New Jersey Hospital Improvement Innovation Network (NJHIIN)

CAUTI Prevention

HAI TAP Workshop
March 12, 2019
Catheter-associated urinary tract infections (CAUTI)

U.S. hospitals reported a significant decrease in CAUTIs between 2015 and 2016.

Among the 2,591 hospitals in U.S. with enough data to calculate an SIR, 10% had an SIR significantly higher (worse) than 0.93, the value of the national SIR.

CATHETER-ASSOCIATED URINARY TRACT INFECTIONS

When a urinary catheter is not put in correctly, not kept clean, or left in a patient for too long, germs can travel through the catheter and infect the bladder and kidneys.

Source: https://gis.cdc.gov/grasp/PSA/HAIreport.html
New Jersey CAUTI Data

CAUTI SIR
Standardized Infection Ratio (NHSN measure)

- NJHIN 20% Target (0.99)
- NJHIN Baseline (1.24)
- National Benchmark (0.63)

Regression Equation:

\[
y = -0.0031x + 0.9827
\]

\[
R^2 = 0.0044
\]

Catheter Utilization Rate
Catheter Days per 1,000 Patient Days (NHSN measure)
Urinary Tract Infection (UTI) Facts

• 4th most common HAI
• Accounts for more than 12% of infections reported by acute care hospitals
• Associated with an estimated 13,000 deaths annually
• Each day an indwelling catheter remains, a patient has a 3-7% increased risk of acquiring a catheter-associated urinary tract infection (CAUTI)
Key Term: Indwelling Catheter

• A drainage tube that is inserted into the urinary through the urethra, is left in place, and is connected to a drainage bag.

• Also called a Foley catheter
Target
CAUTI: Measures to Target

• CAUTI Infections rate, SIR, CAD
• Device utilization rate, SUR
• Unit-level or facility-level
• Pathogen patterns
• Process related data
  • Appropriate indication for insertion
CAUTI: TAP Report

<table>
<thead>
<tr>
<th>Facility Org ID</th>
<th>Facility Name</th>
<th>Facility CAD</th>
<th>Location Rank</th>
<th>Location</th>
<th>CDC Location</th>
<th>Events</th>
<th>Urinary Catheter Days</th>
<th>DUR %</th>
<th>CAD</th>
<th>SIR</th>
<th>SIR Test</th>
<th>No. Pathogens</th>
</tr>
</thead>
<tbody>
<tr>
<td>10000</td>
<td>DHQP Memorial Hospital</td>
<td>10.78</td>
<td>1</td>
<td>ICU</td>
<td>IN.ACUTE:CC:M</td>
<td>4</td>
<td>453</td>
<td>8</td>
<td>3.51</td>
<td>.</td>
<td>6 (3, 0, 0, 0, 0, 0, 1)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>STEP1</td>
<td>2</td>
<td>2</td>
<td>IN.ACUITE:STEP</td>
<td>1054</td>
<td>12</td>
<td>1.5</td>
<td>2 (0, 0, 0, 0, 0, 0, 0, 0, 0)</td>
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<tr>
<td>3</td>
<td>ICU2</td>
<td>2</td>
<td>2</td>
<td>IN.ACUTE:CC:M</td>
<td>630</td>
<td>12</td>
<td>1.43</td>
<td>2 (0, 0, 0, 0, 0, 0, 0, 0, 0, 0)</td>
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<tr>
<td>4</td>
<td>ICU3</td>
<td>2</td>
<td>2</td>
<td>IN.ACUTE:CC:MS</td>
<td>1068</td>
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<td>1.38</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1E</td>
<td>3</td>
<td>3</td>
<td>IN.ACUTE:WARD:M</td>
<td>960</td>
<td>68</td>
<td>1.24</td>
<td>3 (1, 0, 0, 0, 0, 0, 0, 0, 0, 0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>2E</td>
<td>3</td>
<td>3</td>
<td>IN.ACUTE:WARD:MS</td>
<td>1326</td>
<td>13</td>
<td>0.98</td>
<td>3 (0, 0, 0, 0, 0, 0, 0, 0, 0, 0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>1W</td>
<td>3</td>
<td>3</td>
<td>IN.ACUTE:WARD:PP</td>
<td>3090</td>
<td>75</td>
<td>0.86</td>
<td>4 (1, 0, 0, 0, 0, 0, 0, 0, 0, 0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>ICU4</td>
<td>3</td>
<td>3</td>
<td>IN.ACUTE:CC:MS</td>
<td>3380</td>
<td>75</td>
<td>0.66</td>
<td>3 (1, 0, 0, 0, 0, 0, 0, 0, 0, 0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>5E</td>
<td>1</td>
<td>1</td>
<td>IN.ACUTE:WARD:M</td>
<td>720</td>
<td>9</td>
<td>0.51</td>
<td>2 (0, 0, 0, 0, 0, 0, 0, 0, 0, 0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. This report includes CAUTI data for 2015 and forward.
2. If location-level CADs are the same in a given facility, their ranks are tied.
3. (EC,YS,PA,KS,PM,ES) = No. of E. Coli, Yeast (both candida and non-candida species), P. aeruginosa, K. pneumoniae/K. oxytoca, Proteus Mirabilis, Enterococcus species
4. SIR is set to 1 when predicted number of events is <1.0.
5. LOCATION CAD = (OBSERVED LOCATION - PREDICTED LOCATION) SELECTED SIR Goal
6. SIR TEST = 'SIG' means SIR > SIR Goal significantly

- Group Discussion: Which unit should be targeted for improvement and why?
Assess
CAUTI: Assessment

• Use tools to identify gaps in CAUTI prevention practices
• Tools can be used to assess practice through:
  • Observational auditing
  • Competency-based training
  • Understanding staff perception
CAUTI: Quick Observation Tool

Instructions: Observe patients with urinary catheters in place. Observe each practice and record the observation. In the column on the right, sum (across) the total number of “Yes” and the total number of observations (“Yes” + “No”). Sum all categories (down) for overall performance.

Source: http://ipcobservationtools.site.apic.org/

<table>
<thead>
<tr>
<th>Urinary catheter: Observation Categories</th>
<th>Patient 1</th>
<th>Patient 2</th>
<th>Patient 3</th>
<th>Patient 4</th>
<th>Summary of Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Is the catheter properly secured to the patient?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>2 Is there unobstructed flow from the catheter into the bag?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>3 Is the collection bag below the level of the bladder?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>4 Are the bag and tubing off of the floor?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Total YES and TOTAL OBSERVED**
### Indwelling Urinary Catheter (IUC) Insertion Checklist to Prevent CAUTI in the Adult Hospitalized Patient: Important Evidence-Based Steps.

<table>
<thead>
<tr>
<th>Before IUC Insertion:</th>
<th>Yes</th>
<th>Yes with Reminder</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Determine if IUC is appropriate per the CDC Guidelines (CDC, 2009) (See page 1, Box 1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) Select smallest appropriate IUC (14 Fr., 5ml or 10 ml balloon is usually appropriate unless ordered otherwise)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) Obtain assistance PRN (e.g., 2-person insertion, mechanical aids) to facilitate appropriate visualization/insertion technique</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4) Perform hand hygiene.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>After IUC Insertion Completion:</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Perform Triple Action for IUC/Drainage System:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Secure IUC to prevent urethral irritation.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Position drainage bag below the bladder (but not resting on the floor).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Check system for closed connections and no obstructions/kinks.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## CDC CAUTI TAP Facility Assessment Tool

### II. Appropriate Indications for Indwelling Urinary Catheter Insertion

<table>
<thead>
<tr>
<th>Question</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
<th>Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do ordering providers document an indication for indwelling urinary catheters?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do ordering providers use indwelling urinary catheters for appropriate indications?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do personnel use alternative strategies for management of urinary incontinence (e.g., external catheters, bedside commodes, scheduled toileting, garments/pads)?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do personnel use bladder scanners to confirm urinary retention before placing or replacing urinary catheters?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do personnel use bladder scanners with intermittent catheterization for management of postoperative urinary retention?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does your facility provide instructions/protocols for personnel to act upon bladder scanner results?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are patients and/or families educated on appropriate indications for and care of urinary catheters?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In the Emergency Department, is an order provided prior to insertion of an indwelling urinary catheter?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do Emergency Department providers order indwelling urinary catheters for appropriate indications?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do Emergency Department providers document an indication when ordering indwelling urinary catheters?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Comments (and/or “As Evidenced By”)

```sql

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Monitor Trends-Provide Feedback

CAUTI CAD by ICU Type

- Neuro ICU: 22
- Cardiac ICU: 8
- Medical ICU: 16
- Surgical ICU: 1

Legend:
- Blue: Neuro ICU
- Orange: Cardiac ICU
- Gray: Medical ICU
- Yellow: Surgical ICU
New Jersey CAUTI Assessment Feedback Results

<table>
<thead>
<tr>
<th>Leading*</th>
<th>Lagging†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training on urinary catheter insertion and maintenance, placement of drainage bag, and use of bladder scanners</td>
<td></td>
</tr>
<tr>
<td>Use of urinary catheters for appropriate indications, use of alternative strategies to manage incontinence, and use of bladder scanners</td>
<td></td>
</tr>
<tr>
<td>Use of pre-connected, sealed drainage systems, and personnel keep system closed to maintain sterility</td>
<td></td>
</tr>
<tr>
<td>Documentation of insertion procedure, identification of patients with catheters, and daily review for continued need</td>
<td></td>
</tr>
<tr>
<td>Requirement of at least two personnel present for urinary catheter insertion</td>
<td></td>
</tr>
<tr>
<td>Physicians respond to alerts or reminders by removing unnecessary urinary catheters</td>
<td></td>
</tr>
<tr>
<td>Competency assessments of use of bladder scanners: At least annually</td>
<td></td>
</tr>
<tr>
<td>Awareness of ED practices regarding ordering catheters before insertion, for appropriate indications, and documenting indication</td>
<td></td>
</tr>
</tbody>
</table>
Prevent
CAUTI: Strategies for Prevention

Lifecycle of the Catheter

Catheter Placement: Appropriate Use Only!

- Place indwelling urinary catheters only for appropriate reasons:
  - Patient has acute urinary retention or bladder outlet obstruction
  - Need for accurate measurements of urinary output in critically ill patients
  - Perioperative use for selected surgical procedures
  - To assist in healing of open sacral or perineal wounds in incontinent patients
  - Patient requires prolonged immobilization (e.g., potentially unstable thoracic or lumbar spine, multiple traumatic injuries such as pelvic fractures)
  - To improve comfort for end of life care if needed
What is “Appropriate”

“develop a list of catheter indications assessed as appropriate, inappropriate, or of uncertain appropriateness”

“guide nurses and physicians considering catheters in hospitalized medical patients”

Is this an appropriate indication?

<table>
<thead>
<tr>
<th>Reason</th>
<th>Foley Indwelling Urinary Catheter</th>
<th>ISC Catheter</th>
<th>External Condom Catheter</th>
<th>Noncatheter Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinician requests catheter to measure urine volume†</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Hourly urine volume required to provide treatment.</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Example: manage hemodynamic instability, hourly titrate IVF, drips</td>
<td>Yes, if cannot be collected/assessed without catheter</td>
<td>Uncertain*</td>
<td></td>
<td>Yes, if cannot assess without catheter</td>
</tr>
<tr>
<td>Daily (not hourly) urine volume required to guide treatment.</td>
<td>Yes, if no bladder scanner</td>
<td>Yes, if no bladder scanner</td>
<td>No</td>
<td>Bladder scanner</td>
</tr>
<tr>
<td>Examples: acute renal failure work-up, IVF or oral/IV bolus diuretics, fluid management in respiratory failure</td>
<td>No</td>
<td>Yes, if no bladder scanner</td>
<td>No</td>
<td>Bladder scanner</td>
</tr>
</tbody>
</table>

ICU Daily Checklist

**Figure 4. ICU daily checklist for appropriateness of Foley catheter.**

1. Urine volume measurement:
   a. Is HOUmL urine volume measurement being used to inform and provide treatment?
      - Examples: Hemodynamic instability requiring hourly or multiple daily titrations per day of ongoing bolus fluid resuscitation, vasopressors, inotropes, or diuretics
      - Acute respiratory failure requiring invasive ventilation with hourly titrations of diuretics
      - Hourly measurement of urine studies or urine volumes to manage life-threatening laboratory abnormalities
   b. Is DAILY urine volume measurement being used to provide treatment AND volume status CANNOT be adequately or reliably assessed without a Foley catheter, such as by daily weight or urine collection by urinal, commode, bedpan, or external catheter?
      - Examples: Management of acute renal failure, IV fluids, or IV or oral bolus diuretics
      - Fluid management in acute respiratory failure requiring large volumes of oxygen (>5 L/min or >50%)

2. Does patient have a urologic problem that is being treated with a Foley catheter?
   - Examples: Urinary retention that cannot be adequately monitored or addressed by bladder scanner or ISC
     - Urinary retention anticipated because of treatment with paralytic medications
     - Recent urologic or gynecologic evaluation or procedure with Foley catheter not recommended to be removed yet, such as:
       - Acute urinary retention with bladder outlet obstruction due to acute prostatitis or urethral edema
       - Gross hematuria with blood clots in the urine
       - Hematuria suspected to be prostatic or urethral bleeding being managed with Foley catheter

3. Urine sample collection for a laboratory test when CANNOT be collected by noncatheter method

<table>
<thead>
<tr>
<th>What type of sample is needed?</th>
<th>Use Foley Catheter?</th>
<th>Use ISC?</th>
<th>Use External Catheter?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sterile sample for urine culture</td>
<td>No</td>
<td>Yes</td>
<td>Yes, if staff trained for sterile application</td>
</tr>
<tr>
<td>Nonsterile random urine sample</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>24-hour urine sample</td>
<td>Yes</td>
<td>If all urine can be collected by ISC</td>
<td>Yes, preferred option in cooperative males</td>
</tr>
</tbody>
</table>

4. Does the patient have urinary incontinence that cannot be addressed by noncatheter methods (barrier creams, incontinence garments and absorbent pads, prompted toileting, straight catheterization if overflow incontinence) because nurses cannot turn and provide skin care with specialty resources (such as lift teams and lift machines) or transition to external catheter (for cooperative males)?
   - Examples: Turning causes hemodynamic or respiratory instability
   - Strict temporary immobility postprocedure such as from a vascular procedure if patient cannot manage urine otherwise
   - Incontinence with open pressure ulcers (stage III or IV) or “unstoppable” ulcers

5. Foley catheter is providing comfort from severe distress related to urinary management that cannot be addressed by noncatheter options, ISC, or external catheter.
   - Examples: Difficulty voiding due to severe dyspnea with position changes required for managing urine without an indwelling catheter
   - Address patient and family goals in a dying patient
   - Acute, severe pain upon movement (e.g., unrepaired fracture) WITH demonstrated difficulties using noncatheter options or external catheter

ICU = intensive care unit; ISC = intermittent straight catheter; IV = intravenous.
Can you use a catheter alternative?
Catheter Care: “It’s all in the technique”

- Hand hygiene
- Aseptic technique
- Standardize insertion kit
- Keep supplies close to point of care
- Competency-based training

Maintenance Issues

• Catheter securement
• Bag below level of bladder
• Avoid breaks in system
• Peri care
• Audit practices

Bundle Best Practices!
Catheter Removal: Holy Moley- Remove that Foley!

- Daily assessment
- Nurse-driven removal protocols
- Bladder ultrasound
- Electronic reminders

http://www.tnpatientsafety.com/LinkClick.aspx?fileticket=lpKnmXe7h3g%3D&tabid=56
CAUTI High Performer

Saint Barnabas Medical Center
Top Steps for Reduction

- Form a multidisciplinary committee
- Promote Awareness- Rapid Cycle Rounds to assess the need of catheter- partner with a physician champion
- Standardize bathing and perineal care
- Educate the proper specimen collection- remove the catheter if possible before specimen collection
- With physician input; set up reflex testing (collect both u/a and culture; cancel culture if U/A is negative to discourage treating colonization
- Get input/ from the nurses on unit- via standardized audit tools; innovative programs: data stats updated monthly displayed on nurse huddle boards
- Conduct RCA on any cauti with input from staff nursing

ONGOING AWARENESS IS KEY!!!
Suspect a Urinary Tract Infection?
Proper Ordering and Specimen Collection

Does your patient have a urinary catheter?

- Yes
  - Assess patient for necessity of continued catheter use
    - If not indicated, remove Foley
    - If indicated, replace Foley with a new catheter and collect urine specimen from that catheter
      - SPECIMENS FROM EXISTING CATHETER WILL LIKELY BE COLONIZED

- No
  - Collect the urine as midstream clean catch (urinalysis and urine culture tubes)
  - Order in Cerner as: Urine Reflex clean catch Test

1. Collect urine from sampling port (urinalysis and urine culture tubes)
2. Order in Cerner as: Urine Reflex Cath Spec Test
Influencing Autonomous Nurse Assessments

External Catheters:

Bladder Scanners:

Reflex Testing:
Group Discussion

• Do you currently have a well-functioning team (or work group) focusing on CAUTI prevention?
• Do you have a project manager with dedicated time to coordinate your CAUTI prevention activities?
• Do you have an effective nurse and physician champion for your CAUTI prevention activities?
• Do bedside nurses assess, at least daily, whether their catheterized patients still need a urinary catheter?
• Do bedside nurses take initiative to ensure the indwelling urinary catheter is removed when the catheter is no longer needed (e.g., by contacting the physician or removing the catheter per protocol)?

http://catheterout.org/questions.html CAUTI GPS