Updated recommended treatment regimens for gonococcal infections and associated conditions — United States, April 2007

Ongoing data from CDC 's Gonococcal Isolate Surveillance Project (GISP), including preliminary findings from 2006, demonstrate that fluoroquinolone-resistant gonorrhea is continuing to spread and is now widespread in the United States. As a consequence, and as reported in the MMWR, April 13, 2007, this class of antibiotics is no longer recommended for the treatment of gonorrhea in the United States. Treatment recommendations have been updated accordingly, and are provided below.

Uncomplicated Gonococcal Infections of the Cervix, Urethra, and Rectum*

Recommended Regimens
Ceftriaxone 125 mg IM in a single dose
OR
Cefixime† 400 mg orally in a single dose or 400 mg by suspension (200 mg/5ml)
PLUS
TREATMENT FOR CHLAMYDIA IF CHLAMYDIAL INFECTION IS NOT RULED OUT
* This regimen is recommended for all adult and adolescent patients, regardless of travel history or sexual behavior.
† The tablet formulation of cefixime is currently not available in the United States.

Alternative Regimens
Spectinomycin† 2 g in a single intramuscular (IM) dose
OR
Single-dose cephalosporin regimens
†Spectinomycin is currently not available in the United States.

Other single-dose cephalosporin therapies that are considered alternative treatment regimens for uncomplicated urogenital and anorectal gonococcal infections include ceftizoxime 500 mg IM; or cefoxitin 2 g IM, administered with probenecid 1 g orally; or cefotaxime 500 mg IM. Some evidence indicates that cefpodoxime 400 mg and cefuroxime axetil 1 g might be oral alternatives.

Uncomplicated Gonococcal Infections of the Pharynx*

Recommended Regimens
Ceftriaxone 125 mg IM in a single dose
PLUS
TREATMENT FOR CHLAMYDIA IF CHLAMYDIAL INFECTION IS NOT RULED OUT
* These regimens are recommended for all adult and adolescent patients, regardless of travel history or sexual behavior.

Disseminated Gonococcal Infection (DGI)

Recommended Regimen
Ceftriaxone 1 g IM or IV every 24 hours

Alternative Regimens
Cefotaxime 1 g IV every 8 hours
OR
Ceftizoxime 1 g IV every 8 hours
OR
Spectinomycin † 2 g IM every 12 hours
†Spectinomycin is currently not available in the United States.

A cephalosporin-based intravenous regimen is recommended for the initial treatment of DGI. This is particularly important when gonorrhea is detected at mucosal sites by nonculture tests. Spectinomycin is not currently available in the United States; updated information regarding its availability can be found at http://www.cdc.gov/std/gonorrhea/arg. Treatment should be continued for 24–48 hours after clinical improvement, at which time therapy may be switched to one of the following regimens to complete at least 1 week of antimicrobial therapy.

Cefixime † 400 mg orally twice daily
OR
Cefixime suspension 400 mg by suspension (200 mg/5ml) twice daily
OR
Cefpodoxime 400 mg orally twice daily
† The tablet formulation of cefixime is currently not available in the United States

Fluoroquinolones may be an alternative treatment option if antimicrobial susceptibility can be documented by culture. With use of nonculture tests to diagnose *N. gonorrhoeae* increasing and with local data on antimicrobial susceptibility less available, laboratories should maintain the capacity to conduct such testing or form partnerships with laboratories that can.

Pelvic Inflammatory Disease (PID)

Parenteral Treatment

Parenteral and oral therapy appear to have similar clinical efficacy treating women with PID of mild or moderate severity. Clinical experience should guide decisions regarding transition to oral therapy, which usually can be initiated within 24 hours of clinical improvement.

Recommended Parenteral Regimen A
Cefotetan 2 g IV every 12 hours
OR
Cefoxitin 2 g IV every 6 hours
PLUS
Doxycycline 100 mg orally or IV every 12 hours

Recommmended Parenteral Regimen B
Clindamycin 900 mg IV every 8 hours
PLUS
Gentamicin loading dose IV or IM (2 mg/kg of body weight), followed by a maintenance dose (1.5 mg/kg) every 8 hours. Single daily dosing may be substituted.

Alternative Parenteral Regimens

Ampicillin/Sulbactam 3 g IV every 6 hours
PLUS
Doxycycline 100 mg orally or IV every 12 hours

Oral Treatment

Oral therapy can be considered for women with mild-to-moderately severe acute PID, as the clinical outcomes among women treated with oral therapy are similar to those treated with parenteral therapy. Women who do not respond to oral therapy within 72 hours should be reevaluated to confirm the diagnosis and should be administered parenteral therapy on either an outpatient or in-patient basis.

Recommended Oral Regimen

Ceftriaxone 250 mg IM in a single dose
PLUS
Doxycycline 100 mg orally twice a day for 14 days
WITH OR WITHOUT
Metronidazole 500 mg orally twice a day for 14 days

OR

Cefoxitin 2 g IM in a single dose and **Probenecid**, 1 g orally administered concurrently in a single dose
PLUS
Doxycycline 100 mg orally twice a day for 14 days
WITH OR WITHOUT
Metronidazole 500 mg orally twice a day for 14 days

OR

Other parenteral third-generation **cephalosporin** (e.g., **ceftizoxime** or **cefotaxime**)
PLUS
Doxycycline 100 mg orally twice a day for 14 days
WITH OR WITHOUT
Metronidazole 500 mg orally twice a day for 14 days

Alternative Oral Regimens

If parenteral cephalosporin therapy is not feasible, use of fluoroquinolones (levofloxacin 500 mg orally once daily or ofloxacin 400 mg twice daily for 14 days) with or without metronidazole (500 mg orally twice daily for 14 days) may be considered if the community prevalence and individual risk (see "Gonococcal Infections in Adolescents and Adults" in Sexually Transmitted Disease Treatment Guidelines, 2006) of gonorrhea is low. Tests for gonorrhea must be performed prior to instituting therapy and the patient managed as follows if the test is positive:

o If NAAT test is positive, parenteral cephalosporin is recommended.

o If culture for gonorrhea is positive, treatment should be based on results of antimicrobial susceptibility. If isolate is QRNG, or antimicrobial susceptibility can't be assessed, parenteral cephalosporin is recommended.

Although information regarding other outpatient regimens is limited, amoxicillin/clavulanic acid and doxycycline or azithromycin with metronidazole has demonstrated short-term clinical cure. No data has been published regarding the use of oral cephalosporins for the treatment of PID.

Epididymitis

Since empiric therapy is often initiated before laboratory tests are available, it is recommended that all patients receive ceftriaxone plus doxycycline for the initial therapy of epididymitis. Additional therapy may include a quinolone if acute epididymitis is not caused by gonorrhea (i.e., results from culture or nucleic acid amplification testing are negative for *N. gonorrhoeae*) or if the infection is most likely caused by enteric organisms.

> ***Recommended Regimens***
>
> **Ceftriaxone** 250 mg IM in a single dose
> **PLUS**
> **Doxycycline** 100 mg orally twice a day for 10 days
>
> ***For acute epididymitis most likely caused by enteric organisms or with negative gonococcal culture or nucleic acid amplification test***
>
> **Ofloxacin** 300 mg orally twice a day for 10 days
> **OR**
> **Levofloxacin** 500 mg orally once daily for 10 days

Severe Adverse Reactions to Penicillins or Cephalosporins

Immediate (30-60 minutes after administration) and accelerated (1-12 hours after administration) immunoglobin E mediated anaphylactic or urticarial reactions to cephalosporins are rare relative to those associated with penicillin. Reactions to first generation cephalosporins occur in approximately 5-10% of persons with a history of penicillin allergy, and occur less frequently in those administered third generation regimens. Cephalosporin reactions occur in approximately 5-10% of persons with a history of penicillin allergy. However, medical history and penicillin skin

test results do not reliably predict the probability of allergic reactions to cephalosporins in those with history of penicillin allergy. Persons who can not tolerate cephalosporins should be treated with spectinomycin, if available. Because spectinomycin is not adequately effective against pharyngeal infections, patients who have suspected or known pharyngeal infection should have a pharyngeal culture evaluated 3-5 days after treatment to verify eradication of infection.

Since there are limited data regarding alternative regimens for treating gonorrhea among persons who have documented severe cephalosporin allergy, expert infectious diseases consultation is recommended; the best available treatment option is cephalosporin treatment following desensitization. If desensitization is not an option, azithromycin may be considered. Azithromycin 2 grams orally is effective against uncomplicated gonococcal infection, but concerns over emerging antimicrobial resistance to macrolides should restrict its use to limited circumstances.