Electronic health records

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Main points

An electronic health record (EHR) is a person's health record designed to be accessed online from many separate, compatible systems within a network. In 2009, we did an audit to assess if the Ministry of Health had appropriate and effective processes to guide, monitor, and report on the implementation of its EHR system that meets the goals of a Canada-wide integrated EHR system. We did this audit in consultation with the Auditor General of Canada and other provincial audit offices that did similar audits in their jurisdictions.

The Ministry of Health did not have appropriate and effective processes to guide, monitor, and report on the implementation of its EHR system.

The Ministry told us that so far it has spent $235 million and expects to spend over $600 million on development and specialized costs by 2014. Saskatchewan's EHR system is not one project, but is the intended end result of many different individual projects. Although the Ministry had project management and reporting processes at the individual project level, it did not have a strategic and operational plan for the overall EHR system. Nor did the Ministry have a business case setting out expected costs and overall benefits. As a result, the Ministry cannot set related performance measures and baseline information to help it assess its progress and report whether it has achieved intended benefits.

We make four recommendations for the Ministry to help improve its processes.

Introduction

This chapter describes the results of our audit of how the Ministry of Health guides, monitors, and reports on the implementation of its electronic health record system (EHR system) that meets the goals of a Canada-wide integrated EHR system.

Electronic health records

In Saskatchewan, there are thousands of interactions every day between citizens and the health system. Most of these interactions require information or generate information (e.g., prescriptions, lab test results, hospital charts).

Health care providers (such as doctors, pharmacists, hospital staff) collect and store this information in different locations and in different, non-compatible ways. Much of the information is stored in paper-based manual records. Storing information in this way causes many problems and inefficiencies.

An electronic health record (EHR) is a person's health record designed to be accessed online from many separate, compatible systems within a network.[1] (See exhibit 1-Example of an electronic health record). Records in electronic form are more likely to be legible, available when needed, and more easily and quickly retrieved no matter where an individual seeks medical attention. Other potential benefits of EHRs include the following:

- for patients—improved health care and decreased risks (such as fewer adverse drug reactions); lower chance of having duplicate, invasive and/or expensive tests; and shorter waiting lists
- for health care providers—an integrated view of patient and population data and information for making better decisions using accessible, up-to-date patient data
- for health administrators—reduced health care costs and improved care quality, as well as information for quality assurance

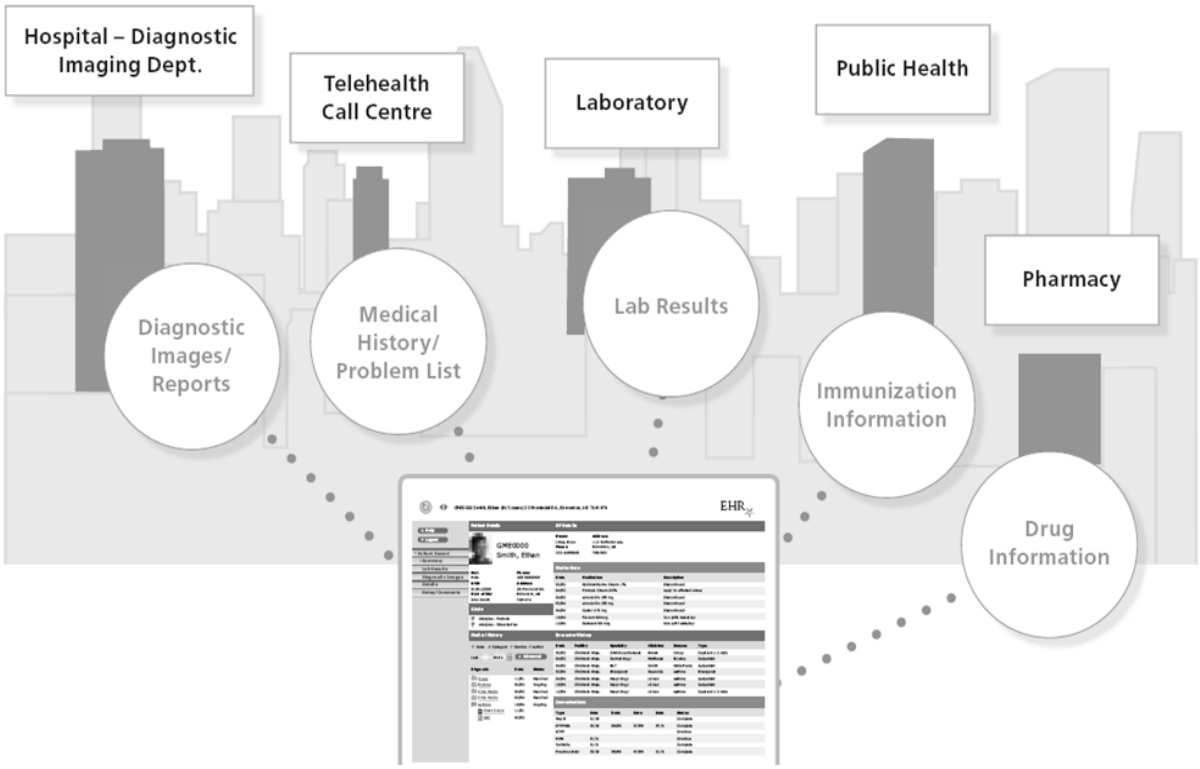
[1] Health Canada. (2001). *Toward Electronic Health Records*, p.9.

- for governments—data to support long-term planning and health resource allocation[2]

EHRs would allow health care providers to electronically view and update a patient's health information. The EHR would include a person's:

- age, address, and other personal details
- medical history
- diagnostic imaging, drug, laboratory, hospital, and clinical reports
- infectious disease and immunization records
- other health information

Exhibit 1—Example of an electronic health record



Source: Canada Health Infoway

The EHR system that allows access to this information includes four major parts. These are:

- a secure network on which data travels

[2] Ibid., pp.19-20.

- applications that enable the system to function by permitting the recording, storage, and retrieval of patient data
- the patient data itself in electronic form, such as medical history, test results, diagnostic images, and prescriptions
- access points from which system users can view, input, and retrieve patient data[3]

National and provincial initiatives

There are initiatives to develop EHRs at both the provincial/territorial level and the national level. For EHRs to deliver their expected benefits—such as access by health care providers to up-to-date information no matter where a patient seeks treatment—EHRs should be compatible not just within a province or territory, but also nationally.

An EHR system is built on communication between many different information technology (IT) systems. This is a complicated task involving significant risks. Success will require sustained effort at all levels in the health sector including planning, coordination, and funding over many years.

To push for EHRs nationally, the Federal Government funds Canada Health Infoway Inc. (Infoway).[4] Infoway is a not-for-profit corporation that works with provinces and territories to accelerate the development and use of compatible EHRs across Canada. Through collaboration (including funding) on specific projects with provincial and territorial health ministries, regional authorities, other health care organizations, and information systems vendors, Infoway is trying to develop a network of compatible electronic health record solutions across Canada.

Infoway's goal is to have EHRs available for 50% of the Canadian population by 2010, and for 100% by 2016.[5] Generally, Infoway pays 75% of eligible costs for specified EHR projects and the province or territory pays the remainder. As a condition of funding, Infoway requires provincial or territorial projects to align with an overall design and to comply with

[3] Auditor General of Ontario. (October 2009). Ontario's electronic health records initiative. Toronto: Author. p.5.
[4] Infoway's membership includes the 14 deputy ministers of Health from the federal, provincial, and territorial governments.
[5] Canada Health Infoway Inc., Business Plan 2008-09, p. 4.

design standards. Compliance with these requirements increases the likelihood of achieving EHRs that will be compatible across the country.

Infoway estimates the cost of implementing EHRs in Canada to be $10.0-12.0 billion. This amount does not include additional estimates of $3.0-4.0 billion to provide necessary electronic systems to health care providers and to the broader community care environment (such as long-term care facilities). Infoway suggests annual operating costs of $1.5-1.7 billion and possible annual savings and efficiencies of $6.0-7.6 billion.[6]

In Saskatchewan, the Minister of Health is responsible for the Saskatchewan Health Information Network (SHIN), which was created in 1997 as a Treasury Board Crown corporation. SHIN has been tasked with information technology (IT) support and service delivery for the health sector. SHIN is also tasked with developing an EHR system for Saskatchewan.

Since SHIN's inception, the Ministry (through SHIN) has undertaken projects that will support the creation of the EHR system. The EHR system is not one project, but it is the desired end result of many different individual projects. These projects include:

- provision of a health sector network and implementation of a data centre
- implementation of the underlying applications that will allow the EHR system to function
- creation of databases for storing information (e.g., laboratory results, drug and prescription information, and diagnostic images)
- development of systems to provide access to the information

The Ministry has worked or is planning to work with Infoway on several of these projects. Also, the Ministry has funded other projects and provides other services (such as health region admission/discharge systems) that address health system needs and will eventually assist it in providing an EHR system in Saskatchewan. The Ministry's goal is that EHRs will be available for all Saskatchewan residents by 2013-14.[7]

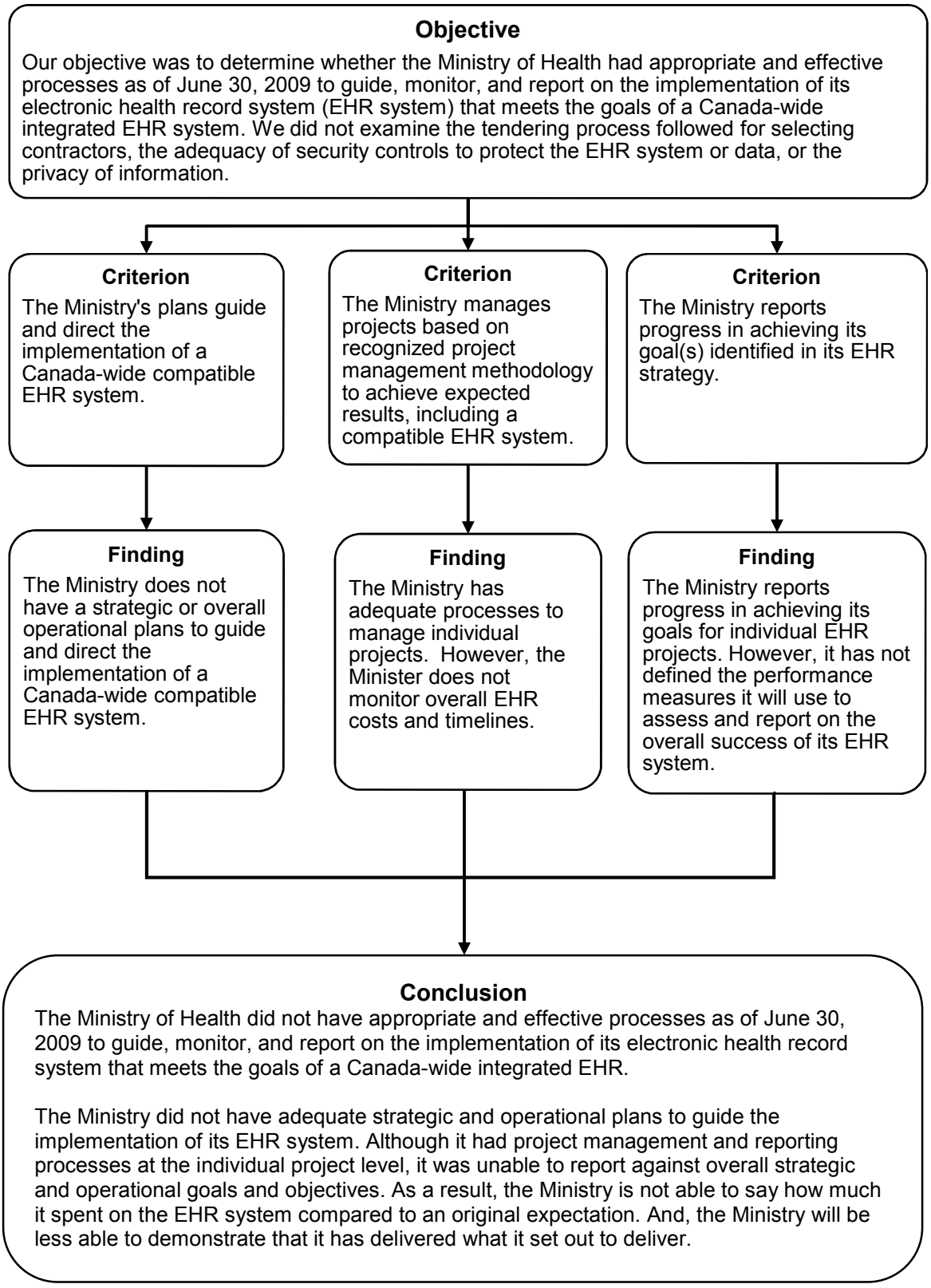
[6] Canada Health Infoway Inc., Advancing Canada's next generation of healthcare, pp.18-20.
[7] Ministry of Health, Saskatchewan Health Information Network 2008-09 Annual Report, p. 4. The Annual Report also outlines activities for the year on individual projects.

The Ministry told us that it (through SHIN) has spent $235 million in March 31, 2009 and expects to spend over $600 million on development (capital) and operating costs by 2014. Much of the spending has been for electronic systems and services that are currently operating but which will ultimately support the EHR system. However, the Ministry had not calculated a separate cost or budget for the overall EHR system. Nor had the Ministry prepared a business case that set out expected costs and overall benefits.

The Ministry has signed agreements with Infoway that commit Infoway to $65 million in funding towards projects that support a compatible EHR.[8] To March 31, 2009, the Ministry told us it has spent (through SHIN) $46 million on these Infoway-funded projects and received $37 million of that amount from Infoway.

[8] Ministry of Health, Saskatchewan Health Information Network 2008-09 Annual Report, p. 17.

Audit objective, criteria, and conclusion



To conduct this audit, we followed the *Standards for Assurance Engagements* established by The Canadian Institute of Chartered Accountants. To evaluate the Ministry's processes, we used common criteria developed by the Canadian Council of Legislative Auditors (CCOLA) Health Study Group. The Ministry's management agreed with the criteria.

We did this audit in consultation with other provincial legislative audit offices that did similar audits in their jurisdictions. At the same time, the federal Auditor General has audited how Infoway manages money from the Federal Government to achieve its goal of making compatible EHRs available across Canada. The audit offices are planning to issue individual reports as well as a future joint report in 2010.

In the next section, we set out key findings and recommendations related to the criteria.

Key findings and recommendations

Plans guide and direct the implementation of a Canada-wide compatible EHR system

We expected the Ministry to have established a framework for EHR strategic planning. The Ministry would use that framework to create and maintain a comprehensive strategic plan for EHRs. We expected the Ministry to have agreements with Infoway for development and funding. We expected the Ministry to have a deployment plan (i.e., an operational plan) to guide implementation of the objectives of the strategic plan.

The Ministry began work on EHR projects with Infoway in 2002. At June 2009, the Ministry did not have an adequate framework for EHR strategic planning. However, the Ministry recently created a governance body called the eHealth Council. The role of the Council is to provide strategic advice on the implementation of EHRs. The Council includes representatives of the Ministry, regional health authorities, and service provider groups (such as the College of Physicians and Surgeons). The Council became active in 2009 and, at June 2009, had met once.

The Ministry worked with health regions to develop an overall IT strategic plan. The plan includes a general, long-term vision for EHRs. The Ministry

has not updated this plan since 2006. The Ministry has developed a one-page EHR blueprint that outlines the IT systems it must develop and integrate for its EHR system to be operational and compatible with other jurisdictions. However, the Ministry does not have a current and comprehensive strategic plan that includes its overall goals for EHRs. Without a strategic plan that includes EHRs, the Ministry and the public are unable to determine what is planned to be achieved by the EHR system or assess progress.

The Ministry told us that, through the eHealth Council, it is in the process of developing an EHR strategic plan.

1. We recommend the Ministry of Health's strategic plan include its strategy for the electronic health record system.

The Ministry has a master agreement and separate project agreements with Infoway for the EHR projects that are co-funded by Infoway. Infoway requires provinces to follow certain IT design standards to help achieve EHRs that are compatible across the country. The Ministry's EHR blueprint and its agreements with Infoway indicate Saskatchewan's intention to comply with these Infoway standards. However, there are significant risks and work to do to achieve compatibility.

According to the master agreement, Infoway will reimburse the Ministry for eligible costs up to the maximums set in project agreements. The Ministry is required to develop, complete, and deliver work to Infoway outlined in each project agreement.

The Ministry has separate project agreements and statements of work that guide the implementation of specific EHR projects. The Ministry created a one-page document in fall 2008 that sets out annual spending needed for each EHR project to meet the 2014 goal. However, the Ministry does not have an overall operational plan that details how or when it will do the work necessary to deliver a functional EHR system by 2014. A multi-year operational plan for EHRs is needed to support the achievement of EHR-related strategic goals. An EHR operational plan would provide a priority roadmap to guide the Ministry's investment on EHRs. Progress will largely depend on the Ministry obtaining adequate funding each year.

2. We recommend the Ministry of Health develop an operational plan to guide the development and implementation of the electronic health record system.

Manage projects based on recognized project management methodology to achieve expected results including a compatible EHR system

We expected that the Ministry would follow recognized project management methodology to implement EHRs. We expected that the Ministry would develop and approve detailed project plans. We expected the Ministry to monitor its work on EHRs to help it manage appropriately to achieve results.

The Ministry has plans for the individual EHR projects it undertakes. These project plans are broken down by project deliverables and include estimated dates of completion and anticipated costs. The project plans are approved by senior Ministry officials (and, for co-funded projects, by Infoway). The Ministry decides which work will be done based on the annual funding available to it. As noted above, though, the Ministry does not have an overall operational plan for EHRs to help ensure that completion of individual projects will result in achievement of a functional EHR system.

Ministry project managers prepare status reports for these individual projects on a monthly basis. The reports include information about project status and recent developments, costs incurred and forecast, and information about risks. Project managers provide these reports to committees that help oversee each project. The committees include representatives of the Ministry, Infoway, and other stakeholder organizations (such as regional health authorities and service provider groups).

However, the Ministry did not set out any original expectation for how much it would cost to develop the EHR system. Therefore, it cannot compare an original budget amount to its actual costs for its overall work on EHRs. There were no reports for management that described the planned timeline for completion of the EHR system compared to actual completion dates. Without this information, the Ministry and public are unable to assess whether the Ministry is on time or on budget.

3. We recommend the Ministry of Health monitor its overall costs and timelines, compared to its plans, for development and implementation of the electronic health record system.

Report progress in achieving its goal(s) identified in its EHR strategy

We expected that the Ministry would produce information to allow it and Infoway to monitor progress and make decisions to help achieve objectives. The Ministry would be able to use baseline information and performance measures to show the extent to which it had achieved objectives and that planned benefits were realized. We expected the Ministry would report progress in achieving its goals to key stakeholders.

The Ministry has processes to monitor individual projects on a short-term basis. Reporting requirements for individual projects, both in terms of written reports and meetings, are set out in agreements between the Ministry and Infoway. The Ministry describes intended results in individual project plans and agreements. The intended results are often, but not always, readily measurable or observable.

The Ministry's monitoring specifies different reporting for various levels in its management structure, for Infoway, and for other stakeholders (such as stakeholder committees or other server provider groups). The reporting varies in detail and frequency depending on the recipient's needs.

In addition to scheduled reports and meetings, the Ministry provides additional reports and organizes additional meetings when warranted, for example at the request of Infoway. The Ministry also provides electronic access to its reports and related data to management, Infoway, and stakeholders.

The Ministry's reports describe progress in achieving individual project deliverables. However, as noted, the Ministry does not have a strategic or operational plan for the overall EHR system. Without these plans, the Ministry cannot set related performance measures and baselines to help it assess its progress. As a result, the Ministry will find it difficult to assess and report on whether it has achieved overall outcomes and benefits for the EHR system.

4. **We recommend the Ministry of Health develop performance measures to allow it to assess and report its progress in achieving the electronic health record benefits.**

What's next

We plan to participate in the preparation of a joint report that summarizes the findings of provincial legislative audit offices as well as the federal audit of Infoway. We plan to post the joint report on our website at www.auditor.sk.ca in late April 2010. We also plan to include the joint report in our 2010 Report – Volume 1.

We also plan to do a future audit on the security of EHRs.

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