E-Health System and EHR

Health and Wellness
Atlantic Access and Privacy Workshop
June 27-28, 2005
Agenda Overview

- EHR Defined
- Some privacy implications
- NB Health Information Privacy Legislation
- NB Provincial Health Plan
- Pan–Canadian Standards
- Questions
EHR Defined

• Electronic Health Record
• Sometimes confused with EMR, EPR, PHR, CPR, EHR, ECR, DMR, CDR, CMR, ICEHR, OPOR, iEHR
• ISO TR 20514 EHR Definition
  – The basic–generic definition for the EHR is a repository of information regarding the health status of a subject of care, in computer processable form.
The sharing of EHR information can take place at three different levels:

- **level 1** - between different clinical disciplines or other users, all of whom may be using the same application, requiring different or *ad hoc* organisation of EHRs,
- **level 2** - between different applications at a single EHR node – i.e. at a particular location where the EHR is stored and maintained, and
- **level 3** - across different EHR nodes – i.e. across different EHR locations and/or different EHR systems.

When level 3 sharing is achieved and the object of the EHR is to support the integrated care of patients across and between health enterprises, it is called an Integrated Care EHR (ICEHR).
The Integrated Care EHR is defined as a repository of information regarding the health status of a subject of care in computer processable form, stored and transmitted securely, and accessible by multiple authorised users. It has a standardised or commonly agreed logical information model which is independent of EHR systems. Its primary purpose is the support of continuing, efficient and quality integrated health care and it contains information which is retrospective, concurrent and prospective.
There are two main levels of shareability or interoperability of information:

- **functional interoperability** – the ability of two or more systems to exchange information (so that it is human readable by the receiver), and

- **semantic interoperability** – the ability for information shared by systems to be understood at the level of formally defined domain concepts (so that information is computer processable by the receiving system).
ISO TR 20514: Semantic interoperability

- **a standardised EHR reference model**, i.e. the EHR information architecture, between the sender (or sharer) and receiver of the information,

- **standardised service interface models** to provide interoperability between the EHR service and other services such as demographics, terminology, access control and security services in a comprehensive clinical information system,

- **a standardised set of domain-specific concept models**, i.e. archetypes and templates for clinical, demographic, and other domain-specific concepts, and

- **standardised terminologies** which underpin the archetypes. Note that this does not mean that there needs to be a single standardised terminology for each health domain but rather, terminologies used should be associated with controlled vocabularies.
Some Privacy Implications

• Extremely High Expectation of Privacy
• Massive Banks of Information
• Concerns About the Accuracy
• Not Seek Treatment
Extremely High Expectation of Privacy

In R. v. Dyment, the Supreme Court of Canada held that a sample of blood taken by a doctor for medical purposes from a bleeding and unconscious hospital patient is intimately personal and confidential, as is other information about a patient concerning his or her medical treatment. The use for other purposes of bodily substances provided for medical purposes is a profound violation of personal autonomy that infringes on reasonable expectations of spatial, personal and informational privacy, as does the disclosure of specific medical care information without patient consent. In R. v. O’Connor and R. v. Mills, the Supreme Court of Canada established that an extremely high expectation of privacy also attaches to therapeutic counselling records. Also in this category, without doubt, would be pharmaceutical records of medications issued to a person for his or her medical care.

PRIVACY AND THE USA PATRIOT ACT

October 2004

Information & Privacy Commissioner for British Columbia
Advanced technologies have enabled the merging of databases into massive banks of information about identifiable individuals. This, in turn, enables data mining—the application of database technology and techniques to uncover patterns and relationships in data and predict future results or behaviour. When personal information is involved, the hidden patterns and subtle relationships that data mining detects are recorded and become new personal information of the individual whose characteristics or habits are being searched and analyzed.

PRIVACY AND THE USA PATRIOT ACT
October 2004
Information & Privacy Commissioner for British Columbia
Concerns About the Accuracy

A key characteristic of data mining is that analysis of an individual’s personal information creates new, secondary, information about that person. The “hidden patterns and subtle relationships” that data mining detects are recorded and become personal information of the individual whose life is being scrutinized and analyzed. ... data mining raises concerns about the accuracy and use of derived personal information, not to mention the individual’s right of access to and correction of such information.

PRIVACY AND THE USA PATRIOT ACT
October 2004
Information & Privacy Commissioner for British Columbia
Physicians and the public place high importance on the protection of personal health information. Without confidence that privacy will be maintained, patients may refrain from disclosing critical information; may be reluctant to provide their consent to use their personal health information for research purposes; may lie about their health status or may simply not seek treatment. A 1999 survey by the [Canadian Medical Association] found that 11% of the public held back information from a health care provider because they were concerned about whom it would be shared with, or for what purposes it would be used…

PRIVACY AND THE USA PATRIOT ACT
October 2004
Information & Privacy Commissioner for British Columbia
NB Health Information Privacy Legislation

- No single overarching Health Information privacy legislation
  - 12 Health acts defining Personal Health Information
  - 9 other acts regulating Personal Information

- Protection of Personal Information Act
  - All public bodies
  - Regional Health Authorities
  - Agents of public bodies
Proposed Health Legislation

- Health Charter of Rights and Responsibilities
  - First introduced in April 2003; not in force
  - Rights
    - Timely access to health care services
    - Make informed decisions on their health care
    - Receive relevant health information
    - Have their complaints investigated
  - Responsibilities
    - Participate in their own health care decisions
    - Use health care services in a reasonable manner
    - Engage in healthy lifestyle choices
Provincial and Federal Privacy Legislation

- **POPIA**
  - CSA Model Code of Practice
  - All personal information
  - All public bodies
  - Regional Health Authorities
  - WHSC Commission
  - Agents of public bodies

- **PIPEDA**
  - CSA Model Code of Practice
  - All commercial transactions
  - Physicians
  - Pharmacies
  - Information Managers
  - Research
How PIPEDA supports POPIA in NB

- Extends personal information protection to non-government agencies and cross-border exchanges of personal information
- Encourages consistent personal information protection practices for all Health service providers
- Should simplify contract negotiations
Healthy Futures - Securing NB’s Health Care System

The Provincial Health Plan
2004-2005
The Provincial Health Plan

- A single, integrated provincial health care system that is patient focused and community based, providing health services in the official language of choice at a cost New Brunswickers can afford

- Goals:
  - a sustainable health care system
  - improved health for New Brunswickers

- Strategies:
  - population health
  - access and delivery
  - health human resources
  - accountability and evidence-based decision making
The Provincial Health Plan and e-Health

- e-Health supports the Provincial Health Plan with appropriate technology
- e-Health builds on New Brunswick’s health care successes and strengths
- Helping New Brunswick move to a future where technology is a support to an integrated, patient-focused, community-based health care system
Vision:

To ensure the development and implementation of a comprehensive approach to e-Health within the New Brunswick health care system, with unified processes, information and technology to enhance access, delivery and monitoring.

Goal:

For every New Brunswicker:

- A complete record of your health care, available to you or your care providers, whenever you need it, anywhere you need it.
- A telehealth system that bridges distances, bringing quality health services and information right to where you live.

With:

- The appropriate use of technology to support optimized health care administration and accountability.
The Office of e-Health

- Established by Department of Health and Wellness and the 8 Regional Health Authorities

- Steering committee
  - Chaired by ADM and a CEO
  - 22 members representing the Department, RHAs, GNB, NB Medical Society
  - Mix of program people, CIOs, IT Dirs and VPs

- Program office
  - Part of Information Systems Branch
  - Program Director, 2 Architects, Analyst, PM resources
<table>
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<tr>
<th>Principles</th>
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<tr>
<td>• Consistent with health agenda</td>
<td>• Borderless</td>
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<td>• Business driven</td>
<td>• Driven by clinical needs</td>
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<td>• Stakeholder involvement</td>
<td>• Management information as a by-product</td>
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<td>• Early majority adopter</td>
<td>• Common solutions across organizations</td>
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<td>• Enabling health care</td>
<td>• Bilingual systems</td>
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<td>• Standards based</td>
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<td>• Respectful of privacy</td>
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The One Patient - One Record

New Brunswick’s vision of the Electronic Health Record
One Patient – One Record

Provincial Health Plan alignment:
Contributes to better access to care and services

By:

**Improving outcomes** due to decision-making enabled by complete, accurate, timely information

**Improving efficiencies** through reduction of duplicate and manual processes, improved access to information

**Increasing safety** through reduction in “paper” errors (e.g. Drug interactions) and more complete information.

**Increasing capacity** through streamlined processes, avoidance of unnecessary hospitalization, etc.
One Patient – One Record

provides access to a single health record for each health services consumer (patient-centric)

accessible by authorized healthcare providers throughout New Brunswick

health record information is consistent, comparable (standards)

enabled by standards, technology and redefined business and patient care processes
One Patient – One Record

• Placing the person at the heart of health information
Login to access the
New Brunswick
Electronic Health Record

User Name: 
Password: 

Login  Cancel

Forgot Your Password?

EHRs in the News
- Riverside-Albert - NB's seventh Community Health Centre
- Restructuring of Healthcare on the Acadian Peninsula
- BC Study proves Community Health Centres save money

more...

The EHR Library
- Health Renewal - A Report from the Premier's Health Quality Council
- Health Care in Canada 2003
more...

purkinje  Purkinje Dossier
- Free software
- Coming to a CHC near you?
more...

Give us your Feedback
- Your opportunity to provide ideas, experiences, and thoughts on issues in New Brunswick.

Share in the Discussion Forum
- Your opportunity to ask questions, compare notes or provide guidance to fellow staff in NB.

Online Training for Staff
- A number of Training Modules available to you online for your convenience and knowledge growth.

EHR Handbook
A Guide to using NB EHR
- About EHR
- Getting Started
- Operating an EHR
- Evaluation

Horizon
Features & Functionality
Upcoming Features of the EHR

Source
Resource Portal
- News  Library  Links  Tools

Take Our Privacy Awareness Training with our online tool
- Privacy Awareness Training Online

OPOR Poll
Increased use of Nurse Practitioners can provide an effective alternative in delivery of Health Care - especially in areas where doctors are in high demand and hard to supply. Do you agree?

Strongly Agree: 74%
Strongly Disagree: 7%
Agree: 15%
Disagree: 1%
Don’t know: 3%

Vote  iGen
All responses are anonymous.

Did you know?
Community Health Centres are not new to Canadian Healthcare. The first CHC was established in 1965 in Alberta.
Evolving the Architecture

OPOR Vision

Conceptual OPOR Architecture

Office of e-Health

New Brunswick
Canada
New Brunswick e-Health Architecture 06/2004

Cross-Jurisdictional (National)
- Health Surveillance Information

Jurisdictional (Province)
- OPOR Web Viewer
- EHRS Locator
- Electronic Health Record
  - Electronic Health Repository
  - Diagnostic Imaging Domain Repository
  - Pharmacy Domain Repository

Point of Service
- Hospital Systems
- Medicare System
- Public/Mental Health System
- Vital Stats System
- Community Health Centres
- .....Other Systems

Health Information Access Layer (HIAL) (Integration Infrastructure)
One Patient – One Record

Representative initiatives:
- Client registry
- Provider registry
- Diagnostic imaging archive
- Lab systems standardization
- Drug information system
- Hospital system interoperability
Telehealth

Bridging distances by bringing quality health services and information to all New Brunswickers

Representative initiatives:
- Telehealth Strategic Plan including:
  - Tele Home Care
  - Tele Mental Health
  - Self Care Telecare
  - Cardiac Post-op Care
  - Telerehabilitation
Fully Functioning Clinical Systems

Full suite of clinical information systems for health care delivery in the Regions

Representative initiatives:
• Community Health Centre software
• Emergency Department Management system
• Addiction Services system
• Cancer Care management
• Cardiac patient triage
Pan-Canadian Standards

- Pan-Canadian Health Information Privacy and Confidentiality Framework
- Canada Health Infoway – pan-Canadian Electronic Health Record and Health Surveillance
  - Privacy and Security Architecture
- Canadian Public Sector Security Classification Guideline
Trust that privacy and confidentiality of personal information will be protected is critical in the health sector.

Developed for FPT Conference of Deputy Ministers of Health

Contains harmonized set of core provisions for the collection, use and disclosure of personal health information in both the publicly and privately funded sectors to facilitate:
- health care renewal,
- electronic health record systems and
- primary health care reform.
Pan-Canadian Health Information Privacy and Confidentiality Framework

• Developed through extensive analysis and consultation
  – Reviewed:
    • domestic and international approaches to protecting PHI privacy;
  – Consulted with
    • FPT departments, ministries, and stakeholder communities;
    • National care provider associations;
  – Obtained feedback from:
    • federal, provincial and territorial privacy commissioners;
    • experts on genetic information; and
    • Canadians by means of a public opinion survey.

• Core provisions
  – consistent with the Canadian Charter of Rights and Freedoms and PIPEDA
  – protecting the privacy and confidentiality of personal health information
  – enabling flow of information to support effective health care.
Canada Health Infoway: The Big Picture
• **User Identification**: establishing a valid and unique identity for each EHRI user;
• **Authentication**: validating the identity of EHRI users or devices upon each system access, transaction or message
• **Access control (privilege management and user authorisation)**: protecting the confidentiality and integrity of EHRI information assets by preventing unauthorised access and use.
• **Identity protection** and pseudonymisation: mechanisms for separating, to the greatest extent possible, personal information that uniquely identifies patient/persons from health information relating to treatment, diagnosis, etc.
• **Anonymisation**: ensuring that aggregated data is available for research and public health surveillance that protects the privacy of patients/persons to the greatest extent possible.
• **Confidentiality**: ensuring information is not made available or disclosed to unauthorised individuals, entities or processes.
• **Integrity**: ensuring that the contents of each EHR, transaction or message has not been altered or destroyed in an unauthorised manner.
• **Availability**: ensuring that information assets are always available in a timely and reliable manner when needed by authorised EHRI users and devices.
• **Audit and Control**: establishing accountability for transaction processing by creating a permanent record of transaction and message history.
• **Confidentiality** - The information requires protection from unauthorized disclosure.

• **Integrity** - The information must be protected from unauthorized, unanticipated, or unintentional modification. This includes, but is not limited to:
  
  – *Authenticity* – A third party must be able to verify that the content of a message has not been changed in transit.
  
  – *Non-repudiation* – The origin or the receipt of a specific message must be verifiable by a third party.
  
  – *Accountability* - A security goal that generates the requirement for actions of an entity to be traced uniquely to that entity.

• **Availability** - The information technology resource (system or data) must be available on a timely basis to meet mission requirements or to avoid substantial losses. Availability also includes ensuring that resources are used only for intended purposes.
## Canadian Public Sector Security Classification Guideline

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<th>Category</th>
<th>Definition</th>
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<td><strong>High</strong></td>
<td>Could reasonably be expected to <strong>cause extremely serious personal or enterprise injury</strong>, significant financial loss in the hundreds of thousands to many millions of dollars, loss of life or public safety, social hardship and major political or economic impact</td>
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<td><strong>Medium</strong></td>
<td>Could reasonably be expected to <strong>cause serious personal or enterprise injury</strong>, loss of competitive advantage, loss of confidence in the government program, financial loss in the tens of thousands of dollars, legal action and damage to partnerships, relationships and reputation</td>
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<td><strong>Low</strong></td>
<td>Could reasonably be expected to <strong>cause significant injury to individuals or enterprises</strong> that would result in financial losses in the hundreds to thousands, a limited impact in service level or performance, embarrassment and inconvenience</td>
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<tr>
<td><strong>Basic</strong></td>
<td><strong>Will not result in injury</strong> to individuals, governments or to private sector institutions</td>
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Questions?