

Artificial Intelligence in Healthcare

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Over the last few decades, we've witnessed the rise of AI technology across a wide variety of industries, with investment pouring in from private and government entities alike. The Australian Government announced in December 2019 that [it will invest AU\\$7.5 million](#) for research into the use of AI in healthcare.

As the healthcare sector becomes increasingly digitized, it's only a matter of time before this technology becomes mainstream. But there's still a fair amount of uncertainty around when and how this might happen, and many healthcare professionals are asking one important question: "Will AI completely replace doctors?"

Dr John Lambert, Chief Medical Officer at Harrison.ai says it's unlikely, at least in the foreseeable future.

"We are so far away from a general purpose AI, let alone an AI that could somehow replicate the experience of going to a caring professional," he said.

"I've worked in technology and healthcare for an awfully long time and one thing that I remain as convinced of now as when I started, is that nothing is going to take away human touch, the healing hands, and emotional connection of healthcare professionals."

There was a consensus among the panel that AI technology will augment, rather than replace, healthcare professionals. But that it needed to be a collaborative process, with the intention of improving quality, safety, and equity of healthcare.

"I believe there's more value in combining the human and the computer to create a better outcome than either one alone can provide. But we need to make sure that the AI solutions are clinically sensible and are solving problems that clinicians, and more importantly patients, actually need solved", Dr Lambert said.

AI is creating more health equity

Kate Quirke is the CEO of Alcidion, an Australian-based health informatics company. She said AI can be used to improve health outcomes and assist doctors in providing more effective and efficient treatment.

"Every doctor will have thousands of algorithms in their head that they know that they need to check for when they're treating a patient. If you can assist by augmenting that and actually sorting through all of the noise that goes on, then you're definitely a step towards improving outcomes."

The panel discussed a few encouraging use cases where AI is being used to augment healthcare. Some notable examples included using AI to [pick up irregularities in chest x-rays](#), using natural language processing to [populate electronic health records](#), and combining AI and robotics to operate within sub-millimetre range and [adjust for tremors in neurosurgery](#).

However, AI is not limited to a clinical setting, Kate explained.

"I think there's a perception that the technology we're using needs to play a role purely in a clinical setting, but that's not necessarily the case."

The panel discussed some promising applications of AI including using data to predict health outcomes, speeding up traditional research methodologies, and using supermarket spending data to map population dietary trends.

Dr Ron Shnier, Chief Medical Officer at I-MED Radiology Network said one of the most important benefits AI will deliver is the globalization of healthcare.

“Australia has access to world-class healthcare but there are many jurisdictions in the world where there is no medical expertise on the ground. To have an algorithm that can at least sort out the serious from the non-serious, where there's no infrastructure to do that, that could be a huge service”, he observed.

Dr Shnier believes AI will do to medicine what the internet did to communication. “The internet is this great infrastructure and people sometimes use it well, and sometimes they use it terribly. Similarly, AI will have a great ability to deliver amazing value,” he said, “but you need safeguards”, he warned.

Kate Quirke adds that being mindful that everyone can access the benefits of AI is critical to creating equity in healthcare. “We've already got enough barriers. Let's not create yet another barrier that's dependent on whether you're technology literate or not.”

Dr Lambert agreed that AI has both incredible potential and significant risks. He reasoned that risks can be mitigated by using one of the fundamentals of medicine, research.

“This is no different to a new surgical procedure or a new drug. We're going to have to implement these tools in clinical environments, measure the impact, and be wise about the impact of usability.”

“And if you test it that way, then a lot of these risks will be identified and can then be mitigated,” he argued.

Getting the foundations right will lead to success

The foundation of AI technology is undoubtedly clean, reliable and relevant data. However, it's estimated that as much as [80% of healthcare data is unstructured](#), such as handwritten notes, emails, radiological images, and pathology slides. This presents a major challenge when it comes to harnessing the full power of AI.

“An AI model is only as good as the data it was trained on”, said Dr Lambert. He pinpointed two big challenges when it comes to data: Getting access to consistent data, and creating the “ground truth labels”, which can be a very labour intensive process. But once a basis of data is established, the possibilities of AI are endless.

“I believe that once that data is gathered, AI will be able to connect dots that humans wouldn't be able to connect.”

However, we need to walk before we can run, cautions **Professor Anna Peeters, Director of the Institute of Health Transformation at Deakin University**.

She said data is important, but the systems that underpin it are just as important to get right.

“I think the harder part is not the generation of those technologies and applications, it's actually a generation of the systems which we need to embed them in.” She advises people to carefully consider things like governance, privacy, and funding mechanisms, as well as the human capabilities that we need to enable AI to work.

“We need to spend a lot more time giving attention to how you integrate these technologies into the system to ensure that it's actually seamless for the patient and for the healthcare worker.”

Prepare now for the AI-enabled future

Prof. Peeters stressed there's no one-size-fits-all approach to AI. She pointed out there are going to be capabilities and functions that healthcare professionals will be very happy for AI to take over, and others that we may never be able to shift.

“I don't think anyone's suggesting that everything suddenly shifts to AI. What we need to do is make sure we choose carefully and strategically, that we co-design and collaborate. And then we continually evaluate the outcomes, costs, benefits, and the risks”, she concluded.