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CEU are available for this workshop.

Implicit Bias

- Describes how our unconscious attitudes or judgements can influence our thoughts, decisions, or actions
- Includes involuntary, unintentional perceptions made without awareness
- Occurs as our brains sort information and perceive data to understand our world
- Affects our decisions, contributing to societal disparities
 - Self awareness about implicit bias can promote healthcare diversity and equality
- Learn more about your own implicit bias at [Project Implicit](https://implicit.harvard.edu/implicit/) (implicit.harvard.edu/implicit/)





Preventing Urinary Tract Infections (UTIs) in Skilled Nursing Facilities (SNFs)

Health Services Advisory Group (HSAG)

June 2023

Your Speakers



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Quality Advisor,
Infection Preventionist, HSAG



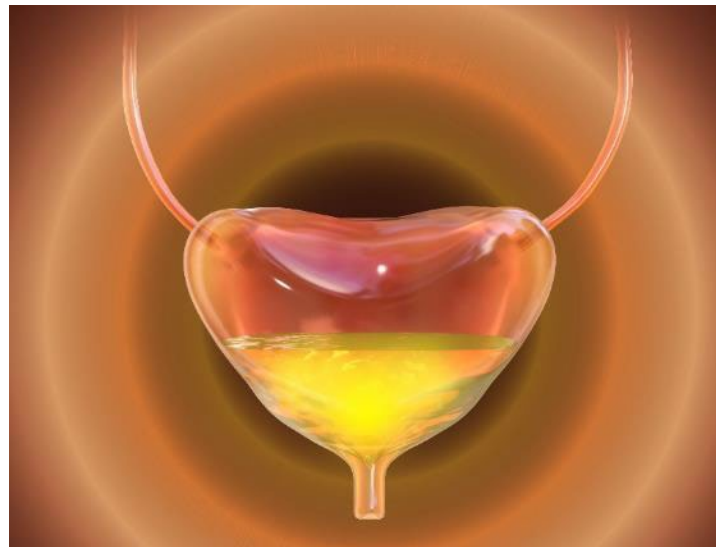
Karen Verterano, MSN, RN
Quality Improvement Specialist, HSAG

Objectives

- Describe the risk of healthcare-associated UTIs in SNFs.
- Review the evidence-based clinical practices shown to prevent UTIs and catheter-associated UTIs (CAUTIs).
- Discuss strategies to reduce healthcare-associated UTIs and CAUTIs.
- Discuss adherence monitoring and feedback.
- Review the HSAG UTI Prevention Bundle and Change Package.

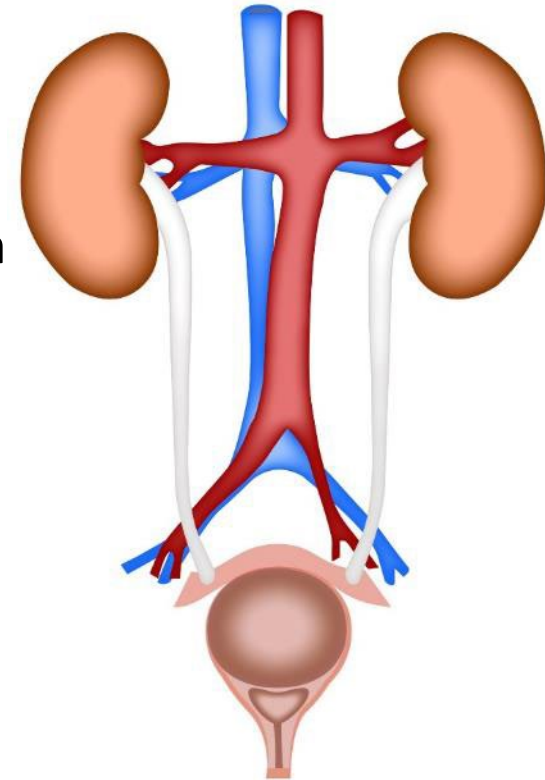


Overview of UTIs



Refresher—Pathophysiology of UTIs

- Most common HAI
- Occurs when bacterium invades urinary epithelium cells
- Typically introduced via urethra
- Mechanisms of development
 - Ability of pathogen to produce infection
 - Strength of individuals defenses/immune system
- Lower UTI (most common)
 - Bladder and/or urethra
 - Cystitis
- Upper UTI (most serious)
 - Ureters, renal pelvis, or kidney tissue
 - Pyelonephritis
- Most common in women
 - 60% of women will experience a UTI
 - 10% of men will experience a UTI



Etiology

Pathogen Source

- Gastrointestinal bacteria
- Perineal bacteria
- Hands of healthcare workers

Urinary Catheters

- External surface of catheter
- Inside catheter



Common UTI Pathogens

Escherichia coli (E. coli)	24%
Pseudomonas aeruginosa	10%
Klebsiella pneumoniae/oxytoca	10%
Enterococcus faecalis	7%

Candida albicans—Common commensal colonizer

- Not reported as a UTI for NHSN
- Yeast—does not respond to antibiotics
- Clinically may still require treatment
 - Fluconazole
 - Increase in resistant candida with high mortality rate



UTIs in Long Term Care (LTC)

- Approximately 1.5 per 10,000 resident days
- Accounts for 20%–30% of infections in LTC
- Frequently urinary catheter-associated
 - 7%–10% of residents have a urinary catheter
- Often unidentified until progressed to bacteremia
- Bacteriuria is common, but not an “infection”
 - Source of overprescribing of antibiotics





Types of UTIs



CDC Defined UTIs—High-Level Overview

Symptomatic UTI (SUTI)

- Positive culture
Plus
- Signs and symptoms such as dysuria, fever, costovertebral angle pain, hematuria, increased incontinence, urgency, and/or frequency

Asymptomatic Bacteremia UTI (ABUTI)

- Positive culture
BUT
- **No** signs or symptoms

CAUTI

- Indwelling urinary catheter
Plus
- Positive culture
Plus
- Signs and symptoms such as dysuria, fever, costovertebral angle pain, and/or hematuria

CDC Surveillance Criteria—SUTI

Criterion	For residents without an indwelling catheter in place or removed >2 calendar days prior to the date of event, where day of catheter removal is equal to day 1:
1	<p>Either of the following (Signs & Symptoms):</p> <ol style="list-style-type: none"> 1. Acute dysuria 2. Acute pain, swelling, or tenderness of the testes, epididymis, or prostate <p>AND</p> <p>A positive urine culture with no more than 2 species of microorganisms, at least one of which is a bacterium of $\geq 10^5$ CFU/ml</p>
2	<p>Either of the following:</p> <ol style="list-style-type: none"> 1. Fever⁺ [Single temperature $\geq 37.8^\circ\text{C}$ ($>100^\circ\text{F}$), or $>37.2^\circ\text{C}$ ($>99^\circ\text{F}$) on repeated occasions (more than once), or an increase of $>1.1^\circ\text{C}$ ($>2^\circ\text{F}$) over baseline] 2. Leukocytosis [defined by NHSN as $> 10,000$ cells/mm³, or Left shift ($> 6\%$ or 1,500 bands/mm³)] <p>AND</p> <p>One or more of the following (New and/or marked increase):</p> <ol style="list-style-type: none"> 1. Costovertebral angle pain or tenderness 2. Suprapubic tenderness 3. Visible (Gross) hematuria 4. Incontinence 5. Urinary urgency 6. Urinary frequency <p>AND</p> <p>A positive urine culture with no more than 2 species of microorganisms, at least one of which is a bacterium of $\geq 10^5$ CFU/ml</p>
3	<p>Two or more of the following (New and/or marked increase):</p> <ol style="list-style-type: none"> 1. Costovertebral angle pain or tenderness 2. Incontinence 3. Urinary urgency 4. Urinary frequency 5. Suprapubic tenderness 6. Visible (gross) hematuria <p>AND</p> <p>A positive urine culture with no more than 2 species of microorganisms, at least one of which is a bacterium of $\geq 10^5$ CFU/ml</p> <p>Footnote: +Since fever is a non-specific symptom, it should be used to meet SUTI criteria even if the resident has another possible cause for the fever (for example, pneumonia).</p>

CDC Surveillance Criteria—CAUTI or CA-SUTI

Criterion	For residents with an indwelling catheter in place or removed within 2 calendar days prior to event onset, where day of catheter removal is equal to day 1:
	<p>One or more of the following (Signs and Symptoms and Laboratory and Diagnostic Testing):</p> <ol style="list-style-type: none"> 1. Fever⁺[Single temperature $\geq 37.8^{\circ}\text{C}$ ($>100^{\circ}\text{F}$), or $>37.2^{\circ}\text{C}$ ($> 99^{\circ}\text{F}$) on repeated occasions (more than once), or an increase of $>1.1^{\circ}\text{C}$ ($>2^{\circ}\text{F}$) over baseline] 2. Rigors 3. New onset hypotension, with no alternate non-infectious cause 4. New onset confusion/functional decline with no alternate diagnosis AND Leukocytosis [defined by NHSN as $> 10,000$ cells/mm^3, or Left shift ($> 6\%$ or $1,500$ bands/mm^3)] 5. New or marked increase in suprapubic tenderness 6. New or marked increase in costovertebral angle pain or tenderness 7. Acute pain, swelling, or tenderness of the testes, epididymis, or prostate 8. Purulent discharge from around the catheter insertion site <p>AND</p> <p>A positive urine culture with no more than 2 species of microorganisms, at least one of which is a bacterium of $\geq 10^5$ CFU/ml</p> <p>Footnote: ⁺ Since fever is a non-specific symptom, it should be used to meet CA-SUTI criteria even if the resident has another possible cause for the fever (for example,</p>

CDC Surveillance Criteria—*ABUTI*

Criterion	<i>Resident with or without an indwelling urinary catheter</i>
	<p>No qualifying fever or signs or symptoms (specifically, no urinary urgency, urinary frequency, acute dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness). <i>If no catheter is in place, fever alone would not exclude ABUTI if other criteria are met.</i></p> <p><u>AND</u></p> <p>A positive urine culture with no more than 2 species of microorganisms, at least one of which is a bacterium of $\geq 10^5$ CFU/ml</p> <p><u>AND</u></p> <p>A positive blood culture with at least 1 matching bacteria to the urine culture</p>

Polling Question

- Do you perform UTI surveillance in your facility?
 - A. Yes, we use NHSN criteria.
 - B. Yes, we use a different criteria.
 - C. Yes, but I am unsure of what criteria we use.
 - D. No, but we would like to start.
 - E. No, and not planning on it.

Terminology Check

Bacteriuria

- Presence of bacteria in urine
- Symptomatic → Possible UTI
- Asymptomatic → Possible colonization
- Can occur with or without indwelling urinary catheter
- Typically, no benefit from antibiotic therapy

Bacteremia

- Presence of bacteria in blood
- Positive blood culture

ABUTI

- No signs or symptoms of UTI
- Positive urine culture (bacteriuria)
- Positive blood culture (bacteremia)
- Can occur with or without indwelling urinary catheter

What Is Bacteriuria?

- Bacteria can be present in the bladder, but not cause infection
- Present in up to 50% of LTC residents
- Does **not** increase mortality
- Does **not** require antibiotics
- Risk increases with use of indwelling catheters
 - 3%–10% increase of bacteria for each catheter day
 - 100% of residents with a catheter for 30 days or more will have bacteriuria



Observing Possible Symptoms

- Flank pain/tenderness
 - Facial grimaces
 - Moans or cries
 - Massages lower back kidney area
- Restlessness, shaking/chills
- Fever
 - $>100^{\circ}\text{F}$ ($>37.8^{\circ}\text{C}$)
 - $>2^{\circ}\text{F}$ (1.1°C) increase above baseline
- Hypotension
 - Significant change in baseline BP or a systolic BP <90



Observing Possible Symptoms (cont.)

- Acute dysuria (painful urination)
- Urinary frequency
- Urinary urgency
- New urinary incontinence
- Gross hematuria
- Change in mental status
 - Altered mental status independent of other symptoms is not an indication to send a urine culture
- Change in intake or output





Risk Factors for UTI



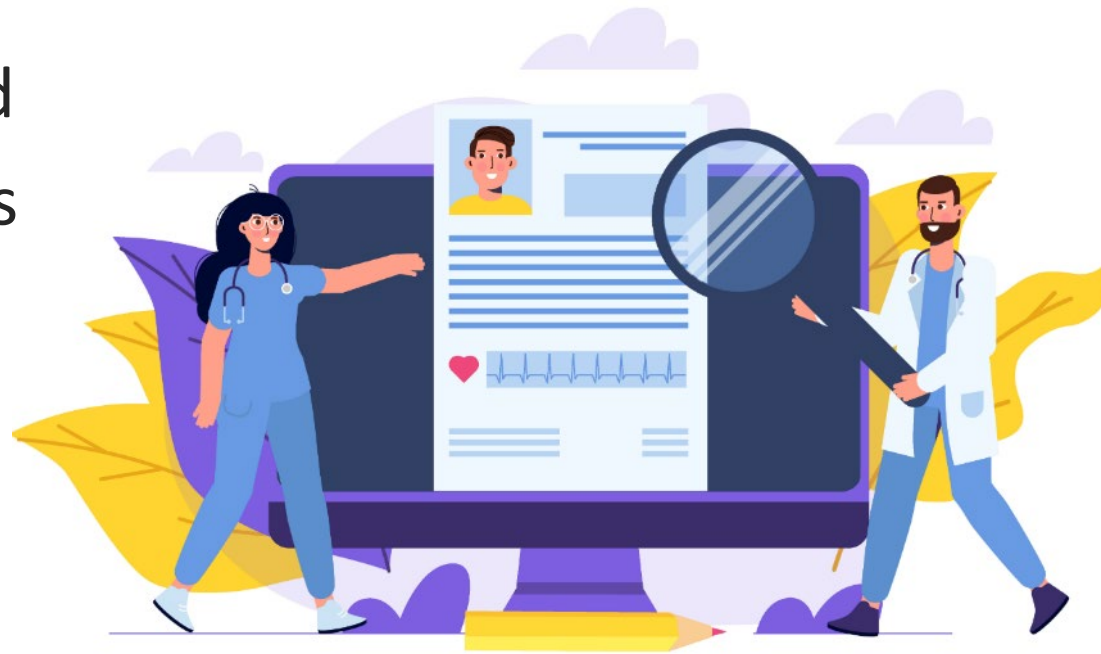
LTC Residents at Risk



- LTC residents at high risk for developing a UTI
- Challenges with activities of daily living (ADLs)
 - Mobility challenges
 - Chronic conditions
 - Cognitive deterioration

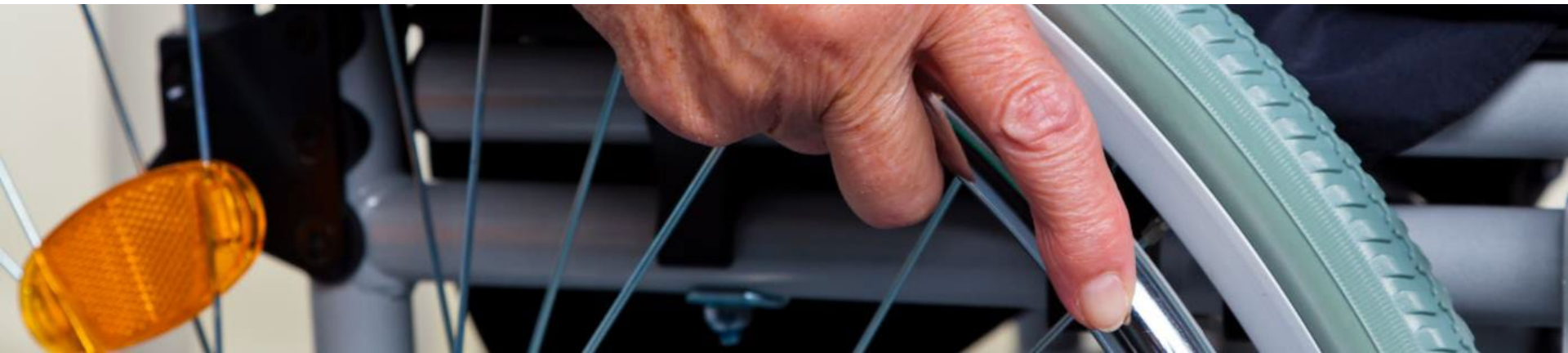
Risk Factors—Co-Morbidities

- Diabetes
- Heart disease
- Renal disease
- Immunocompromised
- Dementia/Alzheimer's
- History of UTIs



Risk Factors—Aging Related

- Age-related changes to genitourinary tract
- Neurogenic bladder
- Bladder and bowel incontinence
- Mobility issues
- Poor intake; fluids



Risk Factors—Device Associated

- Improper **insertion technique**
 - Straight catheter
 - Intermittent catheterization
 - Indwelling urinary catheter
- Use of an indwelling urinary catheter
- Improper maintenance



Polling Question

- Do you perform a risk assessment on new residents for risk factors that put them at a higher risk of developing a UTI?
 - A. Yes
 - B. No
 - C. Not Sure



UTIs and Beyond

Complications of UTIs

- Persistent/chronic UTIs
- Chronic urinary incontinence
- Urinary calculi
- Pyelonephritis
- Renal abscess
- Chronic prostatitis
- Prostatic abscess
- Renal failure
- Functional decline
- Sepsis
- Hospitalization
- Death



UTIs Progression to Urosepsis

- Sepsis caused by a UTI is known as urosepsis
- Urosepsis is an infection of the urinary tract that leads to a systemic response to the infection
- Approximately 25% of sepsis cases are caused by a UTI
- Early diagnosis and treatment for UTI is critical
- Monitor all residents with UTI for early signs of sepsis
 - Temperature $>38.3^{\circ}\text{C}/>100.4^{\circ}\text{F}$
 - Heart rate ≥ 90 /minute (or two standard deviations above normal)
 - Altered mental status
 - Respiratory rate ≥ 22
 - Systolic blood pressure ≤ 100



Preventing UTIs






General Prevention Strategies

- Frequent and consistent hand hygiene
 - Staff and residents
 - Before and after toileting
- Purposeful rounding
 - Offer toileting
- Frequent changing of incontinent pads
 - Avoid prolonged exposure to soiled pads
- Proper perineal care
 - Morning and HS (bedtime)
- Encourage fluids (unless restriction)
 - Water within reach
 - Avoid caffeine



HSAG UTI-Prevention Toolkit—Screening



Risk Factors for Urinary Tract Infections (UTIs)

Use this list of evidence-based risk factors for identifying residents that are at a higher risk of acquiring a UTI. If a resident has three or more of these, assessment of a possible UTI is advised.

- Risk
- Increased Age with Below Conditions
 - Residents who are 65 years old and older are at higher risk due to presence of bacteria and weaker immune systems
 - Elderly males
 - Prostatic hypertrophy
 - Bladder/Kidney stone
 - Bacterial Prostatitis
 - Elderly women
 - Prolapsed uterus
- Bacteria Exposure
 - Possible contact with bacteria from a recent hospitalization
- Prior UTI
 - History of UTI puts residents at higher risk
- Bowel and/or Bladder Incontinence
 - May not completely empty bladder
 - Bacteria contact with perineal area
- Urinary Catheter
 - Prolonged catheter use can provide a route for bacteria or fungus to enter the body
- Dementia/Alzheimer's
 - Confusion/Forgetfulness to toilet
 - Poor toileting habits
 - Incontinent
- Residents with Chronic Conditions
 - Diabetes
 - Heart disease
 - Kidney disease
 - Those with immune system changes (difficulty in fighting off infections)
- Poor Fluid Intake
 - Dehydration
- Mobility Issues
 - Decreased mobility/Functional impairment may result in incomplete bladder emptying

Centers for Disease Control and Prevention (CDC). UTI. October 6, 2021. Available at: www.cdc.gov/antibiotic-use/uti.html


Minnesota Department of Health. Educational module for nurses in LTCF: Urinary tract infections and asymptomatic bacteriuria. December 2014. Available at: www.health.state.mn.us/diseases/antibioticresistance/ho/asp/ho/1/modprintnaul.pdf

National Healthcare Safety Network. Healthcare-associated infection surveillance protocol for UTI events for long-term care facilities. January 2023. Available at: www.cdc.gov/nhsn/pdf/ho/3/uf-off-protocol-current.pdf



This material was prepared by Health Services Advisory Group (HSAG), a Quality Improvement Network-Quality Improvement Organization (QIN-QIO) under contract with the Centers for Medicare & Medicaid Services (CMS), an agency of the U.S. Department of Health and Human Services (HHS). Views expressed in this material do not necessarily reflect the official views or policy of CMS or HHS, and any reference to a specific product or entity herein does not constitute endorsement of that product or entity by CMS or HHS. Publication No. QIN-2320W-10-0310023-06

One-page screening tool to identify residents **most** at risk for developing a UTI

HSAG UTI-Prevention Toolkit—Prevent



Quality Improvement Organizations
Sharing Knowledge. Improving Health Care.
Centers for Medicare & Medicaid Services

Urinary Tract Infection (UTI) Bundle | Risk and Action Tool

If residents have any of the identified UTI risk factors below, the related action plan may assist in prevention of the infection.

Risk	Action
<input checked="" type="checkbox"/> Increased Age	<ul style="list-style-type: none"> • Increased responsibility for staff to protect residents. • Consistently perform hand hygiene—washing with soap and water or using an alcohol-based sanitizer. • Practice standard precautions—assume all blood, body fluids, and environmental surfaces could be contaminated with germs.
<input type="checkbox"/> Bacteria Exposure	<ul style="list-style-type: none"> • Monitor for signs and symptoms of UTI. • Utilize UTI bundle for prevention.
<input type="checkbox"/> Prior UTI	<ul style="list-style-type: none"> • Utilize UTI bundle for prevention.
<input type="checkbox"/> Bowel and/or Bladder Incontinence	<ul style="list-style-type: none"> • Consistently perform hand hygiene—washing with soap and water or using an alcohol-based sanitizer. • Practice standard precautions—assume all blood, body fluids, and environmental surfaces could be contaminated with germs. • Provide regular opportunities for residents to empty their bladder. • Check incontinent pads frequently. • Avoid extended periods of skin exposure to urine and/or feces. • Proper perineal care—cleaning females from front to back/cleaning males' foreskin if present.
<input type="checkbox"/> Dementia/Alzheimer's	<ul style="list-style-type: none"> • Provide regular opportunities for residents to empty their bladder. • Check incontinent pads frequently. • Avoid extended periods of skin exposure to urine and/or feces. • Proper perineal care—cleaning females from front to back/cleaning males' foreskin if present.
<input type="checkbox"/> Residents with Chronic Conditions/Neurogenic Bladder	<ul style="list-style-type: none"> • Increased responsibility for staff to protect residents • Consistently perform hand hygiene—washing with soap and water or using an alcohol-based sanitizer. • Practice standard precautions—assume all blood, body fluids, and environmental surfaces be contaminated with germs. • Neurogenic bladder—avoid unnecessary catheterization; when needed, follow protocols to provide appropriate catheter care.
<input type="checkbox"/> Poor Intake/Dehydration	<ul style="list-style-type: none"> • Offer fluids frequently—unless on a fluid restriction. • Maintain water supply within residents reach. • Avoid fluids with caffeine—can cause dehydration. • Avoid extreme heat—can cause dehydration.
<input type="checkbox"/> Mobility Issues	<ul style="list-style-type: none"> • Provide regular opportunities for residents to empty their bladder. • Check incontinent pads frequently. • Avoid extended periods of skin exposure to urine and/or feces. • Proper perineal care—cleaning females from front to back/cleaning males' foreskin if present.

Centers for Disease Control and Prevention (CDC). Urinary Tract Infection. Accessed on: October 6, 2021. Available at: www.cdc.gov/antibiotic-use/uti.html

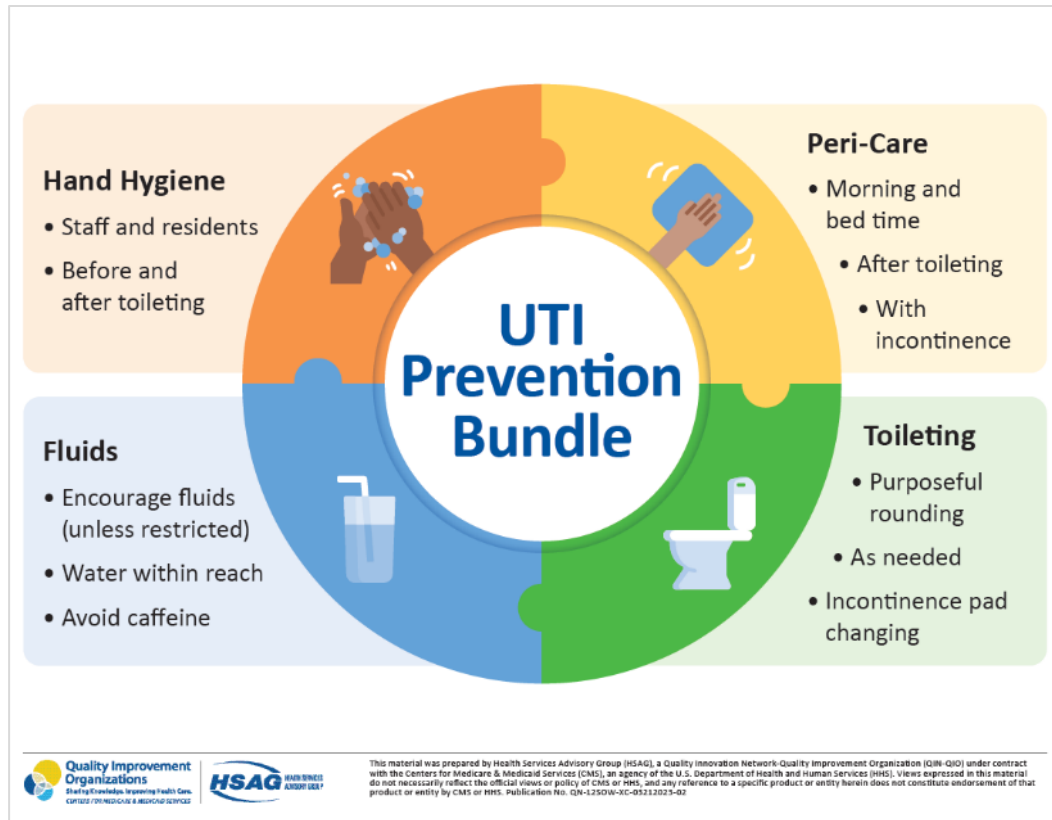
National Healthcare Safety Network. Healthcare-associated infection surveillance protocol for UTI events for long-term care facilities. January 2023. Available at: www.cdc.gov/nhsn/pdfs/n3c2/hai-uti-protocol-current.pdf

Educational Module for Nursing Assistants in Long-term Care Facilities: UTIs & Asymptomatic Bacteriuria. Minnesota Department of Health. December 2014. Available at: www.health.state.mn.us/diseases/antibioticresistance/nap/nap/uti/naputi.html

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UTI Prevention Bundle Strategies Tool

HSAG UTI-Prevention Toolkit—Bundle Poster



Visual cue poster to remind staff, residents, and families about the importance of UTI prevention strategies.

HSAG UTI Prevention Toolkit—Identifying



Urinary Tract Infection (UTI) Signs and Symptoms Assessment

Use this list of UTI signs and symptoms to assess if a resident may need further testing to identify if a UTI is present. There may be one or more signs or symptoms. If any signs or symptoms are identified, the next step is to report, as further testing is recommended.

Any Change in the Resident's Condition Should Be Reported Immediately

Sign/Symptom

Acute dysuria (painful urination)
Observe for:

- Facial grimaces or winces.
- Vocalization of pain (moans, cries, gasps, groans).
- Bracing of furniture or room equipment.

Fever $>100^{\circ}\text{F}$ ($>37.8^{\circ}\text{C}$) or $>2^{\circ}\text{F}$ ($>1.1^{\circ}\text{C}$) Increase Above Baseline

New or worsening:

Urinary frequency or urgency

Urinary dribbling (unable to empty bladder)

Urinary incontinence

Gross hematuria (blood in the urine)

Flank pain/tenderness

Facial grimaces or winces

Vocalization of pain (moans, cries, gasps, groans)

Massaging or rubbing of lower back at kidney area

Restlessness (difficulty keeping still, constant shifting of position, rocking side-to-side)

Change in mental status

Shaking/Chills

Hypotension (Significant Decrease in Baseline BP or a Systolic BP <90)

Changes in Intake or Output

Reminder:
Conditions such as dementia or Alzheimer's, as well as medications can mask some of the above symptoms.

National Healthcare Safety Network. Healthcare-associated infection surveillance protocol for UTI events for long-term care facilities. Accessed on January 2023. Available at: www.cdc.gov/nhsn/pdfs/ncf/uti-protocol-current.pdf.

Bates B. Interpretation of urinalysis and urine culture for UTI treatment. USPharm. 2013;38(1):65-68.

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One page assessment checklist to assist in identifying possible UTIs

HSAG UTI-Prevention Toolkit—Compliance



UTI Prevention Bundle Observation and Quality Tool

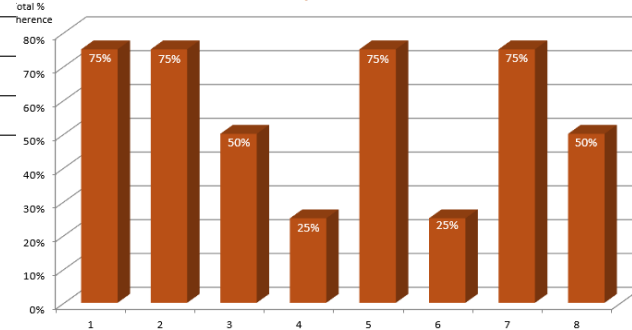
Date: 4/4/2023
Unit: Test

Patient Census:

Complete for Each Resident With UTI Prevention Bundle Implemented:

Comments	Resident 1	Resident 2	Resident 3	Resident 4
<u>Direct Observation</u>				
Room #				
1. Staff performed hand hygiene before and after toileting.	Yes	Yes	No	Yes
2. Resident assisted with hand hygiene before and after toileting.	Yes	Yes	No	Yes
3. Purposeful rounding to offer toileting Q2 hours.	Yes	No	No	Yes
4. Routine changing of incontinence pad or brief.	Yes	No	No	
5. Water pitcher full and within reach. (If not on fluid restriction)	Yes	Yes	Yes	
6. Fluids encouraged during purposeful rounding. (If not on fluid restriction)	Yes	No	No	
7. AM pericare completed.	Yes	Yes	No	
8. HS pericare completed.	Yes	No	No	
Total Positive Per Patient	8	4	1	
Total % Adherence Per Patient	100.0%	50.0%	12.5%	

UTI Prevention Bundle Compliance Observations
Test/04-04-2023



UTI Prevention Bundle Measures

- Staff performed hand hygiene before and after toileting.
- Resident assisted with hand hygiene before and after toileting.
- Purposeful rounding to offer toileting Q2 hours.
- Routine changing of incontinence pad or brief.
- Water pitcher full and within reach. (If not on fluid restriction)
- Fluids encouraged during purposeful rounding. (If not on fluid restriction)
- AM pericare completed.
- HS pericare completed.

“What gets measured gets managed.”
— P. Drucker



HSAG UTI-Prevention Toolkit—Action Plan



Infection Prevention and Control Post-Acute Plan Prioritized Risks, Goals, Strategies, and Implementation Healthcare-Associated Infections (HAIs) Urinary Tract Infections (UTIs)

Nursing Home Name: _____ CCN*: _____ Date: _____

Goal: The percentage of HAI UTIs will decrease by _____ % by _____ (date)

Topic	Root Cause	Strategies	Implementation		Internal Nursing Home Goals
Area of Concern	Survey Findings	Action	Responsible Person(s)	Date of Completion	Evaluation of Effectiveness
HAI UTIs	High rate of HAI UTIs	<ol style="list-style-type: none"> Review and update policies and procedures to reflect current evidence-based practices. Identify UTI prevention champions for each area/unit. Conduct education with teach-back for staff, including nurses and nursing assistants .This includes: <ul style="list-style-type: none"> Pathophysiology of a UTI. Clinical signs and symptoms of a UTI. Risk factors of a UTI. Prevention bundles. Use the UTI Risk Form to identify residents that are high risk. Implement the prevention bundle for UTI for residents identified as high risk. Use the HSAG UTI bundle compliance tool to assess adherence to prevention strategies. 			100% of policies and procedures updated. 100% of the staff received education for UTIs and prevention bundles. _____% of the residents were screened for risk of UTI. _____% of the residents had implementation of the UTI bundle. Perform _____ audits/week. Compliance goal: _____%



Indwelling Urinary Catheters



Indwelling Urinary Catheters in LTC

- 7% to 10% of residents have an indwelling urinary catheter
- Predisposes resident to a UTI or CAUTI
- Most common source of bacteriuria
 - May lead to bacteremia
 - May progress to sepsis
 - Urosepsis has a high mortality rate



Evidence-Based Guidelines

Accessible version: <https://www.cdc.gov/infectioncontrol/guidelines/cauti/>



GUIDELINE FOR PREVENTION OF CATHETER-ASSOCIATED URINARY TRACT INFECTIONS 2009

Carolyn V. Gould, MD, MSCR¹; Craig A. Umscheid, MD, MSCE²; Rajender K. Agarwal, MD, MPH²; Gretchen Kuntz, MSW, MSLIS²; David A. Pegues, MD³ and the Healthcare Infection Control Practices Advisory Committee (HICPAC)⁴

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³ Division of Infectious Diseases
David Geffen School of Medicine at UCLA
Los Angeles, CA

Last update: June 6, 2019

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- Who should receive catheters
- Alternatives to catheters
- Catheter insertion recommendations
- Catheter maintenance recommendations
- Quality improvement strategies
- Administrative infrastructure
- Surveillance strategies

CAUTI Prevention Strategies

INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY MAY 2014, VOL. 35, NO. 5

SHEA/IDSA PRACTICE RECOMMENDATION

Strategies to Prevent Catheter-Associated Urinary Tract Infections in Acute Care Hospitals: 2014 Update

Evelyn Lo, MD;^{1,4} Lindsay E. Nicolle, MD;^{2,4} Susan E. Coffin, MD, MPH;³ Carolyn Gould, MD, MS;⁴ Lisa L. Maragakis, MD, MPH;² Jennifer Meddings, MD, MSc;⁴ David A. Pegues, MD;⁷ Ann Marie Pettis, RN, BSN, CIC;⁵ Sanjay Saint, MD, MPH;⁹ Deborah S. Yokoe, MD, MPH¹⁰

PURPOSE

Previously published guidelines are available that provide comprehensive recommendations for detecting and preventing healthcare-associated infections (HAIs). The intent of this document is to highlight practical recommendations in a concise format designed to assist acute care hospitals in implementing and prioritizing their catheter-associated urinary tract infection (CAUTI) prevention efforts. This document updates "Strategies to Prevent Catheter-Associated Urinary Tract Infections in Acute Care Hospitals,"¹ published in 2008. This expert guidance document is sponsored by the Society for Healthcare Epidemiology of America (SHEA) and is the product of a collaborative effort led by SHEA, the Infectious Diseases Society of America (IDSA), the American Hospital Association (AHA), the Association for Professionals in Infection Control and Epidemiology (APIC), and The Joint Commission, with major contributions from representatives of a number of organizations and societies with content expertise. The list of endorsing and supporting organizations is presented in the introduction to the 2014 updates.²

SECTION 1: RATIONALE AND STATEMENTS OF CONCERN

I. Burden of CAUTIs

A. Urinary tract infection (UTI) is one of the most common hospital-acquired infections; 70%–80% of these infections are attributable to an indwelling urethral catheter.^{3,4} The burden of CAUTI in pediatric patients is not well defined.

B. Twelve to sixteen percent of adult hospital inpatients will have a urinary catheter at some time during admission.⁵

C. The daily risk of acquisition of bacteriuria varies from 3% to 7% when an indwelling urethral catheter remains in situ.

D. Morbidity attributable to any single episode of catheterization is limited,⁶ but the high frequency of catheter use in hospitalized patients means the cumulative burden of CAUTI is substantial.^{3,4,7,8}

II. Outcomes associated with CAUTI

A. Infection is the most important adverse outcome of urinary catheter use.⁹ The CAUTI rates reported in 2011 for facilities reporting to the National Healthcare Safety Network (NHSN) were 0.2–4.8 per 1,000 catheter-days for adult inpatient units and 0–1.6 per 1,000 days for pediatric units.⁹ At one Veterans Affairs hospital, 0.3% of catheter-days involved symptomatic UTI.¹⁰

B. In 2011, CAUTI rates from intensive care units (ICUs) that reported to NHSN ranged from 1.2 to 4.5 per 1,000 urinary catheter-days in adult ICUs and from 1.4 to 3.1 per 1,000 urinary catheter-days in pediatric ICUs.⁹ Symptomatic UTIs in adult ICUs voluntarily reporting to NHSN declined from 1990 to 2007, with a range of an 18.6% decline in cardiothoracic units to a 67% decline in medical-surgical ICUs.⁷ A 7% reduction was observed nationally in CAUTI incidence reported between 2009 and 2011, with modest reductions in incidence reported from ward locations but no changes in incidence reported from ICUs.¹¹

C. During a 3-year period, 61 Quebec hospitals reported that 21% of all bloodstream infections (BSIs) identified

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- Rationale
- Strategies to detect CAUTI
- Strategies to prevent CAUTI
- Performance measures
- Implementation strategies

Polling Question

- What are appropriate indications for a urinary catheter? Select all that apply
 - A. Incontinent residents
 - B. Acute urinary retention or obstruction
 - C. Residents with mobility issues
 - D. Neurogenic bladder
 - E. Healing of perineal or sacral wounds in incontinent residents
 - F. Hospital, comfort care, palliative care for end of life

Appropriate Indications for Urinary Catheters

- Acute urinary retention or obstruction
- Prolonged immobilization due to unstable spine or pelvic fracture
- Neurogenic bladder
- Healing of perineal and sacral wounds in incontinent patients
 - Stage III and IV wounds
- Hospice, comfort care, palliative care for end of life
- Chronic indwelling urinary catheter on admission
 - Evaluate when admitted to confirm necessity

CAUTI Prevention

- **Avoid** inserting indwelling urinary catheters unless appropriate criteria is met.
- **Remove** indwelling urinary catheters as soon as possible.



CAUTI Prevention Practices

- Insert catheters only for appropriate indications.
- Leave in place only as long as needed.
- Ensure catheters are inserted and maintained by properly trained staff.
- Perform hand hygiene.
- Use aseptic technique and sterile equipment for insertion.
- Maintain closed drainage system and unobstructed urine flow.
- Use portable ultrasound devices (bladder scanners) to assess urinary retention to reduce unnecessary catheterizations.
- Implement improvement program to achieve appropriate use of catheters.

Polling Question

- Do you have a policy or procedure to assess for indwelling urinary catheter indication daily?
 - A. Yes
 - B. No
 - C. Not Sure

Bundle Approach to CAUTI Prevention

Insertion Bundle

- Verify need prior to insertion.
- Insert urinary catheter using aseptic technique.
- Maintain urinary catheter based on recommended guidelines.

Maintenance Bundle

- Document daily assessment of catheter need.
- Ensure tamper evident seal is intact.
- Secure catheter to patient.
- Perform hand hygiene before patient contact.
- Maintain daily meatal hygiene with soap and water.
- Empty drainage bag using a clean container.
- Maintain unobstructed flow.

Myths—CAUTI Practices

No evidence that these practices prevent UTIs

- X Complex urinary drainage systems
- X Changing catheters or drainage bags routinely
- X Antimicrobial prophylaxis
- X Periurethral area cleansing with antiseptics
- X Antimicrobial irrigation of the bladder
- X Antiseptic/antimicrobial solutions instilled into drainage bags
- X Screening or culturing routinely



HSAG CAUTI Audit Tool



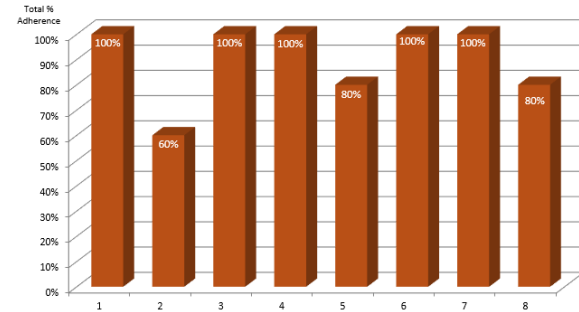
Foley Catheter Observation and Quality Tool

Date: 4/1/2023 Resident Census: 22 NPC= Not placed correctly
 Unit: North Wing Number of Resident with Devices: 5

Complete for each Indwelling Catheter Foley in use:

	Foley 1	Foley 2	Foley 3
COMMENTS			
<u>Direct observation</u>			
ROOM #	101	105	106
1. Is a closed system being maintained?	Yes	Yes	Yes
2. Is the Foley secured to the resident's body to prevent urethral tension?	Yes	No	Yes
3. Is the bag below the level of the Resident's bladder?	Yes	Yes	Yes
4. Is the tubing from the catheter to the bag free of dependent loops?	Yes	Yes	Yes
5. Is the tubing secured to the bed or chair to prevent pulling on the entire system?	Yes	No	Yes
6. Is the bag hanging free without touching the floor?	Yes	Yes	Yes
7. Does the resident have an individual measuring device marked with his/her name and room number?	Yes	Yes	Yes
8. Does the resident have a "dignity bag" in place?	Yes	Yes	Yes

Direct Observation - Foley Catheter Maintenance



Maintenance Indicators

1. Is a closed system being maintained?
2. Is the Foley secured to the resident's body to prevent urethral tension?
3. Is the bag below the level of the resident's bladder?
4. Is the tubing from the catheter to the bag free of dependent loops?
5. Is the tubing secured to the bed or chair to prevent pulling on the entire system?
6. Is the bag hanging free without touching the floor?
7. Does the resident have an individual measuring device marked with his/her name and room number?
8. Does the resident have a "dignity bag" in place?

Chart Review--Foley Catheter

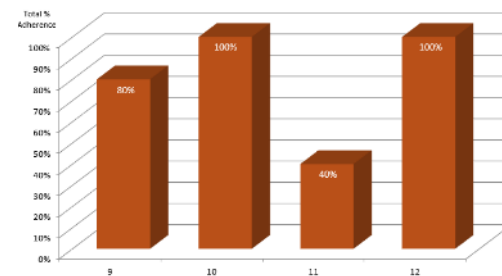


Chart Review Indicators

9. Is there documentation available indicating which department inserted the Foley and is perineal care performed daily?
10. Is there documentation available indicating Foley necessity?
11. Is there documentation available for completion of the insertion bundle?
12. Has there been a check for Foley catheter necessity today?



Testing and Treatment of UTIs



Common UTI Myths

Myth 1: Urine is cloudy and smells bad → UTI

Myth 2: Urine has bacteria → UTI

Myth 3: Urine has a positive leukocyte esterase (for WBCs) → UTI

Myth 4: Urine contains WBCs → UTI

Myth 5: Urine has nitrates (for bacteria) → UTI

Myth 6: Bacteria in a catheterized urine sample → UTI

Myth 7: Asymptomatic bacteriuria will progress to a UTI

Myth 8: Falls and acute altered mental status change → UTI



Urinalysis



- Urinalysis with reflex to urine culture
- Urinalysis results indicating a possible UTI
 - Bacteria present; can also be bacteriuria
 - Pyuria; WBC >10 or positive leukocyte esterase
 - Nitrates present

Urinalysis Guidance

Test	Usual Range	Indicators of Infection	Accuracy
Bacteria	Absent	Any amount	Low sensitivity High specificity
Leukocyte esterase	Absent	Positive = Pyuria Presence of WBCs in urine	High sensitivity Low specificity
WBC	<5	Pyuria = WBC >10	High sensitivity Low specificity
Nitrate	Absent	Positive = presence of bacteria	Low sensitivity High specificity
RBC	<5	Hematuria common in infection	Low sensitivity High specificity
Epithelial cells	<5	<5 = good urine sample	High epithelial cells indicate contamination
PH	4.5 – 8	PH increased if urea-splitting organism is present*	Low specificity

Sensitivity = likelihood of positive test when disease is present
 Specificity = likelihood of negative test when disease is not present

* Proteus mirabilis, Pseudomonas aeruginosa most common

Urine Culture Don'ts—Indwelling Catheter

- Do **not** perform routine urine cultures:
 - After catheter change
 - On admission
 - Test to cure
 - Independent altered mental status
- **Never** draw a urine culture from the collection bag
 - Biofilm will contaminate the sample
- **Never** store urine sample at room temperature
 - Must refrigerate
 - Improper storage can affect the viability of the sample



Tips for Urine Culture Sample—Foley

- **Always** follow your facility's policies and procedures.
- Confirm order and resident identity.
- Perform hand hygiene.
- Always maintain aseptic technique.
- You can clamp tubing below port for 10–15 minutes to ensure adequate urine in the tubing.
- Scrub the hub!
- Use leur-lock, vacutainer, or 10 cc syringe to withdraw sample.
- Do not touch the sides of the sterile specimen cup with the syringe to avoid contamination.

Tips for Clean-Catch Mid-Stream Urine Sample

- **Always** following your facility's policies and procedures.
- Confirm order and resident identity.
- Assist the resident, do not just provide instructions.
- Perform hand hygiene.
- Always maintain aseptic technique.
- Use all the disinfectant wipes provided in the kit.
- Use proper technique for male and female residents.
- Catch mid-stream to decrease contamination.

Treatment Decisions for UTIs

- Avoid culturing urine of asymptomatic persons unless other signs and symptoms are present
 - Cultures are not needed for cloudy or foul-smelling urine unless symptomatic
- **Avoid antibiotics for asymptomatic bacteriuria**
- Symptoms that suggest culture of urine and treatment is indicated
 - Fever
 - Pain (costovertebral angle, suprapubic)
 - Hematuria
 - For non-catheterized residents:
 - Dysuria, urgency, and frequency



Key Take-Aways

- A UTI in nursing home residents can be a serious, but it is a preventable condition.
- If left untreated, a UTI can progress to urosepsis.
 - High mortality rate
- It is critical to recognize and act upon the symptoms associated with UTI.
- Indwelling urinary catheters significantly increase the risk of UTI, know as CAUTI.
- Improper testing for UTI can lead to overuse of antibiotics to treat asymptomatic bacteria (ABUTI).
- Using preventative bundles is a critical step in preventing UTI.



Questions?

Upcoming Events and Important Links

- **Join us for UTI Office Hours**
 - Friday, June 30, 2023, 11 a.m.–12 noon PT
 - Register at: <https://us06web.zoom.us/meeting/register/tZEuc-qupzkoGtG71ilH7H8et-NBAkDrJAZG#/registration>
- **Attend train-the-trainer workshops**
 - IPC Training for CNA: July 17–21, 2023
 - IPC Training for EVS Staff: August 21–25, 2023
- **Access registration links, recordings, curricula, and toolkits**
 - <https://www.hsag.com/ip-train-the-trainer>



Thank you for attending!

Please complete this 4-question evaluation:

<https://www.surveymonkey.com/r/UTIttrainthetrainer2023>

We appreciate your feedback.

Thank you!

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