

Year in Review

April 1, 2007 – March 31, 2008



Ministry of
Health Services

**Interoperable Electronic Health Record/
Provincial Laboratory Information Solution
(iEHR/PLIS) Project**

Electronic Health Record Branch Report – July 2008



Interoperable Electronic Health Record and Provincial Laboratory Information Solution (iEHR/PLIS) Project

Initiative Overview

British Columbia's health system is a source of pride in our province, and we have much to be proud of. Compared to the rest of Canada, we enjoy:

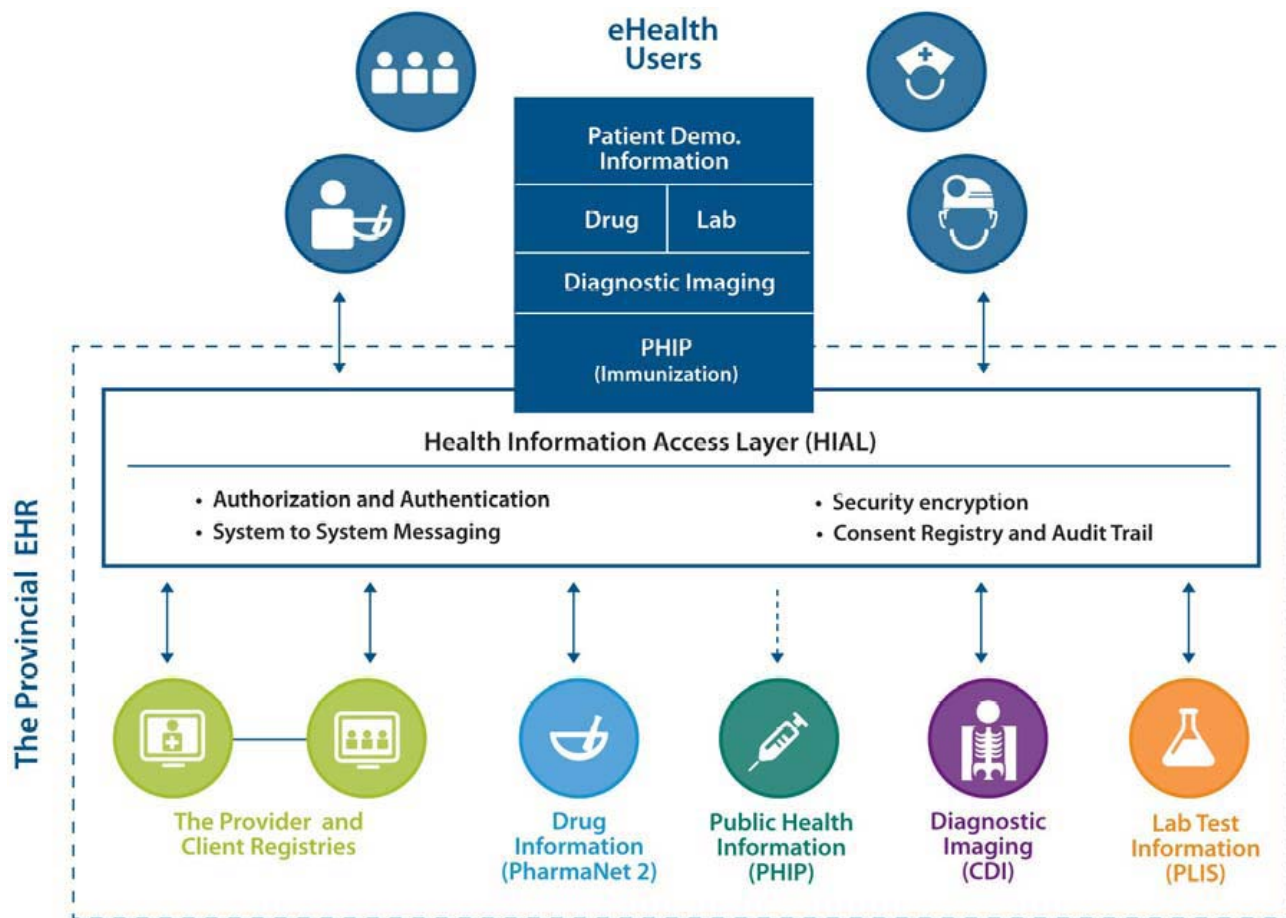
- The highest life expectancy for both males and females;
- Above average disability-free life expectancy rates;
- The second lowest infant mortality rate;
- The second lowest percentage of low birth weight babies;
- The lowest percentage of people reporting obese body weight;
- The lowest rate of daily smokers;
- The highest self-reported level of physical activity;
- Below average mortality for acute myocardial infarction (AMI); and
- Above average patient satisfaction rates for a variety of health care services

However, demographic change is adding pressures to our system.

These pressures are:

- A growing and aging population
- Shortage of health care professionals
- Emerging threats to public health – The outbreak of SARS in 2003, along with avian flu in Asia and in Lower Mainland during 2004, heightened the awareness of the need for a pan-Canadian health surveillance system to rapidly collect, share, and analyze health information critical for managing emerging health threats.
- Equivalent services expected in both urban and remote locations – geographically dispersed populations are increasingly expecting the same consistent and equitable health care access across remote regions as in densely populated urban centres
- New treatments and technologies put growing pressure on funding
- Silos of care – an inability to support an increasingly mobile population, securely share information across health services, and give patients and providers the timely access the require is causing delays, needless duplication, increasing costs and maybe putting patients at risk.

If the forecasted pressures on the health care system are to be successfully managed, it is essential that proven innovations be adopted and improvements in effectiveness, efficiency and productivity be achieved within the health sector.



BC's eHealth program is about using information technology to provide the best possible patient care. eHealth will bring faster, safer, better healthcare to British Columbians by giving authorized health professionals electronic access to secure, complete patient health care records when and where they deliver care. There are projects underway that will bring lab results, x-rays, cat scans and MRIs, medication histories, electronic prescriptions, and electronic medical records to help patients anywhere health care is delivered in BC.

The interoperable Electronic Health Record (iEHR) project will make possible the secure, province-wide information exchange between clinicians, patient information systems and the repositories – e.g., diagnostic imaging, drug and lab information – where information will be stored. It will provide the infrastructure foundation that will enable the other eHealth projects, and as such, is critical to achieving the overall vision of eHealth program.

The iEHR will deliver a private and secure electronic health record service for BC, comprised of the following foundational components envisioned in the Infoway Blueprint:

1. Health Information Access Layer – the standards, common and communication services required to integrate applications across the continuum of care, providing a federated view.
2. Longitudinal Record Services – the central component that coordinates and manages the existence and location of clinical information about clients.
3. eHealth Viewer – a secure web-based application providing view capability of health information to authorized clinicians.

The iEHR will:

- Improve patient care by providing ready access to a range of clinical information for health professionals working in care settings. This access will contribute to the goal of uniform access to health services for all BC residents;
- Protect patient confidentiality by enforcing privacy policy and rules to ensure appropriate and authorized access, use and disclosure of patient data;
- Enable the secure exchange of health care data between health professionals by enforcing consistent data standards, access rules and audit activities;
- Reduce information technology infrastructure costs by providing a single, provincial data exchange hub to simplify and standardize data exchange between health professionals; and
- Enable the province to participate in the Pan-Canadian electronic health record strategy, by conforming to the Infoway blueprint and other national standards.

The Provincial Laboratory Information Solution (PLIS) will be the first of the eHealth projects to connect to the iEHR. By linking all laboratory systems across BC, it will provide health professionals with more timely access to laboratory results at any point of service in the province. It will support laboratory consolidation initiatives by the health authorities and private laboratories; contribute to enhancements in public health surveillance; and contribute to an electronic health record for the citizens of B.C.

PLIS will:

- Provide a core clinical component of the provincial Electronic Health Record;
- Improve quality and safety of patient care delivery with the timely and complete clinical information;
- Increase standardization and improve laboratory services utilization in the province;
- Enhance administration and management decision making; and
- Support goals of laboratory transformation in the province.

In the future, PLIS will support electronic lab test ordering to (a) improve ordering efficiency and accuracy, (b) assist with adherence to Clinical Practise Guidelines, and (c) support the use of established ordering protocols and minimize test administration.

Key Accomplishments

■ ***Contract Signed Between the Province and Sun Microsystems***

The Province and Sun Microsystems (BC) Ltd. signed a \$148-million contract on April 13, 2007 to advance patient care by building the infrastructure for iEHR and for PLIS. The agreement term commenced on the date of signing and will end on March 31, 2017. Sun will build the systems during the first two years, and will maintain them for the rest of the term.

Sun is being assisted by subcontractors CGI Information Systems and Management Consultants Inc., MedPlus Inc., and Telus Communications Company.

■ ***Governance, Project Team and the EHR Branch***

Joint governance committees were established. Terms of Reference for both committees were finalized and accepted by executives from the Province and Sun. The Province and Sun Project Teams, and several working groups were also created.

The Electronic Health Record (EHR) Branch has been created to oversee the Project Team in Vancouver, support the joint governance committees, and coordinate onboarding for projects to the iEHR. The EHR provides oversight and supports the project's contract management, financial management, business

development, deliverables acceptance, stakeholder relations and advocacy, operational transition planning, resource management and communications.

■ ***Integrated Project Plan***

An Integrated Project Plan was prepared and this is continually and collaboratively updated by Sun Microsystems and the Province as the project progresses.

■ ***Business Requirements***

Business Requirements Documents (BRDs) were prepared by the Province. The BRDs underwent several iterations of thorough analysis by both parties.

■ ***Compliance to CHI eHealth Blueprint***

The BRDs complied with the Canada Health Infoway's eHealth Blueprint which is designed for pan-Canadian use. The CHI eHealth Blueprint addresses health-specific integration challenges, and leverages complex integration best practices. It provides a common terminology for architects and developers and a phased-approach to iEHR functionality.

■ ***Initial Adoption Community (IAC)***

Health Authorities were selected to comprise the Initial Adoption Community (IAC). The IAC will be the first users of iEHR/PLIS. They provide the guidance and advice on deliverable acceptance and operations planning. Their insights and experience are valuable to the project's definition of requirements, and in user acceptance and end-to-end testing.

About Sun Microsystems (B.C.) Inc.

Sun Microsystems (B. C.) Inc. is a wholly-owned subsidiary of Sun Microsystems, Inc., a publicly-traded company founded in 1982. Sun provides a diversity of software, systems, services, and microelectronics that power everything from consumer electronics, to developer tools and world's most powerful datacentres. Guided by a singular vision – “the Network is the Computer” – Sun drives network participation through shared innovation, community development and open source leadership. Sun is a Fortune 200 organization with more than 34,000 employees worldwide.

The Sun solution is based on Commercial-Off-The-shelf applications, custom integration and builds on the the strengths of Sun's Java Composite Application Platform Suite (JCAPS) and Identity software technologies, Solaris10, Sun Fire Systems and Storage Tek storage infrastructure, along with their professional and management services capabilities.

Sun leads a team of partners in the design and integration of the iEHR/PLIS architecture that will satisfy the healthcare providers' need for timely health care information while meeting stringent privacy and security policies of the Province.

The Contract Objectives

The Province and Sun acknowledge and agree that the primary objectives and guiding principles of their contractual relationship under the iEHR-PLIS Agreement are as follows:

- To develop, deliver, maintain, support and license the iEHR and PLIS as well as provide the Services as agreed by Sun and the Province;
- To leverage existing infrastructure and Province systems where appropriate to do so;

- To develop the PLIS System and the iEHR System based upon the ‘Commercial Off the Shelf’ (COTS) products to the extent practicable with the capacity to support future development of domain repositories;
- To develop the PLIS System and the iEHR System aligned with the Infoway Blueprint with the capability to be replicated across jurisdictions within Canada;
- To develop a long term and mutually beneficial business relationship characterized by, among other things, mutual trust, respect and understanding of each Party’s interests, mutual cooperation, good faith and flexibility to allow for the addition or removal of services within the scope of the services described in (and in accordance with) this Agreement; and
- To protect the security and privacy of the Personal Information of the Province so that there is no material risk that any such information:
 - Will be disclosed or used contrary to the terms of this Agreement or any applicable laws, or
 - Exist, is stored or can otherwise be accessed anywhere other than in BC (or elsewhere in Canada as may be permitted under or pursuant to this Agreement), whether in its original form or otherwise, without the approval of the Province.

Service Commitments and Results

Objective 1 - Build and deliver the iEHR and PLIS, including support services.

Goals

1. Design, build and implementation services
 - a. Business requirements
 - b. System design
 - c. Application build and configuration
 - d. Application testing and user acceptance

Status

- Business Requirements documents – completed.
- Design Requirements documents – completed
 Technical Design documents – ongoing
 System Level Requirements document – ongoing
- Security Threat and Risk Assessment (STRA) Plan – completed
 STRA for development environment – completed
 STRA for staging & prod environment – ongoing
 Component build – ongoing
 Candidate, Staging, and Production builds – not yet started
- Component Testing Strategy – completed
 Component Test Plan – not yet started
 De-identification Implementation Plan – completed
 De-identified test data – being prepared
 De-Identification Utility – completed
 De-Identification Implementation Guide - completed
 Initial Adoption Community Project Charter – completed
 Component testing – not yet started
 System Test – not yet started
 User acceptance testing – not yet started
 End-to-end testing – not yet started

- | | |
|--|---|
| <p>2. Integration Services</p> <p>a. Development of an interface template to support the future connection of the iEHR System with other provincial health systems to provide an integrated view of patient care; and</p> <p>b. Development of interfaces to Provincial Registry Systems to confirm the identification and authorization of healthcare providers and locations</p> | <p>Network plan (for Registries integration) – ongoing</p> <p>Domain Conformance Specifications – not yet started
Network Interfaces connection - ongoing</p> |
| <p>3. Support Services</p> <p>a. Managed operations to run the iEHR application 24/7</p> <p>b. Training support for provincial personnel to enable provincial staff to provide systems administration and Tier 1 helpdesk services; and</p> <p>c. Project management support for the design, build and implementation</p> | <p>Service Management Framework – completed
Help Service Desk Strategy – completed
Incident Management Process – ongoing</p> <p>Training Strategy – ongoing
Training Plan – not yet started</p> <p>Ongoing.</p> |

Objective 2 – Leverage current infrastructure and province systems where appropriate.

Current Status:

iEHR will use the Health Private Network Gateway (which is renamed to eNG or eHealth Network Gateway) which was established in 2001. It securely connects the health authorities on a high bandwidth, quality-of-service, IP-enabled network. The eNG, having a high-speed core and redundant and resilient architecture, ensures fast recovery in the event of any failure. Telus Business Solutions manages the network, ensuring its availability at all times.

There are three registries which were designed, built and implemented before the advent of the eHealth program: the Provider Registry which contains demographic and core data about B.C. physicians, pharmacists and nurses; the Client Registry which contains demographic information about B. C. residents; and the Enterprise Master Patient Index which is an index of patient data and identifiers that enable linkages to health authority data stores. The iEHR will leverage these foundational registry systems to link patients with health care information (lab results, x-rays, cat scans and MRIs, etc.) and health care providers. This will ensure that the right health information about the right patient will be provided to the right health care provider.

Objective 3 – Protect the security and privacy of personal information.

Current Status:

Privacy Impact Assessment for the requirements (phase 1) has been approved by Canada Health Infoway (CHI) and the Ministry’s eHealth Privacy, Security and Legislation Office (eHPSLO). Another PIA for Implementation (phase 2) is being prepared for submission to CHI and eHPSLO.

Security Threat and Risk Assessment (STRA) standards and plans are completed for the project. STRA for the development environment has been completed. STRAs for the staging and production environments, LIS feeds, PLIS repository, viewer and other components are underway.