

Q&A

Artificial Intelligence in Health— An Interview with Eric Topol, MD

Value & Outcomes Spotlight had the opportunity to interview Eric Topol, MD, Founder and Director of the Scripps Research Translational Institute (SRTI), Professor, Molecular Medicine, and Executive Vice-President of Scripps Research. As a researcher, he has published over 1200 peer-reviewed articles, with more than 230,000 citations, elected to the National Academy of Medicine, and is one of the top 10 most cited researchers in medicine (Thomson Reuters ISI, “Doctor of the Decade”). His principal scientific focus has been on the genomic and digital tools to individualize medicine—and the power that brings to individuals to drive the future of medicine.

In 2016, Dr Topol was awarded a \$207M grant from the NIH to lead a significant part of the Precision Medicine (All of Us) Initiative, a prospective research program that aims to enroll 1 million participants in the US. Prior to coming to lead Scripps SRTI in 2007, for which he is the principal investigator of a flagship \$35M NIH CTSA grant, he led the Cleveland Clinic to become the #1 center for heart care and was the founder of a new medical school there. He has been voted as the #1 most Influential physician leader in the United States in a national poll conducted by Modern Healthcare. Besides editing several textbooks, he has published 2 bestseller books on the future of medicine: *The Creative Destruction of Medicine* and *The Patient Will See You Now*. His new book, *Deep Medicine: How Artificial Intelligence Can Make Health Care Human Again*, was just published in 2019.



Value & Outcomes Spotlight: How did you, as a cardiologist by training, come to be interested in such “techie” issues as digital medicine, big data, and artificial intelligence?

Topol: My background in college was in genetics, which was related to an early interest in deep understanding of what makes

humans tick. With the convergence of sequencing, biosensors, and enormous data output that was getting momentum in the past decade, I was both enthralled and enamored by its potential to take medicine forward.

Much of your recent work, such as in your book, *The Patient Will See You Now*, highlights how digital medicine stands to revolutionize patient care. ISPOR has a strong interest in research; what are your thoughts on technological innovations in clinical trials and health outcomes research?

The ability to perform digital clinical trials, without sites, and direct to participant (DIP) is something that has remarkable allure because of its efficiency, low cost, speed, and appeal to both participants and researchers. In the era of mobile devices and hyper-connectivity, this model, as we used in the MS to PS trial published last summer in JAMA, should be used as much as possible. That’s the beauty of using sensors, both wearable for the individual and environmental. Finally we can get to real-world evidence (RWE), which is so much more useful than much of the evidence we’ve relied upon in the history of medicine.

You also have a strong interest in personalized medicine, how do you foresee the confluence of ‘omics, electronic health records, and artificial intelligence coming together to shape things?

These trends will reboot the practice of medicine in the long term. Deep phenotyping for each individual will enable us to set up more

precise, effective and safe care. We’ll be able to achieve prevention for the individual’s conditions known to be putting her/him at risk. And the use of the virtual health coach that integrates all of a person’s data for improving self-care. I spent a lot of time researching these topics for my book, *Deep Medicine*.

Finally, at ISPOR our focus is on value in healthcare delivery, what are your thoughts on current approaches to health technology assessment?

We desperately need validation and replication in diverse participants and at scale, along with follow-on studies after implementation to corroborate the initial

hypotheses and findings. We’re currently not using the technology that is available enough—we can harness it all to do these studies efficiently and seamlessly. •

ADDITIONAL INFORMATION

To learn more about the Scripps Institute Translation Institute and the progress being made in human genomics, go to <https://www.scripps.edu/science-and-medicine/translational-institute/>