Urinary Tract Infections (UTI)

# Diagnosis

* **First, ask about SYMPTOMS**
  + Acute cystitis: dysuria, frequency, urgency, suprapubic pain
  + Pyelonephritis: fever, flank pain
  + Catheter-associated UTI (CAUTI): subrapubic pain and fever; patients with catheters may not report dysuria, frequency, or urgency
* If symptoms are 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 ≥10,000–100,000 cfu/mL of a urinary pathogen   
    (≥ 1,000 in patients with urinary catheters)
* If a chronic indwelling catheter is in place, remove and replace it before sending UA and culture
* Do not start antibiotics in patients with a positive UA and/or culture until asking about symptoms

# Treatment

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

* **Uncomplicated acute cystitis** (cystitis in a female without urologic abnormality or catheter):
  + Oral therapy preferred; avoid fluoroquinolones
  + [Place local treatment recommendations here]
  + [Place local treatment recommendations here]
  + [Place local treatment recommendations here]
* **Uncomplicated pyelonephritis in women**
  + Fluoroquinolones and trimethoprim/sulfamethoxazole are preferred given excellent penetration into the kidney when the isolate is susceptible; their use as empiric therapy should be based on local *E. coli* resistance data
  + [Place local treatment recommendations here]
  + [Place local treatment recommendations here]
  + [Place local treatment recommendations here]
* **Complicated UTI** (UTI occuring in the presence of urologic abnormality, pregnancy, or urinary catheter or UTI in men)
  + UTI in men in the absence of obstructive pathology (e.g., renal stone, stricture, enlarged prostate) or urinary catheter is uncommon
  + Remove and do not replace urinary catheters whenever possible
  + [Place local treatment recommendations here]
  + [Place local treatment recommendations here]
  + [Place local treatment recommendations here]

# Duration

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| Uncomplicated acute cystitis | Nitrofurantoin or cephalosporin: 5 days  Trimethoprim/sulfamethoxazole (TMP/SMX): 3 days |
| --- | --- |
| Uncomplicated pyelonephritis | Fluoroquinolone: 5–7 days  TMP/SMX or oral cephalosporin:10–14 days (shorter course if early response) |
| Complicated UTI (including CAUTI) | 3 days if lower tract CAUTI in women ≤ 65 years if catheter is removed/not replaced  7 days if prompt resolution of symptoms  10–14 days if delayed response, obstruction, or other urologic abnormality |

# References

Boscia JA, Kobasa WD, Abrutyn E, et al. Lack of association between bacteriuria and symptoms in the elderly. Am J Med. 1986 Dec;81(6):979-82. PMID: 3799658.

Boscia JA, Kobasa WD, Knight RA, et al. Therapy vs no therapy for bacteriuria in elderly ambulatory nonhospitalized women. JAMA. 1987 Feb 27;257(8):1067-71. PMID: 3806896.

Cai T, Mazzoli S, Mondaini N, et al. The role of asymptomatic bacteriuria in young women with recurrent urinary tract infections: to treat or not to treat? Clin Infect Dis. 2012 Sep;55(6):771-7. PMID: 22677710.

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.

Harding GK, Zhanel GG, Nicolle LE, et al. Antimicrobial treatment in diabetic women with asymptomatic bacteriuria. N Engl J Med. 2002 Nov 14;347(20):1576-83. PMID: 12432044.

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.

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.

McKenzie R, Stewart MT, Bellantoni MF, et al. Bacteriuria in individuals who become delirious. Am J Med. 2014 Apr;127(4):255-7. PMID: 24439075.

Nicolle LE. Asymptomatic bacteriuria in the elderly. Infect Dis Clin North Am. 1997 Sep;11(3):647-62. PMID: 9378928.

Nicolle LE. SHEA Long-Term-Care-Committee. Urinary tract infections in long-term-care facilities. Infect Control Hosp Epidemiol. 2001 Mar;22(3):167-75. PMID: 11310697.

Nicolle LE, Bjornson J, Harding GK, et al. Bacteriuria in elderly institutionalized men. N Engl J Med. 1983 Dec 8;309(23):1420-5. PMID: 6633618.

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.

Nicolle LE, Mayhew WJ, Bryan L. Prospective randomized comparison of therapy and no therapy for asymptomatic bacteriuria in institutionalized elderly women. Am J Med. 1987 Jul;83(1):27-33. PMID: 3300325.

Nordenstam GR, Brandberg CA, Odén AS, et al. Bacteriuria and mortality in an elderly population.   
N Engl J Med. 1986 May 1;314(18):1152-6. PMID: 3960089.

Saint S, Kaufman SR, Rogers MA, et al. Condom versus indwelling urinary catheters: a randomized trial. J Am Geriatr Soc. 2006 Jul;54(7):1055-61. PMID: 16866675.

Warren JW, Anthony WC, Hoopes JM, et al. Cephalexin for susceptible bacteriuria in afebrile, long-term catheterized patients. JAMA. 1982 Jul 23;248(4):454-8. PMID: 7045440.

Warren JW, Tenney JH, Hoopes JM, et al. A prospective microbiologic study of bacteriuria in patients with chronic indwelling urethral catheters.   
J Infect Dis. 1982 Dec;146(6):719-23. PMID: 6815281.

AHRQ Pub. No. 17(20)-0028-EF

November 2019