# Diagnosis

Urinary Tract Infections (UTI)

* **First, ask about SYMPTOMS**
  + Acute cystitis: dysuria, frequency, urgency, suprapubic pain1,2
  + Pyelonephritis: fever, rigors, flank pain1
  + Catheter-associated UTI (CAUTI): subrapubic pain and fever; residents with catheters may not report dysuria, frequency, or urgency2,3
* If UTI symptoms present, obtain a urinalysis (UA) and culture
  + A positive UA shows evidence of inflammation (e.g., elevated white blood cells)
  + A positive urine culture is defined as ≥100,000 cfu/mL of a urinary pathogen4 (≥1,000 in residents with urinary catheters)1
* If a chronic indwelling catheter is in place, remove and replace it before sending UA and culture4
* Do not start antibiotics in residents with a positive UA and/or culture until confirming that relevant symptoms are present.5-8
* UTI in males in the absence of obstructive pathology (e.g., enlarged prostate, renal stone, stricture) or urinary catheter is uncommon.1,9,10

# Supportive Care

* Encourage oral hydration.1
* Consider phenoazopyridine (pyridium) to relieve urinary pain.11
* For residents with dysuria that does not resolve with antibiotics, assess for other causes such as vaginal atrophy, yeast infection, enlarged prostate, and sexually transmitted infections.12,13
* In men, lower urinary tract symptoms may be caused by overactive bladder or, more commonly, by benign prostatic hyperplasia (BPH) and consequent bladder outlet obstruction.1,9,10

# Treatment

Assess prior urine culture data, as previous antibiotic susceptibility patterns can help guide antibiotic choice.

* **Uncomplicated acute cystitis**13
  + Oral therapy preferred; avoid fluoroquinolones
  + [Place local treatment recommendations here]
  + [Place local treatment recommendations here]
* **Uncomplicated pyelonephritis in women**14
  + Fluoroquinolones and trimethoprim/sulfamethoxazole are preferred given excellent penetration into the kidney; their use as empiric therapy should be based on local *E. coli* susceptibility data.
  + [Place local treatment recommendations here]
  + [Place local treatment recommendations here]
* **Complicated UTI**3,12
  + Remove and do not replace urinary catheters whenever possible.
  + If concern for obstructive pathology or urosepsis, determine if resident requires transfer to an acute care facility for evaluation and management.
  + [Place local treatment recommendations here]
  + [Place local treatment recommendations here]

# Duration

| Uncomplicated acute cystitis | Nitrofurantoin or cephalosporin: 5 days7  Trimethoprim/sulfamethoxazole (TMP/SMX): 3 days14 |
| --- | --- |
| Uncomplicated pyelonephritis | Fluoroquinolone: Levofloxacin: 5 days; Ciprofloxacin 7 days14  TMP/SMX or IV/oral cephalosporin: 10–14 days (10 days if early response)15,16 |
| Complicated UTI (including CAUTI) | 3 days if lower tract CAUTI in women ≤65 years if catheter is removed/not replaced  Other residents: 7 days if prompt resolution of symptoms or 10–14 days if delayed  response, obstruction, or other urologic abnormality3 |

# References

1. Ashraf MS, Gaur S, Bushen OY, 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. PMID: 31888862.
2. Loeb M, Bentley DW, Crossley K, 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 Feb;22(2):120-4. PMID: 11232875.
3. Hooton TM, Bradley SF, Cardenas DD, et al. Diagnosis, prevention, and treatment of catheter associated urinary tract infection in adults: 2009 international clinical practice guidelines from the Infectious Diseases Society of America. Clin Infect Dis. 2010 Mar;50(5): 625-63. PMID: 20175247.
4. Stone ND, Ashraf MS, Calder J, et al. Surveillance definitions of infections in long-term care facilities: revisiting the McGeer criteria. Infect Control Hosp Epidemiol. 2012 Oct;33(10):965-77. PMID: 22961014.
5. Cai T, Nesi G, Mazzoli S, et al. Asymptomatic bacteriuria treatment is associated with a higher prevalence of antibiotic resistant strains in women with urinary tract infections. Clin Infect Dis. 2015 Dec 1;61(11):1655-61. PMID: 26270684.
6. Lin K, Fajardo K, U.S. Preventive Services Task Force. Screening for asymptomatic bacteriuria in adults: evidence for the U.S. Preventive Services Task Force reaffirmation recommendation statement. Ann Intern Med. 2008 Jul 1;149(1):W20-4. PMID: 18591632.
7. Nicolle LE, Gupta K, Bradley SF, et al. Clinical practice guideline for the management of asymptomatic bacteriuria: 2019 update by the Infectious Diseases Society of America. Clin Infect Dis. 2019 May 15;68(10):e83-110.PMID: 30895288.
8. Nicolle LE. Asymptomatic bacteriuria in the elderly. Infect Dis Clin North Am. 1997 Sep;11(3):647-62. PMID: 9378928.
9. Schaeffer AJ, Nicolle LE. Clinical practice. Urinary Tract Infections in Older Men. N Engl J Med. 2016 Feb 11;374(6):562-71. PMID: 26863357.
10. van Nieuwkoop C, van der Starre WE, Stalenhoef JE, et al. Treatment duration of febrile urinary tract infection: a pragmatic randomized, double-blind, placebo-controlled non-inferiority trial in men and women. BMC Med. 2017 Apr 3;15(1):70. PMID: 28366170.
11. AZO- urinary pain relief tablet. DailyMed. December 2020. <https://dailymed.nlm.nih.gov/dailymed/lookup.cfm?setid=4eab55aa-2087-4b66-92d7-5d8449f96042&version=8>. Accessed Mar 10, 2021.
12. McVary KT, Saini R. Lower urinary tract symptoms in men. UpToDate. February 2021. <https://www.uptodate.com/contents/lower-urinary-tract-symptoms-in-men>. Accessed Mar 9, 2021.
13. Hooton TM, Gupta K. Acute simple cystitis in women. UpTo Date. August 2019. <https://www.uptodate.com/contents/acute-simple-cystitis-in-women>. Accessed Mar 9, 2021.
14. Gupta K, Hooton TM, Naber KG, et al. International clinical practice guidelines for the treatment of acute uncomplicated cystitis and pyelonephritis in women: A 2010 update by the Infectious Diseases Society of America and the European Society for Microbiology and Infectious Diseases. Clin Infect Dis. 2011 Mar 1;52(5):e103-20. PMID: 21292654.
15. Hobbs ALV, Shea KM, Daley MJ, et al. Are first-generation cephalosporins obsolete? A retrospective, non-inferiority, cohort study comparing empirical therapy with cefazolin versus ceftriaxone for acute pyelonephritis in hospitalized patients. J Antimicrob Chemother. 2016 Jun;71(6):1665-71. PMID: 26983859.
16. Fox MT, Melia MT, Same RG, et al. A seven-day course of TMP-SMX may be as effective as a seven-day course of ciprofloxacin for the treatment of pyelonephritis. Am J Med. 2017 Jul;130(7):842-5. PMID: 28216442.

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