UVic eHealth Observatory
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School of Health Information Science, University of Victoria

- Key concepts and frameworks in HIS evaluation
- Practicality and rigor of different approaches
- Examples from literature and challenges

Key Concepts and Frameworks in HIS Evaluation, #1
Infoway Benefits Evaluation 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

Key Concepts and Frameworks in HIS Evaluation, #2
Proposed Clinical Adoption Framework

Key Concepts and Frameworks in HIS Evaluation, #3
EMR Adoption Framework


Key Concepts and Frameworks in HIS Evaluation, #4
CA Framework and HIS Adoption Approaches/Methods

Key Concepts and Frameworks in HIS Evaluation, #5
Rapid Evaluation Methods

UVic eHealth Observatory – http://ehealth.uvic.ca
Practicality and Rigor of Different Approaches, #1
Newfoundland and Labrador Centre for Health Information


- Background
- Process Used to Develop The Framework
- Nature of The Intervention Under Study
- Synopsis of the Literature
  - Perspectives on Evaluation
  - Models and Frameworks Commonly Used to Guide Evaluation Projects
  - Key Messages Regarding Future Efforts To Evaluate Complex Health Information Systems

- Proposed Approach to Planning an Evaluation Of An E.H.R. Initiative
  - Steps For Framework Development
    - Step 1: Identify Key Stakeholders in Each Jurisdiction
    - Step 2: Orient Key Stakeholders To the E.H.R. Initiative and Reach Agreement on Why an Evaluation Is Needed
    - Step 3: Agree on When To Evaluate
    - Step 4: Agree on What To Evaluate
    - Step 5: Agree on How To Evaluate
    - Step 6: Analyze and Report
    - Step 7: Agree on Recommendations and Forward Them to Key Stakeholders

- Proposed Framework: Time Frames, Core Questions, Indicators, Data Sources and Study Design
  - Evaluation For Accountability: Measurement of Results
  - Evaluation For Performance Enhancement
  - Evaluation For Knowledge Development


Practicality and Rigor of Different Approaches, #2
AHRQ - HIT Evaluation Toolkit

<table>
<thead>
<tr>
<th>Importance Scale</th>
<th>Feasibility Scale</th>
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<tbody>
<tr>
<td>1- Very Important</td>
<td>1-Feasible (1)</td>
</tr>
<tr>
<td>2- Moderately Important</td>
<td>2-Moderate Effort (2)</td>
</tr>
<tr>
<td>3- Not Important</td>
<td>3-Not Feasible (5)</td>
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**Practicality and Rigor of Different Approaches, #3**  
AHRQ - HIT Evaluation Toolkit

<table>
<thead>
<tr>
<th>Data Collection Strategies</th>
<th>Types of Study Designs</th>
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<tbody>
<tr>
<td></td>
<td>Case-Control</td>
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<td>Manual Chart Review</td>
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<td>Electronic Data Mining of EMR/ Registry Data</td>
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<tr>
<td>Instrument the EMR/Registry</td>
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<tr>
<td>Surveys (Paper/Electronic)</td>
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<td>Expert Review</td>
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<td>Phone Interview</td>
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<td>Focus Group</td>
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<td>Direct Observation</td>
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*Examples from Literature and Challenges, #1*

**A Review of Systematic Review of HIS Studies**

**Purpose**
- Consolidate existing evidence on HIS studies to inform practice and research

**Method**
- Systematic review, Medline+Cochrane 1996-2009, terms=HIS+reviews
- Summary by topics, reconciliation of duplicates, aggregate effects of controlled studies, factors that influenced HIS success

**Results**
- 50 reviews, 1276 unique studies, 48% North America, 54% ≥2005
- Medication, prevention, health conditions, data quality, care process/outcome
- 31/43 or 72.1% of 287 controlled studies had positive effects, e.g. reminders for immunization and health screening
- HIS success: in-house systems, developers as users, integrated DS, benchmarks
- Addressing contexts: knowledge/perception, implementation, incentives, legislation/policy and interoperability
Examples from Literature and Challenges, #2
A Review of Systematic Review of HIS Studies


Examples from Literature and Challenges, #3
A Review of Systematic Review of HIS Studies

Examples from Literature and Challenges, #4
A Review of Systematic Review of HIS Studies

Conclusions

- Modest positive HIS effects to date
- Improvements needed in HIS areas and metrics
  - health conditions, satisfaction, productivity and care quality
- Successful HIS adoption requires explicit recognition, strategies and actions to address factors in the clinical adoption framework
- How to improve HIS adoption?
  - Making the system workable
  - Addressing contextual issues
  - Measuring clinical impacts