# Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again by Eric Topol

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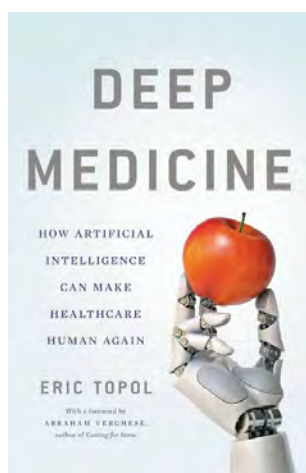
Professor Eric Topol has had his finger on the pulse of digital medicine for over a decade. An American cardiologist and distinguished academic, Topol has been an early proponent of digitalising the health-care sector. In his third book *Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again*, Topol surveils the new health-care landscape emerging as disruptive technologies become standard. For any future-focused health professional, *Deep Medicine* is a detailed and balanced exploration of the current state-of-play of artificial intelligence (AI) in medicine. Moreover, it serves as a guide on how to advocate for a health-care sector that benefits patients, not the pockets of financial stakeholders.

The reader is taken on a journey that explores how digitisation of the health-care system may be an unlikely, yet promising candidate for allowing clinicians to provide humanistic patient-centred care. At the outset, Topol laments the shortcomings of the current health-care climate, which prohibits clinicians from truly engaging with patients. Clinical decision making is fraught with cognitive biases and our mental bandwidth is pushed to the limits. The observation that we are 'attending to keyboard rather than our patients' confirms that our empathy is slowly but surely fading. We have somehow found ourselves trapped practicing shallow medicine. The judicious use of screening and diagnostic tools is becoming a lost art in a health-care sector that is increasingly focused on efficiency and productivity. Our culture of overuse is harming patients 'physically, psychologically and financially, and could threaten the viability of health systems by driving up costs and diverting resource'.[1] We have forgotten our commitment to 'primum no nocere'.

The remedies for shallow medicine have so far been reactive and incremental. For Topol, the overarching solution lies at the intersection of medicine and AI. Proponents of AI have claimed that "the AI revolution is on the scale of the industrial revolution", and Topol discusses several areas where the synergy between AI and health care has created tangible results. Details of machine-learning algorithms that can outperform radiologists in detecting pneumonia on chest x-rays leave the reader feeling that a health-care revolution is just over the horizon. Yet, Topol's optimism for what a digitised health-care system might look like is tempered by a wealth of clinical knowledge and research experience. He is quick to remind us that even though the use of electronic health records represented one of the first efforts to digitise the health-care sector, it is still viewed by many, including Topol himself, as an 'abject failure'.

The digitisation of medicine impacts us all, with some fearing that it's adoption will lead to a system devoid of empathy and connection. Throughout *Deep Medicine*, one senses that Topol's primary motive is profoundly humanistic. We are reminded that the consequences of these technologies extend beyond quantitative health-care metrics, like the length of hospital admission. Sir William Olser noted that it is "more important to know what sort of a patient has a disease than what sort of a disease a patient has".[2] With the current state-of-play, it is difficult to imagine that AI will ever truly understand the patient narrative like nurses and physicians can. Yet, Topol doesn't envision a system where doctors are replaced by machines. Rather, he advocates for one where health-care workers are liberated from administrative burdens through augmented decision-making and the automation of mundane obligations.

Personally, this book underscores the idea that conversations about the future directions of a digitised health-care system shouldn't be reserved for high-profile internet technology companies. For those at the coalface, and receiving end of medicine, it is much easier to

criticise the shortcomings of such technologies. Sadly, we remain ill-equipped to engage in conversations and contribute to their design. There is a paucity of teaching dedicated to understanding the intersection of AI and health care in medical school, and navigating the literature is an onerous and overwhelming task. *Deep Medicine* brings the reader up to speed on current advances and outstanding questions in the domain of digital medicine. More importantly, Topol sows a seed inside the minds of our future health-care advocates. The much-needed overhaul of the current health-care climate may be just over the horizon, but it is imperative that all stakeholders – especially patients and future health professionals – take initiative in curating a system centred upon deep humanism rather than shallow medicine.

References

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Conflicts of Interest

Logan is the Editor-in-Chief of the New Zealand Medical Student Journal. This article has gone through a double-blinded peer review process applied to all articles submitted to the NZMSJ, and has been accepted after achieving the standard required for publication. The author has no other conflict of interest.

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