Reduction of the Incidence of Hospital-Acquired Pressure Ulcers in a Medium-Sized Not-for-Profit Hospital

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About the Organization

• Medium-sized, not-for-profit hospital
• Client of Juran Health Care
The Project Team

• Lean Six Sigma Black Belt (leader)
• Chief nursing officer (champion)
• Nursing leaders
• Other hospital staff
The Problem

• Pressure ulcers are lesions created by unrelieved pressure on the body. Occurrences most often transpire when a patient is bedridden for an elongated amount of time.

• A medium-sized, not-for-profit hospital had hospital-acquired ulcers developing at an 18% incidence rate.

• Compared to the national benchmark of 7%, the amount of pressure ulcers occurring at this level was costly and unacceptable.
Project Goals

• Reduce incidence rate of hospital-acquired pressure ulcers from the current rate of 18% to 5%, two percentage points below the national average.

• Achieve 5% goal by October 15, 2008, based on a project start date in July 2007.
Root Cause Analysis

1. Development of a hospital-acquired pressure ulcer in a patient is dependent on Braden score being done on admission (within eight hours).

2. Nurses do not have easy access to appropriate knowledge and intervention information regarding pressure ulcers.

3. Not enough additional pillows (at least five total per patient) available in at-risk patient rooms for proper positioning.
Root Cause Analysis

4. Skin care products not available on the at-risk patient unit.

5. Development of a hospital-acquired pressure ulcer is dependent on hours of care. (Number of hours on unit that nurse and tech have hands on, number of staff x shift / number of patients.)

6. Development of a hospital-acquired pressure ulcer is dependent on documentation of nursing skin care plan.
Addressing Root Causes

Measures taken to decrease pressure ulcers:

• Assessment of skin within eight hours of admittance and every shift of stay going forward.

• Documentation of Braden Scores and implementation of visual identifiers for at-risk patients (scores of 18 or below). Creation of Braden Quick Reference clipboards for nurses.

• Chair waffles for patients who are chair-bound or who require assistance from bed to chair. Patients cannot be in chair for more than one hour.
Addressing Root Causes

Measures taken to decrease pressure ulcers (continued):

• Five pillows stocked in every room, used for re-positioning.
• No diapers for patients.
• Hospital-wide purchase of new mattresses with pressure redistribution technology.
• Wound care order geared towards pressure ulcer prevention and treatment.
• E-mail and wound care hotline for nurses dedicated to at-risk patients.
Return on Investment

• A staggering 13.1% of incidences were shaved in a mere 18 months.
• By the conclusion of the project, the incidence rate had dropped to 2.1 percentage points below the national average.

<table>
<thead>
<tr>
<th>Time Frame</th>
<th>Incidence Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quarter 3, 2007 (project launch)</td>
<td>18%</td>
</tr>
<tr>
<td>Quarter 1, 2008</td>
<td>16.4%</td>
</tr>
<tr>
<td>Quarter 3, 2008</td>
<td>10.4%</td>
</tr>
<tr>
<td>Quarter 4, 2008</td>
<td>8.3%</td>
</tr>
<tr>
<td>Project conclusion</td>
<td>4.9%</td>
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</tbody>
</table>
Return on Investment

- The costs for the hospital before the project began were $2,357,208 annually.
- A 72% reduction in costs saved the hospital $1,852,162 per year.
- This process drastically decreased the annual operating costs of the hospital and increased client comfort and health.
Monitoring and Evaluating Over Time

• The team implemented a control plan, a communications plan, a training plan, and new and revised policies and procedures.

• After the process was fully implemented and in place several months, the target incident rate of 5% and a sigma level of 3.2 had been achieved.

• The second quarterly incidence study following the project revealed only four cases out of 81 patients.

• In January 2009, an incidence study showed an incidence rate of 4.9%.
The following graph displays the hospital’s quarterly pressure ulcer incidence rate.

### Pressure Ulcer Incident Rate

<table>
<thead>
<tr>
<th>Period</th>
<th>HA Pressure Ulcers as % of Patients Assessed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q3 2007 - Q1 2008</td>
<td>16.4%</td>
</tr>
<tr>
<td>Q2 2008 - Q3 2008</td>
<td>10.4%</td>
</tr>
<tr>
<td>Q4 2008</td>
<td>8.3%</td>
</tr>
<tr>
<td>Q1 2009</td>
<td>4.9%</td>
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</tbody>
</table>
Braden Scores Done Upon Admission

C Chart of Braden > 8 hrs from admission

- Education Completed
- Feedback Implemented

Date of Weekly Discharge Patient Summary Report

- # Patients 1st Braden > 8 hrs from Admit

- UCL = 137.7
- C̅ = 106.8
- LCL = 75.8
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