



# Family physicians of the future redux

## The robot will see you now?

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*If you think in terms of a year, plant a seed; if in terms of 10 years, plant trees; if in terms of 100 years, teach the people.*

Confucius

A recent survey of UK GPs revealed that most were sceptical about the potential for technology to perform as well as or better than humans in such core medical skills as making diagnoses or decisions about which patients to refer.<sup>1</sup> Further, they were even more sceptical about the capacity for technology to replace human physicians in providing empathic care.<sup>1</sup> This is a common view held by physicians.<sup>2,3</sup> In sharp contrast, most respondents were optimistic that in the not-too-distant future, technology would be capable of freeing them from the drudgery of paperwork and administrative tasks. Is this wishful thinking? Could they be wrong on all counts? Do Canadian family physicians share these views?

Artificial intelligence (AI) experts and informaticians believe, on the other hand, that AI could eventually make doctors as we know them obsolete. One expert has argued that AI “physicians” of the future will be more precise, reliable, and comprehensive, less biased, and less unstable than human physicians, yet still caring.<sup>4</sup>

Which of these future family doctors will come to pass?

For the past 4 years, the College has convened an annual Leaders’ Forum where family physicians and key stakeholders (including patients) from across the country gather to discuss important issues affecting family medicine. The goal has been to leverage the collected experience and wisdom of the group to guide the College. It is a privilege as the editor of *Canadian Family Physician* to participate. This year’s forum focused on the effects of virtual care, AI, and machine learning on the future of family medicine. The content and presentations can be found online,<sup>5</sup> but I want to draw the attention of journal readers to a key briefing document prepared by Dr Ross Upshur<sup>6</sup> and an important commentary<sup>7</sup> and keynote presentation by Dr Brian Hodges.

What are AI, machine learning, and deep learning? Artificial intelligence is a field concerned with getting computers to do tasks currently requiring human intelligence. Machine learning is that branch of AI that allows computers to carry out complex tasks by learning directly from data, examples, and experience. Deep learning takes machine learning to a new level using machine learning algorithms that mimic the way that humans learn.

Dr Upshur explores the many facets of AI and technology, potential implications, and the potential responses of our discipline.<sup>6</sup> On one hand is the promise of AI—that the analysis of big data will improve diagnosis and prognostication, lead to new treatments, transform and improve models of care, and, crucially, relieve us of drudgery and reconnect us with our deep roots as a healing profession. On the other hand are the perils—that it will result in workplace surveillance, productivity management, and unemployment and usher in the end of an era of a type of medical practice. One key insight is the parallel with medicine’s relationship with the pharmaceutical industry. Many of those lessons learned can be usefully applied to our relationship with technology.

For Dr Upshur, the most important advocacy work for family physicians as we face the future is to “insist upon the evidence of benefit from the new technologies arising from family medicine not imposed upon it” and that the “promise of benefit in advance of evaluation should not be considered persuasive,”<sup>6</sup> as it has been, for example, with the current use of electronic medical records.

In his keynote, Dr Hodges identified 3 domains of physicians’ work: cognitive, technical, and caring skills.<sup>7</sup> He persuasively argued that, while AI might replace or enhance some of our cognitive and technical capacities, our caring skills will still be relevant. In particular, he emphasized the “importance of metacognition, situational awareness and other higher human cognitive functions”<sup>8</sup> that will need to be enhanced in undergraduate medical education, residency, and especially continuing education. To close on a hopeful note, Dr Upshur identified a key distinction between the human physician and the machine one—that is, the human physician’s “willingness to accept responsibility for the care of another human being.” He feels that “Medicine is fundamentally a moral undertaking, reflected in the responsibilities that physicians assume when entering a physician-patient relationship. This role entails accepting the fallibility and frailty of both parties.”<sup>6</sup>

### References

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