New ways and means of planning, delivering and improving healthcare are in place and in play across Canada, and novel opportunities for change beckon. At the same time, long-standing systemic problems are not yet dislodged – despite many works-in-progress on discrete fronts – and troubling disparities persist. The articles in this issue of *Healthcare Quarterly* speak to all of these realities.

Readers learn how healthcare organizations are exploring and using advanced analytics and artificial intelligence (AI) to improve care; how health researchers are widening their circles to bring in and benefit from the experience and expertise of patients and caregivers; and how performance and accountability in cancer care progressed over the years.

Red flags appear as well: Kathy Lee and her colleagues (2020) track a continuing upward trend in spending increases on public drug programs ($34.3 billion forecast for 2019, a 2.7% increase since 2018); the reporting rate of adverse drug reactions (ADRs) has increased four-fold over nine years; the confounding challenge of prolonged hospital stays exerts multiple ill effects; and ICES describes daunting disparities in health status and healthcare access between the general population and people who experience imprisonment in Ontario (Kouyoumdjian et al. 2020).

Healthcare operates within an environment of finite resources and growing demand for more and new services, which often leads to trade-offs and recalibration. What principles should guide decision making and determine whether today's imperatives should be augmented, replaced, retained, reweighted or removed? What characteristics and capabilities must healthcare systems possess to meet the needs of Canadians in the second decade of the 21st century?

Given the multifaceted and complex entity that is Canadian healthcare, the way forward will require concerted and coordinated efforts, targeted resources and continued stewardship, along with an infusion of skills and knowledge, more time and tenacity and the elixir of courage and vision.

## Artificial Intelligence (AI) in Canadian Healthcare

As part of their national study on AI in Canadian healthcare, Hakim et al. (2020) conducted a multi-method, cross-country checkup with health executives to gauge their organizations' interest, grounding and engagement in using AI and advanced analytics to transform healthcare. Their substantive summary delineates the varying degree, depth and pace at which AI has taken root in the country and highlights instructive examples from the country's AI-in-healthcare hotspots. The organizations have divergent AI goals, a common commitment to increase AI budgets and a range of capacities in analytics skills, strategy, technology, organization and data governance. The article delves into implementation challenges and organizational barriers, which the authors assert could be addressed through the adoption of a standardized analytics operating model.

AI is clearly an innovation for Canadian healthcare, but innovation without effective implementation holds little organizational value. Caesar et al. (2020) present an operating model designed to help harness the potential of AI and successfully embed it into improvement initiatives. They depict it as an enabler of insight and change in healthcare, a big-picture guide to building organization-wide processes and capacities block by block, using AI strategically to link data to decision making aimed at transformational change.

## Patient-Oriented Research

Health research teams focusing on patients and the issues that matter to them have but recently brought their subjects to the table as formal participants with the support of the Canadian Institutes of Health Research (CIHR), which funded units and centres to facilitate patient-oriented research (POR) across the country. That is a positive step for the growing number of people inside and outside healthcare who list patient engagement as a key ingredient to high-quality healthcare.

Flowers et al. (2020) report on an evaluation, supported by the Saskatchewan Centre for Patient-Oriented Research (SCPOR), that assessed the experience and effectiveness of patient family advisors (PFAs) as research team members. Overall results from the Quality Involvement Questionnaire and the Saskatchewan PFA Experience and Effectiveness surveys show that the advisors' experiences are highly positive on most fronts: value, contribution, continued participation, willingness to continue and so on. The only areas to receive neutral or negative feedback relate to the lack of regular updates on the status of the research and the need for greater role clarity for the PFAs. Three-quarters of the lead investigators from the responding research teams agreed that engaging PFAs had a positive impact, provided value to the outcome of the research and represented the patient perspective well.

The effectiveness of Saskatchewan PFAs is not the only attribute evident in the article by Keller et al. (2020), which describes the advisors' initiative in co-developing better POR tools with the SCPOR. The PFAs identified a weakness in how POR grant proposals were being assessed, prompting them to initiate a project to give the process more rigour – and clear criteria to determine what did or didn't make a proposal sufficiently patient oriented. SCPOR and the PFAs co-created a tool for this precise purpose, drawing from expert resources and adapting language from the Spectrum of Public Participation developed by the International Association for Public Participation (IAP2). They tested and tweaked the tool and took it on the road. Many organizations have put it to use; partner organizations have adopted it, and an evaluation is pending.

## Patient Safety

Those who consider patient safety paramount to quality healthcare will be drawn to – and disturbed by – the article by Maity and Longo (2020), who analyzed nine years' worth of reports from the Canada Vigilance Adverse Reaction online database. They put the number of suspected ADRs reported in 2009–2018 at about 437,000. The number of reports per million population over this period grew from 531 to 2173 – as previously noted, a fourfold increase in the reporting rate. The authors also parse the data (acknowledged as limited) to provide demographic and health status information about who reacted, and to which drug(s), and how severely. Their analysis takes in recent regulatory, medical and market developments and raises many questions and research opportunities to better understand the full implications of ADRs on policy issues, including public/patient safety, prevention, cost, treatment and health outcome.

## Quality Improvement

An instructive article by Yorke et al. (2020) lays out the stark and multi-dimensional costs of "extreme length of stay" for children in a quaternary care hospital. They analyzed more than 15,000 pediatric hospital discharges at Toronto's Hospital for Sick Children between 2015 and 2016, revealing that the vast majority of patients with extreme length of stay went directly from hospital to home, and of those, only a minority (between 13% and 16%) had home-based services to help them when they got there.

This reflects the deficit in community supports that further fuels fragmentation and inappropriate use of acute care – the same system challenge, the authors say, that produced the troubling trend of prolonged hospital stays for people with complex chronic illnesses. The authors discuss the widespread nature of the damage: family and school disruption; workforce displacement; risk of infections and medical error, which rises as stays lengthen; and costly demands on nursing and other health disciplines. The authors also offer solutions that centre around alternate levels of care, system resources and improvements to transitions home.

Hagens et al. (2020) provide a clear-headed account of Cancer Care Ontario's 15-year journey in performance management and a detailed description of how 28 priority indicators were brought on board, with 25 of them consistently improving over the years. It speaks to the strategic power of staying the course with works-in-progress and is a shout-out to accountability, data-driven quality improvement, respectful clinical collaboration and effective stakeholder engagement.

– The Editors

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