

Frequent Urinary Tract Infection



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KEYWORDS

• UTI • Recurrent UTI • Cystitis • Pyelonephritis • Bacteriuria

KEY POINTS

- No treatment is required for asymptomatic bacteriuria in nonpregnant individuals.
- Identifying uncomplicated versus complicated urinary tract infections (UTIs) will help to determine necessary further workup and treatment duration.
- Recurrent UTI workup should include physical examination, imaging, and cystoscopy.
- It is important to choose antibiotic choices and duration of treatment wisely.

Urinary tract infections (UTIs) are among the most common bacterial infections, hence one of the most common complaints encountered by primary care providers. By 26 years old, 1 in 3 women will have had at least one provider-diagnosed UTI, with an annual cost of \$1.6 billion.¹ Approximately 50% to 80% of women will experience a UTI at some point in their lifetime, with 20% to 50% of women experiencing a recurrence.^{2,3}

UTIs cause significant morbidity, affecting both men and women of all ages; however, women are significantly more likely to experience a UTI than men, mainly attributable to the anatomy of the female urethra, which is significantly shorter than the male urethra, thus an easier point of entry for bacterial pathogens. Most uropathogens originate in the rectal flora and colonize the perineum and periurethral tissues. Alterations in vaginal flora, specifically the loss of hydrogen peroxide-producing lactobacilli, as is seen in the postmenopausal state, may predispose women to colonization of the vaginal introitus with uropathogens, most commonly *Escherichia coli*.⁴ This can predispose the postmenopausal female population to recurrent UTI. Other populations at increased risk of UTI include the elderly, pregnant women, patients with spinal cord injuries, indwelling or intermittent catheter users, patients with diabetes or multiple sclerosis, patients with acquired immunodeficiency disease syndrome or human immunodeficiency virus, and patients with underlying urologic abnormalities preventing adequate urinary drainage.⁵ Incomplete urinary drainage provides a reservoir for bacterial colonization and growth. However, just because someone does not empty completely does not necessarily mean they will have an issue with UTI or bacteriuria.

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Besides these populations, other risk factors for UTI include prior UTI; condom, diaphragm, or spermicide use; vaginal infection, trauma or manipulation; urinary tract instrumentation; sexual activity; obesity; and genetic susceptibility; that is, a mother with history of UTIs⁶ (**Box 1**). There is also some evidence that recurrent UTIs could stem from intracellular populations of bacteria in the bladder urothelium that are quiescent for some time and may seed recurrent infection.⁷

Definitions
UTI: inflammatory response of the urothelium to bacterial that is associated with bacteriuria
Bacteriuria: presence of bacteria in the urine, which is normally sterile
Cystitis: inflammation of the bladder often caused by infection and usually accompanied by a clinical syndrome, which may include dysuria, frequency, urgency, and/or suprapubic pressure or pain
Pyelonephritis: inflammation of the kidney caused by infection and accompanied by a clinical syndrome, which may include fevers, chills, and flank pain
Catheter-associated UTI: culture proven UTI in a patient with an indwelling catheter, suprapubic tube, or on intermittent catheterization
Asymptomatic bacteriuria: bacteria detected in the urine without any associated symptoms in the patient
Sterile pyuria: the presence of WBC in the urine without bacteriuria
Recurrent UTI: greater than or equal to 2 infections within 6 months, or greater than or equal to 3 infections in 1 year

The clinical presentation of UTI can vary but may include dysuria, frequency, urgency, incontinence, hematuria, fever, suprapubic pain, nausea, vomiting, and malaise (**Box 2**). Additionally, when a patient has a suspected UTI with associated fever and flank pain, there is a higher suspicion that pyelonephritis may be present.

Pyelonephritis is less common than cystitis and has been estimated to occur more often in women at 3 to 4 cases per 10,000, as opposed to 1 to 2 cases per 10,000 in men in the outpatient population. Pyelonephritis occurs when bacteria ascends to

Box 1 Risk factors
<ul style="list-style-type: none"> • Female gender • Sexually active • Prior UTI • Spermicide, condom, or diaphragm use • Diabetes • Obesity • Trauma or manipulation • Vaginal infection • Family history (maternal history of UTI) • First UTI at young age
<i>Adapted from</i> Foxman B. Urinary tract infection syndromes: occurrence, recurrence, bacteriology, risk factors, and disease burden. <i>Infect Dis Clin North Am</i> 2014;28(1):1–13.

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