Catheter Associated Urinary Tract Infection (CAUTI) Prevention

System CAUTI Prevention Team
Objectives

At the end of this module, the participant will be able to:

- Identify risk factors for CAUTI
- Explain the relationship between catheter duration and CAUTI risk
- List the appropriate indications for urinary catheter insertion and continued use
- Implement evidence-based nursing practice to decrease the risk and incidence of CAUTI
The Problem

- **All patients** with an indwelling urinary catheter are at risk for developing a CAUTI.
- CAUTI *increases* pain and suffering, morbidity & mortality, length of stay, and healthcare costs.

*Appropriate indwelling catheter use can prevent about 400,000 infections and 9,000 deaths every year!*

(APIC, 2008; Gould et al, 2009)
2012 National Patient Safety Goal

- Implement evidence-based practices to prevent indwelling catheter associated urinary tract infections (CAUTI)
- Insert indwelling urinary catheters according to evidence-based guidelines
  - Limit catheter use and duration
  - Use aseptic technique for site preparation, equipment, and supplies

(The Joint Commission (TJC), 2011)
2012 National Patient Safety Goal

- Manage indwelling urinary catheters according to evidence-based guidelines
  - Secure catheters for unobstructed urine flow and drainage
  - Maintain the sterility of the urine collection system
  - Replace the urine collection system when required
  - Collect urine samples using aseptic technique

(TJC, 2011)
Sources of CAUTI Microorganisms

- Endogenous
  - Meatal, rectal, or vaginal colonization

- Exogenous
  - From contaminated hands of healthcare personnel during catheter insertion or manipulation of the collecting system

(APIC, 2008; Gould et al, 2009; Gould, 2010; Maki & Tambyah, 2001)
Sources of CAUTI

- Contamination
  - During catheter insertion
  - Of the junction between catheter and drainage tube
  - Of the drainage port when emptying urine from the collection bag
  - During specimen collection

- Migration of microorganisms along the external surface of catheter
- Reflux of urine from contaminated drainage tubing or collection bag into bladder

(APIC, 2008; Gould et al, 2009; Gould, 2010; Maki & Tambyah, 2001)
Sites of Contamination

- Catheter Insertion
- Junction of Catheter & Drainage Tubing
- Urine Collection Bag
- Junction of Tubing & Bag
- Drainage Port

(Perry & Potter, 2009)
Risk Factors for CAUTI
Catheter and Patient Related Factors

- Catheter-Related Factors
  - Insertion technique
  - Catheter care
  - Duration of catheterization

- Patient-Related Factors
  - Compromised Immune System
  - Diabetes Mellitus
  - Renal Dysfunction
  - Fecal Incontinence
  - Female gender
  - Elderly age

(APIC, 2008; Gould et al, 2009)
CAUTI Risk and Duration of Catheterization

The risk of CAUTI is directly related to the duration of catheterization!

Every day that the urinary catheter is in place increases the patient’s risk of CAUTI up to 7% per day!

(APIC, 2008; Gould et al, 2009)
Alternatives to Urinary Catheter Insertion

- Apply external condom catheters for male patients without urinary retention or bladder outlet obstruction
- Assess urine volume with bladder ultrasound
- Perform intermittent catheterization

The most effective strategy to prevent CAUTI is not to insert an Indwelling Urinary Catheter!

(APIC, 2008; Gould et al, 2009)
Primary CAUTI Prevention Strategies

- There are 2 primary CAUTI prevention strategies for patients requiring indwelling urinary catheters
  - Insert *ONLY* for appropriate evidence-based indications
  - Limit the *duration of catheterization*
    - Leave catheters in place only as long as needed
    - Remove catheters ASAP unless there is an appropriate indication for continued use

(APIC, 2008; Gould et al, 2009)
A provider order for “Foley Catheter Insertion” is **required** to insert the catheter
- Order must include the appropriate indication for catheter insertion

An order for “Foley Catheter Care” does not replace an order for catheter insertion
### Appropriate Indications for Insertion

**Table 2. A. Examples of Appropriate Indications for Indwelling Urethral Catheter Use**

<table>
<thead>
<tr>
<th>Indication</th>
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<tbody>
<tr>
<td>Patient has acute urinary retention or bladder outlet obstruction</td>
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<tr>
<td>Need for accurate measurements of urinary output in critically ill patients</td>
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<tr>
<td>Perioperative use for selected surgical procedures:</td>
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<tr>
<td>• Patients undergoing urologic surgery or other surgery on contiguous structures of the genitourinary tract</td>
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<tr>
<td>• Anticipated prolonged duration of surgery (catheters inserted for this reason should be removed in PACU)</td>
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<tr>
<td>• Patients anticipated to receive large-volume infusions or diuretics during surgery</td>
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<tr>
<td>• Need for intraoperative monitoring of urinary output</td>
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<tr>
<td>To assist in healing of open sacral or perineal wounds in incontinent patients</td>
</tr>
<tr>
<td>Patient requires prolonged immobilization (e.g., potentially unstable thoracic or lumbar spine, multiple traumatic injuries such as pelvic fractures)</td>
</tr>
<tr>
<td>To improve comfort for end of life care if needed</td>
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(APIC, 2008; Gould et al, 2009)
Urinary Output Monitoring in the Critically Ill Patient

Patient is hemodynamically unstable and requires accurate urinary output monitoring every 1-2 hours.
Documentation of Appropriate Indication for Insertion

Document Indication for Insertion at the time of insertion

(APIC, 2008; Gould et al, 2009; TJC, 2011)
If the patient does not have an appropriate indication for Urinary Catheter Insertion and the Provider orders Insertion:

- Right click and Add Comment
- Document
  - Urinary Catheter Indication reviewed with Provider (name) and Indication for Insertion is (document Indication stated by Provider)
Do Not Insert Catheters….

- As a substitute for nursing care for management of incontinence
- To obtain urine for culture or other diagnostic tests when the patient can voluntarily void

(APIC, 2008; Gould et al, 2009; TJC, 2011)
Limit the Duration of Catheterization

- Collaborate with the Provider *daily* to review the indication for the catheter
  - Document indication for “Continued Use” every shift and PRN
- Remove the catheter as soon as possible
  - Desired removal outcomes
    - Surgical Patients: POD 1 or 2
    - Medical Patients: 24 hours

(APIC, 2008; Gould et al, 2009; TJC, 2011)
Documentation of Appropriate Indication for Continued Use

Document Indication for Continued Use Every Shift and PRN

(APIC, 2008; Gould et al, 2009; TJC, 2011)
If the patient does not have an appropriate indication for Continued Use and the Provider states that the catheter is to remain:

- Right click and Add Comment
- Document
  - Urinary Catheter Indication reviewed with Provider (name) and Indication for Continued Use is (document Indication stated by Provider)
Postoperative Patients

- Postoperative orders include an order to remove the catheter on postoperative day (POD) #2 at 0600.

- A provider order is required for continued use of the catheter after POD #2 at 0600.
  - The Order must include the indication for Continued Use of the catheter.

(CMS, 2011)
Evidence-Based Nursing Practice to Prevent CAUTI
Nursing Practice to Prevent CAUTI

- Perform hand hygiene immediately before and after insertion or any manipulation of the urinary catheter or drainage system.
- Perform perineal care prior to catheter insertion.
- Disinfect urethral meatus using antiseptic solution prior to catheter insertion.
- Insert urinary catheter using aseptic technique, sterile equipment and supplies.

(APIC, 2008; Gould et al, 2009)
Nursing Practice to Prevent CAUTI

- Maintain sterility of urinary catheter during insertion of indwelling urinary catheter
  - Use one catheter for one insertion attempt
  - If the catheter becomes contaminated during insertion, obtain a new catheter insertion kit
  - Ask for assistance if the patient is unable to maintain position for catheter insertion

(APIC, 2008; Gould et al, 2009)
Nursing Practice to Prevent CAUTI

- If the patient may require accurate urinary output monitoring
  - Select an insertion kit with a *meter*
  - This will prevent the need to disconnect the catheter from the drainage tubing to change the collecting bag and maintain sterility of the closed drainage system

(APIC, 2008; Gould et al, 2009)
Secure the indwelling catheter after insertion to prevent movement and urethral traction

(APIC, 2008; Gould et al, 2009)
Sharp HealthCare CAUTI Prevalence Survey #1 (Fall 2011)

Was the Urinary Catheter Secured? (n=158)

- Yes: 78%
- No: 20%
- Not Recorded: 1%

Only 78% of catheters were secured.

Every catheter should be secured to prevent the risk of CAUTI.
Secure the Urinary Catheter

- Cleanse an area larger than the Securement Device with Alcohol Prep and allow to *dry completely*.
- Apply Skin Barrier Prep and allow to *dry completely*.
- The device will not stick if it is applied before the area is dry.

(Centurion, 2011)
Nursing Practice to Prevent CAUTI

- Maintain a closed, sterile drainage system
- Replace the catheter and collection system using aseptic technique if:
  - Breaks occur in aseptic technique
  - The catheter is disconnected from the drainage tubing
  - Leakage occurs

(APIC, 2008; CMS, 2011; Gould et al, 2009)
Was the Tamper Resistant Red Seal Intact? (n=158)

- Yes: 84%
- No: 15%
- Not Recorded: 1%

~16% of patients had the system opened which increases the risk for CAUTI.

Only 84% of patients had the tamper resistant red seal intact.
Nursing Practice to Prevent CAUTI

- Obtain urine samples aseptically
- If a small volume of urine is needed for urinalysis or culture
  - Scrub the needleless port with alcohol for 15 seconds
  - Allow to dry
  - Aspirate the urine from the needleless port with a sterile syringe

(APIC, 2008; CMS, 2011; Gould et al, 2009)
Nursing Practice to Prevent CAUTI

- Keep the urine collection bag below the level of the bladder at all times
  - Includes during
    - Ambulation, transport, procedures, and surgery
- Maintain unobstructed urine flow
  - Keep the catheter and tubing free of kinking and dependent loops

(APIC, 2008; CMS, 2011; Gould et al, 2009; Schwab et al, 2011)
Maintain Unobstructed Urine Flow and Prevent Dependent Loops

- Dependent loops create back pressure that obstructs urine flow from the bladder

(APIC, 2008; CMS, 2011; Gould et al, 2009; Schwab et al, 2011)
~ 43% of patients had obstructed urine flow related to dependent loops or kinks of the drainage tubing

Only 56% of patients had the drainage tubing straight without dependent loops or kinks
Maintain Unobstructed Urine Flow

- Hang the bag at the end of the bed
- Secure the tubing to the bottom sheet using the green clip
- Ensure that the tubing is straight and urine drains directly into the bag

(CMS, 2011; Perry & Potter, 2009)
Nursing Practice to Prevent CAUTI

- Empty the collection bag when the bag is 2/3 full
- Use a separate container for each patient to measure and empty urine
- Date and label with patient initials
- Obtain a new measuring container every 24hrs
- Empty the urine collection bag using aseptic technique
- Avoid contact of the drainage port with the nonsterile container

(CMS, 2011; Perry & Potter, 2009)
Nursing Practice to Prevent CAUTI

- Perform Catheter Care
  - Daily
  - PRN per individual patient need

This is the *Only* correct screen to document indwelling urinary catheter care.
Nursing Practice to Prevent CAUTI

- Avoid practice that may increase CAUTI
  - Irrigating indwelling urinary catheters
  - Disconnecting the catheter from the drainage tubing
  - Replacing catheters routinely unless the catheter is obstructed
  - Using the same urinary catheter for multiple insertion attempts

(APIC, 2008; Gould et al, 2009)
Evidence-Based Practice Summary
Evidence-Based Practice Summary

- Avoid inserting Indwelling Urinary Catheters
- Implement alternatives to insertion
  - Use the Bladder Scanner to evaluate urine volume
  - Apply external condom catheters for male patients
  - Perform intermittent straight catheterization

(APIC, 2008; Gould et al, 2009)
Evidence-Based Practice Summary

- Insert catheters only for appropriate indications
- Maintain aseptic technique and equipment during catheter insertion
- Perform hand hygiene before insertion and manipulating urinary catheters
- Obtain urine samples using aseptic technique
- Maintain a closed drainage system
- Secure the catheter after insertion

(APIC, 2008; Gould et al, 2009)
Evidence-Based Practice Summary

- Maintain unobstructed urine flow
- Keep the collection bag below the level of the bladder at all times
- Empty the urine collection bag using aseptic technique
- Limit the duration of catheterization
  - Collaborate with the Provider to review the need and indication for the urinary catheter daily
  - Remove unnecessary urinary catheters promptly

(APIC, 2008; Gould et al, 2009)
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References