Health in a Digital Age

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In the past five years alone, there has been dizzying growth in the number and scope of digital healthcare technologies. They range from clinical and research applications of artificial intelligence to large sets of patient data--resulting, for instance in the development of automated diagnostic tools which can accurately screen for diabetic retinopathy--to digital therapeutics such as mobile apps for treating amblyopia, as well as more prosaic developments in informatics and communications technology (ICT) for administrative and educational purposes. Nowhere is this acceleration more evident than in the astonishing array of direct-to-consumer options, with mobile apps offering everything from eye care in the form of regular prompts for "visual breaks" from screen time to online refractive exams.

This overall development has its roots in the first wave of health-related digitization that occurred over the previous two decades, back when medical websites, online patient forums, email, and electronic record keeping seemed groundbreaking. Today the advent of a healthcare future straight out of science-fiction is enthusiastically extolled on Twitter via a forest of hashtags--#ehealth, #mhealth, #healthIT--by startups, practitioners, and a variety of institutional players. The ubiquitous, if somewhat clumsy, "#digital health" probably best captures the broad scope of ICT tool use in healthcare, and is the term adopted by Canada Health Infoway, which more soberly promises "healthier Canadians through innovative digital health solutions".

Proponents of digital health (especially those with a product or service to sell) tend to make big promises. Not simply new efficiencies in labour-saving productivity, or solutions to longstanding problems in healthcare delivery through a move toward rationalized, coordinated care; more ambitiously, they forecast a massive step forward in public health with a global shift toward preventive healthcare and the practice of "precision medicine" tailored to individuals, through a combination of genomics, remote real-time continuous monitoring, and data analytics.

The disjunction between this grandly optimistic vision and the realities of the present day--with the recent fraud indictment of blood-testing startup - Theranos or even the many lingering limitations and frustrations associated with electronic medical records still in clear view--make it tempting to dismiss much of the talk around digital health as so much futurological hype.

It is important to recognize that underneath the hype, an inexorable sea change is in the making. As anyone who has noted the curious persistence of the fax machine in today's healthcare settings can see, the digital revolution that has transformed our experience of almost every other aspect of day to day living creeps forward slowly and unevenly to this sector. The delivery and experience of healthcare remains firmly in the last century: long waits, high costs, fragmentation of care, and a lingering paternalism among providers that often leaves patients with little control or understanding of decision-making around their own bodies.

Digital health's impact isn't really about smart hospitals or robot doctors; it's about a shift toward healthcare in which medical authority is reformulated and redistributed. Not only will the patient's role be far more active and informed than ever before, but the high contact healthcare professions focused on health promotion will see a boost.

Digital health's most disruptive aspect today is to be found in the power of "good enough"; for despite practitioner objections around a lack of proven outcomes or reservations about the accuracy of devices, consumer health tech really needs to just be easier, cheaper, or more user-friendly for it gain ground among those who have become accustomed to instant, seamless connection and an endless choice of products and services delivered directly to them. With the tech giants now stepping into the game, growth in this area, especially around medical-grade biometric sensors, AI-driven imaging analysis, accessible and portable patient health records, and consumer genomics, portends a democratization of access to health information and tools that will make trepidation about Dr Google seem quaint.

Technology is not a neutral tool, but brings with it unintended and unforeseen consequences. The internet is as much a vector for the spread of misinformation as it is for the dissemination of knowledge. We have all had a recent wakeup call as to how the relentless datafication of our lives is just as easily used against our interests as for them; no less will be true of the digitization of our bodies. But the potential for digital health technology--especially that based on nearly ubiquitous smartphones--to open a "digital channel" that facilitates a bi-directional flow of data to and from patients not only encourages a personalized and collaborative model of care, but may allow also for greater engagement with traditionally underserved communities.

This shift will not be without friction. Many healthcare practitioners' longstanding sensitivity to incursions on their professional authority, amplified by "future of work" type fears of being replaced by automation, will generate resistance. Although today's healthcare institutions or experts will not disappear, they won't retain the full extent of their previous monopoly on medical expertise or practice.

In the face of the information overload precipitated by the firehose of data generated by these new technologies, practitioners who pivot toward an educational role in facilitating health literacy may prove to have the most staying power. ODs, with their high degree of technical literacy, and a primary care/consumer orientation, are uniquely positioned to benefit from these changes. Already in the business of wearables for longer than anyone else, they are already attuned to the consultative role that may be the future of healthcare practice. ●