Utilization of Indwelling Foley Catheterization in a Multi-hospital System

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Disclosure

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Overview

- 22 Hospitals in the UHS System were assessed by Bard Clinical Specialists

- 2,334 inpatients across the system

- 611 or 26.2% of patients had a Foley catheter inserted

- Foley utilization ranged from 17.9% to 40.6%
Foley Utilization Survey

• Examine reasons for Foley catheter insertion
  – 13 or 59% of all UHS hospitals had established criteria for Foley insertion.
  – 383 patients were reviewed
    • 68% of these patients had reasons accepted for insertion justified by the nurses
Practices and/or policies in place
Comprehensive Survey

• of the 13 hospitals assessed:
  – Automatic Stop Orders 38%
  – Computer Reminder Systems 31%
  – Daily Assessment 61%
  – Nurse directed protocol 38%
  – Policy for bladder scan 46%
  – Policies or protocols for alternative devices 23%
  – Foley catheter maintenance bundle 46%
Comprehensive Survey Questions

- Do you have written policies and/or procedures for indwelling urinary catheters?
  - If yes, do they include:
    • Criteria/indications for catheter insertion/use?
      - Physician order or nurse-directed protocol?
    • Criteria/indications for catheter discontinuation?
      - Physician order or nurse-directed protocol?
    Techniques/criteria for aseptic catheter insertion?
    Techniques/criteria for appropriate catheter maintenance?
    Defined criteria for healthcare providers qualified to insert/maintain catheters?
    Do they incorporate information from the latest HICPAC Guidelines (2009)?
    Do they address patients admitted to the hospital with an indwelling catheter?
    Do you have any algorithms/criteria to assist in determining the appropriate device for patients requiring a urinary catheter (e.g., size, bag vs. meter, etc.)?
Foley Observation Survey
Product Utilization

- 5.7% were temp sensing Foleys
- 45% had standard Foley bag systems
- 49% had urine meter systems
- 6% were not identified as to a standard or urine meter bag
Training and Education Questions

• Do you have an educational program on use of urinary catheters?
  ○ If yes, is training provided:
    At initial employment?
    Annually?
    During periodic skills fairs?

• Do you have a method for assessing knowledge level of use/maintenance of urinary catheters?
  ○ If yes, does assessment include:
    Direct observation?
    Written testing?

• Do you have an educational program on catheter-associated urinary tract infections (CAUTIs)
  ○ If yes, is training provided:
    At initial employment?
    Annually?
    During periodic skills fairs?

• During periodic skills fairs?
Urinary Catheter Utilization Team Questions

- Do you have a quality improvement (QI) program in place for CAUTIs?  If yes:
  - Has a CAUTI Task Force been developed?
  - Are direct-care providers involved/engaged in CAUTI QI program activities?
- Has a CAUTI prevention bundle been developed?
  - If yes, do you currently monitor UTI bundle compliance?
- Have you implemented programs to reduce dwell time of indwelling urinary catheters?  If yes, do they include:
  - Automatic stop orders or Nurse-driven removal?
  - Daily assessment/documentation of need?
- Do you have a specific location in the medical record where the presence of a Foley catheter is documented?
- Do you routinely monitor hand hygiene compliance in association with insertion and/or management of urinary catheter systems?
- Have you been able to document a reduction in CAUTIs specifically related to QI programs?
CAUTI Surveillance System?

- Is CAUTI surveillance currently conducted?
  - If yes, what type surveillance
  - Is the surveillance conducted house wide or targeted based on assessment of population?
  - Are standardized definitions used to define infection? (please specify)
  - Are McGeer definitions used in long-term care setting?
  - Is surveillance conducted continuously? If not, how frequently?
- Do you monitor the impact of cases that do not meet surveillance definition?
- Does the surveillance include multi-drug resistant organism information?
- Do you calculate CAUTI rates? If yes, what denominator is used?
- Do you report CAUTI surveillance findings to at least one hospital committee?
- Do you report CAUTI surveillance findings to direct-care providers? (e.g., surveillance unit staff)
- Do you conduct catheter practice rounds or surveys?
- Do you have a system to address/determine "present on admission" CAUTIs?
- Do you monitor compliance with Surgical Care Improvement Project (SCIP) Foley catheter initiatives?
Product Utilization

- Do you have a protocol for selecting the appropriate Foley catheter for individual patients? (i.e., size, configuration, drainage system, etc.)
- Do you use pre-connected Foley trays to maintain a closed system?
- Do you have alternative devices to Foley catheters readily available (e.g., external catheters, intermittent catheters)?
- Do you have alternative methods to urinary catheters to assess bladder urine volume (e.g., bedside ultrasound)?
- Have you implemented the use of an anti-infective/anti-microbial Foley catheter?
- Do you have a catheter-stabilization device readily available? If yes, is it directly incorporated into the Foley tray system?
References Bard Used for Project

• HICPAC, Guidelines for Prevention of Catheter-Associated Urinary Tract Infections 2009

Results of the BARD Assessment Survey

We Created a Prevention of Catheter-Associated Urinary Tract Infections Training and Education
CAUTI-Prevention Objectives

• To review the serious problem of catheter-associated urinary tract infections (CAUTI) throughout healthcare settings: hospitals, ambulatory and long-term care.

• To review CAUTI in the context of a CMS “Never Event” including the financial implications.

• To educate the healthcare team involved in the insertion, care and maintenance of urinary catheters about CAUTI prevention.
Definitions, Impact and Background

- A Catheter-Associated Urinary Tract Infection (CAUTI) is a UTI that occurs in a patient who had an indwelling urethral catheter in place within the 48 hour period before the onset of the UTI.

- An Indwelling Urinary Catheter is a drainage tube that is inserted into the urinary bladder through the urethra, is left in place, and is connected to a closed collection system.

- Alternative Urinary Drainage Systems include:
  - Intermittent (in & out)
  - External (condom catheter)
  - Suprapubic-surgically inserted above the pubis.

- Alternative systems are not part of the CAUTI reporting system to the National Health Safety Network (NHSN).
Definition: Indwelling Catheter

- A drainage tube that is inserted into the urinary bladder through the urethra, is left in place, and is connected to a closed collection system
  - Also called a Foley catheter
  - Does not include straight in and out catheters or urinary catheters that are not placed in the urethra (ex. suprapubic catheter).

Epidemiology of CAUTIs

- CAUTIs are the most common type of healthcare-associated infection (CDC estimates >560,000 healthcare acquired UTIs annually).\(^1\)

- CAUTIs account for more than 30% of HAIs reported by acute care hospitals.\(^1\)

- Virtually all CAUTIs are caused by instrumentation of the urinary tract.\(^1\)

- Major increase in morbidity and mortality (CDC estimates 13,000 attributable deaths annually).\(^1\)

- Increases length of stay by 2-4 days\(^2\) and increases cost (CDC reports $0.4-0.5 billion per year).\(^1\)

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Impact and Background

• 15% to 25% Hospitalized patients
• 5% to 10% Nursing Home Residents = 75,000-150,000 individuals
• Use of urinary catheters often inappropriate
  ○ In a recent U.S. hospital survey: >50% did not monitor use of urinary catheters
• 75% did not monitor duration and/or discontinuation of the catheters

Sources of Microorganisms

- **Endogenous**: The flora already present in the patient’s rectal or perineal area.\(^1\)

- **Exogenous**: The contaminated hands of healthcare personnel during catheter insertion or manipulation of a urine collection system.\(^1\)

- **Contamination may occur by:**
  
  - 1) Direct inoculation when inserting the catheter \(^2\)
  - 2) Organisms ascending the external catheter surface\(^2\)
  - 3) Reflux of contaminated urine in the drainage bag\(^2\)
  - 4) Failure of closed drainage system lumen\(^2\)


Biofilms on Urinary Catheters

- Formation of biofilms by urinary pathogens on the surfaces of catheters and urinary drainage bags
- Bacteria within biofilms are resistant to antimicrobials and host defenses
- Biofilms enhance the formation of encrustations around the catheter that can tear the urethra upon removal and cause a potential transient bacteremia as bacteria enter the bloodstream


Core Prevention Strategies: High levels scientific evidence

Insert catheters only for appropriate indications:

- Acute urinary retention or bladder outlet obstruction
- Accurate urine output measurement in critically ill patient
- Perioperative use for select surgical procedures
- Healing of open sacral or perineal wounds with incontinence
- Prolonged immobilization required: potentially unstable spine, multiple trauma such as pelvic fracture
- End-of-life comfort, if needed

Core Prevention Strategies

- Minimize use in all patients, particularly those at higher risk of CAUTI and mortality:
  - Women
  - Elderly
  - Impaired Immunity

- Avoid use for management of incontinence

- Use catheters in operative patients only as necessary

Core Prevention Strategies

• Leave catheters in place only as long as needed
• Remove catheters ASAP postoperatively, preferably within 24 hours, unless there are appropriate indications for continued use.
• Ensure that only properly trained persons insert and maintain catheters
• Insert catheters using aseptic technique and sterile equipment
• (acute care setting)
  • Perform hand hygiene before and after insertion
  • Use sterile gloves, drape, sponges, antiseptic or sterile solution for periurethral cleaning, single-use lubricant
  • Properly secure catheters

Core Prevention Strategies

- Following aseptic insertion, maintain a closed drainage system
- If breaks in aseptic technique, disconnection, or leakage occur, replace catheter and collecting system using aseptic technique and sterile equipment
- Consider systems with pre-connected, sealed catheter-tubing junctions
- Obtain urine samples aseptically

Core Prevention Strategies

- Maintain unobstructed urine flow
  - Keep catheter and collecting tube free from kinking – use the catheter tubing clip to avoid tubing stagnation of urine that can grow organisms
  - Keep collecting bag below level of bladder at all times (do not rest bag on floor)
  - Empty collecting bag regularly; never let more than 400 cc of urine to collect in the bag.
  - Use a separate, clean container for each patient. Ensure drainage spigot does not contact non-sterile container

Audit Nursing practice for each of the core prevention strategies.

<table>
<thead>
<tr>
<th>Room #</th>
<th>Bardex IC Foley Catheter?</th>
<th>Tray or Component</th>
<th>Temp Sensing Y/N</th>
<th>Bag, More or Other</th>
<th>Urinary Catheter secured to body</th>
<th>Secured - if Yes, Statlock® device (S), Tape (T) or Leg Strap (LS) - If No (M)</th>
<th>Tamper-evident Seal (TES) intact</th>
<th>No Dependent Loop Observed</th>
<th>Drain Tubing and Bag Below Bladder</th>
<th>Bag/Meter Not Touching Floor</th>
<th>Bag/Meter Not Overfilled &gt; 400 ml</th>
<th>Individual collection containers in BR</th>
</tr>
</thead>
</table>

Do a manual count of devices and Yes compliance for each column and show in appropriate boxes below. Use calculator to generate percent of total catheters.

<table>
<thead>
<tr>
<th>Number Observed with Foley Catheter</th>
<th>Bardex IC Foley Catheter Count</th>
<th>Tray Count</th>
<th>Temp Sensing Count</th>
<th>Drain Bag Count</th>
<th>Secured - Yes</th>
<th>Statlock® device count</th>
<th>TES intact - YES</th>
<th>No Dependent Loop Count of Yes</th>
<th>Drain Tubing and Bag Below Bladder Count of Yes</th>
<th>Bag/Meter Not Touching Floor Count of Yes</th>
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Bard Catheter Observation Study

Observer’s Name & Credentials

1205-30
Hand Hygiene and Standard Precautions

- Hand hygiene and Standard (or appropriate) Precautions

  - Wash hands before catheterization
  - Wash hands after touching catheter systems – especially after emptying a catheter bag
  - Wear gloves when touching inner thighs, emptying catheter bag or arranging the tubing
  - Wash or Sanitize hands after removing gloves

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Core Prevention Strategies: High

- Implement quality improvement programs to enhance appropriate use of indwelling catheters and reduce risk of CAUTI
  - Keep the catheter secure using the pre-package Bard device, a leg strap or a piece of tape
    - Keep slack in the catheter to minimize trauma
  - Alerts or reminders
  - Stop orders
  - Protocols for nurse-directed removal of unnecessary catheters
  - Guidelines/algorithms for appropriate perioperative catheter management

Example of Urinary Catheter Protocol/Order Set Process Flow*

- Daily at 0500am every patient will be evaluated for Foley catheter removal utilizing the Urinary Catheter Removal Protocol/Order Set.

- The Urinary Catheter Removal Protocol/Order Set form will be implemented by the Nursing staff and maintained in the patient chart at all times.

- Removal of the Foley catheter will not occur until after morning rounds to allow adequate time for communication between physicians and nursing; unless otherwise ordered by the physician.

- It is imperative for the MD/PA/ANP to sign and date the Urinary Catheter Protocol/Order Set EACH DAY.

- There must be documentation in the medical record on POD 1 or POD 2 for a reason or plan to continue the urinary catheter. (A physician order to keep catheter, alone, is not sufficient. Example: “Keep catheter.”) There must be documentation such as “Continue catheter, patient is on total bed rest.”

*Courtesy of Wellington Medical Center, Wellington, FL
Supplemental Strategies

• Consider alternatives to indwelling urinary catheters (intermittent, external condom catheters)
• Consider portable ultrasound devices for assessing urine volume to reduce unnecessary catheterizations
• Consider a antimicrobial or antiseptic-impregnated catheters (first, ensure there is compliance with core prevention strategies)

Supplemental Strategies

- Consider silver-coated catheters
  - Decreased risk of bacteriuria compared to standard latex catheters in a meta analysis of randomized clinical trials
  - Significant differences for silver alloy, but not silver oxide-coated catheters
  - Effect greater for patients catheterized < 1 week
  - Mixed results in observational studies in hospitalized patients

Selective Use Strategy: Nursing Unit Limited Stock

- **Rationale:**
  - Any patient receiving a Foley catheter is at risk for developing a CAUTI; however, patients who are expected to be catheterized for less than 24 hours are thought to be at decreased risk of developing such an infection.

- **Use Protocol:**
  - Patients expected to be catheterized for less than 24 hours should receive a standard Foley catheter. All or most of the patients in certain nursing units are expected to be catheterized for less than 24 hours; therefore standard non-silver-coated catheters should be used:
    - Outpatient Areas and/or Clinics
    - Same Day Surgery
    - Obstetrics/Labor and Delivery
Strategies NOT recommended for CAUTI prevention

- Complex urinary drainage systems (e.g., antiseptic-releasing cartridges in drain port)
- Changing catheters or drainage bags at routine, fixed intervals (clinical indications include infection, obstruction, or compromise of closed system)
- Routine antimicrobial prophylaxis
- Cleaning of periurethral area with antiseptics while catheter is in place on a routine daily basis – no evidence to support a reduction in CAUTIs

Strategies NOT recommended for CAUTI prevention

• Irrigation of bladder with antimicrobials
• Installation of antiseptic or antimicrobial solutions into drainage bags
• Routine screening for asymptomatic bacteriuria (ASB)

Additional References

• Centers for Disease Control and Prevention
• The Joint Commission
• Centers for Medicare and Medicaid Services
• Health and Human Services
• National Quality Forum