

Using Informatics to Improve Patient Safety: Developing the Strategy for a Canadian Adverse Event Reporting and Learning System

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Objectives

Provide an introduction to:

- The Canadian Patient Safety Institute
- Patient Safety
- Adverse Event Reporting and Learning

Engage in discussion on:

- consistency and quality of data input,
- Interoperability with related systems, data mining, analysis and reporting.
- how to integrate data from existing systems
- taxonomy and vocabulary issues
- the challenge of translating a narrative event into a regularized data artefact.

Canadian Patient Safety Institute (CPSI)

- Since December 2003
- Offices in Edmonton and Ottawa
- Arms length funding from Health Canada
- Mandate to build and advance a safer health system for Canadians

The Canadian Patient Safety Institute would like to acknowledge funding support from Health Canada.

The views expressed here do not necessarily represent the views of Health Canada.

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CPSI Vision

“We envision a Canadian health system where patients, providers, governments and others work together to build and advance a safer health system; where providers take pride in their ability to deliver the safest and highest quality of care possible; and where every Canadian in need of healthcare can be confident that the care they receive is the safest in the world”

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CPSI Mission

“In working towards this broad vision for Canada’s health system, the CPSI mission is to provide national leadership in building and advancing a safer Canadian health system”

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- Collaboration
- Development of safety initiatives
- Leadership
- Create a culture of safety
- Empowerment of patients and families

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The Goal of National Reporting

Non-punitive national adverse event reporting so that the information can be sorted, integrated, evaluated and acted upon in a highly coordinated and timely manner.

Characteristics of a Successful Reporting System*

- Data are analyzed by independent organizations composed of subject matter and safety experts
- Timely feedback is provided to system users
- System suggests systems-oriented solutions to reported problems
- Participant organizations are responsive to suggested changes
- Non-punitive
- Confidential

*Karsh BT, Escoto KH, Beasley JW, Holden RJ. Toward a theoretical approach to medical error reporting system research and design. *Applied Ergonomics*. 2006 May; 37 (3): 283-95

World Health Organization: Recommendations for Reporting Systems

- Main objective = **improvement of safety**
 - reporting of errors & hazards for further analysis
 - investigation to identify underlying system factors
- Healthcare workers & institutions are encouraged to report
- Independent of any authority with power to punish
- Identities of reporters not disclosed

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Canadian Adverse Event Reporting and Learning System (CAERLS)

Objective for CPSI to develop a recommended strategy for CAERLS based on assimilated learnings for consultation with key stakeholders

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CAERLS Process

- International Site Visits
- Literature Review
- Legislative and Policy Review
- Identify existing organizational, regional, provincial and national reporting and learning mechanisms
 - Canadian Medication and Incident Reporting and Learning System (CMIRPS)
- Consultation Process
- CAERLS Proposal

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Australia May 2006





The Ideal System

- Universal system for all users
- “Scaffolded” integration with accepted business processes and workflow
- Targeted feedback loops to ensure that the right information gets to the right people at the right time

What does meaningful data look like?

- Large datasets required for deep analysis:
 - Patterns emerge over time, over many events
- The more detailed, granular and consistent the data, the easier it is to normalize and evaluate

Converting Narratives to Data

Output: clean, normalized data

Input: personal stories

Challenges: Systems

- Large and regionalized systems tend to favour local solutions to meet their unique needs
- National systems often duplicate or attempt to replace existing systems

Challenges: Input

- Two step process:
 - Incident narrative recorded at front line
 - Review and classification by subject matter expert
- Multidisciplinary system users have different workflows, vocabularies
- Technology infrastructure and user ability remain inadequate

Challenges: Proprietary Software

- Vocabulary hardwired to the system: Taxonomy = Data Model
- Customizable implementation at regional levels makes data rollup difficult
- Hierarchical database structure is rigid
- Poor usability
- Proprietary software is proprietary:
 - Taxonomy is the IP of the software developer
 - Interoperability with existing systems can be a struggle

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Challenges: Analysis and Alerting

- Data analysis is completed at the highest system level - Feedback may not be provided at local level.
- Feedback for system improvement is often delayed.

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Challenges: Canada

- Large, highly regionalized healthcare system
- Different regulatory and governance models
- Current state varies widely between regions

Canada: Directions

- Develop an agnostic taxonomy for Canada
- Consider an umbrella system that can harvest data from existing system -- this data can then be normalized, analyzed and distributed
- Provide targeted, actionable, appropriate information - "closing the loop" is not enough
- Critically investigate and pilot promising technologies that are not being leveraged elsewhere:
 - Natural language processing
 - Metadata driven, non-hierarchical classification systems

Taxonomies and Reporting

- The terms users use
- Controlled vocabularies

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The Language of Patient Safety

- Nurses
- Pharmacists
- Patients
- Physicians
- Surgeons
- Administration
- Management

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The Language of Patient Safety

- Adverse Event
- Adverse Effect
- Critical Incident
- Sentinel Event
- Patient Safety Incident
- Medical Error

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The Language of Patient Safety - Disclosure

- Negligence
- Malpractice
- Malpractice = MeSH
- Malpractice always = negligence and negativity
- Disclosure of adverse events = positive and pro-active communication process

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World Alliance for Patient Safety Taxonomy Group

- *International Classification for Patient Safety*
 - <http://www.who.int/patientsafety/taxonomy/en/>
 - Testing Version
- What is the appropriate level of granularity for Canada?
 - Global
 - National
 - Provincial
 - Regional

ANALYSIS and LEARNING

A Series of Questions

Analysis - What

- What data is being analyzed?
 - Reported Information
 - Event Analysis
- Canadian Root Cause Analysis Framework
- WHO, High 5's, Event Analysis Group

Analysis - Who

- Who does the analysis?
 - What skill set do they need?
 - What metrics do they use for the analysis?
- Who de-identifies the event?
 - When does de-identification occur?
- Who implements what's been learned?

Analysis - Where

- Where does the analysis take place?
 - In-house?
 - Region?
 - Province?
 - Nation?
- Where is the information stored?

Analysis - When

- When does analysis occur?
 - Is there criteria for how soon after an event is reported that it needs to be analyzed?
 - Can analysis occur too soon?
 - Can analysis occur too late?

World Health Organization: Recommendations for Reporting Systems

- Analysis should be timely
- Analysis should be done by experts
 - who understand clinical and care processes
 - who are trained to recognize underlying systems causes
- Receiving entity capable of making & disseminating recommendations
- Dissemination should be rapid especially when serious hazards are identified

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Security and Privacy

Are there privacy legislations / issues that pertain to the information reported?

- Evidence Laws
- Health Information Privacy Laws
- General Privacy Laws
- Adverse Event/Critical Incident Reporting Laws (Saskatchewan, Manitoba, Quebec)
- Coroner's Inquests and Public Inquiries
- Drug and Medical Device Adverse Event Reporting
- Professional Regulation

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Security and Privacy

- What legislative barriers and enablers relate to adverse event reporting?
- What privacy and security issues exist when sharing reported information nationally?

Learning

- What was learned?
- How are learnings going to be disseminated?
- Who is going to disseminate the learnings?
- Is measurement going to occur to assess implementation and impact?

The Links Between Patient Safety and Reporting

- CPSI commissioned literature review
- The technology and personnel must be ready prior to launch!
 - Similar to literature on patient safety and Electronic Health Record

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The Links Between Patient Safety and Reporting

- The cultures of health care, patient safety and reporting
 - Culture of Safety
 - Culture Change
- Disclosure
 - National Disclosure Guidelines

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Draft Next Steps: Stream 1

Coordinate a national **surveillance, vetting and alerting system (SVAS)**

- identify existing alerts from around the world
- create expert national advisory group to vet the collected information
- provide multi-media method to alert health care organizations

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Draft Next Steps: Stream 2

Canadian Medication Incident Reporting and Prevention System (CMIRPS)

- Developed since 2000
- Currently in pilot testing
- Integrate with CAERLS

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Draft Next Steps: Stream 3

Expand the SVAS system

- Develop taxonomy
 - CMIRPS taxonomy
 - WHO classification system
 - other international sources
- Develop infrastructure to support pan-Canadian reporting and learning by individuals and organizations

Related References

www.patientsafetyinstitute.ca

- *Adverse event reporting and learning systems: a review of the literature.*
- Background paper and draft *National Disclosure Guidelines*
- *The relationship between electronic health records and patient safety: future directions for Canada*
- *International Classification for Patient Safety*
<http://www.who.int/patientsafety/taxonomy/en/>

Take Home

1. When implementing a new technology:
 - Users have to be onboard and know what's in it for them
 - Technology has to be ready
2. Don't build anything you don't need to build (but build what you have to build)
 - Utilize what's out there
3. Don't try using technology to solve business problems
4. Know what success looks like:
 - Metrics

Questions?



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