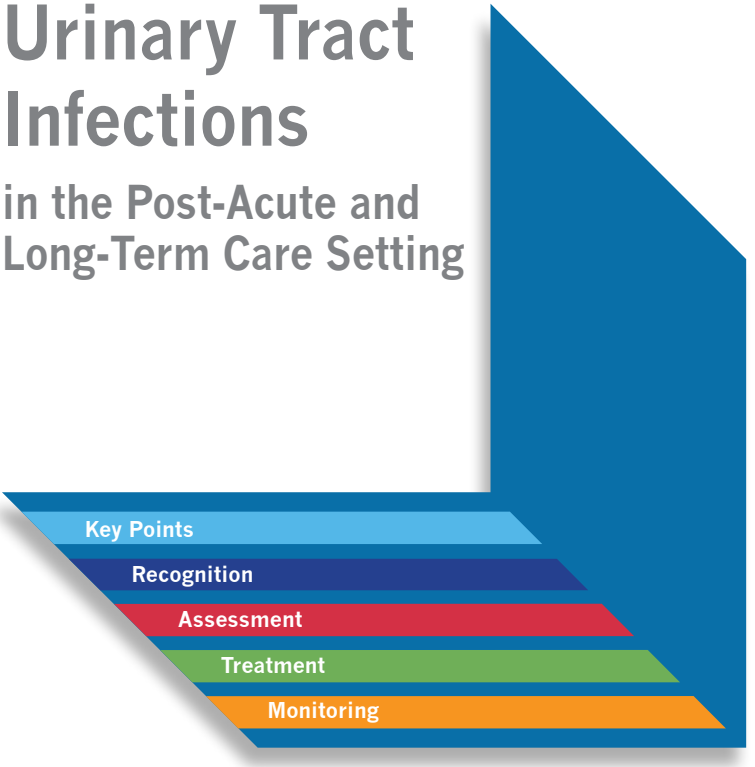
amda
The Society For Post-Acute And Long-Term Care Medicine™

Urinary Tract Infections

in the Post-Acute and Long-Term Care Setting



GuidelineCentral.com®

➥ Key Points

Definitions of Urinary Tract Infections (UTIs):

➤ **Urinary tract infection (UTI) refers to an infection anywhere in the genitourinary tract.**

- **Cystitis**: urinary symptoms are usually confined to the bladder/lower urinary tract.
- **Pyelonephritis**: More severe infection involving the renal parenchyma/upper urinary tract.
- **Catheter-associated urinary tract infection (CAUTI)**: UTIs that develop in individuals with an indwelling urinary catheter.

➤ **Asymptomatic bacteriuria (ASB) refers to the presence of bacteria (in quantitative counts ≥10^5 cfu/mL) in an individual without signs or symptoms of infection that localize to the urinary tract. Individuals with ASB will have a positive urine culture with or without pyuria, defined as white blood cells on urinalyses.**

Abbreviations:

AHRQ, The Agency for Healthcare Research and Quality; **AMDA**, The Society for Post-Acute and Long-Term Care Medicine; **ASB,** asymptomatic bacteriuria; **CAUTI,** catheter-associated urinary tract infection; **CDC**, Centers for Disease Control; **CFU**, colony-forming unit; **CMS**, Centers for Medicare & Medicaid Services; **eCrCl**, estimated creatinine clearance; **IOU**, Improving Outcomes of UTI Management in Long-Term Care Project; **NP**, nurse practitioner; **PA**, physician's assistant; **PALTC**, post-acute and long-term care; **POA,** power of attorney; **SBAR**, Situation, Background, Assessment and Request; **UTI**, urinary tract infection

STEP 1: What are the Signs and Symptoms of UTIs?

➤ **Warning signs:**

- Presence of warning signs such as fever, rigors, acute delirium and/or unstable vital signs suggest complicated cases with systemic infection/sepsis.

➤ **Acute simple cystitis:**

- Signs and symptoms localizing to the bladder (such as acute dysuria, suprapubic tenderness, new or worsening incontinence, frequency, urgency or gross hematuria).

➤ **Pyelonephritis:**

- Non localizing signs and symptoms (such as fever, rigors/chills, marked fatigue/malaise, nausea or vomiting) AND localizing signs and symptoms (such as dysuria, suprapubic tenderness, back pain/costovertebral angle tenderness, pelvic or perineal pain in men, new or worsening incontinence, frequency, urgency or gross hematuria).

  Notes:

  1. Pyelonephritis may present without symptoms of cystitis.

  2. Pelvic or perineal pain in men can suggest accompanying prostatitis.

➤ **Catheter-associated urinary tract infection:**

- If catheter is still present:
  - Systemic or non-specific signs and symptoms, such as fever, rigor/chills or new onset clear cut delirium with no other identified cause, OR signs and symptoms localizing to genitourinary tract (such as suprapubic tenderness or costovertebral angle tenderness), OR acute pain, swelling or tenderness of the testes, epididymis or prostate in men.
- If catheter was removed in the previous 48 hours:
  - Signs and symptoms that localize to the genito-urinary tract, such as urgency, frequency, dysuria, gross hematuria, suprapubic tenderness or costovertebral angle tenderness.

  Note: Presence of acute pain, swelling or tenderness of the testes, epididymis and/or prostate in males with UTI should trigger evaluation for possible complications such as epididymitis, epididymo-orchitis, and/or prostatitis.

STEP 2: Which Symptoms Are No Longer Considered To Be Suggestive of UTI?

Consider evaluating for other potential causes of non-specific symptoms that do not suggest the diagnosis of UTI, especially in the absence of genito-urinary tract-specific signs and symptoms.

Change in color or odor of urine:

- **Changes such as dark, cloudy or foul-smelling urine are not sufficient to indicate a UTI in the absence of clinical signs and symptoms that localize to the genito-urinary tract. It may reflect mild dehydration or changes to diet or medications.**

Fall:

- **A fall is not considered a symptom of a urinary tract infection, especially in the absence of genito-urinary tract-specific signs and symptoms. Therefore, resident should be carefully evaluated for an alternative explanation for the fall in such scenarios.**

Change in mental status:

- **Current recommendations suggest that there should be systemic or specific urinary findings to attribute a UTI as the cause of mental status change. A diagnosis of UTI should only be considered in those residents with unequivocal delirium who have no other cause for these acute, fluctuating symptoms. For older adults with a change in mental status, the diagnosis of a UTI or CAUTI is a diagnosis of exclusion.**

STEP 3: Which Criteria Are Available for the Diagnosis and Management of UTI in the PALTC Setting?

➤ **Post-acute and long-term care (PALTC) settings should use one of the established clinical algorithms (see examples below) to guide the diagnosis and decision to initiate antibiotics for residents with a suspected UTI and incorporate those criteria into their antibiotic stewardship policy.**

- Loeb minimum criteria describes the clinical signs and symptoms that can guide the decision to initiate antibiotics. (See Appendix A)
- The AHRQ tool, developed in a SBAR (Situation, Background, Assessment and Request) format, assists clinicians in deciding when to initiate an antibiotic. (See Appendix B)
- International Delphi consensus criteria recognizes both specific and nonspecific signs and symptoms that are associated with UTI in practice, indicating combinations of those signs and symptoms that justify antibiotic prescribing. (See Appendix C)
- The IOU consensus recommendation describes a set of signs and symptoms most likely to indicate uncomplicated cystitis in non-catheterized residents. (See Appendix D)

STEP 4: When Should A Diagnostic Test Be Sent For A Potential UTI?

- **Clinicians must consider both clinical findings and diagnostic test results when evaluating a resident for a potential UTI.**
- **Urinalysis and urine cultures should only be sent for residents who meet clinical criteria for UTI (as described in above-mentioned clinical algorithms).**
- **Urinalyses and urine cultures should not be sent as a test-of-cure for asymptomatic residents.**

STEP 5: What Are The Best Methods For Urine Collection?

In absence of a urinary catheter:

- **A voided midstream or clean catch specimen is ideal.**
- **In men, cleansing the meatus is recommended prior to urine collection.**
- **Women who are unable to provide a good quality voided specimen may require in and out urinary catheterization.**
- **For men unable to provide a voided specimen, temporary use of a condom catheter, in the range of 30–120 minutes, may permit collection of a good quality urine specimen.** [Ouslander JG et al. *Arch Intern Med.* 1987 Feb;147(2):286-8]

In presence of a urinary catheter:

- **Urine samples should not be obtained from a urine collection bag connected to an indwelling catheter (including a suprapubic catheter) unless a new catheter (along with a new collection bag) was inserted immediately prior to sample collection.**
- **In residents with urinary catheters present for over two weeks, the catheter should be replaced, or discontinued altogether if no longer needed, prior to collecting a urine specimen.**
- **When a urinary catheter has been in place for less than 2 weeks, a decision to obtain a urine sample from the sampling port of the existing catheter or to remove the catheter before obtaining a urine sample should be made on a case-by-case basis. Clinicians should consider potential clinical benefits and risks of removing and, if necessary, replacing urinary catheters present for less than 2 weeks as part of the evaluation for residents with suspected CAUTI.**

STEP 6: Recognize When To Initiate Empiric Antibiotics

Should asymptomatic bacteriuria be treated?

➤ **Screening for and treatment of asymptomatic bacteriuria is not recommended for older adults residing in PALTC facilities except before undergoing transurethral resection of the prostate or other urologic procedures associated with mucosal trauma.**

How should residents with suspected UTI be managed if clinical criteria are not met?

➤ **For residents that do not meet clinical criteria for UTI (and do not have warning signs), but for whom clinical concern for UTI still exists, ''active monitoring'' is recommended. [See Active Monitoring Protocol under Monitoring]**

How should residents with suspected UTI be managed if clinical criteria are met?

➤ **For residents that meet clinical criteria for a UTI, clinicians should send a urine specimen for urinalysis and culture and then initiate empiric antibiotics. [See Table 1]**

STEP 7: Choosing Empiric Antibiotics

- **If prior culture data are available, clinicians should review previously identified organisms and their susceptibilities before selecting an antibiotic for treatment.**
- **In the absence of prior culture data, clinicians should refer to facility or local resistance rates (i.e., antibiograms) to select empiric antibiotics.**
- **In general, nitrofurantoin and trimethoprim-sulfamethoxazole are considered preferred drugs for empiric treatment of acute simple cystitis.**
- **If there is significant concern for multidrug-resistant organisms, oral fosfomycin trometamol may be effective.**
- **Fluoroquinolones are no longer considered first-line treatment for UTIs due to the high rate of resistance against these agents as well as risks for developing serious life-threatening or disabling side effects.**
- **Consider renal function and drug-drug interactions when selecting an antibiotic for treatment. [See Table 2]**
- **If pyelonephritis is suspected, fosfomycin and nitrofurantoin should not be used.**
- **If planning to treat a resident in a PALTC facility for suspected pyelonephritis with an oral antibiotic when susceptibility of the uropathogen is unknown, an initial dose of long-acting parenteral agent (such as ceftriaxone) is recommended. The culture results should be followed and antibiotics tailored once the susceptibility result of the uropathogen is available.**
- **Oral beta-lactam agents should not be used for treatment of pyelonephritis when alternative treatment options are available and, if used, an initial dose of long-acting parenteral agent (such as ceftriaxone) is recommended.**
- **When there is evidence of systemic infection (warning signs) in residents with suspected UTI, clinicians should consider empiric treatment with broad-spectrum agents and then de-escalate based on the results of the urine studies and the clinical course.**

STEP 8: De-Escalation of Antibiotics

- **After selection of an empiric antibiotic, the resident's clinical response and the results of diagnostic studies should inform whether continuing antibiotics is warranted.**
- **If the initial antibiotic was a broad-spectrum agent and the culture results indicate that a more narrow-spectrum agent would be effective, clinicians should consider changing to the narrow-spectrum agent.**
- **In cases where organisms recovered from urine cultures are resistant to the empiric antibiotic selected and residents continue to experience UTI symptoms, therapy modification is warranted.**
- **If the resident clinically improved despite organisms being resistant to the empiric antibiotic selected, the organisms recovered from the urine culture may represent colonization, and discontinuation of antibiotic therapy should be considered.**
- **When a urine culture collected before initiation of empiric treatment is negative or the amount of growth reported is below the threshold for a positive culture, strong consideration should be given to stopping antibiotics and looking for another etiology of the symptoms.**

STEP 9: Determining the Length of Therapy

- **Length of therapy depends on the type of UTI being treated, antibiotic agent being used and resident's response to the treatment (such as prompt recovery within 72 hours versus delayed response).**
- **Table 1 outlines AMDA UTI consensus statement recommended empiric treatment options and durations for UTI syndromes commonly managed in PALTC facilities.**
- **Table 2 outlines IOU consensus recommendations for empirical treatment of acute simple cystitis in nursing home residents. It includes the dosing consideration for renal function and common drug-drug interactions to avoid.**
- **Table 3 describes factors that may predispose residents with a UTI to treatment failure or complications and may impact treatment duration.**

Table 1. Diagnosis and Treatment for Urinary Tract Infections in Post-Acute and Long-Term Care Settings

UTI Syndrome and Associated Clinical and Microbiological Findings[a]	Recommended Treatment and Duration[b]	Additional Comments
Asymptomatic Bacteriuria Diagnostic Test Results: ≥100,000 colony-forming units (CFUs)/mL of ≥1 species of bacteria Signs & Symptoms: Nothing that localizes to the genito-urinary tract	No antibiotics	In general, asymptomatic bacteriuria does not require treatment. However, screening for asymptomatic bacteriuria along with targeted short course of antibiotic treatment (1 or 2 doses) is recommended prior to a urologic procedure associated with mucosal trauma. Antibiotics in these cases should be initiated 30–60 minutes before the procedure.
Acute Simple Cystitis Diagnostic Test Results: ≥100,000 CFUs/mL of ≤2 species of bacteria OR ≥100 CFUs/mL of ≥1 species of bacteria in a specimen collected by in-and-out catheter Signs & Symptoms: Localizing to the bladder such as acute dysuria, suprapubic tenderness, new or worsening incontinence, frequency, urgency or gross hematuria	Nitrofurantoin, 5 days Trimethoprim/sulfamethoxazole, 3 days Beta-lactam agents, 3–7 days Fosfomycin, 1 dose Fluoroquinolones, 3 days	Male patients and those women with cystitis who are identified to be at high risk for treatment failure (see Table 3) may require treatment for 7 days. Longer courses (8–14 days) are usually not necessary in these patients except when there is a delayed response to treatment or severe illness (e.g., sepsis, bacteremia). Nitrofurantoin and fosfomycin should not be used when the infection is suspected to extend beyond the bladder and in severely ill patients (e.g., sepsis, bacteremia). Reserve fosfomycin use for treatment of acute simple cystitis with highly-resistant Gram-negative pathogens and for whom hospitalization and/or intravenous antibiotic therapy is not warranted. Additional doses of fosfomycin will be required if intended treatment duration is >3 days. Fluoroquinolones (e.g., ciprofloxacin and levofloxacin) are no longer considered firstline treatment for UTIs, and their use should be minimized. Moxifloxacin should not be used for UTIs.

Table 1. Continued

UTI Syndrome and Associated Clinical and Microbiological Findings[a]	Recommended Treatment and Duration[b]	Additional Comments
Catheter Associated Urinary Tract Infection (CAUTI) Diagnostic Test Results: ≥100,000 CFUs/mL of ≥1 species of bacteria Signs & Symptoms: Systemic or non-specific, such as fever,[c] rigors/chills, or new onset, clear-cut delirium with no other identified cause, OR Localizing to genito-urinary tract such as suprapubic or costovertebral angle tenderness OR Acute pain, swelling, or tenderness of the testes, epididymis, or prostate (in men) OR If a catheter was removed in the previous 48 hours, presence of signs and symptoms that localizes to the genito-urinary tract such as urgency, frequency, dysuria, gross hematuria, suprapubic tenderness or costovertebral angle tenderness	If prompt resolution of symptoms, 7 days For patients with a delayed response to treatment, 10–14 days of antibiotics is reasonable	It is important to note that a CAUTI can be present with lower colony counts of bacteria (100–1000 CFUs/mL), but most persons with CAUTI have colony counts ≥100,000 CFUs/mL. CAUTI can lead to complications like prostatitis, epididymitis and epididymo-orchitis in males, so presence of acute pain, swelling, or tenderness of the testes, epididymis, or prostate should trigger evaluation for these diagnoses. Presence of costovertebral angle tenderness on exam suggests renal involvement.

Table 1. Continued

UTI Syndrome and Associated Clinical and Microbiological Findings[a]	Recommended Treatment and Duration[b]	Additional Comments
Acute pyelonephritis Diagnostic Test Results: ≥100,000 CFUs/mL of ≤2 species of bacteria OR ≥100 CFUs/mL of ≥1 species of bacteria in a specimen collected by in-and-out catheter Signs & Symptoms: Non-localizing, suggesting that the illness extends beyond the bladder, such as fever,[c] rigors/chills, marked fatigue/malaise, nausea or vomiting, AND Localizing to the genito-urinary tract, such as dysuria, suprapubic tenderness, costovertebral angle tenderness, pelvic or perineal pain (men), new or worsening incontinence, frequency, urgency, or gross hematuria	Trimethoprim/ Sulfamethoxazole, 14 days Beta-lactams, 10–14 days Fluoroquinolones, 7 days	Nitrofurantoin and fosfomycin should not be used to treat pyelonephritis. Pyelonephritis may present without symptoms of cystitis. Shorter (7–10 days) treatment with trimethoprim/sulfamethoxazole may be appropriate in select patients with rapid defervescence. Pelvic or perineal pain in men can suggest accompanying prostatitis.

[a] Clinical and microbiological findings in this table have been provided to highlight differences in various UTI syndromes. PALTC settings are recommended to adapt one of the published clinical algorithms to guide the diagnosis and decision to initiate antibiotics for residents with a suspected UTI.

[b] When choosing an antibiotic agent, clinicians will also need to consider additional factors including (but not limited to) resident allergies, co-morbidities, potential drug-drug interactions, availability, local resistance pattern/urine culture results, cost and overall clinical status. Similarly, final treatment duration will also depend on overall clinical condition and response to the treatment.

[c] More recently published criteria usually define fever as: Single oral temperature of ≥100°F or repeated oral temperatures of >99°F or increase in temperature of ≥2°F over baseline.

Source: Ashraf MS et al. Diagnosis, Treatment, and Prevention of Urinary Tract Infections in Post-Acute and Long-Term Care Settings: A Consensus Statement From AMDA's Infection Advisory Subcommittee. *J Am Med Dir Assoc*. 2020 Jan;21(1):12-24

Table 2. IOU Consensus Recommendations for Empirical Treatment of Acute Simple (Uncomplicated) Cystitis in Nursing Home Residents

Empirical Initial Treatment
Nitrofurantoin in those with eCrCl >30 mL/min ***OR*** Trimethoprim-sulfamethoxazole in those with eCrCl ≥15 mL/min ***OR*** Ciprofloxacin or fosfomycin ONLY IF eCrCl <15 mL/min

Recommended Dosing for Different Levels of Renal Function	
Estimated eCrCl	**Maximum Dosing for Anti-Infective**
>30 mL/min	Nitrofurantoin 100 mg twice a day ***OR*** Trimethoprim-sulfamethoxazole 160 mg/800 mg (one double strength) twice a day
15–30 mL/min	Trimethoprim-sulfamethoxazole 80 mg/400 mg (one single strength) twice a day ***AVOID → Nitrofurantoin***
<15 mL/min	Cirprofloxacin 250 mg twice a day Fosfomycin 3 gm once ***AVOID → Nitrofurantoin & Trimethroprim-sulfamethoxazole***

Drug-Drug Interactions to Avoid	
Interacting Anti-Infective	**Affected Medications**
Ciprofloxacin	Theophylline, Tizanidine, Warfarin
Trimethoprim-sulfamethoxazole	Methotrexate, Phenytoin, Procainaminde, Warafrin

Duration of Anti-Infective Treatment Except for Fosfomycin	
Sex	**Number of Days**
Women	3
Men	7

Source: Hanlon JT et al. The IOU Consensus Recommendations for Empirical Therapy of Cystitis in Nursing Home Residents. *J Am Geriatr Soc*. 2019 Mar;67(3):539-545.

Table 3. Factors That May Predispose Residents with a Urinary Tract Infection to Treatment Failure or Complications

Complicating Factors	Clinical Examples	Considerations
Obstruction	• Ureteric or urethral strictures • Tumors of the urinary tract • Urolithiasis • Prostatic hypertrophy • Diverticulae • Pelvicalyceal obstruction • Renal cysts • Congenital abnormalities	A history of obstruction, by itself, is not a complicating factor unless the obstruction is still ongoing. Elderly males have been historically considered to be at high risk as many presenting with UTI may also have underlying urologic abnormalities like prostatic hypertrophy. More recent evidence indicates that 7 days of antibiotic is sufficient to treat cystitis in men (see manuscript text). Prostatitis (which requires longer length of therapy) should be suspected in residents with recurrent cystitis or if resident also has fever or pelvic or perineal pain. Management of obstruction is also a key component of UTI treatment.
Instrumentation	• Indwelling urethral catheter • Intermittent catheterization • Ureteric stent • Nephrostomy tube • Urological procedures	Frequently reassess the need for an indwelling catheter and, if deemed unnecessary, remove the catheter.
Impaired Voiding	• Neurogenic bladder • Cystocele • Vesicoureteral reflux • Ileal conduit	Risks of complication may depend on severity of the voiding impairment.
Metabolic abnormalities	• Nephrocalcinosis • Medullary sponge kidney • Renal failure (eCrCl <30 mL/min) • Diabetes mellitus	Risks of complications in diabetic patients with good glycemic control and without long-term diabetes complications will be lower than those with poor glycemic control and presence of diabetic complications
Immunocompromised	• Renal transplant	

Source: Ashraf MS et al. Diagnosis, Treatment, and Prevention of Urinary Tract Infections in Post-Acute and Long-Term Care Settings: A Consensus Statement From AMDA's Infection Advisory Subcommittee. *J Am Med Dir Assoc*. 2020 Jan;21(1):12-24

STEP 10: Monitoring of Individuals With a Change in Condition But Who Do Not Meet Diagnostic Criteria for UTI (“Active Monitoring”)

➤ **Active monitoring protocol includes frequent monitoring of vital signs, paying attention to hydration status (e.g., recording fluid intake, stimulating fluid intake), and repeated physical assessments by nursing home staff. A physician should be notified if signs and symptoms worsen or do not resolve, if new signs and symptoms arise, or if fluid intake is less than a certain predefined amount.**

Example of an Active Monitoring Order Set

- ❑ Obtain vital signs (BP, Pulse, Resp Rate, Temp, Pulse Ox) every ____ hours for ____ days.
- ❑ Record fluid intake each shift for ____ days.
- ❑ Notify physician if fluid intake is less than ____ cc daily.
- ❑ Offer resident ____ ounces of water/juice every ____ hours.
- ❑ Notify physician, NP, or PA if condition worsens or if no improvement in ____ hours
- ❑ Obtain the following blood work: _____.
- ❑ Consult pharmacist to review medication regimen.
- ❑ Contact the physician, NP, or PA with an update on the resident's condition on _____.

Nace D.A., et al. *J Am Med Dir Assoc*, 2014 Feb;15(2):133-9.

STEP 11: Monitoring of Individuals Treated and At Risk for UTI

- **Monitor vital signs, oral intake, cognition and function for response to therapy and/or opportunities for de-escalation as above.**
- **Check results of urine culture as specified above and adjust antimicrobial therapy based on clinical status and susceptibility results, when indicated (“antibiotic time-out”).**
- **Follow labs, including renal profile and drug levels, as clinically indicated and/or based on antimicrobial agent guidelines.**
- **Obtaining post-treatment urine cultures (“test-of-cure”) is not recommended.**
- **Surveillance cultures of those with urinary catheters or recurrent UTI’s is not recommended.**
- **Chronic/long-term prophylactic antibiotic therapy is not recommended to prevent recurrence of UTI in both catheterized and non-catheterized individuals; while antibiotics may reduce the risk of recurrent uncomplicated UTI’s, the potential harms associated with long-term use, coupled with the prevalence of multidrug resistant organisms among PALTC residents, argues against this practice.**
- **For postmenopausal women, local (vaginal) estrogen therapy should be considered for the prevention of recurrent UTI’s as well as to treat atrophic vaginitis, the symptoms of which often mimic UTI.**

STEP 12: Monitoring the Nursing Home's Performance With Respect to UTIs

- **Follow the facility's Quality Measure report regarding UTIs for information about the prevalence of these infections relative to national and state norms.**
- **Monitor the effectiveness of the facility's infection prevention and control program, including the tracking of unit-specific UTI rates as well as competencies related to the prevention of CAUTI. Implementing a comprehensive infection prevention and control program is a safe and effective strategy to reduce CAUTI in PALTC setting.**
- **Apply the principles and mandates of antibiotic stewardship to the diagnosis, treatment and prevention of UTIs. The CDC has established 7 core elements for antibiotic stewardship in nursing homes, which are reflected in the guidance used to assess compliance with CMS requirements for an antibiotic stewardship program. PALTC settings may select UTI as one of the facility's annual performance/practice improvement and antimicrobial stewardship projects.**
- **Appendix E summarizes the core elements and provides examples of how these apply to the diagnosis, treatment and prevention of UTI in the PALTC settings.**

Appendix A: Loeb Minimum Criteria for Initiating Antibiotics for Suspected UTIs

Urinary Tract Infection	Minimum Criteria for Starting Antibiotic Therapy
without catheter	Either one of the following criteria: ❑ Acute dysuria, OR ❑ Temperature >37.9°C (100°F) or 1.5°C (2.4°F) above baseline, AND ≥1 of the following new or worsening symptoms: ❑ Urgency ❑ Frequency ❑ Suprapubic pain ❑ Gross hematuria ❑ Urinary incontinence ❑ Costovertebral angle tenderness
with catheter	At least one of the following criteria ❑ Rigors ❑ Temperature >37.9 °C (100 °F) or 1.5 °C (2.4 °F) above baseline ❑ New onset delirium ❑ New costovertebral angle tenderness

Loeb M, Bentley DW, Bradley S, et al. Development of minimum criteria for the initiation of antibiotics in residents of long-term-care facilities: Results of a consensus conference. *Infect Control Hosp Epidemiol* 2001;22:120e124.

Appendix B: Suspected UTI SBAR

Complete this form before contacting the resident's physician.

Nursing Home Name _____ Date/Time _____

Resident Name _____

Physician/NP/PA _____ Date of Birth _____

Phone _____

Fax _____

Nurse _____ Facility Phone _____

Submitted by ❑ Phone ❑ Fax ❑ In Person ❑ Other _____

S SITUATION

I am contacting you about a suspected UTI for the above resident.

Vital Signs BP _____/_____HR _____ Resp. rate _____ Temp. _____

B BACKGROUND

Active diagnoses or other symptoms (especially, bladder, kidney/genitourinary conditions)

Specify _____

❑ No	❑ Yes	The resident has an indwelling catheter
❑ No	❑ Yes	Patient is on dialysis
❑ No	❑ Yes	The resident is incontinent If yes, new/worsening? ❑ No ❑ Yes
❑ No	❑ Yes	Advance directives for limiting treatment related to antibiotics and/or hospitalizations Specify _____ _____
❑ No	❑ Yes	Medication Allergies Specify _____ _____
❑ No	❑ Yes	The resident is on Warfarin (Coumadin®)

Appendix B: Continued

A ASSESSMENT INPUT (CHECK ALL BOXES THAT APPLY)

Resident WITH indwelling catheter

The criteria are met to initiate antibiotics if one of the below are selected

No	Yes	
❑	❑	Fever of 100°F (38°C) or repeated temperatures of 99°F (37°C)[a]
❑	❑	New back or flank pain
❑	❑	Acute pain
❑	❑	Rigors /shaking chills
❑	❑	New dramatic change in mental status
❑	❑	Hypotension (significant change from baseline BP or a systolic BP <90)

Resident WITHOUT indwelling catheter

Criteria are met if one of the three situations are met

No	Yes	
❑	❑	1. Acute dysuria alone
—	**OR**	————————————————
❑	❑	2. Single temperature of 100°F (38°C) and at least one new or worsening of the following:

❑ urgency ❑ suprapubic pain

❑ frequency ❑ gross hematuria

❑ back or flank pain ❑ urinary incontinence

— **OR** ————————————————

❑	❑	3. No fever, but two or more of the following symptoms:

❑ urgency ❑ suprapubic pain

❑ frequency ❑ gross hematuria

❑ incontinence

Nurses: Please check box to indicate whether or not criteria are met

❑ **Nursing home protocol criteria are met.** Resident may require UA with C&S or an antibiotic.[b]

❑ **Nursing home protocol criteria are NOT met.** The resident does NOT need an immediate prescription for an antibiotic but may need additional observation.[c]

---

[a] For residents that regularly run a lower temperature, use a temperature of 2°F (1°C) above the baseline as a definition of a fever.

[b] This is according to our understanding of best practices and our facility protocols. Minimum criteria for a UTI must meet 1 of 3 criteria listed in box.

[c] This is according to our understanding of best practices and our facility protocols. The information is insufficient to indicate an active UTI infection.

Appendix B: Continued

R REQUEST FOR PHYSICIAN/NP/PA ORDERS

Orders were provided by clinician through ❑ Phone ❑ Fax ❑ In Person

❑ Other_____

- ❑ Order UA
- ❑ Urine culture
- ❑ Encourage _____ ounces of liquid intake _____ times daily until urine is light yellow in color.
- ❑ Record fluid intake.
- ❑ Assess vital signs for _____ days, including temp, every _____ hours for _____ hours.
- ❑ Notify Physician/NP/PA if symptoms worsen or if unresolved in _____ hours.
- ❑ Initiate the following antibiotic

  Antibiotic:_____ Dose: _____

  Route: _____ Duration: _____

  ❑ No ❑ Yes Pharmacist to adjust for renal function
- ❑ Other _____

Physician/NP/PA signature Date/Time

_____

Telephone order received by Date/Time

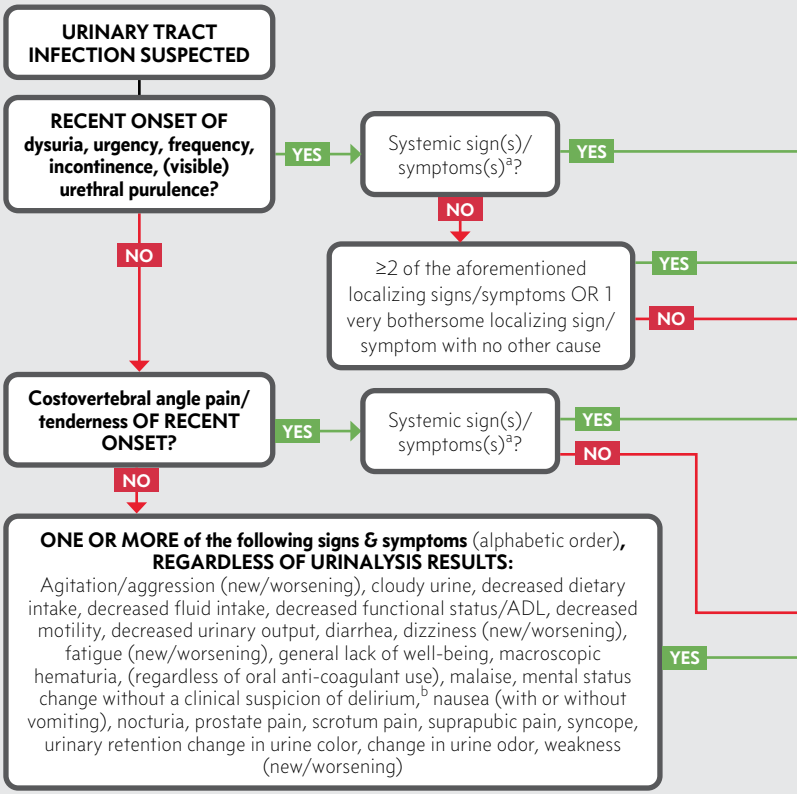
_____

Family/POA notified (name) Date/Time

_____

Source: Toolkit 1. Suspected UTI SBAR Toolkit. 2016. Available at: https://www.ahrq.gov/nhguide/toolkits/determine-whether-to-treat/toolkit1-suspected-uti-sbar.html. Accessed November 10, 2018.

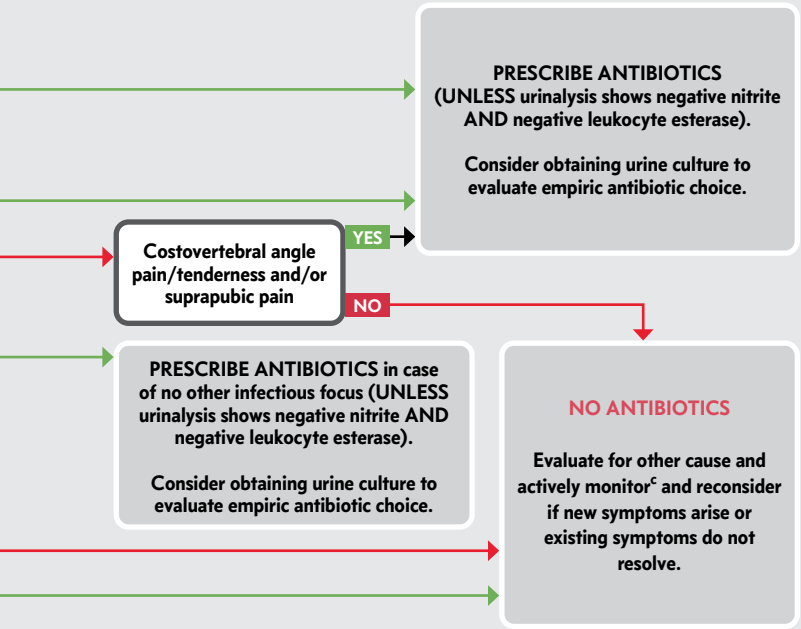
Appendix C: Internal Delphi Consensus Criteria Decision Tool For The Empiric Treatment of Suspected Urinary Tract Infection in Frail Older Adults WITHOUT an Indwelling Urinary Catheter



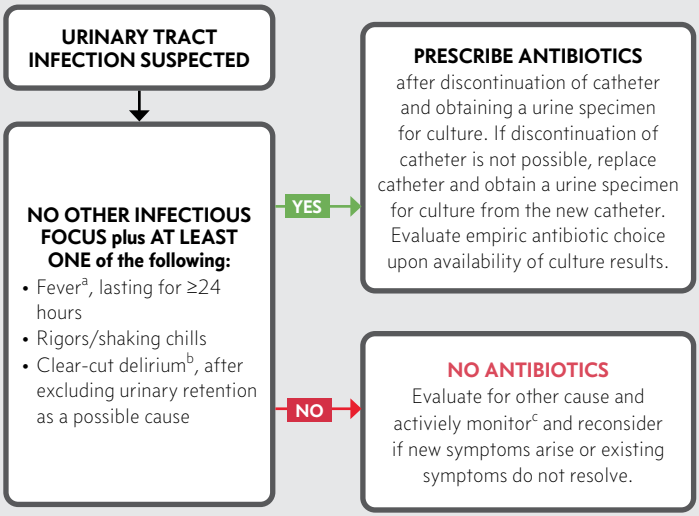
[a] Presence of at least fever (i.e., a single oral temperature >37.8°C OR repeated oral temperatures >37.2°C OR rectal temperature >37.5°C OR a 1.1°C increase over the baseline temperature), rigors/ shaking chills and/or clear-cut delirium.

[b] Definition of delirium according to DSM-5: A) Disturbance in attention (i.e., a reduced ability to direct, focus, sustain and shift attention) and awareness (reduced orientation to the environment). B) The disturbance develops over a short period of time (usually hours to a few days), represents an acute change from baseline attention and awareness, and tends to fluctuate in severity during the course of a day. C) An additional disturbance in cognition (e.g., memory deficit, disorientation, language, visuospatial ability or perception.) D) The disturbances in Criteria A and C are not better explained by a pre-existing, established or evolving neurocognitive disorder and do not occur in the context of a severely reduced level of arousal such as coma. E) There is evidence from the history, physical examination or laboratory findings that the disturbance is a direct physiological consequence of another medical condition, substance intoxication or withdrawal (i.e., due to a drug of abuse or to a medication), or exposure to a toxin, or is due to multiple etiologies.

[c] E.g., monitoring vital signs, paying attention to hydration status and repeated physical assessments by nursing home staff.


PRESCRIBE ANTIBIOTICS
(UNLESS urinalysis shows negative nitrite AND negative leukocyte esterase).
Consider obtaining urine culture to evaluate empiric antibiotic choice.
Costovertebral angle pain/tenderness and/or suprapubic pain
YES
NO
PRESCRIBE ANTIBIOTICS in case of no other infectious focus (UNLESS urinalysis shows negative nitrite AND negative leukocyte esterase).
Consider obtaining urine culture to evaluate empiric antibiotic choice.
NO ANTIBIOTICS
Evaluate for other cause and actively monitor[c] and reconsider if new symptoms arise or existing symptoms do not resolve.

Appendix C: Internal Delphi Consensus Criteria Decision Tool for the Empiric Treatment of Suspected Urinary Tract Infection in Frail Older Adults WITH an Indwelling Urinary Catheter



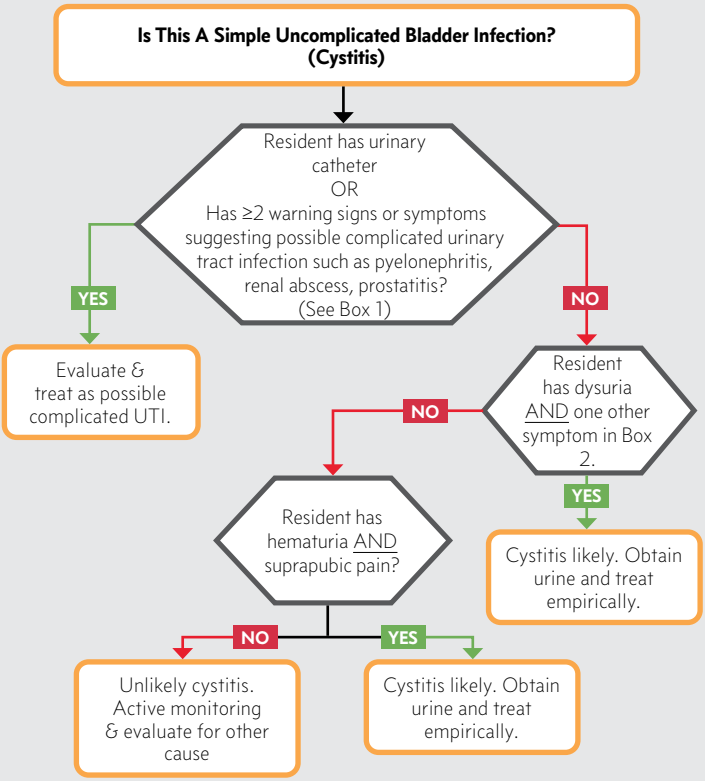
[a] Defined as a single oral temperature >37.8°C OR repeated oral temperatures >37.2°C OR rectal temperature >37.5°C OR a 1.1°C increase over the baseline temperature.

[b] Definition of delirium according to DSM-5: A) Disturbance in attention (i.e., reduced ability to direct, focus, sustain, and shift attention) and awareness (reduced orientation to the environment). B) The disturbance develops over a short period of time (usually hours to a few days), represents an acute change from baseline attention and awareness, and tends to fluctuate in severity during the course of a day. C) An additional disturbance in cognition (e.g. memory deficit, disorientation, language, visuospacial ability, or perception). D) The disturbances in Criteria A and C are not better explained by a pre-existing, established or evolving neurocognitive disorder and do not occur in the context of a severely reduced level of arousal such as coma. E) There is evidence from the history, physical examination or laboratory findings that the disturbance is a direct physiological consequence of: another medical condition, substance intoxication or withdrawal (i.e. due to a drug of abuse or to a medication), or exposure to a toxin, or is due to multiple etiologies.

[c] E.g., monitoring vital signs, paying attention to hydration status and repeated physical assessments by nursing home staff.

Source: van Buul LW, Vreeken HL, Bradley SF, et al. The development of a decision tool for the empiric treatment of suspected urinary tract infection in frail older adults: A delphi consensus procedure. *J Am Med Dir Assoc* 2018;19:757e764.

Appendix D: IOU Consensus Criteria Algorithm for the Diagnostic Approach to Acute Simple (Uncomplicated) Cystitis in Non-Catheterized Nursing Home Residents



Box 1 – Warning Signs & Symptoms of Complicated UTI

- Fever
- Flank pain
- Rigors/chills
- Prostatic/scrotal pain
- Urinary catheter
- Hypotension
- Elevated serum WBC

Box 2 – Simple Cystitis Symptoms

- Gross hematuria
- Suprapubic pain
- Urinary frequency/ urgency

Source: Nace DA, Perera SK, Hanlon JT, et al. The Improving Outcomes of UTI Management in Long-Term Care Project (IOU) consensus guidelines for the diagnosis of uncomplicated cystitis in nursing home residents. *J Am Med Dir Assoc* 2018;19:765e769.e3.

Appendix E: Applying the CDC's Core Elements for Antibiotic Stewardship in Nursing Homes to Support the Diagnosis, Treatment and Prevention of Suspected UTIs

Core Element	Description	Examples
1. Leadership Commitment	Demonstrate support and commitment to safe and appropriate antibiotic use in your facility.	• Establish that the appropriate diagnosis and treatment of UTIs is a priority. • Communicate that priority to nursing staff, prescribing clinicians and to residents and families with consistent messaging and education.
2. Accountability	Identify individuals accountable for antibiotic stewardship activities who have the support of facility leadership.	• Empower the medical director to establish policies and procedures for the diagnosis of UTIs based on specific signs and symptoms, and for treatment with recommended antibiotics and length of therapy. • Empower the director of nursing to establish standards for evaluating the necessity of urinary catheters, catheter care, collecting high-quality urine specimens and for communication with providers.
3. Drug Expertise	Establish access to individuals with antibiotic expertise.	• Engage the consultant pharmacist to help improve the selection of antibiotics used to treat a suspected UTI, including the dose and duration, with consideration of potential drug-drug interactions. • Ask for assistance from the consultant pharmacists, the microbiology laboratory or experts from hospitals within your referral network to help develop an antibiogram specific to urinary pathogens for your population.
4. Action	Implement at least one policy or practice to improve antibiotic use.	• Implement a Situation, Background, Assessment and Recommendations (SBAR) tool for data to gather prior to contacting a medical provider about a suspected UTI. • Establish standing orders for active monitoring (e.g., hydration, mobilization, medical/nursing evaluation, regular vital signs and ongoing monitoring) for residents with a non-specific change in condition in whom a UTI is suspected but not clinically obvious.

Appendix E: Continued		
Core Element	**Description**	**Examples**
5. Tracking	Monitor at least one process measure and one outcome measure of antibiotic use at your facility.	• Determine how often nursing staff and prescribing clinicians document signs and symptoms that localize to the genitourinary tract for residents diagnosed with a UTI. • Assess the antibiotics and length of therapy prescribed for residents diagnosed with a UTI. • Track the rate of UTIs per 1,000 resident days or the rate of CAUTIs per 1,000 catheter days.
6. Reporting	Provide regular feedback on antibiotic use and resistance to prescribing clinicians, nursing staff and other relevant staff.	• Report how often residents who are diagnosed with a UTI: ▸ Had documentation of signs and symptoms that localize to the genitourinary tract in their medical record. ▸ Received an antibiotic and length of therapy concordant with your facility's policy and procedure. • Share graphs of the rate of UTIs per 1,000 resident days with nurses (at morning report or stand-up), prescribing clinicians, the Quality Assurance and Performance Improvement team members and the resident and family council. Provide context to help explain changes in rates, such as a new policy or educational intervention.
7. Education	Provide resources to prescribing clinicians, nursing staff, residents and families about antibiotic resistance and opportunities for improving antibiotic use.	• Provide an in-service for nursing staff about asymptomatic bacteriuria. Include materials they may share with residents and families. Repeat this at least annually. • Incorporate "fast facts" about UTIs into staff meetings or emails shared with prescribing clinicians. • Use the reports about UTI metrics as a chance to remind stakeholders about diagnostic criteria for UTI or interpretation of urine culture results.

Source: Ashraf MS et al. Diagnosis, Treatment, and Prevention of Urinary Tract Infections in Post-Acute and Long-Term Care Settings: A Consensus Statement From AMDA's Infection Advisory Subcommittee. *J Am Med Dir Assoc.* 2020 Jan;21(1):12-24.

References

Ashraf MS, Gaur S, Bushen O et al. Diagnosis, Treatment, and Prevention of Urinary Tract Infections in Post-Acute and Long-Term Care Settings: A Consensus Statement from AMDA's Infection Advisory Subcommittee. *J Am Med Dir Assoc* 2020 Jan;21(1):12-24.e2.

van Buul LW, Vreeken HL, Bradley SF, et al. The development of a decision tool for the empiric treatment of suspected urinary tract infection in frail older adults: A delphi consensus procedure. *J Am Med Dir Assoc* 2018;19:757e764.

Nace DA, Perera SK, Hanlon JT, et al. The Improving Outcomes of UTI Management in Long-Term Care Project (IOU) consensus guidelines for the diagnosis of uncomplicated cystitis in nursing home residents. *J Am Med Dir Assoc* 2018;19:765e769.e3.

Hanlon JT, Perera S, Drinka PJ, et al. The IOU Consensus Recommendations for Empirical Therapy of cystitis in nursing home residents. *J Am Geriatr Soc* 2019;67:539e545.

Nace DA, Drinka PJ, Crnich CJ. Clinical uncertainties in the approach to longterm care residents with possible urinary tract infection. *J Am Med Dir Assoc* 2014;15:133e139.

Loeb M, Bentley DW, Bradley S, et al. Development of minimum criteria for the initiation of antibiotics in residents of long-term-care facilities: Results of a consensus conference. *Infect Control Hosp Epidemiol* 2001;22:120e124.

Toolkit 1. Suspected UTI SBAR Toolkit. 2016. Available at: https://www.ahrq.gov/nhguide/toolkits/determine-whether-to-treat/toolkit1-suspected-uti-sbar.html. Accessed November 10, 2018.

Suggested Citation

Ashraf MS, Gaur S, Clifford K, Dumyati G, Healy E, Bergman, C. "Urinary Tract Infections in the Post-Acute and Long-Term Care Setting." AMDA–The Society for Post-Acute and Long-Term Care Medicine. Clinical Practice Pocket Guide Series. February 2020.

Acknowledgements

AMDA – The Society for Post-Acute and Long-Term Care Medicine developed this educational tool with the support and cooperation of the Clinical Practice Steering Committee and Clinical Practice Guidelines and Tools Subcommittee.

A special thank you to the following members for their contributions:

Muhammad Salman Ashraf, MBBS, FIDSA
Swati Gaur, MD, MBA, CMD, AGSF
Kalin Clifford, Pharm D
Ghinwa Dumyati, MD
Elaine Healy, MD
Christian Bergman, MD

AMDA Staff:

Erin O. Vigne, RN, MA–Interim Director, Clinical Affairs

Disclaimer

International Guidelines Center
AMDAUTI01203a

106 Commerce Street, Suite 105
Lake Mary, FL 32746
TEL: 407.878.7606 • FAX: 407.878.7611
Order additional copies at GuidelineCentral.com