Clinicians Using Standardized Clinical Data to Inform Practice and Influence Health Policy Directions
Agenda

• Discuss the standardization & collection of clinical outcomes to support evidence-based practice
• Describe the evaluation of the implementation & use of C-HOBIC and the C-HOBIC Transition Synoptic Report
• Discuss the advancement of clinical data standards in Canada
• Engage audience in an open discussion regarding the above
Nurses have been documenting the outcomes of their interventions for decades but the lack of common language and associated measures for outcomes has impeded data aggregation and analysis of information about the effects of nursing practice.

Standardizing the Collection of Clinical Outcomes to Support Evidence-Based Practice

Peggy Ann White, MN, BA, RN
Institute for Clinical Evaluative Science, Toronto, ON, Canada
Driving Factors

• Lack of information to inform decisions regarding patient care

• Lack of information for nurse managers to evaluate the impact of resource changes on patient outcomes and examine the quality of care provided

• Need for information to support nursing’s accountability
Process for Selecting Outcomes

• Expert Panel – focus on acute care, complex continuing care, long-term care homes and home care

• Consultations with nursing stakeholders

• Critical appraisal of research - concept definition, valid and reliable measure and empirical evidence linking the outcome to some aspect of nursing (indicator/intervention)
Standardized Clinical Outcomes

- A suite of clinical concepts that can be collected systematically and standardized across the health care system

### Acute Care and Home Care Measures

- **Functional Status**: ADL* & Bladder Continence* (IADL* for home care)
- **Symptom management**: Pain*, Fatigue, Dyspnea, Nausea
- **Safety Outcomes**: Falls*, Pressure Ulcers*
- **Therapeutic Self-care**
- Collected on admission & discharge
- * interRAI measures

### Long-term Care and Complex Continuing Care Measures

- **Functional Status**: ADL* & Bladder Continence*
- **Symptom management**: Pain*, Fatigue*, Dyspnea*, Nausea
- **Safety Outcomes**: Falls*, Pressure Ulcers*
- Collected on admission, quarterly, client condition changes, & discharge.
## Implementation in Ontario

<table>
<thead>
<tr>
<th></th>
<th>Acute Care &amp; CCC</th>
<th>Long-term Care</th>
<th>Home Care</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>As of May 31, 2015</strong></td>
<td>50</td>
<td>122</td>
<td>4 providers (14 sites)</td>
</tr>
<tr>
<td><strong>Assessments in database</strong></td>
<td>982, 842</td>
<td>372, 037</td>
<td>62, 894</td>
</tr>
</tbody>
</table>
Implementation - Guiding Principles

- Emphasis on data for which there is empirical evidence that clinicians impact patient care (outcomes)

- Maximize electronic capture through existing systems – Integrate outcomes capture with existing assessments to avoid duplication – standardized questions with coded responses embedded into assessments

- Provide access to information for nurses and other clinicians, healthcare managers, researchers and ministry planners

- Work with clinicians regarding the value of this data to their practice
### ADL Self Performance

Assess for performance over full 24 hour periods, considering all occurrences of activity.

<table>
<thead>
<tr>
<th>Bathing</th>
<th>Independent</th>
<th>Set up help only</th>
<th>Limited assistance</th>
<th>Extensive assistance</th>
<th>Maximal assistance</th>
<th>Total dependence</th>
<th>Activity did not occur</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Hygiene</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walking</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transfer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toilet</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toilet Use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bed Mobility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*See below for clarification of grid components*

**Bladder Continence (Assess for last 24 hrs)**
- 0: Continent
- 1: Control
- 2: Infrequently incontinent
- 3: Frequently incontinent
- 4: Incontinent
- 5: Did not occur

**Pain Symptoms (Assess for last 24 hours)**
- 0: No Pain
- 1: Present but not exhibited in last 24 hrs
- 2: Exhibited in last 24 hrs

**Dyspnea (Assess for last 24 hours)**
- 0: Absence of symptoms
- 1: Absent at rest, present w moderate activity
- 2: Absent at rest, present w day to day activity
- 3: Present at rest

**Fatigue (Assess for last 24 hours)**
- 0: None
- 1: Minimal
- 2: Moderate
- 3: Severe
- 4: Unable to commence day to day activities

**Nausea (Assess for last 24 hours)**
- 0: No nausea
- 1: Mild nausea
- 2: Moderate nausea
- 3: Severe nausea
- 4: Incapacitating

**Falls**
- 0: No fall in last 90 days
- 1: One fall in last 30 days, but fell 31-90 days ago
- 2: One fall in last 30 days
- 3: Two or more falls in last 30 days

**Most Severe Pressure Ulcer**
- 0: No pressure ulcer
- 1: Any area of persistent skin redness
- 2: Partial loss of skin layers
- 3: Deep craters in skin
- 4: Breaks in skin exposing muscle or bone
- 5: Not codeable, e.g. necrotic eschar predominant
Therapeutic Self Care - HOBIC

1. Do you know what medications you were taking at home, before you came to the hospital?

<table>
<thead>
<tr>
<th></th>
<th>0 - Not at all</th>
<th>1 - Somewhat</th>
<th>2 - Very Much</th>
<th>8 - Unable to Assess</th>
<th>9 - Not Applicable</th>
</tr>
</thead>
</table>

2. Do you know why you were taking your medications?

<table>
<thead>
<tr>
<th></th>
<th>0 - Not at all</th>
<th>1 - Somewhat</th>
<th>2 - Very Much</th>
<th>8 - Unable to Assess</th>
<th>9 - Not Applicable</th>
</tr>
</thead>
</table>

3. Did you take your medications (pills, drops, creams) as ordered by the doctor?

<table>
<thead>
<tr>
<th></th>
<th>0 - Not at all</th>
<th>1 - Somewhat</th>
<th>2 - Very Much</th>
<th>8 - Unable to Assess</th>
<th>9 - Not Applicable</th>
</tr>
</thead>
</table>

4. Were you able to notice symptoms (changes in your body) related to your health?
   Examples of symptoms: pain, feeling tired, dizzy.

<table>
<thead>
<tr>
<th></th>
<th>0 - Not at all</th>
<th>1 - Somewhat</th>
<th>2 - Very Much</th>
<th>8 - Unable to Assess</th>
<th>9 - Not Applicable</th>
</tr>
</thead>
</table>

5. Were you able to carry out treatments to manage your symptoms (changes in your body)? Example of treatments: massage painful area; work at my pace if tired; breathing exercise for shortness of breath.

<table>
<thead>
<tr>
<th></th>
<th>0 - Not at all</th>
<th>1 - Somewhat</th>
<th>2 - Very Much</th>
<th>8 - Unable to Assess</th>
<th>9 - Not Applicable</th>
</tr>
</thead>
</table>

6. Were you able to do your everyday things (like bathing, shopping, preparing meals)?

<table>
<thead>
<tr>
<th></th>
<th>0 - Not at all</th>
<th>1 - Somewhat</th>
<th>2 - Very Much</th>
<th>8 - Unable to Assess</th>
<th>9 - Not Applicable</th>
</tr>
</thead>
</table>
5. Were you able to carry out treatments to manage your symptoms (changes in your body)? Example of treatments: massage painful area; work at my pace if tired; breathing exercise for shortness of breath.

- 0 Not at all
- 1 Somewhat
- 2 Very Much
- 8 Unable to Assess
- 9 Not Applicable

6. Were you able to do your everyday things (like bathing, shopping, preparing meals)?

- 0 Not at all
- 1 Somewhat
- 2 Very Much
- 8 Unable to Assess
- 9 Not Applicable

7. Did you have someone to call if you needed help to do everyday things (like bathing, shopping, preparing meals)?

- 0 Not at all
- 1 Somewhat
- 2 Very Much
- 8 Unable to Assess
- 9 Not Applicable

8. Did you know who to call in case of medical emergency?

- 0 Not at all
- 1 Somewhat
- 2 Very Much
- 8 Unable to Assess
- 9 Not Applicable

Therapeutic Self Care Score

HOBIC Reference Link
Authentication

User ID: 

Password: 

Organisation ID: 

Log On
### Benefits

- Health Care System
  - Provide a foundation piece (common data elements across health settings) to inform the electronic patient record
  - Inform public reporting on health system performance
  - Accountability agenda
  - Making nursing visible on administrative databases

### Table: HOBIC Indicator Reports - Mean Indicators Over Time

<table>
<thead>
<tr>
<th>Variable</th>
<th>1-Jan-2009 - 26-May-2009</th>
<th>1-Jan-2008 - 01-Jan-2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Patient Score</td>
<td>176 10.8 7.4 -3.4</td>
<td>58 9.3 7.8 -1.5</td>
</tr>
<tr>
<td>ADL Composite</td>
<td>194 6.6 4.7 -1.9</td>
<td>64 4.5 4.0 -0.5</td>
</tr>
<tr>
<td>a) Bathing</td>
<td>217 1.4 1.1 -0.3</td>
<td>68 0.8 0.9 0.1</td>
</tr>
<tr>
<td>b) Personal hygiene</td>
<td>222 1.3 1.1 -0.2</td>
<td>70 0.8 0.9 0.1</td>
</tr>
<tr>
<td>c) Walking</td>
<td>228 1.3 0.9 -0.5</td>
<td>72 1.1 0.8 -0.3</td>
</tr>
<tr>
<td>d) Transfer toilet</td>
<td>224 1.3 0.8 -0.5</td>
<td>72 0.8 0.6 -0.2</td>
</tr>
<tr>
<td>e) Toilet use</td>
<td>222 1.0 0.6 -0.4</td>
<td>72 0.7 0.6 -0.1</td>
</tr>
<tr>
<td>f) Bed mobility</td>
<td>247 1.1 0.7 -0.3</td>
<td>76 0.6 0.6 0.0</td>
</tr>
<tr>
<td>g) Eating</td>
<td>235 0.6 0.5 -0.1</td>
<td>70 0.3 0.3 0.0</td>
</tr>
<tr>
<td>Bladder Continence</td>
<td>241 0.4 0.3 -0.1</td>
<td>76 0.3 0.4 0.1</td>
</tr>
<tr>
<td>Pain Scale</td>
<td>215 0.9 0.6 -0.3</td>
<td>65 1.1 1.0 -0.2</td>
</tr>
<tr>
<td>Pain Frequency</td>
<td>216 0.7 0.5 -0.2</td>
<td>66 0.9 0.8 -0.1</td>
</tr>
<tr>
<td>Pain Intensity</td>
<td>216 2.3 1.2 -1.0</td>
<td>65 3.0 2.3 -0.6</td>
</tr>
<tr>
<td>Fatigue</td>
<td>247 1.4 1.0 -0.4</td>
<td>76 1.2 0.9 -0.3</td>
</tr>
<tr>
<td>Dyspnea</td>
<td>246 0.8 0.5 -0.2</td>
<td>76 0.8 0.5 -0.2</td>
</tr>
<tr>
<td>Nausea</td>
<td>247 0.3 0.1 -0.2</td>
<td>76 0.3 0.2 -0.1</td>
</tr>
<tr>
<td>Falls</td>
<td>243 0.6 0.5 -0.1</td>
<td>74 0.3 0.3 0.0</td>
</tr>
<tr>
<td>Most Severe Pressure Ulcer</td>
<td>244 0.1 0.1 -0.0</td>
<td>75 0.0 0.1 0.1</td>
</tr>
</tbody>
</table>
Managers have access to:

- Mean Indicator by Unit
- Mean Indicators by Diagnosis & Age
- Patient Detail by Encounter
- Percentages per Question on Admission & Discharge
- Mean Indicators over time
- Submission Report
- Graphing Feature

### HOBIC Indicator Reports - Percentages per Question on Admission

**Period:** 01-Jan-2011 - 31-Mar-2011

**Unit:** 1A

<table>
<thead>
<tr>
<th>ADL</th>
<th>Total</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>8</th>
<th>Missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>a - Bathing</td>
<td>144</td>
<td>18.8%</td>
<td>19.4%</td>
<td>16.7%</td>
<td>16.0%</td>
<td>14.6%</td>
<td>11.8%</td>
<td>2.8%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>b - Personal hygiene</td>
<td>144</td>
<td>16.0%</td>
<td>13.0%</td>
<td>16.0%</td>
<td>16.7%</td>
<td>13.2%</td>
<td>19.4%</td>
<td>4.9%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>c - Walking</td>
<td>144</td>
<td>13.2%</td>
<td>17.4%</td>
<td>18.8%</td>
<td>10.4%</td>
<td>18.8%</td>
<td>18.1%</td>
<td>3.5%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>d - Transfer toilet</td>
<td>144</td>
<td>15.3%</td>
<td>13.2%</td>
<td>17.4%</td>
<td>15.3%</td>
<td>15.3%</td>
<td>20.1%</td>
<td>3.5%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>e - Toilet use</td>
<td>144</td>
<td>19.4%</td>
<td>17.4%</td>
<td>16.7%</td>
<td>17.4%</td>
<td>11.8%</td>
<td>14.6%</td>
<td>2.8%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>f - Bed mobility</td>
<td>144</td>
<td>21.5%</td>
<td>11.9%</td>
<td>16.7%</td>
<td>13.9%</td>
<td>18.0%</td>
<td>16.7%</td>
<td>3.5%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>g - Eating</td>
<td>144</td>
<td>13.9%</td>
<td>13.9%</td>
<td>13.9%</td>
<td>13.9%</td>
<td>15.3%</td>
<td>20.8%</td>
<td>8.3%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bladder Continen</th>
<th>Total</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>8</th>
<th>Missing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>144</td>
<td>20.8%</td>
<td>18.8%</td>
<td>23.6%</td>
<td>31.2%</td>
<td>5.6%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fatigue</th>
<th>Total</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Missing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>144</td>
<td>20.1%</td>
<td>27.1%</td>
<td>21.5%</td>
<td>22.9%</td>
<td>8.3%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nausea</th>
<th>Total</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Missing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>144</td>
<td>24.3%</td>
<td>25.0%</td>
<td>22.9%</td>
<td>19.4%</td>
<td>8.3%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dyspnea</th>
<th>Total</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>Missing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>144</td>
<td>33.3%</td>
<td>26.4%</td>
<td>31.9%</td>
<td>8.3%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Falls</th>
<th>Total</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>Missing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>144</td>
<td>30.6%</td>
<td>33.3%</td>
<td>28.5%</td>
<td>7.6%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pressure Ulcers</th>
<th>Total</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Missing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>144</td>
<td>20.8%</td>
<td>20.8%</td>
<td>19.4%</td>
<td>28.5%</td>
<td>10.4%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pain Frequency</th>
<th>Total</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>Missing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>144</td>
<td>38.9%</td>
<td>49.3%</td>
<td>11.8%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pain Intensity</th>
<th>Total</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>Missing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>144</td>
<td>88.2%</td>
<td>1.4%</td>
<td>0.7%</td>
<td>0.0%</td>
<td>2.8%</td>
<td>1.4%</td>
<td>1.4%</td>
<td>1.4%</td>
<td>1.4%</td>
<td>1.4%</td>
<td>0.7%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>
HOBIC Indicator Reports - Mean Indicators (Detail) by Diagnosis, Age

Period: 01-Jan-2009 - 31-Dec-2009

Unit: All Units

Dyspnea
Ages: All

Age Range

18-40 N=3
41-65 N=2
65-79 N=1
80-89 N=4
90+ N=1

Value

2.0
1.5
1.3
0.5
0.0

Average Score (Higher Score Indicates More Resource Intensive)

Admission
Discharge
Admission Mean Line
Discharge Mean Line

17
Use of HOBIC Data

- HOBIC reports at team meetings to examine outcomes
- Patient specific discharge summary to patients to follow-up with their family physicians
- Using the therapeutic self-care to assess readiness for discharge/follow-up needed in the community

Clinical Care
- Using HOBIC information (ADL & continence) as part of daily/weekly team rounds
- Completing HOBIC weekly on restorative care units to monitor progress in terms of ADL

- Inclusion of HOBIC measures in Quality Improvement Plans and dashboards
Site Education/Engagement

- Site visits
  - Connect with the team around the value of standardized data

- Symposia
  - Site presentations – use, reporting, feedback and mentoring
  - Present current research findings
  - Solicit ideas and plans for research and engagement initiatives

- Regular conference calls with groups of sites
  - Foster completion rates
  - Strategies that are working

- Monthly Webexs
  - Accessing the HOBIC reports
  - Using the HOBIC data to examine practice at the unit level

- Newsletters
  - Focus on providing information about how sites are using HOBIC data.
Annual HOBIC Reports

Health Outcomes for Better Information and Care (HOBIC)
Acute Care and Home Care in Ontario 2013
June 2014

Health Outcomes for Better Information and Care (HOBIC)
Acute Care in Ontario 2012
September 2013
Figure 3: Percent of Patients with a Decline in ADL Across All Participating Sites by Age and Length of Stay, from December 1, 2006 to March 31, 2014

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>17-24</td>
<td>6.8</td>
<td>9.9</td>
<td>14.3</td>
<td>19.3</td>
<td>9</td>
<td>9</td>
<td>15.7</td>
<td>20.5</td>
<td>25.3</td>
<td>22.4</td>
<td>29</td>
<td>34.1</td>
<td>37.1</td>
<td>33.6</td>
<td>28.4</td>
<td>21</td>
<td>25.5</td>
<td>28.6</td>
<td>31.4</td>
<td>31.9</td>
<td>41.6</td>
<td>42</td>
<td>40</td>
<td>37.1</td>
<td>41.6</td>
<td>42</td>
<td>40</td>
<td>37.1</td>
<td>41.6</td>
<td>42</td>
<td>40</td>
<td>37.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25-34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35-44</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45-54</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>55-64</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>65-74</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>75-84</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>85-94</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>95-104</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: ADL refers to Activities of Daily Living.
HOBIC and Health System Use

HOBIC data linked to other datasets held ICES

- Therapeutic self-care (TSC) scores showed a consistent and significant protective effect for readmission to acute care at 7, 30 and 90 days. TSC scores was associated with approximately a 10% reduction in the likelihood of readmission.

- Nausea was more strongly related to early readmissions (3, 7, and 30 days).

  - Dyspnea was more strongly related to readmission at later stages (30 and 90 days).

Increasing Patient Self Care to Avoid Hospital Readmissions
Demonstrating Value with HOBIC Data - Toronto, ON. February, 2012
Wodchis, McGillis-Hall, & Quigley
HOBIC and Health System Use... continued

HOBIC scores on admission as a predictor of ALC and LOS

• Higher fatigue and dyspnea scores on admission were significantly related to a longer length of stay

• High scores for fatigue and falls and, to a lesser extent, a high ADL composite score on admission were more likely to be discharged to either complex continuing care, long-term care homes or rehabilitation facilities than discharged home


Jeffs, Jiang, Wilson, Ferris, Cardiff, Lancetta, White & Pringle
TSC scores in relation to:
- the use of health care resources, including new emergency room visits/unplanned hospital readmissions;
- safety outcomes, including client falls; unintended weight loss; new urinary tract infection; ADL decline; new pressure ulcer or ulcer deterioration; non-compliance/adherence with medication; and new caregiver decline

Found that clients with high TSC ability experienced fewer adverse events

Need to focus on improving client self-care functioning, a domain frequently overlooked by all health care professionals

Understanding the Relationship between Therapeutic Self-Care and Adverse Events for the Geriatric Home Care Clients in Canada
Journal of the American Geriatrics Society, 2014, 62, supplement 1
Sun & Doran
24
Evaluating the Implementation and Use of C-HOBIC and the Transition Synoptic Report

Lynn M. Nagle, PhD, MScN, BN, RN, FAAN
Lawrence S. Bloomberg, Faculty of Nursing,
University of Toronto, Toronto, ON, Canada
C-HOBIC Implementation: Phase 1 – 2007-2009

- Ontario (funded by Ministry of Health and Long-term Care) 122 sites collecting the C-HOBIC suite of measures – abstracted real time to central database providing nurses with access to information about their patients and providing unit level reports for organizations.

- Saskatchewan: Implementation in 30 facilities ranging from 17 to 237 beds for a total of 2131 LTC beds in Saskatoon Health Region.

- Manitoba: Implementation in 2 long-term care homes for a total of 1005 long-term care beds and 6 home care offices - approximately 3,300 clients in home care in Winnipeg Regional Health Authority.
C-HOBIC Implementation: Phase 2 – 2012 - present

• Manitoba
  – St. Boniface Hospital - an acute care hospital - questions embedded into Allscripts system and collected on admission and discharge
  – C-HOBIC Synoptic Transition Report to be shared with other sectors (long-term care and home care) as people move from one sector to another

• Ontario
  – C-HOBIC Synoptic Transition Report developed and available to clinicians in the Hamilton Niagara Haldimand Brant and Waterloo Wellington region through the ClinicalConnect Portal
C-HOBIC Transition Synoptic Report (TSR)
Evaluations Completed

Sector Focus
Fall 2008 – Long-term and Home care SK & MB
Fall 2010 – Homecare in ONT
Fall 2014 – Acute Care in ONT & MB

Methods
• System access & use
• Surveys
• Focus Groups
• Interviews
Evaluation Framework

Canada Health Infoway Benefits Evaluation Framework.
Adapted from DeLone & McLean, 2003
BIG Lessons Learned

1. Leadership is key

2. Clinician engagement from the outset is essential
   
1. Project management and effective change management are crucial and must be sustained over the long term

2. Consistent and continuous communication of value proposition and benefits realized to healthcare providers/organizations

3. Consider complexities, other priorities, and politics within and between healthcare providers and sectors
Lessons Learned: Implementations & Evaluations

Standards Integration

- Review existing standardized tools at the outset of implementation to determine whether any redundant tools are already in use
- Identify opportunities for the elimination of redundant clinical documentation
- Provide guidelines for integration of clinical data standards into systems
- Recognize that not all vendor solutions will support a graphic representation of data
- Privacy legislation will likely necessitate data sharing agreements across sectors of care
- Identify interface requirements internally and externally
Use and Usability

- Consider existing workflow/documentation processes and need for redesign
- Avoid requirements for duplicate documentation
- Evaluate the use and usability and impact of standardized outcome measures at 6, 12, and 18 mos.
- Identify clear and consistent processes and accountabilities for the documentation and use of outcome measures

“This are simple concepts to convey and demonstrate the informational value to clinicians”

Clinician in Ontario
Applicability of Outcome Measures

- Need to review applicability of specific outcome measures for different patient populations
- Implementation guidelines should clearly identify the intended clinical populations for use and timing of completion
Completion of Measures on Admission and Discharge

- Identify strategies to increase the completion of outcomes at admission AND discharge to ensure clinical comparability
- Discuss opportunities to use outcomes as a basis for discussions and discharge planning with patients and families
- Completion of a standardized discharge summary by nurses is new
Supporting Care Transitions

• Continue the pursuit of cross sector flow of outcomes information as clients move between sectors of care

• Engage in multi-sector discussions regarding the potential value outcomes in supporting care transitions

• Expect delays and other challenges in working across sectors of care given organizational and vendor differences and legislative requirements

“\textit{The report is easy to use and provides a quick overview of the patient’s status but has not been built into the processes for planning patient discharge to Long Term Care Facilities and the use of Home Care Services}”

\textit{Clinician in Manitoba}
Education and Training

• Provide opportunities to learn about the value of clinical data standards and the specific outcomes
• Separate training and education on outcomes measures from that provided for use of the clinical information system
• Provide post go-live follow-up education and support, including a multi-sector workshops for the sustainable and effective use of outcomes and reports

“There is a need to explore how the information gathered could be used by the health care team during the patient’s stay and in the discharge planning”

Clinician in Manitoba
System Considerations

- Vendor system design capabilities
- Data & Reports
  - Cross-sector access
  - Interprofessional access
  - Point-of-care, real-time access
  - Use with patients/families
  - Process & Quality improvement opportunities
Implementation ≠ Information use
Advancing Clinical Data Standards in Canada

Kathryn J. Hannah, C.M., PhD, MScN, BScN, RN, FAAMI
School of Nursing, University of Victoria, Calgary, AB, Canada
Standardized Clinical Measures and Data
Why Collect Standardized Clinical Measures and Data?

- **Clinical accountability** is part of the larger movement of accountability driven by the public and policy makers, whereby all healthcare professionals must provide evidence of the role they play in patient outcomes
  - Standardized measures are essential to:
    - Evaluate clinical interventions, and
    - Implement informed quality improvement initiatives

- Standardized data such as C-HOBIC assists clinicians in **communicating with team members** at shift change and when patients are being transferred home or to another organization

- Collection of standardized data, linked with other administrative data, contributes to **informing health care policy, planning and research** to improve the health of Canadians
THE Challenge Associated with Using Standards

• Challenge to move clinicians to accept standardized measures (questionnaires, instruments, tools) for assessing symptoms, functional status, etc.

• Clinicians are educated to assess & describe patients in narrative terms:
  – very, much, more/less, a lot, a bit
  – Limitations include:
    • Inconsistency of descriptions across nurses and to other health providers
    • Incompatibility with transfer to database
Overview of the need for health data standards
Standards and interoperability are two sides of the same coin.

Standards make things fit together, so that all stakeholders can communicate and understand each other seamlessly.
Interoperability

Goal:
the ability of health information systems to work together within and across organizational boundaries in order to advance the effective delivery of healthcare for individuals and communities
Interoperability

– Types of interoperability
  – Functional
    » message transport from one point to another
  – Semantic
    » the meaning of the message content is understood by both the sender and receiver
Standardized Clinical Terminology
Definitions

- **Concept**
  - A single idea, action, or thing with a unique meaning
- **Term**
  - One or more words used to describe a concept or data element
- **Code**
  - An expression of a term or concept
- **Coding**
  - Processing or assigning a code to a specific concept; usually performed within a system or by health information personnel
- **Classification (Classification system)**
  - Ordered systems of concepts for a domain with explicit order principles; definition depends on expected use; both nomenclature and terminologies can be presented in classifications
- **Nomenclature**
  - Subset of terms for a given domain, including both terms and relationships; no hierarchical structure; usually presented by an official group that uses the terminology
Definitions cont’d

- **Synonyms**
  - Different terms that represent the same concept
    - MI & heart attack; pyrexia & febrile, knowledge deficit or lack of knowledge

- **Homonyms**
  - Different terms that are spelled and pronounced the same but have different meanings
    - Rose – a flowering shrub or the past tense of ‘rise’

- **Natural language**
  - Broad use of language to express concepts, may include native language or expressions

- **Controlled language**
  - Terminology & vocabularies
Vocabularies & Terminologies

Vocabulary
• A set of terms within a specific domain available for use to individuals or groups

Controlled Vocabulary
• A set of terms limited or constrained for use in a specific environment (e.g., PICU, orthopedics, neurology, etc)
  - Counterpart of natural language for systems, with restricted terms and grammar rules
  - Can provide a list of terms for users to select

Output Vocabulary
• Terminologies used for information analysis; system tools derive information from the reference terminology

Terminology
• The set of words or word groups with specific meaning in a domain

Interface Terminology
• A controlled vocabulary from which users can choose a term in a list to enter in a system; may include all lexical varieties, acronyms, abbreviations, all with their own context-dependent meaning

Reference Terminology
• Set of all terms or words to represent a specific domain
• Can consist of multiple interface terminologies
"If we cannot name it, we cannot control it, finance it, teach it, search it or put it into public policy" (Clark and Lang, 1992, p. 109)

C-HOBIC Dataset: Mapping for Inclusion in EHRs - ICNP

- Initially mapped to ICNP® version 1
- With the release of ICNP® version 2 the C-HOBIC concepts were mapped to ICNP Version 2
- Mapping validated by international ICNP® experts and C-HOBIC team
- Release of International Catalogue on March 6, 2012
C-HOBIC Dataset: Mapping for Inclusion in EHRs - SNOMED CT

- A major aim of this work was to investigate potential approaches to harmonisation of the ICNP® catalogue and SNOMED-CT while meeting the Canadian requirements for SNOMED CT (SCT) and ICNP® outcome concepts to be used to represent the content of the C-HOBIC dataset

- On June 22nd 2012, 16 nursing terminology experts assembled in Montreal - four from the IHTSDO Nursing SIG, five from the International Council of Nurses ICNP® Programme and seven from Canada

- A draft document had been prepared in advance by the UK NHS SNOMED-CT team

- Mapping of C-HOBIC to SCT Observables was completed at this meeting and over the following months the mapping to SCT Findings was completed
Standardized Data

• Interoperability of clinical systems
• Patient safety – standardized *clinical* information at the point of care (falls, symptoms, pressure ulcers)
• Standardized *clinical* information across the continuum – improved continuity & *coordination of care for the patient during transitions*
• Better information on patient needs … *the right information at the right time*
• Better information on *clinical* patient outcomes … *ability for facilities to use in benchmarking and to compare effectiveness of treatments*
• Opportunity to *transform* the delivery of care through use of standardized *clinical* patient outcomes to support evidence informed practice
Standardization - Supports Inclusion in National databases (CIHI DAD)

- Recognition of the value in being able to link this dataset with other datasets such as the home care dataset and long-term care homes dataset to understand clinical outcomes across the continuum of care

- Model will see the submission of the C-HOBIC dataset by 2 acute care sites using the special projects fields in the DAD to identify resources required for the submission - Once this work is completed, other sites that are collecting the C-HOBIC dataset will be able to include these data with their DAD special projects fields submission

- Eventually the C-HOBIC dataset would be part of the DAD core submission and available on the CIHI portal to support:
  - Health System Use and benchmarking at a system level
  - Health policy related to “how well is the system doing in improving outcomes for people within the system?”

- **First time clinical data beyond physician data** is included in the DAD
Value of C-HOBIC
C-HOBIC Value: to Patients and the Health System

- Patient safety – standardized *clinical* information at the point of care (falls, symptoms, pressure ulcers)
- Standardized *clinical* information across the continuum – improved continuity & *coordination of care for the patient during transitions*
- Better Information on patient needs … *the right information at the right time*
- Better information on *clinical* patient outcomes … *ability for facilities to use in benchmarking and to compare effectiveness of treatments*
- Opportunity to *transform* the delivery of care through use of standardized *clinical* patient outcomes to support evidence-based practice
The Opportunity for Healthcare Leaders

- **Standardized data**
  - Accountability: Clinicians/managers/organizations need data to know where they are doing well and where practice needs to improve
  
  - Allows for the capability to analyze health service outcomes on the basis of: Diagnoses, Age, Region/Sector, Cost of care, Skill mix, Staff ratios

  - Provides information to inform: Health Care Policy, Allocation of Resources, Delivery of Services, Quality of Care
Benefits to the Health Care System

- Patient Safety & Quality of Care
- Primary Health Care Reform
- Clinical Accountability
- Care Planning, Continuity of Care & Continuity of Information
- Senior Care and Transitions
- Data Aggregation
C-HOBIC: Value for Provincial EHRs and the DAD

- Standardize assessment and documentation of patient outcomes by clinicians in Canada thereby facilitating abstracting for the DAD
- Standardize terminology used for entry of patient-centred clinical outcomes into jurisdictional EHRs by clinicians in Canada thereby facilitating abstracting for the DAD
- Develop a consistent methodology that will contribute to outcomes data for the EHR and for the DAD
- Foster user uptake of the EHR by clinicians by providing content in the EHR that is useful in practice
C-HOBIC: Aggregating the Standardized Data

Atomic to global level data that provides
- Person-specific comparative information across the continuum of care
- Consistent measurement of outcomes
- Correlational and predictive analytics
- Local to national to international comparisons
- Information that leads to new knowledge and understandings about the impact of specific interventions and outcomes
Atomic Level Data Collected Once, Used Many Times

Zielstorff, Hudging, & Grobe, 1993

"Atomic level" patient-specific data: e.g., assessments, diagnoses, interventions, diagnostic test results, procedures, treatments, hours of care, outcomes. Used to provide most appropriate care.
Changes in C-HOBIC scores from admission and discharge scores

• Significant improvements in all of the C-HOBIC outcomes, with the exception of pressure ulcers.

• Suggests that nursing care interventions are having the desired effect on clinical outcomes, leading to an improvement in the outcomes by discharge.

Changes in Patient Health Outcomes from Admission to Discharge in Acute Care (2013). *Journal of Nursing Care Quality* 28 (1). McGillis Hall, Wodchis, Ma, & Johnson
C-HOBIC Value: Analysis of Aggregated Data

Dr. Walter Wodchis et. al. (2012)
• C-HOBIC data was linked to other datasets held at the ICES. Therapeutic self-care (TSC) scores showed a consistent and significant protective effect for readmission to acute care at 7, 30 and 90 days.
• TSC scores was associated with approximately a 10% reduction in the likelihood of readmission. Nausea was more strongly related to early readmissions (3, 7, and 30 days), while dyspnea was more strongly related to readmission at later stages (30 and 90 days).

Dr. Lianne Jeffs et al. (2013)
• examined the C-HOBIC scores on admission as a predictor of ALC and LOS and found that higher fatigue and dyspnea scores on admission were significantly related to a longer length of stay.
• Patients with higher scores for fatigue and falls and ADL composite score on admission were more likely to be discharged to either complex continuing care, long-term care homes or rehabilitation facilities than discharged home.
Winnie Sun PhD (cand) et al. (2014)

- analyzed C-HOBIC TSC scores in relation to two types of adverse events:
  - the use of health care resources, including new emergency room visits/unplanned hospital readmissions;
  - safety outcomes, including client falls; unintended weight loss; new urinary tract infection; ADL decline; new pressure ulcer or ulcer deterioration; non-compliance/adherence with medication; and new caregiver decline

- found that clients with high TSC ability experienced fewer adverse events

- indicates that there is a need to focus on improving client self-care functioning, a domain frequently overlooked by all health care professionals
The Vision for C-HOBIC Data

**Patients**
- Facilitate communication
- Identify safety risks
- Inform proactive care
- Determine discharge readiness

**Clinicians**
- Improve communication within the team – standardized data
- Enhance satisfaction by demonstrating measurable results
- Identify how clinical practice leads to improved outcomes
- Shift clinicians from task focused care to ‘outcomes focused care’
- Clinical Accountability

**Healthcare Executives**
- Standardized information for comparative analysis within organizations and benchmarking
- Information to evaluate operational decisions and resource allocation
- Information to identify areas for quality improvement
- Information to support accreditation surveys - ROPs
- Information to support continuity of care across the continuum

**Health Care System**
- Information to support results driven patient focused care
- Public reporting – measurable results
- Standardized information for electronic health records

**Health System Use**
- More timely information and better data to address research questions to inform clinical program management, health system management

**ROPs**
- Information to support continuity of care across the continuum
Questions
For more information

C-HOBIC webpage

http://c-hobic.cna-aiic.ca/about/default_e.aspx