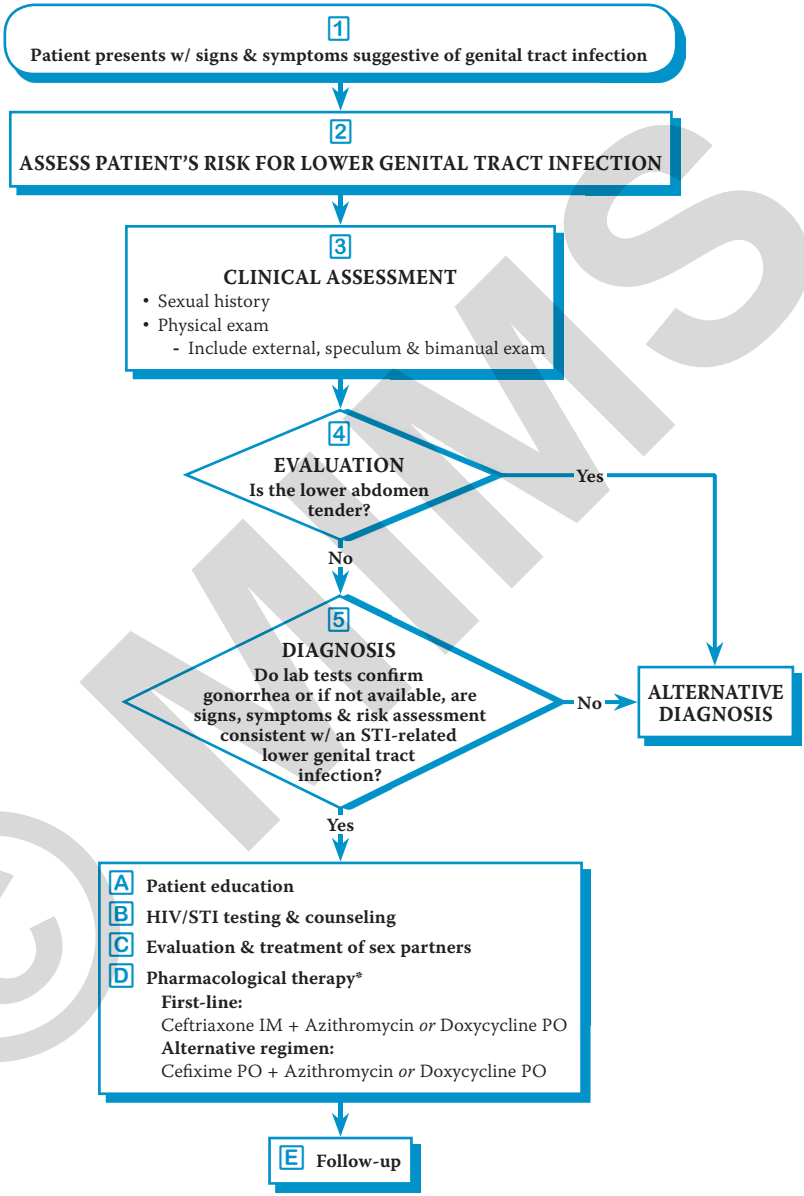
Gonorrhea - Uncomplicated Anogenital Infection (1 of 10)



*According to the 2019 British Association for Sexual Health and HIV (BASHH) national guideline for the management of infection w/ *Neisseria gonorrhoeae*, when antimicrobial susceptibility is unknown prior to treatment, Ceftriaxone 1 g IM single dose monotherapy is given; if it is known, Ciprofloxacin 500 mg oral single dose is given

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Specific prescribing information may be found in the latest MIMS.

1 SIGNS & SYMPTOMS

- Gonorrhea is a sexually or vertically transmitted infection secondary to Gram-negative diplococcus *Neisseria gonorrhoeae*
- It is one of the most common sexually transmitted bacterial infections that may cause pelvic inflammatory disease (PID) leading to infertility or ectopic pregnancy
- Most of the infected females are asymptomatic, but may present w/:
  - Increased or altered vaginal discharge - most common
  - Dysuria
  - Urethral discharge
  - Abnormal vaginal bleeding
  - Vulval itching or burning
  - Dyspareunia
  - Conjunctivitis
  - Proctitis

2 RISK ASSESSMENT

- In some settings, certain demographic & behavioral risk factors have been frequently associated w/ lower genital tract infection (the following risk factors should be adjusted for local social, behavioral & epidemiological situations)
- Women w/ positive risk assessment (w/ ≥1 risk factor present) have a higher likelihood of lower genital tract infection than those who are risk-negative
- Women w/ vaginal discharge & positive risk assessment should be offered treatment for gonococcal & chlamydial cervicitis
- All sexually active women at high risk are advised to undergo annual screening for gonorrhea infection
- Screening of pregnant women is recommended during the 1st prenatal visit & during the 3rd trimester if the women continue to be at risk

Risk Factors

- <25 years old
- Unmarried
- History of previous or concurrent sexually transmitted infection (STI)
- New or >1 sex partner in the last 3 months
- Sex partner currently has an STI
- Sex partner w/ concurrent partners
- Inconsistent use of condom
- Street involvement (youth on the streets, sex workers)
- Injection drug use
- Commercial sex worker

3 CLINICAL ASSESSMENT

History

- Inquire regarding patient's sexual activities & identify possible risk factors

Physical Exam

- Perform general assessment & look for signs of STI
- Examine mucocutaneous regions including the conjunctivae, pharynx & endocervix
- External genitalia should be inspected for anatomical irregularities, cutaneous lesions, inflammation, & urethral discharge
- Perianal inspection
  - Digital rectal exam & anoscopy should be considered if patient has practiced receptive anal intercourse or has rectal symptoms
  - Colonization can take place even without anal intercourse
- Inguinal lymph nodes should be palpated

Illuminated Speculum Exam

- Visualize cervix & vaginal walls
- Evaluate vaginal & endocervical vaginal discharges
- Observe for cervical mucopus, erosions & friability which may be associated w/ cervical infections
- If resources are available, obtain specimens
  - Cervical swab for *Chlamydia* test & gonorrhea culture
  - Vaginal swab for Gram stain & *Trichomonas* slide

Bimanual Pelvic Exam

- Detect uterine or adnexal masses, tenderness or cervical motion tenderness

4 EVALUATION

- A finding of lower abdominal tenderness or cervical motion tenderness should prompt the attending physician to evaluate the patient for PID
  - Treat patient accordingly *(Please see Pelvic Inflammatory Disease disease management chart for further information)*
- Differential diagnoses may also include other surgical or gynecological conditions

5 DIAGNOSIS

- Syndromic management approach may be used in health care facilities where equipment & trained personnel for determining STI etiology are not available
- Syndromic management is based on consistent groups of symptoms & easily recognized signs
  - Treatment will cover the most common or serious organisms involved in causing the syndrome
  - Using syndromic management in cases of vaginal discharge is limited especially if lower genital tract infections are the cause (gonococcal or chlamydial)

Lab Tests

- If resources permit, lab tests to screen women w/ vaginal discharge should be considered
- Screening for other possible STIs, especially *C trachomatis,* should be done in patients w/ or at risk of gonorrhea
  - *Please see Chlamydia-Uncomplicated Anogenital Infection disease management chart for further information*
- It is recommended that patients, who tested negative within 2 weeks of sexual contact w/ an infected partner, be tested again after this window period if they have not yet received epidemiological treatment

Lab Exams for *N gonorrhoeae*

- Identification of *N gonorrhoeae* at infected site establishes the diagnosis
  - Gram-negative intracellular diplococci present in an endocervical smear indicates probable gonorrhea
  - Gram-negative, oxidase-positive diplococci isolated by culture or *N gonorrhoeae* demonstrated through antigen or nucleic acid detection confirms gonorrhea
- Microscopic examination of Gram-stained smears of endocervical discharge can be used as an initial test to provide an immediate presumptive diagnosis of gonorrhea
  - Permits direct visualization of *N gonorrhoeae* as monomorphic Gram-negative diplococci within polymorphonuclear leukocytes
  - Microscopic exam of vaginal discharge may be attempted in settings where the Gram stain may be carried out in an efficient manner; however, the sensitivity of the procedure for vaginal discharge specimens is lower compared to urethral specimens in males
  - Urethral smear is less sensitive than endocervical smear
- Culture
  - Recommended for pharyngeal & rectal specimens
  - Readily allows antimicrobial susceptibility testing & monitoring, confirmatory identification, & treatment failure evaluation
    - Only method used to evaluate efficacy of antibiotic treatment, eg "test of cure"
  - Specificity & sensitivity are 100% & 61.8-92.6%, respectively
  - May be negative if obtained <48 hours after exposure
  - Should be obtained in all cases diagnosed by NAATs before an antibiotic is given
    - Allows testing of susceptibility & identifying resistant strains
  - Intracervical swab specimen is more reliable for culture during menstruation
- Nucleic acid amplification tests (NAAT)
  - Most sensitive (>95%) & specific (93.9-100%) test available for *C trachomatis* & *N gonorrhoeae*
  - Most useful when patients resist pelvic exam
  - May be done at the time of presentation or even <48 hours after exposure
  - Utilizes single sample to test both *Chlamydia* & gonorrhea
  - Specimens that may be used are endocervical swab, urethral discharge or self-obtained vaginal swab
    - Recommended specimen is the self- or physician-obtained vulvovaginal swab
- Routine use of the following lab tests is not recommended: Nucleic acid hybridization or probe test, nucleic acid genetic transformation test, direct fluorescent antibody test, enzyme immunoassay, & serological test
- For individuals who have undergone genital reconstructive surgery (GRS), the following specimens may be considered:
  - Gram-stained smear for microscopy from a bowel segment neovagina
  - First-pass urine & neovaginal swabs for transgender women
  - Vaginal swab if vagina is still present after GRS as directed by patient's symptoms & sexual history

A PATIENT EDUCATION

- Patient needs to be informed about the nature of the infection & the importance of taking full course of the medication
- Counsel patients on possible complications of STI & the need to have their partners evaluated & treated

Advise patients on how to lower their risk of acquiring STIs:

- Tailor counseling to the patient's specific risk factors
- Abstinence, condom use
- Limited number & careful selection of partners

B HIV/STI TESTING & COUNSELING

- STI consultation allows for an opportunity to discuss patient's risk factors for STIs & HIV
- Determine patient's risk for HIV & discuss HIV testing
- Testing for HIV is recommended & should be offered to all persons seeking evaluation & treatment for STIs
  - Pretest & post-test counseling, as well as informed consent, are part of the testing procedure
  - Concomitant infection w/ HIV may complicate management & control of some STIs
    - Treatment of gonococcal infection in patients w/ HIV is similar to patients who are HIV-negative
  - Gonococcal infection aids in transmission & increases susceptibility to HIV

C EVALUATION & TREATMENT OF SEX PARTNERS

- Sex partners of STI patients may be asymptomatic, thus the importance for partner notification & management
- Sex partners of STI patients are likely to be infected & should be offered treatment to prevent further STI transmission & reinfection
- All partners who had sexual contact w/ the patient within 60 days of the diagnosis of infection should be evaluated & treated for both gonococcal & chlamydial infection
  - If patient's previous sexual intercourse was >60 days before diagnosis, the latest sexual partner should be evaluated & treated
- For patients who present within 14 days of exposure, it is recommended to give epidemiological treatment; for those who present after 14 days of exposure, treat based on testing results
- Patients & their sex partners should be instructed to abstain from sexual intercourse until they & their partners have completed the treatment
  - Continue abstinence x 7 days after a single-dose regimen or until the completion of a 7-day regimen

Partner-delivered Therapy

- In situations where concerns exist that the sex partners of a female patient w/ gonorrhea will not seek treatment, the patient may be the one to deliver therapy to their partners in the form of medication or a prescription
- Partner-delivered therapy for gonorrhea should always include treatment for *Chlamydia*
- The approach may not be permitted in some settings

D PHARMACOLOGICAL THERAPY

Syndromic Management

In areas where resources allow for lab tests to screen women

- Empiric therapy should be considered when:
  - Prevalence of *N gonorrhoeae & C trachomatis* is high in the patient population & the patient is unlikely to return for treatment

In areas where lab tests to screen women are not available

- The justification for empiric treatment becomes stronger as the prevalence of gonorrheal & chlamydial infections in the patient population becomes higher
  - Patients w/ positive risk assessment & vaginal discharge should be offered treatment for gonococcal & chlamydial cervicitis

D PHARMACOLOGICAL THERAPY (CONT'D)

Dual therapy for N gonorrhoeae & C trachomatis is recommended because patients infected w/ N gonorrhoeae are often co-infected w/ C trachomatis

- Routine dual therapy can be cost-effective for populations in which chlamydial infection accompanies 10-30% of gonococcal infections because the cost of therapy for chlamydial infection is less than the cost of testing
- A specific diagnosis may enhance partner notification, improve compliance w/ treatment, & decrease antibiotic exposure & expense
- If the proper diagnostic tools are not available, patients should be treated for both infections
- *Please see Chlamydia-Uncomplicated Anogenital Infection disease management chart for further information*

Treatment for Uncomplicated Anogenital *N gonorrhoeae* Infection

- Treatment w/ the most effective agents will reduce gonorrhea infection transmission, prevent complications, & will probably slow down emergence of antimicrobial resistance
- Information about sexual behavior & recent travel history are important to ensure suitability of treatment given
- Directly observed, single-dose therapy for *N gonorrhoeae* is recommended to enhance compliance
- Antimicrobial therapy should consider local patterns of antimicrobial sensitivity to *N gonorrhoeae*
  - Many gonococcal isolates are now resistant to sulfonamides, penicillins, tetracyclines & quinolones
  - If local resistance data are unavailable, dual therapy is suggested over single therapy for treatment of genital gonorrhea
    - Dual therapy is also recommended due to the emerging resistance to cephalosporins & the lack of alternative 1st-line agents

Cephalosporins

- Ceftriaxone
  - Considered as the most effective treatment for uncomplicated gonorrhea, in combination w/ a single oral dose of Azithromycin or 7-day regimen of Doxycycline
    - Doxycycline is used in patients allergic to or intolerant of Azithromycin
  - May also be given in pregnant patients except for Doxycycline
  - Studies have shown that single IM injection of 250-mg dose provides high & maintained bactericidal levels in the blood
  - Effective treatment for *N gonorrhoeae* infections at all sites
- Cefixime
  - Currently not recommended as a 1st-line treatment option for patients w/ gonococcal infections due to evidences that showed increased minimum inhibitory concentrations that may predict emergence of *N gonorrhoeae* resistance
    - Studies have shown that 400-mg single oral dose does not provide sustained & high bactericidal levels as compared to single IM dose of Ceftriaxone
    - Also showed limited effectiveness in treating pharyngeal gonorrhea
  - May be given as an alternative agent if Ceftriaxone is not available or if patient refused or has contraindications to IM injection
    - Patient should be advised to return for a test-of-cure at the site of infection after 1 week
- Alternative agents: Single-dose cephalosporins (Cefotaxime, Ceftizoxime, Cefoxitin w/ Probenecid *or* Cefpodoxime)
  - Have no advantage over Ceftriaxone or Cefixime in terms of efficacy or pharmacokinetics

Spectinomycin

- May be used as an alternative regimen in combination w/ a single oral dose of Azithromycin in patients allergic to cephalosporins or in patients who are pregnant

Macrolides

- Azithromycin
  - Preferred 2nd antimicrobial agent in addition to Ceftriaxone irrespective of *Chlamydia* testing results
    - Better than Doxycycline due to its convenience & increased compliance of single-dose therapy, & lower prevalence of gonococcal resistance
  - May be an option in persons known to have severe allergy to cephalosporins; however, monotherapy for gonorrhea treatment is not recommended due to increasing gonococcal resistance
  - May be considered in pregnant women only if other drug alternatives are unavailable & if isolate is determined to be susceptible

D PHARMACOLOGICAL THERAPY (CONT'D)

Quinolones

- No longer recommended for gonorrhea treatment in many areas due to increasing resistance rate
- Quinolone-resistant *N gonorrhoeae* (QRNG) is common in parts of Europe, US, Middle East, Asia & the Pacific
- There are variations in the anti-gonococcal activity of individual quinolones & it is necessary to use only the most active according to local resistance patterns
- May be used in areas where prevalence of resistance is <5%
  - May be given if an infection is known as quinolone-sensitive prior to treatment
- When quinolone resistance has been excluded, these may be given as alternative agents in patients w/ cephalosporin allergy or penicillin anaphylaxis

Other Treatment Regimens

- Injectable Gentamicin or oral Gamifloxacin combined w/ oral Azithromycin are new antibiotic regimens which have shown high rates of effectivity in treating genital gonorrhea
  - May be considered an option when Ceftriaxone cannot be given (eg severe allergic reaction or resistance)
  - Adverse effects are mostly gastrointestinal
- Other therapeutic agents currently being investigated for gonorrhea treatment include Ertapenem, Solithromycin, Zoliflodacin, Gepotidacin, Delafloxacin, Sitafloxacin & Avarofloxacin

E FOLLOW-UP

- Helpful to confirm compliance of patient w/ the treatment, ensure resolution of symptoms, inquire about possibility of re-infection, adverse reaction to treatment, or treatment failure & drug resistance, & check on partner notification
- Some authorities have recommended that test of cure should be done in all patients w/ gonococcal infection giving priority to those w/ persistent signs or symptoms after the treatment & those patients treated w/ alternative regimens w/ unknown antimicrobial susceptibility
  - Test-of-cure should be done 1 week after completion of treatment
    - Others have recommended test of cure to be done 72 hours after completion of therapy in patients w/ persistent signs & symptoms or 2 weeks after in asymptomatic patients
    - Ideally performed w/ culture or, if not available, w/ NAAT (2 weeks after treatment) for *N gonorrhoeae*
      - Confirmatory culture should be done if NAAT's result is positive; if culture is positive, phenotypic antimicrobial susceptibility testing should be performed
- Pregnant women should be retested 3 months after therapy & during the 3rd trimester if risk for gonococcal infection is high
- Culture of relevant specimens & susceptibility testing of *N gonorrhoeae* should be done in patients who have failed w/ the recommended treatment regimen & re-treat according to susceptibility results
- If treatment failure happened after single therapy, re-treat w/ dual therapy; if treatment failure happened after dual therapy, re-treat w/ a dual therapy of higher dose
- Patients who had treatment failure w/ alternative regimens should be treated w/ Ceftriaxone & Azithromycin & be referred to an infectious disease specialist for further management
- Due to the emerging resistance to extended-spectrum cephalosporins in *N gonorrhoeae,* criteria for probable gonorrhea treatment failure include the following:
  - Patient w/ laboratory-confirmed *N gonorrhoeae* infection & treated w/ cephalosporin-based regimen & subsequently tested positive for *N gonorrhoeae* (culture positive ≥72 hours after treatment or NAAT positive ≥7 days after treatment) & without sexual activity following treatment &
  - Pre- or post-treatment antimicrobial susceptibility testing of *N gonorrhoeae* isolates showed Ceftriaxone MIC ≥0.125 mcg/mL or Cefixime MIC ≥0.25 mcg/mL
- Infections identified after treatment
  - Typically are due to reinfection which should be distinguished from treatment failure prior to retreatment
    - Reinfected patients are re-treated w/ the recommended regimen, sexual abstinence or condom use is reinforced & partner is treated
  - There may be a need for improved patient education & referral of sex partners

Dosage Guidelines

AMINOGLYCOSIDES

Drug	Dosage	Remarks
Gentamicin	5 mg/kg body wt IM 24 hrly	**Adverse Reactions** • Ototoxic effects (impaired hearing, dizziness, tinnitus); Renal effects (elevated serum creatinine, oliguria); CNS effects (muscular tics, convulsions, cramps, headache, confusion); Hypersensitivity reactions; Metabolic effects (elevated transaminases, alkaline phosphatases & serum bilirubin, reduced Ca, Mg & K levels); Hematologic effects (anemia, leukopenia, transient agranulocytosis); Other effects (N/V, dyspnea, visual disturbances, loss of appetite) **Special Instructions** • Monitor serum levels & auditory/vestibular function in patients w/ renal impairment • Use w/ caution in patients w/ conditions associated w/ muscle weakness (eg myasthenia gravis, Parkinson's), patients w/ preexisting renal dysfunction, vestibular or cochlear impairment, or hypocalcemia
Kanamycin	1-2 g/day IM divided 12-24 hrly	**Adverse Reactions** • Ototoxic effects (irreversible ototoxicity resulting in hearing loss, dizziness, vertigo); Renal effects (reversible nephrotoxicity, acute renal failure when other nephrotoxic drugs have been administered); Neuromuscular effects (neuromuscular paralysis, gait instability); Hypersensitivity reactions **Special Instructions** • High plasma levels increase the risk of nephrotoxicity & ototoxicity; therefore, monitoring serum concentrations by measuring peak & trough levels is recommended • Use w/ caution in patients w/ conditions associated w/ muscle weakness (eg myasthenia gravis, Parkinson's), patients w/ preexisting renal dysfunction, vestibular or cochlear impairment, or hypocalcemia

ANTIBACTERIAL COMBINATIONS

Drug	Dosage	Remarks
Co-trimoxazole [Sulfamethoxazole (SMZ) & Trimethoprim (TM)]	800 mg SMZ/160 mg TM PO 12 hrly for 2 days **Long-term treatment:** 400 mg SMZ/80 mg TM PO 12 hrly for ≥14 days	**Adverse Reactions** • GI effects (N/V, anorexia, diarrhea); Dermatological effects (rash, pruritus, photosensitivity); Hypersensitivity reactions (Stevens-Johnson syndrome) **Special Instruction** • Contraindicated in patients allergic to sulfonamides • Use w/ extreme caution or not at all in patients w/ hematological disorders especially megaloblastic anemia due to folic acid deficiency • Use w/ caution in patients w/ renal impairment or severe hepatic dysfunction & those w/ folate deficiency

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Dosage Guidelines

CEPHALOSPORINS

Drug	Dosage	Remarks
First Generation		
Cefalexin (Cephalexin)	250-500 mg PO 6 hrly	**Adverse Reactions** • Hypersensitivity reactions (urticaria, pruritus, rash, severe reactions eg anaphylaxis); GI effects (diarrhea, N/V, rarely antibiotic-associated diarrhea/colitis); CNS effects (headache, vertigo, fatigue); Other effect (candidal infections) • High doses may be associated w/ CNS effects (encephalopathy, convulsions); Rarely hematologic, hepatic & renal effects have occurred • Prolonged prothrombin time (PT), prolonged activated partial thromboplastin time (aPTT), &/or hypoprothrombinemia (w/ or without bleeding) have been reported & occur most frequently w/ NMTT side chain-containing cephalosporins **Special Instructions** • May be taken w/ food to decrease gastric distress • Use w/ caution in patients allergic to Penicillin, there may be 10% chance of cross sensitivity • Use w/ caution in patients w/ renal impairment or GI disease (eg colitis)
Second Generation		
Cefoxitin	2 g IM as a single dose ***Plus*** Probenecid 1 g PO as a single dose	
Cefuroxime	1 g PO as a single dose ***or*** 1.5 g IM as a single dose w/ Probenecid 1 g PO	
Third Generation		
Cefixime	400 mg PO as a single dose ***Plus*** Azithromycin or Doxycycline[1]	
Cefoperazone	500 mg IM as a single dose	
Cefotaxime	500 mg-1 g IM as a single dose	
Cefpodoxime	200 mg PO as a single dose	
Ceftizoxime	1 g IM as a single dose	
Ceftriaxone	250-500 mg IM as a single dose ***Plus*** Azithromycin or Doxycycline[1]	
Cephalosporin w/ β-Lactamase Inhibitor		
Cefoperazone/ sulbactam	2-4 g/day or 1.5-3 g/day IV/IM divided 12 hrly (1:1) ratio **Max dose:** 4 g/day of sulbactam	

[1]Please see dosage recommendations under Macrolide & Tetracycline dosage guideline tables.

MACROLIDES

Drug	Dosage	Remarks
Azithromycin	**If given w/ cephalosporin:** 1 g PO as a single dose **For patients w/ severe cephalosporin allergy:** 2 g PO as a single dose	**Adverse Reactions** • GI effects (N/V, abdominal discomfort, diarrhea & other GI disturbances, antibiotic-associated diarrhea/colitis); Other effect (candidal infections) • Hypersensitivity reactions are uncommon (urticaria, pruritus, rash, rarely anaphylaxis); Rarely altered cardiac conduction, hepatotoxicity; Dose-related tinnitus/hearing loss has occurred w/ some macrolides **Special Instructions** • May take w/ food to decrease gastric distress • Use w/ caution in patients w/ hepatic dysfunction & severe renal impairment

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Dosage Guidelines

MACROLIDES (CONT'D)		
Drug	**Dosage**	**Remarks**
Erythromycin	**Erythromycin estolate:** 250-500 mg PO 6 hrly **Erythromycin ethylsuccinate:** 400-800 mg PO 6 hrly **Erythromycin lactobionate:** 25-50 mg/kg/day IV divided 6 hrly **or** 1-2 g/day IV 6 hrly **Erythromycin stearate:** 250-500 mg PO 6 hrly	**Adverse Reactions** • GI effects (N/V, abdominal pain, diarrhea); Other effects (seizure, urticaria, anaphylaxis, inj site phlebitis, weakness, ventricular arrhythmia, hearing loss, abnormal LFTs) **Special Instructions** • May take w/ food to decrease gastric distress • Use w/ caution in patients w/ hepatic impairment, myasthenia gravis • Avoid in patients w/ hypersensitivity to Erythromycin, any macrolide antibiotics, or any component of the formulation

PENICILLINS		
Drug	**Dosage**	**Remarks**
Benzylpenicillin Na/procaine benzylpenicillin	1.2-2.4 MIU IM as single dose	**Adverse Reactions** • Hypersensitivity reactions (rash, urticaria, pruritus, severe reactions eg anaphylaxis can occur); GI effects (diarrhea, N/V, rarely antibiotic-associated diarrhea/colitis); Other effect (candidal infections) • Rarely hematologic effects; renal & hepatic effects have occurred; high doses may be associated w/ CNS effects (encephalopathy, convulsions) **Special Instructions** • Avoid in patients w/ Penicillin allergy • Use w/ caution in patients w/ renal impairment
Aminopenicillins w/ or without β-Lactamase Inhibitors		
Amoxicillin (Amoxycillin)	3 g PO as a single dose or divided 12 hrly	
Amoxicillin/ clavulanic acid (Amoxicillin/ clavulanate, Co-amoxiclav)	375-625 mg PO 8 hrly	
Ampicillin	500 mg IM/IV 4-6 hrly **or** 500 mg 2 doses IM/IV 8-12 hrly **or** 2-4 g IV infusion 24 hrly in 1 or 2 equal doses over 1-2 hr	
Ampicillin/ sulbactam (Sultamicillin: Pro-drug of Ampicillin/ sulbactam)	2.25 g PO as single dose ***or*** 1.5 g IM/IV as single dose ***plus*** Probenecid 1 g PO	
Antipseudomonal Penicillin w/ β-Lactamase Inhibitor		
Piperacillin/ tazobactam	2 g IM as a single dose May be given Probenecid 1 g PO 30 min prior to inj	

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Dosage Guidelines

QUINOLONES

Drug	Dosage	Remarks
Ciprofloxacin	250-500 mg PO as a single dose	**Adverse Reactions** • GI effects (N/V, diarrhea, abdominal pain, dyspepsia, diarrhea, rarely antibiotic-associated diarrhea/colitis); CNS effects (headache, dizziness, sleep disorders, restlessness, drowsiness); Dermatologic effects (rash, pruritus, photosensitivity); Hypersensitivity reactions can range from mild (eg rash) to severe/life-threatening (eg Stevens-Johnson syndrome) • Rarely hematologic effects; hepatic & renal effects • Some quinolones have the potential to prolong the QT interval **Special Instructions** • Administer at least 2 hr before or 3 hr after Al- or Mg-containing antacids, dietary supplements containing Zn or Fe or buffered Didanosine preparations • Avoid exposure to strong sunlight or tanning beds • Use w/ caution in patients w/ epilepsy or history of CNS disorders, in patients w/ impaired renal or hepatic function & in those w/ G6PD deficiency
Levofloxacin	250-500 mg PO 12-24 hrly	
Norfloxacin	800 mg PO as a single dose	
Ofloxacin	400 mg PO 24 hrly for 7 days	
Pipemidic acid	400 mg PO 12 hrly	

TETRACYCLINES

Drug	Dosage	Remarks
Doxycycline	**Given w/ cephalosporin:** 100 mg PO 12 hrly x 7 days	**Adverse Reactions** • GI effects (N/V, diarrhea, antibiotic-associated diarrhea/colitis, dysphagia, esophageal ulceration when taken w/ an insufficient amount of liquid); Dermatologic effect (photosensitivity); Other effects (candidal infections, discoloration of teeth, interference w/ bone growth in young infants/pregnant women) • Rarely renal dysfunction, hepatotoxicity, hematologic effects, increased intracranial pressure w/ headache & visual disturbances; Hypersensitivity reactions have occurred **Special Instructions** • Avoid long exposure to sunlight or tanning beds • Take w/ plenty of fluids while sitting or standing & well before retiring to bed • Avoid in pregnant women & in patients w/ SLE • Use w/ caution in patients w/ renal or hepatic impairment
Minocycline	Initially 200 mg PO then 100 mg PO 12 hrly for at least 4 days	
Tetracycline	250-500 mg PO 6-12 hrly	

OTHER ANTIBIOTIC

Drug	Dosage	Remarks
Spectinomycin	2 g IM as a single dose **Max dose:** 4 g	**Adverse Reactions** • GI effect (nausea); CNS effects (dizziness, headache, insomnia, fever & chills); Hypersensitivity reactions (urticaria, rarely anaphylaxis) • Hematologic effects, alterations in kidney & liver functions occasionally seen w/ repeated doses **Special Instruction** • May mask or delay symptoms of incubating syphilis. Serologic test for syphilis at the time of gonorrhea diagnosis & 3 mth after is advised to all patients being treated for gonorrhea w/ Spectinomycin

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