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

Workshop Outline

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

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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?

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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?

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
What are the HIS Evaluation Models? Existing Infoway BE Framework

**System quality**
- Functionality
- Performance
- Security

**Information quality**
- Content
- Availability

**Service quality**
- Responsiveness

**Use**
- Use Behavior/Pattern
- Self reported use
- Intention to use

**User satisfaction**
- Competency
- User satisfaction
- Ease of use

**Net benefits**
- Quality
  - Patient safety
  - Appropriateness/effectiveness
  - Health outcomes
- Access
  - Ability of patients/providers to access services
  - Patient and caregiver participation
- Productivity
  - Efficiency
  - Care coordination
  - Net cost

**ORGANIZATIONAL & CONTEXT FACTORS: STRATEGY, CULTURE & BUSINESS PROCESS – OUT OF SCOPE**
- Service quality
- Responsiveness

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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

Proposed Clinical Adoption Framework – Meso and Macro Views

Organizational & Context Factors: Strategy, Culture & Business Process – Out of Scope

- People
  - Individuals/groups
  - Personal characteristics
  - Personal expectations
  - Roles & responsibilities

- Organization
  - Strategy
  - Culture
  - Structure/processes
  - Info/infrastructure

- Implementation
  - Stage
  - Project
  - HIS-practice fit
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

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

- Change Management
- Risk Management
- Peer to Peer Support
- Other Approaches or Methodologies

Proposed Clinical Adoption Framework - eHealth Maturity Stages and Metrics

- Metric "Saturation"
- Metric expected low
- Go Live
- System Use
- Clinical Behaviour
- Patient Outcomes

Proposed Clinical Adoption Framework - Mapping BE to eHealth Maturity Stages

Proposed Clinical Adoption Framework - Toward Clinical Adoption Maturity?
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

Assembling the RREM Toolkit

RREM Overview

HIS Users
- Early Adopters
- Advanced-users
- Intermediate-users
- Basic-users
- Non-users
- Late Adopters

HIS Lifecycle Telescopic Views
- Close-up
- In-motion
- Fixed-anchor
- Wide-angle

HIS Effects
- Usability Engineering
- Process Evaluation
- Impact Evaluation
- Meta-analysis And Review

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### Assembling the RREM Toolkit

#### EMR Adoption 5-Stage Model and Survey Tool, 1

<table>
<thead>
<tr>
<th>IOM Categories of Capabilities</th>
<th>HIMSS 5-Stages</th>
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<tbody>
<tr>
<td>Model Structure</td>
<td>0 1 2 3 4 5</td>
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<tr>
<td>Health Information and Data</td>
<td></td>
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<tr>
<td>Order Entry/Management</td>
<td></td>
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<tr>
<td>Results Management</td>
<td></td>
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<tr>
<td>Decision Support</td>
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<tr>
<td>Electronic Communication and Connectivity</td>
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<tr>
<td>Patient Support</td>
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<tr>
<td>Administrative Processes</td>
<td></td>
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<tr>
<td>Reporting and Population Health Management</td>
<td></td>
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</tbody>
</table>

General description of capabilities at each level

Specific description for sub-sections of the category


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### Assembling the RREM Toolkit

#### EMR Adoption 5-Stage Model and Survey Tool, 2

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

The same level of functionality may span more than one stage
### Assembling the RREM Toolkit
#### EMR Adoption 5-Stage Model and Survey Tool, 4

<table>
<thead>
<tr>
<th>Stage 5</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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</thead>
<tbody>
<tr>
<td>Health Information and Data</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient Demographics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Patient Demographics in the EMR, synced with provincial patient registry.</td>
</tr>
<tr>
<td>Medical Summary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Medical Summary data coded to provincial standards. Uploaded to provincial EHR.</td>
</tr>
<tr>
<td>Order Entry/Management</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Results Management</td>
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<tr>
<td>Decision Support</td>
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<tr>
<td>Electronic Communication and Connectivity</td>
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<tr>
<td>Patient Support</td>
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<td>Reporting and Population Health Management</td>
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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.
- [ ] Mainly in the patient chart and billing program. I may have some files on my computer also, such as spreadsheet for some patients.
- [ ] In my EMR but I use the billing program as the reference source.
- [ ] Exclusively in my EMR (which also has a billing system).
- [ ] Exclusively in my EMR which can be synchronized with a provincial electronic registry of patients.

Indicates which stage each option corresponds to for scoring:

- 0
- 1
- 2
- 3
- 4
- 5

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.

![Graph showing overall stage](image)

**Assembling the RREM Toolkit**

**Usability Benchmarking, 1**

**Usability Benchmark Test Setup for a Stationary Device**

- **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


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### Usability Problems

<table>
<thead>
<tr>
<th>Type</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interface Usability</td>
<td>Aesthetic and Overall Design</td>
<td>Coded if the user specifically mentions the aesthetic look and feel of the system (i.e., the system's graphics, icons, and layout).</td>
</tr>
<tr>
<td></td>
<td>Consistency of Operations</td>
<td>Coded if there are inconsistencies between system operations (i.e., the system uses inconsistent menu layouts, different control labels for the same control, etc.).</td>
</tr>
<tr>
<td></td>
<td>Data Entry</td>
<td>Coded if the user has difficulty entering data into the system.</td>
</tr>
<tr>
<td></td>
<td>Feature Not Present</td>
<td>Coded if a feature requested in the scenario is not supported by the tested system.</td>
</tr>
<tr>
<td></td>
<td>Flexibility</td>
<td>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”).</td>
</tr>
<tr>
<td></td>
<td>Help and Documentation</td>
<td>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 to do this”).</td>
</tr>
<tr>
<td></td>
<td>Navigation</td>
<td>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?”).</td>
</tr>
<tr>
<td></td>
<td>Overall Ease of Use</td>
<td>Coded when the user expresses difficulty using the system (e.g., “I find this system very hard to use”).</td>
</tr>
<tr>
<td></td>
<td>System Responsiveness</td>
<td>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”).</td>
</tr>
<tr>
<td></td>
<td>Task Speed</td>
<td>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”).</td>
</tr>
<tr>
<td></td>
<td>Understandability</td>
<td>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.).</td>
</tr>
<tr>
<td></td>
<td>Visibility</td>
<td>Coded if the user is confused about what the system is doing or what the user can do (e.g., “Is the computer reading the program or not?” or, “What am I supposed to do with this?”).</td>
</tr>
<tr>
<td>Content</td>
<td>Database</td>
<td>Coded if the system database doesn’t contain the desired data.</td>
</tr>
<tr>
<td></td>
<td>Error</td>
<td>Coded if the system provides an incorrect default selection.</td>
</tr>
</tbody>
</table>

#### Errors

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mistake</td>
<td>Coded if the user makes an error during the system testing and does not correct the actions.</td>
</tr>
<tr>
<td>Skip</td>
<td>Coded if the user makes an error during the system testing, but catches and corrects the error.</td>
</tr>
</tbody>
</table>

### Assembling the RREM Toolkit

#### Usability Benchmarking

**Think Aloud Condition Scenario #1**

<table>
<thead>
<tr>
<th>Task</th>
<th>Usability Problem</th>
<th>Description</th>
<th>Start Time (in mins)</th>
<th>End Time (in mins)</th>
<th>Clip Duration (in mins)</th>
<th>Associated Error</th>
<th>Slip (s)</th>
<th>Mistake (s)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create a patient problem for Lisa Vansy</td>
<td>Navigation</td>
<td>The user passed the new patient menu item and then has to return to it with the cursor.</td>
<td>0.00:48</td>
<td>0.00:52</td>
<td>0.00:04</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Create a prescription for 1x500mg Aconitum (aroma)
After 5 days | Default            | Defaults to 1x15mg PO TO, whereas the patient needs 1x500mg PO, QBM.        | 0.03:04              | 0.03:17           | 0.00:13                 |                  |          |             |       |

**Scenario Totals**

- Task Time: 00:58
- Problems: 2
- Slips: 0
- Mistakes: 0
- Errors: 0

*May not be a system error (the scenario could just be different)*. Get a medical expert to check.
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 such as allergies, drug-specific factors like contraindications, and non-clinical factors like insurance 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 direct to treat the infection with antibiotics.

1. When she presented to your office, how would you confirm the identity of the patient?
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, breastfeeding, 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.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.b Evaluate patient-specific non-clinical factors
She has a busy schedule and often forgets medications. She prefers once daily dosing. How is this information about her preference included in selecting a medication?

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

Electronic Prescribing - Workflow Modeling and Analysis Method

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. e-prescribing. The transition to e-prescribing is not a single step process. The stages of e-prescribing 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 Hospital Reimbursement Benefits for Each Stage” (2009). 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 physician writes a prescription, a pharmacist fills it, and then a patient takes it. In the real world though, the workflow is not as straightforward. One individual might act in more than one role, one role might be taken or left 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

This handbook is the main document to guide a workflow process. It includes:

- Background information on e-prescribing and the stages
- Instructions to all the tools
- Detailed flowcharts
- A series of workflow diagrams for each stage

Workflow Walk-through

The Workflow Walk-through describes a specific process and how each activity is done. It can be used in addition to the Workflow Assessment Summary.

Workflow Assessment Summary

The Workflow Assessment Summary is used to present the results of the workflow analysis. Details of the workflow analysis such as comments collected during the evaluation are also included in this document.

Workflow Analysis Data Sheet

The Workflow Analysis Data Sheet is used to indicate gaps between the control stage of workflow and known current workflow.

Workflow Analysis Summary

The Workflow Analysis Summary is used to identify gaps between the control stage of workflow and known current workflow.

Acknowledgements

This work was completed as part of an eHealth Observatory project by Dr. Patrick Lee (PhD) for the City of Victoria, City of Nanaimo, and the Province of British Columbia.

References


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.”

RREM Outputs
Meta-synthesis of HIS Reviews, 3

Figure 2b - Frequency of Positive, Neutral and Negative Controlled HIS studies by Reported HIS Effects

Figure 1 - Distribution of HIS Studies by Evaluation Dimensions/Categories

Net Benefits
Quality

Health Outcomes 44
Appropriate Effective 27
Feasibility 30

Access
Participation 6
Access / Availability 6

Productivity
Care Coordination 2
Efficiency 53
Net Cost 21

System Quality

Functionality 25
Security 1
Performance 0

Information Quality

Content 13
Availability 0

Service Quality 0

Use

Actual Use 12
Self Reported Use 2
Intention to Use 0

User Satisfaction

User Competency 1
Satisfaction 6
Ease of Use 6

Not covered in BE Framework - 52

Incentives 2
Feature Correlation 4
Implementation 8
Improvement 3
Legislation / Policy 6
Interoperability 1

Patient / Provider 20
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.

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

Scoping Review of IT Use in Medication Reconciliation
RREM Outputs
Rapid Evaluation of Physician Office EMR Systems

**By Evaluation Methods**

<table>
<thead>
<tr>
<th>Method</th>
<th>Output</th>
<th>Impact</th>
<th>Quality/Reliability</th>
<th>Cost</th>
<th>Ease of use</th>
<th>Flexibility</th>
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<tr>
<td>Qualitative assessment of performance, workflow, satisfaction</td>
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<tr>
<td>Quantitative assessment of performance, workflow, satisfaction</td>
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<tr>
<td>Deployment process to change risk management assessment</td>
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<td>Practice reflections</td>
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<tr>
<td>Focus groups for info sharing, feedback, identifying improvements</td>
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**By Evaluation Metrics**

<table>
<thead>
<tr>
<th>Metric</th>
<th>Output</th>
<th>Impact</th>
<th>Quality/Reliability</th>
<th>Cost</th>
<th>Ease of use</th>
<th>Flexibility</th>
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<tbody>
<tr>
<td>System features and data quality</td>
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<tr>
<td>ePrescribing features</td>
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<tr>
<td>Flow sheet data quality -- completeness/accuracy</td>
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<td>System usage and satisfaction</td>
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<td>Time of use</td>
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<td>Perceived usefulness/value for physicians/staff</td>
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<td>Appropriateness/effectiveness</td>
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<td>Guidelines adherence on follow-up HTN visits</td>
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<td>Physiologic parameters in target range</td>
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<td>Efficiency</td>
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<td>Time to complete prescribing tasks</td>
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<tr>
<td>Time of ePrescribing/Manual tasks</td>
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<tr>
<td>Implementation</td>
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<tr>
<td>Change/risk management with Pared’s risk assessment framework</td>
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<tr>
<td>Identifying practice improvement opportunities</td>
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<tr>
<td>Sharing lessons learned</td>
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</table>
### Group Exercise - Developing an Evaluation Plan, 1

**Health Information Technology Evaluation Toolkit**

**2009 Update**

Prepared for:
Agency for Healthcare Research and Quality
U.S. Department of Health and Human Services
540 Garfield Road
Rockville, MD 20850

www.ahrq.gov

Contract No. 290-04-0016

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---

**Table: Time estimates for data collection tasks by evaluation method for each physician practice site over 6 months**

<table>
<thead>
<tr>
<th>Data Collection Tasks / Evaluation Methods</th>
<th>Participant</th>
<th>Month-1</th>
<th>Month-5</th>
<th>Month-6</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>Interviews</td>
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<tr>
<td>EMR benchmarking</td>
<td>Physician/Staff</td>
<td>2 hr</td>
<td>2 hr</td>
<td></td>
<td>4 hrs</td>
</tr>
<tr>
<td>Productivity modeling</td>
<td>Physician/Staff</td>
<td>1 hr</td>
<td>1 hr</td>
<td></td>
<td>2 hrs</td>
</tr>
<tr>
<td>Impact assessment – quantitative/qualitative</td>
<td>Physician/Staff</td>
<td>1 hr</td>
<td>1 hr</td>
<td></td>
<td>2 hrs</td>
</tr>
<tr>
<td>Impact assessment – deployment process</td>
<td>Physician/Staff</td>
<td>1 hr</td>
<td>1 hr</td>
<td></td>
<td>2 hrs</td>
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<tr>
<td>Usability Engineering – post</td>
<td>Physician/Staff</td>
<td>50 min</td>
<td>50 min</td>
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<td>1 hr</td>
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<tr>
<td>Observations</td>
<td>Physician/Staff</td>
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<tr>
<td>Productivity modeling (with interviews)</td>
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<tr>
<td>Usability Engineering</td>
<td></td>
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<tr>
<td>Usability prescribing test scenarios</td>
<td>Physician</td>
<td>1 hr</td>
<td>1 hr</td>
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<td>2 hrs</td>
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<tr>
<td>Data Extraction</td>
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<tr>
<td>Impact assessment – qualitative</td>
<td>Staff</td>
<td>2 hrs</td>
<td>2 hrs</td>
<td></td>
<td>4 hrs</td>
</tr>
<tr>
<td>Practice Reflections</td>
<td></td>
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<tr>
<td>Impact assessment – qualitative</td>
<td>Physician/Staff</td>
<td>2 hrs</td>
<td>2 hrs</td>
<td></td>
<td>4 hrs</td>
</tr>
<tr>
<td>Impact assessment – deployment process</td>
<td>Physician/Staff</td>
<td>2 hrs</td>
<td>2 hrs</td>
<td></td>
<td>4 hrs</td>
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<tr>
<td>focus groups</td>
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<tr>
<td>Sub-total</td>
<td>Staff</td>
<td>11.5 hrs</td>
<td>9.5 hrs</td>
<td>2 hrs</td>
<td>23 hrs</td>
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<tr>
<td>Chart Review</td>
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<tr>
<td>Impact assessment – quantitative</td>
<td>Staff</td>
<td>10 hrs</td>
<td>2 hrs</td>
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<td>12 hrs</td>
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<tr>
<td>Total</td>
<td>Staff</td>
<td>20.5 hrs</td>
<td>11.5 hrs</td>
<td>2 hrs</td>
<td>55 hrs</td>
</tr>
</tbody>
</table>

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

---

**Table: Time estimates for data collection tasks for vendor over 6 months**

<table>
<thead>
<tr>
<th>Data Collection Tasks / Evaluation Methods</th>
<th>Participant</th>
<th>Month-1</th>
<th>Month-5</th>
<th>Month-6</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviews</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Determine EMR features</td>
<td>Vendor</td>
<td>2 hrs</td>
<td>2 hrs</td>
<td></td>
<td>4 hrs</td>
</tr>
<tr>
<td>Total</td>
<td>Vendor</td>
<td>2 hrs</td>
<td>2 hrs</td>
<td></td>
<td>4 hrs</td>
</tr>
</tbody>
</table>
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

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
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

May 30, 2010

Canada Health Infoway
Clinical Adoption and Benefits, and Lessons

Simon Hagens, Director
Benefits Realization & Quality Improvement

May 30, 2010