

Update of STD for Primary Care 2026

Peter G. Gulick, DO, FACP, FIDSA, FACOI
Professor

Michigan State University
East Lansing, MI

Update of STD for Primary Care 2026

Conflict of Interest

1. I have none to report

Objectives

1. To update the PCP on current epidemiology of STD in Michigan
2. To update the PCP on the up-to-date diagnostic testing for STD's
3. To update the PCP on the up-to-date therapies of STD's

STD Cases in Michigan 2023

- Chlamydia
 - Largest STD burden in Michigan
 - 43115 cases, rate of 429.5 per 100,000
- Gonorrhea
 - Had increased from 2014-2020 but has since decreased in 2023 to 152.2 per 100,000 or 15298 cases
- Syphilis
 - Decline in 2023 with 8.4 per 100,000 with 3022 cases
- HIV
 - Had been declining but has stabilized in 2023
- Congenital Syphilis
 - Rise in cases secondary to increase in transmission

1. A patient tests positive for GC. Chlamydia testing was not done. What is the appropriate therapy?
 - a. Ceftriaxone 500mg IM
 - b. Ceftriaxone 250mg IM
 - c. Ceftriaxone 500mg plus azithromycin 1 gram
 - d. Ceftriaxone 500mg plus doxycycline 100mg bid x 7 days
 - e. Cefixime 800mg plus azithromycin 1 gram

Gonorrhea

- The treatment of uncomplicated gonorrhea is now **500 mg of intramuscular ceftriaxone**; if chlamydia is present or is not ruled out, add one week of 100 mg of oral doxycycline taken twice daily
 - Alternate regimens for **urogenital or rectal infections** include oral cefixime 800 mg; intramuscular gentamicin 5mg/kg plus 2 g oral azithromycin
- Patients with pharyngeal gonorrhea should be treated with ceftriaxone- **no alternate regimens are recommended**; a test-of-cure should be performed one to two weeks later
- A reported history of penicillin allergy should prompt clinicians to obtain more information about the nature of that allergy; a majority of these patients may be safely treated with ceftriaxone
- Re-screen all persons diagnosed with gonorrhea in 3 months
- Treat all sex partners in the preceding 60 days of index patients diagnosed with gonorrhea

2. A 25-year-old presents with fever and tender, swollen right knee. No prior trauma. He is sexually active with prior history of STD. On exam, he has a few scattered pustular lesions on his hands as well as arm and a red, swollen right knee. What is the likely diagnosis?
 - a. Meningococemia
 - b. Septic right knee from staph aureus
 - c. Endocarditis
 - d. Disseminated GC
 - e. Reiter's syndrome

Disseminated gonococcal infection (DGI)

- DGI frequently results in petechial or pustular acral skin lesions (< 12 lesions and usually tender), tenosynovitis, and asymmetrical arthralgia, or (oligoarticular) septic arthritis
- The infection is occasionally complicated by perihepatitis and rarely by endocarditis or meningitis.
- *Strains of N. gonorrhoeae* that cause DGI may cause **minimal** genital inflammation
- Risk factor for DGI: terminal complement deficiency (acquired form often seen in SLE)
- Differential diagnosis: meningococemia, RMSF, dengue, endocarditis, Reiter's
- **Test all mucosal surfaces using NAATs and culture (genital, rectal, pharyngeal). Culture is less sensitive but it allows for antimicrobial resistance testing**
- **Treatment: Start with IV ceftriaxone and once clinical status improves, de-escalate to oral regimen based on antimicrobial susceptibility testing. Short courses (i.e. <7 days) are adequate except for meningitis, endocarditis, and septic arthritis.**



3. A patient presents with urethritis and chlamydia is positive. The GC test is negative. What is the best therapy?
 - a. Ceftriaxone 500mg plus azithromycin 1 gram
 - b. Ceftriaxone 500mg plus tetracycline 100mg bid x 7 days
 - c. Doxycycline 100mg bid x 7 days
 - d. Azithromycin 1 gram po x 1
 - e. Moxifloxacin 400mg po x 7 days

Chlamydia

Clinical Infectious Diseases

- Doxycycline 100mg orally twice daily will be the **preferred option** to treat *Chlamydia trachomatis* infections
 - Azithromycin 1g orally is a second-line regimen
- Azithromycin was 3% less effective when treating urogenital infections compared with doxycycline
- Two recent RCTs demonstrated that azithromycin was 20% **less effective** when treating rectal chlamydia infections compared with doxycycline

NEJM 2015; 373;26:2513-2521



Doxycycline Versus Azithromycin for the Treatment of Rectal Chlamydia in Men Who Have Sex With Men: A Randomized Controlled Trial

Julia C. Dombrowski,^{1,2} Michael R. Wierzbicki,³ Lori M. Newman,⁴ Jonathan A. Powell,³ Ashley Miller,⁵ Dwyn Dithmer,² Olusegun O. Soge,⁶ and Kenneth H. Mayer^{7,8}

- Microbiologic cure was higher with doxycycline than azithromycin (91% [80 of 88] vs 71% [63 of 89]; absolute difference, 20%; 95% CI, 9–31%; P < .001)
- The mechanism of azithromycin treatment failure in rectal CT is not known but is **not** likely due to antibiotic resistance, inadequate tissue penetration of the drug, or the prevalence of LGV biovars.


The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Azithromycin or Doxycycline for Asymptomatic Rectal *Chlamydia trachomatis*

Andrew Lau, M.S., Fabian Y.S. Kong, Ph.D., Christopher K. Fairley, Ph.D.,

- Microbiologic cure occurred in 281 of 290 men (96.9%; 95% CI: 94.9 to 98.9) in the doxycycline group and in 227 of 297 (76.4%; 95% CI, 73.8 to 79.1) in the azithromycin group, for an adjusted risk difference of 19.9 percentage points (95%CI, 14.6 to 25.3; P<0.001)

- 
4. In general, which test would be most sensitive in diagnosing chlamydia or GC regardless of anatomical site?
 - a. NAAT testing
 - b. Gram stain
 - c. Cultures
 - d. Cultures and gram stain
 - e. Serology testing

Testing for Gonorrhea and Chlamydia


Anatomical Site	Specimen type	GC Gram's stain (sensitivity)	GC Culture (Sensitivity)	GC/CT NAATs (Sensitivity)
Male urethra	Swab	Symptomatic: 89-94% Asymptomatic: 40-60%	Symptomatic: 90-95% Asymptomatic: 65-85%	>95% (symptomatic and asymptomatic)
Urine (M/F)	First catch	Not appropriate specimen	Not appropriate specimen	87-95% overall Preferred specimen for men
Endocervical	Swab	37-70% overall (lower for asymptomatic)- specificity is poor	Symptomatic: ~85% Asymptomatic: 65-80%	>95% (symptomatic and asymptomatic)
Vaginal	Swab	Not appropriate specimen	Not appropriate specimen	>95% (symptomatic and asymptomatic) Preferred specimen for women
Throat (M/F)	Swab	Not appropriate specimen	~50%	>95% (symptomatic and asymptomatic)
Rectal (M/F)	Swab	Not appropriate specimen	~50%	>95% (symptomatic and asymptomatic)

- e. An MSM is on PrEP and comes in for his 3-month visit and refill of meds. Which tests are appropriate to get?
 - a. GC, chlamydia, urine, oral, rectal, syphilis, HIV test
 - b. GC, chlamydia, urine, syphilis, HIV test
 - c. GC, chlamydia, urine, HIV test
 - d. GC, chlamydia, urine, rectal, syphilis, HIV test, CBC, CMP
 - e. HIV testing

Prevalence of Extragenital Gonorrhea and Chlamydia


Population	NG Prevalence Range (median)	CT Prevalence Range (median)	Comments
Women (33 studies) Rectal Pharyngeal	0.6 - 35.8% (1.9%) 0 - 29.6% (2.1%)	2% - 77.3% (8.7%) 0.2% - 3.2% (1.7%)	Mostly STD clinics; 93% of pharyngeal and 53-100% of rectal NG were asymptomatic. Most women who test positive for rectal infections did NOT report anal sex; extragenital screening increased NG yield by 6-50% compared to genital only testing
MSM (53 studies) Rectal Pharyngeal	0.2 - 24% (5.9%) 0.5 - 16.5% (4.6%)	2.1% - 23% (8.9%) 0% - 3.6% (1.7%)	More extensively studied than in women; 25-100% of extragenital infections were asymptomatic; extragenital screening increased NG yield by 14-85% compared to genital only testing
MSW (9 studies) Rectal Pharyngeal	0 - 5.7% (3.4%) 0.4 - 15.5% (2.2%)	0% - 11.8% (7.7%) 0% - 22% (1.6%)	Some participants may have engaged in same sex behaviors (sexual identity vs. sexual behaviors)

Screen all sexually active MSM at all sites of exposure; consider screening women at all sites of exposure after discussing with patient

- 
6. A 25-year-old MSM comes in with anorectal pain and discharge over the past 3 days. He admits to having recent genitoanal sex. What is the likely cause?
- a. GC
 - b. Chlamydia
 - c. Herpes
 - d. Syphilis
 - e. All of the above

Proctitis

	Proctitis	Proctocolitis
Symptoms	Anorectal pain, tenesmus, rectal discharge	Proctitis symptoms, may also have diarrhea, abdominal cramps, inflammation of colonic mucosa extending to 12 cm above the anus
Etiologic organisms	Gonorrhea, Chlamydia (including LGV), Syphilis, Herpes	LGV, (also Campylobacter, Shigella, Entamoeba histolytica, CMV)
Initial testing	In both: NAAT for GC/CT, Syphilis serologies, HSV (PCR) *note: Syphilis and LGV can mimic IBD.	

- 
7. A patient comes to you with complaints of persistent progressive anorectal pain over the past 5 days. He also complains of tenesmus as well as rectal discharge. A rectal NAAT is positive for chlamydia. What is the therapy?
- a. Doxycycline 100mg bid x 7 days
 - b. Doxycycline 100mg bid x 21 days
 - c. Azithromycin 1 gram x 1 dose
 - d. Ceftriaxone 500mg x 1 dose
 - e. Moxifloxacin 400mg x 5 days

Lymphogranuloma Venereum (LGV)


- **L1-L3 serovars of *Chlamydia trachomatis*: LGV**
 - Rectal CT NAAT will be positive
 - Clusters reported in Europe, US (especially in HIV+ MSM)
- **Clinical:**
 - Primary lesion: non painful ulcer 3-21 days
 - Secondary lesions 10 days to 6 months
 - Tender inguinal/femoral adenopathy (buboes)
 - Systemic symptoms
 - **Proctitis, Proctocolitis**

**Cluster of Lymphogranuloma Venereum Cases
Among Men Who Have Sex with Men —
Michigan, August 2015–April 2016**

Alex de Voux, PhD^{1, 2}; James B. Kent, MS³;
Kathryn Macomber, MPH³; Karen Krzanowski, MA, MPH⁴;
Dawn Jackson⁴; Tayneata Starr⁴; Sandra Johnson⁴;
Deborah Richmond, MSN⁵; Lawrence R. Crane, MD⁵;
Jonathan Cohn, MD⁵; Christopher Finch⁵; Jevon McFadden, MD⁶;
Allan Pillay, PhD²; Cheng Chen, PhD²; Laurie Anderson²;
Ellen N. Kersh, PhD²

Chlamydia Proctitis

- There are currently no commercial tests that distinguish between LGV and non-LGV strains of *Chlamydia trachomatis*
- The treatment duration for chlamydia proctitis depends on symptoms:
 - **Asymptomatic and mildly symptomatic** persons should be treated with one week of doxycycline
 - **Moderately to severely symptomatic** persons should be treated with 3 weeks of doxycycline

- 
8. A 35-year-old female presents with lower abdominal pain and vaginal discharge and is diagnosed with pelvic inflammatory disease. What would be the best therapy?
- a. Ceftriaxone
 - b. Ceftriaxone plus azithromycin
 - c. Ceftriaxone plus doxycycline
 - d. Ceftriaxone plus doxycycline plus metronidazole
 - e. Cefoxitin plus doxycycline

PID

- Test all women for gonorrhea and chlamydia. The value of testing women with PID for *M. genitalium* is unknown
- The risk for PID associated with IUD use is primarily confined to the first 3 weeks after insertion. If an IUD user receives a diagnosis of PID, the IUD does not need to be removed
- Until treatment regimens that do not cover anaerobic microbes have been demonstrated to prevent long-term sequelae (e.g., infertility and ectopic pregnancy) as successfully as the regimens that are effective against these microbes, **using regimens with anaerobic activity should be considered**

All outpatient regimens to treat PID are cephalosporin-based

Recommended Intramuscular or Oral Regimens for Pelvic Inflammatory Disease

Ceftriaxone 500 mg IM in a single dose*

PLUS

Doxycycline 100 mg orally 2 times/day for 14 days

WITH

Metronidazole 500 mg orally 2 times/day for 14 days

OR

Cefoxitin 2 gm IM in a single dose and Probenecid 1 gm orally administered concurrently in a single dose

PLUS

Doxycycline 100 mg orally 2 times/day for 14 days

WITH

Metronidazole 500 mg orally 2 times/day for 14 days

OR

Other parenteral third-generation **cephalosporin** (e.g., ceftizoxime or cefotaxime)

PLUS

Doxycycline 100 mg orally 2 times/day for 14 days

WITH

Metronidazole 500 mg orally 2 times/day for 14 days

*For persons weighing >150 kg (~300 lbs.) with documented gonococcal infection, 1 gm of ceftriaxone should be administered.

9. A 25-year-old male presents with urethral discharge and urethritis. NAAT testing is positive for GC, chlamydia. He is treated with ceftriaxone 500mg and doxycycline 100mg bid x 7 days but still has symptoms. His urine shows ≥ 5 WBC per HPF. What is the likely diagnosis?
- a. Persistent GC
 - b. Persistent chlamydia
 - c. Mycoplasma genitalium
 - d. Mycoplasma urealyticum
 - e. Post-treatment inflammation

Managing Urethritis

- If a patient presents with urethritis, test for both GC and CT and treat for both empirically with ceftriaxone and doxycycline [if you are able to do a Gram's stain, or have access to another POC diagnostic, and it does not show evidence of GC, just treat for CT with doxycycline]
- If the patient has persistent symptoms and there are **objective signs** for urethritis (≥ 2 WBCs/HPF in high-prevalence settings [STI clinics] or ≥ 5 WBCs/HPF in lower-prevalence settings OR positive leukocyte esterase test on first-void urine OR microscopic examination of sediment from a spun first-void urine demonstrating ≥ 10 WBCs/HPF):
 - Test MSW for both trichomonas and *M genitalium*
 - Test MSM for *M genitalium*
- Treat the patients with persistent symptoms based on testing results

Mycoplasma genitalium: Testing and Treatment

- NAATs now FDA-cleared
- Test men with persistent urethritis and women with persistent cervicitis
- CONSIDER testing women with PID
- Do NOT routinely test extragenital sites
- Do NOT screen asymptomatic men or women
- Partners: If you can test partners, treat those who are positive; if you cannot, consider treating the partner with the same regimen used to treat the patient

Two-stage therapy approaches, (ideally using resistance-guided therapy) are recommended for 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 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 Regimen 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

10. A patient presents for a routine physical. Routine labs reveal a positive FTA-ABS for syphilis and an RPR of 1:16. He is sexually active but has no history of genital lesions or history of syphilis. What stage is he?
- a. Primary
 - b. Secondary
 - c. Early latent
 - d. Late latent
 - e. Tertiary

How would you treat him?

- a. Benzathine penicillin x 1 dose
- b. Benzathine penicillin x 3 doses
- c. Aqueous penicillin 14 million units IV per day for 17 days
- d. Ceftriaxone 1 gram IM x 1
- e. Doxycycline 100mg bid x 14 days

Syphilis Serologies

- **Nontreponemal (lipoidal) tests: RPR and VDRL**
 - Nonreactive in 30% of persons with primary syphilis
 - False positives occur (older age; autoimmune diseases; HIV & other infections)
 - **May become nonreactive over time with or without treatment**
- **Treponemal tests: (EIA, CIA, FTA-ABS, TPPA, etc.)**
 - Nonreactive in 30% of persons with primary syphilis
 - False positives occur (non-syphilitic treponematoses; severe gingivitis)
 - **Once reactive always reactive- independent of treatment history**

Table 1. Traditional and Reverse-Sequence Algorithms for Serologic Testing.*

Algorithm	NTT	TT	Confirmatory TT†	Interpretation‡
Traditional	Nonreactive			No serologic evidence of syphilis (most likely) Early primary syphilis (extremely recent infection cannot be ruled out) Treated or long-standing untreated syphilis
Traditional	Reactive	Nonreactive		Biologic false positive NTT§
Traditional and reverse-sequence	Reactive	Reactive		Untreated syphilis (likely) Treated syphilis (likely) Endemic treponematoses
Reverse-sequence	Nonreactive	Reactive	Nonreactive	Biologic false positive TT¶
Reverse-sequence	Nonreactive	Reactive	Reactive	Treated syphilis (most likely) Long-standing untreated syphilis Early primary syphilis (before NTT has turned positive) Prozone reaction (more common with VDRL test than with RPR test)
Reverse-sequence		Nonreactive		No serologic evidence of syphilis (most likely) Early primary syphilis (extremely recent infection cannot be ruled out) Long-standing treated syphilis if TT shows seroreversion


* The traditional algorithm starts with a nontreponemal test (NTT) followed, if reactive, by a confirmatory treponemal test (TT). The reverse-sequence algorithm starts with a TT (e.g., fluorescent treponemal-antibody absorption test, *Treponema pallidum* particle agglutination test, or automated enzyme or chemiluminescence immunoassay), followed, if reactive, by an NTT. RPR denotes rapid plasma reagin, and VDRL Venereal Disease Reference Laboratory.

† The confirmatory TT should be different from the TT performed initially.

‡ The likely or most likely interpretation of test results is noted for each algorithm.

§ Causes of a biologic false positive NTT include older age, autoimmune diseases, infections (e.g., human immunodeficiency virus infection), and drug use; pregnancy as a cause is controversial.

¶ Causes of a biologic false positive TT include infections (e.g., Lyme disease), autoimmune diseases, and older age.

- 
11. One year later his RPR is 1:4 and he has no symptoms. What would you do?
 - a. Retreat with benzathine penicillin x 1 dose
 - b. Retreat with benzathine penicillin x 3 doses
 - c. Doxycycline 100mg bid x 28 days
 - d. Do nothing but continue to monitor
 - e. Do a lumbar puncture

What to do with RPR Titers that Don't Respond Appropriately

- **Lack of a fourfold decline in titers** after waiting a **full 12m** following therapy for early syphilis and a **full 24m** following therapy for late syphilis:
 - Any neurological signs/symptoms? **If yes, perform immediate LP**
 - Could the patient have been reinfected? **If yes, treat**
 - If both of the above are negative, you can either follow the patient carefully or you can give additional antibiotics. Several observational studies suggest that there are **NO short/intermediate-term benefits to additional antibiotics**
- A **four-fold increase in titers** after appropriate therapy:
 - Any neurological signs/symptoms? **If yes, perform immediate LP**
 - Could the patient have been reinfected? **If yes, treat**
 - If the patient denies the possibility of reinfection, **and the titer continues to be elevated when repeated two weeks later**, **consider performing a LP**

Syphilis: CSF Examination

- Perform a lumbar puncture (LP) in persons who:
 - Have neurological signs and symptoms
 - Are diagnosed with tertiary syphilis (cardiovascular, gummas)
 - Consider in those who are asymptomatic but whose serological titers increase four-fold after stage-appropriate therapy and in whom the likelihood of reinfection is low
- No data to support routine LP in asymptomatic HIV-infected persons
- No need for follow-up LP 6 months after the diagnosis and treatment of neurosyphilis in HIV uninfected or PLWH who are on ART if they improve clinically, and their serological titers are responding appropriately

12. A patient presents with a 3-day history of redness and pain in his eyes. He also complains of recent floaters and slight decreased vision. On exam, he has conjunctivitis bilateral also a diffuse rash on trunk, palms, and soles. He admits to being sexually active. Testing is done and he has a syphilis FTA positive with RPR 1:512. What is the diagnosis?

- a. Primary syphilis
- b. Secondary syphilis
- c. Late latent syphilis
- d. Neurosyphilis
- e. Ocular syphilis

What should be done now?

- a. Lumbar puncture
- b. Treat with benzathine penicillin x 1
- c. Treat with benzathine penicillin x 3
- d. Treat with IV aqueous penicillin plus corticosteroids
- e. Treat with ceftriaxone 1 gram IM x 1

Otic and Ocular Syphilis Take-Home Points

Otosyphilis

- **Clinical manifestations:** cochleovestibular dysfunction and syphilis infection without an alternate diagnosis; ~50% bilateral
 - Symptoms: Hearing loss, vertigo, and/or tinnitus (ringing in the ears)
 - Diagnosis is presumptive; **CSF examination is normal in 90% of cases and is NOT recommended if patient only has otic signs and symptoms**
- **Therapy:** IV penicillin (+ corticosteroids)
- **Prognosis:** 23% experience improvement in hearing; up to 80% experience improvement in tinnitus and vertigo

Ocular Syphilis

- Clinical manifestations: any portion of the eye; any ocular manifestation; **immediate ophthalmological examination**
 - Symptoms: Redness, pain, floaters, flashing lights, visual acuity loss
 - Diagnosis is presumptive; **CSF examination is normal in 40% of cases and is NOT recommended if patient only has ocular signs and symptoms**
- **Therapy:** IV penicillin (+ corticosteroids)

Syphilis During Pregnancy

- Maternal risk factors for syphilis during pregnancy include sex with multiple partners, sex in conjunction with drug use or transactional sex, late entry to prenatal care (i.e., first visit during the second trimester or later) or no prenatal care, methamphetamine or heroin use, incarceration of the woman or her partner, and unstable housing or homelessness
- Certain evidence indicates that additional therapy is beneficial for pregnant women to prevent congenital syphilis. **For women who have primary, secondary, or early latent syphilis, a second dose of benzathine penicillin G 2.4 million units IM can be administered 1 week after the initial dose**
- Missed doses **>9 days** between doses are not acceptable for pregnant women receiving therapy for late latent syphilis

14. A patient presents with popular lesions on his penis that burn and tingle. He is concerned about herpes. What is the most sensitive test to diagnose this?

- a. Glycoprotein IgG antibody for herpes
- b. Glycoprotein IgM antibody for herpes
- c. Culture of lesion for herpes
- d. HSV PCR swab for herpes
- e. HSV DNA viral load

HSV-2 Serological Diagnosis: 2-Step Testing

- If lesions are present, PCR is the best diagnostic test
- If lesions are absent, the recommended serological tests for HSV-1 and HSV-2 are the Glycoprotein-G-based IgG EIAs [e.g., HerpeSelect HSV EIA]
 - There are issues with the **SPECIFICITY** of the IgG-2 EIAs with EIA index values <3.0 [in one study, the specificity was 38%]
 - Laboratories should provide index values for all HSV-2 IgG EIA results
 - **If the index value <3.0 , a second more specific test should be performed to confirm the original EIA result.** There are two options for the second test:
 - HSV-2 Western Blot- only performed at the University of Washington
 - <https://depts.washington.edu/uwviro/>
 - HSV-2 *Biokit Rapid Test* (Biokit USA, Lexington MA)
- **NEVER IgM serologies**- they are neither sensitive nor specific to diagnose a recent infection

HSV: HIV & Pregnancy

- In PWH with a CD4 < 200 cells/mm³ and a history of genital herpes, consider 6 months of HSV suppressive therapy when initiating ART to decrease reactivation of genital herpes
- During pregnancy: At the onset of labor, all women should be questioned thoroughly about symptoms of genital herpes, **including prodromal symptoms (e.g., pain or burning at site before appearance of lesion)**, and all women should be examined thoroughly for herpetic lesions. Women without symptoms or signs of genital herpes **or its prodrome** can deliver vaginally.

Vaginitis

- Clinical Features
 - Change in volume, color, odor of vaginal secretions
 - Pruritus, burning, erythema, dyspareunia, spotting, dysuria
- General significance
 - Most common reasons women seek healthcare
 - 10 million visits annually
 - Less than 50% optimally managed
- Common etiologies
 - Bacterial vaginosis
 - Candida vulvovaginitis
 - Trichomoniasis

Bacterial Vaginosis

- Etiology
 - Imbalance of naturally occurring bacteria in vagina with overgrowth of certain bacteria (anaerobes) and *Gardnerella vaginalis* and suppression of good normal flora (*Lactobacillus*)
- Clinical Presentation
 - Discharge with a “fishy smell”
 - Not an STI but can be risk factor with multiple sex partners, plus hormonal changes
 - Men cannot get BV
- Diagnosis
 - Gram stain with few *Lactobacillus* but many small GNB, *G. vaginalis*, *Bacteroides*, *Mobiluncus*
 - Foul smelling discharge (fishy odor)
 - Clue cells (vaginal epithelial cells with bacteria)
 - pH of vaginal fluid > 4.5
- Therapy
 - Metronidazole or clindamycin

Vaginal Yeast Infection

- Etiology
 - Candida
- Risks
 - Immunocompromised (HIV) severe, recurrent
 - Antibiotic use
- Clinical Presentation
 - Itching, burning around vagina
 - Thick, white discharge (cottage cheese)
 - Redness, swelling around vagina
 - Dysuria
 - Pain during sex

Vaginal Yeast Infection

- Diagnosis
 - Microscopic exam
 - KOH stain positive
 - Culture fungus
 - Vaginal pH
- Therapy
 - Antifungal medication
 - Fluconazole
 - Miconazole

Trichomonas vaginalis

- Majority of infections asymptomatic in both men and women; causes vaginitis and NGU (especially among heterosexual men)
- Older women and MSW are at higher risk
- Diagnosis: culture and **PCR**; wet mount is not sensitive
- Vaginal pH usually >4.0
- Therapy: **Metronidazole 500mg PO BID X 7 days for all women** [never use topical gel formulations]; Metronidazole 2g PO X1 is ok for men; **Tinidazole 2g orally X1 ok for both men and women**
 - Recent study suggests that 1 week of metronidazole better than 2g in HIV-uninfected women (Kissinger P, et al. *Lancet Infectious Diseases* 2018)
- Resistance: ~5% of strains have low-level resistance to metronidazole; <1% have high level resistance
- Partners in the preceding 60 days must be treated
- **Screen HIV+ women annually**

Doxy PEP

- Used for prevention of STI
 - Gonorrhea, chlamydia, syphilis
 - Used as post-exposure prophylaxis within 72 hours after the exposure
 - Effectiveness
 - Reduction of chlamydia, syphilis by > 70%
 - Reduction of gonorrhea by 50%
- Medication
 - Doxycycline 200mg within 72 hours after sex
- Risks
 - Seeing more resistant gonorrhea
 - Must always test for HIV as well

Case 1

A 25-year-old patient comes in for evaluation of painful urination with a thick urethral discharge over the past 2 days. He has a history of recent sexual activity. He also has a past medical history of sexually transmitted infections. The exam is unremarkable.

Questions

1. What is the likely diagnosis?
2. What tests would be most appropriate?
 - A. NAAT test
 - B. Gram stain
 - C. Culture urine
 - D. FTA, RPR
 - E. HIV test

The gram stain reveals many WBC and gram-negative intracellular cocci.

Questions

3. What is the likely diagnosis?
 - A. Gonorrhea
 - B. Chlamydia
 - C. M. genitalium
 - D. Syphilis
 - E. Something else

4. Would you do any other testing?

Questions

5. How would you treat him?
 - A. Ceftriaxone 500 mg IM
 - B. Ceftriaxone 250 mg IM
 - C. Azithromycin 1 gm po x 1
 - D. Doxycycline 100 mg bid x 7 days
 - E. Something else

6. What if a NAAT test for chlamydia was negative, how would this influence your management?

Questions

7. What if all tests on the urethral discharge were negative? What would be a possible diagnosis?
- A. Gonorrhea
 - B. Chlamydia
 - C. Trichomoniasis
 - D. Herpes simplex
 - E. Mycoplasma genitalium
 - F. Syphilis
 - G. Something else

Case II

A 25-year-old presents to you with a rash that has been present over the past 3 days. The rash is macular over his trunk and extremities including palms and soles. It is non-pruritic. He states he is on tetracycline for facial acne for the past month. He is sexually active with several partners and last activity was 14 days ago. He had a genital papular lesion 3 days ago, but it disappeared.

Questions

1. What is the likely diagnosis?
 - A. Drug rash
 - B. Rash from a viral infection
 - C. Secondary syphilis
 - D. RMSF
 - E. Something else
2. What tests would you order?
 - A. CBC, CMP
 - B. FTA, RPR
 - C. HIV test
 - D. Urethral culture for GC, chlamydia
 - E. Something else

Questions

3. What do you do now?
- A. Give him penicillin shots weekly x 3
 - B. Give him penicillin shot x 1 dose
 - C. Doxycycline 100 mg bid x 14 days
 - D. Something else

3 months later, his FTA is positive and RPR is 1:4

4. What do you do now?
- A. Retreat him with penicillin x 3 weekly doses
 - B. Retreat him with 1 dose of penicillin
 - C. Doxycycline 100 mg bid x 21 days
 - D. Nothing more
 - E. Something else