Early Recognition and Management of Sepsis: UTI and CAUTI Prevention

Meeting 4

Angela Craig APN, MS, CCNS
CRMC ICU Clinical Nurse Specialist
acraig@crmchealth.org
Early Recognition and Management of Sepsis

• Welcome
• Review of Program Objectives
  – Develop and implement an early recognition of sepsis process
  – Standardize processes for treatment of patients with early sepsis
  – Standardize processes for infection prevention of PNA, CAUTI and CLABSI
  – Decrease rate of transfer to higher level facility
  – Decrease sepsis mortality rates
• Orientation to training materials
What We Did Last Meeting

- Reviewed sepsis screening audits
- Education on PNA prevention
- Review a current state assessment related to PNA prevention
  - Homework to perform current state assessment related to PNA prevention
Agenda

• UTI and CAUTI prevention

• UTI/CAUTI current state assessment
Preventing CAUTI’s and UTI’s Through Evidence Based Care Practices
The Why

- Urinary tract infections (UTI) are one of the most commonly hospital-acquired infections
- Along with other device associated infections, (CLABSI and VAP) account for 25% of all hospital acquired infections
- Urinary tract infection, pneumonia/upper respiratory tract infection, and skin and soft tissue infection were ranked as the three greatest infection challenges and are also the most common infections in nursing homes (NH)
- 70-80% of UTIs are due to urinary catheters
- 5-7% of NH patients are catheterized; 12-15% of new admits to NH are catheterized
- Leads to increased morbidity and costs ($896)
- Medicare no longer reimburses U.S. hospitals for the additional costs of certain infections
- CLABSI & CAUTI are 65% of the clinical conditions for VBP
- CAUTI prevention is part of the 2012 National Patient Safety Goal

Mody, L et al JAMA Intern Med 2015
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. Promoting Catheter Removal

4. Preventing Catheter Replacement

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
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)

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 closed drainage system (1B)
• Secure the system (1B)
• Maintain unobstructed urine flow (1B)
• Keep 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></td>
<td>Yes</td>
</tr>
<tr>
<td>Hand hygiene before and after procedure</td>
<td>Yes, after correction</td>
</tr>
<tr>
<td>Sterile gloves, drapes, sponges, aseptic sterile solution for cleaning, and single use packet lubricant used</td>
<td></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 the 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 closed 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)

Condom Catheters
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 securing 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 reinforced 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

Average Wear Time = 24hrs

Fitzwater M, IP Kindred Albuquerque, 2015
### Recommendations for Improving Use of ECD as a Component of an Intervention Bundle for Prevention of CAUTI

1. Incorporating ECDs into discussions of CAUTI prevention, emphasizing the need to avoid unnecessary Foley catheters while maintaining the ability to capture accurate intake and output.²²,³⁰

2. Ensuring adequate buy-in of clinical team members when introducing an ECD; addressing key stakeholders and team at correct time points; engaging medical director and nursing director, WOC nurses as stakeholders, nurse educators, and CAUTI prevention champions.³⁴,³⁵

3. Identifying champions/superusers as part of the quality improvement initiative.¹,²⁸

4. Setting appropriate expectations regarding the learning curve for application of ECDs by nurses and presentation of the device as an evidence-based solution for CAUTI prevention; presenting the learning curve associated with ECDs as investment, which is part of the solution vs part of the problem.

5. Setting appropriate expectations regarding duration of ECD use and potential changes on a case-by-case basis; emphasizing evidence-based nursing.³⁶,³⁷

6. Setting appropriate expectations for ECDs in unique patient populations in which application may be more complex (eg, obese/uncircumcised).

7. Develop a customizable nurse-driven protocol for ECD usage in clinically appropriate situations.³⁴,³⁵

8. Develop tools to demonstrate value of ECDs (cost avoidance).⁴⁰,⁵²

9. Develop tools to ensure education/re-education on an every 6-mo basis (potentially annual basis) focused on appropriate ECD application to avoid rare complications.⁴³,⁵⁰

10. Collect patient survey information in ambulatory patients (satisfaction, comfort, health-related quality of life) to measure patient satisfaction.³⁸,³⁹

---

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 closed drainage system (1B)
- Secure the system (1B)
- Maintain unobstructed urine flow (1B)
- Keep 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)
- Keep the collecting bag below the level of the bladder at all times (1B)
- Unresolved-
  – Antiseptic or sterile saline for meatal cleaning before insertion

How We Bathe May Impact CAUTI’s

Why are there so many bugs in here?
Bath Basins: Potential Source of Infection
Large multi-center study evaluates presence of multi-drug resistant organisms

Total hospitals: 88
Total basins: 1103

62% Contaminated
686 basins/88 Hospitals

45% Gram negative bacilli
495 basins/86 hospitals

3% MRSA
36 basins/28 hospitals

35% Colonized w/ VRE
385 basins/80 hospitals

Method of Basin Contamination

- Skin flora
- Multiple-use basins
  - Incontinence cleansing
  - Emesis
  - Product storage
- Bacterial biofilm from tap water

Waterborne Infection

Hospital Tap Water

• Bacterial biofilm
• Most overlooked source for pathogens
• 29 studies demonstrate an association with HAIs and outbreaks
• Transmission:
  – Drinking
  – Bathing
  – Rinsing items
  – Contaminated environmental surfaces
• Immunocompromised patients at greatest risk

Reducing UTI’s Through Basinless Bathing

CAUTI 7.5 per 1000 catheter days to 4.42 per 1000 catheter days, then to .46 per 1000 catheter days

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

<table>
<thead>
<tr>
<th>Unit Census: 14</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Phases</strong></td>
</tr>
<tr>
<td>I- Pre-Packaged Bathing Washcloths (9 months)</td>
</tr>
<tr>
<td>II- Basin/Water (9 months)</td>
</tr>
<tr>
<td>III- Additional Product Cost, UTI, LOS, COSTS</td>
</tr>
</tbody>
</table>

¹Based on 3 packages of 8 towels each ²Based on product cost of towels, soap, and basin³ Difference between phase I pre-package/phase II basin water⁴

Cleansing of Patients with Indwelling Catheter

- Indwelling catheter care should occur with the daily bath (basin-less 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
• Do not routinely use antimicrobial/antiseptic impregnated catheters
• Do not screen for asymptomatic bacteriuria in catheterized patients

Preventing UTIs (no indwelling catheter)

- Ensure adequate fluid intake
  - Urine should be light and clear
- Adequate toileting
  - Bladder should be emptied every 2-3 hours
- Cleaning: front to back
- Manage incontinence with appropriate toileting and products
Strategies to not over treat asymptomatic bacteriuria
Background: Antibiotic Use in Nursing Homes

- Between 50% and 70% of nursing home residents will receive at least one course of systemic antimicrobial agent during the calendar year.
- 20% to 30% of residents may receive multiple courses during the calendar year.
- Frequent use of antibiotics has produced a variety of multidrug-resistant bacteria (e.g., MRSA and VRE).

Antibiotic Use in Nursing Homes for Suspected UTIs

- In a recent study, more than half of the prescriptions of antibiotics for a suspected UTI were for residents who were asymptomatic.
- No evidence indicates that antibiotics help with asymptomatic bacteriuria.
- There is evidence that they can do harm.
Antibiotic Use in Nursing Homes Creates Risks for Multiple Groups

- The most recent trend in health care-associated infections is the growing incidence in the community of drug-resistant microbes. They are a threat to more than those in the nursing home itself.
- Bacteria can migrate to caregivers in the nursing home, who then unknowingly share them with family and the community.
Guidelines for Antibiotic Use

- The guidelines are based on evidence
- Researchers developed guidelines for a few key infections, including a UTI
- Other researchers independently used these guidelines, tested them, and found that they were effective in reducing the number of antibiotics used
ABCs for Diagnosing UTI

Diagnosis of Urinary Tract Infection (UTI) in long-term care resident requires clinical signs and symptoms of UTI and a positive culture.

**Assessment: Clinical Signs and Symptoms of UTI**

- Check here if criteria are met for signs or symptoms.

### Resident without indwelling catheter*

- Acute dysuria alone OR
- Fever + at least one of the symptoms below (new or increased) OR
- If no fever, at least two of the symptoms below (new or increased)
  - Urgency
  - Frequency
  - Suprapubic pain
  - Gross hematuria
  - Costovertebral angle (CVA) pain or tenderness
  - Urinary incontinence

*Identical status changes above are not specific enough to identify symptoms of urinary tract infection. See urine test results for alternative causes.

### Resident with indwelling catheter

- At least one of the symptoms below (new or increased)
  - Fever
  - Costovertebral angle (CVA) pain or tenderness
  - Rigors (shaking chills)
  - Delirium
  - Flank pain (back, side pain)
  - Pelvic discomfort
  - Acute hematuria
  - Malaise or lethargy with no other cause

### Bacteria (Order urinalysis and culture & sensitivity if above criteria are met)

Collect clean voided specimen if possible; in and out catheter if necessary. For residents with chronic indwelling Foley catheter, change catheter; send urine obtained from new catheter.

Consider CBC, BMP if clinically indicated (e.g., lethargy, fever). The presence of an elevated WBC count suggests infection, with or without a fever.

<table>
<thead>
<tr>
<th>Urinalysis</th>
<th>Culture and sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrate</td>
<td>Positive</td>
</tr>
<tr>
<td>Leukocyte esterase</td>
<td>Positive</td>
</tr>
<tr>
<td>Pyuria</td>
<td>$&gt;10$ WBC urinalysis</td>
</tr>
</tbody>
</table>
ABCs for Diagnosing UTI
UTI SBAR

- UTI SBAR form:
  - Is intended to guide communication regarding the potential need for antibiotic use between nursing staff and prescribing clinicians in long-term care facilities, such as nursing homes
  - Is based on the Situation, Background, Assessment, and Recommendation form of communication, or SBAR
  - Is based on clinical practice guidelines

SBAR Tool Design

S – **Situation**: A concise statement of the problem (what is going on now)

B – **Background**: Pertinent and brief information related to the situation (what has happened)

A – **Assessment**: Analysis and consideration of options (what you found/think is going on)

R – **Recommendation**: Request/recommend action (what you want done)
Suspected UTI SBAR

[Suspected UTI SBAR]

[Situation (use this information to complete Section A&R)]
- I am contacting you about a suspected UTI for above resident.
  - Current Assessment (check all that apply):
    - Increased urgency
    - Increased frequency
    - Hematuria
    - Rigors (shaking, chills)
    - Delirium (sudden onset of confusion, disorientation, dramatic change in mental status)
  - Vital Signs: BP __________/__________ Pulse __________ Resp. rate __________ Temp __________
  - Resident Complaints (check all that apply):
    - Dysuria (painful, burning, difficult urination)
    - Suprapubic pain
    - Costovertebral tenderness (flank pain/tenderness)

[Recent Urinalysis Results (within the last 10 days) if Available]
- UA results that were obtained on __________ (date) due to __________ (reason).
- The results ___ accompanying this communication ___ are as follows:

[Background]
- Indwelling catheter: ___ NO ___ YES
- Incontinence: ___ NO ___ YES If yes, is this new/worsening? ___ NO ___ YES
- Active diagnoses (especially, bladder, kidney/genitourinary conditions):
  Specify: ________________________________
- Advance directives for limiting treatment (especially antibiotics): ___ NO ___ YES
  Specify: ________________________________
- Medication allergies: ___ NO ___ YES
  Specify: ________________________________

The resident is on: Warfarin (Coumadin™) ___ NO ___ YES
The resident is diabetic: ___ NO ___ YES
Suspected UTI
SBAR
Summary

- UTIs are one of the most common infections in nursing home residents
- Quick removal of urinary catheters when they do not meet insertion criteria is important
- Implement evidence based practices for insertion and care of urinary catheters
- Audit prevention practices
- Do not treat asymptomatic bacteriuria
- Educate patients and families on preventing CAUTIs and UTIs
## Current State Assessment Related to UTI/CAUTI Prevention Practices

<table>
<thead>
<tr>
<th>Prevention Practices</th>
<th>Current Policy in Place</th>
<th>Audit 5 patients to see if compliant with policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper Hand Hygiene</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Without Indwelling Catheter:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adequate fluid so urine is light and clear</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appropriate toileting (emptying bladder every 2-3 hrs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>With Indwelling Catheter:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aseptic technique followed during insertion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily catheter care</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Catheter secured</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Closed system</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No dependent loops</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Catheter bag not on floor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appropriate Culturing</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Homework

• Continue with the sepsis screening audits
• Identify gap in PNA prevention practices and select an intervention to close the gap
• Perform current state assessment on UTI/CAUTI prevention strategies
# Sepsis Early Recognition Action Plan

<table>
<thead>
<tr>
<th>Step</th>
<th>Who? When?</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Get team together to create early recognition process</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Get medical staff support for screening and early intervention</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 3. Develop screening tool/process  
  • Define frequency |  |  |
| 4. Define content for your staff education, whom will provide education, and implementation plan for the program |  |  |
| 5. Develop patient & family education process and tools |  |  |
| 6. Evaluate screening audit: define outcome and process metrics |  |  |
| 7. Develop an infection prevention education plan for PNA, UTI, and CLABSI |  |  |
Cauti Prevention Protocol CRMC
Fun Video

- https://www.youtube.com/watch?v=ZtSwd1bFE2g
Questions?
Thank you for your participation in this important work