



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

Health Services Advisory Group (HSAG)

Your Speakers



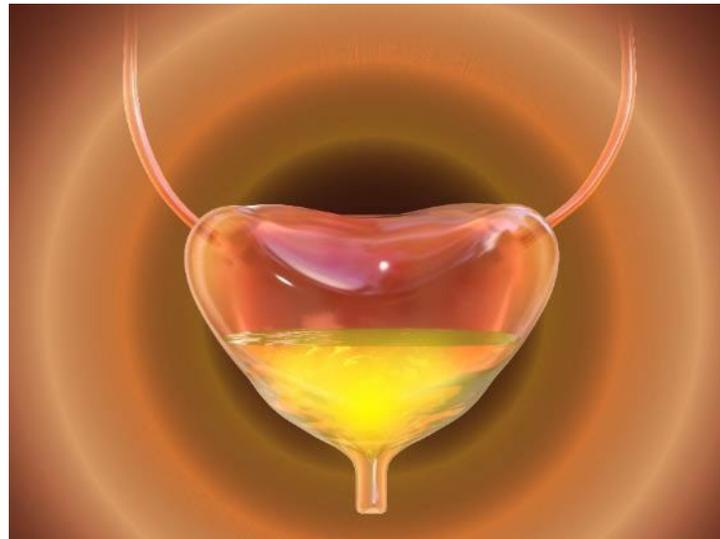
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Objectives

- Refresher of UTI pathophysiology.
- Review UTI etiology.
- Discuss pathogens.
- Review types of UTIs.

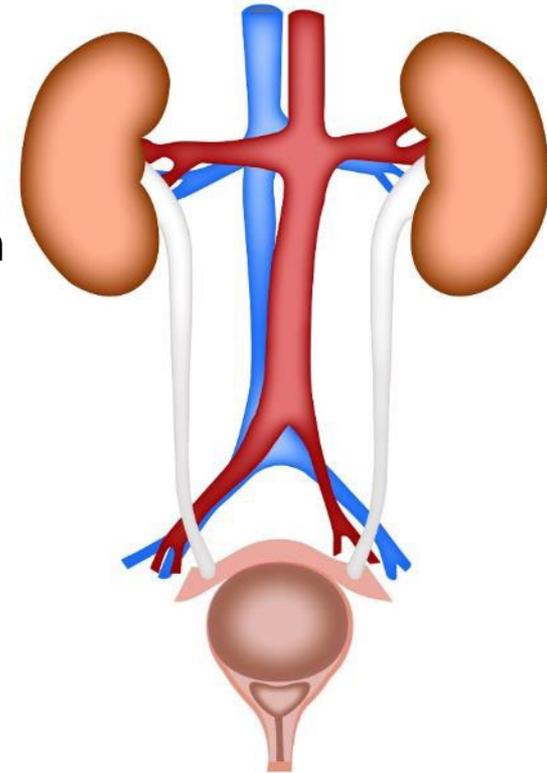


Overview of UTIs



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

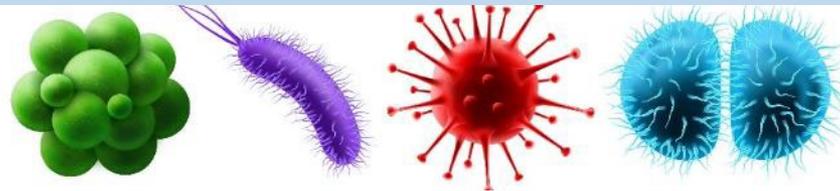


Common UTI Pathogens

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

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—*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>

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



Key Take-Aways

- A UTI in nursing home residents can be a serious, but it is a preventable condition.
- It is critical to recognize and act upon the symptoms associated with UTI.



Questions?



Thank you!

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