A3
Decreasing Catheter Associated Urinary Tract Infections (CAUTI)
Using the Breakthrough (Lean) Method and Team STEPPS

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Lean Thinking

- A management philosophy based on principles and practices proven to create high performance organizations.
Lean Origins

- Developed in post-war Japanese manufacturing to produce high quality, low cost products despite limited access to capital and uncertain demand.
Army aviation crew coordination failures in mid-80s contributed to 147 aviation fatalities and cost more than $290 million.

The vast majority involved highly experienced aviators.

Failures were attributed largely to crew communication, workload management, and task prioritization.
TeamSTEPPS

- Knowledge
  - Shared Mental Model

- Attitudes
  - Mutual Trust
  - Team Orientation

- Performance
  - Adaptability
  - Accuracy
  - Productivity
  - Efficiency
  - Safety
What Comprises Team Performance?

Knowledge
Cognitions
“Think”

Skills
Behaviors
“Do”

Attitudes
Affect
“Feel”

…team performance is a science…consequences of errors are great…
Examples

Length of ICU Stay After Team Training

- Reduction in Length of ICU Stay
- 50% Reduction

(Pronovost, 2003)
Johns Hopkins
Journal of Critical Care Medicine

OR Teamwork Climate and Postoperative Sepsis Rates

(supplemented)
- Low Teamwork Climate
- Mid Teamwork Climate
- High Teamwork Climate

(AHRQ National Average)

(Mann, 2006)
Beth Israel Deaconess Medical Center
Contemporary OB/GYN

Adverse Outcomes

- 50% Reduction in Adverse Outcomes

Indemnity Experience

- 50% Reduction in Malpractice Claims

(Mann, 2006)
Beth Israel Deaconess Medical Center
Contemporary OB/GYN
Due to its impact on quality and costs, Lean Thinking is growing in the healthcare industry.
Peer Intervention Champions
Initial State

### Metrics

<table>
<thead>
<tr>
<th></th>
<th>Baseline:</th>
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<tbody>
<tr>
<td># of catheter-related UTI’s for Non-ICU per 1000 catheter days</td>
<td>1st Quarter 2011 4/564=7.1 2nd Quarter 2011 2/517=3.9</td>
</tr>
<tr>
<td># of catheter-related UTI’s for ICU per 1000 catheter days</td>
<td>1st Quarter 2011 6/737=8.1 2nd Quarter 2011 2/430=4.7</td>
</tr>
</tbody>
</table>

### Indwelling Catheter Monitoring Tool-Adherence to CAUTI Prevention Bundle

| 38/63 = 60% (4/20/11) |

### 2010 Associated Urinary Tract Infection (CAUTI)

#### Graph 1:
- 2010 Associated Urinary Tract Infection (CAUTI)
- # of UTIs per quarter and total

#### Graph 2:
- 2011 Associated Urinary Tract Infection (CAUTI)
- # of UTIs per quarter and total

### Source

Data from CDC, National Nosocomial Infection Surveillance.
Target State

**Metrics**

<table>
<thead>
<tr>
<th>Baseline:</th>
<th>Target</th>
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<tbody>
<tr>
<td># of catheter-related UTI for Non-ICU per 1000 catheter days</td>
<td>0 CAUTI</td>
</tr>
<tr>
<td>1st Quarter 2011 4/564=7.1</td>
<td></td>
</tr>
<tr>
<td># of catheter-related UTI for ICU per 1000 catheter days</td>
<td>0 CAUTI</td>
</tr>
<tr>
<td>1st Quarter 2011 6/716=8.4</td>
<td></td>
</tr>
<tr>
<td>Indwelling Catheter Monitoring Tool-Adherence to CAUTI Prevention Bundle</td>
<td>100%</td>
</tr>
<tr>
<td>38/63 = 60% (4/20/11)</td>
<td></td>
</tr>
<tr>
<td>Gap / Issue</td>
<td>Root Cause</td>
</tr>
<tr>
<td>-------------</td>
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</tbody>
</table>
| **Staff Knowledge/Training:**  
- Training Incomplete  
- Competencies not validated  
- Lack of adherence to bundle  
- PCA's not trained |  
- Some staff off when training was done  
- Training modules just arrived in ED |
| **Documentation:**  
- Daily maintenance not consistently documented  
- MD's do not consistently order foley catheter insertion, or note the indication,  
- Justification for ongoing necessity not documented |  
- Regular progress notes are narrative and nurses are not prompted to include foley care  
- MD's do not consistently order foley catheter insertion, or note the indication,  
- Justification for ongoing necessity not documented |
| **Communication:**  
Inconsistent communication between physicians and nurses | No standard method for communication with team |
| **Supplies:**  
- Different types of catheter sets are being used eg. meter vs. bag, silver tip vs. non silver  
- Emptying containers are not individualized  
- Individual statlocks not available on all units |  
- No standardization of supplies; GU service has different requirements  
- Some units unaware that the statlocks are supplied individually without opening an entire kit |
| **Monitoring:**  
- Tool is documented inconsistent and shows no correlation with infection rates |  
- Some units not aware of tool; information not capturing what is actually happening and is not done in real time;  
- No direct observations are being made |
<table>
<thead>
<tr>
<th>IF WE...............</th>
<th>THEN WE..........</th>
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</table>
| **Staff Knowledge/Training:**  
- Provide training using Talent Tree etc.  
- Use anatomical model to validate competency  
- Train Unit Champions for peer intervention  
- Educate PCA’s  
- Provide educational materials; post laminated signs on units  
- Review/revise policy e.g., C/S specimen vs. UA for pts admitted with Foley, standardize maintenance care, etc. | Ensure that staff are knowledgeable and can demonstrate competencies to perform the function of proper insertion and maintenance of foley catheters |
| **Documentation:**  
- Review adequacy of current screen and make recommendations  
- Determine need for OR documentation  
- Train MD's to order online with indication  
- Institute a process for daily necessity review  
- Have automatic stop orders in place | Ensure that all necessary information is captured accurately, and timely in the EMR; enhance written transfer of information between caregivers, facilitate the quality review process. |
| **Communication:**  
- Implement Team STEPPS communication strategies like huddles, briefs and CUS words – Concerned, Uncomfortable, Safety Issue | Ensure that patient information regarding the necessity of the foley catheter, the order for discontinuation and the removal of the catheter is done. Ensure that the proper technique is used by all staff and if a problem with technique is observed, the procedure is stopped. |
| **Supplies:**  
- Standardize equipment; and determine GU requirements  
- Have single use Statlocks on all units  
- Individualize and label all emptying receptacles | Decrease variability; maintain a closed system  
- Change statlocks when indicated; eliminate waste of opening a new set  
- Avoid cross contamination |
| **Monitoring:**  
- Adapt a catheter campaign; identify 2 champions/unit and their roles  
- Revise/develop appropriate monitoring tools  
- Include foley catheters in shift/A.D.N./transfer reports  
- Conduct Prevalence Study weekly (PI)  
- Ensure that catheter days are being captured accurately | Trigger peer intervention for early problem identification; increase accountability; ensure practices are being followed; enhance ability to institute timely countermeasures  
- Improve validity of data collection |
Sharing Best Practices
2012 Associated Urinary Tract Infection (CAUTI)

1st Quarter Numbers Per 1,000 Catheter Days

<table>
<thead>
<tr>
<th></th>
<th>Non-ICU</th>
<th>ICU</th>
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<tbody>
<tr>
<td>1st Quarter</td>
<td>0/393=0</td>
<td>4/463=8.6</td>
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Non-ICU: 0/393 = 0

ICU: 4/463 = 8.6
Catheter Associated Urinary Tract Infections (CAUTI's) 2010-2012

Number Per 1,000 Catheter Days

<table>
<thead>
<tr>
<th>Year</th>
<th>Non-ICU</th>
<th>ICU</th>
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<tbody>
<tr>
<td>2010</td>
<td>5/1372=3.6</td>
<td>22/2036=10.8</td>
</tr>
<tr>
<td>2011</td>
<td>7/2112=3.3</td>
<td>12/2203=5.4</td>
</tr>
<tr>
<td>2012</td>
<td>0/393=0</td>
<td>4/463=8.6</td>
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QUESTIONS