



October 29, 2016

W. Edmund Clark

Chair, Premier's Advisory Council on Government Assets and Premier's Business Advisor

Dear Mr. Clark:

Thank you for inviting me and our organization to offer thoughts and recommendations regarding the Government of Ontario's eHealth strategy, specifically the strategy centred on eHealth Ontario (eHO). I offer reflections based on our understanding of the eHealth strategy and current state as well as my experience as the Chair for the Electronic Children's Health Network (eCHN), an alternative health information exchange with somewhat longer tenure than eHO but focused on children's healthcare. My personal views are also shaped by my experience as a physician and executive in two large US health systems, both with comprehensive e-health strategies and fully integrated electronic health records. I've also been an electronic health record developer as well as a scholar investigating the adoption and impact of digital health technology.

My thinking is shaped by the recognition that the primary purpose of clinical information systems and those systems that support the exchange and analysis of clinical data is to support improved clinical care in healthcare provider's offices, hospitals, and, more recently, patient's homes. For such systems to positively impact clinical care, they must: be easily integrated into clinical workflow (unless clinical workflow is to be adapted to the technology); be easy to use; provide relevant, timely, accurate, and easy to understand information. By making valuable information available, systems can lead to better clinical decision making, better coordination of care across providers, and reduce the possibility of mistakes. This seems like a particularly important benefit given the recent CIHI report that highlights the frequency of serious errors in Canadian hospitals. Secondly, analysis of data over time for a given patient or across a population of patients can be valuable for healthcare services planning, quality improvement, clinical research to drive advances in healthcare, and improved case management. There are additional benefits of such systems including business efficiencies, better customer service, and streamlined operational performance.

Investments in clinical information systems are typically the most expensive, most complicated, but most strategically important investments that healthcare organizations make. There is abundant literature from many jurisdictions to support the benefits identified above. However, it is important to recognize that the value of these investments is what might be considered "real option value". Realizing any benefit depends on the systems being used and the most

critical use is at the point of care which is the source of most relevant information and the point of most significant impact.

Ontario has invested substantial resources in eHealth and has developed a set of important assets. At the same time, Ontario hospitals and physician offices have far less extensive implementations of clinical information systems (CIS). Although electronic records may be used in some settings, their capability and degree of integration with the systems of other providers is far less than in jurisdictions with similarly advanced health systems. While many hospitals were early adopters of earlier CIS, investments have not generally appeared to have kept up with the field. Few hospitals have systems that integrate clinical documentation such as flow sheets, nursing notes or physician notes – all typically central elements of a high functioning system.

There are a number of reasons for this slow adoption in Ontario. First, there is no clear strategy, policy environment, or funding to encourage hospitals to maintain state-of-the-art systems. Second, the fact that hospitals typically do not generate operating surpluses prevents hospitals from generating the kind of capital necessary to support CIS investments. Third, recent pressures on hospital finances make it even more challenging to accommodate the increased operating costs associated with a high functioning system unless there is a high level of confidence that benefits will be realized. Fourth, we can expect that the recent MOHLTC strategy of requiring hospitals to adopt CIS through regional hubs will add a considerable additional barrier to adoption because of the challenges in building appropriate governance structures to support multi-institutional installations as well as the challenges of contracting for vendors to support systems across organizational boundaries. The lack of a truly integrated hospital system or network with consolidated governance/management in Ontario, recent trends notwithstanding, is another complicating factor with many autonomously governed hospitals and minimal integration of physician practices into more integrated entities. CIS used to support individual physician offices are typically different than systems built to support hospitals although hospital-based systems can well support physician offices if desired and planned for.

The eHealth Ontario strategy, like eCHN's strategy is built on the concept of health information exchange. It is not intended and not designed to collect information during the process of clinical care. Rather, these systems move information from one CIS (or similar system) to another. This theoretically allows a clinician to see clinical data that was collected at or resides within another organization. This may well make valuable information (such as laboratory or imaging reports) available for clinical decision- making and may reduce redundant testing. Ontario has developed a significant eHealth infrastructure and data holdings due in large part to the leadership under eHO and the participation of many organizations and individuals under the regional connect strategies. However, the current state and plans for eHO and health information exchange implementation, may markedly limit the value returned by the considerable investments that have been made.

There are a number of factors that will limit the value created by the eHO and related strategies. These include:

- Connectivity, as could be achieved through the eHO strategy, by itself will drive limited change. Improvements in care need to be reinforced, and indeed driven, by policies, funding models, and broader strategies. Change will also depend on the robust implementations of the primary systems that are intended to be connected under the eHO strategy.
- Overall, the approach that eHO has followed has mirrored the Provincial approach to healthcare more broadly with independent organization being given regional markets to serve but a broad mandate as to how to serve that market and autonomy in prioritizing and executing on opportunities. This led to variable strategies to achieve interoperability between hospital systems. It also relied on the goodwill of hospitals and other provider organizations to provide thought leadership to work together towards a common goal but it isn't clear how those individuals developed a sense of the art-of-the-possible or clear future vision before embarking on an incremental approach to value generation.
- There is a widening range of data elements exchanged but extremely variable ability of hospitals and other providers to exchange important elements because their own information systems are not mature enough. For example, many hospitals are not able to exchange electronic discharge summaries.
- Because of the immaturity of many providers' CIS, electronic systems are not well integrated into clinical workflow in a way that is likely to influence caregivers. While eHO data may well be available to clinicians through user-facing applications, a clinician would have to choose to use that system to query information about a patient at hand but may not know if any useful information will be available.
- The eHO system is not built in a way that integrates data into the kinds of systems clinicians use in their clinical practice. Rather, clinicians either use a standalone application or launch the eHO system from a button in their CIS. This reduces the usability considerably and prevents integration of one organization's data exchanged through eHO into the data held and viewed within the system used at the point of care in a second organization.
- The regulations under which eHO was created as well as the terms of data sharing agreement appears to prevent the kinds of secondary use of data that many organizations and jurisdictions are applying to improve care, address population health opportunities, and drive more effective system planning. Rather, those tasks are carried out through other provincial registries relying on administrative data and limited clinical data collected and exchanged through different streams.
- The multiple regional exchanges, such as cGTA and the SW exchange along with the separate regional exchanges built to share diagnostic images, currently prevents exchange of information across regional boundaries even though some patients, particularly the most complex patients, cross regional boundaries for care.

- There are important valuable data elements that would be helpful to coordinate care across sites that are not incorporated into eHO and not yet supportable given the immaturity of in-hospital and in-office CIS. These include elements such as: allergies, medication lists, problem lists, and care plans.
- From a value-for-money perspective, it also seems more likely that there could be considerable advantages of relying on vendor-built solutions that integrate exchange, analytics, and other functions, even if the application is still focused on exchange between providers' CIS. With a global market and a high interest in population health principles in other jurisdictions, vendors such as Allscripts, Epic, and Cerner are all improving existing products to create a higher degree of interoperability between CIS systems and to support the benefits of looking at data across federated data holdings.
- Were the Province's regional CIS strategy to prevail, the investments made into eHO may become relatively obsolete as providers will be able to leverage the far more comprehensive data integration that is an inherent benefit of these systems.

Given the current limitations in the current eHO implementation, the environmental clinical computing ecosystem, and the growing need for a strategy that supports the healthcare triple aim of better health outcomes, higher quality episodes of care, and lower per capita costs of healthcare, government strategy could incorporate the following elements:

- Support for the modernization of hospital CIS, particularly implementations that are capable of supporting a broader health system. Such support could rely on multiple approaches including direct funding of hospital clinical systems, financial incentives such as higher ministry revenues to hospitals with more capable systems (this is similar to the Meaningful Use Program in the US), or underwriting debt service when hospitals borrow to implement CIS.
- Incentives for hospitals to come together to develop regional CIS hubs. The current requirements for hospitals to participate in regional hubs without any financial incentive to do so will create a considerable barrier to implementation. Without first coming together into clinically integrated networks with a single governance, the complexities of building regional hubs that have a high degree of functionality may be insurmountable and will exclude certain vendors, including some of the most high-performing, from being able to participate.
- Create incentives for hospitals to support other parts of the healthsystem's CIS needs. The hospitals CIS systems are the most complex in the CIS ecosystems as well as the most expensive. However, the marginal cost of supporting other components of the health system such as physician offices is relatively low. By bringing providers together onto a common CIS instance, data sharing is far expanded and can be designed more easily to improve care across venues than can be accomplished through exchanges such as that provided by eHO. Although this might not eliminate the need for eHO, it will reduce the reliance of clinicians on the limited data sharing through the eHO exchange.



- Develop a policy/regulatory framework that allows data to be analyzed to support a population health strategy.
- Explore and adopt best practices from other jurisdictions and other organizations using data exchanges to promote better care and improved population health. For example, studying case examples such as the health system in Israel that has leveraged information exchange across federated data holdings and multiple CIS to create a nationwide network to improve the quality of care across organizational boundaries. Similar strategies are being implemented or considered in BC, AB, and NS here in Canada.
- Transfer the implementation risk and responsibility for system evolution to vendors that have a major stake in product development to support care improvements across multiple CIS and organizational boundaries.
- Underwrite the costs of interface development and other costs to allow providers to participate in a health information exchange
- Create a single pan-provincial information exchange rather than regional exchanges.

We recognize both the cost and complexity of creating a higher performing ecosystem for clinical information sharing as well as the difficulty in navigating change with the considerable sunk costs to date. However, real improvements in our collective ability to improve care, reduce long-term costs, and drive better health of the population will depend on a deliberate strategy that drives parallel improvements in the point-of-care CIS used by providers in hospitals, physician offices and other clinicians alongside improvements in the ability to exchange, analyze, and make useful information that is shared across CIS systems.

On behalf of the Hospital for Sick Children,

Michael Apkon

President and Chief Executive Officer