# 2021 CDC SEXUALLY TRANSMITTED INFECTION (STI) TREATMENT GUIDELINES SUMMARY
# MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH (MDPH) – DIVISION OF STD PREVENTION (DSTDP)

These guidelines for treatment of STIs reflect recommendations of the **MDPH DSTDP** and of the **CDC STI Treatment Guidelines**. These guidelines focus on STIs encountered in outpatient settings and are not an exhaustive list of effective treatments. Please refer to the complete CDC document for more information or call the DSTDP. Clinical and epidemiological services are available through the DSTDP including staff to assist healthcare providers with confidential notification of sexual partners of patients with STIs and/or HIV. Please call the DSTDP for assistance at (617) 983-6940.

| DISEASE | RECOMMENDED TREATMENT | ALTERNATIVES (use only if recommended regimens are contraindicated) |
|---|---|---|
| **SYPHILIS** | | |
| **Adults** Primary, Secondary or Early Latent (<1 Year) | • Benzathine penicillin G 2.4 million units IM once | (**For penicillin-allergic non-pregnant patients only**)<br>• Doxycycline[1] 100 mg orally 2 times a day for 14 days ***OR***<br>• Tetracycline 500 mg orally 4 times a day for 14 days<br>See complete CDC guidelines for additional alternatives. |
| **Adults** Late Latent (>1 Year) or Latent of Unknown Duration | • Benzathine penicillin G 2.4 million units IM for 3 doses at 1 week intervals (total 7.2 million units) | (**For penicillin-allergic non-pregnant patients only**)<br>• Doxycycline[1] 100 mg orally 2 times a day for 28 days ***OR***<br>• Tetracycline 500 mg orally 4 times a day for 28 days<br>See complete CDC guidelines for additional alternatives. |
| **Neurosyphilis**<br>**Ocular Syphilis**<br>**Otosyphilis** | • Aqueous crystalline penicillin G 18-24 million units per day, administered as 3-4 million units IV every 4 hours or continuous infusion, for 10-14 days[2] | • Procaine penicillin G 2.4 million units IM once daily **PLUS** probenecid 500 mg orally 4 times a day, both for 10-14 days[2]<br>See complete CDC guidelines for additional alternatives. |
| **Children** Primary, Secondary or Early Latent (<1 Year) | • Benzathine penicillin G 50,000 units/kg IM once, up to adult dose of 2.4 million units | No specific alternative regimens exist. |
| **Children** Late Latent (>1 Year) or Latent of Unknown Duration | • Benzathine penicillin G 50,000 units/kg IM (up to adult dose of 2.4 million units) for 3 doses at 1 week intervals (up to total adult dose of 7.2 million units) | |
| **Congenital Syphilis** | See complete CDC guidelines. | |
| ***All Suspect Syphilis Cases:*** Call DSTDP at (617) 983-6940 for past titers and treatment. — **HIV Infection** | Same stage-specific recommendations as for HIV-negative persons. | |
| **Pregnancy** | Penicillin is the only recommended treatment for syphilis during pregnancy. Pregnant individuals who are allergic should be desensitized and treated with penicillin. Minimum penicillin treatment is the same as in non-pregnant patients for each stage of syphilis, but pregnant individuals with primary, secondary, or early latent syphilis can receive a second dose of benzathine penicillin G 2.4 million units IM, 1 week after initial dose, based on evidence indicating additional therapy is beneficial to prevent congenital syphilis. See complete CDC guidelines. | |
| **GONOCOCCAL INFECTIONS[3]** | | |
| **Adults, Adolescents, and Children >45 - <150 kg** Pharyngeal, Urogenital, Rectal | ♦ Ceftriaxone 500 mg IM once[4]<br>***Note:*** **Treatment of pharyngeal gonorrhea should be followed by a test of cure 7-14 days after treatment.[5]** | **For urogenital or rectal infections ONLY,[6] if ceftriaxone is *not* available:**<br>• Gentamicin 240 mg IM once **PLUS** Azithromycin 2 g orally once (if cephalosporin allergy) ***OR***<br>• Cefixime 800 mg orally once |
| **Adults and Adolescents** Conjunctival | • Ceftriaxone 1 g IM once plus consider lavage of infected eye with saline solution once | No specific alternative regimens exist. |
| **Adults and Adolescents** Arthritis, Arthritis-Dermatitis[7] | • Ceftriaxone 1 g IM or IV every 24 hours | • Cefotaxime 1 g IV every 8 hours ***OR***<br>• Ceftizoxime 1 g IV every 8 hours |
| **Children ≤45 kg** | • Ceftriaxone 25-50 mg/kg IV or IM once (max 500 mg) | No specific alternative regimens exist. |
| **Neonates** Ophthalmia Neonatorum Infants Born To Infected Mothers | • Ceftriaxone 25-50 mg/kg IV or IM once[8] | **For neonates unable to receive ceftriaxone due to co-administration of intravenous calcium:**<br>♦ Cefotaxime 100 mg/kg IV or IM once |
| **CHLAMYDIAL INFECTIONS** | | |
| **Adults and Adolescents** | ♦ Doxycycline[1] 100 mg orally 2 times a day for 7 days[9] | ♦ Azithromycin 1 g orally once ***OR***<br>• Levofloxacin[10] 500 mg orally once a day for 7 days |
| ***Partner Management:*** Expedited partner therapy (EPT) is allowed in Massachusetts for treatment of partners of patients with chlamydia. For more information, go to www.mass.gov/dph/cdc/std. — **Children Aged ≥8 Years** | • Azithromycin 1 g orally once ***OR***<br>• Doxycycline[1] 100 mg orally 2 times a day for 7 days[9] | No specific alternative regimens exist. |
| **Children Aged <8 Years and ≥45 kg** | • Azithromycin 1 g orally once | |
| **Children <45 kg and Neonates** | • Erythromycin base or ethylsuccinate 50 mg/kg/day orally divided into four doses daily for 14 days[11,12] | • Azithromycin 20 mg/kg/day orally once a day for 3 days[12,13] |
| **Pregnancy** | • Azithromycin 1 g orally once | • Amoxicillin 500 mg orally 3 times a day for 7 days[14] |
| **NONGONOCOCCAL URETHRITIS[15]** | | |
| **Adults** Penile | • Doxycycline[1] 100 mg orally 2 times a day for 7 days | ♦ Azithromycin 1 g orally once ***OR***<br>♦ Azithromycin 500 mg orally once, then 250 mg orally once a day for 4 days |
| **EPIDIDYMITIS** | | |
| Likely Due To Chlamydia or Gonorrhea | ♦ Ceftriaxone 500 mg IM once[4] **PLUS**<br>• Doxycycline[1] 100 mg orally 2 times a day for 10 days | No specific alternative regimens exist. |
| Likely Due To Chlamydia and Gonorrhea or Enteric Organisms (Penile-Rectal exposure) | ♦ Ceftriaxone 500 mg IM once[4] **PLUS**<br>• Levofloxacin[10] 500 mg orally once a day for 10 days | |
| Likely Due To Enteric Organisms Only | • Levofloxacin[10] 500 mg orally once a day for 10 days | |
| **CERVICITIS** | | |
| **Adults and Adolescents** | ♦ Doxycycline[1] 100 mg orally 2 times a day for 7 days | ♦ Azithromycin 1 g orally once |
| **PELVIC INFLAMMATORY DISEASE (outpatient management)** | | |
| **Adults and Adolescents >45 - <150 kg** | ♦ Ceftriaxone 500 mg IM once[4] ***OR***<br>• Cefoxitin 2 g IM once **plus** probenecid 1 g orally once ***OR***<br>• Other parenteral third generation cephalosporin (e.g., ceftizoxime or cefotaxime)<br>**PLUS**<br>• Doxycycline[1] 100 mg orally 2 times a day for 14 days<br>**PLUS**<br>♦ Metronidazole[16] 500 mg orally twice a day for 14 days | ♦ See complete CDC guidelines for alternatives. |
| **Pregnancy** | Patients should be hospitalized and treated with recommended IV therapy (see complete CDC guidelines). | |

[1] Doxycycline can cause skin photosensitivity. Doxycycline not recommended during pregnancy or for children <8 years of age. Effects of prolonged exposure via breast milk are not known. Consider risk of infant exposure, benefits of breastfeeding to infant, and benefits of treatment to mother in any decision to continue or discontinue breastfeeding during therapy.

[2] Durations of regimens for neurosyphilis, ocular syphilis, and otosyphilis are shorter than duration of regimen used for latent syphilis. Therefore, benzathine penicillin, 2.4 million units IM once per week for 1–3 weeks, can be considered after completion of these regimens to provide comparable total duration of therapy.

[3] Dual therapy for gonococcal infection is no longer recommended for all patients with gonorrhea. If chlamydial infection has not been excluded, treat for chlamydia infection.

[4] For persons weighing ≥150 kg, 1 g ceftriaxone should be administered.

[5] Test of cure unnecessary in cases of uncomplicated urogenital or rectal gonorrhea treated with recommended or alternative regimens. All cases of pharyngeal gonorrhea should have test of cure 7-14 days after treatment by either NAAT and/or culture; however, NAAT performed closer to 7 days after treatment may be false-positive. If the NAAT is positive, perform confirmatory culture before retreatment, especially if culture was not already collected. If treatment failure suspected: culture, perform antimicrobial susceptibility testing, notify and consult with state health department, or an infectious disease specialist, or an STD clinical expert from the National Network of STD/HIV Prevention Training Centers (www.stdccn.org).

[6] No reliable alternative treatments available for pharyngeal gonorrhea.

[7] When treating for arthritis-dermatitis syndrome, switch to oral agent can be guided by antimicrobial susceptibility testing 24–48 hours after substantial clinical improvement, for total treatment course of at least 7 days.

[8] Do not co-administer ceftriaxone with calcium-containing solutions. Ceftriaxone should be administered cautiously to neonates with hyperbilirubinemia, especially those born prematurely.

[9] Doxycycline also available as delayed-release 200-mg tablet formulation, requiring once-daily dosing for 7 days (as effective as doxycycline 100 mg twice daily for 7 days for treating urogenital chlamydia infection).

[10] Fluoroquinolone use associated with disabling and potentially irreversible serious adverse reactions that have occurred together, including tendinitis and tendon rupture, peripheral neuropathy, and CNS effects. Discontinue immediately and avoid use in patients who experience any of these serious adverse reactions. Reserve fluroquinolones for use in patients with no better alternative treatment options.

[11] Erythromycin efficacy for treating neonatal chlamydial conjunctivitis and pneumonia is about 80%. A second course of therapy may be required.

[12] Association between both oral erythromycin and azithromycin and infantile hypertrophic pyloric stenosis (IHPS) has been reported in infants aged <6 weeks. Infants treated with either of these antimicrobials should be followed for IHPS signs and symptoms.

[13] Data on efficacy of azithromycin for neonatal chlamydial conjunctivitis and pneumonia limited. Follow-up is recommended to assess response.

[14] Amoxicillin listed as alternative therapy in pregnancy because of chlamydia persistence after exposure to penicillin-class antibiotics in animal and in vitro studies.

[15] For persistent or recurrent nongonococcal urethritis, see complete CDC guidelines for recommended testing and treatment.

[16] Multiple studies and meta-analyses have *not* demonstrated an association between metronidazole use during pregnancy and teratogenic or mutagenic effects in newborns. In lactating individuals administered metronidazole, withholding breastfeeding during treatment and for 12–24 hours after last dose will reduce exposure of infant to metronidazole.

**♦ Indicates revision from previous STD Treatment Guidelines**

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| DISEASE | RECOMMENDED TREATMENT | ALTERNATIVES (use only if recommended regimens are contraindicated) |
|---|---|---|
| **LYMPHOGRANULOMA VENEREUM** | | |
| **ADULTS AND ADOLESCENTS** | • Doxycycline[1] 100 mg orally 2 times a day for 21 days | ♦ Azithromycin 1 g orally once weekly for 3 weeks[17] ***OR***<br>• Erythromycin base 500 mg orally 4 times a day for 21 days |
| **CHANCROID** | | |
| **ADULTS AND ADOLESCENTS** | • Azithromycin 1 g orally once ***OR***<br>• Ceftriaxone 250 mg IM once ***OR***<br>• Ciprofloxacin[10] 500 mg orally 2 times a day for 3 days ***OR***<br>• Erythromycin base 500 mg orally 3 times a day for 7 days | No specific alternative regimens exist. |
| **BACTERIAL VAGINOSIS (BV)** | | |
| **ADULTS AND ADOLESCENTS** | • Metronidazole[16] 500 mg orally 2 times a day for 7 days ***OR***<br>• Metronidazole gel 0.75%, 5 g intravag. once a day for 5 days ***OR***<br>• Clindamycin cream 2%, 5 g intravag. at bedtime for 7 days[18] | • Clindamycin 300 mg orally 2 times a day for 7 days ***OR***<br>• Clindamycin ovules 100 mg intravag. at bedtime for 3 days[18] ***OR***<br>♦ Secnidazole 2 g oral granules orally once[19] ***OR***<br>• Tinidazole[20] 2 g orally once daily for 2 days ***OR***<br>• Tinidazole[20] 1 g orally once daily for 5 days |
| **PREGNANCY** | Treatment is recommended for all symptomatic pregnant individuals.[21] | |
| **TRICHOMONIASIS[22]** | | |
| **ADULTS** VAGINAL AND CERVICAL | ♦ Metronidazole[16] 500 mg orally 2 times a day for 7 days | • Tinidazole[20] 2 g orally once |
| **ADULTS** PENILE | • Metronidazole 2 g orally once | |
| **PEDICULOSIS PUBIS[23]** | | |
| | • Permethrin 1% cream rinse applied to affected areas, wash off after 10 minutes ***OR***<br>• Pyrethrin with piperonyl butoxide applied to affected areas, wash off after 10 minutes | • Malathion 0.5% lotion applied to affected areas, wash off after 8-12 hours ***OR***<br>• Ivermectin[24] 250 mcg/kg orally once, repeated in 1 - 2 weeks |
| **SCABIES** | | |
| | • Permethrin[25] 5% cream applied to all areas of body from neck down, wash off after 8-14 hours ***OR***<br>• Ivermectin[24] 200 mcg/kg orally, repeated in 2 weeks<br>♦ Ivermectin 1% lotion applied to all areas of body from neck down, wash off after 8–14 hours; repeat in 1 week if symptoms persist | • Lindane[26] 1% 1 oz of lotion or 30 g of cream applied thinly to all areas of body from neck down, wash off after 8 hours |
| **GENITAL HERPES SIMPLEX** | | |
| **ADULTS AND ADOLESCENTS** FIRST CLINICAL EPISODE[27] | • Acyclovir 400 mg orally 3 times a day for 7-10 days[28] ***OR***<br>• Famciclovir[29] 250 mg orally 3 times a day for 7-10 days ***OR***<br>• Valacyclovir 1 g orally 2 times a day for 7-10 days | |
| **ADULTS AND ADOLESCENTS** SUPPRESSIVE THERAPY FOR RECURRENT GENITAL HERPES (HSV-2) | • Acyclovir 400 mg orally 2 times a day ***OR***<br>• Valacyclovir 500 mg orally once a day[30] ***OR***<br>• Valacyclovir 1 g orally once a day ***OR***<br>• Famciclovir[29] 250 mg orally 2 times a day | |
| **ADULTS AND ADOLESCENTS** EPISODIC THERAPY FOR RECURRENT GENITAL HERPES (HSV-2) | • Acyclovir 800 mg orally 2 times a day for 5 days[31] ***OR***<br>• Acyclovir 800 mg orally 3 times a day for 2 days ***OR***<br>• Famciclovir[29] 1 g orally 2 times a day for 1 day ***OR***<br>• Famciclovir[29] 500 mg orally once, followed by 250 mg orally 2 times a day for 2 days ***OR***<br>• Famciclovir[29] 125 mg orally 2 times a day for 5 days ***OR***<br>• Valacyclovir 500 mg orally 2 times a day for 3 days ***OR***<br>• Valacyclovir 1 g orally once a day for 5 days | |
| **HIV INFECTION** | Higher doses and/or longer therapy recommended. See complete CDC guidelines. | |
| **PREGNANCY** | | |

**GENITAL WARTS**

| External or Perianal[32] | Urethral Meatus | Vaginal[36], Cervical[37] or Intra-Anal[38] |
|---|---|---|
| **PROVIDER-ADMINISTERED**<br>• **Cryotherapy** with liquid nitrogen or cryoprobe. Repeat applications every 1-2 weeks if necessary ***OR***<br>• **Surgical removal** ***OR***<br>• **Trichloroacetic acid (TCA) or bichloroacetic acid (BCA)** 80% -90%. Apply small amount only to warts. Allow to dry. If excess amount applied, powder with talc, baking soda or liquid soap. Repeat weekly if necessary.<br>**PATIENT-APPLIED**<br>• **Imiquimod 5% cream**.[33] Apply once daily at bedtime 3 times a week for up to 16 weeks. Wash treatment area with soap and water 6-10 hours after application ***OR***<br>• **Imiquimod 3.75% cream**.[33] Apply once daily at bedtime every day for up to 8 weeks. Wash treatment area with soap and water 6-10 hours after application ***OR***<br>• **Podofilox 0.5% solution or gel**.[34] Apply 2 times a day for 3 days, followed by 4 days of no therapy, 4 cycles max. Total wart area should not exceed 10 $cm^2$ and total volume applied daily not to exceed 0.5 ml ***OR***<br>• **Sinecatechins 15% ointment**.[35] Applied 3 times a day for up to 16 weeks. Do not wash off. | • **Cryotherapy** with liquid nitrogen<br>***OR***<br>• **Surgical removal** | • **Cryotherapy** with liquid nitrogen<br>***OR***<br>• **Surgical removal**<br>***OR***<br>• **TCA or BCA 80%-90%**. Apply small amount only to warts. Allow to dry. If excess amount applied, powder with talc, baking soda or liquid soap. Repeat weekly if necessary. |

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[17] Because this regimen has not been rigorously validated, a test-of-cure with *C. trachomatis* nucleic acid amplification test (NAAT) 4 weeks after completion of treatment can be considered.
[18] Clindamycin cream and ovules are oil-based and may weaken latex condoms and diaphragms for 5 days after use (refer to clindamycin product labeling for additional information). Although older studies indicated a possible link between use of vaginal clindamycin during pregnancy and adverse outcomes for the newborn, newer data demonstrate that this treatment approach is safe for pregnant individuals.
[19] Oral granules should be sprinkled onto unsweetened applesauce, yogurt, or pudding before ingestion. A glass of water can be taken after administration to aid in swallowing.
[20] Tinidazole safety during pregnancy is not established. Interruption of breastfeeding is recommended during treatment and for 3 days after last dose.
[21] Because oral therapy has not been shown to be superior to topical therapy for treating symptomatic BV in effecting cure or preventing adverse outcomes in pregnancy, symptomatic pregnant individuals can be treated with either oral or vaginal regimens recommended for nonpregnant individuals, except as noted. Metronidazole 250 mg orally 3 times a day for 7 days can also be used for pregnant individuals with symptomatic BV.
[22] For persistent or recurrent trichomoniasis, see complete CDC guidelines for recommended testing and treatment.
[23] Lindane is no longer recommended because of toxicity. Pregnant or lactating individuals should be treated either with permethrin or pyrethrin with piperonyl butoxide.
[24] Ivermectin not recommended for pregnant or lactating individuals, or children who weigh <15 kg.
[25] Permethrin is the preferred treatment in infants and young children.
[26] Lindane is an alternative regimen because it can cause toxicity; it should be used only if recommended therapies cannot be tolerated or if recommended therapies have failed. Lindane is not to be used immediately after a bath, or in persons with extensive dermatitis, or in individuals who are pregnant or lactating, or children aged <10 years.
[27] Treatment can be extended if healing is incomplete after 10 days of therapy.
[28] Acyclovir 200 mg orally 5 times a day for 7-10 days is also effective but no longer recommended because of frequency of dosing.
[29] Famciclovir can be used in adolescents and children ≥45 kg.
[30] Valacyclovir 500 mg once a day might be less effective than other dosing regimens for persons who have frequent recurrences (i.e., ≥10 episodes/year).
[31] Acyclovir 400 mg orally 3 times a day for 5 days is also effective but not recommended because of frequency of dosing.
[32] Persons with external anal or peri-anal warts might also have intra-anal warts. Thus, persons with external anal warts might benefit from an inspection of the anal canal by digital examination, standard anoscopy, or high-resolution anoscopy.
[33] May weaken condoms and vaginal diaphragms. Data from studies of humans are limited regarding use of imiquimod in pregnancy, but animal data suggest imiquimod poses low risk.
[34] Podofilox is contraindicated in pregnancy.
[35] Sinecatechins not recommended for HIV-infected persons, immunocompromised persons, or persons with clinical genital herpes. Safety of sinecatechins in pregnancy is unknown.
[36] Cryoprobe is not recommended because of risk for vaginal perforation and fistula formation.
[37] Management should include consultation with a specialist. Exophytic cervical warts warrant biopsy to exclude high-grade squamous intraepithelial lesions before treatment is initiated.
[38] Management should include consultation with a specialist. Many persons with anal warts may also have them in the rectal mucosa. Inspect rectal mucosa by digital examination or anoscopy.

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