

Newfoundland and Labrador Centre for Health Information–Network Update

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ABSTRACT

The Newfoundland and Labrador Centre for Health Information was established to make the province's Health System Information Task Force's vision of a quality person-centred health information system a reality. Since 1996, the centre has been working with partners to develop a comprehensive Health Information Network. The centre has obtained government support to build the unique personal identifier/client registry, and is presently finalizing a proposal to government to fund a project for the Newfoundland and Labrador Pharmacy Network. Work also continues at Newfoundland and Labrador Centre for Health Information towards the development and dissemination of quality health information.

BACKGROUND

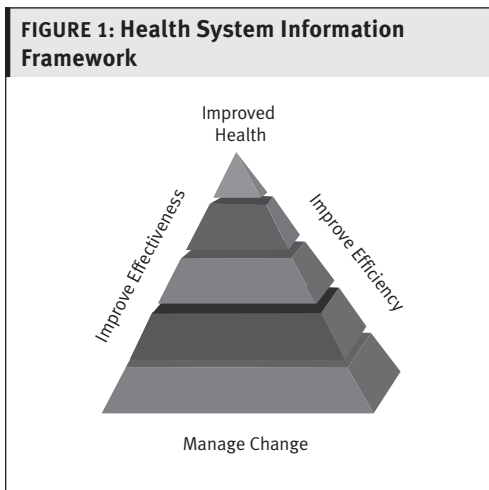
The Newfoundland and Labrador Centre for Health Information (NLCHI) was established in October 1996. It represented the culmina-

tion of a collaborative process initiated in 1993, when the provincial Department of Health and Community Services (DOHCS), Treasury Board and the Newfoundland and Labrador Health Boards Association agreed to jointly sponsor a task force on health system information. For two years, representatives of these partners, along with health information specialists, met on a monthly basis to develop a vision for Newfoundland and Labrador's health information system.

Improved Health for Newfoundland and Labrador through Improved Health Information contained 26 recommendations on how the Health System Information Task Force's vision could be realized. These recommendations provided a blueprint on how access to quality health information can lead to improvements in people's health and well-being.

The work that was completed in the health-care system by the Health System Information Task Force led to the development of the

Health System Information Framework as shown in Figure 1.



The Health System Information Framework encompasses a holistic appreciation for the continuum of health that includes health promotion, disease prevention, acute care, curative, rehabilitative and supportive programs and services. The framework depicts that the health system should be focused on providing information to improve the health of people and communities. This is to be done through improved effectiveness, increased efficiency and management of change. It was viewed that health information was critical in decision-making at all levels to support individuals, service providers and policy makers.

The Health System Information Framework led to a vision statement that positioned the health system to:

“Improve the quality of healthcare in the province, through provision of accurate and timely information to the appropriate care delivery and decision-making stakeholder, and to the public.”

One of the key recommendations coming from the Health System Information Task Force was that the Newfoundland and Labrador Centre for Health Information be established to make the Task Force’s vision a reality.

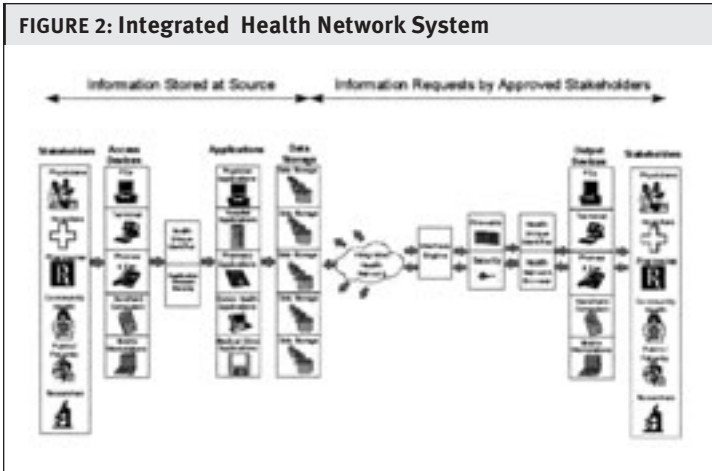
Once staffed, the Newfoundland and Labrador Centre for Health Information’s first

task was to update the vision from 1995 to ensure it was still valid. Towards this end an *Information Systems Strategic Plan* was completed in partnership with KPMG in February 1998. This study confirmed that the elements of a person-centered health information system articulated by the Health System Information Task Force were still valid. The guiding principles of the vision are for a system that is secure, confidential, private, based on common standards, subscribes to the fundamentals of open systems, views information as a strategic resource, and is person-centered. The *Information Systems Strategic Plan* identified the need for a robust and secure province-wide Health Information Network to link stakeholders and make it possible to electronically exchange information.

There are a number of key elements to this:

- The health unique identifier is the foundation for all encounters in the health system. This health number is critical to the success of the vision and will allow for the use of information that stakeholders know is accurate and up-to-date. It will provide the basis of the electronic patient chart and the associated security and confidentiality of the network.
- The left side of Figure 2 shows the concept of “information stored at source.” Stakeholders within and connected to the health system will own and operate information systems that are “best of breed” for their unique needs. Through access devices such as personal computers, mobile workstations, and hand-held devices, stakeholders access their applications and create data and information that is stored at their location.
- When access to patient information is required, appropriate levels of security and the use of a unique identifier will be required to authenticate use of the information systems. This includes the need for patient consent.
- The right side of Figure 2 shows the concept of “information requests” for information that will come from sources outside of your specific application (i.e., outside of your hospital, physician office, or geographic

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region). The integrated health network will be used to gain access to information that stakeholders have authority to see. Based on the electronic patient chart, information will be made available using a number of search parameters. For example, researchers will have the ability to view information that does not have any patient identifiers, while a care provider will be able to view the patient record if the encounter has been authorized by the patient.

- With a common-user interface (similar to an Internet browser such as Netscape), users will submit requests for information over this network. The browser will direct the request through the appropriate security layers to its destination. With an interface engine, users will collect data that is stored in another application and receive it in read-only format.
- The interface engine will be based on international standards such as HL7. This will allow the stakeholders to own and operate their own systems, provided these systems are capable of operating within this scenario.

The move toward more community-based healthcare delivery over the past few years has created the demand for a more distributed model for information systems. Demand is growing for new applications to address community, clinical, caregiver, research and individual requirements that are outside of the large institutional framework. The ability to

link these distributed systems is a fundamental component of the vision, and one of the most exciting possibilities for the IT sector is to master new and leading edge skills. The word “integrable” is a term used to describe the ability to link and unlink applications as required to meet business objectives. In terms of this strategy, it will safeguard existing stakeholder investments

in their own systems, and allow for a phased approach to the building of a comprehensive information system.

BENEFITS-DRIVEN BUSINESS CASE

In order to execute the strategy, a strong IT partner from the private sector as well as a means of financing the project are key prerequisites. To this end, a request for qualifications for a project leader was issued, with EDS/*SmartHealth* being selected in June 1998. EDS/*SmartHealth* and its Newfoundland consortium partners prepared a benefits-driven business case that proposed an incremental approach to the development of the Health Information Network. (A benefits-driven business case is a tool designed to provide an objective, high-level assessment leading to a decision to proceed or not proceed with a project.)

Extensive stakeholder consultations identified a number of opportunities for improved health outcomes, local IT industry development and economic benefit and direct financial savings.

To achieve the financial benefits, an incremental implementation approach was developed that reflects stakeholder input, maximum use of existing technology in the healthcare system, and the financial realities in the province. A proposed conceptual technology architecture and supporting change management strategy are tailored to address the technical and stakeholder issues in the province. The implementation approach describes steps for a comprehensive Health

Information Network to be developed over five years and beyond. Eight core components were identified.

1. Unique Personal Identifier

A unique personal identifier will facilitate the linkage of personal health information that is now fragmented across regions, facilities and service providers. The unique personal identifier will be associated with a definitive registry of client information (name, date of birth, address, etc.) for all users. Such linkages will reduce delays in the provision of clinically appropriate services to clients.

Developing the unique personal identifier will require creation of a registry of valid client data and processes to maintain its integrity. This will draw upon client data in the existing MCP (physician fee-for-service payment system) database, provider systems, and individual client contacts.

2. Pharmacy Network

Appropriate, authorized access to a complete list of dispensed and administered medications for each client will assist pharmacists, physicians and other health service providers in providing enhanced care. Specifically it will result in more appropriate prescribing and dispensing, recognition of contraindications, avoidance of adverse drug events, improved counseling, improved compliance monitoring and reduced abuse of prescription drugs.

3. Personal Diagnostic Service History

Appropriate, authorized access to recent service requests and diagnostic results for each client will assist physicians in providing diagnosis and treatment. Diagnostic results are frequently fragmented across multiple institutions, practices and regions. Results may not be available in a timely manner or may be entirely inaccessible when required. An incomplete history of diagnostic service results (i.e., laboratory tests, diagnostic imaging, electrocardiograms, etc.) can lead to duplicate testing and ordering of additional, potentially unnecessary services that increase costs with no improvement in health outcomes. A comprehensive

diagnostic service history for each client will support continuity of service between providers over time and more efficient delivery of effective services.

4. Diagnostic Service Requester Decision Support

Electronic ordering of diagnostic services will provide an opportunity to influence requester decisions at the point of contact with a client. For example, a pop-up dialogue box on the ordering screen will suggest potential alternative tests. Such just-in-time information will assist the requester to select the most appropriate diagnostic services to provide health services effectively and efficiently. Electronic ordering will also reduce the need for transcription or duplicate entry of data, increasing administrative efficiency and reducing opportunities for errors and omissions.

5. Personal Medication Regimen

A personal medication regimen will provide health service providers with information on the medications that a client is meant to be currently taking. Aside from monitoring a client's current medications, the personal medication regimen can exclude (hide) dispensed medications that have been completed or removed, include prescribed medications that have not yet been dispensed, and include recommended non-prescription medications. Annotations will provide the rationale behind changes. Such functionality will assist in making dispensing, prescribing, counseling and compliance monitoring more effective, leading to better health outcomes and more cost effective treatment.

6. Personal Health Information Profile

A personal health information profile that provides essential elements of a client's health record will support the provision of appropriate, effective health services as well as the movement from a disease model to a wellness model for the health system. Appropriate access to relevant clinical data will assist service providers in numerous ways. For example, the profile will give providers a more complete

LOOKING FORWARD

The Newfoundland and Labrador Centre for Health Information is poised to move forward on the vision of the Health System Information Task Force for a person-oriented health information system. The primary limiting factor is funding.

Recent health informatics developments nationally, including *Canada Health Infoway: Paths to Better Health*, the report of the Advisory Council on Health Infostructure; funding programs such as the Health Infostructure Support Program (HISP) and the Canadian Health Infostructure Partnership Program (CHIPP); and the creation of Canada Health Infoway Inc. are all encouraging.

The need for national leadership and facilitation of inter-provincial collaboration around the electronic health record is evident and timely. Health Canada's track record in "raising the bar" of provincial activity is nothing new. Their work on promulgating the wellness model of health regarding "Achieving Health for All" illustrates how the federal government can encourage all partners in health services delivery to rethink the norm. By taking the initiative to establish Canada Health Infoway Inc., the federal government is adopting a role with which it is familiar and well suited.

Although fiscal federalism is a pejorative term to many, in the case of facilitating a pan-Canadian EHR it is appropriate. Many jurisdictions have well-articulated plans with an amazing degree of similarity in the required component pieces. The new corporation has an excellent window of opportunity to facilitate consensus, negotiate adherence to standards and privacy and confidentiality requirements while infusing much needed funding to this historically under-resourced area.

CONCLUSION

In the three-and-a-half years since it became operational, the Newfoundland and Labrador Centre for Health Information has obtained government support to build the unique personal identifier/client registry, which will be operational in the winter of 2001. As well, a detailed cost-benefit analysis of the

The new corporation has an excellent window of opportunity to facilitate consensus, negotiate adherence to standards and privacy and confidentiality requirements while infusing much needed funding to this historically under-resourced area.

Newfoundland and Labrador Pharmacy Network, the proposed second phase of the Health Information Network, indicates substantial savings to government.

Work also continues at Newfoundland and Labrador Centre for Health Information towards the development and dissemination of quality health information. The standards division is involved in numerous activities aimed at improving the quality of provincial data through standard coding and collection initiatives, and the product development division continues to produce and disseminate health information from available data sources. The communications division has taken the lead in addressing issues of privacy and confidentiality of personal health information. A board committee of the Newfoundland and Labrador Centre for Health Information has prepared privacy, confidentiality and access guidelines in consultation with the health system. The centre is presently working with the DOHCS in developing a provincial policy, which will form the basis for legislation protecting personal health information.

The establishment of Canada Health Infoway Inc., the latest federal initiative to facilitate a pan-Canadian electronic health record, will hopefully trigger greater inter-provincial collaboration as well as a faster pace of development. **e**

REFERENCES

Cited documents available on NLCHI website.

Improved Health for Newfoundland and Labrador through Improved Health Information. July 1995: www.nlchi.nf.ca/pdf/taskforce.pdf.

Information Systems Strategic Plan. February 1998: www.nlchi.nf.ca/pdf/iisp.pdf.