TABLE 163-4 MANAGEMENT OF URETHRAL DISCHARGE IN MEN

Usual Causes	Usual Initial Evaluation
Chlamydia trachomatis *Neisseria gonorrhoeae* *Mycoplasma genitalium* *Ureaplasma urealyticum* *Trichomonas vaginalis* Herpes simplex virus	Demonstration of urethral discharge or pyuria Exclusion of local or systemic complications Urethral Gram's stain to confirm urethritis, detect gram-negative diplococci Test for *N. gonorrhoeae, C. trachomatis*
Initial Treatment for Patient and Partners	
Treat gonorrhea (unless excluded):	
Ceftriaxone, 250 mg IM[a] plus	Azithromycin, 1 g PO
Management of Recurrence	
Confirm objective evidence of urethritis. If patient was reexposed to untreated or new partner, repeat treatment of patient and partner.	
If patient was not reexposed, consider infection with *T. vaginalis*[b] or doxycycline-resistant *M. genitalium*[c] or *Ureaplasma*, and consider treatment with metronidazole, azithromycin, or both.	

[a]Neither oral cephalosporins nor fluoroquinolones are recommended for treatment of gonorrhea in the United States because of the emergence of increasing fluoroquinolone resistance in *N. gonorrhoeae,* especially (but not only) among men who have sex with men, and decreasing susceptibility of a still-small proportion of gonococci to ceftriaxone (Fig. 163-1). Updates on the emergence of antimicrobial resistance in *N. gonorrhoeae* can be obtained from the Centers for Disease Control and Prevention at *http://www.cdc.gov/std.* [b]In men, the diagnosis of *T. vaginalis* infection requires culture, DNA testing, or nucleic acid amplification testing (where available) of early-morning first-voided urine sediment or of a urethral swab specimen obtained before voiding. [c]*M. genitalium* is often resistant to doxycycline and azithromycin but is usually susceptible to the fluoroquinolone moxifloxacin. Until nucleic acid amplification testing for *M. genitalium* becomes commercially available, moxifloxacin can be considered for treatment of refractory nongonococcal, nonchlamydial urethritis.

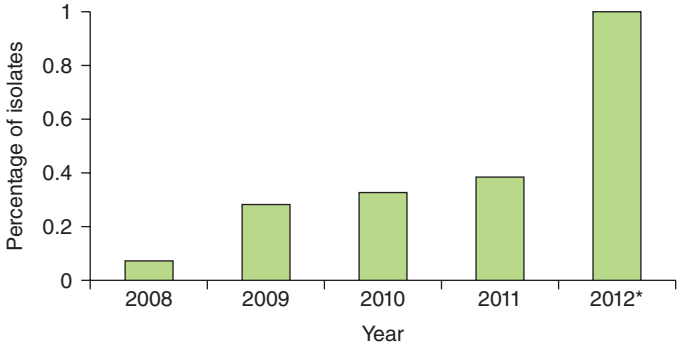

FIGURE 163-1 Proportion of *Neisseria gonorrhoeae* isolates with elevated ceftriaxone minimum inhibitory concentrations (MICs), United States 2008–2012. Elevated resistance is defined by ceftriaxone MICs of ≥0.125 μg/mL. *Preliminary (January–June). *(From the Centers for Disease Control and Prevention: Gonococcal Isolate Surveillance Project [GISP], 2013.)*

the second or third decade of life and produces a sudden onset of pain, elevation of the testicle within the scrotal sac, rotation of the epididymis from a posterior to an anterior position, and absence of blood flow on Doppler examination or ^{99m}Tc scan. Persistence of symptoms after a course of therapy for epididymitis suggests the possibility of testicular tumor or of a chronic granulomatous disease, such as tuberculosis. In sexually active men under age 35, acute epididymitis is caused most frequently by *C. trachomatis* and less commonly by *N. gonorrhoeae* and is usually associated with overt or subclinical urethritis. Acute epididymitis occurring in older men or following urinary tract instrumentation is usually caused by urinary pathogens. Similarly, epididymitis in men who have practiced insertive rectal intercourse is often caused by Enterobacteriaceae. These older men usually have no urethritis but do have bacteriuria.

TREATMENT EPIDIDYMITIS

Ceftriaxone (250 mg as a single dose IM) followed by doxycycline (100 mg by mouth twice daily for 10 days) constitutes effective treatment for epididymitis caused by *N. gonorrhoeae* or *C. trachomatis*. Neither oral cephalosporins nor fluoroquinolones are recommended for treatment of gonorrhea in the United States because of resistance in *N. gonorrhoeae,* especially (but not only) among MSM **(Fig. 163-1)**. Oral levofloxacin (500 mg once daily for 10 days) is also effective for syndrome-based initial treatment of epididymitis when infection with Enterobacteriaceae is suspected; however, this regimen should be combined with effective therapy for possible gonococcal or chlamydial infection unless bacteriuria with Enterobacteriaceae is confirmed.

URETHRITIS AND THE URETHRAL SYNDROME IN WOMEN

C. trachomatis, *N. gonorrhoeae*, and occasionally HSV cause symptomatic urethritis—known as *the urethral syndrome* in women—that is characterized by "internal" dysuria (usually without urinary urgency or frequency), pyuria, and an absence of *Escherichia coli* and other uropathogens at counts of $\geq 10^2$/mL in urine. In contrast, the dysuria associated with vulvar herpes or vulvovaginal candidiasis (and perhaps with trichomoniasis) is often described as "external," being caused by painful contact of urine with the inflamed or ulcerated labia or introitus. Acute onset, association with urinary urgency or frequency, hematuria, or suprapubic bladder tenderness suggests bacterial cystitis. Among women with symptoms of acute bacterial cystitis, costovertebral pain and tenderness or fever suggests acute pyelonephritis. **The management of bacterial urinary tract infection (UTI) is discussed in Chap. 162.**

Signs of vulvovaginitis, coupled with symptoms of external dysuria, suggest vulvar infection (e.g., with HSV or *Candida albicans*). Among dysuric women without signs of vulvovaginitis, bacterial UTI must be differentiated from the urethral syndrome by assessment of risk, evaluation of the pattern of symptoms and signs, and specific microbiologic testing. An STI etiology of the urethral syndrome is suggested by young age, more than one current sexual partner, a new partner within the past month, a partner with urethritis, or coexisting mucopurulent cervicitis (see below). The finding of a single urinary pathogen, such as *E. coli* or *Staphylococcus saprophyticus*, at a concentration of $\geq 10^2$/mL in a properly collected specimen of midstream urine from a dysuric woman with pyuria indicates probable bacterial UTI, whereas pyuria with $<10^2$ conventional uropathogens per milliliter of urine ("sterile" pyuria) suggests acute urethral syndrome due to *C. trachomatis* or *N. gonorrhoeae*. Gonorrhea and chlamydial infection should be sought by specific tests (e.g., NAATs of vaginal secretions collected with a swab). Among dysuric women with sterile pyuria caused by infection with *N. gonorrhoeae* or *C. trachomatis*, appropriate treatment alleviates dysuria. The role of *M. genitalium* in the urethral syndrome in women remains undefined.

VULVOVAGINAL INFECTIONS

Abnormal Vaginal Discharge If directly questioned about vaginal discharge during routine health checkups, many women acknowledge having nonspecific symptoms of vaginal discharge that do not correlate with objective signs of inflammation or with actual infection. However, unsolicited reporting of abnormal vaginal discharge does suggest bacterial vaginosis or trichomoniasis. Specifically, an abnormally increased amount or an abnormal odor of the discharge is associated with one or both of these conditions. Cervical infection with *N. gonorrhoeae* or *C. trachomatis* does not often cause an increased amount or abnormal odor of discharge; however, when these pathogens cause cervicitis, they—like *T. vaginalis*—often result in an increased number of neutrophils in vaginal fluid, which thus takes on a yellow color. Vulvar conditions such as genital herpes or vulvovaginal candidiasis can cause vulvar pruritus, burning, irritation, or lesions as well as external dysuria (as urine passes over the inflamed vulva or areas of epithelial disruption) or vulvar dyspareunia.