

SECTION 1: CLINICAL CONDITIONS

1.20 URINARY TRACT INFECTION

Urinary tract infection (UTI) refers to a spectrum of clinical presentations ranging from asymptomatic urinary infection to acute pyelonephritis with septicemia. UTI is a common infection diagnosed at the time of hospital admission or acquired during hospitalization. Annually in the United States, more than 550,000 hospital discharges occur with UTI as the primary diagnosis with an average length of stay of 4 days.¹ UTI is the most common hospital-acquired infection, and it accounts for nearly 40% of all nosocomial infections.^{2,4} Of UTIs acquired during hospitalization, approximately 75% are associated with urinary catheter use.⁵ In addition to patients who have indwelling catheters, other populations that are at greater risk for UTIs are women and older adults, as well as those who are pregnant or have diabetes mellitus. Symptomatic UTIs should be distinguished from asymptomatic bacteriuria, which is more common with advancing age and in persons with diabetes mellitus and should only be treated when it presents in pregnant women or men undergoing urologic procedures.⁶ Hospitalists diagnose, treat, and identify complications of UTI. Hospitalists can lead hospital-wide patient safety initiatives to reduce the incidence of hospital-acquired infection and emerging antibiotic resistance.

KNOWLEDGE

Hospitalists should be able to:

- Define UTI and describe the pathophysiology that leads to complicated UTI.
- Describe common symptoms and signs of UTI.
- Explain the clinical spectrum of UTI, including patient populations that may present with atypical symptoms.
- Name specific patient populations at increased risk for development of hospital-acquired or other complicated UTIs.
- Name common community-acquired and hospital-acquired urinary pathogens.
- Explain how local and national resistance patterns affect the selection of initial antibiotics.
- Distinguish UTI from sterile pyuria and from colonization.
- Explain the indications and limitations of specific tests used to diagnose UTI, its underlying causes, and complicating conditions.
- Recognize indications for specialty consultation, which may include urology or infectious disease services.
- Define risk factors for UTI.
- Describe the indications for appropriate urinary bladder catheterization for hospitalized patients.
- Differentiate the specific clinical management, including antibiotic selection for different patient populations, for patients with community-acquired UTI, hospital-acquired UTI, and incidentally recognized pyuria, as well as for patients who have chronic indwelling catheters, are pregnant, or are immunosuppressed.

- Explain the indications for hospitalization in patients with UTI.
- Explain the goals for hospital discharge, including specific measures of clinical stability for safe care transition.

SKILLS

Hospitalists should be able to:

- Elicit a focused medical history to identify risk factors for and symptoms of UTI and its known complications.
- Perform a targeted physical examination looking for signs of complicated UTI, sepsis, prostatitis, and other comorbid conditions.
- Order and interpret urinalysis and urine culture.
- Order and interpret the results of imaging studies when indicated.
- Formulate an initial care plan on the basis of patient risk factors, acute medical illness, comorbid disease, and local and national antibiotic resistance patterns.
- Adjust antibiotic therapy on the basis of subsequent culture results and determine the appropriate treatment duration.
- Apply judicious antibiotic selection to help reduce antibiotic resistance.
- Recognize and address complications of UTI and/or inadequate therapeutic response.
- Evaluate and treat patients for UTI in the perioperative setting when indicated.
- Promote and use preventive measures, which may include early removal and avoidance of unnecessary urinary catheters and other interventions to prevent UTI.
- Communicate with patients and families to explain tests and procedures and their indications and to obtain informed consent.
- Communicate with patients and families to explain the use and potential adverse effects of pharmacologic agents.
- Communicate with patients and families to explain the goals of care, discharge instructions, and management after hospital discharge to ensure safe follow-up and transitions of care.
- Document the treatment plan and provide clear discharge instructions for postdischarge clinicians, including duration of antibiotic treatment and the need for follow-up testing.
- Provide and coordinate resources to ensure safe transition from the hospital to arranged follow-up care.
- Coordinate discharge plans when patients require ongoing skilled nursing care.

ATTITUDES

Hospitalists should be able to:

- Employ a multidisciplinary approach in the care of patients with complicated UTI that begins at admission and

continues through all care transitions.

- Follow evidence-based recommendations for the diagnosis and treatment of UTI.
- Appreciate and treat patients' pain.

SYSTEM ORGANIZATION AND IMPROVEMENT

To improve efficiency and quality within their organizations, hospitalists should:

- Lead, coordinate, and/or participate in multidisciplinary initiatives to minimize use and duration of urinary catheters and to reduce the incidence of hospital-acquired UTI.
- Implement systems to ensure hospital-wide adherence to national standards and document those measures as specified by recognized organizations.
- Collaborate with local infection control practitioners to reduce the spread of resistant organisms within the institution.

References

1. Agency for Healthcare Research and Quality. Healthcare Cost and Utilization Project. U.S. Department of Health & Human Services. Available at: <http://hcupnet.ahrq.gov/>. Accessed July 2015.
2. Haley RW, Culver DH, White JW, Morgan WM, Emori TG. The nationwide nosocomial infection rate. A new need for vital statistics. *Am J Epidemiol.* 1985;121(2):159-167.
3. Haley RW, Hooton TM, Culver DH, Stanley RC, Emori TG, Hardison CD, et al. Nosocomial infections in U.S. hospitals, 1975-1976: estimated frequency by selected characteristics of patients. *Am J Med.* 1981;70(4):947-959.
4. Klevens RM, Edwards JR, Richards CL Jr, Horan TC, Gaynes RP, Pollock DA, et al. Estimating health care-associated infections and death in U.S. hospitals, 2002. *Public Health Rep.* 2007;122(2):160-166.
5. Centers for Disease Control and Prevention. Healthcare-associated infections: Catheter-associated urinary tract infections (CAUTI). Available at: http://www.cdc.gov/HAI/ca_uti/uti.html. Accessed July 2015.
6. Dull RB, Friedman SK, Risoldi ZM, Rice EC, Starlin RC, Destache CJ. Antimicrobial treatment of asymptomatic bacteriuria in noncatheterized adults: a systematic review. *Pharmacotherapy.* 2014;34(9):941-960.