Zero CAUTI’s: Applying Evidence And Going Beyond Guidelines to Prevent Patient Harm

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Disclosures for Kathleen Vollman

- Consultant-Michigan Hospital Association Keystone Center
- Subject matter expert CAUTI, CLABSI, HAPU, Safety culture
- Consultant and speaker bureau for Sage Products LLC
- Consultant and speaker bureau for Hill-Rom Inc
- Consultant and speaker bureau for Eloquest Healthcare
Session Objectives

- Create the link of patient advocacy to the basic nursing care
- Identify and detail the evidence-based practices around preventing CAUTI’s
- Discuss possible barriers to practice changes and realistic solutions to assist the team in the implementation process.
“It may seem a strange principle to enunciate as the very first requirement in a Hospital that it should do the sick no harm.”

Florence Nightingale
PROTECT THE PATIENT FROM BAD THINGS HAPPENING ON YOUR WATCH

Implement Interventional Patient Hygiene
Interventional Patient Hygiene

- Hygiene… the science and practice of the establishment and maintenance of health
- Interventional Patient Hygiene….nursing action plan directly focused on fortifying the patients host defense through proactive use of evidence based hygiene care strategies
INTERVENTIONAL PATIENT HYGIENE (IPH)

- VAP/HAP
- Oral Care/Mobility
- HAND
- Skin Care/Bathing/Mobility
- Patient

- Catheter Care
- CA-UTI
- CA-BSI
- SSI
- Falls
- HASI

Factors Impacting the ability to Achieve Quality Nursing Outcomes at the Point of Care

Building Resiliency Into Interventions

- Forcing functions and constraints
- Automation and computerization
- Standardization and protocols
- Checklists and independent check systems
- Rules and policies
- Education and information
- Vague warnings – Be more careful!

Weakest

Strongest
Preventing CAUTI’s Through Evidence Based Care Practices
The Why

- Urinary tract infection (UTI) are one of the most common hospital-acquired infections
- Along with other device associated infections (CLABSI and VAP) account for 25% of all hospital acquired infections
- 70-80% of CAUTI are due to urinary catheters
- 12-16% of inpatients are catheterized
- Leads to increased morbidity and costs ($896)
- Medicare no longer reimburses U.S. hospitals for the additional costs of certain infections
- CLA-BSI & CAUTI are 65% of the clinical conditions for VBP
- CAUTI prevention is part of the 2012 National Patient Safety Goal

### CUSP & CAUTI Interventions

<table>
<thead>
<tr>
<th>Adaptive /Cultural</th>
<th>Technical</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CUSP</strong></td>
<td><strong>CLAUTI</strong></td>
</tr>
<tr>
<td>1. Educate on the Science of Safety</td>
<td>1. Insertion</td>
</tr>
<tr>
<td>2. Identify Defects (Staff Safety Assessment)</td>
<td>Limiting use</td>
</tr>
<tr>
<td>3. Senior Executive Partnership</td>
<td>Using aseptic technique for site prep, equip &amp; supplies</td>
</tr>
<tr>
<td>4. Learn from Defects</td>
<td>2. Maintenance</td>
</tr>
<tr>
<td>5. Implement Teamwork &amp; Communication Tools</td>
<td>• Securing the catheter for unobstructed flow</td>
</tr>
</tbody>
</table>

#### Technical

- **CLAUTI**
  - **1. Insertion**
    - Limiting use
    - Using aseptic technique for site prep, equip & supplies
  - **2. Maintenance**
    - Securing the catheter for unobstructed flow
    - Maintaining the sterility of the urine collection system
    - Replacing the urine collection system when required
    - Collecting urine samples
Isn’t this a patient safety issue, not just CAUTI?
Pathogenesis of CAUTI

- Source: colonic or perineal flora on hands of personnel
- Microbes enter the bladder via extraluminal {around the external surface} (proportion = 2/3) or intraluminal {inside the catheter} (1/3)
- Daily risk of bacteriuria with catheterization is 3% to 10%; by day 30 = 100%
Disrupting the Lifecycle of the Urinary Catheter

1. Preventing Unnecessary and Improper Placement

2. Maintaining Awareness & Proper Care of Catheters

3. Prompting Catheter Removal

4. Preventing Catheter Replacement

(Meddings. Clin Infect Dis 2011)

www.catheterout.org
Before Placing an Indwelling Catheter, Please Consider if These Alternatives Would be Appropriate:

- *Bedside commode, urinal, or continence garments*: to manage incontinence.
- *Bladder scanner*: to assess and confirm urinary retention, prior to placing catheter to release urine.
- *Straight catheter*: for one-time, intermittent, or chronic voiding needs.
- *External catheter*: appropriate for cooperative men without urinary retention or obstruction.
Nurse Driven Protocol-ER/ICU/OR & Floor

- Assessment of criteria for insertion
- Examine alternatives to indwelling catheters
  - External condom catheters for male patients without urinary retention or bladder outlet obstruction*
  - Intermittent catheterization several times per day (post-op)
- Use of the bedside bladder ultrasound to assess urinary retention (reduce rates by 30-50%)
  - If minimal or no urine found in the bladder alternative strategies should be considered prior to catheterization
- Prevalence evaluation to determine number of catheters versus the number of catheters that met criteria

*Saint S, et al. J am Geriatr Sco. 2006;54(7)1055-1061
Nurse Driven Intermittent Catheterization Program

If retention is suspected post removal:

- If no voiding within 4-6 hours of removing the catheter, a bedside bladder scan ultrasound should be obtained.
- If the bladder volume is less than 500mL, encourage the patient to void by using techniques to stimulate bladder reflex (cold water to abdomen, stroke inner thigh, run water, flush toilet).
- Continue to assess the patient and repeat the bladder scan in 2 hours if the patient has not voided.
- If the bladder volume is greater than 500mL, and intake is less than 3/l a day-catheterize for residual urine volume rather than place an indwelling catheter.
- If volumes are greater/catheter goes back in 24hrs

STOP CAUTI Sample Policy and Procedure
University of Virginia Health System nurse driven intermittent cath program
Before Placing an Indwelling Catheter, Please Consider if These Alternatives Would be Appropriate:

- **Bedside commode, urinal, or continence garments:** to manage incontinence.
- **Bladder scanner:** to assess and confirm urinary retention, prior to placing catheter to release urine.
- **Straight catheter:** for one-time, intermittent, or chronic voiding needs.
- **External catheter:** appropriate for cooperative men without urinary retention or obstruction.
Challenges with Current Appropriate Alternatives: External Male Catheters

1 out of every 200 men is born with what’s medically known as ‘micro-penis”
Buried Penis
Condom Catheter
Common Problems

• Most common problems are:
  – Skin irritation and maceration
  – Difficult to keep the condom from falling off/retraction of the penis or decrease size
  – Ischemia and penile obstruction/tightness
  – Adherence: requires to secure on the shaft & adhesive mechanisms are challenging

A New Male External Catheter

- Hydrocolloid alternative
  - Hydrocolloid wafer shaped adheres to the glans penis
  - Acts as a skin protectant
  - Protects the glans penis from excessive moisture
  - The seal is reinforces by a second hydrocolloid strip
  - Can be used with circumcised and uncircumcised males
  - Clean glans penis with a remover & alcohol
Before & After QI Project

- 60-day comparison
- Use of novel EMC device vs. indwelling catheter
- Inclusion criteria:
  - No restraints
  - No BPH
  - No neurogenic bladder
  - Cooperative
  - Hospitalized ≥ 2 weeks
- Monitored wear time, evaluated skin

Foley utilization rate, before, during & after

Fitzwater M, IP Kindred Albuquerque, 2015

Average Wear Time = 24hrs
CDC, SHEA, IDSA and NHS: Indications for Placement

- Perioperative use for selected surgical procedures
- Urine output in critically ill patients
- Management of acute urinary retention and urinary obstruction
- Assistance in pressure ulcer healing for incontinent patients
- At a patient request to improve comfort (SHEA) or for comfort during end of life care (CDC)

Mindful When Making the Decision for Placement
Types Of Treatments Requiring Close UO Monitoring

- Bolus fluid resuscitation
- Vasopressors
- Inotropes
- High dose diuretics
- Hourly urine studies to measure life threatening laboratory abnormalities

Are you responding hourly to the patient’s urine output??
I & O in Critical Care

The Culture of Culturing

- Case examples
- When is a urine culture necessary
- Strategies to improve the culture of culturing
Case Example #1

A 45 year old male who is an active intravenous drug user is admitted with fever of 103°F, confusion and respiratory distress. The patient is intubated and admitted to the intensive care unit; the CXR shows multiple pulmonary emboli and the blood cultures grow methicillin resistant *Staphylococcus aureus*. On day 3, he is still febrile with a temperature of 101.8°F. His blood cultures are still growing gram-positive cocci and the patient has a urinary catheter since intensive care unit admission.

1. Urine culture
2. No urine culture
Case Example #2

A 73 year old patient with prostatic hypertrophy was admitted to the hospital with abdominal discomfort. On admission, he was afebrile with normal vital signs and white blood cell count. A bladder scan showed a significantly distended urinary bladder. A urinary catheter was placed and 1200 ml of urine was drained. His abdominal pain improved and he did not complain of any respiratory symptoms. The patient spiked a fever of 102°F the next day. His blood pressure was 100 systolic and heart rate 110.

1. Urine culture
2. No urine culture
Resident Physicians (N=106) and Nurses (N=159): Triggers For Cultures In Catheterized Patients
(Sibai et al, ID Week 2013, presentation 205 )

<table>
<thead>
<tr>
<th>Trigger for Urine Culture</th>
<th>Resident Physicians (Answered Yes)</th>
<th>Nurses (Answered Yes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foul smelling urine</td>
<td>75 (70.8%)</td>
<td>146 (94.8%)</td>
</tr>
<tr>
<td>Cloudy urine</td>
<td>84 (79.2%)</td>
<td>146 (94.8%)</td>
</tr>
<tr>
<td>Sediments in urine</td>
<td>57 (53.8%)</td>
<td>129 (84.3%)</td>
</tr>
<tr>
<td>Darker urine</td>
<td>39 (36.8%)</td>
<td>72 (47.7%)</td>
</tr>
<tr>
<td>Chronic UC on admission</td>
<td>46 (43.4%)</td>
<td>115 (74.2%)</td>
</tr>
</tbody>
</table>

All of the above should **NOT** trigger a urine culture in catheterized patients!
Resident Physicians and Pyuria: Obtain A Urine Culture In Catheterized Patients
(Sibai et al, ID Week 2013, presentation 205)

<table>
<thead>
<tr>
<th>Trigger for Urine Culture</th>
<th>Answered Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urine WBC 25 cells</td>
<td>71 (67%)</td>
</tr>
<tr>
<td>Urine WBC 100 cells</td>
<td>94 (88.7%)</td>
</tr>
<tr>
<td>Urine WBC 500 cells</td>
<td>101 (95.3%)</td>
</tr>
</tbody>
</table>

Pyuria in an asymptomatic patient with an indwelling urinary catheter should not be a trigger for culture or antimicrobials.
Screening Urine Cultures!!

The practice: “screening culture on admission”, “standing orders” or “reflex orders” for urine cultures based on urinalysis results

1. May not help the hospital avoid non-reimbursement
2. May increase utilization of additional resources (testing, antibiotics, consults)
3. May adversely affect patients by exposing them to inappropriate testing and treatments
How to Reduce Unnecessary Urine Cultures

1. Evaluate current processes for obtaining urine cultures (avoid automatic triggers or screening cultures with no appropriate indications)
2. Evaluate practice patterns (avoid PAN culturing)
3. Provide education on when it is appropriate to obtain urine cultures
4. Have periodic audits on urine culture use in the intensive care units to look for trends
5. Promote appropriate urinary catheter use to reduce risk of bacteriuria/ funguria
## Appropriate Urine Culture Use

<table>
<thead>
<tr>
<th>Appropriate Urine Culture Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part of an evaluation of sepsis without a clear source (CAUTI is often a diagnosis by exclusion)</td>
</tr>
<tr>
<td>Based on local findings suggestive of CAUTI (example, pelvic discomfort or flank pain)</td>
</tr>
<tr>
<td>Prior to urologic surgeries where mucosal bleeding anticipated or transurethral resection of prostate</td>
</tr>
<tr>
<td>Early pregnancy (avoid urinary catheters if possible)</td>
</tr>
</tbody>
</table>
Example: St Joseph Mercy Hospital
Urine Culturing Tool

*SHOULD THIS PATIENT BE EVALUATED FOR A URINARY TRACT INFECTION?*

Does the patient have any of the following without alternate explanation?

1. Urgency, frequency, dysuria
2. Suprapubic pain/tenderness
3. Flank pain or tenderness
4. New onset delirium
5. Fever >38°C/Rigors
6. Acute hematuria
7. Increased spasticity or autonomic dysreflexia in a spinal cord injury patient
8. ≥2 SIRS criteria (T > 38°C or < 35°C, HR > 90, RR > 20 or PaCO2 < 32 mmHg, WBC > 12 K/mm³ or < 4 K/mm³ or > 10% bands) OR shock with concerns for sepsis

**YES**
- Send U/A & urine culture
- Document indication for sending urine culture
- Start empiric therapy (see reverse side)

**NO**
- Do NOT send urine culture

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**EMPIRIC THERAPY BASED ON CLASSIFICATION OF URINARY TRACT INFECTION (UTI)**

Empiric choices should take into account recent previous cultures.

If urine culture is negative & patient was on an antibiotic at the time of the culture & patient has symptoms (3-8 on the reverse side) it may be appropriate to treat.

<table>
<thead>
<tr>
<th>PATIENT CATEGORY</th>
<th>PREFERRED</th>
<th>2ND LINE</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASYMPTOMATIC BACTERURIA</td>
<td>Do not treat unless pregnancy, post or to urologic procedures, or neutropenia</td>
<td>Ceftriaxone or Cefotaxime</td>
<td>Ceftriaxone or Cefotaxime</td>
</tr>
<tr>
<td>UNCOMPROMICATED LOWER TRACT UTI</td>
<td>TMPI/MX or Nitrofurantoin</td>
<td>Ciprofloxacin or Cefaclor</td>
<td>Ciprofloxacin or Cefaclor</td>
</tr>
<tr>
<td>COMPLICATED LOWER TRACT UTI</td>
<td>Ceftriaxone or TMPI/MX or Cefepime (if risk for resistant gram negatives) or Piperacillin-tazobactam (if risk for resistant gram negatives and enterococcus)</td>
<td>Ciprofloxacin</td>
<td>Ciprofloxacin</td>
</tr>
<tr>
<td>SEPSIS WITH UTI, PYELOEDEMA, PERITONEAL ABSCESS</td>
<td>Ceftriaxone or Cefepime (if critically ill, septic or recently hospitalized) or Piperacillin-tazobactam (if critically ill, septic or recently hospitalized and concern for enterococcus)</td>
<td>Sepsis ESK ETX Vancomycin PLUS Amoxicillin</td>
<td>Sepsis ESK ETX Vancomycin PLUS Amoxicillin</td>
</tr>
</tbody>
</table>

Follow culture results and de-escalate therapy based on final results and sensitivities.

For each antibiotic: document indication and planned duration for all patients.

Version date: 0/10/2012

*Symptom-based screening is not reliable in the following cases: pregnancy, prior to urologic procedures, patients with complex urinary anatomy (e.g., nephrostomy tubes, urinary tract stents, H/O urinary diversion surgery in the past, or renal transplant), patients admitted to the ICU, or neutropenia. Use your clinical judgment for this population.*
On Transfer

- What devices can be removed before the patient is transferred to a different level of care
## Ann Arbor Criteria for Appropriate Use

### Appropriate indications

<table>
<thead>
<tr>
<th>Indication</th>
<th>Example/Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute urinary retention without bladder outlet obstruction</td>
<td></td>
</tr>
<tr>
<td><strong>Example:</strong> medication-related urinary retention</td>
<td><strong>Example:</strong> exacerbation of benign prostatic hyperplasia</td>
</tr>
<tr>
<td>Acute urinary retention with bladder outlet obstruction due to noninfectious, nontraumatic diagnosis</td>
<td>Caution: consider urology consultation for catheter type and/or placement for conditions, such as acute prostatitis and urethral trauma</td>
</tr>
<tr>
<td>Chronic urinary retention with bladder outlet obstruction†</td>
<td>Stage III or IV or unstageable pressure ulcers or similarly severe wounds of other types that cannot be kept clear of urinary incontinence despite wound care and other urinary management strategies‡</td>
</tr>
<tr>
<td>Urinary incontinence in patients for whom nurses find it difficult to provide skin care despite other urinary management strategies‡ and available resources, such as lift teams and mechanical lift devices</td>
<td>Examples: turning causes hemodynamic or respiratory instability, strict prolonged immobility (such as in unstable spine or pelvic fractures), strict temporary immobility after a procedure (such as after vascular catheterization), or excess weight (&gt;300 lb) from severe edema or obesity</td>
</tr>
<tr>
<td>Hourly measurement of urine volume required to provide treatment</td>
<td>Examples: management of hemodynamic instability, hourly titration of fluids, drips (e.g., vasopressors, inotropes), or life-supportive therapy</td>
</tr>
<tr>
<td>Daily (not hourly) measurement of urine volume that is required to provide treatment and cannot be assessed by other volume§ and urine collection strategies</td>
<td></td>
</tr>
<tr>
<td>Single 24-h urine sample for diagnostic test that cannot be obtained by other urine collection strategies</td>
<td></td>
</tr>
<tr>
<td>Example: acute unrepaired fracture</td>
<td></td>
</tr>
<tr>
<td>Improvement in comfort when urine collection by catheter addresses patient and family goals in a dying patient</td>
<td>Management of gross hematuria with blood clots in urine</td>
</tr>
<tr>
<td>Clinical condition for which ISC or external catheter would be appropriate but placement by experienced nurse or physician was difficult or patient for whom bladder emptying was inadequate with nonindwelling strategies during this admission</td>
<td>Meddings J, et al. Ann of Intern Med, 2015;162:S1-34</td>
</tr>
</tbody>
</table>
Core Recommendations

• Insert catheters only for appropriate indications (1B)
• Leave catheters in only as long as needed (1B)
• Ensure that only properly trained persons insert and maintain catheters (1B)
• Insert catheters using aseptic technique and sterile equipment (acute care settings) (1C)
• Consider use of alternatives (II)
• Maintain a close drainage system (1B)
• Secure the system (1B)
• Maintain unobstructed urine flow (1B)
• Key the collecting bag below the level of the bladder at all times (1B)

## Simplified Insertion Checklist for Urinary Catheter

<table>
<thead>
<tr>
<th>Components of Checklist</th>
<th>Compliant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand hygiene before and after procedure</td>
<td>Yes</td>
</tr>
<tr>
<td>Sterile gloves, drapes, sponges, aseptic sterile solution for cleaning, and single use packet lubricant used</td>
<td>Yes, after correction</td>
</tr>
<tr>
<td>Aseptic insertion technique (no contamination during placement)</td>
<td></td>
</tr>
<tr>
<td>Proper securement of urinary catheter post-procedure</td>
<td></td>
</tr>
<tr>
<td>Closed drainage system and bag below patient post-procedure</td>
<td></td>
</tr>
</tbody>
</table>
Core Recommendations

• Insert catheters only for appropriate indications (1B)
• Leave catheters in only as long as needed (1B)
• Ensure that only properly trained persons insert and maintain catheters (1B)
• Insert catheters using aseptic technique and sterile equipment (acute care settings) (1C)
• Consider use of alternatives (II)
• Maintain a close drainage system (1B)
• Secure the system (1B)
• Maintain unobstructed urine flow (1B)
• Key the collecting bag below the level of the bladder at all times (1B)

Securement Devices
Core Recommendations

• Insert catheters only for appropriate indications (1B)
• Leave catheters in only as long as needed (1B)
• Ensure that only properly trained persons insert and maintain catheters (1B)
• Insert catheters using aseptic technique and sterile equipment (acute care settings) (1C)
• Consider use of alternatives (II)
• Maintain a close drainage system (1B)
• Secure the system (1B)
• Maintain unobstructed urine flow (1B)
• Key the collecting bag below the level of the bladder at all times (1B)
• Unresolved-
  – Antiseptic or sterile saline foe meatal cleaning before insertion
How We Bathe May Impact CA-UTI’s

Why are there so many bugs in here?
Reducing UTI’s Through Basinless Bathing

CA-UTI 7.5 per 1000 catheter days to 4.42 per 1000 catheter days, then to .46 per 1000 catheter days

89% Reduction

Stone S, APIC 2010
Impact on UTI with Basin Bathing

UTI Rate- Removal of Prepackaged Bath Product QTR 3 FY05

# The Effect of Bathing with Basin and Water and UTI Rate, LOS and Costs

## Unit Census: 14

<table>
<thead>
<tr>
<th>Phases</th>
<th>Product Cost/ No. of UTI</th>
<th>Median(^4) LOS (17) Days</th>
<th>Median(^4) Cost (4857.00)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I- Pre-Packaged Bathing Washcloths (9 months)</td>
<td>$10,530(^1) ($3.00) 25</td>
<td>175</td>
<td>$117,175</td>
</tr>
<tr>
<td>II- Basin/Water (9 months)</td>
<td>$3,510(^2) ($1.00) 48</td>
<td>336</td>
<td>$224,916</td>
</tr>
<tr>
<td>III- Additional Product Cost, UTI, LOS, COSTS</td>
<td>$7,020 23(^3) 151</td>
<td>$107,741</td>
<td></td>
</tr>
</tbody>
</table>

\(^1\)Based on 3 packages of 8 towels each \(^2\)Based on product cost of towels, soap, and basin \(^3\)Difference between phase I pre-package/phase II basin water \(^4\)

Impact of 2% CHG Cloth Bath*: Follow Up Analysis On Universal Decolonization on Bacteriuria & Candiduria

3 protocols tested:

a) Swab for MRSA on admission to ICU
   - Isolate if positive
b) Swab for MRSA on admission to ICU
   - Isolate if positive
   - Nasal mucopiricin x 5 days
   - 2% CHG cloth* bathing for entire ICU stay
c) No swab
   - Nasal mucopiricin x 5 days
   - 2% CHG cloth bath* for entire ICU stay

*2% CHG cloth for bathing is consider an off label use of the product

Cleansing of Patients with Indwelling Catheter

- Indwelling catheter care should occur with the daily bath (basinless bathing)*, as a separate procedure using clean technique
- There is no evidence to support 2x a day indwelling catheter care
- If a large liquid stool occurs, bathe the patient with basin less bathing
- Use separate cloths to clean front to back in the perineal area and 6 inches of the catheter**
- Apply barrier cloth to area of skin requiring protection

“Even if you are on the right track, you will get run over if you just sit there.”

Will Rogers
Additional Recommendations: SHEA Compendium Update 2014

• Replace the catheter and the collecting system using aseptic technique when breaks in aseptic technique, disconnection, or leakage occur (quality of evidence: III).

• For examination of fresh urine, collect a small sample by aspirating urine from the needleless sampling port with a sterile syringe/cannula adaptor after cleansing the port with disinfectant (quality of evidence: III).

Additional Recommendations: SHEA Compendium Update 2014

• Develop a protocol for management of post-op urinary retention
  – Bladder scanner
  – Intermittent catheterization
• Bladder training if appropriate
• Do not routinely use antimicrobial/antiseptic impregnated catheters
• Do not screen for asymptomatic bacteriuria in catheterized patients

**Nurstoons**

**by Carl Elbing**

How did your first Foley catheter insertion go?

Terrible!! I got so nervous that I put it in the wrong “opening”.

Don’t be so hard on yourself. It’s difficult to find the meatus on an old lady.

I know... but it wasn’t an old lady, it was a man!!

Oh...

[www.nurstoonn.com](http://www.nurstoonn.com)
THINGS TO CONSIDER
Cost-Benefit Ratio

CA-UTI vs. IAD & Pressure Ulcer
Moisture Injury: Incontinence Associated Dermatitis

- Inflammatory response to the injury of the water-protein-lipid matrix of the skin
  - Caused from prolonged exposure to urinary and fecal incontinence
- Top down injury
- Physical signs on the perineum & buttocks
  - Erythema, swelling, oozing, vesiculation, crusting and scaling

Brown DS & Sears M, OWM 1993;39:2-26
IAD: Multisite Epidemiological Study

- 5342 patients in 424 facilities in Acute & Long Term Care in US
- Prevalence study
  - To measure the prevalence of IAD in the acute care setting,
  - To describe clinical characteristics of IAD, and
  - To analyze the relationship between IAD and prevalence of sacral/coccygeal pressure ulcers
- Results: 1716 patients incontinent (44%)
  - 57% both FI and UI, 27% FI, 15% UI
  - 24% IAD rate
    - 60% mild
    - 27% moderate
    - 5% severe
  - 73% was facility acquired
- ICU a 36% rate
- IAD 5x more likely to develop a HAPU

Giuliana K. Presented at the CAACN September 25-27th Winnipeg, Manitoba, CA
Gray M. Presenting a Wound Care Conference, 2016, New York City, NY
# IAD Assessment Tool

## Hospital Survey on Incontinence & Related Skin Injury

**Instructions:**
This survey is limited to inpatient care areas and excludes the following:
- Labor & Delivery, Obstetrics, Nursery, Emergency Department & Operating Room.
- Note: Complete ONLY ONE form for each unit.

**Date of Survey:** ______/_____/______  **Unit:** ______

Please check the unit specialty that best describes the care provided.

- **Burn**
- **Cardiac Surgery**
- **CCU - General**
- **CCU - Intervventional**
- **ICU - Cardiovascular**
- **ICU - General**
- **ICU - Medical**
- **ICU - Neuro**
- **ICU - Neonatal**
- **ICU - Pediatric**
- **ICU - Surgical**
- **Psychiatric - Geriatric**
- **Psychiatric - General**
- **Telemetry - General**
- **Telemetry - Surgical**
- **Wound Care**

**Patient Census of Unit at Time of Survey:**

### Incontinence Collection Products

- Check all that apply to a specific unit/work area.
  - **Diaper/Brief**
  - **Collection Device**
  - **Disposable plastic-backed**
  - **Disposable air-flow-backed**

### Incontinence Cleanup & Skin Protection

- **All-in-one products:**
  - **Barrier Protection: (Tubes, Bottles or Sprays)**
  - **Moisturizers:**
  - **Cream**
  - **Ointment**

### Section 1 - Complete for all patients surveyed

**Patient Information**

- **Patient Gender:**
- **Patient Age Group:**
- **Height:**
- **Weight:**

**Continence Status:**

- **Diabetes Mellitus:**
- **Respiratory Failure:**
- **Chronic Obstructive Pulmonary Disease:**
- **Skin Lesions:**
- **History of Incontinence:**
- **Medications:**
- **Recent Surgery:**
- **Vascular Lesions:**
- **Recent Trauma:**

**Section 2 - Complete only for Incontinent patients**

**Contributing Factors & Co-Morbidities**

- **Medication:**
- **Recent Infection:**
- **Recent Immobilization:**
- **Recent Surgery:**
- **Recent Trauma:**

**Section 3 - Complete only for Incontinent patients with rash/redness of buttock or perineal skin**

**Perineal Skin Injury**

- **Area Affected:**
- **Contraindication Products:**
  - **Footprints:**
  - **Stool:**
  - **Bleeding:**

**Section 4 - Complete only for Incontinent patients with incontinence of urine or stool**

- **Urinary Incontinence:**
- **Stool Incontinence:**
- **Skin Lesions:**
- **Medications:**

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**Junkin J, Selek JL. J WOCN 2007;34(3):260-269**
Reminder Systems May Reduce Inpatient Catheter Use and Associated UTIs

Reminder
- 56% reduction

Stop Order
- 41% reduction

Nurse Directed Catheter Removal

- 300 bed community teaching hospital
- Implementation of a nurse directed urinary catheter removal protocol
  - Protocol linked to physician catheter order
  - Physician documentation of catheter insertion criteria & device specific charting in progress notes
  - Bi-weekly unit specific feedback
- Results: 50% ↓ in catheter use & 70% ↓ in CAUTI

Parry MF, et al. AM J Of Infect Control, 2013;41:1178-81
Pathogenesis of CAUTI

- Source: colonic or perineal flora on hands of personnel
- Microbes enter the bladder via extraluminal {around the external surface} (proportion = 2/3) or intraluminal {inside the catheter} (1/3)
- Daily risk of bacteriuria with catheterization is 3% to 10%; by day 30 = 100%
Novel Dual Balloon Catheter

- Tampa General Neuro ICU
- No protocol/CAUTI bundle changes occurred during the study period.
- 161 patients had dual balloon catheters placed and 223 patients had single balloon catheters placed in the NSICU
- Dual balloon rate lower than NHSN benchmark for Academic center NICUs

<table>
<thead>
<tr>
<th></th>
<th>Single-Balloon</th>
<th>Dual-Balloon</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total # of patients</td>
<td>223</td>
<td>161</td>
<td>-</td>
</tr>
<tr>
<td>Total catheter days</td>
<td>1090.0</td>
<td>870.3</td>
<td>-</td>
</tr>
<tr>
<td># of males (%)</td>
<td>112 (50.2)</td>
<td>91 (56.5)</td>
<td>0.25</td>
</tr>
<tr>
<td>Avg age (median)</td>
<td>60.8 (42)</td>
<td>60.2 (63)</td>
<td>0.73</td>
</tr>
<tr>
<td>Diagnosis of DM (%)</td>
<td>95 (42.6)</td>
<td>68 (42.2)</td>
<td>0.92</td>
</tr>
<tr>
<td>Avg days spent in ICU (median)</td>
<td>7.4 (14.0)</td>
<td>9.7 (7.0)</td>
<td>0.003</td>
</tr>
<tr>
<td># of CAUTIs</td>
<td>6</td>
<td>1</td>
<td>0.25</td>
</tr>
<tr>
<td>Infections per 1000 catheter-days</td>
<td>5.5</td>
<td>1.1</td>
<td>0.11</td>
</tr>
</tbody>
</table>

Tools Used with Intervention

- Lecture for nurses
- Pocket cards, posters

**Urinary Catheter Project**

- To decrease catheter-associated urinary tract infections (CAUTIs)
- To improve patient safety
- To teach nurses the indications for urinary catheter use
- To decrease the unnecessary use of urinary catheters in the inpatient setting

**Background**
- CAUTIs patients develop hospital-acquired UTIs per year
- Of these CAUTIs, 40% are caused by a urinary catheter
- Approximately 90% of patients with a urinary catheter do not have a valid indication for placement
- Up to 40% of patients may require a urinary catheter, but the risk of the CAUTI increases 20%

**Prevention of CAUTI**

- Promptly remove urinary catheters
  - Acute urinary retention or obstruction
  - Perioperative use in selected surgeries
  - Assist healing of perineal and sacral wounds in incontinent patients
  - Hospital/comfort care/ palliative care
  - Required immobilization for trauma or surgery
  - Chronic indwelling urinary catheter on admission

Questions? Call [Contact Info]

**Does Your Patient Really Need a Urinary Catheter?**

**Indications for Urinary Catheter Use Include:**
- Acute urinary retention or obstruction
- Perioperative use in selected surgeries
- Assist healing of perineal and sacral wounds in incontinent patients
- Hospital/comfort care/palliative care
- Required immobilization for trauma or surgery
- Chronic indwelling urinary catheter on admission

Any questions, please call [Insert contact info]

**Remove Unnecessary Urinary Catheters!**

- Does your patient really need a urinary catheter?
- Indications for urinary catheter use include:
  - Acute urinary retention or obstruction
  - Perioperative use in selected surgeries
  - Assist healing of perineal and sacral wounds in incontinent patients
  - Hospital/comfort care/palliative care
  - Required immobilization for trauma or surgery
  - Chronic indwelling urinary catheter on admission

Any questions, please call [Insert contact info]
Tier 1 Protocol: Use of Indwelling Urinary Catheter Kit

- Assess daily the necessity of the indwelling catheter
- Encourage use of alternatives to indwelling catheter
- Use standard indwelling urinary catheter kit with pre-sealed junction
- Ensure proper aseptic insertion technique
- Follow maintenance and removal template for care and removal of the catheter
- Measure CAUTI rates monthly

Monitor CAUTI rates closely. Proceed to Tier 2 if either of the following conditions are met over a period of 6 months:

1. ICU ≥ 9 CAUTIs/10,000 patient days
   2 CAUTIs/1,000 catheter days
2. Non-ICU, Acute Care ≥ 3 CAUTIs/10,000 pt days & 2 CAUTIs/1,000 catheter days


- Assess and document competency of health care workers performing insertion
- Consider Root Cause Analysis or Focused Review of CAUTI or catheter use to identify improvement opportunities
- Measure monthly for 6 months; re-evaluate. If rate has dropped below indicated levels proceed back to Tier 1

Sources:
- HICPAC CDC Guidelines on CAUTI Prevention
- www.catheterout.org

(Department of Veterans Affairs, VISN 11)
Stop catheter-associated urinary tract infections (CAUTI) in critically ill patients.

1. RAISE AWARENESS & UNDERSTAND THE RISKS.

Possible misconceptions:
- "It's just a Foley, so what's the big deal?"
- "All immobile ICU patients need Foley catheters."
- "Incontinent patients need a urinary catheter to prevent hospital-acquired pressure ulcers."
- "CAUTI prevention isn't my responsibility."
- "My team needs precise input and output details for our patients throughout their ICU stay."

What the science & evidence show:
CAUTI is a serious patient safety issue.
- Complications associated with CAUTI result in increased length of stay, patient discomfort, excess healthcare costs, and even death.
- It's about more than just the Foley: Unnecessary catheterization puts patients at risk for urinary tract infections and may cause other complications such as multidrug-resistant organisms, additional antibiotics leading to increased risk of C. difficile infection, immobility (a.k.a. Foley as a "one-point restraint"), hospital-acquired pressure ulcers, falls, and venous thromboembolism.
- Not all critically ill, immobile patients need Foley catheters.
- All team members—from frontline staff to leaders—have a responsibility to help prevent CAUTI.
- CAUTI prevention is also tied to the "bottom line" with potential financial implications associated with CMS and Healthcare Acquired Conditions, Value Based Purchasing, and population health.
- CAUTI outcome measures are used to assess performance.

2. CONSIDER ALTERNATIVES TO USING AN INDWELLING CATHETER TO MEASURE URINE INTAKE AND OUTPUT.

- Daily weights
- Condom catheter
- Female and male urinals
- Straight intermittent catheterization
- Patient commodes
- Absorbent briefs or under pads that can be weighed to obtain urine output

3. RETHINK THE "CULTURE OF CULTURING" URINE.

- Pen culturing may lead to C. difficile infection.
- Asymptomatic bacteriuria + exposure to unnecessary antibiotics = possible C. difficile infection.
- If a patient develops a new fever, ...(> 38.3 C), it is a reasonable trigger for a clinical assessment but not necessarily a laboratory or radiologic evaluation for infection.
- Don't assume an ICU patient's fever is due to a urinary tract infection...
- Other causes could include:
  - Respiratory tract infection
  - Gastrointestinal infection
  - Bloodstream infection
  - Neurologic pathology that may result in altered thermoregulation
- "Critical care units could reduce the cost of fever evaluations by eliminating automatic laboratory and radiologic tests for patients with new temperature elevation (level 2). Instead, these tests should be ordered based on clinical assessment."

4. TACKLE CAUTIs.

1. Pause and validate that the patient has an approved indication before catheter insertion.
2. Involve a second person during insertion to facilitate aseptic technique.
3. Evaluate continued need daily.
4. Empower nursing staff to discontinue catheter use as soon as possible.

Make a difference. Change the culture. Learn more about the On the CUSP: Stop CAUTI program.

Visit www.onthecuspto.stopnai.org for more information, including frequently asked questions.

References:
Example Gap Analysis

• Strong Action
  – Standardize equipment
    • Urometer’s house wide
    • Type of alternatives

• Intermediate Action
  – Training/yearly competencies
  – EMR link order & nurse removal protocol
  – Included in structured handoff

Questions:
• Variation in routine hygiene & incontinence care
• Hand hygiene
• *Measuring pads
• Education of transport people
• **Culture process – catheter change/urine kept cool

A Program to Prevent Catheter-Associated Urinary Tract Infection in Acute Care

Sanjay Saint, M.D., M.P.H., M. Todd Greene, Ph.D., M.P.H., Sarah L. Krein, Ph.D., R.N., Mary A.M. Rogers, Ph.D.,
Sam R. Watson, M.S.A., C.P.P.S., Barbara Meyer-Lucas, M.D., M.H.S.A., Marie Masuga, R.N., M.S.N.,
Kelly Faulkner, M.S.P.A., Carolyn V. Gould, M.D., M.S.C.R., James Battles, Ph.D.,
and Mohamad G. Fakih, M.D., M.P.H.

Putting it all Together—Culture & Technical
Study Population and Methods

- 926 units (59.7% non-ICU, 40.3% ICU) (more than 10% of U.S. acute care hospitals)
- 603 hospitals in 32 states, the District of Columbia and Puerto Rico
- Sponsored by the AHRQ (and based on the successful Michigan Health and Hospital Association (MHA) Keystone Center’s Bladder Bundle)
- National collaboration of professional societies, academic researchers, government agencies (IE: CDC), and state hospital associations
- Combination of application of technical practices to prevent CAUTI and addressing socio-adaptive factors (through the application of CUSP)
- 9 Cohorts of hospital units participated—reporting the results of the first 4 Cohorts
- Began March of 2011 to November of 2013 (18 months)
Goals of Program

• Reduce Catheter associated UTIs
• Improve attitudes and behavior with respect to safety (IE: safety culture)

Timeline

• 3 month baseline
• 2 months implementation phase
• 12 months—sustainability phase

Program Components

• 3 in-person meetings-”Learning Sessions” over course of 18 months
• Monthly National Content Calls—experts provided education on both technical and socio-adaptive aspects of CAUTI prevention
• Monthly coaching calls by state organizations/leaders
# Key Interventions

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Example of Intervention</th>
</tr>
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<tbody>
<tr>
<td><strong>Primary</strong></td>
<td></td>
</tr>
<tr>
<td>Conducting daily assessment of the presence of and need for an indwelling urinary catheter</td>
<td>Conducting daily nursing rounds to review urine-collection strategies, including indications for continued urinary-catheter use</td>
</tr>
<tr>
<td>Avoiding use of an indwelling urinary catheter by considering alternative urine-collection methods</td>
<td>Promoting the use of condom catheters, bladder scanners, intermittent straight catheterization, and accurate measurement of daily weight (all in lieu of indwelling urinary catheters)</td>
</tr>
<tr>
<td>Emphasizing the importance of aseptic technique during catheter insertion and proper maintenance after insertion</td>
<td>Developing or updating the catheter-insertion policy to include all the proper steps, developing competencies for health care workers who insert catheters, and considering periodic audits of catheter placement</td>
</tr>
<tr>
<td><strong>Additional</strong></td>
<td></td>
</tr>
<tr>
<td>Providing feedback to the units regarding urinary-catheter use and catheter-associated UTI rates</td>
<td>Providing nurses and physicians with data on urinary-catheter use, with monthly feedback on use and catheter-associated UTIs</td>
</tr>
<tr>
<td>Addressing any identified gaps in knowledge of urinary management processes†</td>
<td>Conducting an evaluation for gaps in knowledge of infectious and noninfectious consequences of urinary-catheter use; developing tailored educational materials to fill identified gaps; using multiple venues for education, including bedside and electronic; incorporating education into annual competency testing for nurses; and using multiple venues for physicians (formal presentations and meetings, with one-to-one discussions for physicians with high use)</td>
</tr>
</tbody>
</table>

*UTI denotes urinary tract infection.
† Urinary management processes include proper insertion and maintenance of indwelling urinary catheters, use of alternative urine-collection methods, and prevention of infectious and noninfectious consequences of urinary-catheter use.
Results

• CAUTI rates decreased from 2.82 infections/1000 catheter days to 2.19 per 1000 catheter days (22.3% change) (unadjusted)

• (Adjusted) CAUTI rates decreased from 2.4 infections/1000 catheter days to 2.05 infections/1000 catheter days (P=0.009)

• Reductions occurred mainly in the non-ICU: 2.28 to 1.54 infections/1000 catheter days (P<0.001)

• Catheter use in non-ICU decreased from 20.1% to 18.8% (adjusted for hospital size)

• Catheter use in the ICUs decreased from 61.1% to 57.6%
Success Factors for CAUTI Prevention & Reduction

- Belief that “zero” is attainable
- Frontline accountability
- Strong leadership at all levels
- Infrastructure and resources to support improvement
- Supportive organizational culture
- Understand the evidence
- Use of data (outcome and process)
- Learn from your defects
Advocacy Starts with Us
WHEN WOULD NOW BE A GOOD TIME TO DO THIS?

It is not enough to do your best, you have to know what to do and then do your best.

E Deming