Uncovering actionable opportunities to lower 30-day readmission risk for heart failure patients through cross-country comparison of delivery systems

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Why lower readmissions?

- Cost attributes
- Physical outcomes (medical outcome)
- Process
- Change
- Service outcomes (customer satisfaction)
- iCentra
Research goals

• Conduct a cross-country comparison of 30-day readmission risk levels using the international comparison framework
• Characterize differences in delivery system performance
• Demonstrate the role that cross-country comparisons can play in highlighting opportunities for shared learning and quality improvement
Approach

Framework for International Comparative Data Analysis: A Purposeful Effort for Uncovering Opportunities for Shared Learning and Innovation in Health Care

Phase I: Set Collaboration Terms
- Establish Willingness to Collaborate & Terms of Engagement
  - Collaborative Goals
  - Priority-Setting Rules
  - Resource Sharing
- Agreement on Shared Priority Areas
  - Inventory of Expertise
- Data Feasibility Assessment
  - Measure Specification
  - Data Availability/Purpose
  - Data Source Attributes

Phase II: Identify Transferable Improvements from High-Quality Comparisons
- Excavation
  - Layered Approach
  - Identify Variation
  - Adjust for Confounding
- Exploration
  - Map Clinical Processes
  - Embed Measures
  - Socialize Results
- Identification
  - Transferable Practices
  - Evaluation Improvement Opportunities

Phase III: Take Action and Disseminate Learnings
- Indicated Action
  - Plan Test of Change
  - Perform Test of Change
  - Evaluate Results
- Dissemination & Spread
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### Final measurement specifications

<table>
<thead>
<tr>
<th>Qualifying Inpatient Admission Counts</th>
<th>Unadjusted/raw</th>
<th>CMS definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Discharge types:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discharged deceased</td>
<td>Include</td>
<td>Exclude</td>
</tr>
<tr>
<td>Facility transfers</td>
<td>Exclude</td>
<td>Exclude</td>
</tr>
<tr>
<td>Discharge against medical advice</td>
<td>Include</td>
<td>Exclude</td>
</tr>
</tbody>
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<th>Qualifying Inpatient Readmission Counts</th>
<th>Unadjusted/raw</th>
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</thead>
<tbody>
<tr>
<td>Causes</td>
<td>All-cause</td>
<td>All-cause</td>
</tr>
<tr>
<td>Planned readmissions</td>
<td>Exclude</td>
<td>Exclude</td>
</tr>
<tr>
<td>Planned - CMS definition (limited to  &quot;always planned&quot; codes only)</td>
<td>Exclude</td>
<td>Exclude</td>
</tr>
<tr>
<td>Planned - CMS definition (complete algorithm) (D)</td>
<td>Exclude</td>
<td>Exclude</td>
</tr>
</tbody>
</table>

| Timeframe:                             |                |                |
| Readmits within 30 days                | Limit to 30 days| Limit to 30 days|
| Readmits within 24 hours               | Include        | Include        |

| Visit type:                            |                |                |
| Observation stay                       | Include        | Include        |
Initial results – all disease types, all patients
Initial results – all disease types, patients 65+
## Comparing the delivery systems - 2015

<table>
<thead>
<tr>
<th>Measure</th>
<th>Uppsala University Hospital</th>
<th>Intermountain Medical Center</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Designation</strong></td>
<td>Tertiary referral center that handles critical care trauma services</td>
<td>Tertiary referral center that handles critical care trauma services</td>
</tr>
<tr>
<td><strong>Population served</strong></td>
<td>350,000 in Uppsala County/Referrals from Northern Sweden</td>
<td>1M in Salt Lake County/Referrals from Intermountain West</td>
</tr>
<tr>
<td><strong>Hospital beds</strong></td>
<td>1134</td>
<td>454</td>
</tr>
<tr>
<td><strong>Annual volumes:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Inpatient admissions</strong></td>
<td>55000</td>
<td>29000</td>
</tr>
<tr>
<td><strong>Mean length of stay</strong></td>
<td>8.4 days</td>
<td>5.9 days</td>
</tr>
<tr>
<td><strong>ER visits</strong></td>
<td></td>
<td>86500</td>
</tr>
<tr>
<td><strong>Heart failure volumes</strong></td>
<td>1042 encounters</td>
<td>693 encounters</td>
</tr>
</tbody>
</table>
Results – heart failure patients 65+

30-DAY READMISSION, ALL CAUSE, HEART FAILURE, PATIENTS 65+

2013: Intermountain Medical Center - 18.7%, Region Uppsala - 20.3%
2014: Intermountain Medical Center - 18.5%, Region Uppsala - 23.5%
2015: Intermountain Medical Center - 13.1%, Region Uppsala - 18.3%
Results – heart failure patients 65+

30-DAY READMISSION, ALL CAUSE, HEART FAILURE, PATIENTS 65+

- Intermountain Medical Center
- Region Uppsala

<table>
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<tr>
<th>Year</th>
<th>Readmission Risk %</th>
<th>Mean Length of Stay (in days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>20.3%</td>
<td>5.2</td>
</tr>
<tr>
<td>2014</td>
<td>18.5%</td>
<td>5.3</td>
</tr>
<tr>
<td>2015</td>
<td>13.1%</td>
<td>5.4</td>
</tr>
</tbody>
</table>
Net difference by days – Uppsala/IMC

30-DAY READMISSION, ALL CAUSE, HEART FAILURE, PATIENTS 65+, 2015 ONLY

- 0-3 DAYS: 1.5%
- 4-7 DAYS: -1.0%
- 8-30 DAYS: 4.7%

Uppsala higher/(lower)
Exploring the clinical process at Intermountain

- Early efforts to lower heart failure readmission rates began in 2009
- Cardiovascular clinical program emphasis to lower readmissions beginning in 2013
- Detection algorithm implemented to improve detection of heart failure patients upon admission
- Readmission risk algorithm to identify HF patients at increased risk of readmission upon admission
- High-risk heart failure multi-disciplinary care pathway system-wide with emphasis at Intermountain Medical Center and other high-volume hospitals in the system
Preliminary impact assessment

- Impact of lowering readmission levels 320 basis points:
  - 1 in 20 patient lives impacted
  - 47 fewer readmits each year
  - 283 fewer bed days annually

- Impact of reducing length of stay
Next steps

• Proposed international comparative framework holds promise in supporting collaborative efforts to evaluate delivery system performance

• **More detailed review of heart failure clinical processes between both organizations to evaluate and plan test of change**

• Broaden to national effort for heart failure in Sweden to lower readmissions
September 2016 – 2,5 day conference in Utah

• 9 persons from Uppsala and 7 from Intermountain
• Preparations by video link – focus on re-admissions
• 7 two hour sessions with prepared topics
• We chose five topics for drill down
The five topics

• Compare the process and understand differences
• Algorithm for detection of Heart failure
• Transitions in care
• Palliative care
• Algorithms for detection of risk patients (re-admission)
Professional knowledge has to be followed by improvement knowledge.

**Professionell knowledge**
- Specific medical knowledge
- Personal skills
- Values and ethics

**Improvement of diagnosis, treatment and care**

**Improvement science**
- System
- Measure and understand variation
- Improve and learn
- Change psychology

**Improvement of processes and organisation**

**Added value**

*Batalden & Stoltz (1993)*