human relationships that are integral to medicine. We are standing on the brink of a new revolution: the age of AI. But the question of how we implement this new technology is still up to us. If we want to improve healthcare without taking away the fundamental humanity that sits at its core, we must find a balance between AI and human physicians. Once this balance is found, and AI is implemented, as a tool, not a replacement, medicine will be changed for the better, forever.

Works Cited

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