



The pulse of change

Better patient care through integrated information

Lydia Lee

Partner and National Digital Health Leader, KPMG in Canada

If transparency, connectivity, and collaboration are the hallmarks of Industry 4.0, then few industries stand to benefit more from digital disruption than Canada's healthcare sector.

Connected care

The potential for data analytics, automation, and cloud computing to create a more connected patient experience has not gone unnoticed among Canada's healthcare community. Many provinces have put major effort behind building and consolidating repositories of key data sets (e.g. lab results, diagnostic imaging, drug information, treatment information, etc.) to provide clinicians with a holistic view of their patients and to better connect them to healthcare partners.

The next step is leveraging that same data to inform clinical practice improvement and predict



To enable digital transformation in healthcare, we need to allow for transparency. Data that was not originally built for longitudinal record-sharing needs to be converted to accessible and actionable information. Implementing health information exchanges requires capturing data from multiple institutional and provider-level record systems and presenting the information in a secure way that supports clinical decision making across the continuum of care. ”

future healthcare needs. Provinces have data captured for clinical decision making, but now healthcare ministries, healthcare organizational leaders and clinicians are exploring opportunities to use these repositories as big data sources to enable population health management. This would allow healthcare providers to proactively manage symptoms in the community like diabetes and heart failure, for example.

Now, more and more tech-savvy entrepreneurs are finding ways to interact with all this data for innovative enhancements to patient care. We're seeing software developers and tech companies begin to build new remote-care technologies that allow patients to interact with their care teams virtually from the comfort of their own homes.

New expectations, new risks

As much as third-party vendors, entrepreneurs, and healthcare leaders are exploring ways in which to leverage data, so too are the recipients of care. Patients want access to their data whenever and wherever they choose to view it. They want to track their immunizations, schedule their own appointments, be able to look back into their own records, and have greater control over their healthcare journey. This is creating new pressure on the healthcare sector to deliver a more mobile, digitally enhanced, and personalized experience.



Health data and app integration

Ned, short for 'No Evident Disease' is a mobile app developed by the University Health Network that is designed for patients at all stages of prostate cancer survivorship. The platform provides:

- real-time collection of Patient Reported Outcomes (PROs)
- graphical representation of health data
- a live news feed including self-care, education and support group event information
- Prostate Specific Antigen (PSA) lab results fed directly from Ontario Lab Information System (OLIS)

Ned allows clinicians to collect PROs and receive PSA lab results directly from laboratory information systems. This data can be used to support decision-making and prompt behavioural or treatment changes, helping patients and clinicians to detect problems before they become serious.¹

¹ <http://ehealthinnovation.org/project/ned/>

Providers are only recently experiencing situations where their patients are regularly accessing their own patient record data and it is changing the provider-patient interactions. It used to be that clinicians would review a patient's results just in time for the next appointment. Now they are getting calls from their patients in advance of the next visit asking about their chart, which they can view online. This new dynamic is changing the doctor-patient relationship. Healthcare providers now need to adapt the way they review and share information to keep up with the patient's evolving expectations.

Still, digital disruption in healthcare comes with natural concerns over patient privacy and data-sharing risks. Privacy constructs around electronic health record systems have largely been built to enable data sharing between clinicians within a patient's 'circle of care'. This is to ensure that data is only shared among those who are caring for a patient based on a clinician's need-to-know basis, and not for other purposes.

Cloud computing has also disrupted traditional IT in healthcare and affords an opportunity to significantly reduce costs and enhance data security, but the industry is only just recently starting to take advantage of this technology.

Here again, it comes down to how individual people cope with the disruption. So much is moving to the cloud, and that's good. What we do need to focus on now are the human behaviours, competencies and knowledge around cyber security and privacy best practices that must go hand in hand with this move to the cloud.

Adopting AI and automation

With better data comes the opportunity to reap the full rewards of artificial intelligence (AI) and automation. These disruptors are relatively new to the healthcare sector but fast becoming one of the largest areas of investment by healthcare decision makers. For instance, AI is being used to predict hospital patient admissions, discharges, length of stay and likelihood of readmissions. With data from patient visits, hospitals can create predictive algorithms to reorganize processes and deliver a better patient experience with better outcomes.

On a more advanced scale, AI and machine learning are also being used to develop specific treatments for patients based on their individual make-up.

We are quickly approaching a future where treatments will be personalized based on a patient's genetic makeup. So from a disruption



There's a tendency to discuss technological disruption as it relates to greater profits and market share. Yet, just as automation, cloud-computing, and AI hold great potential for bottom lines, it's disruptors like these that will also prove critical in helping Canada deliver on its healthcare promises. ”

standpoint, we have to rethink the way we organize care because we've spent decades trying to standardize practice for entire cohorts of patients and now tech is taking us in the opposite direction.

We are living in a very exciting time. A time when data analytics, automation, AI, and cloud computing are opening the door to an integrated healthcare experience for both patients and providers. In order for patients to fully embrace digitization, governments have to ensure they create a system that is both transparent and secure. In doing so, they will be streamlining processes, ensuring that personal data is protected, and ultimately achieving more efficient and successful patient outcomes.

