AETC AIDS Education & Training Center Program Southeast

Sexually Transmitted Infections in the Primary Care Setting

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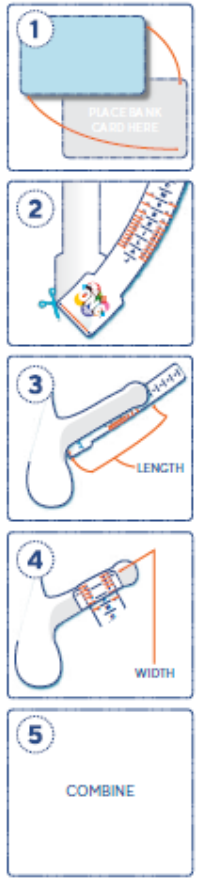
Objectives

- Identify the impact of bacterial sexually transmitted infections (STIs) on the acquisition of HIV infection
- Identify symptoms suggestive of sexually transmitted infection (STI)
- Choose appropriate diagnostic tests for sexually transmitted infection
- Treat sexually transmitted infections according to guideline recommendations

How many sizes of condoms are there?

Introducing myONE®, the world's first perfect-fit condom with 60 different sizes for maximum pleasure & comfort.



FitKit™ Instructions

STEP 1: Print your fit kit. It's important that the Fit Kit print correctly so you are sized properly. To verify, place a bank card onto the illustration below. If it fits, so will you. Troubleshooting printer issues: Printer scalingis the most common reason the FitKit does not print correctly. Be sure to turn printer scaling off and verify that you're printing the document at 100% size.

STEP 2: Cut out the measuring tool. Letters are for length and numbers are for width.

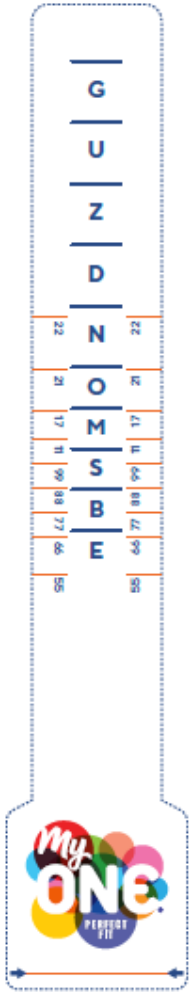
STEP 3: Find your length. Place the measuring tool under your erection with the wide end toward your body. Be sure that the edge of the Fit Kit is at the base of your penis, ensuring that the entire shaft will be covered. Your length is the letter that you see above the tip of your penis.

STEP 4: Find your width. Wrap the measuring tool gently around the middle of your erection. Your width is shown where the arrows meet the numbers. If your size is in between two numbers, select the number that is closest.

STEP 5: Determine your size. Combine your Length Letter with your Width Number to determine your myONE condom size. Visit myonecondoms.com to purchase or locate a retailer near you.

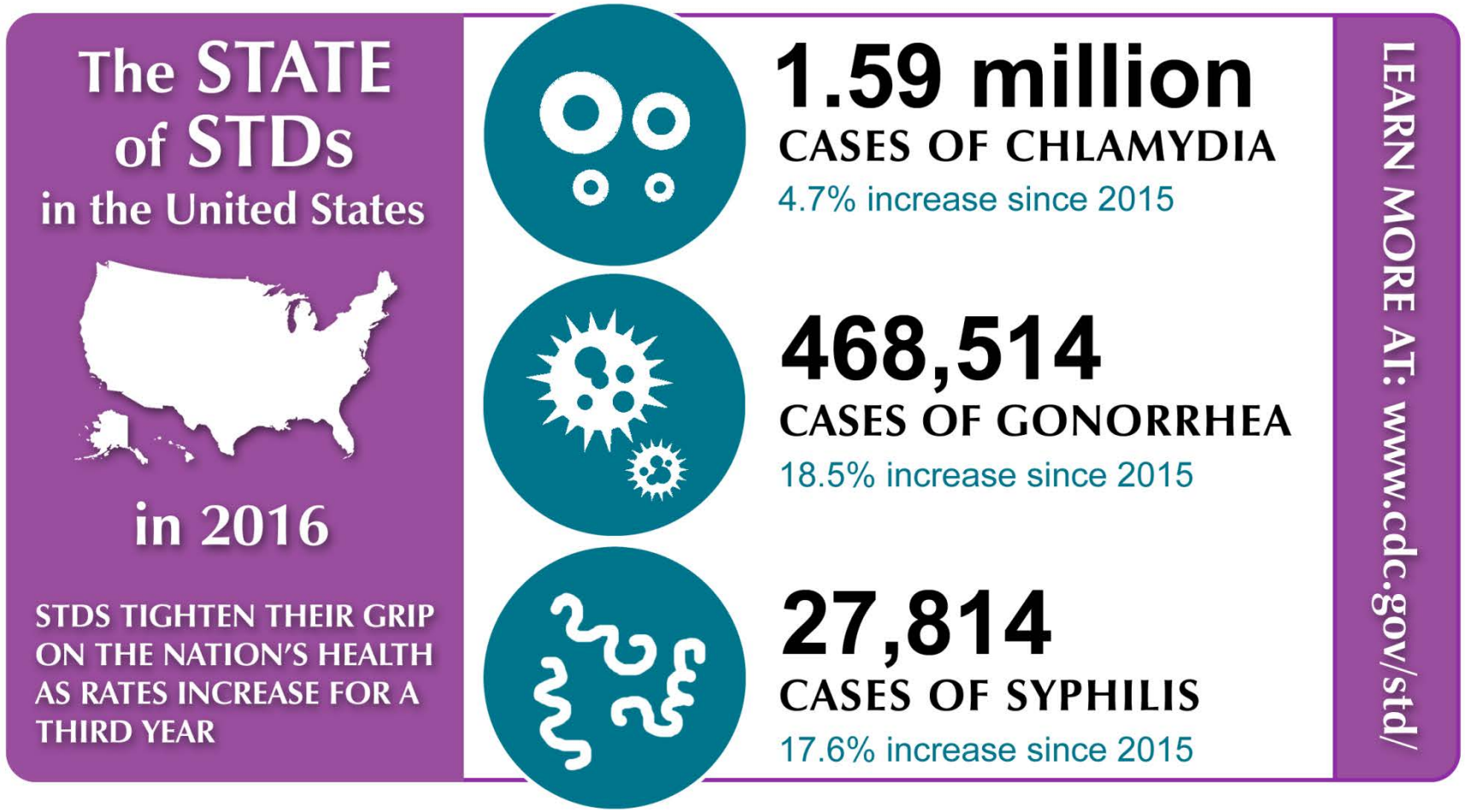
Please note: your myONE size is a suggested size based on your measurements. You may want to choose a slightly different size based on your personal preference. If your combination is not shown, to make the best choice choose a nearby size. It's better that a condom has more length or less width rather than be too wide or short. A proper fit is both comfortable and held snugly in position. Don't be afraid to try more than one code combination!

PLACE BANK CARD HERE



Warning: myONE® may actually improve your sex life! myONE® FitKit™ Version USA 2017.03-ALWAYS USE THE MOST UP TO DATE FitKit™ TO MAXIMIZE FITTING ACCURACY AND FITTED COMFORT. CHECK MYONECONDOMS.COM FOR DETAILS.

Record highs!

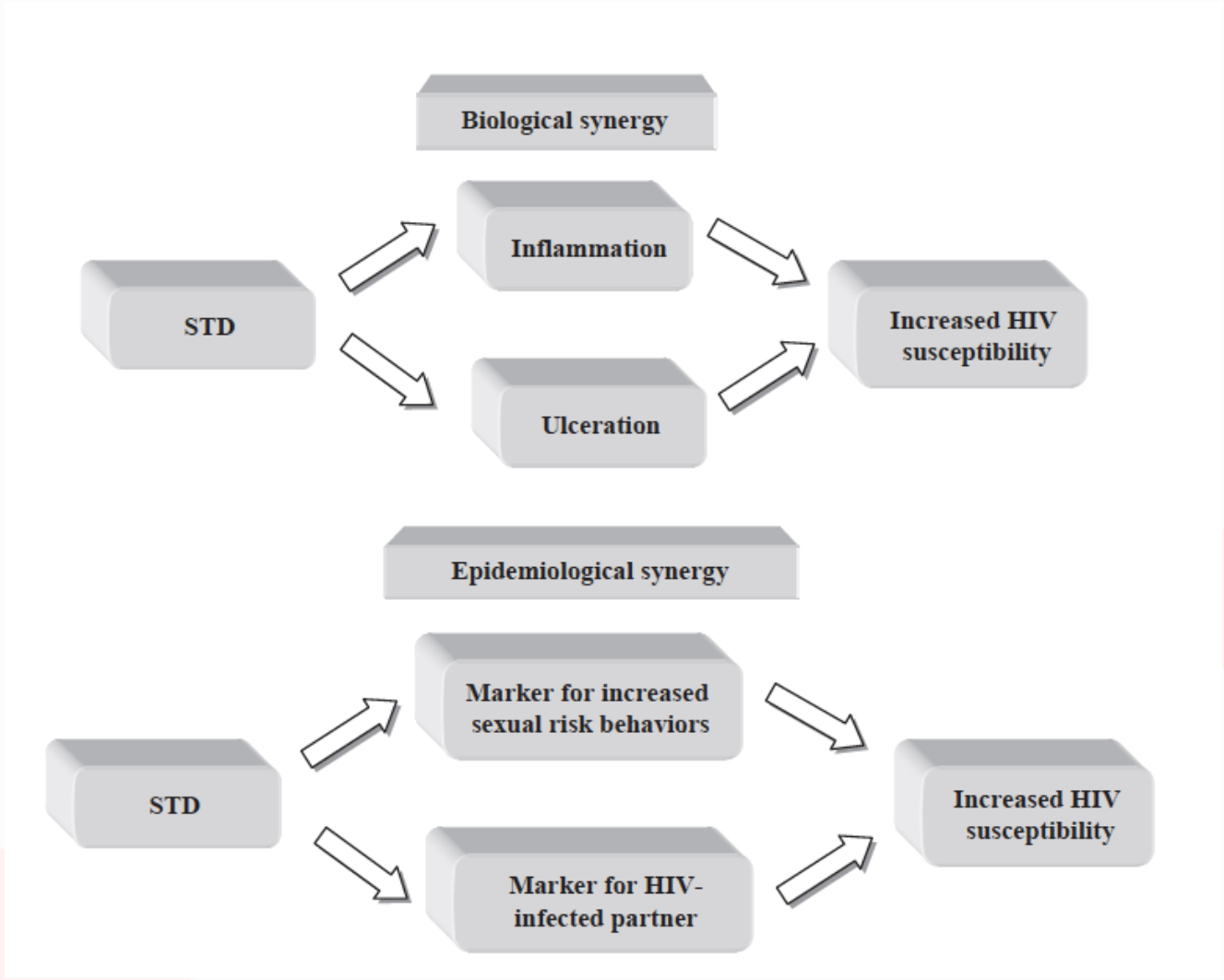


https://www.cdc.gov/std/stats16/default.htm

State of Tennessee

- Primary and secondary syphilis rate 4.3 per 100,000 in 2011 and 5.3 per 100,000 in 2015
- Tennessee now ranks 22nd in rates of 1˚ and 2˚ syphilis
- In 2015, Tennessee is ranked 19th among 50 states in chlamydial infections (477.5 per 100,000 persons)
- Ranked 17th among 50 states in gonorrheal infections (128 per 100,000 persons).

STIs and HIV Transmission



Mayer KH & Venkatesh KK. Am J Reprod Immunol. 2011 Mar;65(3):308-16

STIs Facilitate HIV Transmission

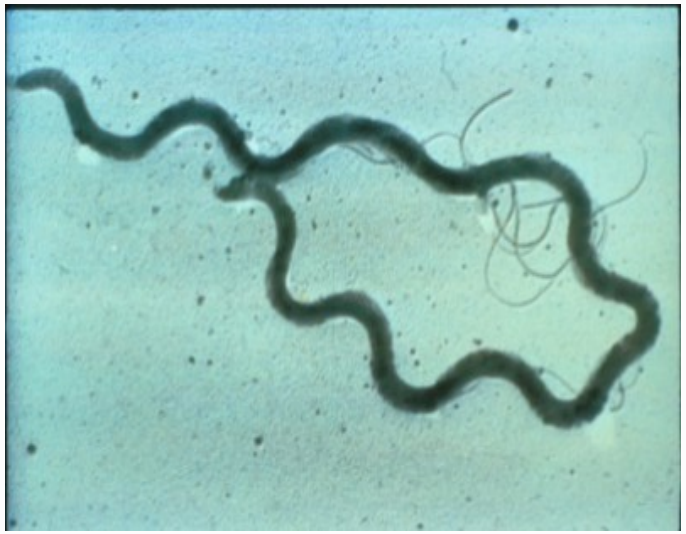
- Disruption of mucosal integrity
- Increase HIV target cells in genital tract due to immune reaction to infection
- STIs promote HIV shedding in the genital tract

Presence of ulcerative STI increases likelihood of HIV acquisition up to 5-fold!

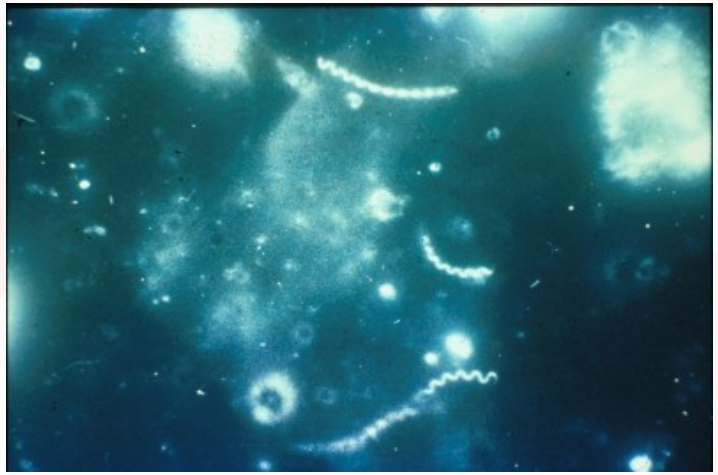
https://www.cdc.gov/std/hiv/stds-and-hiv-fact-sheet-press.pdf

Syphilis: *Treponema pallidum*

- Spirochete
- Cannot culture *in vitro*, diagnosis by serology
- Not visible by normal light microscopy
- Transmission
  - Direct contact with lesions
  - Blood or exudate transfer
  - Transplacentally



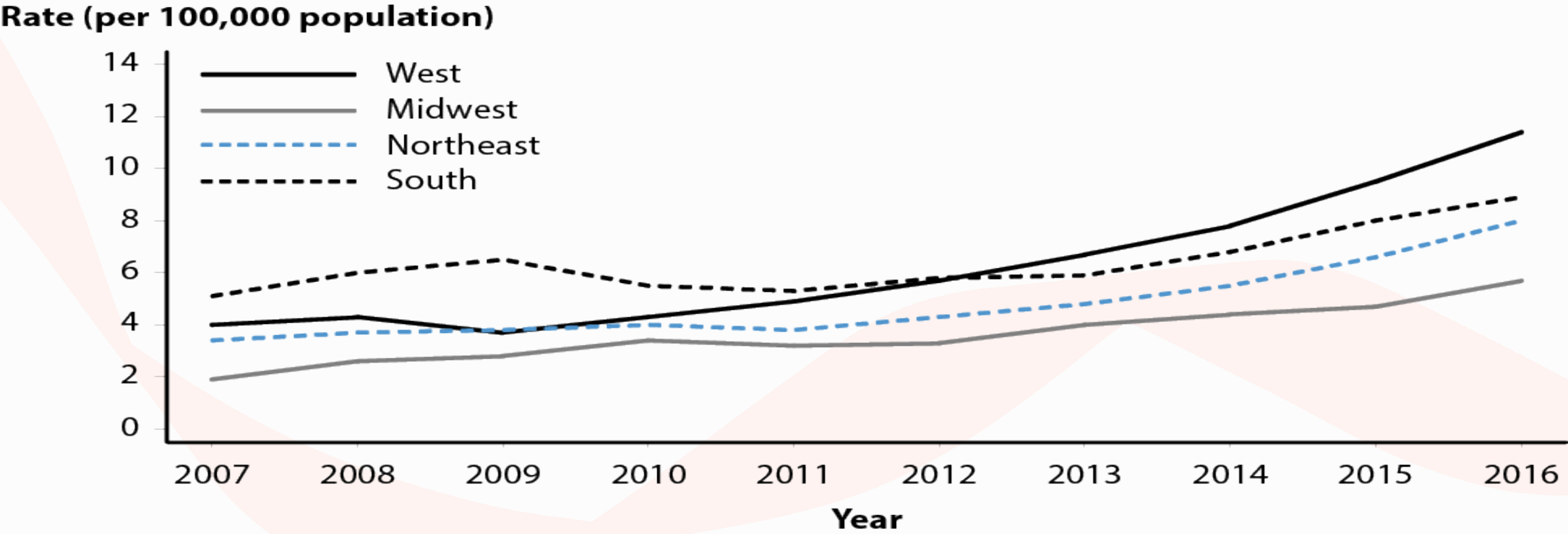
Electron photomicrograph, 36,000 x.



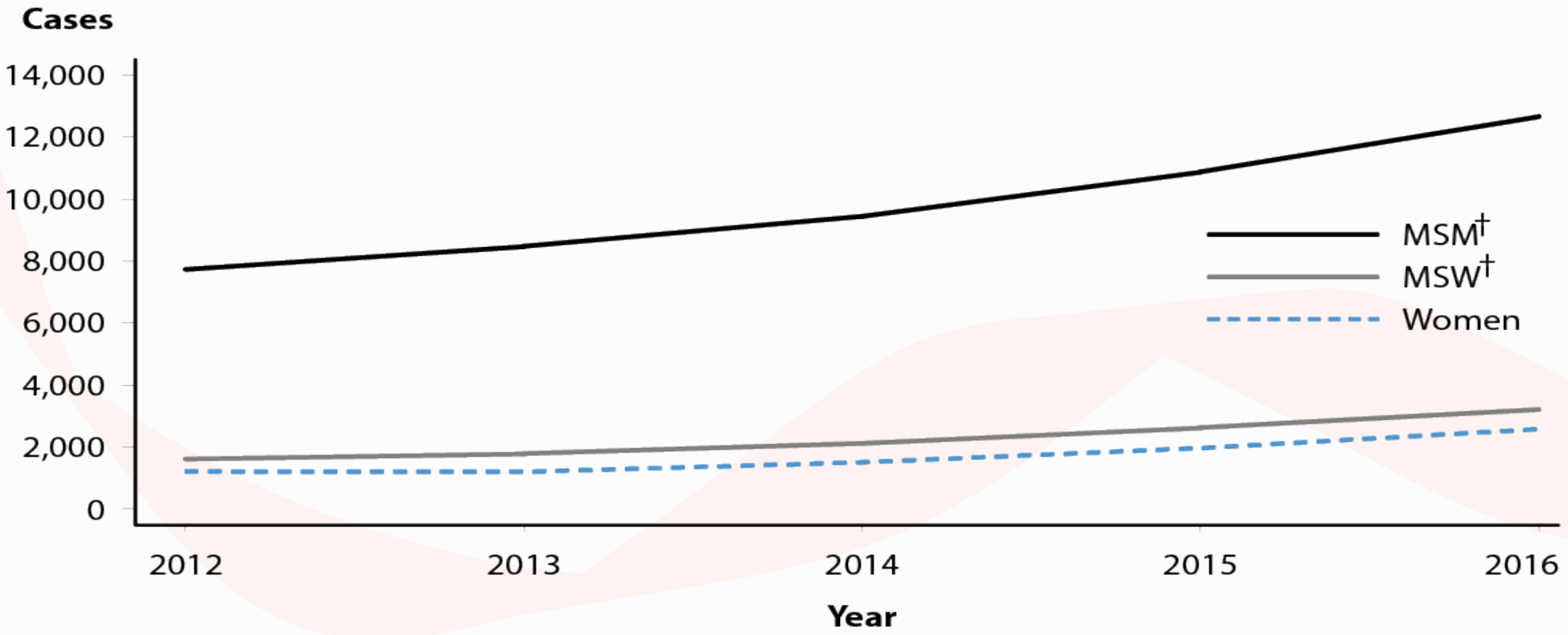
Darkfield photomicrograph

Source: CDC/NCHSTP/Division of STD Prevention, STD Clinical Slides

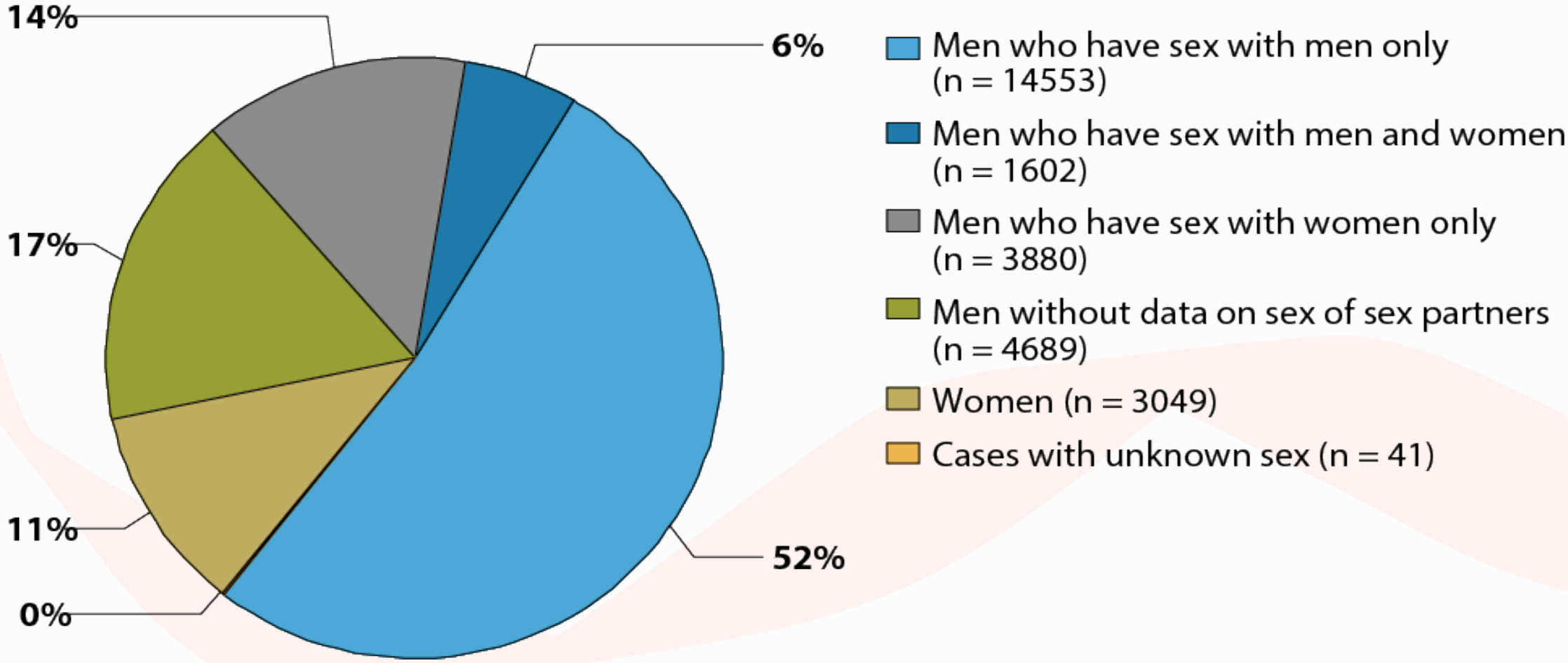
Primary and Secondary Syphilis –Rates Reported cases by Region, United States, 2007-2016



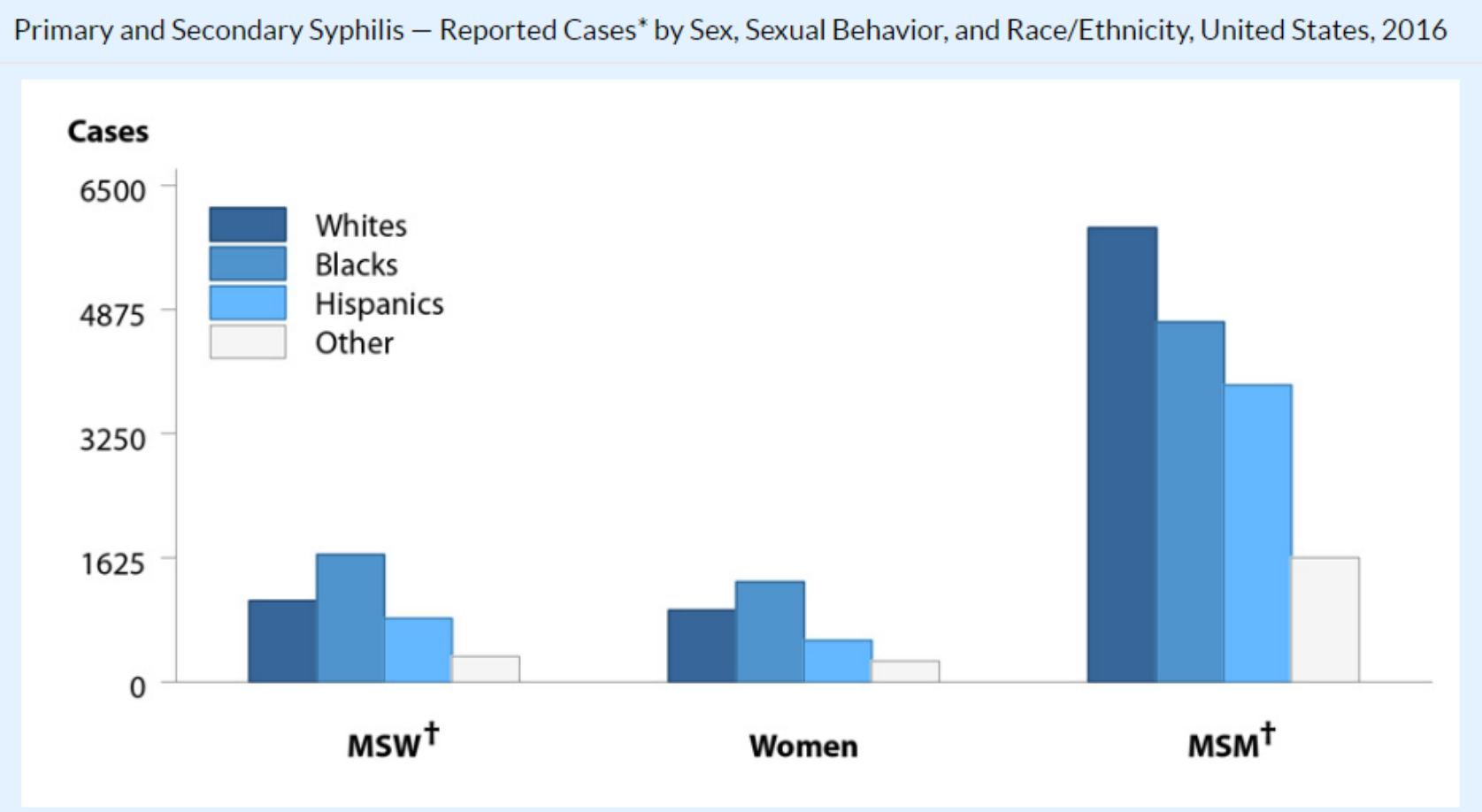
Primary and Secondary Syphilis — Reported Cases by Sex and Sexual Behavior, 36 States*, 2012–2016



Primary and Secondary Syphilis — Distribution of Cases by Sex and Sexual Behavior, United States, 2016

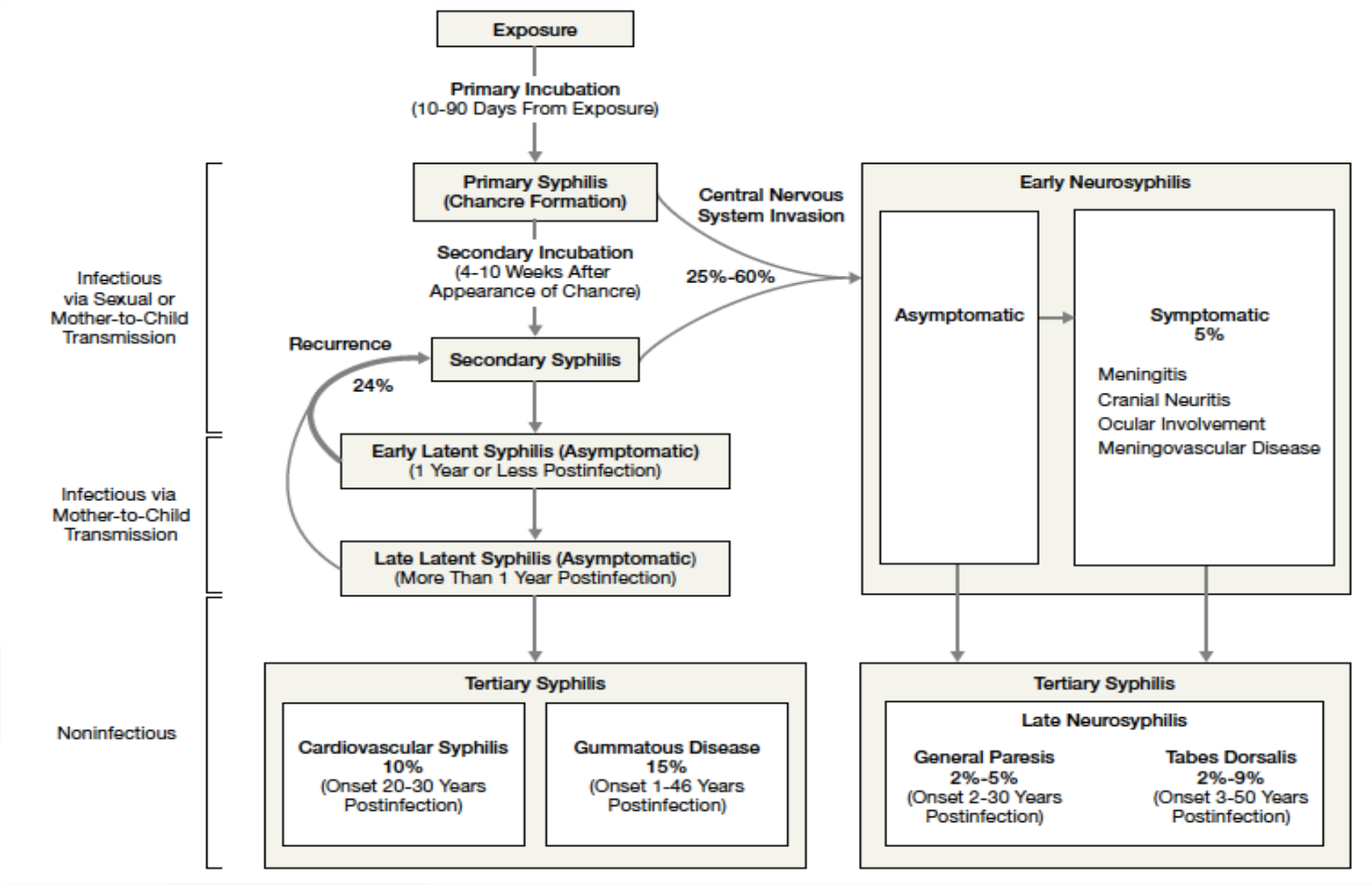


Primary and Secondary Syphilis - Distribution by Race/Ethnicity and Sexual Behavior, 2016



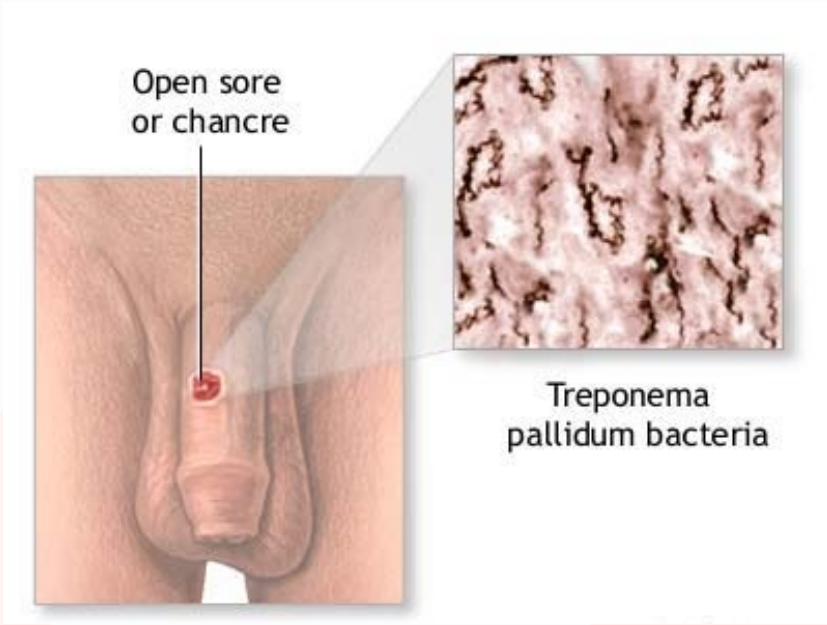
https://www.cdc.gov/std/stats16/default.htm

Natural History of Untreated Syphilis



Golden MR, et al. JAMA. 2003;290(11):1510-1514

Primary Syphilis



The Great Imitator

Diseases That Mimic Early Syphilis

	Differential diagnosis
Genital ulceration	Genital herpes (very common), chancroid, Bechet's syndrome, trauma
Palmar or plantar skin rash	Contact dermatitis, eczema, atopic dermatitis, erythema multiforme, Rocky Mountain spotted fever
Generalised skin rash	Systemic allergy, pityriasis rosea
Generalised lymphadenopathy	Mononucleosis syndrome, Hodgkin's lymphoma
Aseptic meningitis	Viral exanthem

Table 1: **Differential diagnosis of diseases that can mimic early syphilis, by manifestation**

Hook EW. Lancet 2017; 389: 1550–57.

Secondary Syphilis

Dr. Adriana Cruz, Centro Internacional de Entrenamiento e Investigaciones Médicas, Cali, Colombia.

Neurosyphilis

- Early
  - Cranial nerve dysfunction
  - Meningitis
  - Stroke (meningovascular syphilis)
  - Acute altered mental status
  - Auditory or ophthalmic abnormalities
- Late
  - Tabes dorsalis
  - General paresis

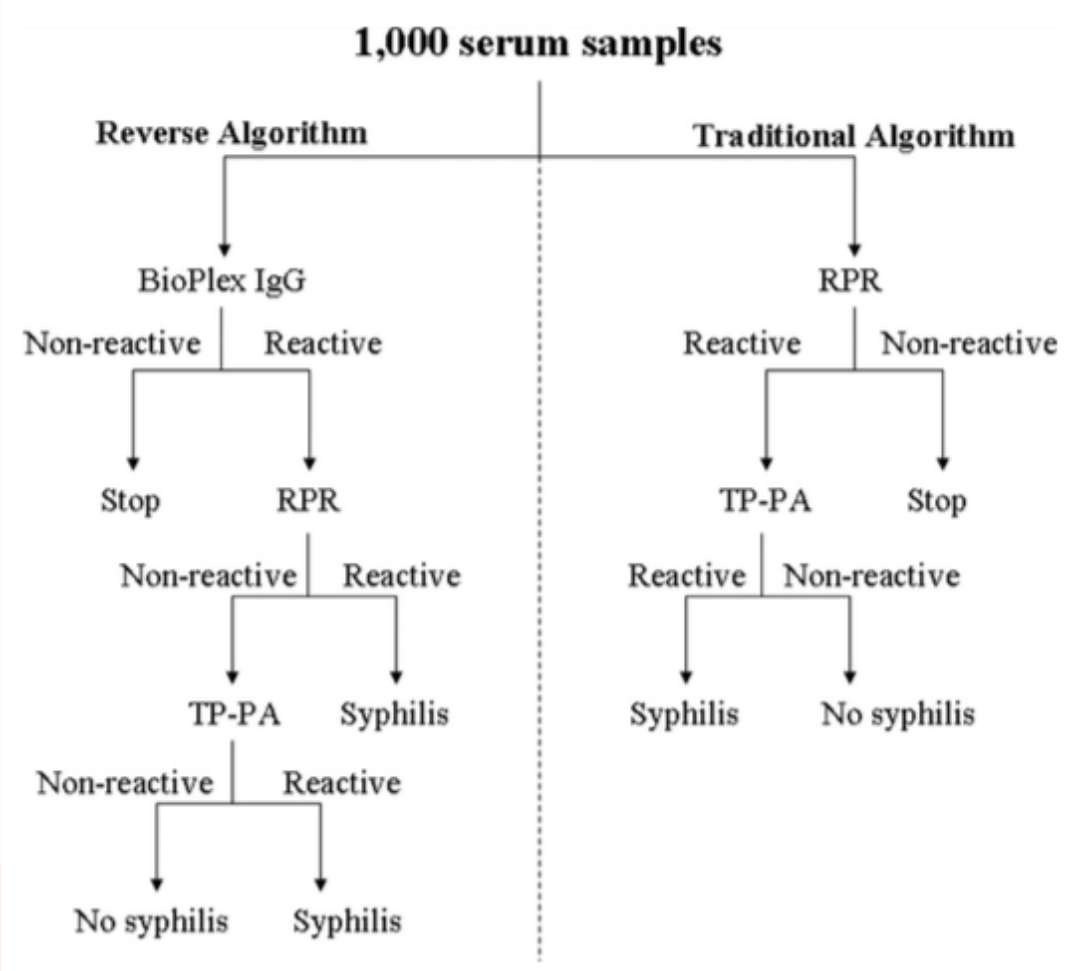
Syphilis and HIV

- Primary:
  - 70% have more than one ulcer
  - Deeper and larger ulcerations
- Secondary:
  - May see primary and secondary syphilis at the same time in HIV + patients
- Neurosyphilis
  - Not necessarily a late manifestation, can occur early on in disease
  - Unclear if represents higher treponemal invasion due to immunocompromise versus higher rates of baseline CSF abnormalities
- Male gender, CD4 <350, RPR >1:32 associated with neurosyphilis in HIV

Syphilis Tests

- Treponemal
  - TPPA
    - *T pallidum* particle agglutination assay
  - FTA-ABS
    - Fluorescent treponemal antibody absorption
  - MHA-TP
    - Microhemagglutination assay
  - Immunoassays
- Nontreponemal
  - RPR
  - VDRL

Reverse vs Traditional Syphilis Diagnostic Algorithm



Binnicker MJ, et al. J Clin Microbiol. 2012 Jan; 50(1): 148–150.

Test Interpretations

Treponemal Test (IgG)	Non-treponemal Test (RPR)	Second Treponemal Test (TP-PA)	Interpretation
-	n/a	n/a	Negative test
+	-	+	History of treated syphilis, though possibly very early or late latent – thorough history is needed
+	+	n/a	Untreated or recently treated syphilis – thorough history is needed
+	-	-	False positive initial treponemal test

Treatment of Syphilis

- Primary, secondary, early latent syphilis
  - Benzathine penicillin G 2.4 million units IM x 1
- Late latent syphilis or syphilis of unknown duration
  - Benzathine penicillin G 2.4 million units IM once weekly for 3 weeks
- Tertiary syphilis with normal CSF examination
  - Benzathine penicillin G 2.4 million units IM once weekly for 3 weeks

CDC. 2015 STD Guidelines.

Treatment of Syphilis

- Neurosyphilis and ocular syphilis
  - Acqueous crystalline penicillin G 18-24 million units per day, administered as 3-4 million units IV Q4 hours or by continuous infusion for 10-14 days

CDC. 2015 STD Guidelines.

Syphilis Treatment and Penicillin Allergy

- Pregnant
  - Desensitize and treat with penicillin
- Nonpregnant primary or secondary syphilis
  - Doxycycline, tetracycline, ceftriaxone, ?Azithromycin
- Latent syphilis
  - Doxycycline or tetracycline for 28 days
- Neurosyphilis
  - Desensitize and treat with penicillin
  - Limited data re: ceftriaxone

Jarisch-Herxheimer Reaction

- Acute febrile reaction frequently accompanied by headache, myalgia and fever within the first 24 hours after initiation of treatment for any stage of syphilis
- More common in early syphilis
- Can use antipyretics, but these have not been found useful in prevention of this reaction

Followup

HIV negative

- Primary and secondary syphilis
  - Clinical and serologic evaluation at 6 & 12 months after treatment
- Latent Syphilis
  - Clinical and serologic evaluation at 6, 12, and 24 months

HIV positive

- Primary and secondary syphilis
  - Clinical and serologic evaluation at 3, 6, 9, 12 and 24 months after treatment
- Latent syphilis
  - Clinical and serologic evaluation at 6, 12, 18, and 24 months

CDC. 2015 STD Guidelines.

Followup

- If persistent symptoms, or persistent titer elevation (less than 4 fold drop)
  - Retest for HIV if HIV negative initially
  - Consider lumbar puncture
  - Re-treat with benzathine penicillin G 2.4 million units IM once weekly for 3 weeks
  - Neurosyphilis: if initial CSF pleocytosis, repeat LP at 6 months

Case 1

- 23yoM presents with a new, painless ulcer on the shaft of his penis. He is MSM, with multiple recent partners with inconsistent condom use. He has never been tested for syphilis before. He is HIV-negative. He has no medication allergies.

Case 1

- What is the next step?

A. Test with treponemal IgG, RPR to confirm diagnosis

B. PCN IM 2.4MU weekly x 3 (presume late latent infection given no prior testing)

C. PCN IM 2.4MU IM x 1

D. Swab lesion for culture to confirm diagnosis

Case 1

- What about his partners?

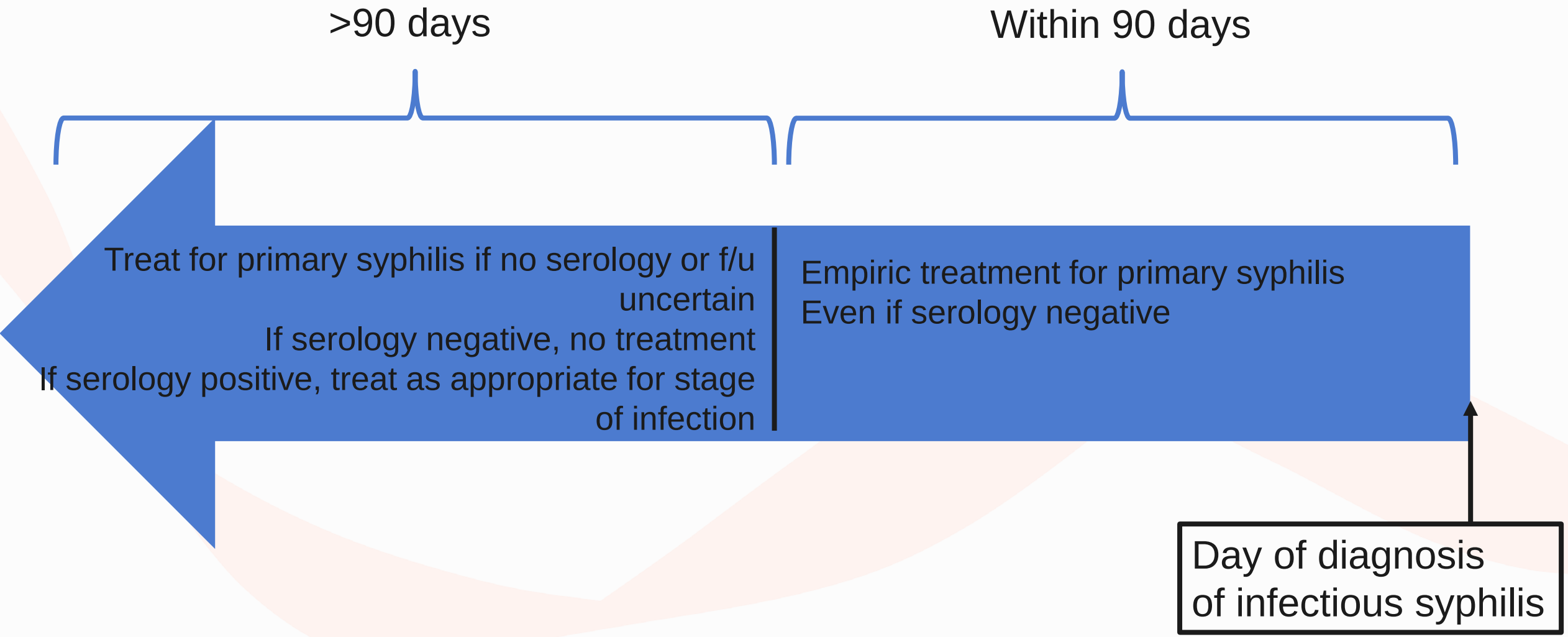
A. All partners over the past 90 days should be treated with PCN IM x 1

B. All partners over 90 days should be tested, and treated if positive

C. All partners over the past 1 year should be treated with PCN IM x 1

D. All partners over the past year should be treated with PCN IM weekly x 3

Treating Sexual Partners



Case 2

- 36yoM who presented to the emergency room with complaints of vision loss over the prior 3 months.
- Recently saw PCP 3 weeks ago with a large, painless ulcerative perianal lesion.
- Seen by an ophthalmologist 2 weeks ago and was diagnosed with uveitis treated with oral steroids. Despite this treatment, he developed retinal detachment.
- Pt is MSM, multiple partners with inconsistent condom use.

Case 2

- HIV Ag/Ab positive
- HIV viral load 1,642,400 copies/mL
- CD4 absolute 136 cells/mm^3
- RPR 1:256

Case 2

- What is the likely diagnosis?

A. Neurosyphilis

B. Primary syphilis

C. Ocular syphilis

D. All of the above

Does he need a lumbar puncture?

- “A CSF examination should be performed in all instances of ocular syphilis, even in the absence of clinical neurologic findings.”

Case 2

- Lumbar puncture with the following results
  - CSF WBC 30 cells/µL, protein 75 mg/dL, CSF VDRL positive

Neurosyphilis CSF Profile

- Reactive CSF VDRL
- CSF WBC ≥ 20 cells/mL
- CSF WBC may be <20 cells/mL in setting of AIDS (CD4 count <200 cells/µL)
- 70% have elevated protein and CSF pleocytosis

Case 2

- At what stage of infection does neurosyphilis occur?

A. Primary

B. Secondary

C. Tertiary

D. All of the above (can occur at any stage)

Ocular Syphilis

- Can involve almost any eye structure
  - Most common = posterior uveitis and pan uveitis
- Usually occurs in early syphilis, but can an occur at any stage

Ocular Syphilis

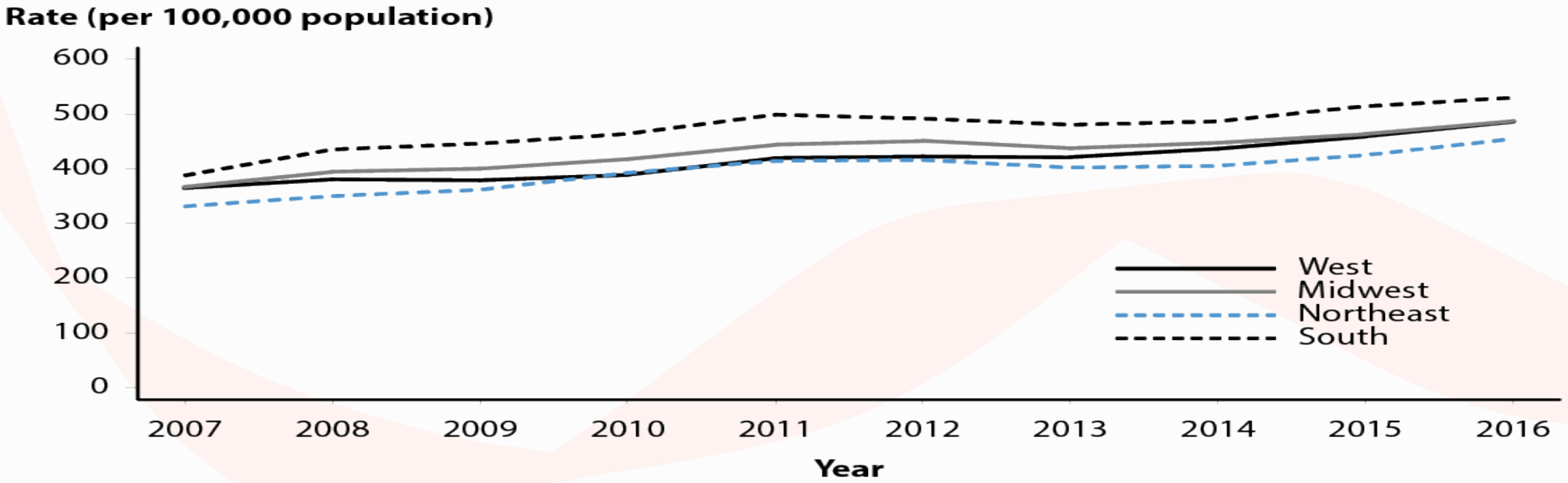
- Screen for visual complaints in any patient at risk for syphilis
- + Syphilis = need for HIV testing
- Syphilis + ocular complaints = need for immediate ophthalmic exam
- Can be associated with neurosyphilis
- Perform LP in any patient with syphilis and ocular complaints

CDC. Clinical Advisory: Ocular Syphilis in the United States. Available at http://www.cdc.gov/std/syphilis/clinicaladvisoryos2015.htm. Accessed 4.24.16.

Which is the recommended treatment for ocular syphilis?

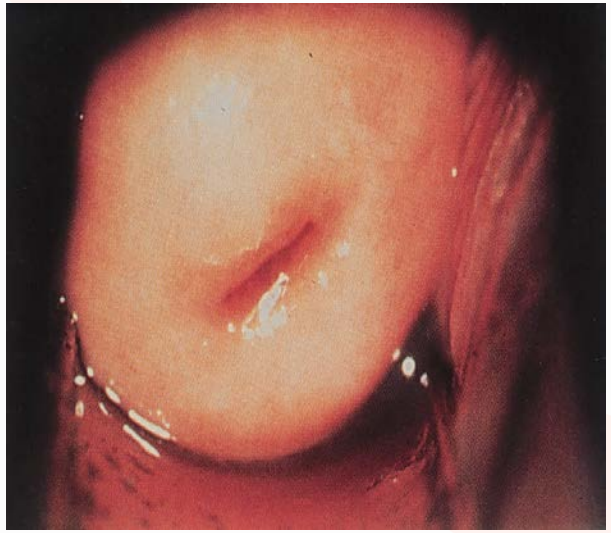
A. Ceftriaxone 2 gm IM x 1
B. Benzathine Penicillin G 2.4 MU once weekly x 3 weeks
C. Aqueous PCN G IV for 10-14 days
D. Procaine PCN IM + probenecid x 10-14 days

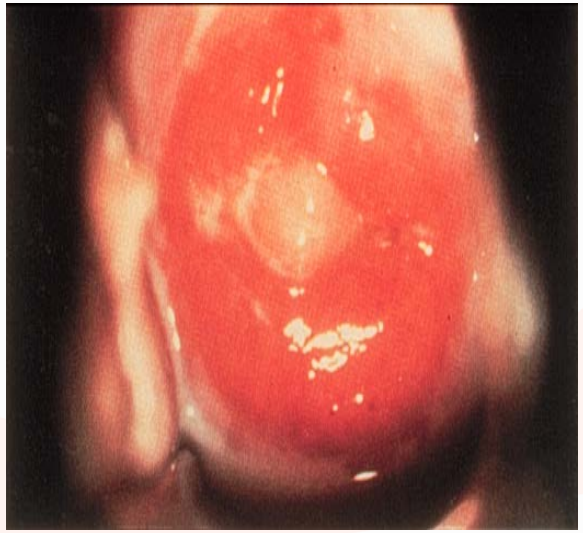
Chlamydia — Rates of Reported Cases by Region, United States, 2007–2016



Potential Complications of Chlamydia

- Epididymitis
- Pelvic Inflammatory Disease (in up to 10-15%)
- Reactive arthritis
- Conjunctivitis
- Lymphogranuloma venereum (LGV)
- Proctitis & proctocolitis
- Urethral strictures





Which is the preferred clinical diagnostic method for chlamydia?

A. Nucleic acid amplification test (NAAT)
B. Culture
C. Chlamydia serology
D. Gram Stain of exudate

NAAT Testing

- FDA approved for testing urine, vaginal or urethral specimens
- Not FDA approved for oropharyngeal or rectal swab specimens
  - Improved sensitivity and specificity compared to culture in these sites
- Can do NAAT testing on liquid based cytology specimens

Chlamydia: Recommended Treatment Regimen

- Azithromycin 1 gram PO x 1
- Doxycycline 100 mg BID x 7 days

Case 3

- 32yoF who is in a monogamous relationship with a man, who recently disclosed to his patient that he had sex with a woman who does commercial sex work
- Pt presents to the clinic complaining of vaginal discharge.
- Her partner has no similar symptoms.

Case 3

- You suspect chlamydia, NAAT is positive for chlamydia.
- She receives azithromycin 1 gram PO x 1 for treatment of presumptive chlamydia

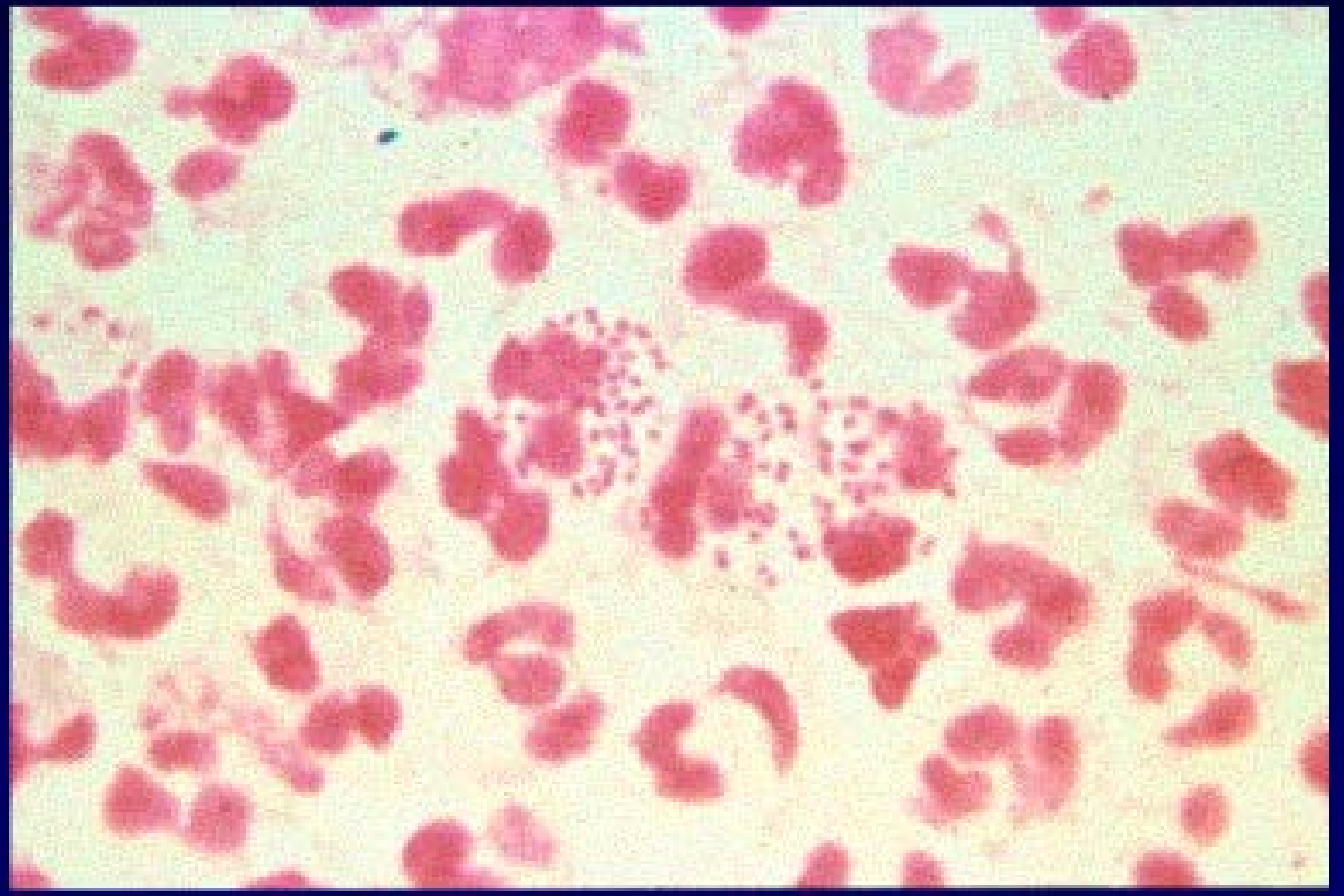
When should patients treated for chlamydia undergo repeat testing?

A. Repeat testing is not recommended
B. 3-4 weeks after treatment
C. 3 months after treatment
D. No retesting needed, just repeat azithromycin 1 gram in 3 months

Gonorrhea

- Neisseria gonorrhoeae
- Gram-negative intracellular diplococcus
- Infects mucus-secreting epithelial cell
- Evades host response through alteration of surface structures

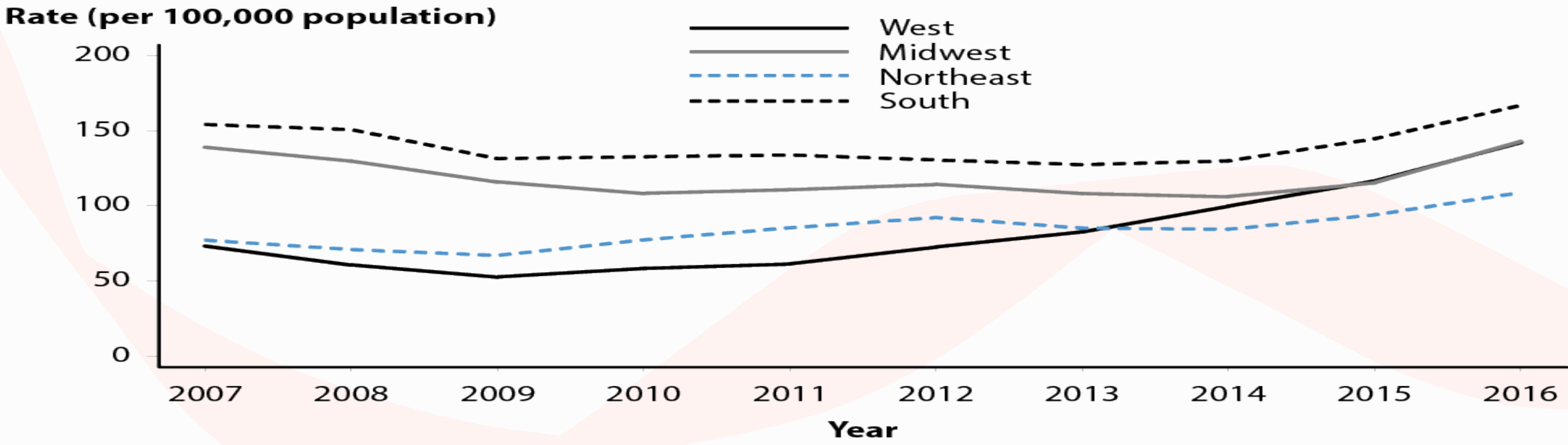
Gram Stain of Urethral Discharge

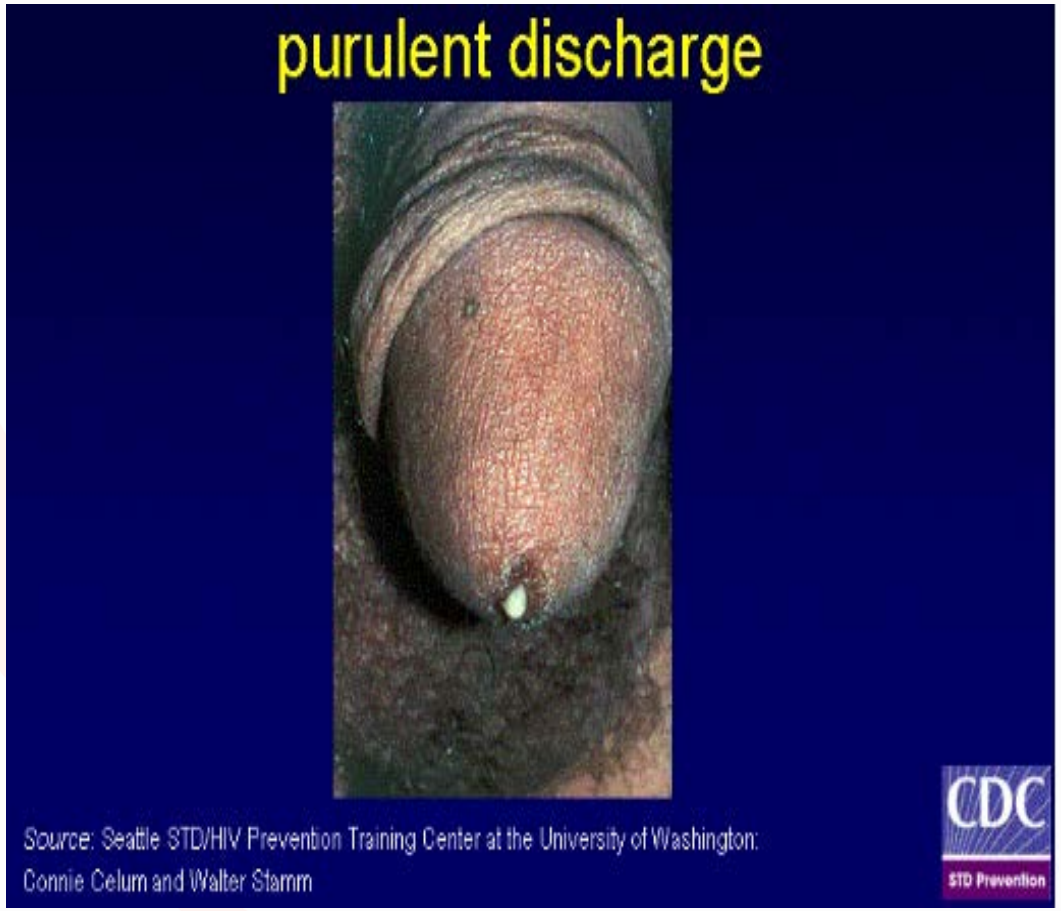


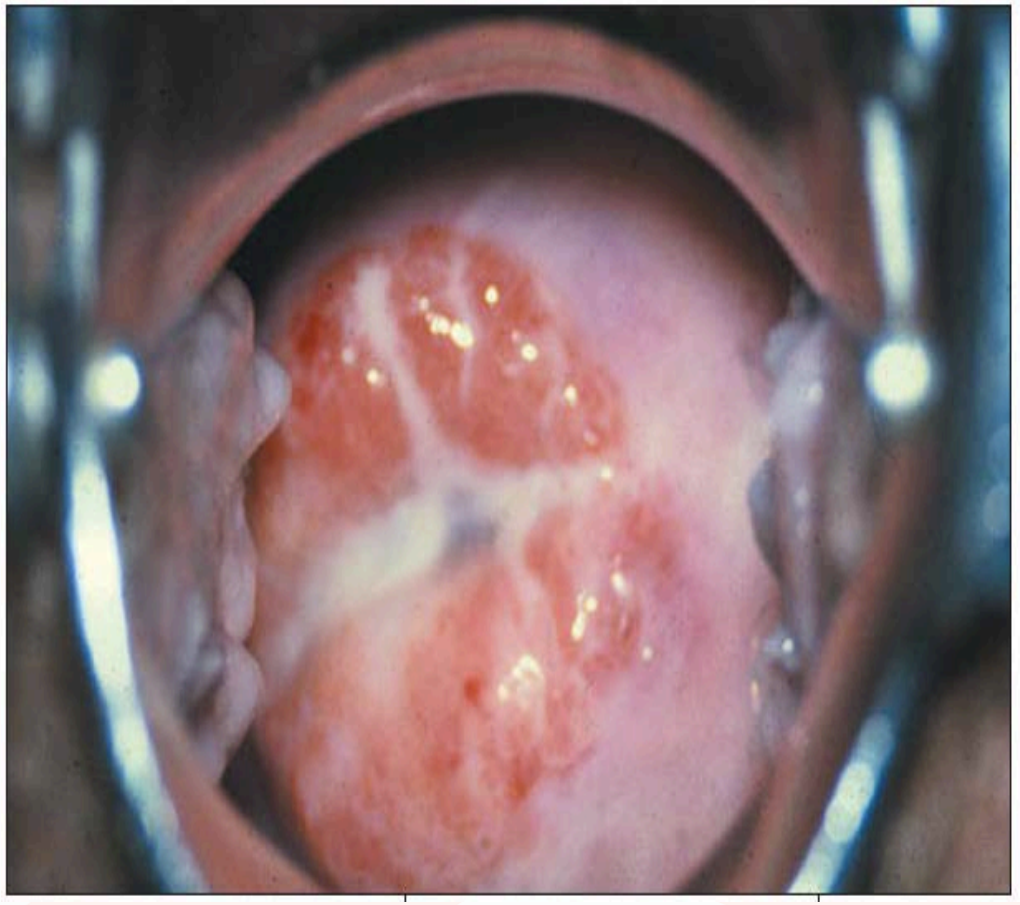
Source: CDC/NCHSTP/Division of STD Prevention, STD Clinical Slides

CDC
STD Prevention

Gonorrhea — Rates of Reported Cases by Region, United States, 2007–2016







Source: Seattle STD/HIV Prevention Training Center at the University of Washington
Connie Celum and Walter Stamm

Purulent vaginal Discharge. Courtesy of Public Health Agency of Canada

Case 4

- 18yoM who recently went on a 5-day trip to Atlanta complaining of urethral drainage noted on his underwear.
- While in Atlanta he had anal insertive sex with 3 men not previously known to him.
- He did not use a condom with any partners.
- He has no known drug allergies.

Case 4

- What is the preferred regimen?

A. Doxycycline 100 mg BID x 7 days

B. Metronidazole 500 mg BID x 7 days

C. Ceftriaxone 2 gm IM x 1

D. Ceftriaxone 250 mg IM + azithromycin 1 gm PO x 1

Recommended Treatment Regimen for Gonorrhea

- Ceftriaxone 250 mg IM x 1

PLUS

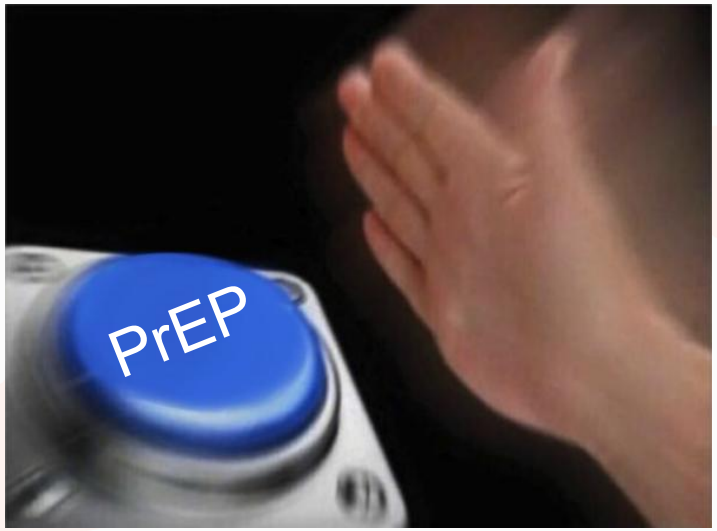
- Azithromycin 1 gram PO x 1

CDC. 2015 Sexually Transmitted Diseases Guidelines.

Case 4

- Your patient’s urine GC/chlamydia urine NAAT was positive for both gonorrhea AND chlamydia.

- Are we done?



Case 4

- What about his partners?

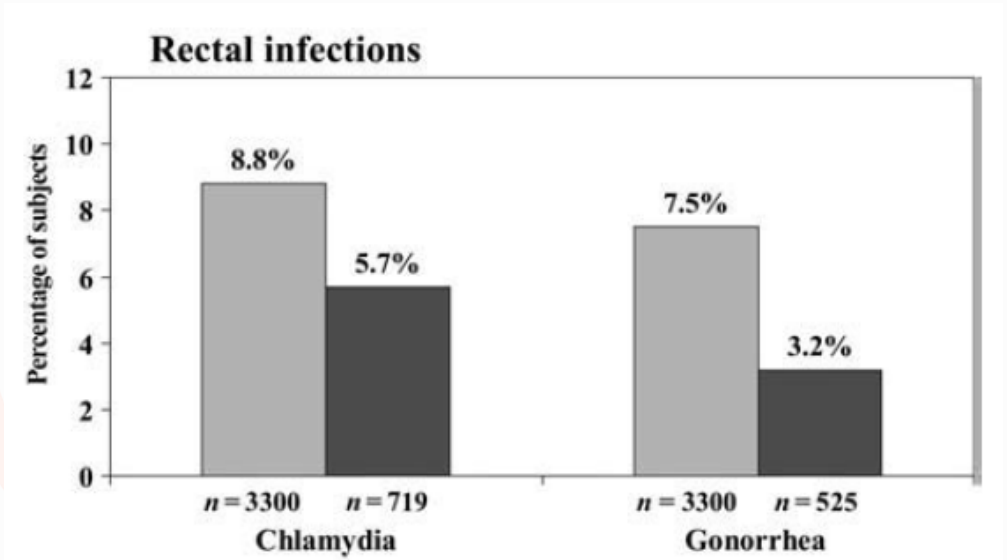
A. All partners over the past 30 days should receive empiric treatment

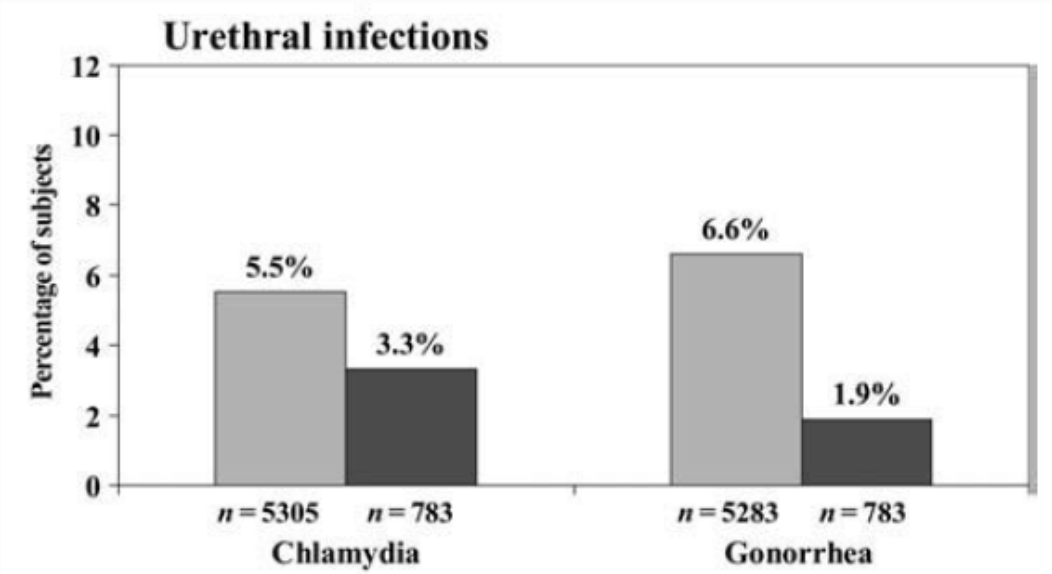
B. All partners over the past 60 days should receive empiric treatment

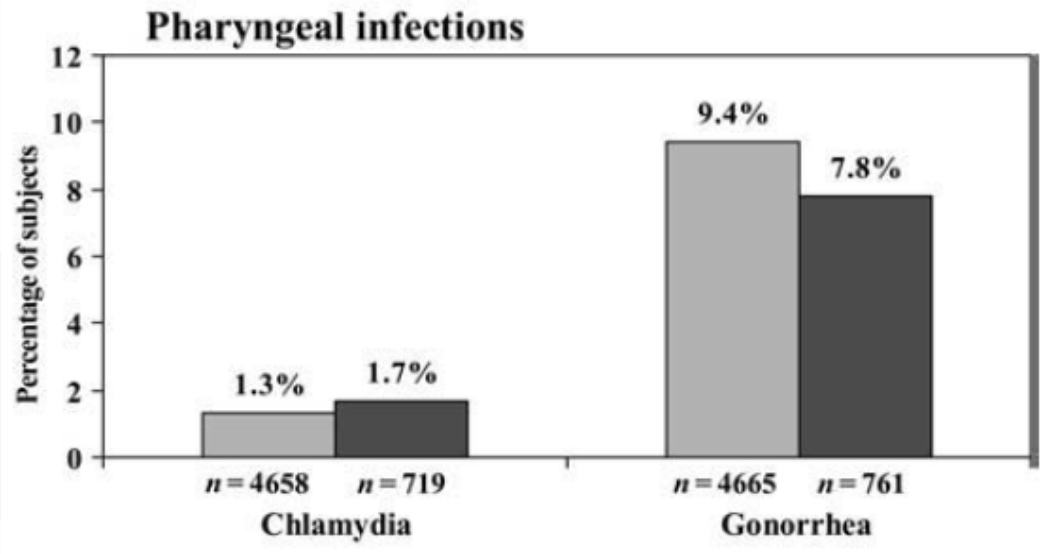
C. All partners over the past 90 days should receive empiric treatment

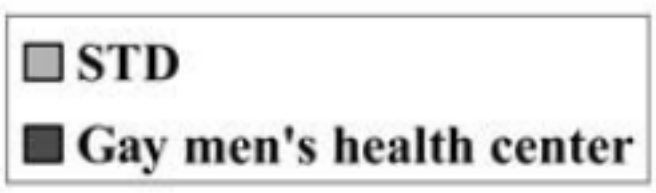
D. All partners over the past 90 days should be tested and treated if positive

Prevalence of GC and Chlamydia by Site of Infection



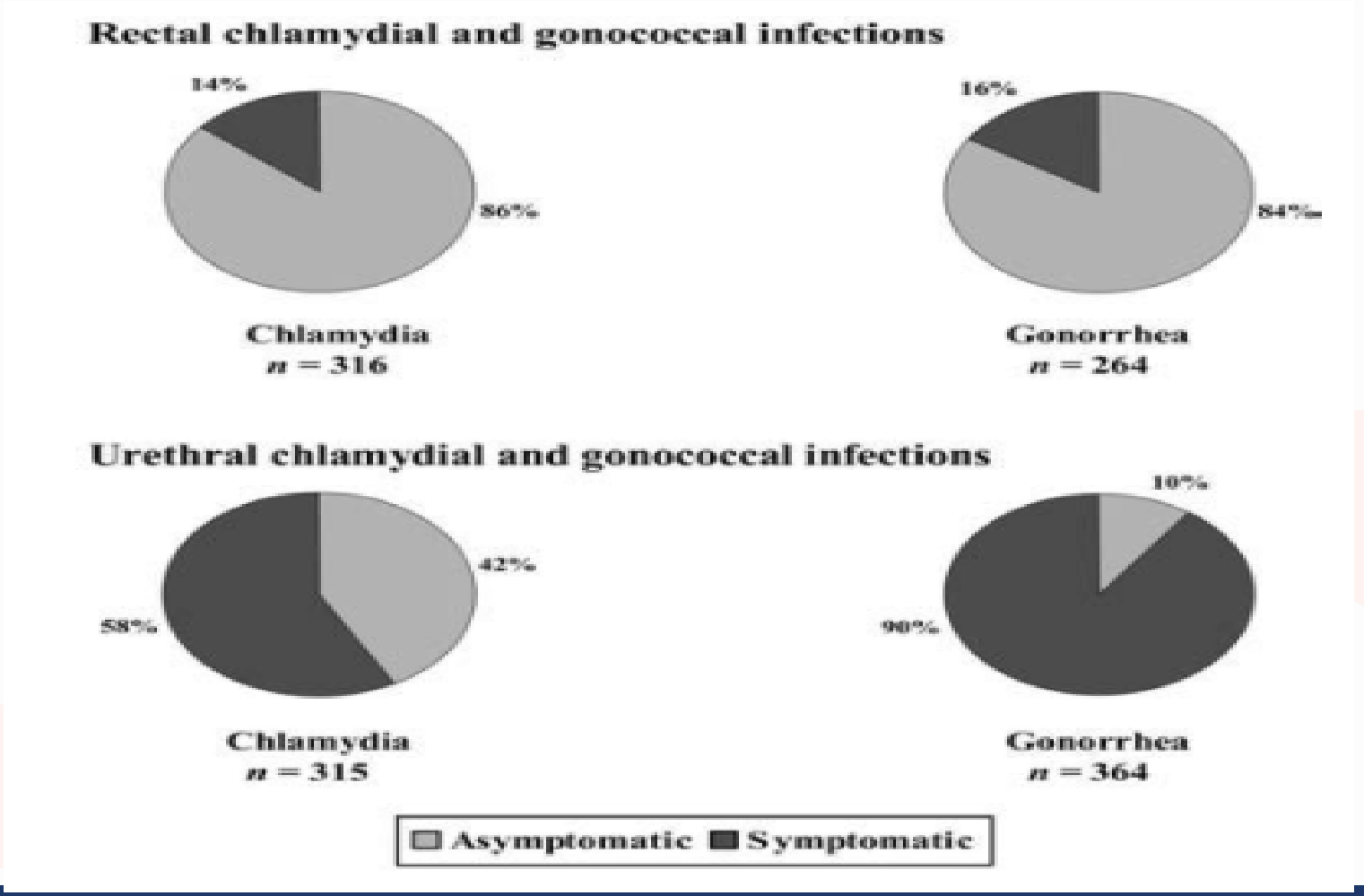






Kent, CK, et al. Clin Infect Dis **2005;41:67–74.**

Proportion of Asymptomatic Rectal and Urethral Gonococcal and Chlamydial Infections in MSM, San Francisco

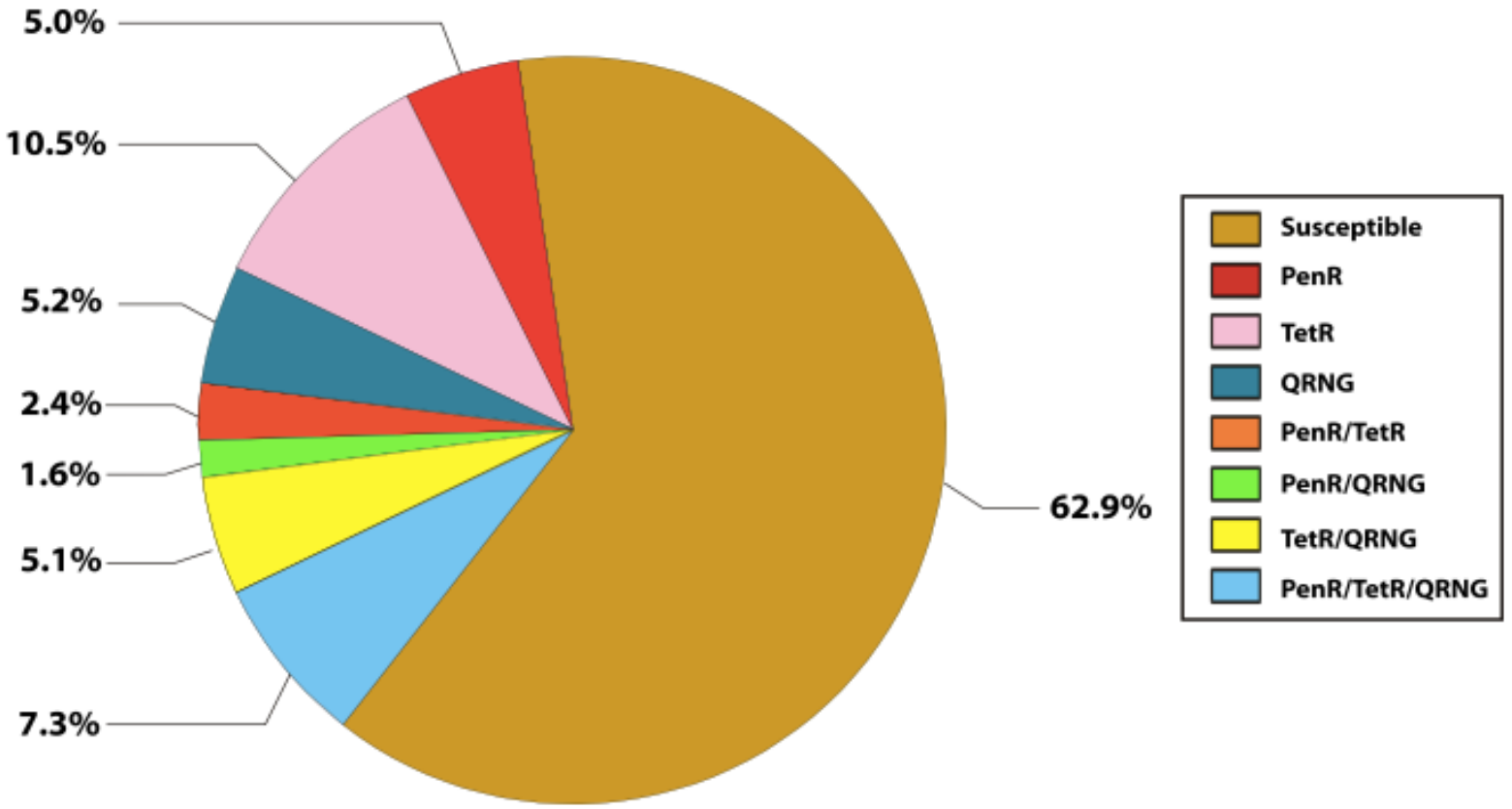


Kent, CK, et al. Clin Infect Dis **2005;41:67–74.**

Vanderbilt PrEP Clinic

- 25% with ANY bacterial STI in 6 months
  - 10% with gonorrhea
  - 13% with chlamydia
  - 10% with syphilis

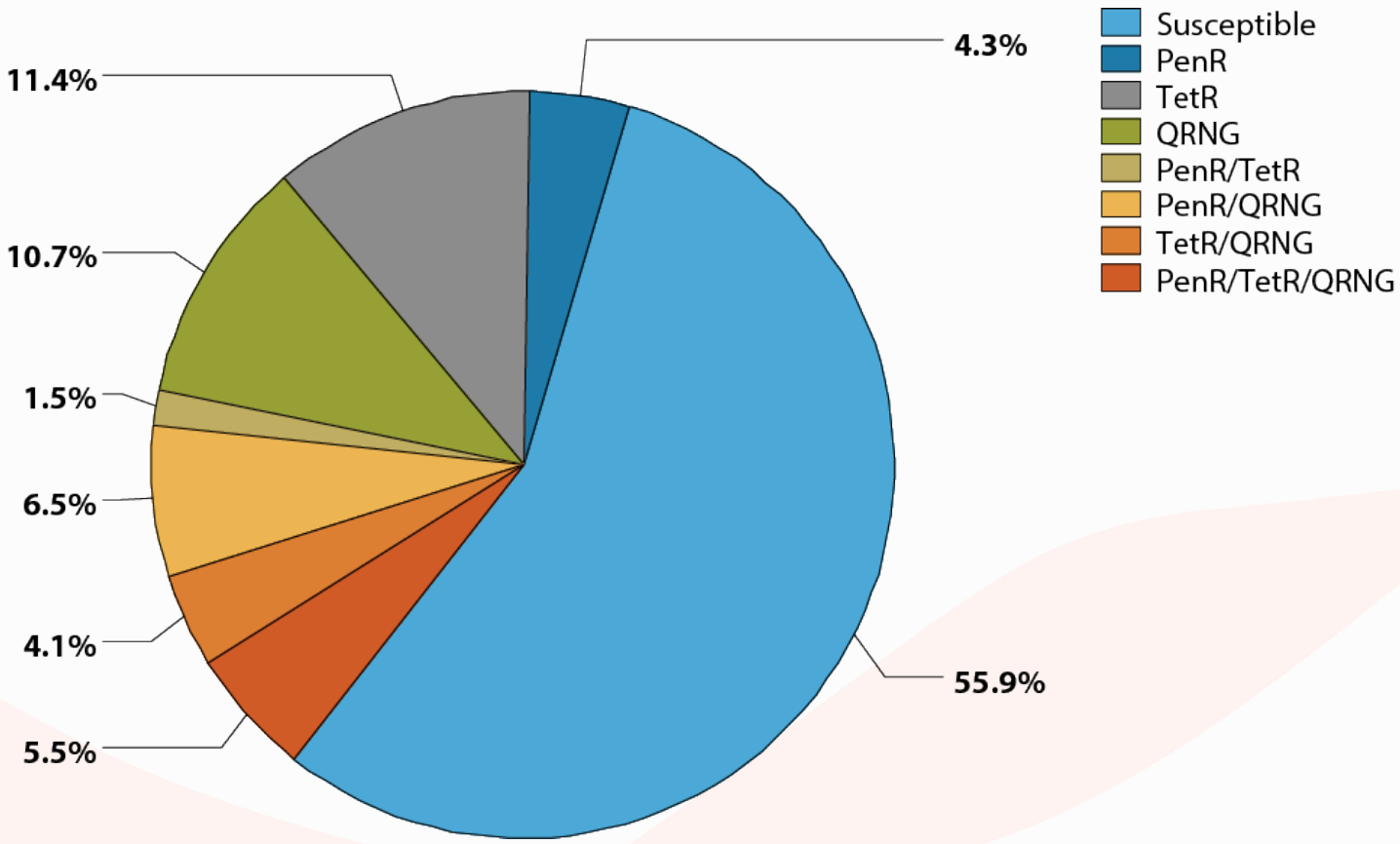
Neisseria gonorrhoeae — Percentage of Isolates, with Penicillin, Tetracycline, and/or Ciprofloxacin Resistance, Gonococcal Isolate Surveillance Project (GISP), 2014



NOTE: PenR = penicillinase-producing *Neisseria gonorrhoeae* and chromosomally-mediated penicillin-resistant *N. gonorrhoeae*; TetR = chromosomally- and plasmid-mediated tetracycline-resistant *N. gonorrhoeae*; and QRNG = quinolone-resistant *N. gonorrhoeae*.

CDC.gov. 2014 Sexually Transmitted Disease Surveillance.

Neisseria gonorrhoeae — Distribution of Isolates with Penicillin, Tetracycline, and/or Ciprofloxacin Resistance, Gonococcal Isolate Surveillance Project (GISP), 2016



Gonorrhea Follow-up

- If symptoms persist after treatment, obtain culture and antimicrobial susceptibility
- Test for reinfection at 3 months

Recommended Screening: HIV Infected

- First visit: syphilis, gonorrhea and chlamydia
- Annual chlamydia screening for all women ≦ 25, all high risk women > 25
- All sexually active patients – screen for STIs at least annually

Aberg JA, et al. Clin Infect Dis. **2009;49:651–81.**

Asymptomatic People at High Risk for STI

- Screen more frequently (every 3-6 months)
  - Multiple or anonymous sex partners
  - Past history of any STI
  - Substance use
  - Commercial sex work
  - Living in an area or in population group with high prevalence of STIs
  - Inconsistent condom use

Questions?