

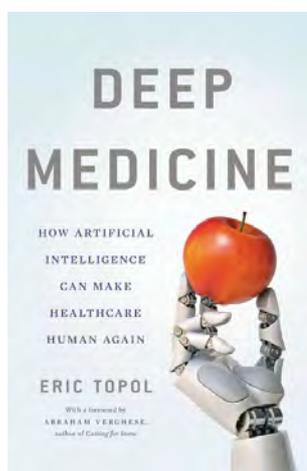
»» Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again

by Eric Topol

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➤ Logan is a final year medical student at The University of Auckland, and Editor-in-Chief of the New Zealand Medical Student Journal. He is passionate about research, and is currently pursuing a career as a clinician scientist in neonatology and perinatal neurodevelopment. More recently, he has explored the digitisation of healthcare and open-access science.



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 non 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 Osler 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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Deep Medicine (2019) explores how artificial intelligence could dramatically reshape the health-care industry, from how illnesses are diagnosed to the ways patients are cared for. Our current experience of care is "shallow," as overworked clinicians rush through patients without truly empathizing, listening, or being present. Health-care professionals and students. Futurists interested in how AI may impact the health-care industry. Anyone who's ever been frustrated by flaws in the medical care they've received. Eric Topol is a cardiologist, researcher, and executive vice president of Scripps Research. With over 270,000 citations, he is one of the top ten most cited researchers in medicine. In Deep Medicine, leading physician Eric Topol reveals how artificial intelligence can help. AI has the potential to transform everything doctors do, from note-taking and medical scans to diagnosis and treatment, greatly cutting down the cost of medicine and reducing human mortality. By freeing physicians from the tasks that interfere with human connection, AI will create space for the real healing that takes place between a doctor who can listen and a patient who needs to be heard. Innovative, provocative, and hopeful, Deep Medicine shows us how the awesome power of AI can make medicine better. MD about his new book, Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again. The program will start at about 7:50, PM, ET. To join come to any Medscape Facebook page and wait for the video to begin. Click "Interested" to receive a notification when we go live! 5.1K Views. Related Videos. Medscape. Medicine and the Machine Podcast from Medscape. 0:32 · 161 Views. Deep Medicine : How Artificial Intelligence Can Make Healthcare Human Again Download PDF, Free Download Deep surtdecasa.cat. <https://surtdecasa.cat/.../pdf-deep-medicine-how-artificial-intelligence-can-make-healthcare-human-eric-topol-md-pdf-download-free-book-ddd273d.pdf>. clipped from Google - 12/2020. Deep medicine, artificial intelligence, and the practising clinician. A recent book Deep Medicine, Eric Topol quotes a number of experts who discuss radiology algorithms as assistants to expert radiologists. The Penn Medicine www2.deloitte.com. Excerpted from Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again, by Eric Topol. Copyright © 2019 by Eric Topol. Available from Basic Books, an imprint of Perseus Books, a division of PBG Publishing, LLC, a subsidiary of Hachette Book Group, Inc. New York Times: "Opinion: The A.I. Diet" "Some months ago, I participated in a two-week experiment that involved using a smartphone app to track every morsel of food I ate, every beverage I drank and every medication I took, as well as how much I slept and exercised. I wore a sensor that monitored my blood-glucose levels, and I sent in a sample of my stool for an assessment of my gut microbiome.