

# Thesis Inquiry Paper eHealth Ontario

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# Abstract

This study examined whether Ontario's decision to move forward with the eHealth initiative is appropriate. The major players in the decision-making process and their different views are introduced and analysis of previous experience and experiences from other countries are considered. Additionally, an overview of the potential benefits and the views of those opposed to the initiative are also outlined. The final recommendation is based on the effect of this decision on health systems and society.

# Acknowledgment

In the Name of Allah, the Beneficent, the Merciful.

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# Chapter 1

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## 1.1 Introduction

This study aims to examine whether Ontario's choice to move forward with its eHealth initiative is appropriate in light of the major setbacks it has witnessed. The positions of the key players in the decision-making process and the effect of this decision on the health system and society are examined.

eHealth is considered important to Ontario due to (1) improvements in care quality due to the ability to monitor the effectiveness of the care service and the allocation of resources; <sup>(1)</sup> (2) cost savings achieved through the reduction of unnecessary duplicate work and <sup>(2)</sup> (3) dependence on electronic rather than paper-based records, which should help reduce Ontario's carbon footprint. <sup>(2)</sup>

### 1.1.1 Electronic Health Records (EHR)

The Ministry of Health and Long-Term Care defines EHR as “a secure and private lifetime record of an individual's health and care history, available electronically to authorized health providers” (Government of Nova Scotia, 2011).

The development of EHR involved all 10 provinces and three territories with the support of the federal government. The plan was to establish a system that allows physicians to have equal access to the health records of a patient receiving treatment irrespective of their address, thereby granting the physician access to any Canadian resident's health records.

Canadian Health Infoway (Infoway) is an organization created in 2001 by the federal government to help the provinces set up EHRs. Their goal was to have EHRs for 50% of Canadians by 2010 and 100% by 2016. <sup>(3)</sup>

## **1.2 Background**

The planning for EHRs began in Ontario in the late 1990s. The Smart Systems for Health Agency (SSHA) was created by the Ministry of Health and Long-Term Care in 2002 and tasked with creating a province-wide technology infrastructure. Ontario has spent more than \$1 billion on the EHR since 2002; \$800 million of this spending was directed to the SSHA.

Moreover, a Canadian study has predicted that whilst it will cost \$10 billion to fully develop EHR for all Canadians, the system could save the country \$6 billion in healthcare costs each year. <sup>(4)</sup>

The eHealth Ontario agency was then created in September 2008 to replace both the SSHA and the Ministry of Health and Long-Term Care's EHR initiatives. The agency was tasked with creating an Electronic Health Records system to be ready for use in Ontario by 2015.

Soon after the eHealth Ontario agency began operating, the provincial government became aware of inefficiencies created by eHealth.

## 1.3 E-Health system components

Infoway states that 2,000 health-care transactions take place every minute in Canada. This includes 440 million laboratory tests, 382 million drug prescriptions, 332 physician visits, 35 million diagnostic images and 2.8 million in-patient hospitalizations. An EHR system will require four main components if it is to lead to improvements: <sup>(5)</sup> A secure network to transfer

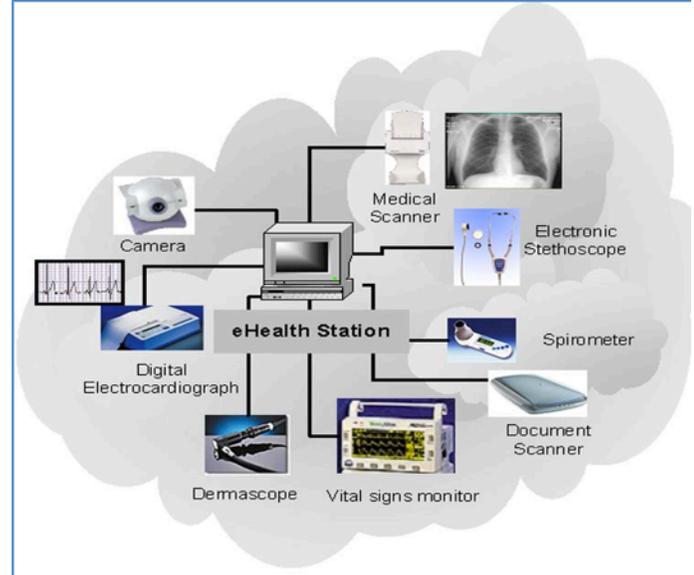


Figure 1: eHealth connections <sup>(14)</sup>

patient's data, applications that allow users to store, record and access patients' data, ensuring that data such as test results, diagnostic images and prescribed medication is available in digital form, and access points to enable users to input and retrieve patient data.

## 1.4 eHealth in North America

### 1.4.1 Expectations

It is expected that eHealth will improve healthcare in many ways. Patients, for example, expect to be able to access services such as referrals, appointment scheduling, prescription renewal and payments on the web. They also expect to be able to access other services that could help them manage their personal care from home in a convenient manner, including preregistration and access to their own test results. Healthcare providers also have their own expectations, for

example access to patients' health profiles and data to facilitate dealing with emergencies. <sup>(6)</sup>

### **1.4.2 Limits**

Some limiting factors could lead to a delay in applying eHealth, such as the lack of incentives to health care providers, who are paid for treating unhealthy people rather than for keeping them away from hospitals. Another limit is the substantial competition between hospitals in the US, which is a deterrent to moving to a unified database that allows patients to change hospitals freely. <sup>(7)</sup>

### **1.4.3 Barriers**

There are a number of barriers to implementing the eHealth system on schedule, including the shortage of health IT professionals. Economic barriers due to deficits and intra-provincial strategies could also act as barriers in Canada. <sup>(7)</sup>

Accessibility is of major importance in eHealth. If the patients, the core beneficiaries of the system, are not able to access the system it will be useless to them. More than 40% of adults in the United States and Canada have very limited or even no use of the Internet, which must be taken in consideration when planning the eHealth program. <sup>(13)</sup>

## 1.5 Stakeholders

### 1.5.1 Medical staff

Most health information for patients is collected at doctors' offices, which require Electronic Medical Records (EMR)s to collect and manage this information. This system enables physicians to collect and manage patients' health information electronically. Moreover, the exchange of patients' information between doctors and health providers under this system is easy, safe, and efficient in terms of time. Physicians are therefore an important part of this process; if they adopt the idea of EMR, this is likely to act as a foundation for the successful use of electronic health records for all Ontarians.

### 1.5.2 Patients

The main players in the success of eHealth in Ontario are patients. If patients accept the idea of e-health, adopt it and apply for an ID, Ontario will be halfway towards reaching its goal of implementing e-health. Patients stand to benefit greatly from the e-health system. For instance, the implementation of diagnostic imaging systems will reduce the need for duplicate and unnecessary exams, improve access to radiologists in remote areas and eliminate unnecessary exposure to radiation. A range of benefits are associated with every system in the e-health program. The patient will not need to explain the same situation many times as all the necessary information will be available online. The fact that patients may not remember all the medications they are taking and the possible side-effects must also be borne in mind.

### 1.5.3 Policy-makers

The role of policy-makers is to ensure that they are serving the interests of both the government and the community. Their work involves studying eHealth from different perspectives. The cost-effectiveness of the program must be considered without ignoring the social benefits and the preferences of medical staff must be taken into account. All the different components of the system should be given full consideration in order to obtain the full picture, enabling the right decision to be taken based on suitable guidelines.

Policy-makers should also ensure that educational and marketing campaigns take place to explain to the community the reasons behind their decisions. The community needs to be involved in their work, which could be the main factor underpinning the success of the program.

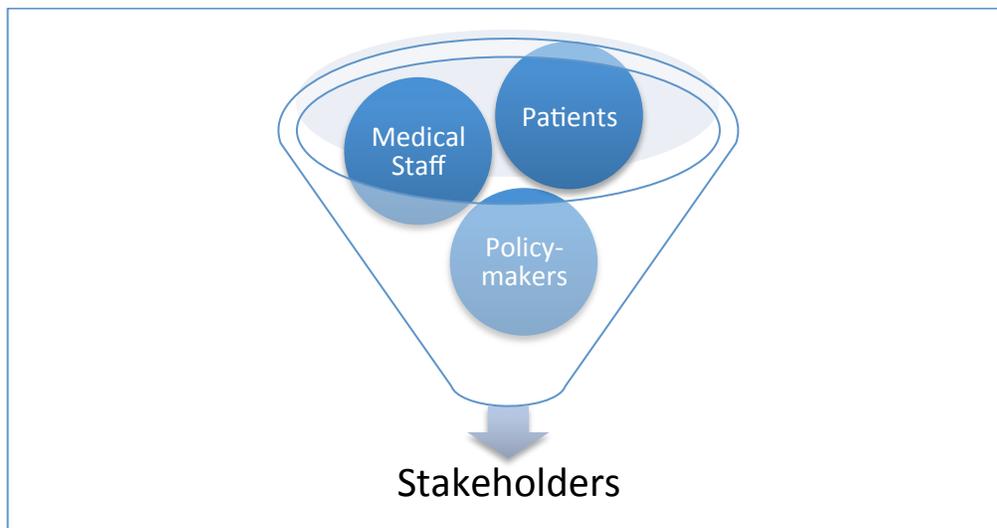


Figure 2: eHealth Stakeholders

# Chapter 2

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## 2.1 Previous Experience

### 2.1.1 Spending

The procurement practices used at the Ministry's eHealth Program Branch regarding the deployment of money between the EHR system and its infrastructure are questionable. Authorization was given to a consultant to spend the Ministry's money, and no justification from the Ministry for selecting the most expensive vendor was provided.

(5)

#### 2.1.1.1 Division of funding between the EHR system and infrastructure

Progress on Electronic Health Records has been slow. According to Auditor General Jim McCarter, \$400 million had been spent by 2007 on building the EHR network and connecting it to the healthcare community. Of this sum, McCarter reported that only \$100 million was spent on the EHR application that would run on the network. It was therefore not surprising that EHR did not meet with expectations; it is unclear how in-depth the upfront planning was before EHR projects were initiated. Efficient planning should have identified all resources, such as staff hours, consultant hours, and all other resource costs, such as the equipment and software needed to complete projects.

Additionally, the strategy for procuring all these resources should have been identified in the most economic and efficient manner possible. Moreover, some projects had unrealistic timelines that could not be met and in some the end product did not meet

the end users' requirements. Moreover, the SSHA did not plan for the network to be built in a cost-effective manner. For example, \$2.5 million is paid every month to maintain circuits which are almost inactive or underutilized. <sup>(5)</sup>

#### **2.1.1.2 Non-Ontario employees spending Ontario's money**

The government first considered the development of the EHR in the early 2000s. However, there was a heavy reliance on consultants. By 2008, the eHealth Program Branch, under the Ministry of Health, employed more than 300 consultants in comparison to fewer than 30 full-time Ministry employees. <sup>(8)</sup> This resulted in inefficient management and oversight on the government side. For instance, \$2 million was paid to consultants who had been employed for seven years; \$2.4 million was paid to another consultant who had been hired for six years. A consultant who held a key position in management inside the Ministry for over four months awarded five additional contracts with a total value of \$1.3 million to the consulting firm he was associated with, resulting in a clear conflict of interest. However, no alarm was raised. Another questionable practice involved not evaluating a significant amount of contracts for vendor proposals; many contracts were approved without obtaining signatures from all appropriate parties. For instance, the decision to invite vendors was made by a single individual who was also solely responsible for deciding to whom to award the contract. More than 30% of the contracts were controlled by this individual. Moreover, some contracts for requests for service were signed on the closing date. <sup>(5)</sup>

These practices all indicate that even if a competitive process was followed, it was simply a formal routine rather than a true competition as the decisions in such cases had already been made. There were clear indications of favoritism in awarding some of these

contracts as some contracts were awarded to certain consultants and vendors without giving a fair chance to other firms to compete.

### **2.1.2 Contracts Selection**

The Ministry's procurement policies state that any large contract above a certain amount of money should be put out to tender. However, in this case any large contracts were divided into several contracts worth smaller amounts, which led to the bidding requirements being bypassed.

The requests for service proposals from the Ministry were mostly incomplete and unclear with regard to the deliverables. This resulted in large differences in the projected and estimated cost of the proposals submitted. For example, the Ministry received two responses to a request for service, one with a projected cost of \$60,000 and the other with a projected cost of \$600,000. The Ministry chose the most expensive vendor without any explanation.

To conclude, many procurement decisions in the Ministry eHealth Program Branch were the product of rushed decision-making and an acceptance of benefit over thoroughness. Reasonable policies are in place to ensure that all suppliers can compete fairly for government projects and that taxpayers' money is spent appropriately. However, the defense used by ministry staff was that the work was of an emergency nature, which justified the bypassing of normal procurements procedures, the use of contradictory documentation and absolute power in the hands of a few individuals with no supervision to ensure their work was appropriate. <sup>(5)</sup>

### 2.1.5 Oversight

Two parties were responsible for delivering the EHR solution: the Ministry's eHealth Program Branch and Smart System Health Agency (SSHA). The SSHA was responsible for the underlying infrastructure. The Ministry's eHealth Program Branch was responsible for overall EHR strategy and related applications. Case study analysis clearly shows that the relationship between the Ministry and the SSHA was the main problem. Both parties should have had a cohesive and cooperative working environment as the success of the project relied on cohesion between the two agencies, which was never the case. Cooperation and coordination between the SSHA and the Ministry's eHealth Program Branch was weak.

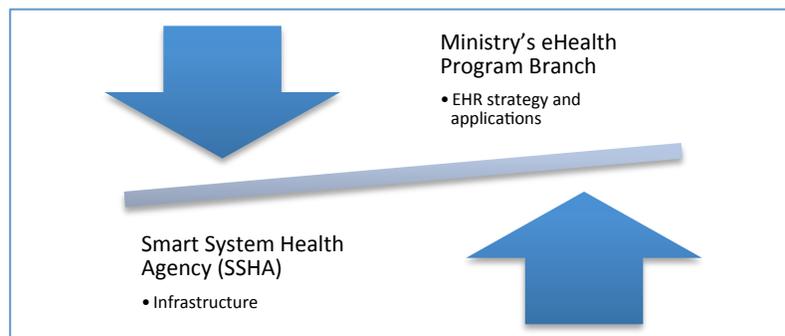


Figure 3: Oversight Problem

#### 2.1.5.1 Origins of the problem

Two factors contributed to the lack of oversight, the first of which was the designation of the SSHA as a major agency with a high degree of control. The second concerned the unclear definition of e-health deliverables according to the strategic plan. Allocating responsibility for EHR decision-making to a new agency without a reliable monitoring mechanism authorized the CEO of Ontario's eHealth agency and their team to disregard procurement standards and to approve contracts with high public acceptance.

Ontario province has spent over \$1 billion on EHR-related activities since the EHR project began in 2002. \$800 million of this expenditure was from the SSHA. The eHealth Ontario agency was created by the Ministry in September 2008 to take over both the SSHA and the Ministry's own initiatives. The agency found itself mired in controversy shortly after it began operations. It was widely reported that millions of dollars had been spent on untendered contracts to consultants. This controversy led to the resignation of the agency's CEO and the Chair of the Board of Directors.

### **2.1.6 Auditing difficulties**

An audit took place to assist the progress of EHR projects, which followed the professional standards of the Canadian Institute of Chartered Accountants. An audit should normally receive full cooperation from the Ministry staff, which was not the case in this audit. The office of the Auditor General of Ontario wrote to the Deputy Minister in 2008 to advise him of this audit. Despite efforts on the part of the auditing agency, neither access nor accommodation was available until February 2009.

Even when the auditors finally received accommodation in late December, they were denied access. The reason, given by the ministry, was that they still did not have full agreement from the Ministry on the scope of the audit or on the overall objective of evaluating work on the EHR initiative. <sup>(5)</sup>

This unprofessionalism in dealing with the auditing process suggests that it could have been due to unacceptable work. Moreover, if the agency had been allowed to place the audit earlier, this could have helped improve the work carried out and to identify any possible problems.

If work on eHealth had been conducted appropriately from the outset, Ontario would have saved a substantial amount of money and effort. Ontario could have stood to benefit from the system or from the process of upgrading the system if necessary.

# Chapter 3

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## 3.1 What was learned from these mistakes?

A number of actions have recently been taken by eHealth Ontario and the ministry to improve work, which include:

- Approval of policies regarding authority delegation and procurement.
- Strengthened procurement functions, mandatory development of plans to identify anticipated annual procurement, and quarterly procurement reports are now required.
- Eliminating fee-for-service consultants in all areas with the exception of the development and implementation of the program, reducing the number of consultants from more than 330 to less than 170 within a year.
- Developing of an eHealth Privacy Strategy for the 2009/10 fiscal year.
- Reducing the \$1.2 million annual network service cost as a result of negotiations with the agency's major network service providers.

The Ministry has also introduced measures to improve its procurement control:

- A financial management branch has been created to supervise labor; including consultants, and to track and monitor all transfer payments.
- The Ministry's Supply and Financial Services Branch has been restructured to improve its supervision capacity and to focus on its procurement process.<sup>(5)</sup>
- A yearly business plan coordinated with the eHealth Strategic Plan will be developed.
- Discussions have been initiated to enhance the government-wide accounting system to aid the enhanced supervision of contract and payment process.

Ontario's Electronic Health Records initiative (2009) states that Ontario's eHealth agenda has more than EHR; it focuses on improving health care by the introduction of advanced health information systems. eHealth applications will be an important tool to facilitate the creation of better healthcare and will include a surveillance system for public health, electronic health records for physicians, diagnostic medical imaging and telecommunication services. A noticeable improvement has been achieved in each of these systems.

The Ontario government will continue with the eHealth program and its role in initiating Electronic Health Records for chronic diseases, starting with diabetic patients before proceeding to EHR for all Ontarians.

The government is also ensuring that the money being spent on eHealth initiatives is used to reinforce and update the health care system.

The Ministry and eHealth Ontario have developed new policies and plans for each of the proposals in the Auditor's General report.

In July 2009, the government initiated a new procurement directive, requiring consideration to be given to cost-effectiveness when paying for consulting services and banning the payment of consultants for accommodation, food and unplanned expenses.

A new directive for travel and expenses was introduced by the government in September 2009 to clarify standards for these expenses and to enforce on-line training on expenses claims for Ontario public service staff and employees in large firms. Starting in April 2010, on-line posting of all the expenses for Ontario Public Service senior managers, cabinet ministers, political staff and agency senior executives will be required.

(9)

One important area in need of attention is Ontario's strategic plan. Ontario has a "quick-win" project which prioritizes three deliverables with fast clinical value: the Diabetes Registry, the ePrescribing and Drug Information System and the Wait Times Initiative. It is understandable that real benefits stand to be obtained from this short-term project as a support for the EHR program; however, this could result in a delay to the goal of delivering EHR by 2015.

# Chapter 4: Other Experiences

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## 4.1 New Zealand

New Zealand's government began work on the infrastructure for its EHR system by initiating three strategies. These strategies comprise the creation of a database for national health, the development of a privacy code for health information and contracting and the establishment of a private organization to develop and deliver information services. This strategy provides a strong foundation for the eHealth system.

The government then provided NZ \$5,000 to enable general practitioners' (GP) offices to purchase computers and required them to use electronic billing. This strong foundation was very successful. Two years later, more than 95% of GPs were using computerized billing and appointment systems, and more than 50% of them were using systems capable of capturing a patient's clinical information during consultations. <sup>(12)</sup>

## 4.2 Denmark

Primary care physicians in Denmark began their electronic health system by using floppy disks to send claims to insurance companies. For this reason, each physician's office purchased a computer, forming the first building blocks of a computerized clinical system. The MedCom project was later established to connect two physicians with a laboratory and a hospital system. Two years later, lab results and discharge letters were processed electronically by a number of primary physicians, which lent impetus to

EMRs. Moreover, electronic prescriptions are sent to physicians, replacing paper-based prescription.<sup>(12)</sup>

### **4.3 Comparison**

A comparison of Ontario's attempts with those of New Zealand and Denmark shows that Ontario's first attempt failed to develop a clear strategic plan to obtain desirable results from the eHealth program. Strategic planning underpins the success of New Zealand's eHealth program.

Another key reason for the previous failure in Ontario is that Infoway was a national body responsible for developing the EHR strategy; it was not responsible for ensuring compatibility between their strategy and provincial law and policies. Furthermore, the eHealth program currently has fragmented bodies in each province charged with the development of the EHR initiative in Canada.

# Chapter 5

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## 5.1 Potential benefits

In 2002, the Ministry drafted a large number of strategic plans for eHealth, none of which were approved by the government. Deloitte Consulting was commissioned to review the operational activities of the SSHA due to growing concerns about its slow progress. The main problem identified by Deloitte was an absence of a comprehensive government eHealth strategy, which led to an unclear definition of the role of the SSHA. This resulted in the SSHA being unable to complete its own strategy development as it was unclear of its purpose. <sup>(10)</sup>

The Ministry developed a draft strategy to expand an existing system, termed the Electronic Child Health Network, for pediatric patients in one of the Hospitals for Sick Children. The deliverables of this strategy, according to the Auditor General of Ontario in 2009, were divided into three periods: 2007 to 2010, 2011 to 2012 and 2014 to 2016.

### 2007-2010 deliverables:

- Most Ontarians should have access to the EHR.
- Medical data should be updated online by patients.
- EHR should be used by the majority of clinics to access patient information, improving knowledge of patients' medical history and current medication.

### 2011-2012 deliverables:

- EHR access should be available for care providers through the primary care system.

- Patients suffering from chronic diseases should be able to interact with their providers online.
- Electronic referral should be available.

2014-2016 deliverables:

- By the end of this period, interaction between Ontarians and their healthcare providers should be online.
- Ontarians should be able to manage their tests and appointments and renew their prescriptions online.
- Medical information should follow the individual through the healthcare information system across jurisdictions and platforms.

This strategic plan was never approved, the consequences of which were:

- Although \$800 million was spent by the SSHA to build and run a network, now run by the eHealth Ontario agency, there was no coordination between this work and the Ministry's efforts. There were not enough applications to enable easy sharing of the EHR data and there were too few databases to serve these applications. Some of the EHR applications began earlier, whereas critical projects did not begin until 2008. The Ministry was responsible for this delay, as it was responsible for eHealth strategy and for developing the applications and valuable data for healthcare providers.
- Work began on the EHR initiative without adequate planning to enable all citizens of Ontario citizens to access the network. The network built by the SSHA was a private network that is currently only usable by the healthcare community. The network itself was not intricate enough to grow and connect all Ontarians directly. Instead, the Internet needs to be used and users must connect to the network built by the SSHA.

Since the Internet is an unregulated, open and unsecure environment, appropriate technical support is needed to protect the confidential data traveling through it.

#### Strategic Plan 2009

In 2009, the Ministry submitted an eHealth strategy to the government for approval. The strategic plan divided the work into phases to be implemented, with top priority given to three short-term deliverables: the Diabetes Registry, ePrescribing and the Drug Information System, and the Wait Time Initiative.

#### The Diabetes Registry:

According to government estimations, diabetes afflicts 900,000 Ontarians, a figure that has increased by 69% over the past ten years. Moreover, diabetes accounts for 3,200 deaths annually.

#### The major deliverables are:

- Compiling data on diabetes patients and healthcare by the Registry.
- Enabling electronic monitoring for the best diabetes management practices.
- An alert will be automatically sent to health care providers by the system if the practices were not carried out satisfactorily.

#### The ePrescribing and Drug Information System:

The primary source of medical errors involves having an incomplete patient medication list. Ministry reports suggest that preventable adverse reactions to drugs are the fourth highest cause of death in Ontario.

The major deliverables are:

- A) The system will allow the doctors to prescribe medications electronically.
- B) The system will generate patient medication profiles.
- C) The system will check for any allergies or drug-to-drug interactions.
- D) The system will reduce diagnostic errors.
- E) The system will also provide patients and their families with their medication history and give them the ability to track personal medical data such as blood sugar readings.

The Wait Times Initiative:

It is obvious from the name of this initiative that it is not related to the EHR.

However, the goal of this initiative is to reduce waiting times for health services and to make them available online on the government website. This system was also designed to allow patients to track their access to these health services.

This strategic plan was approved and the eHealth Ontario Agency was formed in 2008. After a consistent eHealth strategy document was completed with this submission, the final form of the strategic plan was released in March 2009, which consisted of detailed activities to be completed from 2009 to 2012. The plan sets solid targets and deliverables on the key components of EHR. It was a step forward towards the government's eHealth priorities and plans and towards communicating these plans to stakeholders.

There were some concerns about this plan such as:

It is not known how close the government will be in 2012 to actual completion of EHR. The strategic plan did not specify what remained to be done at that point in time or how much more work would be required. In addition, the plans in place to complete the work over the following three years were not specified.

# Chapter 6

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## 6.1 Opposition to eHealth

After the \$1 billion scandal, policy-makers and society began to be suspicious about the eHealth program. The following statements explain this opposing point of view:

- “Diverting health care dollars away from patients and families towards high-flying US consultants is proof that the LHINs are not working. Dalton McGuinty’s LHINs model is broken and has to go.” *Tim Hudak, MPP for Niagara West – Glanbrook.*
- After the Auditor General report revealed that \$1 billion had been spent on eHealth with an unsatisfying outcome, the public is now wondering who the real beneficiaries of the new eHealth deal are. (*Opposition makes noise over new eHealth contract, The Canadian Press, Tuesday Nov. 3, 2009 5:39 PM ET*).
- It is not acceptable for consultants to bill taxpayers for extra expenses such as tea and snacks when they are already were receiving up to \$2,700 per day. (*Opposition questions bids from former eHealth players, The Canadian Press, Thursday July 7, 2011 6:38 PM ET*).
- "Confidence is reduced when we see the same players that were at the heart of the scandal a couple of years ago." (*NDP Leader Andrea Horwath*).

## 6.2 Potential of eHealth

Although Ontario has already spent a great deal of money and a considerable amount of time has been wasted, it should nevertheless go ahead with e-health. Statistics suggest that one of the most important benefits is the potential payback. The Electronic Health Records system will cost approximately \$10 billion but will save the health sector \$6 billion annually. The benefits to e-health will not only involve cost savings; the system is likely to save lives and to eliminate medical errors. According to Infoway, some e-health systems that have already been implemented have resulted in 17,000 fewer unnecessary patient transfers annually. Moreover, turnaround time has improved by 30 to 40 percent, resulting in faster clinical decisions and patient treatment and shorter patient waiting times and hospital stays.

- Efficiency has been improved due to the Diagnostic Imaging System.
- The productivity level has been improved to the equivalent of adding 500 doctors to the healthcare system.
- Radiologist productivity has improved by 25 to 30 percent.
- The productivity level for technologists has improved to the equivalent to adding 2,900 technologists to the healthcare system.
- The number of exam reports produced by technologists has risen from 8 million to 10 million with the same level of professionalism. <sup>(11)</sup>

These benefits all support the decision to proceed with the e-health program.

# Chapter 7

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## 7.1 Ministry response

The response and justification given by the Ministry to questions on sole sourcing and misspending problems was the emergency nature of the work. The fact that the consultants hired had irrelevant experience was also excused by the Ministry, who said the procurement policies that were in place were in dispute. However, these excuses do not justify the sole sourcing practice employed.

The Ministry responded to the lack of a strategic plan since 2002 by announcing the development of an EHR program for Ontario by 2015. A budget of \$2 billion for the following three years was provided for the program. The new plan included three main components: (1) establishment of technology infrastructure. (2) Development of clinical applications. (3) Creation of the Electronic Health Records system and supporting technologies.

The response of eHealth Ontario was that a detailed business plan has been completed showing how the 2009-2012 eHealth strategy relates to the organization's daily activities. With the availability of this completed business plan, the organization is establishing a strategy to go beyond 2012. The plan will specify deliverables, risks, a timeframe, privacy measures and will specify how applications are to be integrated. This planning process will involve eHealth Ontario, the Ministry of Health and Long-term Care as well as active stakeholders in the province.

## 7.2 Policy Recommendations

1- Develop an extensive strategic plan that includes:

- a. Focus on addressing the EHR target, taking over Ontario in 2012.
- b. Facilitation of the fulfillment of the EHR agenda by 2015.
- c. Addressing the appropriate integration of EHR applications.
- d. Consideration of privacy controls.

A clear strategic plan with specified goals and targets should facilitate the program's assessment process and its results. Setting the same national goals and targets could interfere with provincial visions and plans. However, planning is a core element in the success of any project and cannot be ignored.

2- Build an integrated and secure provincial information technology infrastructure that facilitates electronic communication between health service providers in Ontario, and includes the following:

- a. A well-managed private network.
- b. A secured system.
- c. A secure messaging communication service.
- d. Secured on-line directories.
- e. Standardized data and technology.
- f. Emergency health records available in case of emergencies containing critical personal health information.

Well-developed infrastructure should make it easier to maintain and sustain the system. Whilst this step will have a high initial cost, including the cost of the infrastructure and human labor, it is likely to save money on the long-term.

3- All stakeholders, including those within and outside government and from both the public and private sector, should be involved.

Including all the different points of view and interests will lead to a system that serves all the needs of society. Whilst differences in ideas could lead to conflict, which might delay the achievement of results, it is recommended that effort should be made to understand all different needs and views.

4- Clear detailed reports should be submitted twice a year or on a quarterly basis.

- a. The report should include details about the budget and expenditure.
- b. It should also include specifications regarding work and achievements.
- c. The benefits obtained should also be included.

This could be considered an extra workload. However, it is an excellent approach to follow up the work and to ensure the success of the program, and is needed to help the whole process.

5- Educational campaigns should be considered since people are key to eHealth.

Educating society should improve the public's knowledge and understanding, accelerating the success of the program and reaching its goals and targets. Whilst arranging campaigns that fit in with the schedules of different society members and meet with the acceptance of all of them may be difficult, the end results are likely to be worth the hard work involved.

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