CARILION CLINIC
Antimicrobial Stewardship

Guideline for the Treatment of Sexually Transmitted Infections (STIs) in Adults and Pediatrics

Disclaimer: These guidelines are not intended to replace clinical judgement. An Infectious Diseases consultation is available for complex patients. Please refer to the Carilion Clinic Antimicrobial Dosing Recommendations for other dosing.

Adult Treatment Recommendations- patients with HIV may have different recommendations

Diseases characterized by genital, anal or perianal ulcers

Organism/Diagnosis		Preferred Therapy	Alternative Therapy	Pregnancy Considerations
Chancroid (*Haemophilus ducreyi*)		Azithromycin 1 g PO x 1 Ceftriaxone 250 mg IM x 1	Ciprofloxacin 500 mg PO BID x 3 days Erythromycin base 500 mg PO TID x 7 days	Macrolide or Ceftriaxone regimen preferred
Genital herpes (HSV-1 and HSV-2)	**First episode** *Treatment duration can be extended if healing is incomplete after 10 days*	Acyclovir 400 mg PO TID x 7-10 days Valacyclovir 1 g PO BID x 7-10 days	Famciclovir 250 mg PO TID x 7-10 days	
	Recurrent episodes	Acyclovir 800 mg PO BID x 5 days or TID x 2 days Valacyclovir 500 mg PO BID x 3 days Valacyclovir 1 g PO QD x 5 days	Famciclovir 125 mg PO BID x 5 days Famciclovir 1 g PO BID x 1 day Famciclovir 500 mg once, followed by 250 mg BID x 2 days	
	Severe disease (disseminated infection, CNS complications)	Acyclovir 10 mg/kg q8h x 2-7 days followed by oral therapy to complete 10 total days *For encephalitis refer to meningitis guidelines*		
	Suppression**	Acyclovir 400-800 mg PO BID Valacyclovir 500 mg or 1 g PO QD (1 g preferred if $\geq$ 10 episodes/yr)	Famciclovir 500 mg PO BID	Treatment should be initiated at 36 weeks gestation Increase acyclovir to TID and valacyclovir to BID

Granuloma Inguinale/ Donovanosis (*klebsiella granulomatis*)± Addition of another antibiotic may be added if no improvement after first few days of therapy	Azithromycin 1 g PO once weekly or 500 mg daily x ≥ 3 weeks until all lesions have healed	Doxycycline 100 mg PO BID x ≥ 3 weeks Erythromycin base 500 mg PO QID x ≥ 3 weeks TMP/SMX 1 DS tab PO BID x ≥ 3 weeks	Macrolide regimen should be used for pregnant and lactating women

**Suppression of HSV recommended for patients with HIV for 6 months after starting ART or for 6 months after genital ulcer disease (GUD) risk returns to baseline (CD4 > 200 cell/mm^3)

Syphilis (*T. pallidum*)±

Diagnosis	Preferred Therapy	Alternative Therapy#	Pregnancy Considerations
Primary, Secondary, Early Latent	Benzathine penicillin G 2.4 million units IM x 1 dose	Doxycycline 100 mg PO BID x 14 days	Pregnant women who report penicillin allergy should be desensitized and treated with penicillin regardless of syphilis stage
Late Latent, Tertiary with normal CSF exam	Benzathine penicillin G 2.4 million units IM weekly x 3 doses	Doxycycline 100 mg PO BID x 28 days	
Neurosyphilis/ Ocular Involvement	Aqueous crystalline penicillin G 3-4 million units IV every 4 hours x 10-14 days	Procaine penicillin G 2.4 million units IM QD **PLUS** Probenecid 500 mg PO QID x 10-14 days Ceftriaxone 2 g IV QD x 10-14 days	

Bicillin L-A (benzathine penicillin G) must be used for treatment, **NOT** Bicillin C-R
#Alternatives should ONLY be used for true penicillin allergy

Diseases characterized by urethritis and cervicitis

Organism/Diagnosis		Preferred Therapy	Alternative Therapy	Pregnancy Considerations
***Chlamydia trachomatis*±**	**Uncomplicated**	Doxycycline 100 mg PO BID x 7 days	Azithromycin 1 g PO x 1 dose Levofloxacin 500 mg PO QD x 7 days	Azithromycin preferred Can also use amoxicillin 500 mg PO TID x 7 days Test for cure 4 weeks after treatment
	Lymphogranuloma venereum (LGV)	Doxycycline 100 mg PO BID x 21 days	Erythromycin base 500 mg PO QID x 21 days	Erythromycin should be used for pregnant and lactating women Test for cure 4 weeks after treatment

Gonorrhea (*N. gonorrhoeae*)± If low suspicion for chlamydia or ruled out, do not need to add doxycycline. Alternatives are less effective than preferred	**Uncomplicated (cervix, urethra, rectum, pharynx)**	Ceftriaxone 500 mg IM x 1 dose **PLUS** doxycycline 100 mg PO BID x 7 days *If ≥150 kg: increase ceftriaxone to 1 g*	Gentamicin 240 mg IM x 1 dose **PLUS** azithromycin 2 g PO x 1 dose Cefixime 800 mg PO x 1 dose **PLUS** doxycycline 100 mg PO BID x 7 days	Azithromycin should be utilized instead of doxycycline for pregnant women
	Conjunctivitis	Ceftriaxone 1 g IM x 1 dose		
	Disseminated	Ceftriaxone 1-2 g IV QD (2 g Q12h if CNS involvement) **PLUS** doxycycline 100 mg PO BID x 7 days		Azithromycin should be utilized instead of doxycycline for pregnant women
Mycoplasma genitalium		Doxycycline 100 mg PO BID x 7 days **followed by** moxifloxacin 400 mg PO QD x 7 days	Doxycycline 100 mg PO BID x 7 days **followed by** azithromycin* 1 g PO x 1 then 500 mg PO QD x 3 days	

*Test for cure if macrolide resistance unknown

Diseases characterized by vulvovaginal itching, burning, irritation, odor or discharge

Organism/Diagnosis	Preferred Therapy	Alternative Therapy	Pregnancy Considerations
Bacterial Vaginosis	Metronidazole 500 mg PO BID x 7 days Metronidazole gel 0.75% 1 applicator intravaginally QD x 5 days Clindamycin cream 2% 1 applicator intravaginally QHS x 7 days	Clindamycin 300 mg PO BID x 7 days Clindamycin ovules 100 mg intravaginally QHS x 3 days Tinidazole 2 g PO QD x 2 days Tinidazole 1 g PO QD x 5 days	Tinidazole should be avoided in pregnancy
Trichamoniasis (*T. vaginalis*)	Women- Metronidazole 500 mg PO BID x 7 days Men- Metronidazole 2 g PO x 1 dose	Men & women- Tinidazole 2 g PO x 1 dose	Tinidazole should be avoided in pregnancy

Pelvic Inflammatory Disease

Preferred Therapy	Alternative Therapy	Pregnancy Considerations
Ceftriaxone 1 g IV Q24 hours* **PLUS** doxycycline 100 mg PO Q12 hours **PLUS** metronidazole 500 mg PO Q12 hours x 14 days Ceftriaxone 500 mg IM x 1 dose **PLUS** doxycycline 100 mg PO BID x 14 days **PLUS** metronidazole 500 mg PO BID x 14 days	Ampicillin-sulbactam 3 g IV Q6 hours **PLUS** doxycycline 100 mg PO Q12 hours Clindamycin 900 mg IV Q8 hours **PLUS** gentamicin 5 mg/kg Q24 hours	Pregnant women diagnosed with PID should be hospitalized and treated with IV therapy

*Ceftriaxone should be continued until clinical improvement and patient is ready to transition to only PO therapy

Rescreening: rescreening after 3 months is recommended for all patients diagnosed with chlamydia or gonorrhea. Women with a positive test for trichomonas should be rescreened 3 months after treatment. All patients diagnosed with syphilis should undergo serology follow-up and HIV testing.

All patients should be assessed for the following vaccinations via ACIP recommendations:
Human Papillomavirus (HPV), Hepatitis A, Hepatitis B

Pediatric Treatment Recommendations

Organism/Diagnosis		Preferred Therapy
Neonatal Herpes		Acyclovir 20 mg/kg IV Q8 hours x 14 days *Extend duration to 21 days if disseminated or CNS disease*
Syphilis± Children with allergy should be desensitized and treated with penicillin	**Primary, Secondary, Early Latent**	Benzathine penicillin G 50,000 units/kg body weight IM x 1 dose (max 2.4 million units)
	Late Latent, Tertiary with normal CSF exam	Benzathine penicillin G 50,000 units/kg IM weekly x 3 doses
	Congenital (neonate)*	Aqueous crystalline penicillin G 50,000 units/kg IV Q12 hours for first 7 days of life then Q8 hours for total 10 days of therapy Procaine penicillin G 50,000 units/kg IM QD x 10 days
	Congenital (infants and children)	Aqueous crystalline penicillin G 50,000 units/kg IV Q4-6 hours x 10 days

Infection	Population		Treatment
Chlamydia trachomatis±, Ophthalmia Neonatorum±	<45 kg		Erythromycin base or ethylsuccinate 50 mg/kg/**day** PO divided into 4 doses x 14 days
	≥45 kg but age < 8 years		Azithromycin 1 g PO x 1 dose
	Age ≥ 8 years		Azithromycin 1 g PO x 1 dose Doxycycline 100 mg PO BID x 7 days
Gonorrhea±	Ophthalmia Neonatorum, neonates born to mothers with Gonorrhea		**Prophylaxis**: Erythromycin 0.5% ophthalmic ointment in each eye x 1 application at birth **Treatment**: Ceftriaxone 25-50 mg/kg IV or IM x 1 dose (max 250 mg)
	Uncomplicated	≤45 kg	Ceftriaxone 25-50 mg/kg IV or IM (max 250 mg) x 1 dose
		>45 kg	Use adult recommendations
	Disseminated	≤45 kg	Ceftriaxone 50 mg/kg (max 1 g) IM or IV QD x 7 days *Extend duration to 10-14 days for meningitis*
		>45 kg	Ceftriaxone 1 g IM or IV QD x 7 days *Extend duration to 10-14 days for meningitis*

*If > 1 day of therapy is missed, entire course should be restarted

±Syphilis, Chlamydia, Gonorrhea, and Granuloma inguinale MUST be reported to the Virginia Department of Health

References:

1. CDC Sexually Transmitted Infections Treatment Guidelines, 2021.
2. ACIP Recommended Immunization Schedule, 2023. https://www.cdc.gov/vaccines/schedules/downloads/adult/adult-combined-schedule.pdf
3. Virginia Department of Health Reportable Disease List, 2023. https://www.vdh.virginia.gov/content/uploads/sites/134/2023/03/VIRGINIA-REPORTABLE-DISEASE-LIST.pdf