UWTASP

tele-antimicrobial stewardship program

2021 STI Update

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Acknowledgements

- Dr. Christine Johnston

CDC-INFO on Demand - Publications

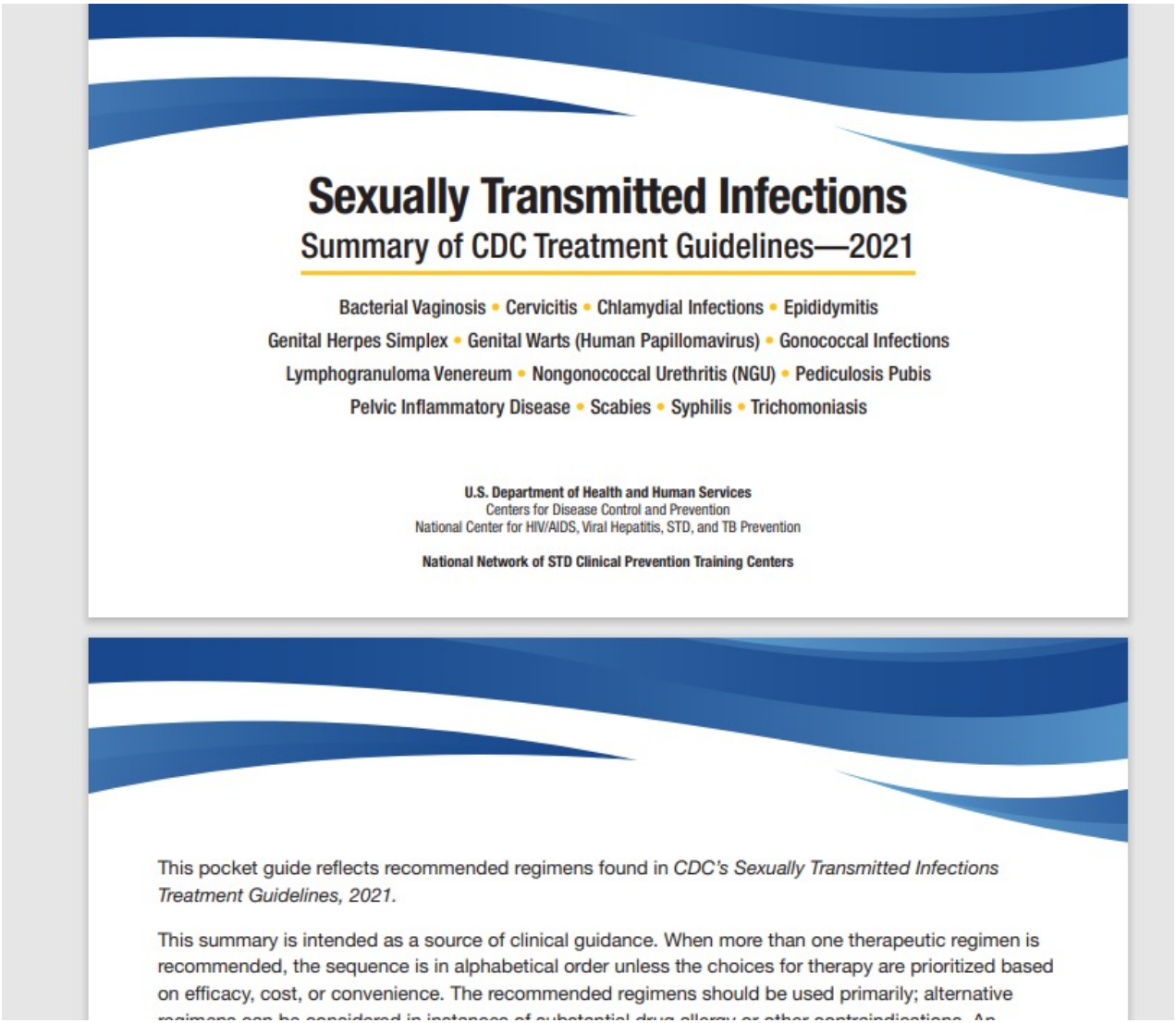
Summary of CDC STI Treatment Guidelines, 2021

This wall chart reflects recommended regimens found in CDC's Sexually Transmitted Infections Treatment Guidelines, 2021. This summary is intended as a source of clinical guidance. When more than one therapeutic regimen is recommended, the sequence is in alphabetical order unless the choices for therapy are prioritized based on efficacy, cost, or convenience. The recommended regimens should be used primarily; alternative regimens can be considered in instances of substantial drug allergy or other contraindications. An important component of STI treatment is partner management. Providers can arrange for the evaluation and treatment of sex partners either directly or with assistance from state and local health departments. Complete guidelines can be found online at www.cdc.gov/std/treatment.

DISEASE	RECOMMENDED REGIMEN	ALTERNATIVE REGIMEN
Bacterial Vaginosis	metronidazole 500 mg orally 2x/day for 7 days **OR** metronidazole gel 0.75%, one 5 gm applicator intravaginally, 1x/day for 5 days **OR** clindamycin cream 2%, one 5 gm applicator intravaginally, at bedtime for 7 days	clindamycin 300 mg orally 2x/day for 7 days **OR** clindamycin ovules 100 mg intravaginally at bedtime for 3 days[1] **OR** secnidazole 2 gm orally in a single dose[2] **OR** tinidazole 2 gm orally 1x/day for 2 days **OR** tinidazole 1 gm orally 1x/day for 5 days
Cervicitis[3]	doxycycline 100 mg orally 2x/day for 7 days	azithromycin 1 gm orally in a single dose
Chlamydial Infections		
Adults and adolescents	doxycycline 100 mg orally 2x/day for 7 days	azithromycin 1 gm orally in a single dose **OR** levofloxacin 500 mg orally 1x/day for 7 days
Pregnancy	azithromycin 1 gm orally in a single dose	amoxicillin 500 mg orally 3x/day for 7 days
Infant and children <45 kg[4] (nasopharynx, urogenital, and rectal)	erythromycin base, 50 mg/kg body weight/day orally, divided into 4 doses daily for 14 days **OR** ethylsuccinate, 50 mg/kg body weight/day orally, divided into 4 doses daily for 14 days	
Children who weigh ≥45 kg, but who are aged <8 years (nasopharynx, urogenital, and rectal)	azithromycin 1 gm orally in a single dose	
Children aged ≥8 years (nasopharynx, urogenital, and rectal)	azithromycin 1 gm orally in a single dose **OR** doxycycline 100 mg orally 2x/day for 7 days	
Neonates:[5] ophthalmia and pneumonia	erythromycin base, 50 mg/kg body weight/day orally, divided into 4 doses daily for 14 days **OR** ethylsuccinate, 50 mg/kg body weight/day orally, divided into 4 doses daily for 14 days	azithromycin suspension 20 mg/kg body weight/day orally, 1x/day for 3 days
Epididymitis		
For acute epididymitis most likely caused by sexually transmitted chlamydia and gonorrhea	ceftriaxone 500 mg IM in a single dose[6] **PLUS** doxycycline 100 mg orally 2x/day for 10 days	
For acute epididymitis most likely caused by chlamydia, gonorrhea, or enteric organisms (men who practice insertive anal sex)	ceftriaxone 500 mg IM in a single dose[6] **PLUS** levofloxacin 500 mg orally 1x/day for 10 days	

DISEASE	RECOMMENDED REGIMEN	ALTERNATIVE REGIMEN
Lymphogranuloma Venereum	doxycycline 100 mg orally 2x/day for 21 days	azithromycin 1 gm orally 1x/week for 3 weeks [20] **OR** erythromycin base 500 mg orally 4x/day for 21 days
Nongonococcal Urethritis (NGU)	doxycycline 100 mg orally 2x/day for 7 days	azithromycin 1 gm orally in a single dose **OR** azithromycin 500 mg orally in a single dose, **THEN** 250 mg 1x/day for 4 days
Persistent or Recurrent NGU: test for *Mycoplasma genitalium:*		
If *M. genitalium* resistance testing is unavailable but *M. genitalium* is detected by an FDA-cleared NAAT	doxycycline 100 mg orally 2x/day for 7 days, **FOLLOWED BY** moxifloxacin 400 mg 1x/day for 7 days	For settings without resistance testing and when moxifloxacin cannot be used: doxycycline 100 mg orally 2x/day for 7 days, **FOLLOWED BY** azithromycin 1 gm orally on first day, **FOLLOWED BY** azithromycin 500 mg orally 1x/day for 3 days and a test-of-cure 21 days after completion of therapy
If resistance testing is available, use resistance-guided therapy	**Macrolide sensitive** doxycycline 100 mg orally 2x/day for 7 days, **FOLLOWED BY** azithromycin 1 gm orally initial dose, **FOLLOWED BY** azithromycin 500 mg orally 1x/day for 3 additional days (2.5 gm total) **Macrolide resistance** doxycycline 100 mg orally 2x/day for 7 days, **FOLLOWED BY** moxifloxacin 400 mg orally 1x/day for 7 days	
Test for *Trichomonas vaginalis* in heterosexual men in areas where infection is prevalent	metronidazole 2 gm orally in a single dose **OR** tinidazole 2 gm orally in a single dose	
Pediculosis Pubis	permethrin 1% cream rinse applied to affected areas, wash after 10 minutes **OR** pyrethrin with piperonyl butoxide applied to affected areas, wash after 10 minutes	malathion 0.5% lotion applied to affected areas, wash after 8–12 hours **OR** ivermectin 250 µg/kg body weight repeated in 7–14 days
Pelvic Inflammatory Disease		
Parenteral treatment	ceftriaxone 1 gm by IV every 24 hours **PLUS** doxycycline 100 mg orally or by IV every 12 hours **PLUS** metronidazole 500 mg orally or by IV every 12 hours **OR** cefotetan 2 gm by IV every 12 hours **PLUS** doxycycline 100 mg orally or by IV every 12 hours	ampicillin-sulbactam 3 gm by IV every 6 hours **PLUS** doxycycline 100 mg orally or by IV every 12 hours **OR** clindamycin 900 mg by IV every 8 hours **PLUS** gentamicin 2 mg/kg body weight by IV or IM **FOLLOWED BY** 1.5 mg/kg body weight every 8 hours. Can substitute with 3–5 mg/kg body weight 1x/day

Pocket guide



Sexually Transmitted Infections

Summary of CDC Treatment Guidelines—2021

Bacterial Vaginosis • Cervicitis • Chlamydial Infections • Epididymitis
Genital Herpes Simplex • Genital Warts (Human Papillomavirus) • Gonococcal Infections
Lymphogranuloma Venereum • Nongonococcal Urethritis (NGU) • Pediculosis Pubis
Pelvic Inflammatory Disease • Scabies • Syphilis • Trichomoniasis

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention
National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention

National Network of STD Clinical Prevention Training Centers

This pocket guide reflects recommended regimens found in *CDC's Sexually Transmitted Infections Treatment Guidelines, 2021.*

This summary is intended as a source of clinical guidance. When more than one therapeutic regimen is recommended, the sequence is in alphabetical order unless the choices for therapy are prioritized based on efficacy, cost, or convenience. The recommended regimens should be used primarily; alternative

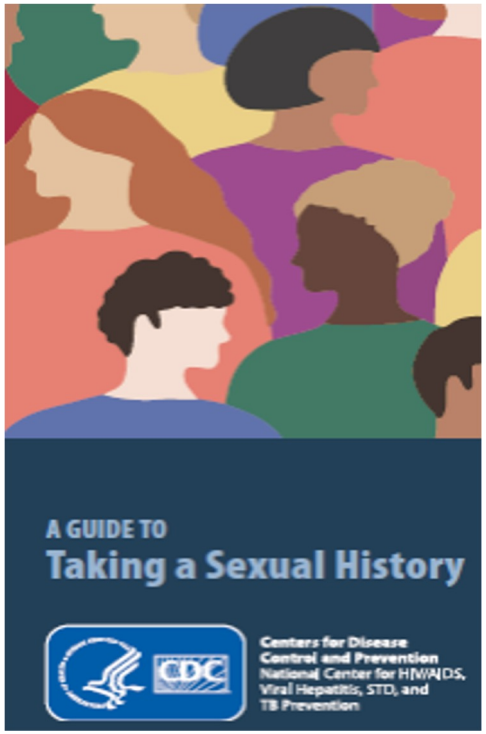
1. Name change

STD vs STI

- Sexually transmitted disease
- Refers to disease state

- Sexually transmitted infection
- Refers to pathogen
- Often asymptomatic

2. Inclusivity



Revised “5Ps”

1. Partners – What is the gender…
2. Practices
3. Protection from STIs
4. Past history of STIs
5. Pregnancy intention (new)
   - Previously “prevention”

3. Chlamydia

- Doxycycline is preferred treatment for chlamydia at any site

Recommended Regimens for Chlamydial Infection Among Adolescents and Adults

Doxycycline 100 mg orally 2 times/day for 7 days

Alternative Regimens

Azithromycin 1 g orally in a single dose
OR
Levofloxacin 500 mg orally once daily for 7 days

Evidence base for shift to doxycycline for chlamydia

Urogenital Chlamydia

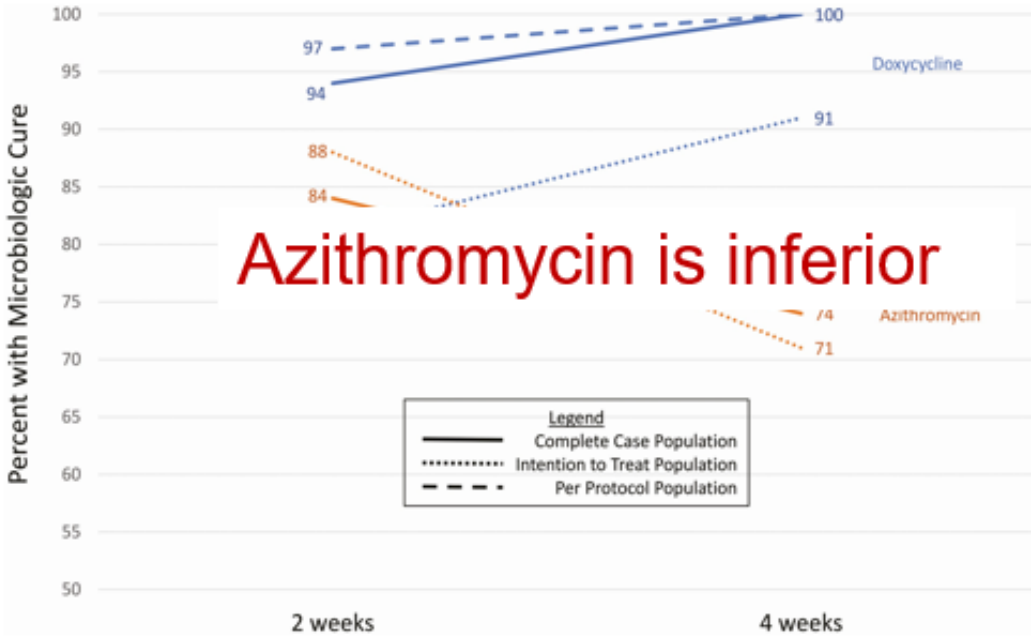
1. Both doxycycline and azithromycin are highly effective
   - 100% cure rates with doxy
   - 97% with azithro

Situations where azithromycin may still be used:

- Pregnancy
- Concerns about ability to adhere to 7 day regimen
- Allergy, intolerance

Geisler W, NEJM 2015

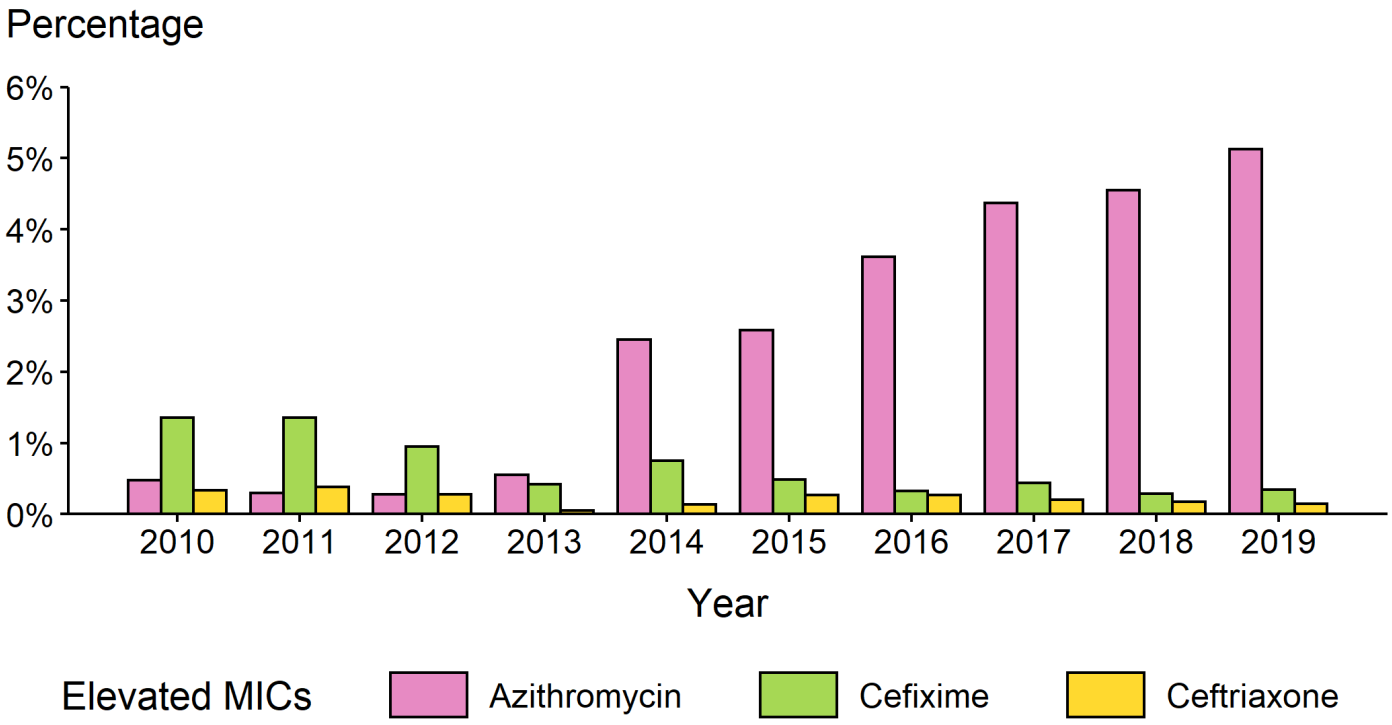
Rectal Chlamydia



Dombrowski J, *2021, CID* https://doi.org/10.1093/cid/ciab153

4. Gonorrhea

Rise in GC Isolates with Decreased Susceptibility to Azithromycin (~5%) Gonococcal Isolate Surveillance Project, 2010–2019



Gonorrhea

NEW treatment guidelines for uncomplicated infections

Ceftriaxone **500** mg IM x 1
for persons weighing <150kg*

*For persons weighing ≥ 150 kg, 1 g of IM ceftriaxone should be administered

However, if chlamydia has not been excluded, treat for chlamydia with:

Doxycycline 100 mg PO BID x 7 days

For pregnancy, allergy, or concern for non-adherence, 1 g PO azithromycin x 1 can be used

- No longer recommending dual therapy with azithromycin
- Test-of-Cure at 7-14 days post treatment for **pharyngeal** gonorrhea

Gonorrhea

- ***New*** **Alternative** Gonorrhea Treatment for uncomplicated infections of the cervix, urethra, and rectum **if ceftriaxone is not available**:

Cefixime **800** mg PO x 1

However, if chlamydia has not been excluded, treat for chlamydia with:

Doxycycline 100 mg PO BID x 7 days

For pregnancy, allergy, or concern for non-adherence, 1 g PO azithromycin x 1 can be used

Cephalosporin allergy: Gentamicin 240 mg IM + azithromycin 2 g PO

No reliable alternative treatments are available for **pharyngeal** gonorrhea

5. Expedited Partner Tx for GC/CT

- No states in US prohibit EPT (either allowable or potentially allowable by law/statute in all 50 states)
- Previously only recommended for hetero men/women, now "shared decision making" for EPT for MSM
- Providing patients with packaged oral medications is preferred approach
  - Partners (especially adolescents) may not fill prescriptions

6. Syphilis

- No new data on treatment
  - PCN G remains recommended treatment
  - Ongoing RCT early syphilis (1 vs 3 benzathine PCN)
  - Alternative regimens- doxycycline 100 mg BID x 7 days ceftriaxone 1 g IV x 10 days (primary or secondary); insufficient data on amoxicillin + probenecid

7. PNC allergy: another opportunity for stewardship

- Prevalence of penicillin allergy is due to imprecise use of “allergy”
  - (IgE-mediated hypersensitivity vs. drug intolerances, idiosyncratic reactions)
- Use history to validate penicillin or another ß-lactam antibiotic allergy
  - If low risk, consider treat with appropriate antibiotic
  - If high-risk (IgE-mediated), consider skin test, if negative, oral amoxicillin challenge
- Updates on penicillin skin testing procedures
- Modified desensitization protocols (clinical syndrome, drug, route of administration)

BOX 2. Low risk history in patients who report Penicillin allergy

Gastrointestinal Symptoms

Headache

Pruritis without rash

Localized rash

Delayed onset rash (>24 hours)

Symptoms unknown

Family history of penicillin or other drug allergy

Patient denies allergy, but it is on the medical record

8. Mycoplasma genitalium

- More than 1 in 4 men with urethritis have *Mycoplasma genitalium*
- Population based screening for *M. genitalium* is NOT recommended
- Diagnostic testing: NAAT (FDA approved in 2019) for urine, urethral, penile meatal, endocervical, vaginal specimens
- When to test: persistent urethritis that fails initial treatment, also consider for persistent PID or cervicitis
- Resistance: 64% resistant to macrolides (AZ), 11.5% par C (FQ), 8% both

Bachmann CID 2020

M genitalium treatment

Recommended Regimens if *M. genitalium* Resistance Testing is Available

If ***macrolide sensitive:*** **Doxycycline** 100 mg orally 2 times/day for 7 days, followed by **azithromycin** 1 g orally initial dose, followed by 500 mg orally once daily for 3 additional days (2.5 g total)

If macrolide resistant: Doxycycline 100 mg orally 2 times/day for 7 days followed by **moxifloxacin** 400 mg orally once daily for 7 days

Recommended Regimens if *M. genitalium* Resistance Testing is Not Available

If *M. genitalium* is detected by an FDA-cleared NAAT: Doxycycline 100 mg orally 2 times/day for 7 days, followed by **moxifloxacin** 400 mg orally once daily for 7 days

9. Trichomonas vaginalis

Recommended regimen: **Vaginal trichomonas (HIV+/HIV-)**

Metronidazole 500 mg orally BID x 7d

Metronidazole 2 g orally single dose for men w/ trichomonas or male partners)*

Alternative regimen:

Tinidazole 2 gm orally in a single dose

ACOG 2020 Treatment Guidelines

Metronidazole 500 mg orally BID x 7 d

Retest for reinfection in 3 months

10. PID: metronidazole for tx

Regimens:

- Ceftriaxone 500 mg IM (or other parenteral 3rd generation cephalosporin) x 1 ***or***
- Cefoxitin 2 g IM ***with*** probenecid 1 g orally once
  PLUS
- Doxycycline 100 mg orally twice daily for 14 days
  WITH ~~**OR WITHOUT**~~
- Metronidazole 500 mg orally twice daily for 14 days

Evidence for metronidazole

- Randomized Controlled Trial (N=233 cis women)
- Ceftriaxone 250 mg IM plus Doxycycline 100 mg PO BID x 14 days plus
  - Metronidazole 500 mg BID x 14 day **OR**
  - Placebo BID X 14 day
- Primary outcome: Clinical improvement at 3 days similar between two arms
- Metronidazole
  - Reduced anaerobes in endometrium (8% vs 21%, $p<0.05$)
  - Reduced M. genitalium (cervical) (4% vs 14%, $p<0.05$)
  - Reduced CMT/pelvic tenderness (9% vs 20%, $p<0.05$)

- Conclusion: Metronidazole should be routinely added for PID RX

Wisenfeld et al. CID 2021

Resources

National STD Curriculum

www.std.uw.edu

STI Guidelines CDC: Provider Resources (cdc.gov)