Hardwiring Processes to Improve Patient Outcomes

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UNC Hospitals
Objectives

- Understand the need to demonstrate superior outcomes
- Learn how to use a Six Sigma process to evaluate and improve patient outcomes
- Learn how to hardwire improvements
Health Care Today
Forces Affecting Rehab

- Health Care Reform
- Value-based purchasing
- Evidence-based Outcomes
- Consumer Demand for Quality
- Site-neutral Payments
- Need for Transparency

(REHAB)
What Is Quality?

Institute of Medicine

“The degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge.”
IOM Components of Quality Care

- Safe
- Timely
- Effective
- Efficient
- Equitable
- Patient-Centered
Do Outcomes Matter?
Are Outcomes Important?

In an environment that rewards value and quality, attention to outcomes measurement and improvement will be essential to the success of organizations across the healthcare system.
UNC Rehabilitation Center
How is the Quality at UNC Healthcare?
How is the Quality of Care at UNC Rehabilitation Center?

“UNC Rehabilitation Center is commended for its use of input from stakeholders to improve performance improvement. The organization has successfully implemented aspects of an external developed established reengineering methodology to improve the quality of programs and services.”
Lean Six Sigma at UNC Healthcare

**LEAN**
- Speed
- Elimination of Waste
- Standardization
- Flexibility/Responsiveness

**Six Sigma**
- Root Cause
- Eliminate Variation
- Method
- Metric
- Infrastructure
- Culture
Benefits of Lean Six Sigma

• Provides a comprehensive tool set to solve problems and to increase the speed and effectiveness of any process
• Provides a consistent lens and vocabulary for all staff
• Increases efficiency
• Increases revenue
• Reduces costs
• Increases satisfaction
• Develops effective people
• Creates a culture for continuous improvement
Changing the Culture at UNC Healthcare

- Change is a journey not a destination
- Must use a common framework for change
- Must have leadership commitment
- Clearly communicate the importance of change
- Empower the team with tools for decision-making
Measuring Outcomes in Rehab

Program Evaluation Model (PEM)

- Discharge FIM® rating
- FIM® rating change
- Length-of-stay efficiency
- % of patients discharged to the community
- % of patients discharged to acute care
We Were Surprised!

Program Evaluation Model (PEM)
(January 1, 2013 - December 31, 2013) Score Card® - Facility

Number of Facilities in Percentile Ranking: 774  
Facility Number of Cases Included: 529

<table>
<thead>
<tr>
<th>Case-Level Indicators</th>
<th>Facility Actual (Points or Outcome)</th>
<th>Facility Target (Possible Points or CMG-Adjusted Expectation)</th>
<th>Facility Subscore (% of Target)</th>
<th>Indicator Weight (fixed)</th>
<th>Weighted Indicator Subscores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discharge FIM™ Total</td>
<td>194</td>
<td>529</td>
<td>36.7%</td>
<td>60</td>
<td>21.5</td>
</tr>
<tr>
<td>FIM™ Change</td>
<td>191</td>
<td>529</td>
<td>36.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOS Efficiency</td>
<td>183</td>
<td>529</td>
<td>34.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Composite</td>
<td>568</td>
<td>1,587</td>
<td>35.8%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Facility-Level Indicator

| % Discharge to Community   | 74.7%                             | 70.3%                                                         | 106.3%                         | 30                       | 31.9                        |
| % Discharge to Acute Care  | 12.5%                             | 13.2%                                                         | 100.8%                         | 10                       | 10.1                        |

Facility Percentile Rank = 24  
Facility PEM Score = 63.5

PEM Score Range

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What Do We Do?

- Six Sigma DMAIC Project
  - Define
  - Measure
  - Analyze
  - Improve
  - Control
Why Use Six Sigma?

The Classical View of Quality
“99% Good” (Z = 3.8σ)

- 20,000 lost articles of mail per hour
- Unsafe drinking water almost 15 minutes each day
- 5,000 incorrect surgical operations per week
- 2 short or long landings at most major airports daily
- 200,000 wrong drug prescriptions each year
- No electricity for almost 7 hours each month

The Six Sigma View of Quality
“99.99966% Good” (Z = 6σ)

- Seven lost articles of mail per hour
- One minute of unsafe drinking water every seven months
- 1.7 incorrect surgical operations per week
- One short or long landing at most major airports every five years
- 68 wrong drug prescriptions each year
- One hour without electricity every 34 years
Our Problem Statement

“UNC Rehab Center is currently ranked in the 24th percentile for calendar year 2013. The case level indicators are the ones most impacted by our staff. The goal is to meet or exceed 75% of case level indicator targets on the quarterly PEM report for calendar year 2014, with overall target to be in the 60th percentile for calendar year 2014.”

<table>
<thead>
<tr>
<th>FUNCTION</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Belt Sponsor</td>
<td>Lesley-Anne Bandy, Nurse Manager</td>
</tr>
<tr>
<td>Black Belt</td>
<td>Becky Dodge</td>
</tr>
<tr>
<td>Subject Matter Experts</td>
<td>Jeff Soltes, PT, Dr. Heather Walker</td>
</tr>
<tr>
<td>Process Owner</td>
<td>Lesley-Anne Bandy, Susan Gisler</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SUPPLIER</th>
<th>INPUT</th>
<th>PROCESS</th>
<th>OUTPUT</th>
<th>CUSTOMER</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Patients</td>
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<td></td>
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<td></td>
<td>UNC AIR Center</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unit level management</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Senior level management</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3rd party payors</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Patient’s families</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>UNC AIR Center staff</td>
</tr>
</tbody>
</table>

DMCAI
Context of the Team

- Why is culture important?
  - Belief of outcomes PEM ranking vs. team
  - Understanding why the PEM is important
  - Using data to help set expectations
  - It is not all about the numbers, it is all about patient outcomes

Why would you ever change?
Capturing the VOC

- Voice of the Customer:
  - We reached 147 point of contact with our customers
  - Allowing us to start to understand our customers perspective of our PEM Ranking

<table>
<thead>
<tr>
<th>Customer</th>
<th>Method</th>
<th>Sample Size</th>
<th>When Collected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing Staff</td>
<td>Survey</td>
<td>26/60</td>
<td>11/13-11/25</td>
</tr>
<tr>
<td></td>
<td>Focus Groups (2)</td>
<td>10</td>
<td>11/18</td>
</tr>
<tr>
<td>Full-time therapists</td>
<td>Survey</td>
<td>20/20</td>
<td>11/7-11/14</td>
</tr>
<tr>
<td></td>
<td>Focus Groups (3)</td>
<td>14</td>
<td>11/18</td>
</tr>
<tr>
<td>Covering therapists</td>
<td>Survey</td>
<td>22/30</td>
<td>11/20-11/27</td>
</tr>
<tr>
<td></td>
<td>Focus Groups (2)</td>
<td>13</td>
<td>11/22</td>
</tr>
<tr>
<td>Physicians</td>
<td>Survey/Focus Group (1)</td>
<td>7/7</td>
<td>11/6</td>
</tr>
<tr>
<td></td>
<td>Interviews</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Patients/Caregivers</td>
<td>Survey</td>
<td>11</td>
<td>11/20-12/3</td>
</tr>
<tr>
<td>PPS Coordinator</td>
<td>Interview</td>
<td>1/1</td>
<td>11/26</td>
</tr>
<tr>
<td>CCM</td>
<td>Interview</td>
<td>2/2</td>
<td>11/14</td>
</tr>
<tr>
<td>Management</td>
<td>Interview</td>
<td>5/5</td>
<td>11/13-11/30</td>
</tr>
</tbody>
</table>
Outcome of capturing the VOC

A Pareto chart based off the survey data (showing the Average Priority Score) was created to analyze responses from staff who rate patients for the FIM® instrument.

We were looking to see what issues stood out, but our analysis showed all issues are weighted fairly evenly.
Organizing our feedback to define the problem

Customer feedback from focus groups, interviews and surveys were organized. The team grouped this information by customer need, driver of customer need, and critical to quality metric.

**Voice of Customer Key Findings**
- Process of FIM® rating is confusing and time-consuming
- Communicating patient’s FIM® ratings can be difficult
- Perception of skills to assess FIM® ratings is variable
Voice Of the Process Measure Phase

- Process Map

- Is there a planned time for the discharge FIM® assessment?
### Voice of the process (VOP)

We had listened to the customers.

Now it was time to listen to our process, our data.

Thanks to UDSMR, a lot of data ………………

<table>
<thead>
<tr>
<th>WHAT</th>
<th>Admission FIM® Total</th>
<th>Discharge FIM® Total</th>
<th>FIM® Change</th>
<th>Length of Stay Efficiency</th>
<th>Length of Stay</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data Tags</strong></td>
<td>1. FIM® ratings completed within first 3 days of admission</td>
<td>1. FIM® ratings completed within defined 24 hr period</td>
<td>1. FIM® change by diagnosis</td>
<td>1. Patient diagnosis</td>
<td>1. Discharge date equal to ELOS</td>
</tr>
<tr>
<td></td>
<td>2. FIM® ratings by diagnosis</td>
<td>2. Last 3 day actual FIM® ratings vs. 24 hr period chosen</td>
<td>2. FIM® change by item</td>
<td>2. FIM® ratings by diagnosis</td>
<td>2. FIM® ratings by diagnosis</td>
</tr>
<tr>
<td></td>
<td>3. FIM® ratings by item</td>
<td>3. FIM® ratings by diagnosis</td>
<td>3. FIM® ratings by item</td>
<td>3. FIM® ratings by item</td>
<td>3. FIM® ratings by item</td>
</tr>
<tr>
<td></td>
<td>4. FIM® ratings by day of week</td>
<td>4. FIM® ratings by item</td>
<td>4. FIM® change by day of week admitted</td>
<td>4. FIM® ratings by item</td>
<td>4. FIM® ratings by item</td>
</tr>
<tr>
<td></td>
<td>5. FIM® ratings by item in top (6) diagnoses</td>
<td>5. FIM® ratings by item</td>
<td>5. FIM® change by day of week discharged</td>
<td>5. FIM® ratings by item</td>
<td>5. FIM® ratings by item</td>
</tr>
<tr>
<td></td>
<td>6. FIM® ratings by discipline</td>
<td>6. Medical holds - Amount of therapy given, limitations from staffing, etc.</td>
<td>6. FIM® change by item in top (6) diagnoses</td>
<td>6. Initial discharge date day of the week</td>
<td>6. Medical holds</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7. FIM® ratings by discipline</td>
<td>7. FIM® change by discipline</td>
<td>7. Medical holds</td>
<td>7. Extended stay based on dispo conflict</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8. FIM® ratings by discipline</td>
<td>8. FIM® ratings by discipline</td>
<td>8. FIM® ratings by item in top (6) diagnoses</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9. FIM® ratings by item in top (6) diagnoses</td>
<td>9. FIM® ratings by discipline</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10. Number of times discharge date is changed cross-referenced to ELOS</td>
</tr>
</tbody>
</table>


Onset days were reviewed to see to check opportunity of bringing patients to rehab sooner.

This has potential to help get a lower admission FIM® rating.

A histogram of FIM® change for 2013 data revealed that we had patients who had a negative FIM® change.
Measure Phase

Admission FIM® ratings were slightly below the confidence interval for the region and nation adjusted scores.

Our discharge FIM® ratings and FIM® change were also below the confidence interval for region- and nation-adjusted scores.

Source: UDSMR® database.
Measure Phase

Why so many zeros?

Zeroes Documented in Last 3 Days Before Discharge
N = 32 (96 Opportunities/item)

<table>
<thead>
<tr>
<th>FIM TASKS</th>
<th>DOCUMENTED Zeros</th>
<th>Percent</th>
<th>Cum %</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAIRS</td>
<td>75</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>TRANSFER/TUB/SHOWER</td>
<td>57</td>
<td>23</td>
<td>53</td>
</tr>
<tr>
<td>TRANSFER TOILET</td>
<td>20</td>
<td>8</td>
<td>61</td>
</tr>
<tr>
<td>LOCOMOTION</td>
<td>18</td>
<td>7</td>
<td>68</td>
</tr>
<tr>
<td>BATHING</td>
<td>15</td>
<td>6</td>
<td>74</td>
</tr>
<tr>
<td>LOWER BODY DRESSING</td>
<td>15</td>
<td>5</td>
<td>80</td>
</tr>
<tr>
<td>UPPER BODY DRESSING</td>
<td>12</td>
<td>4</td>
<td>84</td>
</tr>
<tr>
<td>TRANSFER BED/M/C</td>
<td>11</td>
<td>2</td>
<td>89</td>
</tr>
<tr>
<td>GROOMING</td>
<td>6</td>
<td>2</td>
<td>91</td>
</tr>
<tr>
<td>EATING</td>
<td>5</td>
<td>2</td>
<td>93</td>
</tr>
<tr>
<td>MEMORY</td>
<td>4</td>
<td>2</td>
<td>95</td>
</tr>
<tr>
<td>TOILETING</td>
<td>4</td>
<td>2</td>
<td>96</td>
</tr>
<tr>
<td>Other</td>
<td>9</td>
<td>4</td>
<td>100</td>
</tr>
</tbody>
</table>
Measure Phase

- A zero at admission is a “0”

- A zero at discharge converts to a “1”

- At discharge, the burden of care is supposed to be captured through the FIM® items

- All of our instances of code 0 were turning into level 1 ratings if somebody recorded code 0 for an item

- This lead to flat to negative FIM® changes in some of our cases

- “Prior to recording a code of 0, the clinician completing the assessment must consult with other clinicians, the patient's medical record, the patient, and the patient's family members to determine whether the patient did perform or was observed performing the activity. Do not use code "0" to indicate that the clinician did not observe the patient performing the activity; use the code only when the activity did not occur.”

IRF-PAI Training Manual, p. 6
Measure Phase

We began tracking all discharge FIM® totals.

We tracked therapists’ FIM® ratings by the day of the week and by discipline.
Analyze Phase

What are the Root Causes?
The top root causes of low scores from issues surrounding the FIM® instrument were identified by the team:

- Lack of Clarity about the role of “Independence Day”
- No consistent process for identifying which items need to be completed and by whom, and therefore no accountability for the items being completed
- Lack of education for how to administer the FIM® instrument and lack of training on implementing it
Analyze Phase

Root Cause #1
Lack of Clarity regarding the Role of “Independence Day”

• Importance:
The last 3 days are critical for capturing D/C FIM® ratings. We must chose ratings from one 24-hour period that will be submitted to UDSMR.

• Evidence:
- High Percentage of zeros
- No written documentation of the process
- Other Events occurring on the same day (family trainings, outings, medical procedures)
- Voice of the Customer shows staff are inconsistent with FIM® ratings the last 3 days
Root Cause #2

No process for accountability in scoring

• Importance:
Consistent use of the FIM® instrument is a critical part of our process. Inconsistency leads to overuse of code 0 or a complete lack of a FIM® rating.

• Evidence:
- Zeros were being scored for items not observed (for example, nurses scoring 0 on stairs)
- High % of zeros recorded or left blank in the last three days of a patient's stay
- No process for accountability

<table>
<thead>
<tr>
<th>Percentages of Zeros</th>
<th>N=80 random patients from 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehension</td>
<td>8.7%</td>
</tr>
<tr>
<td>Bowel Management</td>
<td>81.2%</td>
</tr>
<tr>
<td>Expression</td>
<td>8.7%</td>
</tr>
<tr>
<td>Grooming</td>
<td>82.5%</td>
</tr>
<tr>
<td>Social Interaction</td>
<td>8.7%</td>
</tr>
<tr>
<td>Transfer Toilet</td>
<td>88.7%</td>
</tr>
<tr>
<td>Memory</td>
<td>40.0%</td>
</tr>
<tr>
<td>Bathing</td>
<td>96.2%</td>
</tr>
<tr>
<td>Problem Solving</td>
<td>42.5%</td>
</tr>
<tr>
<td>Upper Body Dressing</td>
<td>96.2%</td>
</tr>
<tr>
<td>Bladder</td>
<td>57.5%</td>
</tr>
<tr>
<td>Lower Body Dressing</td>
<td>96.2%</td>
</tr>
<tr>
<td>Transfer (Bed/WC)</td>
<td>66.2%</td>
</tr>
<tr>
<td>Transfer Tub/Shower</td>
<td>96.2%</td>
</tr>
<tr>
<td>Toileting</td>
<td>67.5%</td>
</tr>
<tr>
<td>Stairs</td>
<td>96.2%</td>
</tr>
<tr>
<td>Eating</td>
<td>70%</td>
</tr>
</tbody>
</table>
Analyze Phase

Root Cause #3

Lack of staff education

• Importance

Accurate use of the FIM® instrument reflects progress as it relates to the 18 FIM® items.

• Evidence

- Staff lack confidence in using the FIM® instrument
- High number of zeros documented in the medical record
- No clear policy existed at the time
- Current competency needs improvement
Analyze Phase take home points

Take home points:

• Our patient scores at discharge were below expected scores for similar patients, regionally and nationally

• There were many scores of zero documented in the last 3 days of a patient’s stay

• There was no consistent process for communication about FIM® ratings

• There was not a proactive process to capture the FIM® ratings during a planned time period at discharge

• After reviewing the data, the team agreed to focus specifically on the discharge process
Improve Phase

- Created administration FIM® policy
- Created Skills Day policy
- Created a way to better ID patients on Skills Day
- Created an audit process
- Created a FIM® document visual indicator
Improve Phase

FIM® administration policy for the interdisciplinary rehab staff

Skills Day Policy for the interdisciplinary rehab team
Improve Phase

We set expectations:

Skills Day report card for staff

Created a hand out to patients to set expectations and create ownership
Our Improve Phase solutions focused on discharge FIM® ratings. All three case level indicators are positively impacted if this score increases.

**Pre-pilot (Jan-Sept, 2014, N=449):**

- 27% (126 of 449) patients’ discharge FIM® ratings met or exceeded the national mean discharge FIM® rating

**Pilot (Oct-Dec, 2014, N=131):**

- 45% of patients’ discharge FIM® ratings met or exceeded the national mean discharge FIM® rating

P-value = <.001
Control Phase

Can we sustain the improvement?
Are we Hardwired yet?

Maintaining Change by Hardwiring the Process:

- FIM® administration and Skills Day policies
- Train new staff on current policies at time of hire
- Staff meetings and e-mails regarding process compliance and improvements
- Process includes auditing and follow-up sequences to close loops
- Report cards and Skills Day signs for visual indicators
- Dashboard metrics compile data for monthly review by medical and administrative leaders
- PEM Report review quarterly and annually
Lessons Learned:

- DMAIC model encourages systematic problem evaluation
- Project management requires patience, flexibility, and persistence
- Leading change requires a balance of listening and acting
- Teamwork multiples ideas and manpower
- Process control requires continued effort and attention
- Place the focus on process consistency rather than people dependency
- Promote an atmosphere of cultural change and sustainability
Thank you for your time

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