Field Guide: Catheter-Associated Urinary Tract Infections

Definition and Harm Impact

A urinary tract infection occurs when microorganisms enter the urinary tract and cause infection. The infection is considered catheter-associated if an indwelling catheter has been in place for greater than two days from the date that the infection is noted. It is estimated that 15–25 percent of hospitalized patients have a urinary catheter placed during their hospital stay. Catheter-associated urinary tract infections (CAUTIs) are one of the five most frequently occurring type of infection in acute care settings. The most important risk factor for developing a CAUTI is prolonged use of the urinary catheter. Therefore, urinary catheters should only be used for appropriate indications and removed as soon as no longer needed. According the Centers for Disease Control and Prevention (CDC) in 2015, CAUTIs have been associated with increased:

- Morbidity and mortality
- Healthcare costs
- Length of stay

Engaging Patients and Families

Patient/family education and partnership in prevention of CAUTI and care of indwelling catheters is a critical element to successful reduction of infections.

Education points:

- Include the reasons for an indwelling catheter, as well as indications for removal and expected length of treatment.
- Include patient/family in daily removal review discussion as part of bedside shift to shift report and daily plan of care.
  - Include estimated length of catheter use.
- Urinary care best practice and CAUTI prevention strategies using teach-back
  - Use occasion of urinary catheter ‘teachable moment’ to reinforce perineal care best practices,
  - Educate patients to wash their hands before and after perineal care, touching the catheter and provide access to hand hygiene.
  - Include education about the ideal location of the urine bag below the level of the bladder and not to tug, pull, twist, or kink the catheter tubing.
- Invite and encourage patient and family members to “speak up” to staff members when they observe breaks in best practices.
  - Handwashing, catheter placement, drainage bag placement, and etc.

Patient engagement strategies include:

- Plan for Teach-Back sessions on catheter care best practices that include family members and support catheter self-care where feasible.
- Invite patient/family feedback regarding the development of education tools, catheter care strategies and processes.

Additional resources are available at: [www.hsag.com/hiin](http://www.hsag.com/hiin)
Consider adding patient/family member to education committee, or multidisciplinary healthcare-associated infection (HAI) prevention committee.

**Hospital Improvement Strategies**

Hospitals working on improvement in CAUTI rates are encouraged to follow the 2009 CDC Healthcare Infection Control Practices Advisory Committee (HICPAC) guidelines to prevent CAUTIs, with the addition of antibiotic stewardship elements.\(^6\) The guidelines emphasize the proper use, insertion, and maintenance of urinary catheters, and can be implemented and tracked by using the “Bladder Bundle,” including:\(^7\)

- **Urinary Catheter Order Sets: Standardize indications and process for catheter type selection:**
  - Ensure indication and removal criteria are documented as part of initial order
  - Standardize indication reasons by specialty area
  - Consider alternatives to indwelling urinary catheters if feasible such as:
    - External catheters
    - Intermittent urethral catheterization
    - Strict adherence to measuring urinary voiding output
  - Catheter selection and insertion:
    - Guidelines/algorithms for appropriate perioperative catheter management
    - Select smallest size for indicated reason, use standardized sizes, and preassembled kits where possible.
    - Standardize agreement on escalation of failed insertion attempts to Urology consults
    - Confirm proper and aseptic insertion techniques for newly hired staff members and through regular competency validation.
  - Catheter removal
    - Monitor readiness for removal using documented clinical removal criteria daily (see orders) and remove as soon as feasible.
    - Track number of catheter days at bedside or readily available location for clinical staff members and patient/family (i.e. white boards).
    - Adopt registered nurse (RN) driven protocols for catheter removal.\(^8\)

- **Urinary Catheter Care**
  - Following aseptic insertion, maintain a closed drainage system
  - Practice hand hygiene and standard (or appropriate isolation) precautions according to CDC HICPAC guidelines for any procedure involving the catheter i.e. insertion/removal and catheter care\(^9\)
  - Maintain unobstructed urine flow
  - Keep the bag lower than the bladder to prevent urine from back flowing to the bladder
  - Empty the bag regularly. The drainage spout should not touch anything while emptying the bag.\(^10\)

- **Best Practice CAUTI Prevention Program Strategies**
  - Set Catheter Days tracking as part of documentation system, tied to alerts when number exceeds planned treatment (linked to order set).
  - Set-up alerts tied to clinical criteria for registered nurse driven catheter removal
  - Set-up automatic stop orders for urinary catheters\(^11,12\)
  - Protocols for judicious urine testing, antibiotic use, and stewardship\(^13,14\)
  - Ensure clinical staff member competency training for CAUTI best practices are up-to-date.
Measurement

The Hospital Innovation Improvement Innovation Network (HIIN) goal is a 20 percent reduction in the CAUTI standardized infection ratio (SIR) compared to the National Healthcare and Safety Network (NHSN) calendar year 2015 baseline SIRs. For the purposes of HIIN reporting for CAUTI, there are four outcomes measures: CAUTI SIR All Units (intensive care units [ICUs] + Other, excluding neonatal ICU [NICU]), CAUTI SIR ICUs only (ICUs only, excluding NICUs), CAUTI Rate (ICUs + Other, excluding NICU), and CAUTI Rate (ICUs only, excluding NICU). The SIR is defined as the total number of observed infections divided by the total number of predicted infections, always excluding the NICU. The rates are defined as the total number of observed healthcare-associated inpatient CAUTIs over the total number of indwelling urinary catheter days for each surveilled location, per 1,000 catheter days.

Resources and Guides for Hospitals

- CDC—Catheter-Associated Urinary Tract Infections (CAUTIs): Available at: https://www.cdc.gov/hai/ca_uti/uti.html.

4 CDC. CAUTI Frequently Asked Questions. Available at: https://www.cdc.gov/hai/ca_uti/cauti_faqs.html.