

# Ramos and Aiken: How artificial intelligence can improve health care

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Doctors check results on a computer. *BERTRAND LANGLOIS / AFP/GETTY IMAGES*

Policy debates over how to solve problems around access to family doctors, wait times for elective surgery, home care, transfer to long-term care, tracking the over-prescription of opioids and many

other serious health dilemmas facing Canadians rarely consider the role artificial intelligence (AI) can and will play in offering solutions.

But the potential to realize the benefits of AI requires a proactive policy strategy that is geared to the future rather than a reactive approach, constantly focused on managing current crises. This means solutions for tomorrow rather than today and also will require parsing out how to recognize, trade and access the commodity that drives the “gig economy” – data.

The Fraser Institute (<https://www.fraserinstitute.org/article/canadas-doctor-shortage-will-only-worsen-in-the-coming-decade>) warned that in the next decade Canada’s doctor shortage will only worsen, largely because of an increase in the number retiring physicians that will not be replaced fast enough by new or foreign trained doctors. The Canadian Institute for Health Information ([https://www.cihi.ca/sites/default/files/document/wait-times-report-2017\\_en.pdf](https://www.cihi.ca/sites/default/files/document/wait-times-report-2017_en.pdf)) found that although wait times are improving for hip surgery, they are getting worse for cataract surgery and are remaining constant for a number of other procedures. The institute (<https://www.cihi.ca/en/opioid-crisis-having-significant-impact-on-canadas-health-care-system>) has also found that overdoses from fentanyl, oxycodone, and morphine are on the rise in Canada; the country’s opioid crisis is having a significant impact on health-care systems across the country. When policy-makers look to solutions for each of these problems, they largely ignore the role technology can play in the solution.

These oversights could conceivably lead to the Uberization of healthcare. The taxi industry was revolutionized overnight by the development of a web app that used big data and analytics to improve efficiency and services for ride sharing. The same pressures will likely affect the delivery of health care. Amazon, (<https://www.nytimes.com/2018/01/31/technology/amazon-china-health-care-ai.html>) for example, is launching its artificial intelligence capabilities to provide simplified and affordable medical services and advice in China (<https://domain.com/tag/china>). In Quebec, AkioSoft (<https://www.newswire.ca/news-releases/akioclinik-new-intelligent-health-care-and-telemedicine-services-available-for-physicians-and-their-patients-653022693.html>) is exploring the development of virtual health clinics powered by artificial intelligence and in the United States, one critical care physician can monitor up to six intensive-care units in different locations through the use of technology. Fitbits, other health devices, and smartphone apps are now

collecting volumes of advanced predictive data analytics that provide incredibly useful health data.

As the private sector increasingly tracks health data and begins to use that data to deliver more efficient and affordable health care, it is vitally important for government officials to explore the policy implications of these important trends by asking the right questions about the oversight provinces and territories have to ensure this information is used in a manner that offers better health outcomes.

And the privacy issue needs to be put to rest. Health utilization data has been collected in provinces for decades without privacy breaches. Mechanisms that will avoid the scandals that are now plaguing Facebook, are well-established in government health data, so we need to take action now to address the potential benefits of managing, accessing and utilizing big data from all sectors to improve Canadian health-care services, and indeed the overall health of Canadians.

A problem with the robust health data being collected by the private sector is that much of it will not be shared with cutting edge medical researchers or public agencies that can maximize the health benefits that AI can provide. This is confounded by the issue that the best health data collected through provincial and territorial electronic medical records (EMR) is missed, because this data is subject to rigorous privacy standards that far exceed expectations of most citizens. This can impede practical and timely access to the data by research communities. The barriers to data sharing of EMR-collected health-care information leads to many missed opportunities for the public and private sector research community to bring truly meaningful solutions to the major health problems of our time.

The full potential of AI to solve Canada's health-care problems will only be achieved by creating bridges between the public and private sector, by increasing and effectively managing oversight of essential data collected by private companies, while at the same time relaxing it for the public sector, and, above all, by increasing mechanisms for sharing the data that powers AI and the mining of crucial information that can be compiled and distributed across multiple health sectors.

On this front, Canada's universities are positioned to play a central role in creating collaborative health research hubs connecting health, medicine, law, computer science, social science, and the humanities to ensure ethical

collection and analysis of data. Universities can provide the essential expertise required to tap into the data and explore the many health solutions it offers along with the legal and social implications of its use, and the vision and mission to educate and mentor the next generation of health care providers who will use artificial intelligence, with a human touch, to offer the best health care for Canadians.

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