



Monitoring the Effects of Health Information Systems in Canada

- UVic eHealth Observatory
- Evaluation Frameworks and Approaches
- Selected Evaluation Findings
- Next Steps

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Materials from Canada Health Inflow and Auditor General Offices

Francis Lau PhD -Sep 14, 2010



What is the UVic eHealth Observatory?

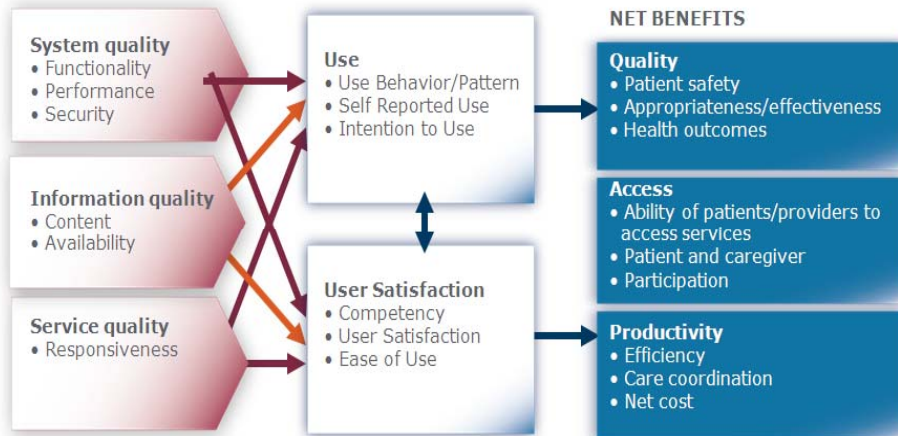
- **Overall Aim**
 - Monitor effects of HIS deployment and use in Canada
- **Specific Objectives**
 - Employ models/methods/metrics to evaluate HIS adoption/use/impact
 - Engage eHealth community in KT to synthesize/share/use knowledge
 - Build research capacity in HIS implementation/evaluation
- **Program Scope**
 - Medication management, EMR/EHR integration; care providers ...
 - Secondary use in performance management
- **Contexts**
 - System related: eDrug, EMR, lab and EHR in BC and elsewhere
 - social/healthcare related: communities, organizations, domains



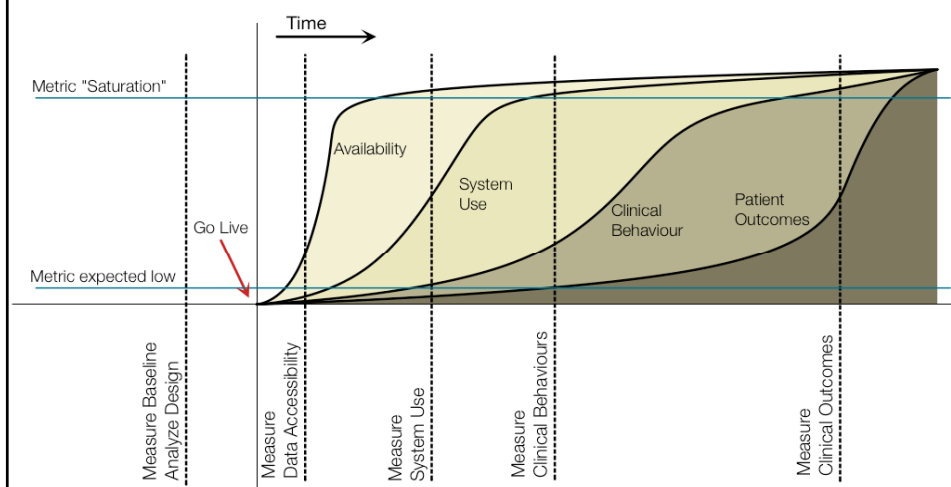
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Evaluation Frameworks and Approaches – *Benefits Evaluation*



Evaluation Frameworks and Approaches – *Maturity Stages*

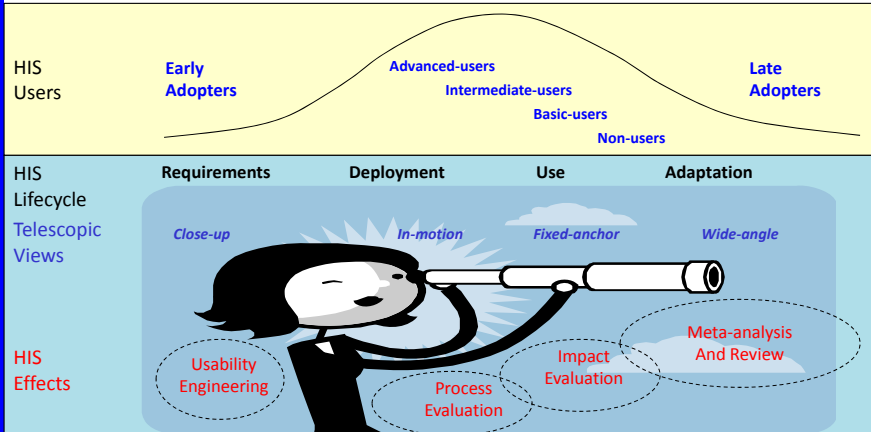




Evaluation Frameworks and Approaches

- Rapid Response Evaluation Methodologies (RREM)

Assembling an HIS evaluation methodology toolkit



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Evaluation Frameworks and Approaches

- Physician Office EMR Systems

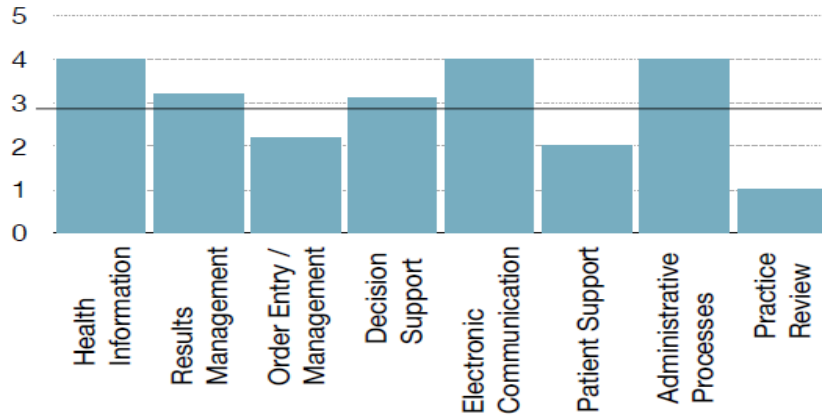
	HIMSS Levels	IOM Features
5	EMR Integrated with Health System, Point of Reflection CDSS	Health Information & Data
4	Electronic Chart with Advanced Point of Care CDSS	Results Management
3	Electronic Medical Record (more passive record)	Order Entry / Order Management
2	Hybrid Electronic Paper Chart	Decision Support
1	Online Access to Reference Materials	Electronic Communication
0	Paper Charts for Clinical Information	Patient Support
		Administrative Processes
		Reporting & Population Health

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Evaluation Frameworks and Approaches

- Physician Office EMR Systems, Benchmarking



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Evaluation Frameworks and Approaches

- Infoway, Jurisdictions and Others

- Infoway Clinical Adoption Forum
 - Jurisdictional forums for sharing ideas, approaches and lessons
 - Change management, benefits evaluation, peer-to-peer network
 - Commissioned studies, e.g. eDrug, privacy, public health surveillance
- Jurisdictions and Healthcare Agencies
 - Provincial/territorial jurisdictions eHealth programs, benefits evaluation
 - Canadian Institute for Health Information: health system performance
 - Canadian Institutes for Health Research, eHealth related research initiatives
 - Canadian Patient Safety Institute, Public Health Agency of Canada
- Auditor General Offices
 - Performance audit of eHealth programs by federal/provincial auditors

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Selection Evaluation Findings Emerging Evidence?

- Canadian Contexts
- Pan-Canadian Diagnostic Imaging systems
- Cancer Care Ontario – CPOE for systemic chemotherapy
- Federal/Provincial eHealth/EHR Audit reports

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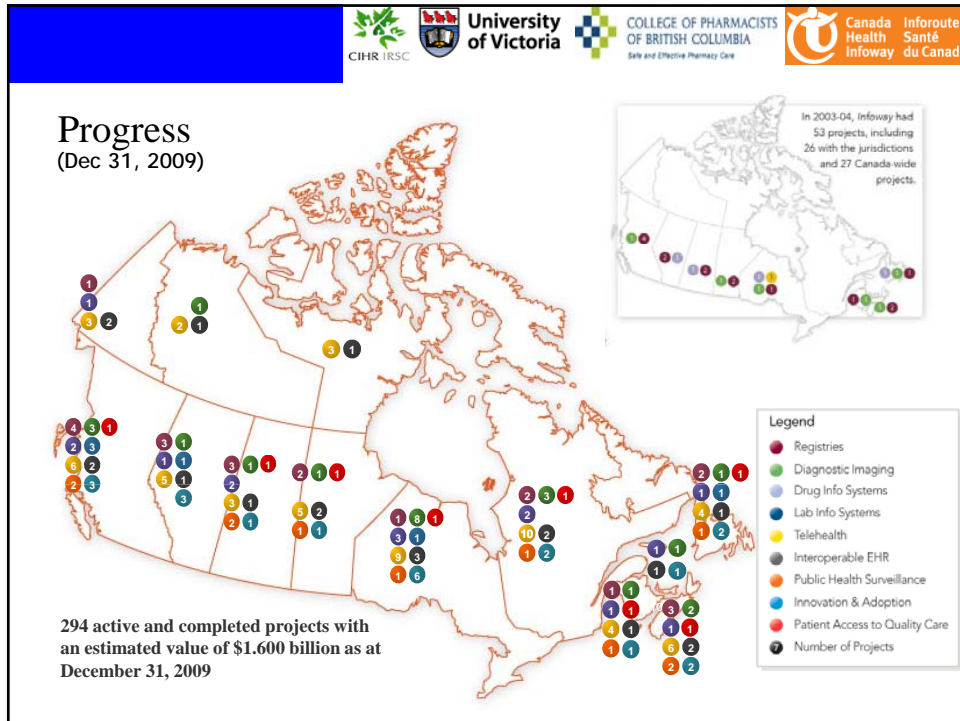


Selected Evaluation Findings Emerging Evidence? *Canadian Contexts*

- Canada Health Infoway, 2001 - present
 - Non-profit, \$2.1 billion, 50% EHR available by 2010 and 100% by 2016

Setting the Future Direction	Innovation and Adoption \$105m		Patient Access to Quality Care \$50m	
	EMR and Integration \$340m	Consumer Health Solutions \$45m	Public Health Surveillance \$150m	Telehealth \$110m
The Electronic Health Record	Interoperable Electronic Health Record \$365m			
	Registries \$134m	Drug Systems \$250m	Laboratory Systems \$170m	Diagnostic Imaging \$365m
	Architecture and Standards Infostructure - \$52m			

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Selected Evaluation Findings

Emerging Evidence? Dx Imaging, pan-Canadian

Benefit	Description	Annual Value	Resources	Capacity
Technologist productivity	25-30% improvement in technologists' productivity	\$122-148M	2,400-2,900 equivalent technologists	8-10M exams
Radiologist productivity	25-30% improvement in radiologists' productivity	\$169-203M	450-540 equivalent radiologists	9-11M exams
Duplicate exams	2-3% reduction in unnecessary duplicate exams	\$47-71M	43-63 radiologists 240-358 technologists	0.8-1.3M exams
Film costs	Elimination of film-related cost of materials and operations	\$350-390M	N/A	N/A

We've seen a significant reduction in repeated exams: we have one PACS for three distinct geographic areas....sites no-longer have to remember to transfer films with patients (either acute transfer or follow-up with specialist in another city)...images are now available [with PACS] for review at any time, at any location in the region...

Nancy Davis, Mgr. DI, Peterborough, ON

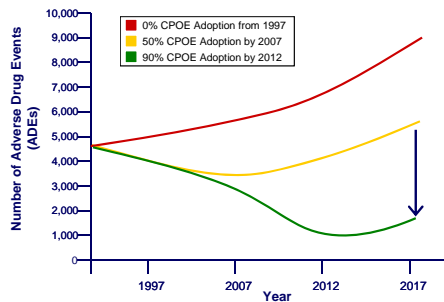
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Selection Evaluation Findings Emerging Evidence? *Cancer Care Ontario*

Computerized Physician Order Entry (CPOE) solution for systemic chemotherapy

- Methods:
 - Incident reports, nurse/pharmacist log, system data, surveys
- Findings:
 - 60% reduction in the number of incidents per medication order
 - 50% reduction in the number of transcription errors
 - 66% reduction in unclear or ambiguous orders



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Selection Evaluation Findings Emerging Evidence? *Audit Reports ...*

- Concurrent performance audits (6 provinces+federal)
- Planning and implementing EHRs
 - Strategic plans: from comprehensive to none, need updating and linking of individual projects to strategic plan lacking
 - Ensure compatibility, good project management, governance/oversight
- Reporting on progress
 - Performance measures, reporting standards, costs and baselines
- Meeting challenges
 - Achieving goals, realizing benefits, upgrading systems, physician office EMRs, consumer health, sharing personal health information, demonstrating “value for money”

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Next Steps

National, Jurisdictional and Local Levels

- Infoway Vision 2015
 - EHR, telehealth, public health surveillance, doctor office EMR, CPOE
 - Wait-time management, consumer health, CDM integration
 - Clinical adoption forum: BE, change management, peer-to-peer networks
- Jurisdictions, ongoing
 - Auditors' recommendations: linkages, project management, reporting, baseline measures, value for money
 - Primary health care EMR integration with EHR systems
 - Benefits evaluation efforts: PEI drug information system studies, Ontario drug profile viewer for patient safety, Alberta personal health record
- UVic eHealth Observatory
 - Evaluation: drug info system, office EMR, personal health record
 - EMR review, SNOMED CT implementation, end-of-life care surveillance