CAUTI: Chasing Zero in Critical Care
Rosy Canete-Yoham, MSN, ACNP, CCRN-CSC
Edwin Vides, BSN, RN
South Miami Hospital (SMH) Demographics

SMH, a part of Baptist Health South Florida, is a not-for-profit, acute care hospital with 452 licensed beds. The hospital has an excellent reputation for quality care in many areas, including:

- Award-winning maternity services
- Help for infants and children with developmental delays and disabilities
- Robotic surgery
- Addiction treatment
- Weight-loss surgery
- Comprehensive cancer program
- A wide range of outpatient services
- Cardiovascular services

Awards/Certifications:
Objectives:

1. Discuss methods used to identify common reasons that contribute to Catheter Associated Urinary Tract Infections (CAUTI)
2. Identify most common reasons that contribute to Catheter Associated Urinary Tract Infections (CAUTI)
3. Describe processes to reduce CAUTI rate
Background/Problem:

- Higher CAUTI rates lead to increased length of stay, cost & mortality:
  - According to CDC*, urinary tract infections (UTIs) are the 2nd most common type of healthcare-associated infection (HAI) & account for more than 15% of infections reported by hospitals.
  - CAUTI can lead to complications such as prostatitis, cystitis, pyelonephritis, bacteremia, endocarditis, and meningitis.
  - An estimated 13,000 deaths are associated with UTIs each year.
- Q4 2014, SMH Critical Care CAUTI rate was above the national mean

<table>
<thead>
<tr>
<th>Hospital</th>
<th>4Q14</th>
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<tbody>
<tr>
<td>SMH</td>
<td>4.8</td>
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<tr>
<td>NHSN Mean</td>
<td>2.2</td>
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*CAUTI Device Module, 4/2015
Goals:

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<tr>
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<th>Goals:</th>
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<tbody>
<tr>
<td>1</td>
<td>Reduce indwelling catheter utilization ratio</td>
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<tr>
<td>2</td>
<td>Reduce CAUTI Rates to ZERO</td>
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Methods:

• Root Cause Analysis: 10/2014
• Gap Analysis: 11/2014
• Teams Refocus Imagine Measure (TRIM) Analysis: 12/2014 (BHSF Lean Six Sigma)
Method #1: Root Cause Analysis – CAUTI (10/2014)

Analyzed CAUTIs and identified trends:
- Location of Foley insertion:
  - 79% placed in Critical Care / ED
- Date of infection/event:
  - Median: Day 3
- Catheter type/sizes:
  - 16F Only
- Inserter:
  - ED techs
- Catheters placed during emergencies
- Bathing practices
  - Basin baths

Interventions:
- 10/2014 Removed basin baths
- 11/2014 Gap Analysis – Product Consultant
- 12/2014 Teams Refocus Imagine Measure (TRIM) Analysis
**Interdisciplinary Team**

<table>
<thead>
<tr>
<th>Team Members &amp; Credentials</th>
<th>Title</th>
<th>Department</th>
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</thead>
<tbody>
<tr>
<td>Vernon Bartholomew, RN</td>
<td>Director of Nursing</td>
<td>Critical Care</td>
</tr>
<tr>
<td>Aimee Green-Blumstein, RN</td>
<td>Patient Care Manager</td>
<td>Critical Care</td>
</tr>
<tr>
<td>Edwin Vides, RN</td>
<td>Clinical RN Educator</td>
<td>Critical Care</td>
</tr>
<tr>
<td>Rosy Canete-Yoham, ARNP</td>
<td>Nurse Practitioner</td>
<td>Critical Care</td>
</tr>
<tr>
<td>Jorge Murillo, MD</td>
<td>Infectious Disease Physician</td>
<td>Infectious Disease</td>
</tr>
<tr>
<td>Yola Duhaney, MPH, RN</td>
<td>Manager of Infection Control</td>
<td>Infection Control</td>
</tr>
<tr>
<td>Cam Kha, RN</td>
<td>Infection Control Nurse</td>
<td>Infection Control</td>
</tr>
<tr>
<td>Andrea Bloomfield, RN</td>
<td>Infection Control Nurse</td>
<td>Infection Control</td>
</tr>
<tr>
<td>George Gordon, RN</td>
<td>Patient Care Manager ED</td>
<td>Emergency Department</td>
</tr>
<tr>
<td>Katie Modzelewksa, MBA</td>
<td>Manager of Business Op</td>
<td>Emergency Department</td>
</tr>
<tr>
<td>Yasmin Rivera-Hernandez, RN</td>
<td>Clinical RN Educator</td>
<td>Emergency Department</td>
</tr>
<tr>
<td>Jacqueline Ruiz, PharmD</td>
<td>Antibiotic Stewardship</td>
<td>Performance Improvement</td>
</tr>
<tr>
<td>Debra Witherspoon, RN, MSN</td>
<td>Nursing Quality &amp; PI Coordinator</td>
<td>Performance Improvement</td>
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<tr>
<td>Eduardo Garcia, RN</td>
<td>Proficient RN</td>
<td>Critical Care</td>
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<tr>
<td>Luba Kinal, RN</td>
<td>Proficient RN</td>
<td>Critical Care</td>
</tr>
<tr>
<td>Sasha Topping, RN</td>
<td>Proficient RN</td>
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<tr>
<td>Yvonne Maxwell, RN</td>
<td>Proficient RN</td>
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</tr>
<tr>
<td>Michelle Munro, RN</td>
<td>Proficient RN</td>
<td>Critical Care</td>
</tr>
<tr>
<td>Silvia Clark, RN</td>
<td>Proficient RN</td>
<td>Critical Care</td>
</tr>
<tr>
<td>Chloris Garcia</td>
<td>Manager Medical Tech</td>
<td>Laboratory</td>
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</tbody>
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Method #2: Gap Analysis – Indwelling Catheter Placement (11/2014)

Top opportunities for improvement:

1. Identified variability in insertion and maintenance techniques.
2. Culture of errors unique to each department
3. No onboarding screening or training on foley insertions.

Interventions:

1/2015 Added new Foley Tray System
2/2015 RN Re-education; Indwelling catheter placement competency & orientation requirement
Method #3: Teams Refocus Imagine Measure (TRIM) Analysis: 12/2014

**TRIM Analysis:**

- Placement of indwelling catheters lacked:
  - Indication for use
  - MD order (during emergencies)
  - Securement devices
- MD orders without:
  - Criteria or timeframe to discontinue
  - UAs with reflex
- Inconsistent practice:
  - Hand washing; pericare; insertion & aseptic technique; placement of catheter bag; documentation of date, time of insertion
- Limited indwelling catheter size (only 16F)

**Interventions:**

<table>
<thead>
<tr>
<th>Date</th>
<th>Intervention Details</th>
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<tbody>
<tr>
<td>12/2014</td>
<td>Implemented Targeted Solutions Tool to increase compliance with hand hygiene</td>
</tr>
<tr>
<td></td>
<td>Piloted new cleansing wipes with colloidal silver</td>
</tr>
<tr>
<td>1/2015</td>
<td>Added new ARNP role in CC with focus on quality outcomes</td>
</tr>
<tr>
<td></td>
<td>Implemented Nurse Driven Protocol (indwelling catheter removal)</td>
</tr>
<tr>
<td></td>
<td>Revised MD orders to include UA w/Reflex</td>
</tr>
<tr>
<td>2/2015</td>
<td>RN / CP Re-education</td>
</tr>
</tbody>
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**SMH Nurse Driven Protocol**

### Insertion of Indwelling Catheter

- Place insertion site here

### Removal of Indwelling Catheter

**Criteria for appropriate insertion**

- **Yes:**
  - Patient is continent and able to void
  - Patient has no other medical conditions requiring a catheter

- **No:**
  - Patient is not continent
  - Patient has ongoing medical conditions requiring a catheter

<table>
<thead>
<tr>
<th>RN Name:</th>
<th>Department:</th>
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</table>

- Obtain order for UA with culture and send to the lab.

**RN Initials:**

<table>
<thead>
<tr>
<th>Date:</th>
<th>Time:</th>
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</table>

**RN Initials:**

- Obtain order for UA with culture and send to the lab.

**Date:**

**Time:**

### Indications for continuing urinary catheter

1. Adult urinary retention or bladder/voiding obstruction
2. Need for hourly measurements of urinary output in critically ill patients
3. Urinary surgery or other surgery on contiguous structures of genitourinary tract
4. Catheter placed by urologist or urology oncology patients
5. Assess for renal or azotemia in adult or pediatric patients or other patients
6. Patients requiring peritoneal dialysis (e.g., potentially unstable metabolic or urinary space, multiple transfusions, etc. or pelvic fracture)
7. Improve comfort and/or life

### Post-Catheter Removal Instructions

1. Document date and time of catheter removal
2. Assess the patient's voiding ability
3. Assess for spontaneous voiding without difficulty
4. Assess the patient's ability to perform a urethral catheterization
5. Notify the physician if the patient exhibits difficulty or discomfort with voiding
6. Record the time of catheter removal
7. Document the patient's current voiding status
8. Document any additional interventions or treatments

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### South Miami Hospital

**NURSE DRIVEN STANDARD OF CARE FOR REMOVAL OF INDWELLING URINARY CATHETER**

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Adobe Acrobat Document
Outcomes: Goal #1 Reduce indwelling catheter device days

South Miami Hospital Critical Care Foley Utilization Ratio
(4Q13-3Q15)

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<tr>
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<tbody>
<tr>
<td>Foley Utilization Ratio</td>
<td>0.54</td>
<td>0.51</td>
<td>0.56</td>
<td>0.52</td>
<td>0.45</td>
<td>0.45</td>
<td>0.40</td>
<td>0.40</td>
</tr>
<tr>
<td># Foley Days</td>
<td>976</td>
<td>968</td>
<td>998</td>
<td>808</td>
<td>734</td>
<td>814</td>
<td>703</td>
<td>679</td>
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<tr>
<td># Patient Days</td>
<td>1797</td>
<td>1909</td>
<td>1781</td>
<td>1567</td>
<td>1627</td>
<td>1791</td>
<td>1772</td>
<td>1681</td>
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</tbody>
</table>

1Q15: CAUTI Interventions Initiated
4Q14: CAUTI Analysis
1Q14-3Q14 Pre Data
2Q15-3Q15 Post Data
Outcomes: Goal #2 Reduce CAUTI Rate to Zero

South Miami Hospital: Critical Care CAUTI Rate
Q3 2013 - Q3 2015

<table>
<thead>
<tr>
<th></th>
<th>Incidence/1000 Device Days</th>
<th>NHSN Mean</th>
<th># CAUTI</th>
<th># Foley Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q3-2013</td>
<td>0.0</td>
<td>1.9</td>
<td>0</td>
<td>244</td>
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<tr>
<td>Q4-2013</td>
<td>3.2</td>
<td>1.9</td>
<td>1</td>
<td>312</td>
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<tr>
<td>Q1-2014</td>
<td>0.0</td>
<td>2.2</td>
<td>0</td>
<td>271</td>
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<tr>
<td>Q2-2014</td>
<td>0.0</td>
<td>2.2</td>
<td>0</td>
<td>223</td>
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<tr>
<td>Q3-2014</td>
<td>0.0</td>
<td>2.2</td>
<td>0</td>
<td>184</td>
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<tr>
<td>Q4-2014</td>
<td>4.8</td>
<td>2.2</td>
<td>1</td>
<td>208</td>
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<tr>
<td>Q1-2015</td>
<td>0.0</td>
<td>2.2</td>
<td>0</td>
<td>131</td>
</tr>
<tr>
<td>Q2-2015</td>
<td>0.0</td>
<td>2.2</td>
<td>0</td>
<td>156</td>
</tr>
<tr>
<td>Q3-2015</td>
<td>0.0</td>
<td>2.2</td>
<td>0</td>
<td>166</td>
</tr>
</tbody>
</table>

Pre Data 1Q14-3Q14

Post Data 2Q15-3Q15

4Q14:
- Root Cause Analysis
- Gap Analysis Indwelling Catheter Insertion
- CAUTI TRIM
- Cleansing wipes with colloidal silver
- Targeted Solutions Tool

1Q15:
- New ARNP role focus on “Quality Outcome”
- Nurse Driven Protocol Indwelling Catheter
- Re-educated staff UA w/reflex
- New Foley Tray Kit
Conclusion:

• Reduce indwelling catheter utilization ratio from 0.45 to 0.40
• Reduced CAUTI Rate = “ZERO” for over a year
• Estimated annual cost savings between $13,182 and $32,955 due to the measures implemented
Questions?

Don’t forget to exfoley-ate daily!

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