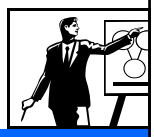
From Benefits Evaluation to Clinical Adoption:
Overview of Concepts, Methods and Case Studies



Workshop Outline

TIME	TOPIC
0900	Introduction, Objectives and Expectations
0905	Benefits Evaluation and Clinical Adoption Frameworks
0930	UVic eHealth Observatory Rapid Response Evaluation Methods
1010	Group Exercise – Developing an Evaluation Plan (Includes Nutritional Break)
1050	Canada Health Infoway - Clinical Adoption and Benefits
1130	pan-Canadian Studies, Experiences and Lessons
1200	End of Session

1

May 30, 2010

Introduction, Objectives and Expectations

- **Introduction**
  - Facilitator1: Francis Lau, Health Information Science, UVic
  - Facilitator2: Simon Hagens, Canada Health Infoway
  - Participant backgrounds?
- **Workshop Objectives**
  - Describe benefits evaluation and clinical adoption frameworks
  - Describe rapid response evaluation methods
  - Discuss Infoway clinical adoption and benefits
  - Provide update on pan-Canadian studies, experiences and lessons
  - Provide hands-on evaluation planning exercise
- **Participant Expectations?**
  - What (else) do you expect to get out of this workshop?

2

May 30, 2010

Benefits Evaluation and Clinical Adoption Frameworks

- **What is the UVic eHealth Observatory?**
  - Overall Aim, Specific Objectives, Program Scope and Contexts
- **What are the HIS Evaluation Models?**
  - Existing Infoway Benefits Evaluation (BE) framework
  - Proposed Clinical Adoption Framework
  - eHealth Maturity Stages and Metrics
  - Mapping BE to eHealth Maturity Stages
  - Toward Clinical Adoption Maturity?

3

May 30, 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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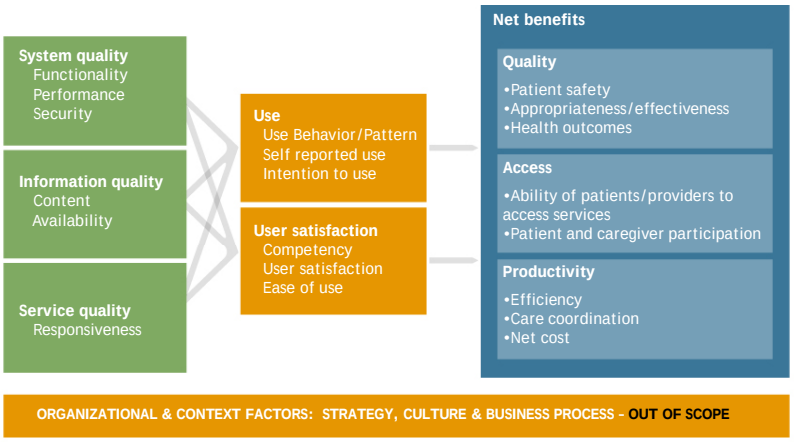
May 30, 2010

What are the HIS Evaluation Models?
Existing Infoway BE Framework



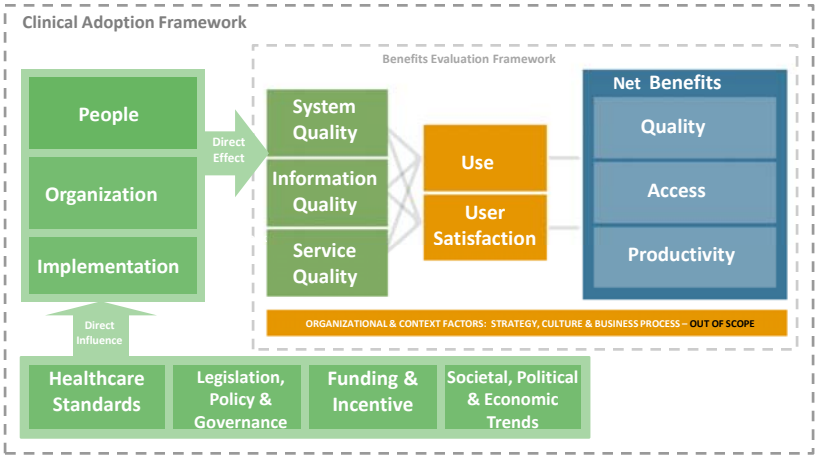
Lau et al. A proposed benefits evaluation framework for HIS in Canada. *Heathcare Q* 2007;10(1):112-8.

Extending the Infoway BE Framework to Clinical Adoption?

- **Why the Need for Extension?**
  - Original IS success model intended for stable information systems
  - Out of scope for organizational and contextual
  - Micro-view of HIS within an organization
  - Contingent factors, e.g. development, implementation, culture
  - Jurisdictions implementing HIS, with focus on adoption/use
  - Missing socio-organizational/contextual aspects
- **What Theories/Concepts/Ideas for Extensions?**
  - Information technology interaction model by Silver et al.
  - Technology acceptance models by Lee, Vankatesh, others
  - Implementation research/managing change – Kotter, Pare, others
  - Socio-organizational and contextual issues

Lee et al. The technology acceptance model: past, present and future. *CAIS* 2008;12:752-80. Kotter J. Leading Change: why transformation efforts fail. Harvard Business Review 2007;96-103.
Pare G, Sicotte C, Jaana M, Girouard D. prioritizing clinical information system project risk factors: a Delphi study. *Proceedings of 21st HICSS, Jan 5-7, 2008.*
Silver et al. The IT interaction model: a foundation for MBA core course. *MISQ* 1995;Sep 262. Vanketash et al. User acceptance of technology: toward a unified view. *MISQ* 2003;27(3):425-78.

Proposed Clinical Adoption Framework – Meso and Macro Views



Lau F, Charlebois M, Wong A, Keshavjee K. *Clinical Adoption: Extending the Infoway Benefits Evaluation Framework*. Nov 17, 2009. Draft only – unpublished.

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Proposed Clinical Adoption Framework - Meso View

- **People**
  - Individuals/groups
  - Personal characteristics
  - Personal expectations
  - Roles & responsibilities
- **Implementation**
  - Stage
  - Project
  - HIS-practice fit
- **Organization**
  - Strategy
  - Culture
  - Structure/processes
  - Info/infrastructure

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Proposed Clinical Adoption Framework – Macro View

- **Healthcare Standards**
  - HIS standards
  - Performance standards
  - Practice standards
- **Funding & Incentive**
  - Remunerations
  - Added values
  - Incentive programs
- **Legislation, Policy, Governance**
  - Legislative acts
  - Regulations/policies
  - Governance bodies
- **Societal, Political and Economic Trends**
  - Societal trends
  - Political trends
  - Economic trends

9

Proposed Clinical Adoption Framework – Now Altogether

Integrated Micro, Meso and Macro Views of HIS Deployment/Use

- **Micro View**
  - *HIS quality:* system, information and service quality
  - *Use/satisfaction*: use and user satisfaction
  - *Net benefits:* care quality, access and productivity
- **Meso View**
  - *People:* Individuals/groups, personal characteristics/expectations, roles/responsibilities
  - *Organization*: Strategy, culture, structure/process and info/infrastructure
  - *Implementation:* Stage, project, HIS practice/fit
- **Macro View**
  - *Healthcare standard:* HIS, performance and practice standards
  - *Funding/incentive:* Remunerations, added values and incentive programs
  - *Legislation/policy/governance:* legislative acts, regulations /policies, and governance
  - *Social, political and economic trends*

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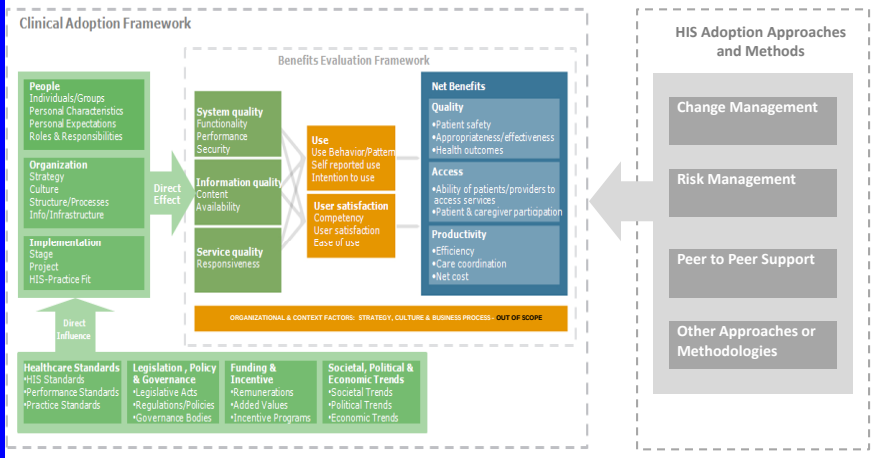
Proposed Clinical Adoption Framework - Adoption Approaches/Methods



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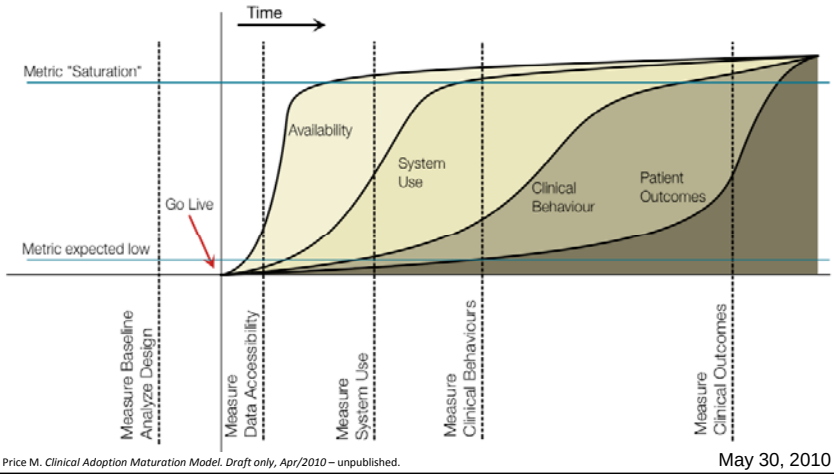
Proposed Clinical Adoption Framework - eHealth Maturity Stages and Metrics

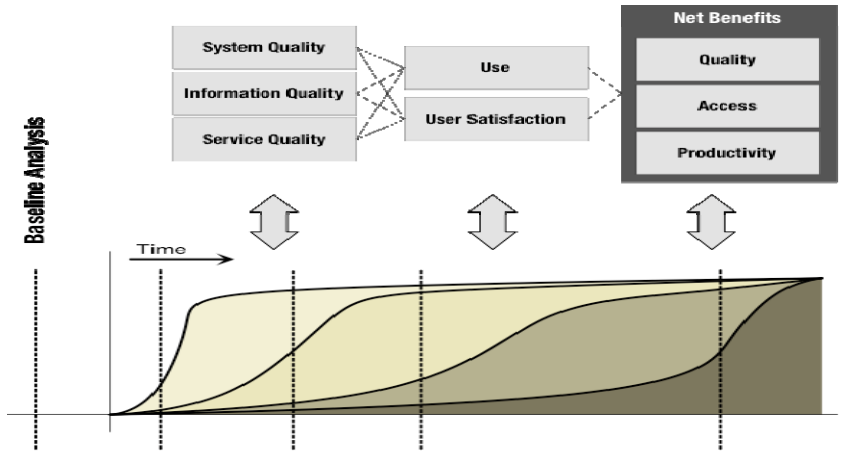


12

Price M. *Clinical Adoption Maturation Model. Draft only, Apr/2010* – unpublished.

May 30, 2010

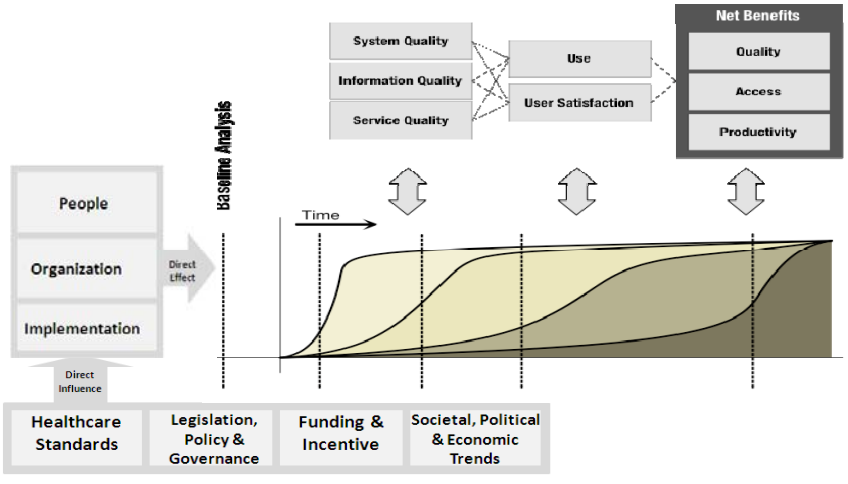
Proposed Clinical Adoption Framework - Mapping BE to eHealth Maturity Stages



13

Price M. *Clinical Adoption Maturation Model. Draft only, Apr/2010* – unpublished.

Proposed Clinical Adoption Framework - Toward Clinical Adoption Maturity?



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UVic eHealth Observatory -
Rapid Response Evaluation Methods

- Assembling the RREM Toolkit
  - RREM overview
  - EMR adoption 5-Stage model and survey tool
  - Usability engineering and workflow modeling in ePrescribing
- RREM Outputs
  - Meta-synthesis of HIS reviews
  - Scoping review of IT use in medication reconciliation
  - Systematic reviews of EMR impact on physician office practice
  - Rapid evaluation of physician office EMR systems

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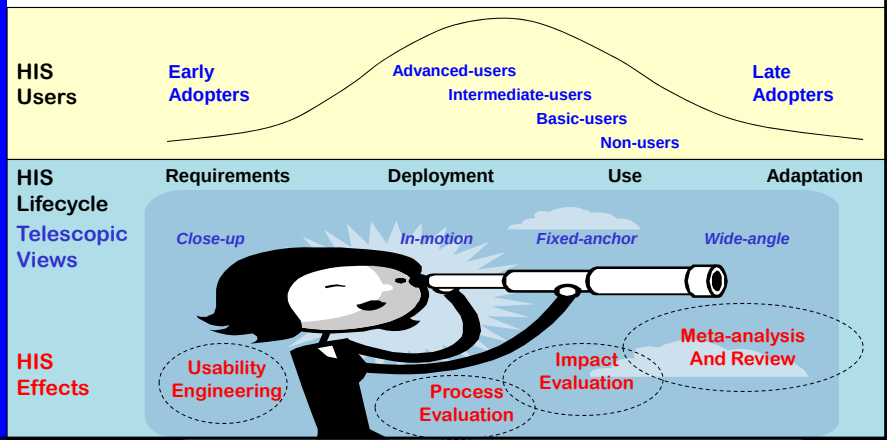
May 30, 2010

Assembling the RREM Toolkit
RREM Overview



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Assembling the RREM Toolkit
EMR Adoption 5-Stage Model and Survey Tool, 1

IOM Categories of Capabilities — HIMSS 5-Stages

Model Structure	0	1	2	3	4	5
Health Information and Data						
Order Entry/Management						
Results Management						
Decision Support						
Electronic Communication and Connectivity						
Patient Support						
Administrative Processes						
Reporting and Population Health Management						

General description of capabilities at each level

Specific description for sub-sections of the category

Lai J, Price M, Bassi *J.5-stage EMR Adoption Model*, Jan/2010 – unpublished.

Assembling the RREM Toolkit
EMR Adoption 5-Stage Model and Survey Tool, 2

Stage 1	0	1	2	3	4	5
Health Information and Data		Some health data electronically, but captured ad hoc...				
Patient Demographics		Source of truth for demographics still the billing system...transcribed docs				
Medical Summary	Medical summary found in paper chart (own format)					
Order Entry/Management						
Results Management						
Decision Support						
Electronic Communication and Connectivity						
Patient Support						
Administrative Processes						
Reporting and Population Health Management						

The same level of functionality may span more than one stage

Assembling the RREM Toolkit
EMR Adoption 5-Stage Model and Survey Tool, 4

Stage 5	0	1	2	3	4	5
Health Information and Data						
Patient Demographics						Patient Demographics in the EMR, synced with provincial patient registry.
Medical Summary						Medical Summary data coded to provincial standards. Uploaded to provincial EHR.
Order Entry/Management						
Results Management						
Decision Support						
Electronic Communication and Connectivity						
Patient Support						
Administrative Processes						
Reporting and Population Health Management						

At stage 5, a sophisticated EMR exists with linkages to external systems

Assembling the RREM Toolkit
EMR Adoption 5-Stage Model and Survey Tool, 5

Survey Tool

- To determine which stage the practice is at in terms of EMR adoption
- Questions directly correspond to each sub-category in the model

Example:

Health Information and Data

Patient Demographics

1. How do you keep track of the patient demographics in your practice?

- ☐ In the patient chart and using my billing program. 0
- ☐ Mainly in the patient chart and billing program. I may have some files on my computer also, such as spreadsheet for some patients. 1
- ☐ In my EMR but I use the billing program as the reference source. 2
- ☐ Exclusively in my EMR (which also has a billing system). 3 4
- ☐ Exclusively in my EMR which can be synchronized with a provincial electronic registry of patients. 5

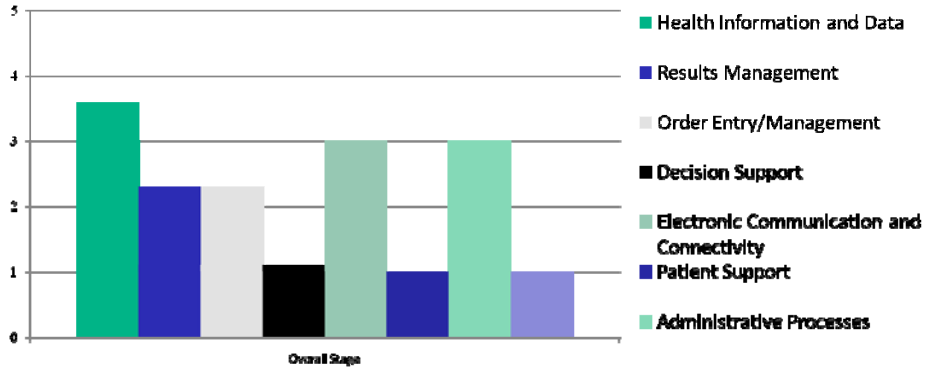
Indicates which stage each option corresponds to for scoring

Functionality applies to both stages in the model

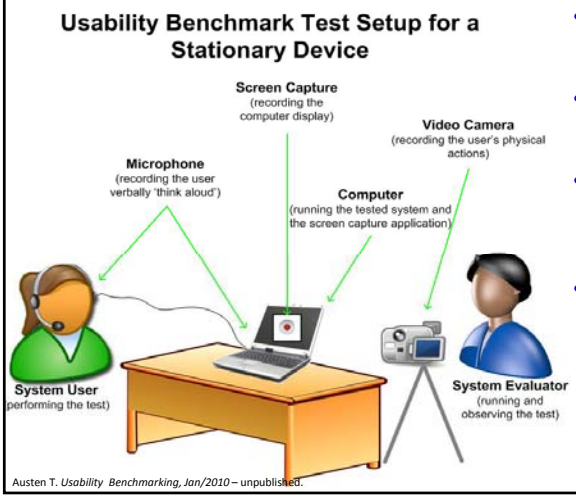
Assembling the RREM Toolkit
EMR Adoption 5-Stage Model and Survey Tool, 6

Summary

The scores are averaged for each IOM category and recorded along with comments showing the current stage of EMR adoption for the practice site



Assembling the RREM Toolkit
Usability Benchmarking, 1



- **PLAN:** Definitions, purpose, selection of system/user/task/setting and study metrics, and user training
- **DO:** Usability testing for normal condition, think aloud, instructional, post-test survey
- **STUDY:** Data compilation, analysis and interpretation; to create transcript, validate coding scheme, annotate and verify transcripts,
- **ACT:** Course of actions on content for system benchmark, instructional system use, usability testing and comparative analysis of conditional system testing

Austen T. *Usability Benchmarking, Jan/2010* – unpublished.

May 30, 2010

Usability Problems		
Type	**Name**	**Description**
Interface	Aesthetic and Minimalistic Design	Coded if the user specifically mentions the aesthetic look and feel of the system (i.e. the system's graphics, layout, color, etc.) (e.g. "I find this page to be way too cluttered")
	Consistency of Operations	Coded if there are inconsistencies between system operations (i.e. the system uses: inconsistent menu layouts, different control labels for the same control, etc.) (e.g. "Why is the exit button over here now?").
	Data Entry	Coded if the user has difficulty entering data into the system
	Feature Not Present	Coded if a feature requested in the scenario is not supported by the tested system.
	Flexibility	Coded if the user states that the system is unable to customize to their needs (e.g. "It would be nice if I could rearrange the menu in order of how often I use the features").
	Help and Documentation	Coded if the user expresses a need to learn more about a system aspect but cannot, because the help documentation is either ambiguous or not present (e.g. "I wish I knew how do this").
	Navigation	Coded when a subject shows difficulty navigating through the system or expresses difficulty in finding a system component (e.g. "Where is the main menu link?")
	Overall ease of use	Coded when the user expresses difficulty using the system (e.g. "I find this system very hard to use")
	System Responsiveness	Coded if the user mentions that the response time of the system is slow (e.g. "I have to wait forever for this screen to close")
	Task Speed	Coded if the user states that a system task takes longer than desired (e.g. "Using my old system, I could get this done much faster).
	Understandability	Coded if the system doesn't present data to the user in a language that the user understands (i.e. unclear: error messages, labels, system instructions, etc.) (e.g. "what happens if I press this button?").
	Visibility	Coded if the user is confused about what the system is doing or what the user can do (e.g. "Is the computer loading the program or not?" or "What am I supposed to do with this?").
Content	Database	Coded if the system database doesn't contain the desired data
	Default	Coded if the system provides an incorrect default selection
Errors		
Error	Mistake	Coded if the user makes an error during the system testing and does not correct the actions.
	Slip	Coded if the user makes an error during the system testing, but catches and corrects the error.
Prescription Error Type	Type	The wrong medication is selected
	Dose	The wrong dose is selected
	Frequency	The wrong frequency is selected
	Route	The wrong route is selected
	Period	The wrong period is selected

Usability Benchmarking, 2

CIHR IRSC | University of Victoria | College of Pharmacists of British Columbia | Canada Health Infoway / Inforoute Santé du Canada

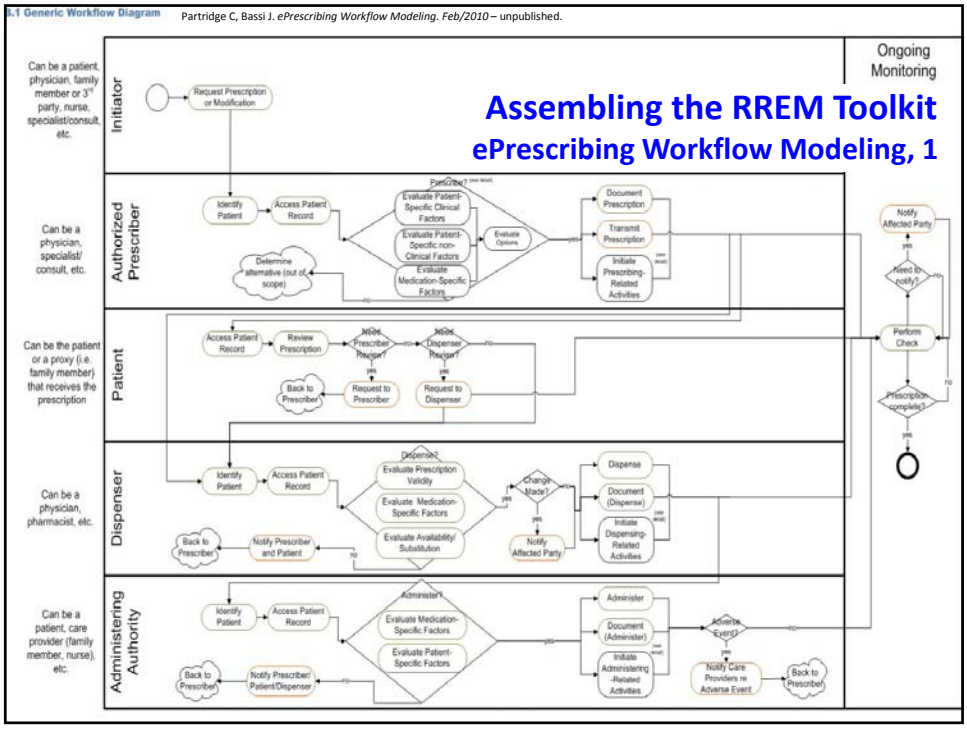
Assembling the RREM Toolkit

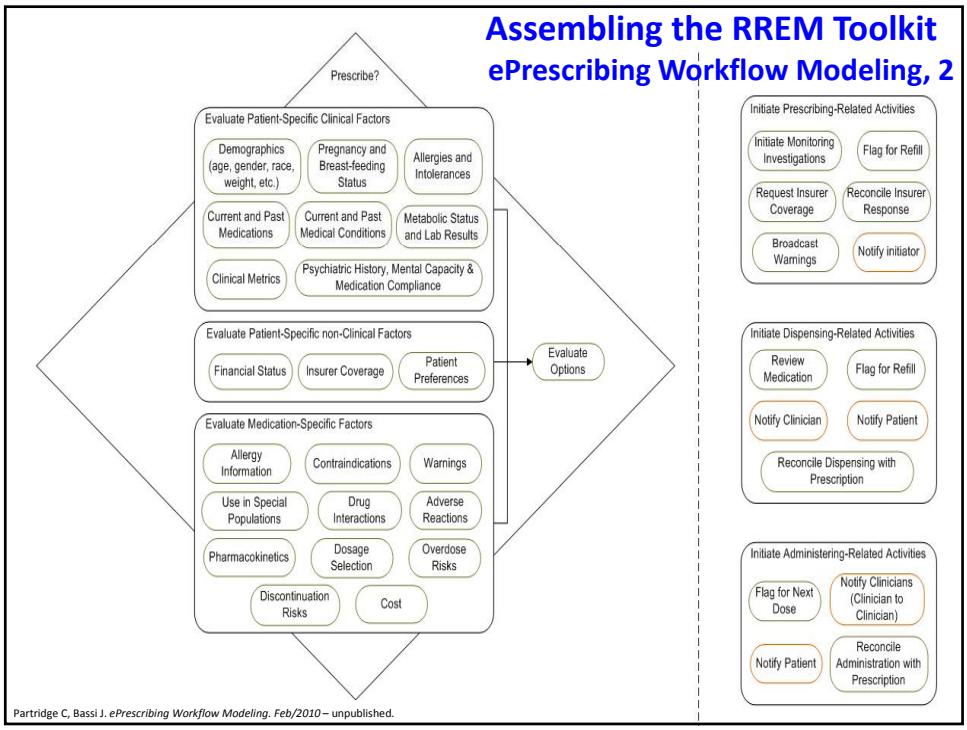
Usability Benchmarking, 3

Think Aloud Condition Scenario #1

Task	Usability Problem	Description	Start Time (hh:mm:ss)	End Time (hh:mm:ss)	Clip Duration (hh:mm:ss)	Associated Error	Slip (1 if true)	Mistake (1 if true)	Notes
Create a patient record for Lisa Anthony	Navigation	The user passed the new patient menu item and then has to return to it with the cursor.	0:00:46	0:00:52	0:00:06				
Create a prescription for 1x500mg Apo-Amoxi (amoxicillin), Q8H for 5 days	Default	Defaults to 1x125mg PO TID, whereas the patient needs 1x500mg, PO, Q8H	0:03:04	0:03:17	0:00:13				May not be a system error (the scenario could just be different). Get a medical expert to check.

Scenario Totals	
Task Time:	0:04:38
Problems:	2
Slips:	0
Mistakes:	0
Errors:	0


Partridge C, Bassi J. *ePrescribing Workflow Modeling. Feb/2010* – unpublished.
Assembling the RREM Toolkit
ePrescribing Workflow Modeling, 1
Ongoing Monitoring
Initiator
Authorized Prescriber
Patient
Dispenser
Administering Authority
Can be a patient, physician, family member or 3rd party, nurse, specialist/consult, etc.
Can be a physician, specialist/ consult, etc.
Can be the patient or a proxy (i.e. family member) that receives the prescription
Can be a physician, pharmacist, etc.
Can be a patient, care provider (family member, nurse), etc.
Request Prescription or Modification
Identify Patient
Access Patient Record
Prescribe?
Evaluate Patient-Specific Clinical Factors
Evaluate Patient-Specific non-Clinical Factors
Evaluate Medication-Specific Factors
Evaluate Options
Determine alternative (out of scope)
Document Prescription
Transmit Prescription
Initiate Prescribing-Related Activities
Notify Affected Party
Need to notify?
Perform Check
Prescription complete?
Review Prescription
Note Prescriber Review?
Note Dispenser Review?
Back to Prescriber
Request to Prescriber
Request to Dispenser
Dispense?
Evaluate Prescription Validity
Evaluate Availability/ Substitution
Change Made?
Dispense
Document (Dispense)
Initiate Dispensing-Related Activities
Notify Prescriber and Patient
Administer?
Administer
Document (Administer)
Initiate Administering -Related Activities
Adverse Event?
Notify Care Providers re Adverse Event
Notify Prescriber/ Patient/Dispenser


Assembling the RREM Toolkit
ePrescribing Workflow Modeling, 2
Prescribe?
Evaluate Patient-Specific Clinical Factors
Demographics (age, gender, race, weight, etc.)
Pregnancy and Breast-feeding Status
Allergies and Intolerances
Current and Past Medications
Current and Past Medical Conditions
Metabolic Status and Lab Results
Clinical Metrics
Psychiatric History, Mental Capacity & Medication Compliance
Evaluate Patient-Specific non-Clinical Factors
Financial Status
Insurer Coverage
Patient Preferences
Evaluate Options
Evaluate Medication-Specific Factors
Allergy Information
Contraindications
Warnings
Use in Special Populations
Drug Interactions
Adverse Reactions
Pharmacokinetics
Dosage Selection
Overdose Risks
Discontinuation Risks
Cost
Initiate Prescribing-Related Activities
Initiate Monitoring Investigations
Flag for Refill
Request Insurer Coverage
Reconcile Insurer Response
Broadcast Warnings
Notify initiator
Initiate Dispensing-Related Activities
Review Medication
Flag for Refill
Notify Clinician
Notify Patient
Reconcile Dispensing with Prescription
Initiate Administering-Related Activities
Flag for Next Dose
Notify Clinicians (Clinician to Clinician)
Notify Patient
Reconcile Administration with Prescription
Partridge C, Bassi J. *ePrescribing Workflow Modeling. Feb/2010* – unpublished.

A.1 Scenario 1 – Prescribing

This scenario assesses basic prescribing workflow.

In clinical practice, even the generation of a simple prescription is preceded by a consideration of patient-specific factors like allergies, drug-specific factors like contraindications, and non-clinical factors like insurer coverage for drug costs.

The scenario is as follows:
A 26 year-old patient of one of your colleagues presents to your office, reporting two days of dysuria and frequency. She is 10 weeks pregnant and her urine dip shows +3 WBC, positive nitrites and +3 RBC. You diagnose a UTI, and elect to treat the infection with antibiotics.

2. 1. When she presented to your office, how would you confirm the identity of the patient?

3. 2. How are your patient records stored? (e.g. paper files, free text in EMR, structured information in EMR)

3. Having made the decision to prescribe, physicians consider patient-specific clinical and non-clinical factors, plus available therapeutic choices. You need to know if she is pregnant, breast-feeding, has allergies, is on medications, etc.

Please describe how you would access the following information and include it in your prescribing decision in choosing an antibiotic. (As noted earlier, these questions are not intended to assess your clinical judgment, but to clarify the workflow steps necessary to do the following):

4.1.2 A. Evaluate patient-specific clinical factors
How is her pregnancy status included in the drug selection process? (In what form and level of detail is her pregnancy status documented in the chart?)

4.2.3 B. Evaluate patient-specific non-clinical factors
She has a busy schedule and often forgets medications. She prefers once a day dosing. How is this information about her preference included in selecting a medication?

4.3.6 C. Evaluate Medication-specific Factors
How are potential medication adverse effects assessed in the drug selection process?

4.4 D. Evaluate the options
Having considered the patient-specific factors, and medication-specific factors, how do you go about ranking the available therapeutic options and select a drug? Does your EMR provide a list of therapeutic options?

5. 4. Having selected a medication, how would you document the fact in your patient's medical record?

Electronic Prescribing – Workflow Modeling and Analysis Method

Dr. Colin Partridge (BSc., M.D., CCFP) & Jesdeep Bassi (BSc., MSc. Candidate), University of Victoria

Background

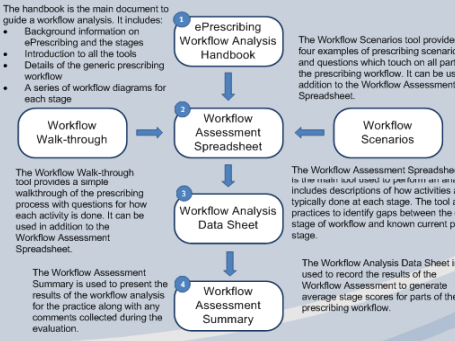
Clinicians are beginning to use electronic medical records (EMRs) in offices. A key workflow change will be the use of computers for prescribing i.e. ePrescribing. The transition to ePrescribing is not a single-step process. The stages of ePrescribing are derived from the 5-Stage EMR Adoption Model developed by the eHealth Observatory, which is based on HIMSS' "EMR Adoption Model for Physician Clinics and Expected Benefits for Each Stage" (2008)). To evaluate the use of EMRs for prescribing, we developed a workflow modeling and analysis method.

At first glance, the concept of outpatient prescribing is simple: a clinician writes a prescription, a pharmacist fills it, and then a patient takes it. In the real world though, the workflow is often not so straightforward. One individual might act in more than one role, one role might be taken on by multiple individuals, activities might be done by multiple individuals or providers, and the workflow can change depending on how a patient's medical status changes over time. Our view of prescribing is presented as a workflow diagram.

Overall Method

The handbook is the main document to guide a workflow analysis. It includes:

- Background information on ePrescribing and the stages
- Introduction to all the tools
- Details of the generic prescribing workflow
- A series of workflow diagrams for each stage



The Workflow Scenarios tool provides four examples of prescribing scenarios and questions which touch on all parts of the prescribing workflow. It can be used in addition to the Workflow Assessment Spreadsheet.

The Workflow Walk-through tool provides a simple walkthrough of the prescribing process with questions for how each activity is done. It can be used in addition to the Workflow Assessment Spreadsheet.

The Workflow Assessment Spreadsheet tool is the main tool used to perform an analysis. It includes descriptions of how activities are typically done at each stage. The tool allows practices to identify gaps between the current stage of workflow and known current potential stage.

The Workflow Analysis Data Sheet is used to record the results of the Workflow Assessment to generate average stage scores for parts of the prescribing workflow.

The Workflow Assessment Summary is used to present the results of the workflow analysis for the practice along with any comments collected during the evaluation.

We welcome any questions or feedback. Version 1 of the workflow handbook and tools is available on the eHealth Observatory website: www.ehealth.uvic.ca.

The overall method can be employed by a physician office practice as a quality improvement exercise or used by analysts in formal evaluation studies. The tools would typically be used during interviews with physicians and office staff. It is targeted to specifically describe and facilitate the assessment of those elements of ePrescribing encountered in the outpatient office setting of clinicians and does not suggest or describe HL7 message formats, define EMR usability criteria, or list implementation specifications for an ePrescribing system

Acknowledgements

This work was completed as part of an eHealth Observatory project led by Dr. Francis Lau. Funding support for this work was provided by the Canadian Institutes for Health Research (CIHR), Canada Health Infoway, and the College of Pharmacists of British Columbia.

eHealth Observatory

References

HIMSS and HIMSS Analytics. (2008). Electronic Medical Record Capabilities and Expected Benefits in US Non-federal Hospitals and Physician Clinics. In *A Call for Action Enabling Healthcare Reform Using Information Technology Recommendations for the Obama Administration and 111th Congress*. Retrieved from http://www.himss.org/2009callforaction/HIMSSCallToActionDec2008.pdf

Partridge, C. & Bassi, J. (2010). *Electronic Prescribing Workflow Analysis Handbook v1.0.* Retrieved from http://ehealth.uvic.ca/resources/tools/WorkflowModeling/WorkflowModeling.php

RREM Outputs
Meta-synthesis of HIS Reviews, 1

ABSTRACT

OBJECTIVE: Consolidate existing evidence from systematic reviews of HIS studies to inform HIS practice and research

METHODS: 50 reviews selected in 5 areas – medication management, preventive care, health conditions, data quality and care process/outcome

RESULTS: Reconciled 1,276 HIS studies as non-overlapping corpus. Subset of 287 controlled HIS studies showed some evidence of improved quality of care but in varying degrees across topic areas. For instance, 31/43 or 72.1% had positive results using preventive care reminders mostly thru guideline adherence e.g. Immunization and health screening.

CONCLUSIONS: Some evidence of HIS success but highly variable across areas. Need to focus on *"making systems workable," "addressing contextual issues"* and *"demonstrating clinical impacts."*

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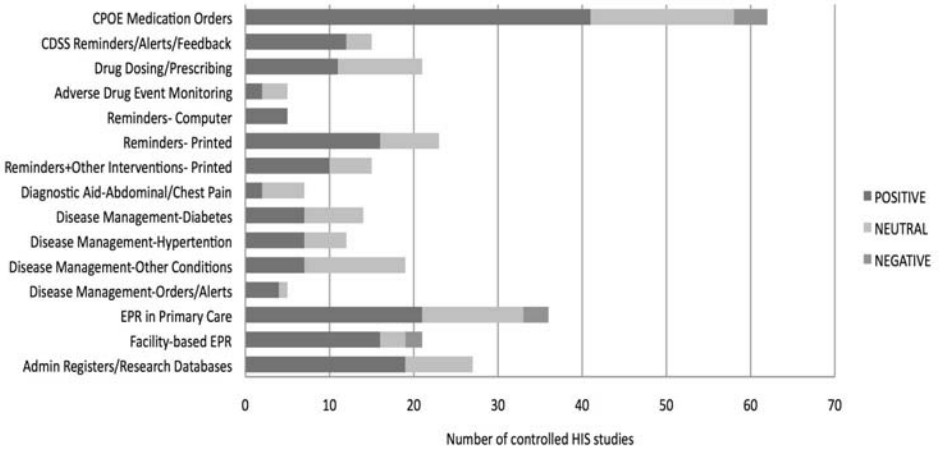
Lau F, et al. A review on systematic reviews of health information system studies. *Unpublished, 2010.*

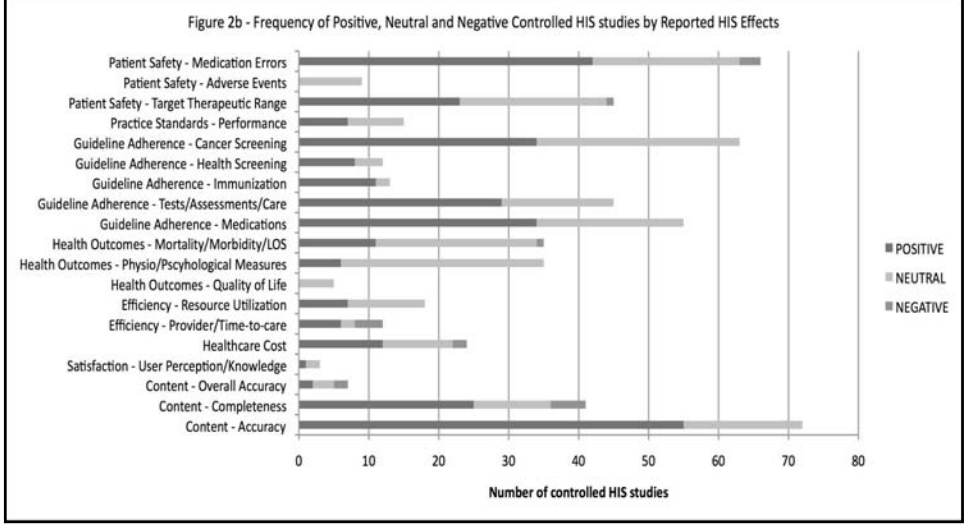
RREM Outputs
Meta-synthesis of HIS Reviews, 2

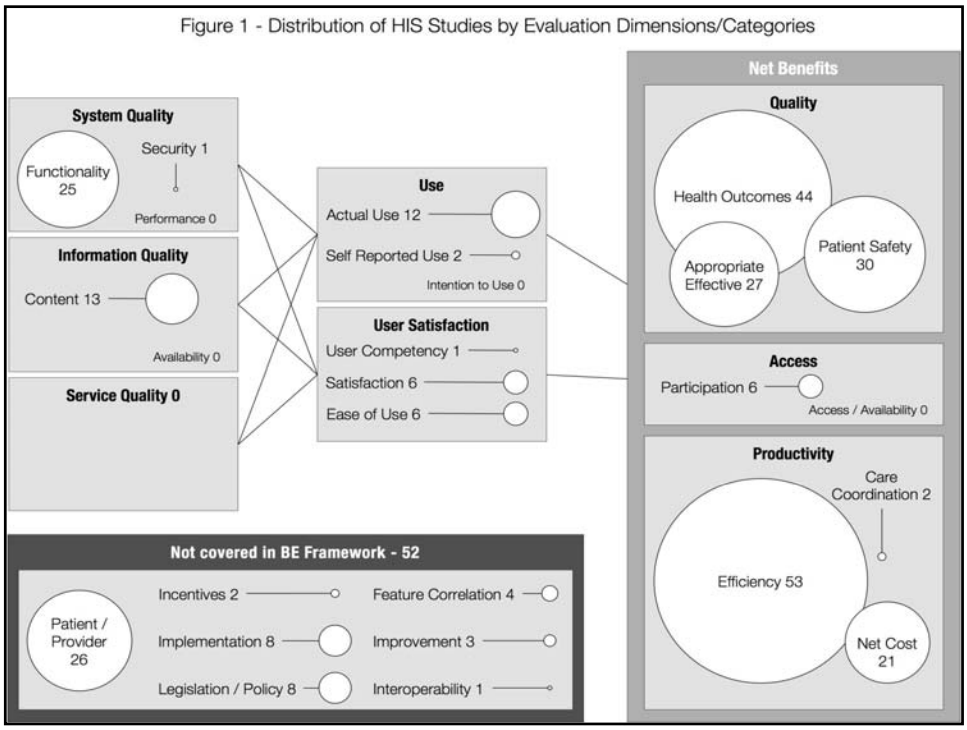
Figure 2a - Frequency of Positive, Neutral and Negative Controlled HIS studies by Reported HIS Features



RREM Outputs

Meta-synthesis of HIS Reviews, 3





RREM Outputs

Scoping Review: IT Use in MedRec

ABSTRACT

OBJECTIVE: Identify studies on IT use in medication reconciliation

METHODS: Searched MedLine and CINAHL databases. Included 28 primary studies on MedRec and use of IT in MedRec process; another 8 with promising MedRec-IT tools.

RESULTS: IT used range from email, databases to specialized MedRec tools. IT mapped to a generic MedRec workflow and Institute of Medicine's key EHR capabilities. Some supported comparison of medications and clarification of discrepancies

CONCLUSIONS: IT is used to facilitate MedRec activities and new applications are being developed to support entire process

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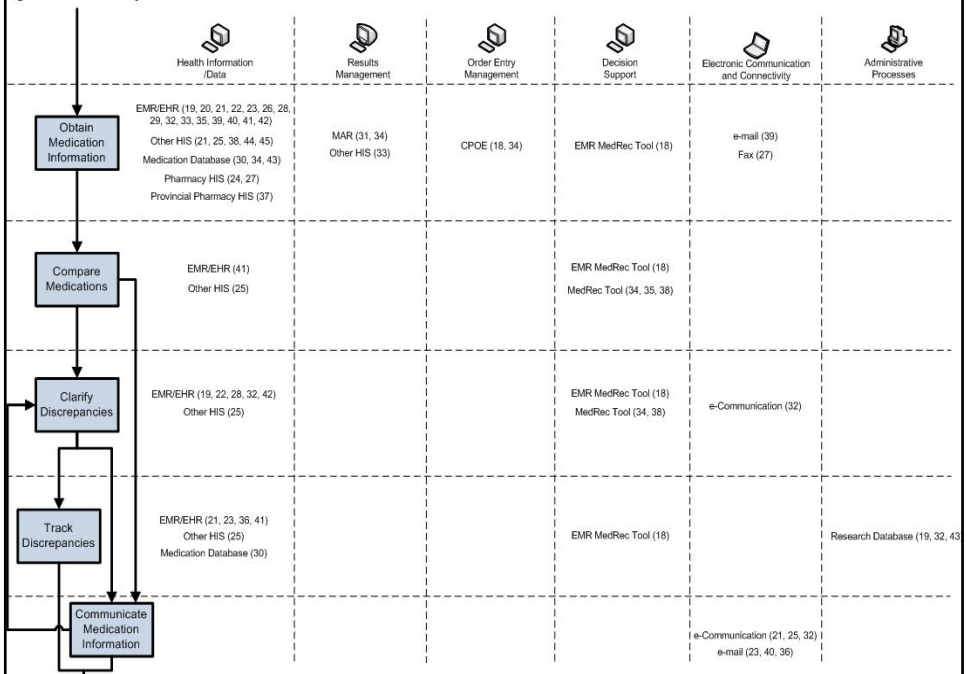
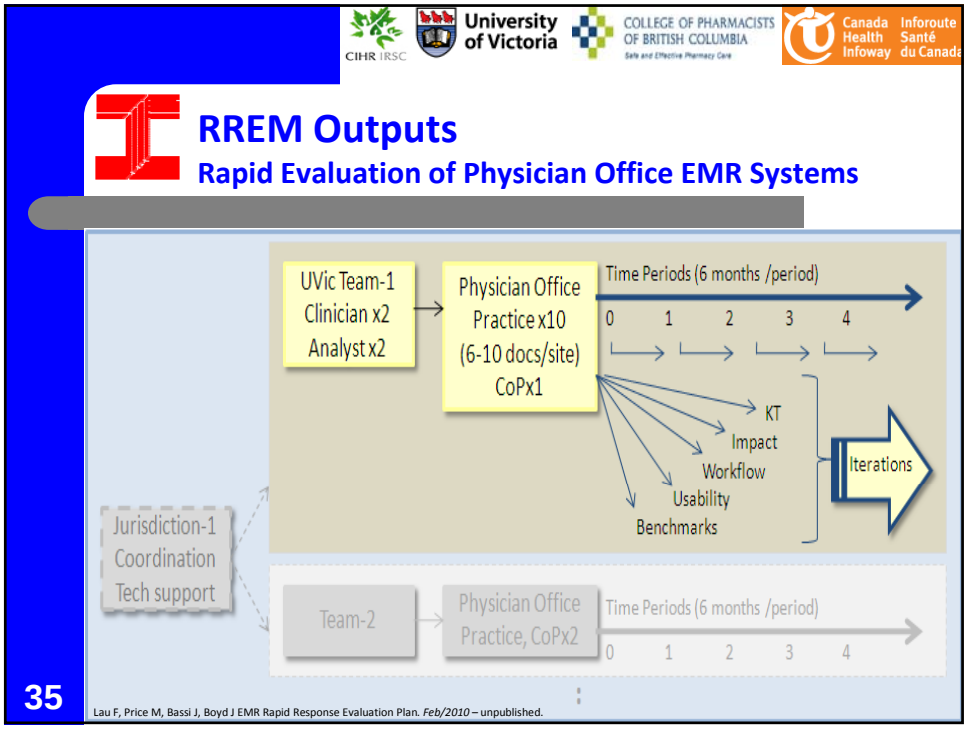
Bassi J, et al. A scoping review of IT use in medication reconciliation. *Annals of Pharmacotherapy* 2010;*44(5):885-97*

Figure 3 - IT Use in Key Activities for the MedRec Process



Scoping Review of IT Use in Medication Reconciliation



By Evaluation Methods	Interviews	Observations	Usability Test Scenarios	Chart Review	Data Extraction	Focus Groups
EMR benchmarking						
5 stage EMR adoption model assessment	v					
Usability engineering						
ePrescribing scenarios	v		v			
Work sampling of prescribing tasks for completion time						
Productivity modeling						
Workflow/task analysis of prescribing process	v	v				
Impact assessment						
Qualitative assessment on performance, outcomes, satisfaction	v					v
Quantitative assessment on performance, outcomes, satisfaction				v	v	
Deployment process thru change/risk management assessment	v					v
Practice reflections						
Focus groups for info sharing, feedback, identifying improvements						v
By Evaluation Metrics						
System features and data quality						
ePrescribing features	v		v			
Flowsheet data quality – completeness/accuracy				v	v	
System usage and satisfaction						
Actual EMR use patterns		v	v		v	
Ease-of-use			v			v
Perceived usefulness/value for physicians/staff	v					v
Patient safety						
Actual/potential medication error rates				v	v	
Rates of medication review/change				v	v	
Appropriateness/effectiveness						
Guideline adherence rates for HTN management				v	v	
Guidelines adherence on follow-up HTN visits				v	v	
Health outcomes						
Physiologic parameters in target range				v	v	
Efficiency						
Time to complete prescribing tasks	v		v			
Ratios of ePrescribing/manual tasks	v		v			
Implementation						
Change/risk management with Pare's risk assessment framework*	v					v
Identifying practice improvement opportunities	v					v
Sharing lessons learned	v					v

(a) Time estimates for data collection tasks by evaluation method for each physician practice site* over 6 months

Data Collection Tasks / Evaluation Methods	Participant	Month-1	Month-5	Month-6	Total
Interviews					
EMR benchmarking	Physician/staff	2 hr	2 hr		4 hrs
Productivity modeling	Physician/staff	1 hr	1 hr		2 hrs
Impact assessment – quantitative/qualitative	Physician/staff	1 hr	1 hr		2 hrs
Impact assessment – deployment process	Physician/staff	1 hr	1 hr		2 hrs
Usability Engineering – post questionnaire	Physician/staff	30 min	30 min		1 hr
Observations					
Productivity modeling (with interviews)	Physician/staff				
Usability Engineering					
Usability ePrescribing test scenarios	Physician	1 hr	1 hr		2 hrs
Data Extraction					
Impact assessment - quantitative	Staff	2 hrs	2 hrs		4 hrs
Practice Reflections		2 hrs	2 hrs	2 hrs	6 hrs
Impact assessment – qualitative	Physician/staff				
Impact assessment – deployment process	Physician/staff				
Focus groups	Physician/staff				
Sub-total		11.5 hrs	9.5 hrs	2 hrs	23 hrs
Chart Review					
Impact assessment – quantitative	Staff	10 hrs	2 hrs		12 hrs
Total		20.5 hrs	12.5 hrs	2 hrs	35 hrs

*Note – the time estimates refer to each physician at a site; so if there are two physicians at a site the total for that site is 70 hrs.

Time estimates for data collection tasks for vendor over 6 months

Data Collection Tasks / Evaluation Methods	Participant	Month-1	Month-5	Month-6	Total
Interviews					
Determine EMR features	Vendor	2 hrs			2 hrs
Total		2 hrs			2 hrs

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Group Exercise - Developing an Evaluation Plan, 1

Health Information Technology Evaluation Toolkit

2009 Update

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Group Exercise - Developing an Evaluation Plan, 2

Is there a project that you have to develop an evaluation plan?

I. Develop brief project description
II. Determine project goals
III. Set evaluation goals
IV. Choose evaluation measures
V. Consider both quantitative and qualitative measures
VI. Consider ongoing evaluation of barriers, facilitators and lessons learned
VII. Search for accessible measures
VIII. Consider project impacts on potential measures
IX. Rate your chosen measures in order of importance to your stakeholders
X. Determine which measurements are feasible

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Group Exercise - Developing an Evaluation Plan, 3

XI. Determine your sample size
XII. Rank your choices on both importance and feasibility
XIII. Choose the measures you want to evaluate
XIV. Determine your study design
XV. Consider the impact of study design on relative cost and feasibility
XVI. Choose your final measures

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Group Exercise -
Developing an Evaluation Plan, 4

Four Suggested Case Studies

1. Telehomecare – providing support and enabling patient self-management for patients with chronic diseases
2. Provincial drug information system (Gen 2) – province wide prescription medication profiles in pharmacies and hospitals
3. Provincial diagnostic imaging system – province wide diagnostic image repositories, allowing reduced duplicates and better access to care (beyond the benefits of local PACS)
4. Occurrence reporting system – web-based reporting and learning tool to support identification, investigation and analysis of safety and risk related incidents

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May 30, 2010

Canada Health Infoway
Clinical Adoption and Benefits, and Lessons

Simon Hagens, Director
Benefits Realization & Quality Improvement

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