## AIs will make health care safer and better

## It may even get cheaper, too, says Natasha Loder

## May 27th 2024, The Economist

When people set goals which are sky-high to the point of silliness, the sensible scoff. They are normally right to do so. Sometimes, though, it is worth entertaining the possibility that even the most startling aspiration might be achievable.

In 2015 Priscilla Chan, a paediatrician, and her husband Mark Zuckerberg, a founder of Facebook, set up the Chan Zuckerberg Initiative (CZI) with the aim of helping science bring about a world in which all disease could be prevented, cured or managed. Unsurprisingly there was a tech-centric feeling to the undertaking. But it was not until 2020 that the Chan-Zuckerberg's annual updates started to talk about the potential of artificial intelligence (AI). Four years later it is hard to imagine anyone pursuing their goals not putting it front and centre.

The proportion of biomedical research papers which invoke artificial intelligence was climbing exponentially well before the field started dazzling the world with "foundation models" like OpenAI's various GPTs (generative pre-trained transformers), Meta's Llama and Gemini from Google (see chart). Given the vast amounts of data that biomedical research produces, AI's early application there is hardly a surprise. That past progress and promise, though, is a mere prelude to what is now under way.

Artificial-intelligence systems of similar power to the foundation models and large language models that generate cogent text in all manner of styles, answer complex questions quite convincingly and helpfully, and create images that capture the ideas expressed in verbal prompts are becoming a part of health care. They have applications for almost every part of it. They can improve the choices researchers make about how exactly to edit genes; they are phenomenally good at making sense of big data from disparate sources; they can suggest new targets for drug development and help invent molecules large and small that might work as drugs against them. The CZI itself is now working on building an AI-powered "virtual cell" with which it hopes to revolutionise all manner of biomedical research.

The effects are not restricted to the lab. Various sorts of diagnosis in which AI is playing a role look ready to be transformed. Robot surgeons are taking on an expanding range of operations. The way that patients access health information and motivate themselves to follow treatment regimes looks ripe for reimagining as chatbots and wearable health monitors learn to work together. The productivity of health-care systems seems likely to be improved significantly.

Poorer countries may have the most to gain. An earlier generation of AI is already making itself felt in health care there. One advantage is that it can make quite modest equipment much more capable, allowing it to be used more widely and beyond the clinic. Smart stethoscopes can help users pick out salient details, phones can be turned into "tricorders" that measure heart rate, temperature, respiration and blood oxygen saturation all at once. Delivering reliable guidance for health-care workers over the world in their native language offers an advance both straightforward and game changing.

If such tools can become widespread, and if health-care systems are reshaped to get the most out of them, they should make it possible to deliver much better care. That represents an opportunity to improve the lives of hundreds of millions, even billions.

Some see not just a humanitarian breakthrough, but an epistemological one: a whole new sort of knowledge. Artificial intelligence can find associations and connections in bodies of disparate data too vast and knotted for humans to unpick without needing pre-existing models of what sorts of cause have what sorts of effect. Demis Hassabis, one of the founders of DeepMind, an AI powerhouse that is now part of Google, thinks that ability will change the way humans understand life itself.