A Comprehensive Guide to STD Management

March 21, 2024

Kento Sonoda, MD, AAHIVS

Assistant Professor

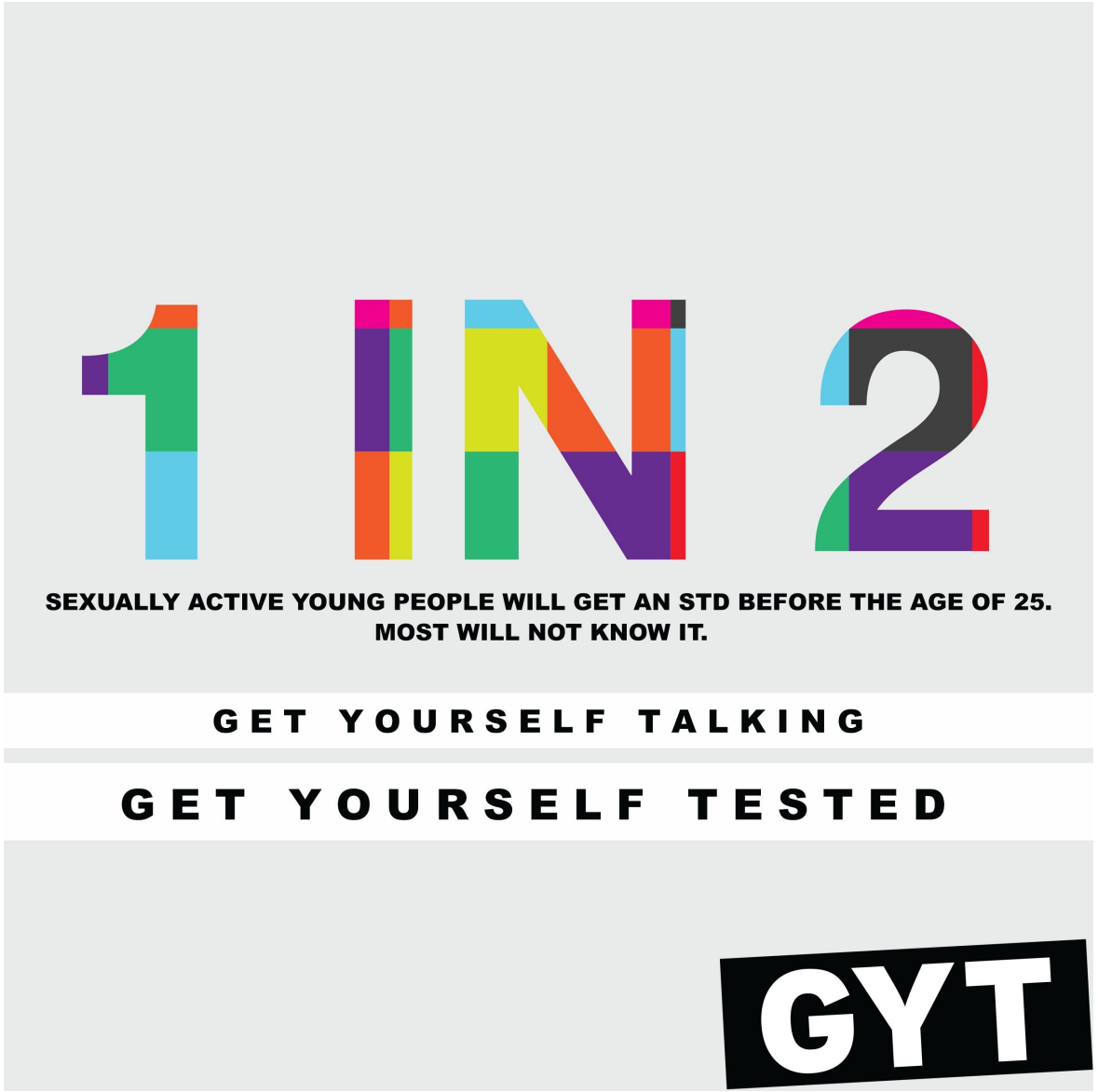
Department of Family and Community Medicine

Saint Louis University

How often do you see STDs in your practice?

1. Everyday
2. 2-4 days a week
3. Weekly
4. Bi-weekly
5. Monthly

Why does STD Matter in FM?



Timeline

- Chlamydia
- Gonorrhea
- Syphilis

Chlamydia

Chlamydia classification

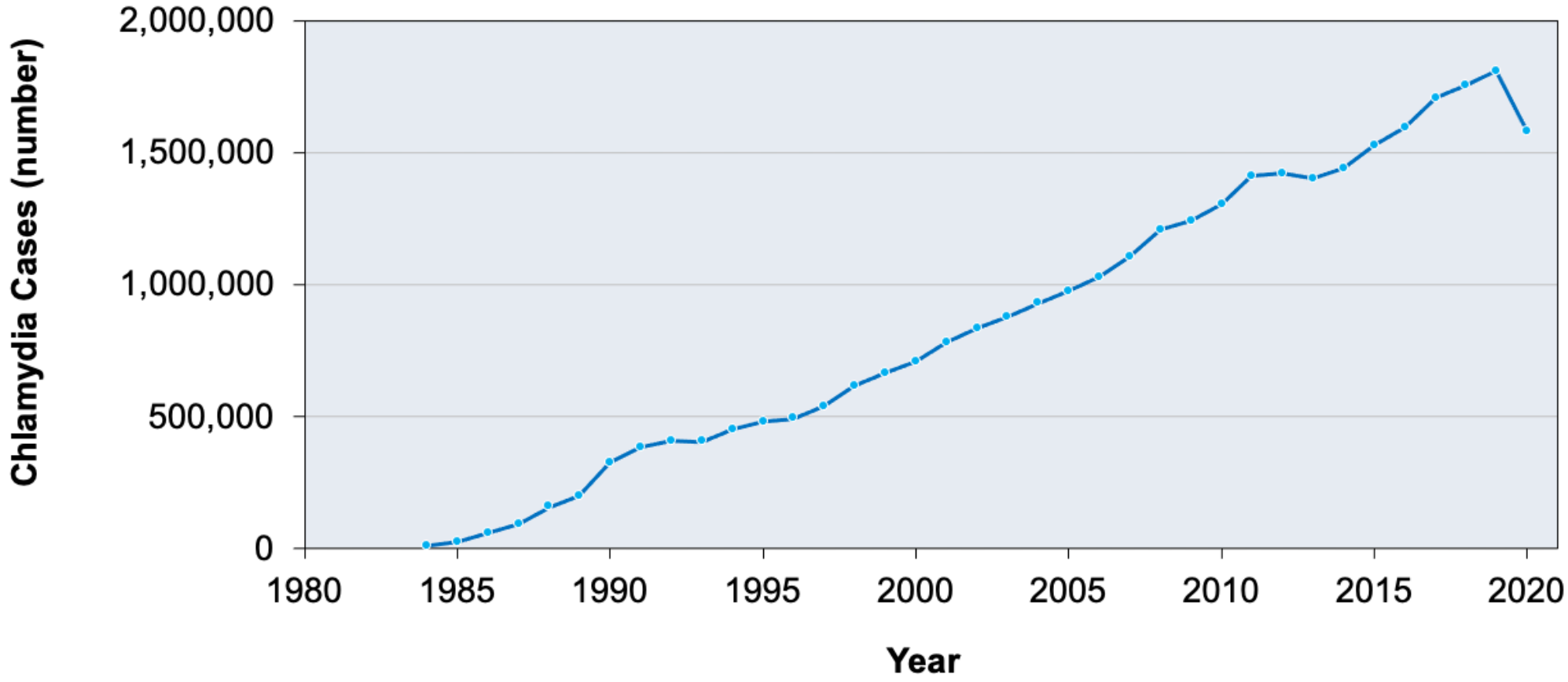
C. trachomatis – 1) trachoma and 2) LGV

C. pneumoniae

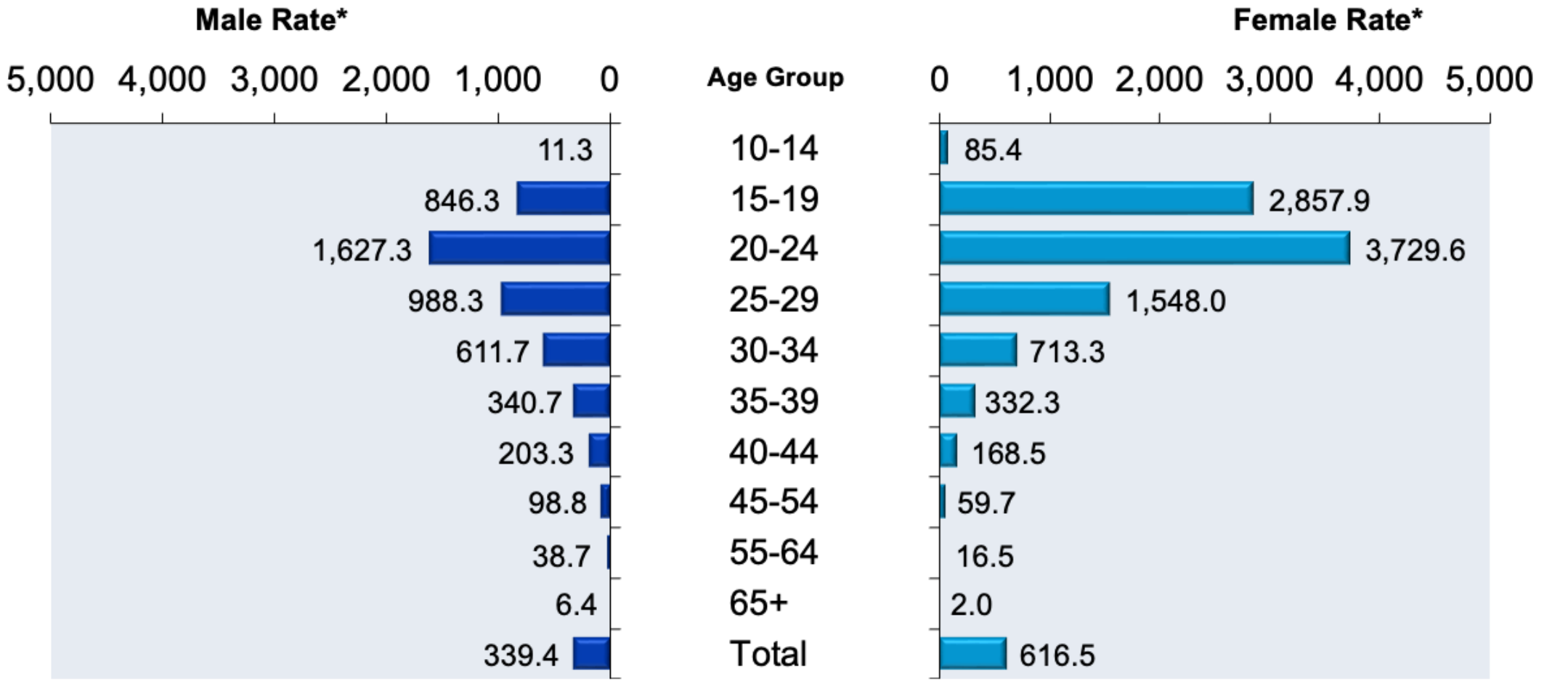
C. psittaci

C. pecorum

Epidemiology (Nation)

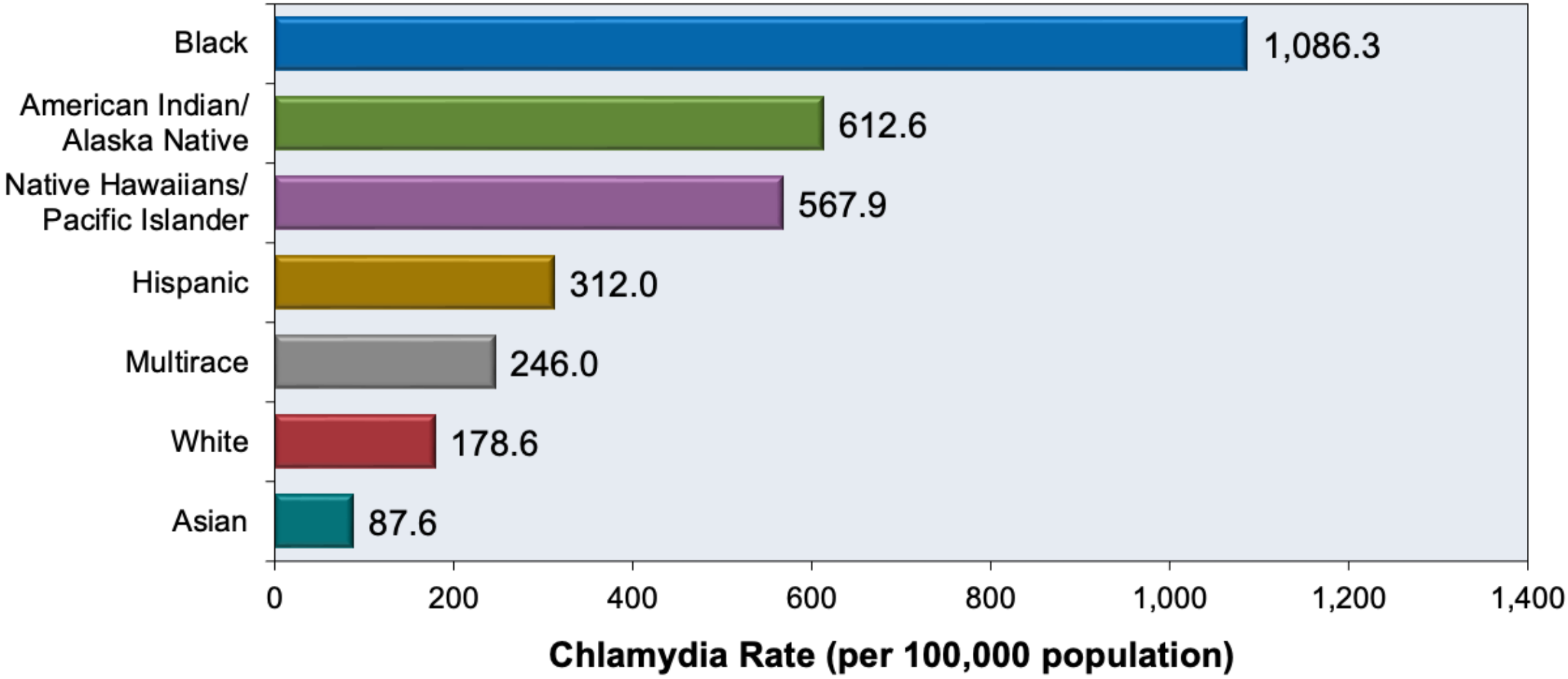


Chlamydia Rates (per 100 K) by Sex and Age

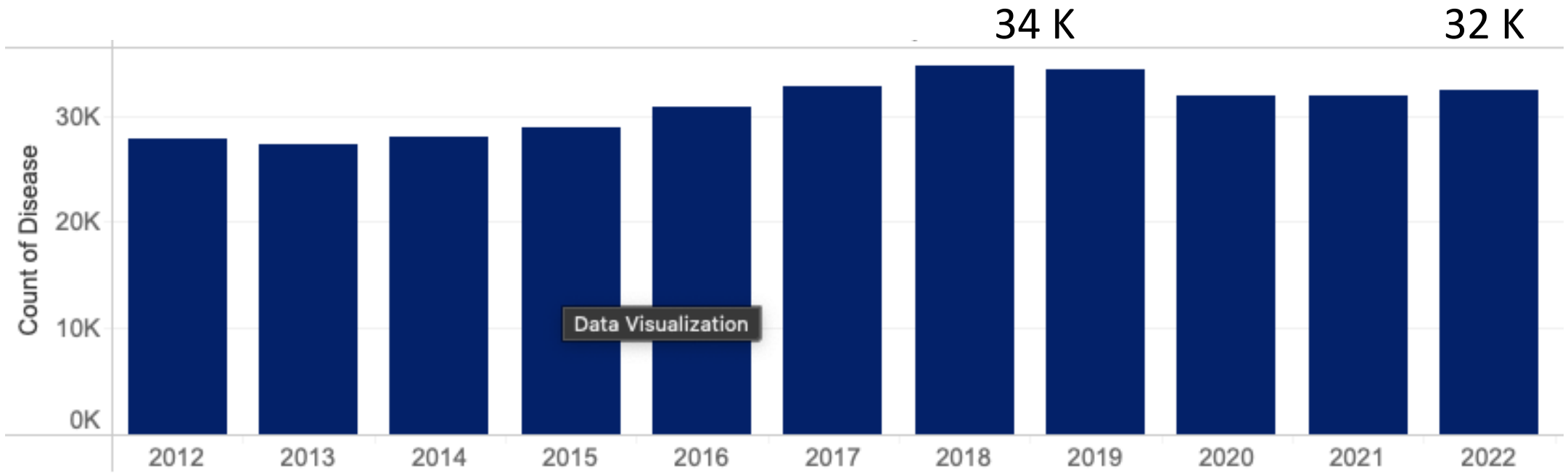


*Per 100,000 population

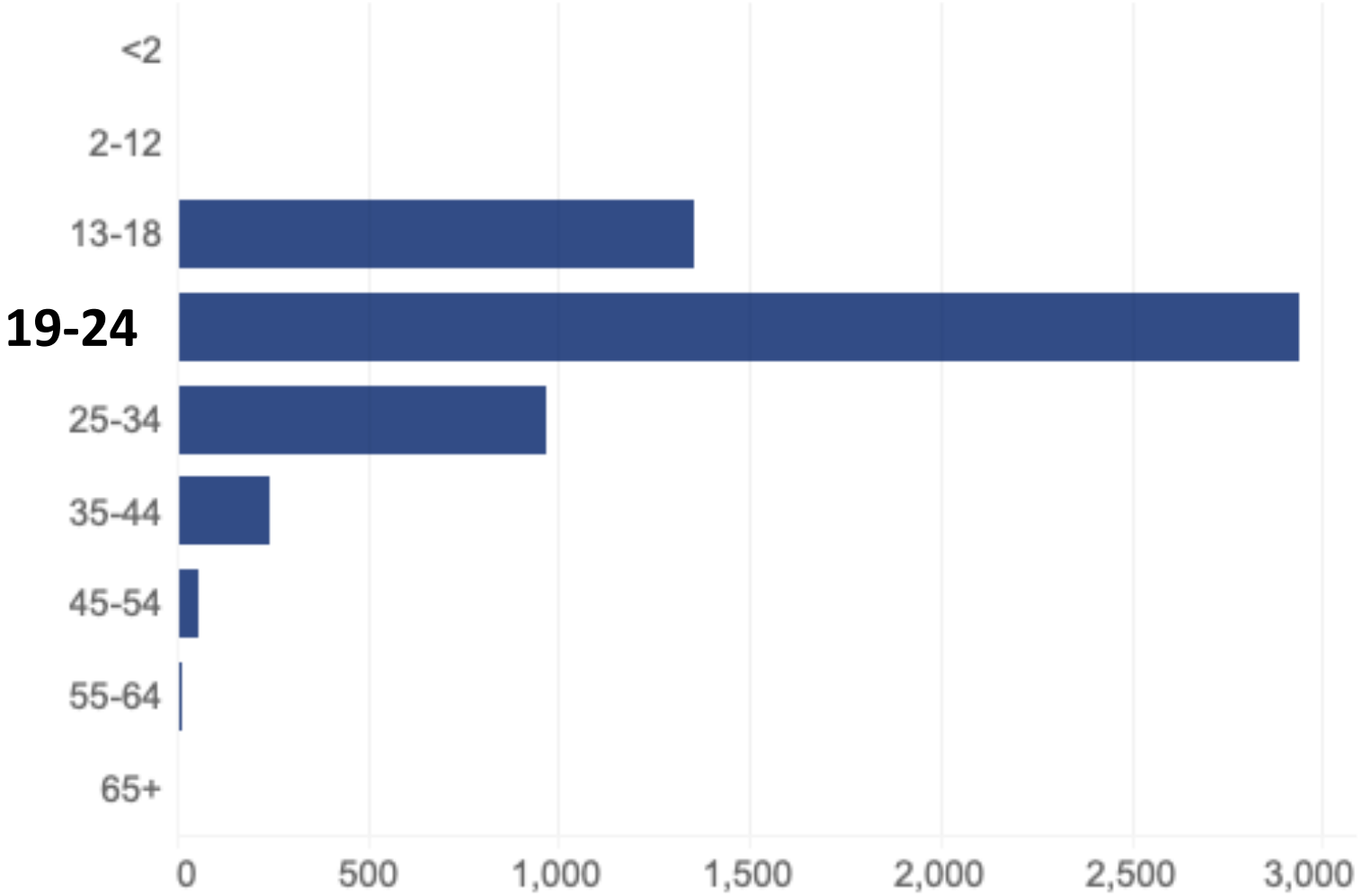
Chlamydia Rates by Race/Ethnicity



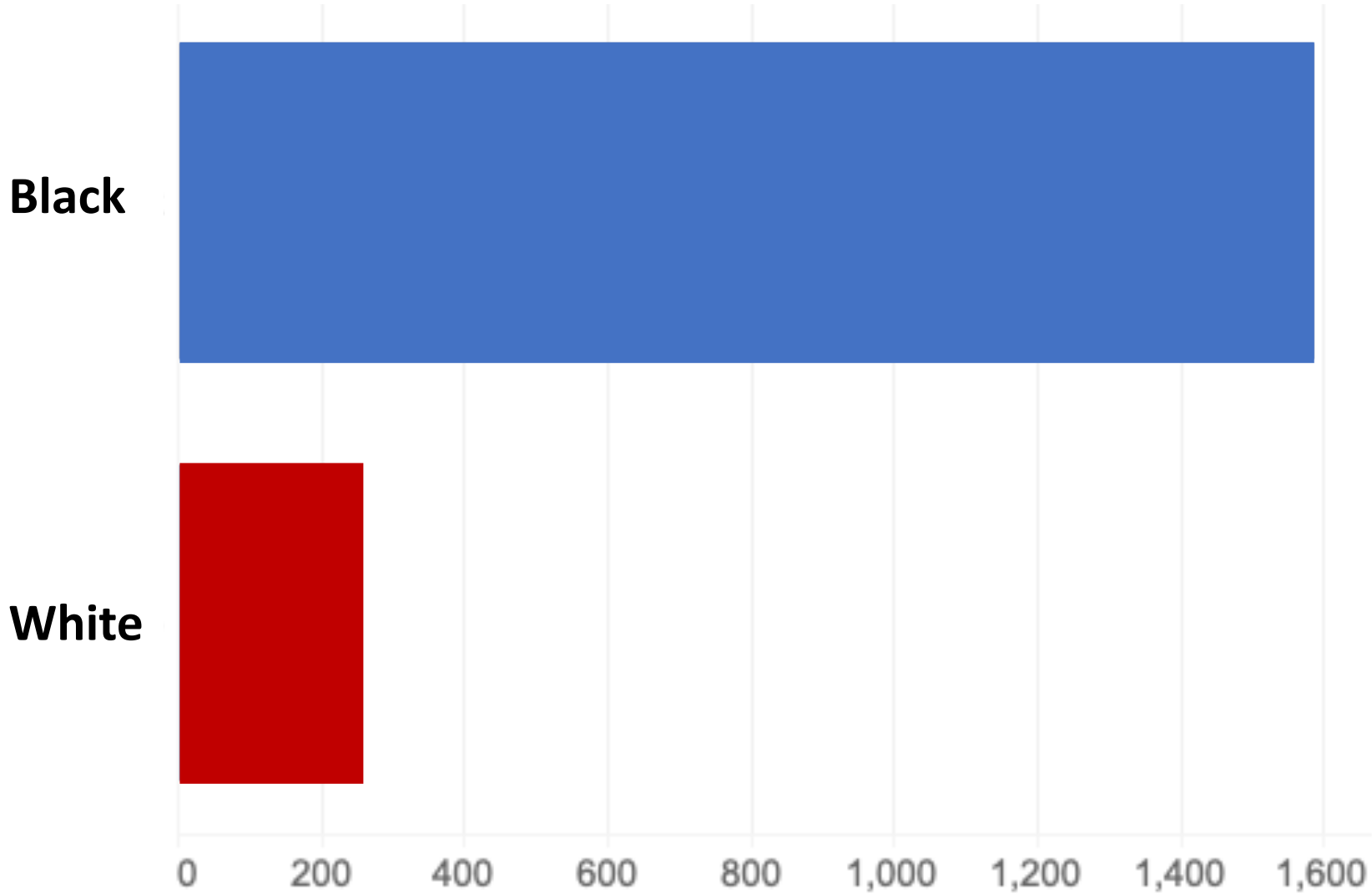
Chlamydia Cases by Year (MO)



Chlamydia Rate (per 100K) by Age Group (MO)

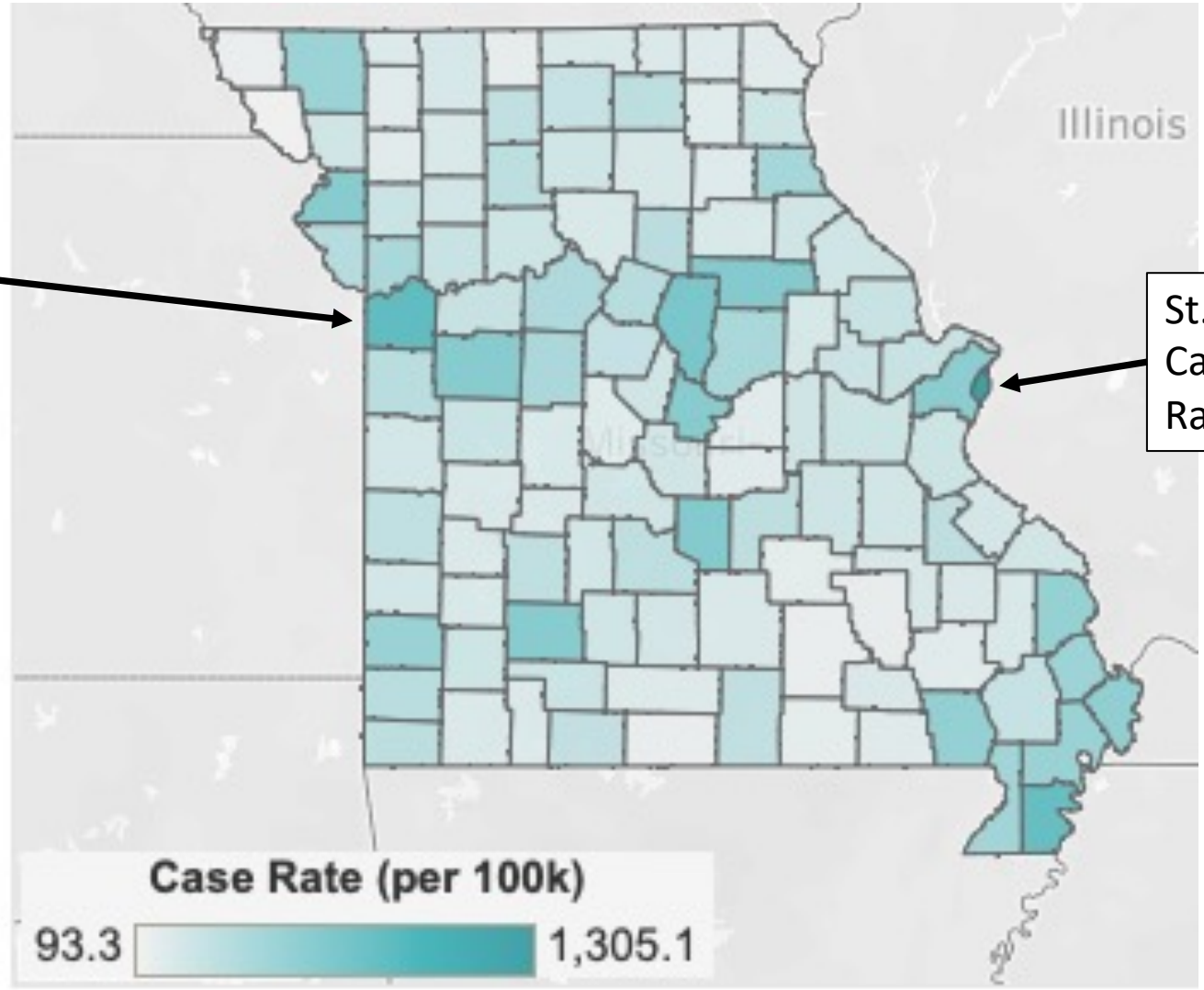


Chlamydia Rate (per 100 K) by Race (MO)



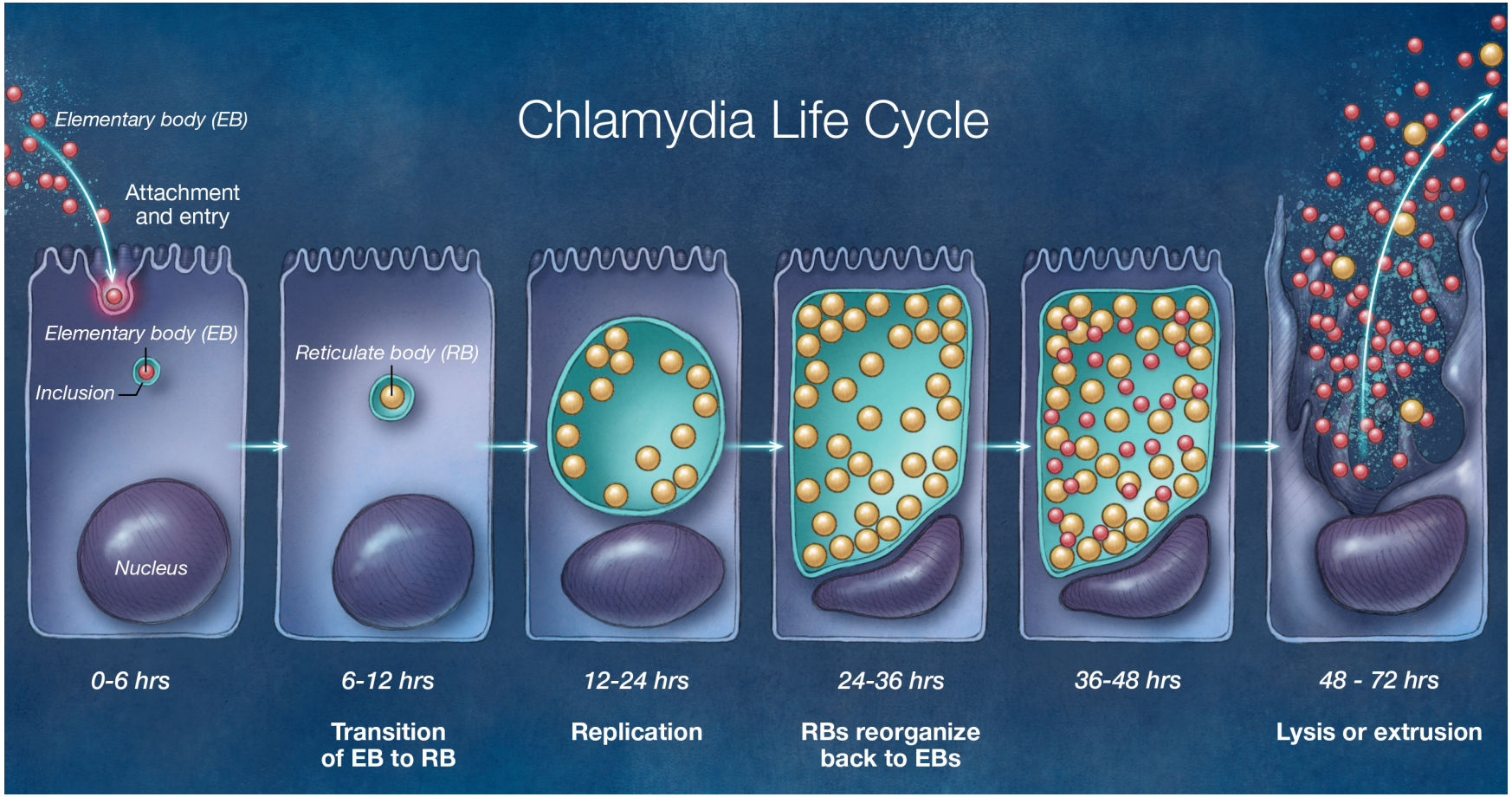
Case Rate (per 100 K)

Jackson
Cases: 58,732
Rate: 843



St. Louis City
Cases: 40,041
Rate: 1,305

Chlamydia Life Cycle



UW STD Curriculum

Transmission

Male-to-Female transmission probabilities per partnership:
32.1 – 34.9%

Female-to-Male transmission probabilities per partnership:
4.6 – 21.4%

Lewis, 2021

Manifestation – Women

- Cervicitis / Urethritis – Asymptomatic
- Pelvic inflammatory disease

Chronic pain (30%)

Infertile (20%)

Ectopic pregnancy (1%)

- Other: Perihepatitis, Conjunctivitis, oropharyngeal infection, rectal infection, lymphogranuloma venereum (LGV), reactive arthritis

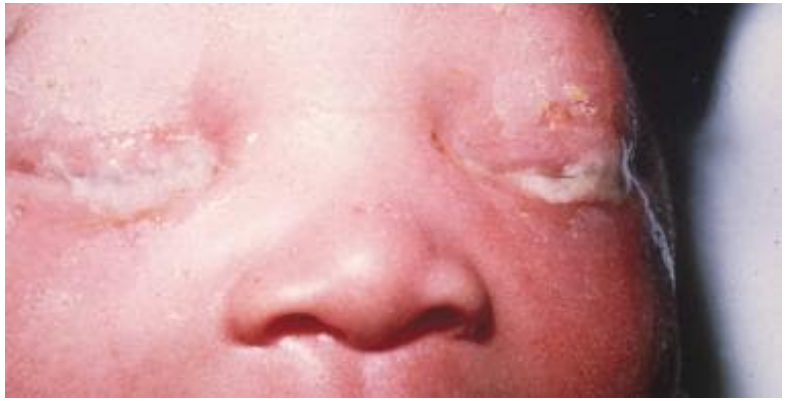
Ness, 2002

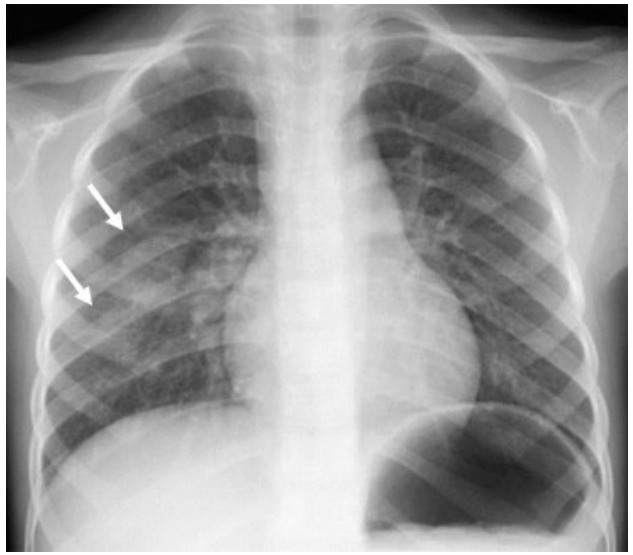
Manifestation – Men

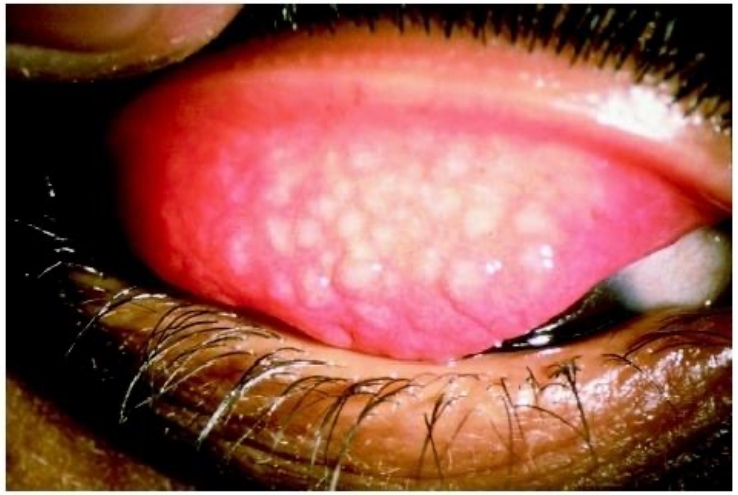
Urethritis
Epididymitis
Untreated rectal chlamydia: Increase the risk of HIV
Conjunctivitis, oropharyngeal infection, rectal infection, reactive arthritis, lymphogranuloma venereum (LGV)

Manifestation - Children

- Conjunctivitis (inclusion / neonatal)
- Pneumonia (4-12 wks after delivery)
- Trachoma







Lab testing

- Nucleic acid amplification tests – standard

Testing: **any sites** related to sexual activities (pharynx/urethra/rectum)

- Men
  – urethral secretions or a first-catch urine specimen
- Women
  – urine samples or vaginal swab
  – self-swabbing

Screening

Population	Recommendation	Grade
Sexually active women, including pregnant persons	The USPSTF recommends screening for chlamydia in all sexually active women 24 years or younger and in women 25 years or older who are at increased risk for infection.	B
Sexually active men	The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening for chlamydia and gonorrhea in men.	I

USPSTF 2021

Treatment – Chlamydia

Urethral/cervical/rectal/oropharyngeal infection

- First choice: Doxycycline 100 mg BID 1-week
- Alternative options:
  azithromycin 1 gm single dose, levofloxacin 500 mg QD 1-week
- Pregnant individuals:
  - First choice: azithromycin 1 mg single dose
  - Alternative option: amoxicillin

- LGV: doxycycline 100 mg BID for 21 days

A 32-year-old cisgender woman presents to her clinic with abnormal vaginal discharge. She is diagnosed with cervical chlamydia and treated with a course of doxycycline. She is not pregnant. Her two sex partners, both of whom are cisgender men, are notified and both received evaluation and treatment for chlamydia infection. She has been asymptomatic following the treatment course with doxycycline.

Q: Which one of the following should be recommended regarding routine follow-up chlamydia testing for this woman?

1. Retest with a nucleic acid amplification (NAAT) 1 week after completion of therapy
2. Retest with NAAT 4 weeks after completion of therapy
3. Retest with NAAT 3 months after completion of therapy
4. Retesting with NAAT is NOT recommended.

A 32-year-old cisgender woman presents to her clinic with abnormal vaginal discharge. She is diagnosed with cervical chlamydia and treated with a course of doxycycline. She is not pregnant. Her two sex partners, both of whom are cisgender men, are notified and both received evaluation and treatment for chlamydia infection. She has been asymptomatic following the treatment course with doxycycline.

Q: Which one of the following should be recommended regarding routine follow-up chlamydia testing for this woman?

1. Retest with a nucleic acid amplification (NAAT) 1 week after completion of therapy

2. Retest with NAAT 4 weeks after completion of therapy

3. Retest with NAAT 3 months after completion of therapy

4. Retesting with NAAT is NOT recommended.

Post-Treatment Follow-up

- Routine test-of-cure after tx: NOT Recommended
- Repeat testing **3 months** after tx: Recommended for re-infection
- AVOID repeat NAAT testing within the first 4 weeks after treatment (high rates of false-positive test results)

Gonorrhea

Epidemiology

More than 700 K cases in 2021 (28% increased since 2017)

Sex: Men > Female

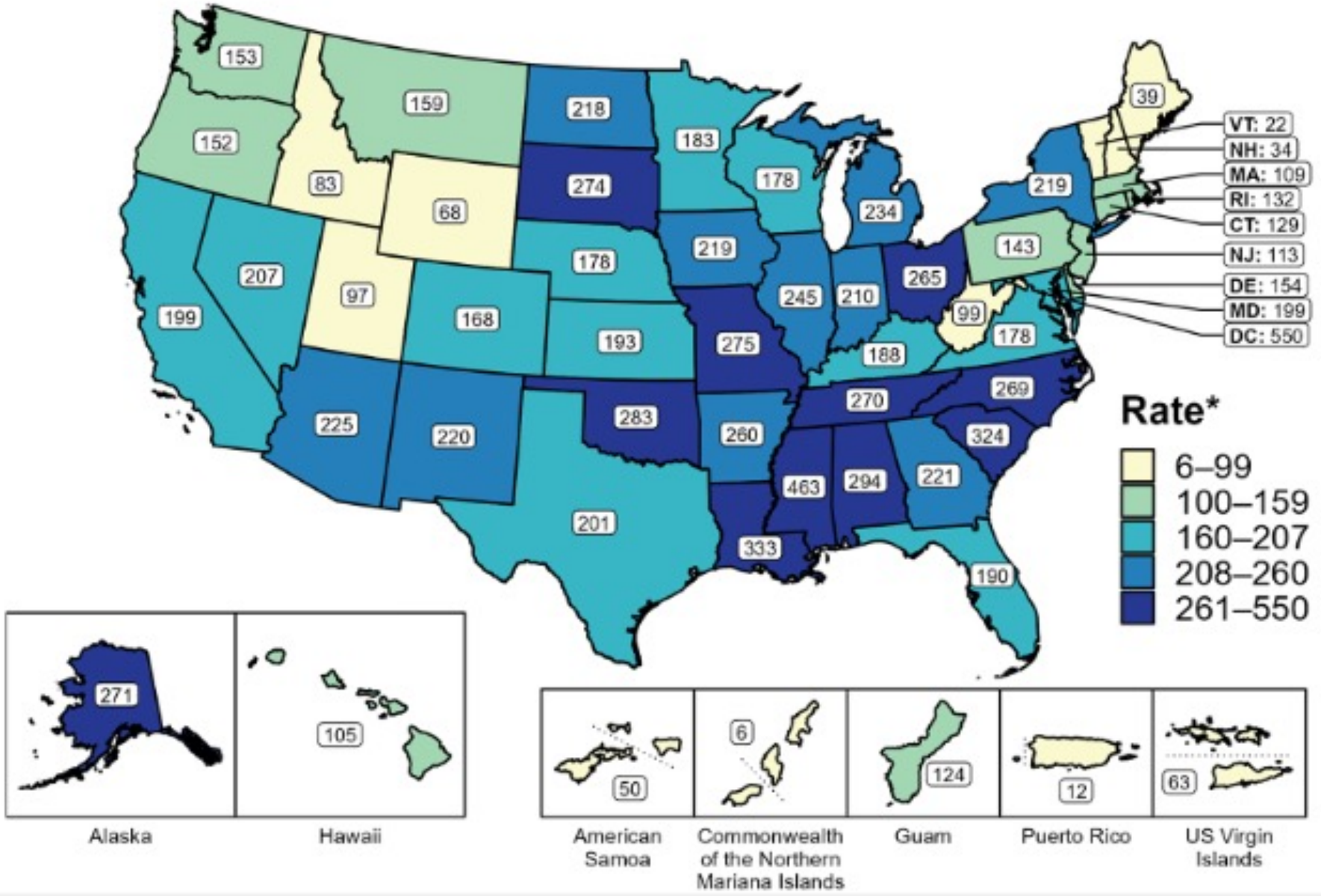
Age: highest rate among 20 to 24 years of age for both males/females

Race/Ethnicity: highest among Black individuals

Region: highest rates in the South and the Midwest

CDC. STD Surveillance 2021.

Gonorrhea – Rates of Reported Cases by State



*Rate:
per 100 K population

Transmission

- Urethra-to-vagina per episode of vaginal intercourse: 50-70%
- Vagina-to-urethra per episode of insertive vaginal intercourse: 20%
  - Increases to 60 to 80% after four or more episodes

Lin, 1998

Manifestation – Men

- Urethritis
- Proctitis
- Epididymitis
- Disseminated gonococcal infection, conjunctivitis, pharyngitis

Manifestation – Female

- Cervicitis
- Proctitis
- Bartholin gland infection (Bartholin cyst/abscess)
- Pelvic inflammatory disease
- Perihepatitis
- Disseminated gonococcal infection, conjunctivitis, pharyngitis

Lab testing

- Nucleic acid amplification tests – standard

Testing: **any sites** related to sexual activities (pharynx/urethra/rectum)

- Men
  – urethral secretions or a first-catch urine specimen
- Women
  – urine samples or vaginal swab
  – self-swabbing

Screening

Sexually active women, including pregnant persons	The USPSTF recommends screening for gonorrhea in all sexually active women 24 years or younger and in women 25 years or older who are at increased risk for infection.	B
Sexually active men	The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening for chlamydia and gonorrhea in men.	I

USPSTF 2021

Treatment

- Gonococcal infection of the cervix/urethra/rectum
  - Weight < 150 kg – Single IM Ceftriaxone 250 to 500 mg
  - Weight > 150 kg - Single IM Ceftriaxone 1 gm
  - If Chlamydia has been ruled out – monotherapy / (if not) dual therapy
- Gonococcal infection of the pharynx
  - Weight < 150 kg – Single IM Ceftriaxone 500 mg
  - Weight > 150 kg - Single IM Ceftriaxone 1 gm

Post-Treatment Follow-up

- Routine test-of-cure at 7 to 14 days post-treatment
  - Cervix/Urethra/Rectum: NOT RECOMMENDED
  - Pharynx: RECOMMENDED – include antimicrobial susceptibility testing
- ALL: Repeat testing in 3 months at the anatomic site of exposure

Suspected Gonococcal Treatment Failure

1. Appropriate treatment
2. No sexual contact during the post-treatment f/u period
3. Remain symptomatic (or positive test-of-cure)

- First approach: Retreatment

- Likely treatment failure:
  Single-dose PO azithromycin 2 gm + IM gentamicin 240 mg

Patient Education – Chlamydia & Gonorrhea

- When to resume sexual activity?
  a) > 7 days after tx completion
  b) No genitourinary symptoms
  c) Partner treatment
- Partner notification: all sex partners in the prior 60 days
- Follow-up testing: 3-month f/u testing
- STI Prevention: number of sex partners, condom use, PrEP

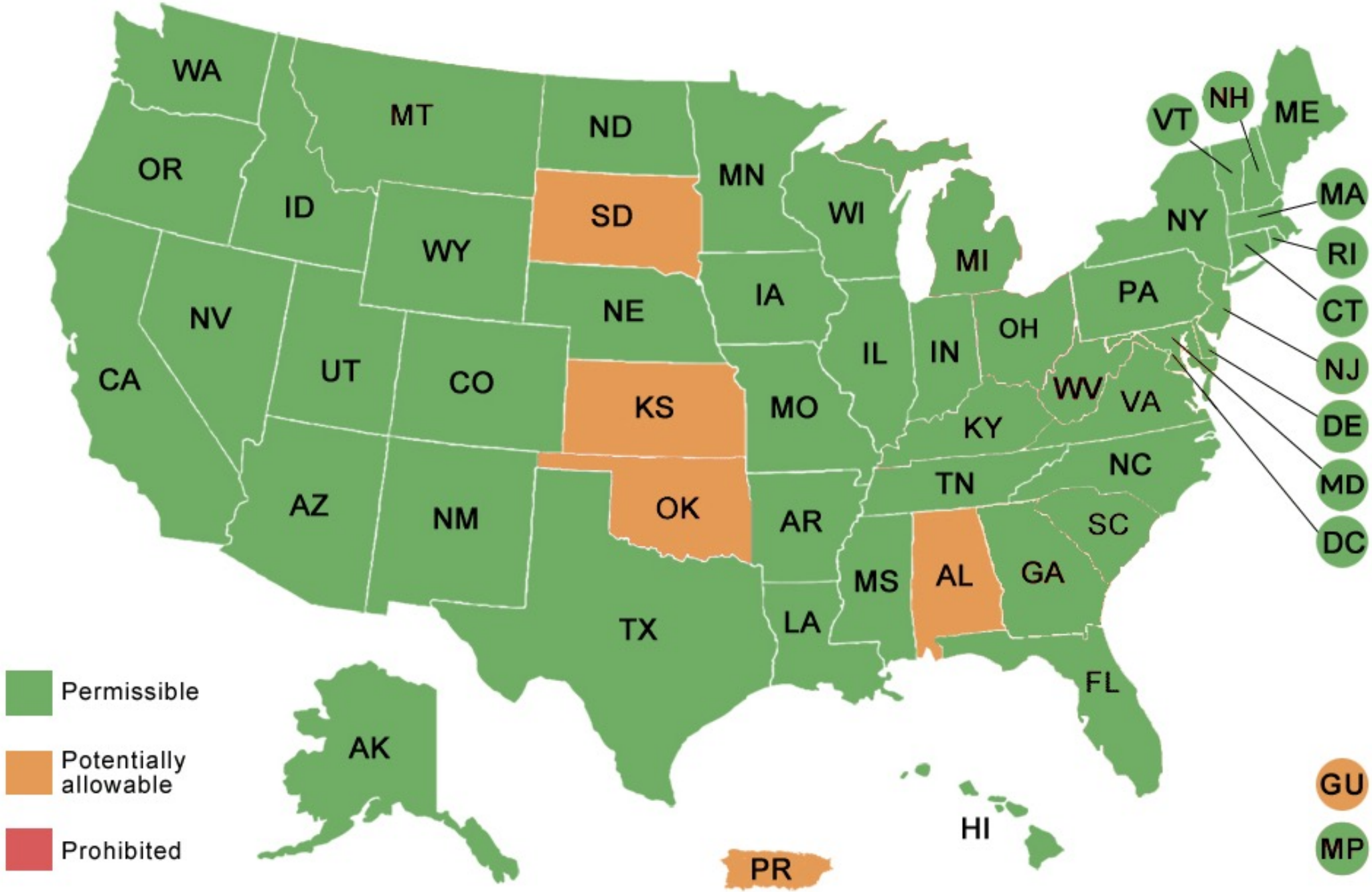
Expedited Partner Therapy (EPT)

Expedited Partner Therapy

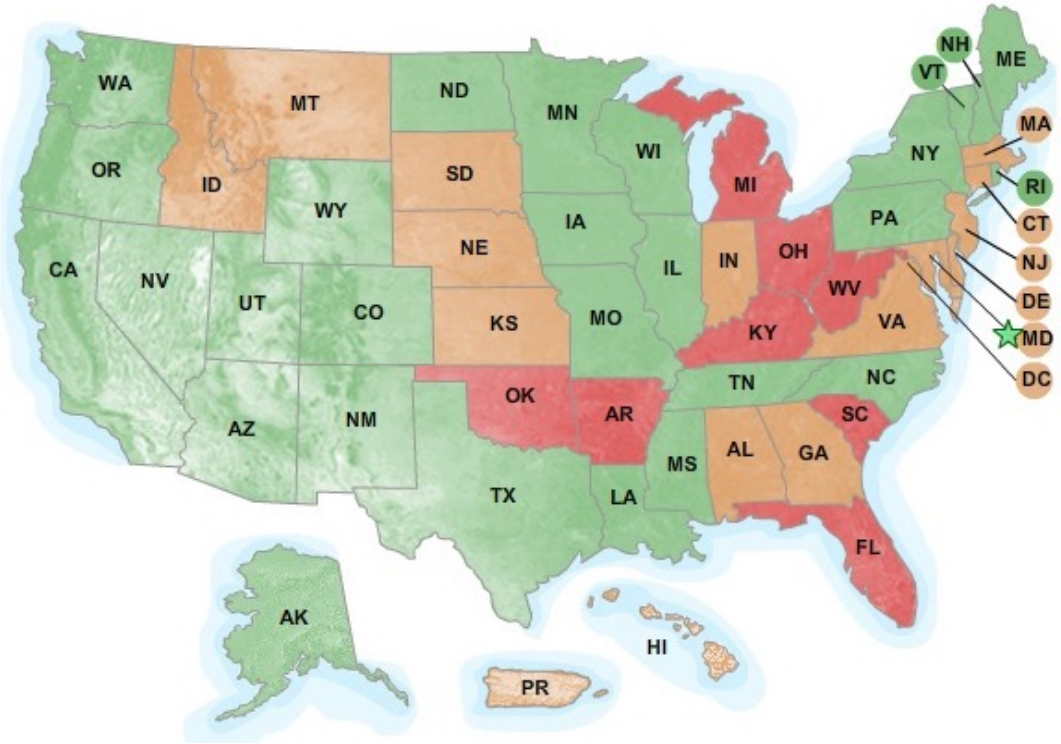
- Prompt referral and treatment: unavailable

- Recommended regimen for Chlamydia:
  - Azithromycin 1 gm, PO, single dose
- Recommended regimen for Gonorrhea
  - Ceftriaxone 500 mg, IM, single dose
  - Cefixime 800 mg, PO, single dose
- Check State Legal Status

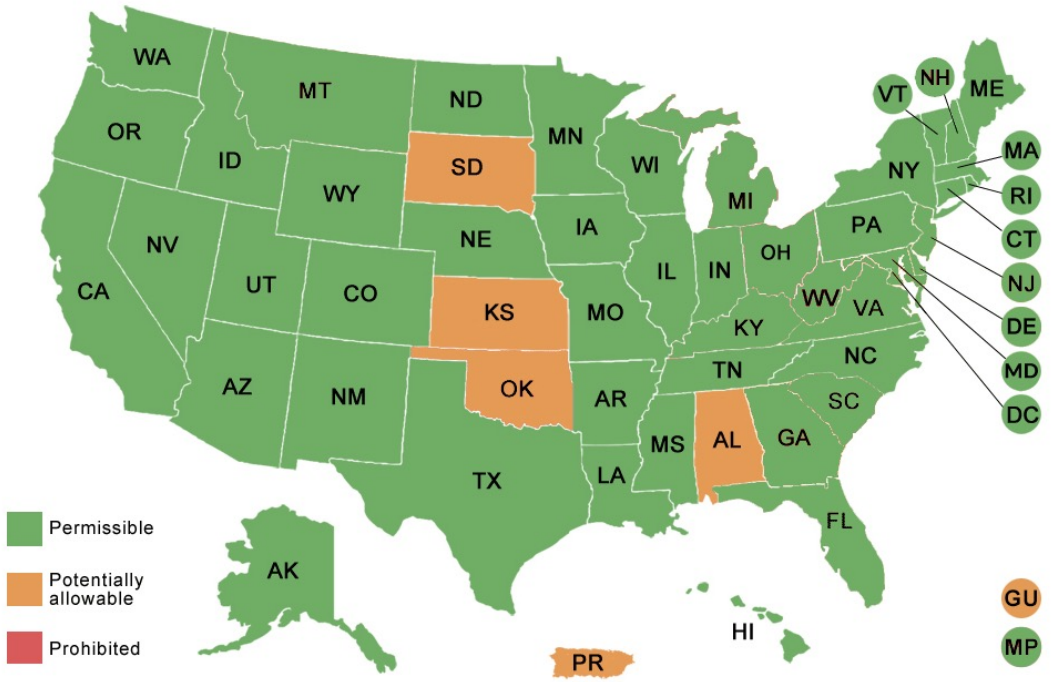
CDC, Expedited Partner Therapy


WA
OR
CA
ID
NV
MT
WY
UT
AZ
CO
NM
ND
SD
NE
KS
OK
TX
MN
IA
MO
AR
LA
WI
IL
MS
MI
IN
KY
TN
AL
OH
WV
GA
FL
SC
NC
VA
PA
NY
VT
NH
ME
MA
RI
CT
NJ
DE
MD
DC
AK
HI
PR
GU
MP
Permissible
Potentially allowable
Prohibited

2011

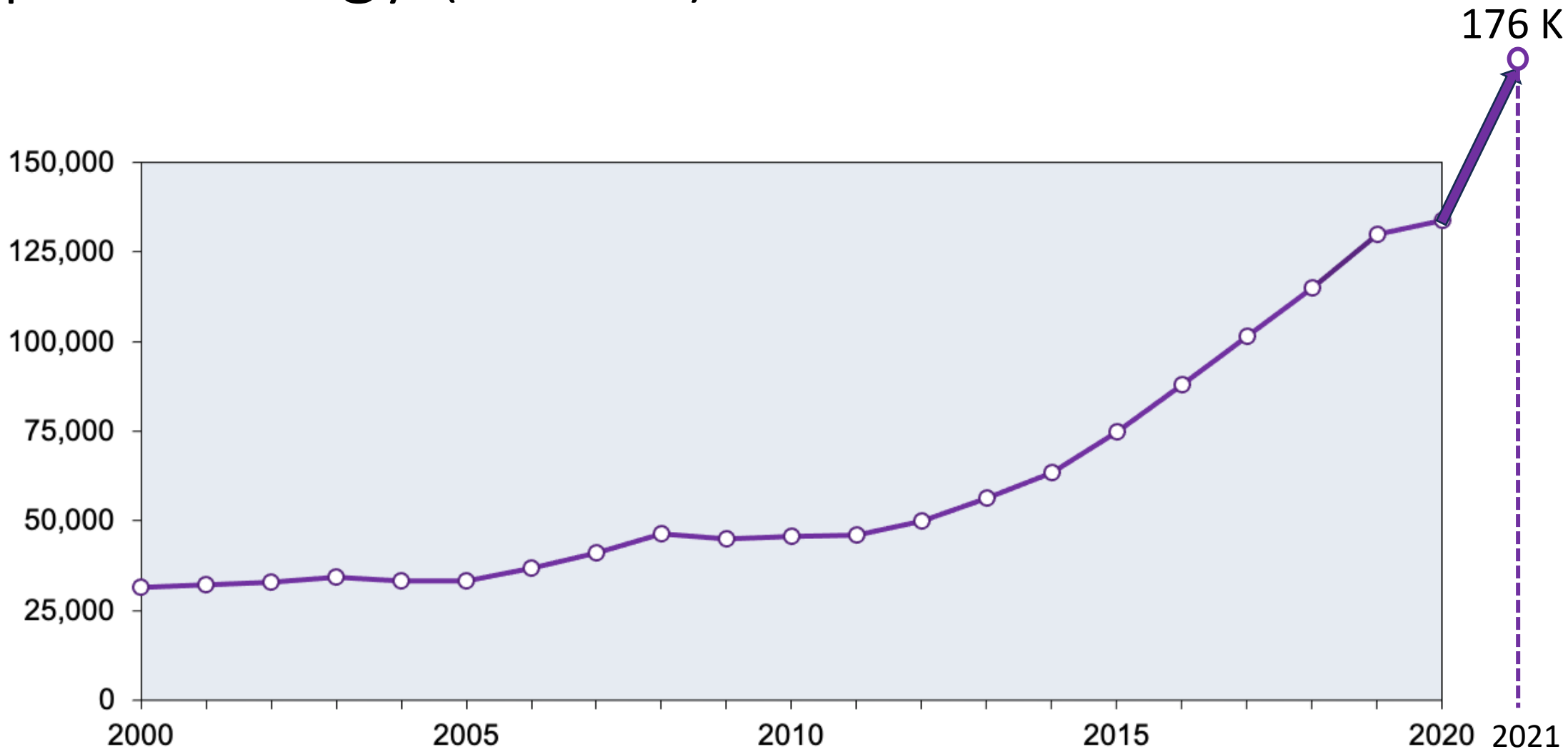

WA
OR
CA
ID
NV
MT
WY
UT
AZ
CO
NM
ND
SD
NE
KS
OK
TX
MN
IA
MO
AR
LA
WI
IL
MS
MI
IN
KY
TN
AL
OH
WV
GA
FL
SC
NC
VA
PA
NY
NH
VT
ME
MA
RI
CT
NJ
DE
MD
DC
AK
HI
PR

2023


WA
OR
CA
ID
NV
MT
WY
UT
AZ
CO
NM
ND
SD
NE
KS
OK
TX
MN
IA
MO
AR
LA
WI
IL
MS
MI
IN
KY
TN
AL
OH
WV
GA
FL
SC
NC
VA
PA
NY
VT
NH
ME
MA
RI
CT
NJ
DE
MD
DC
AK
HI
PR
Permissible
Potentially allowable
Prohibited
GU
MP

Syphilis

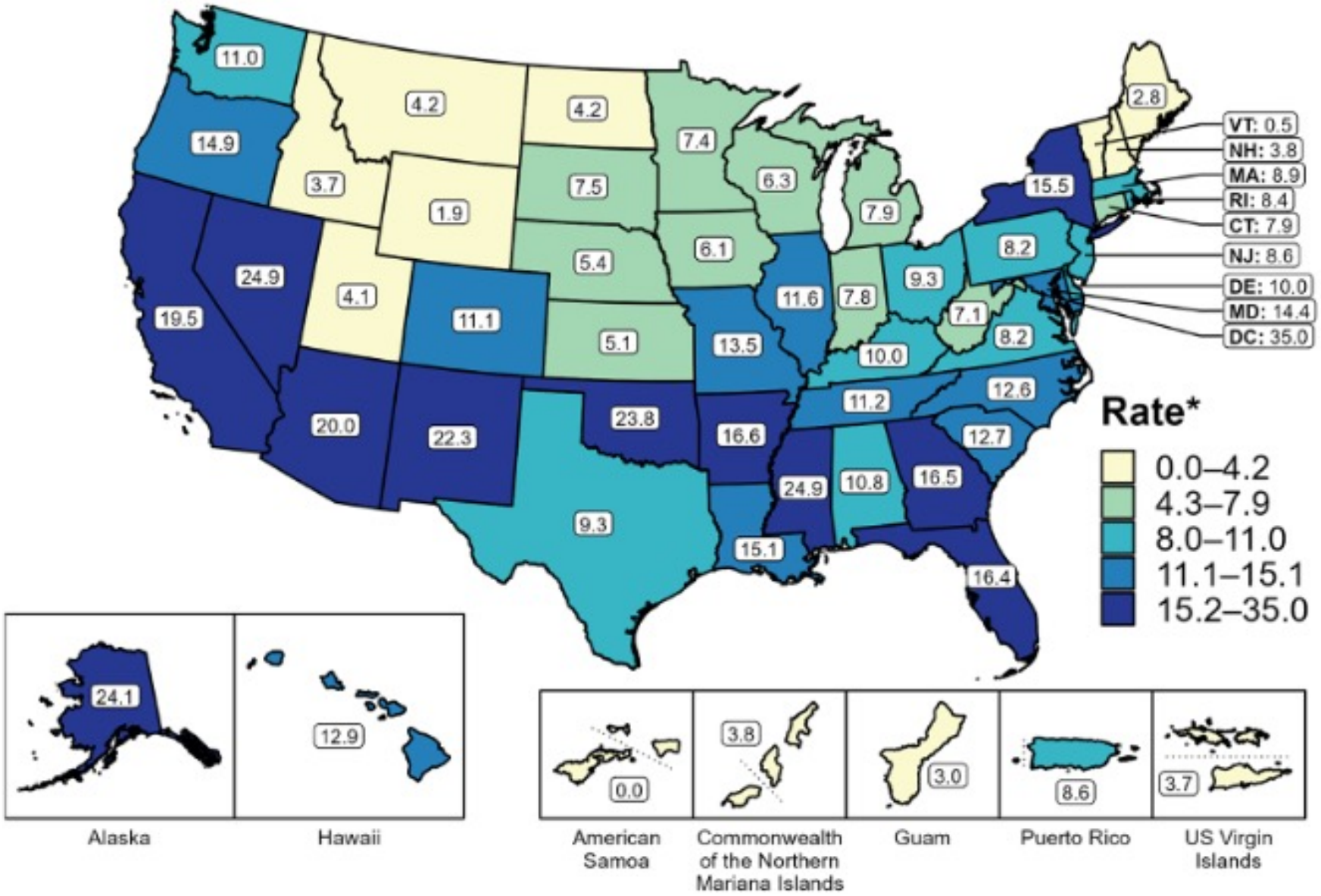
Epidemiology (Nation)



Epidemiology (Nation)

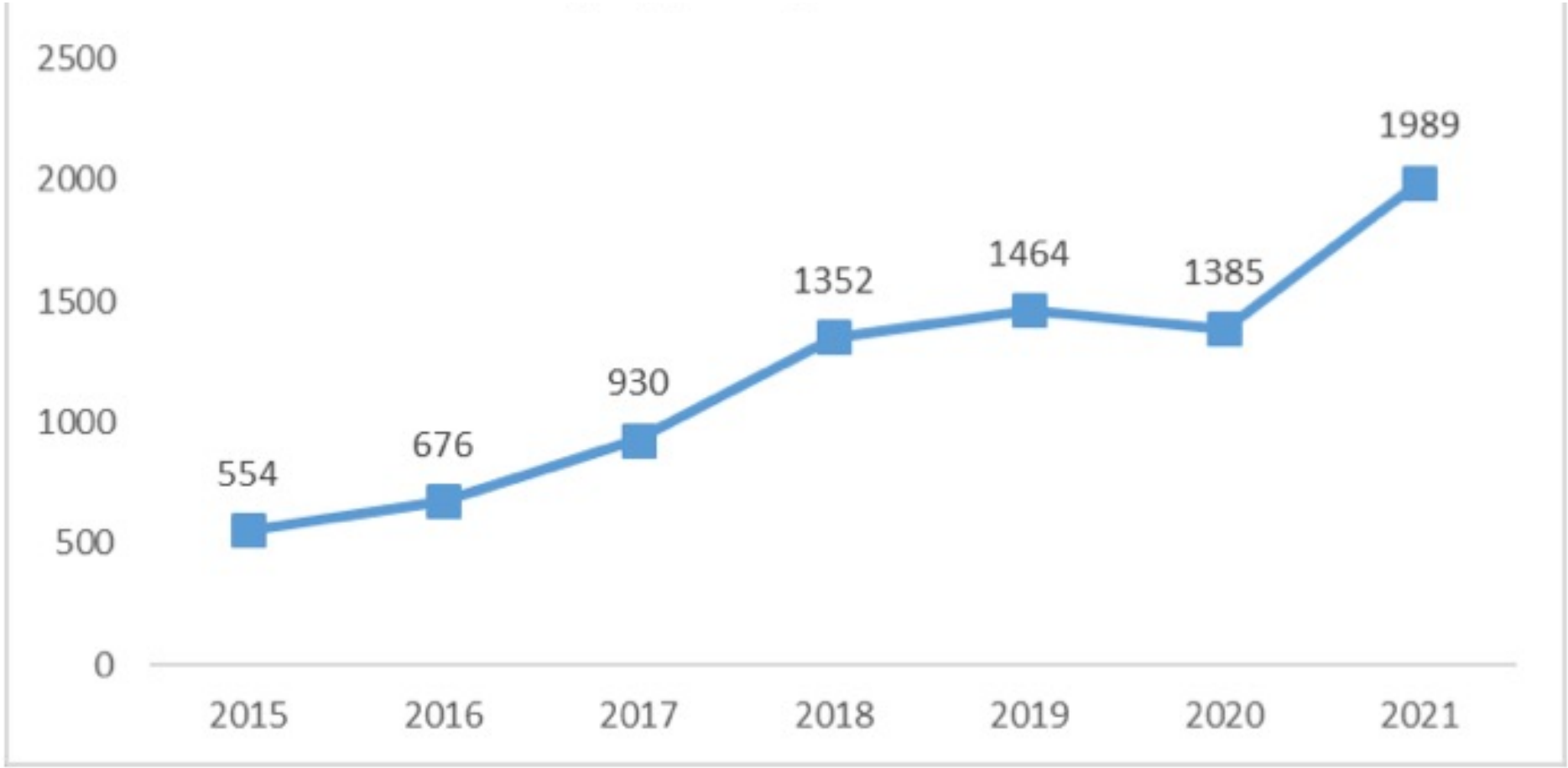
- Sex: Men > Women
- Sex partner – 38% - MSM
- Age (highest rates) – 25-29 years of age
- Race/Ethnicity (highest rates) - Black persons
- Region and Sate: West / Nevada and Mississippi

Syphilis – Rates of Reported Cases by State



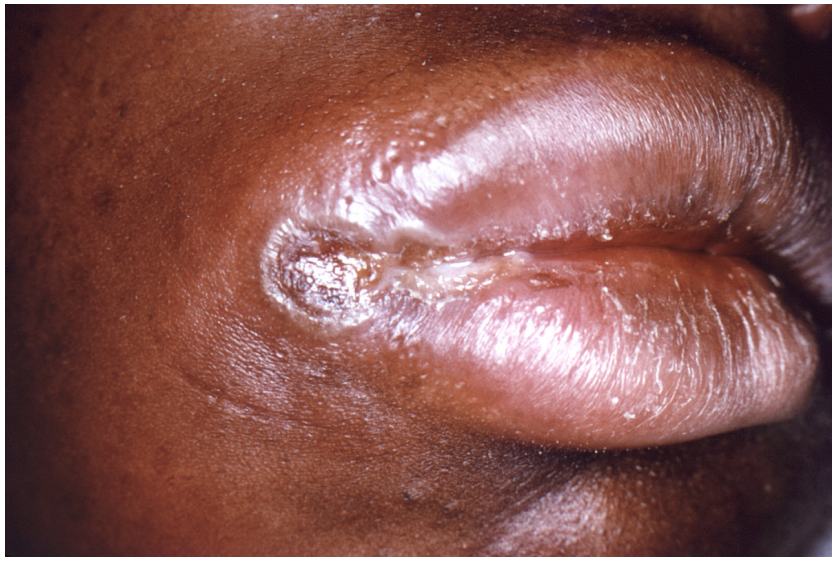
*Rate:
per 100 K population

Syphilis Cases in Missouri



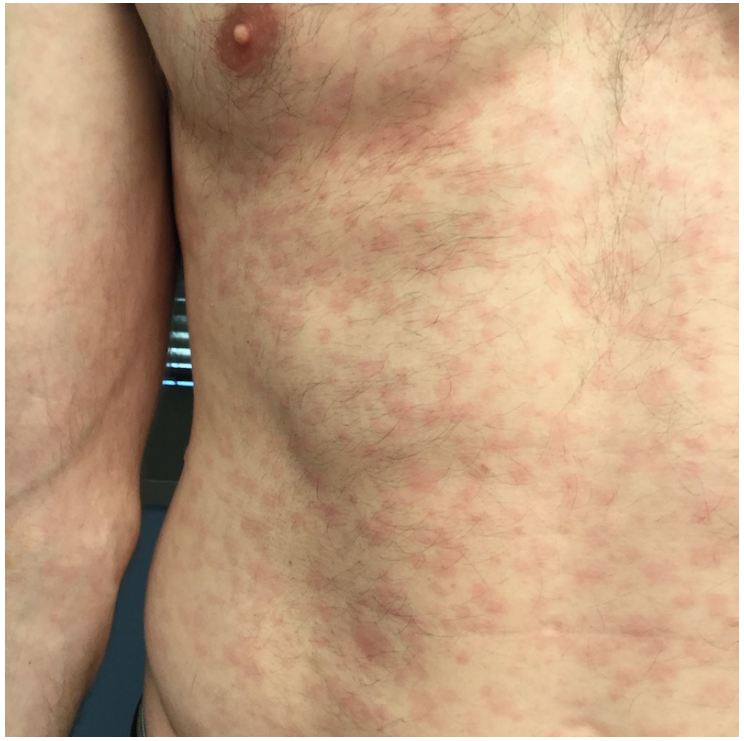
Primary Syphilis

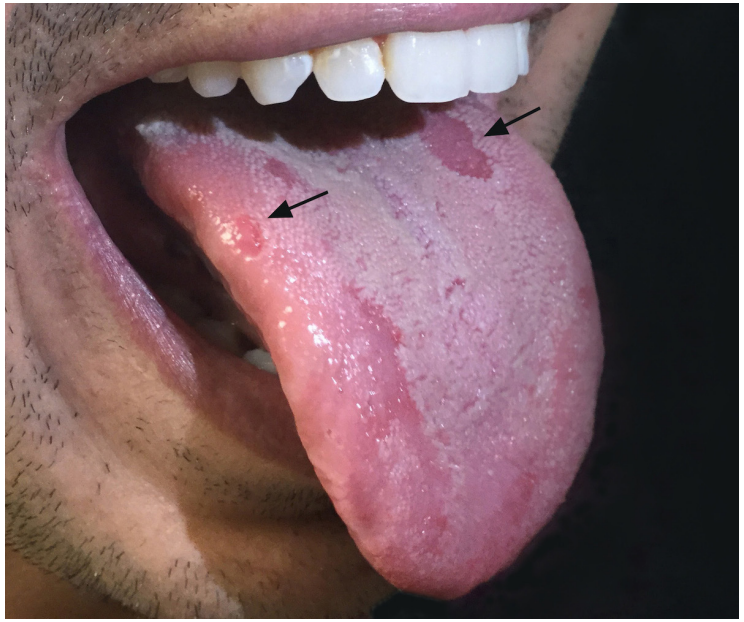
- Chancres
  - 2-3 weeks (10~90 days) after the acquisition of T. pallidum
  - Site: penis, labia, perianal region, or mouth
  - highly contagious
  - heal spontaneously in 3-8 weeks



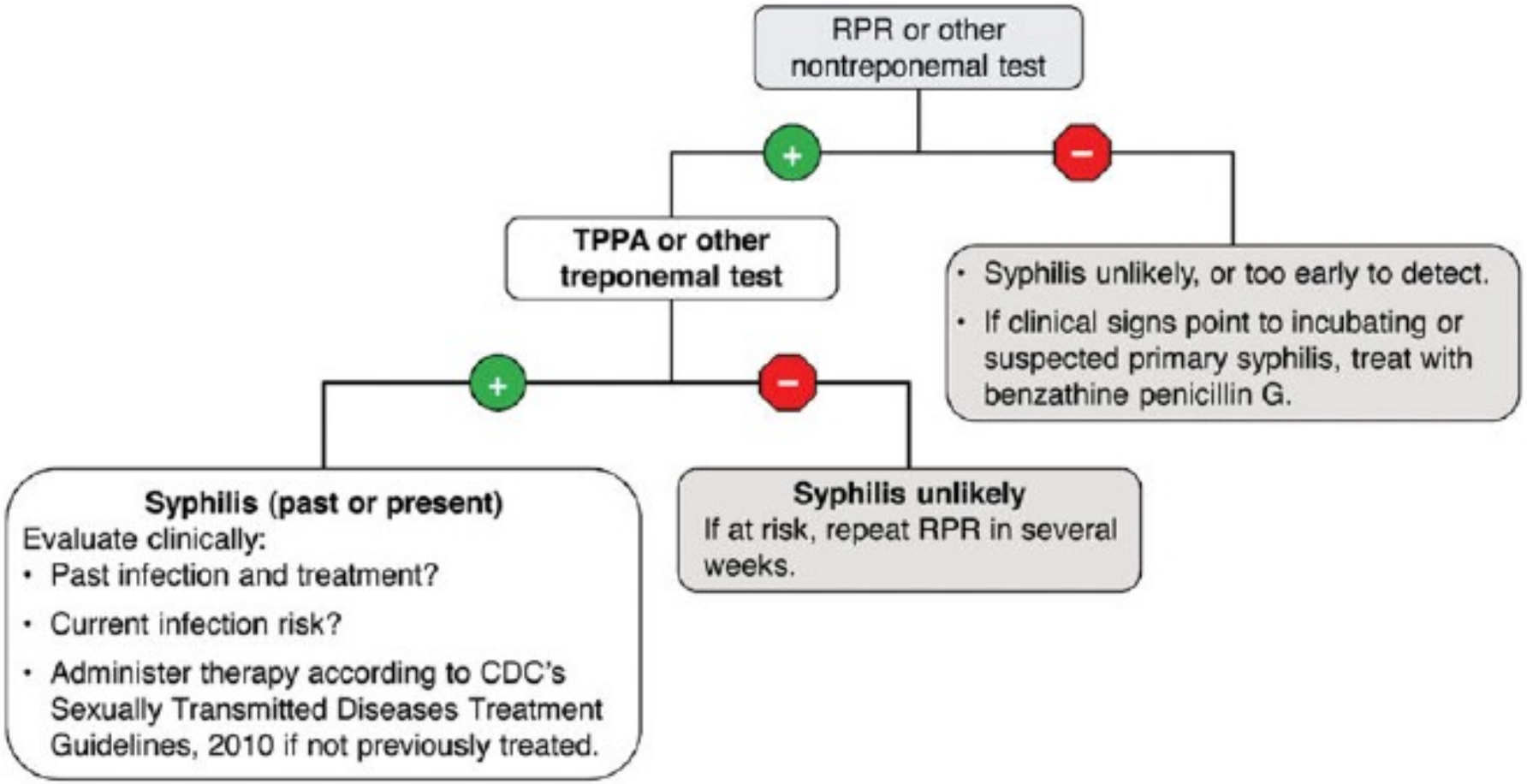
Secondary Syphilis

- 4-10 weeks after the acquisition
- Generalized body rash (>75%)
- Mucous patches (6-30%)
- Condylomata Lata (10-20%)
- Alopecia (5%)

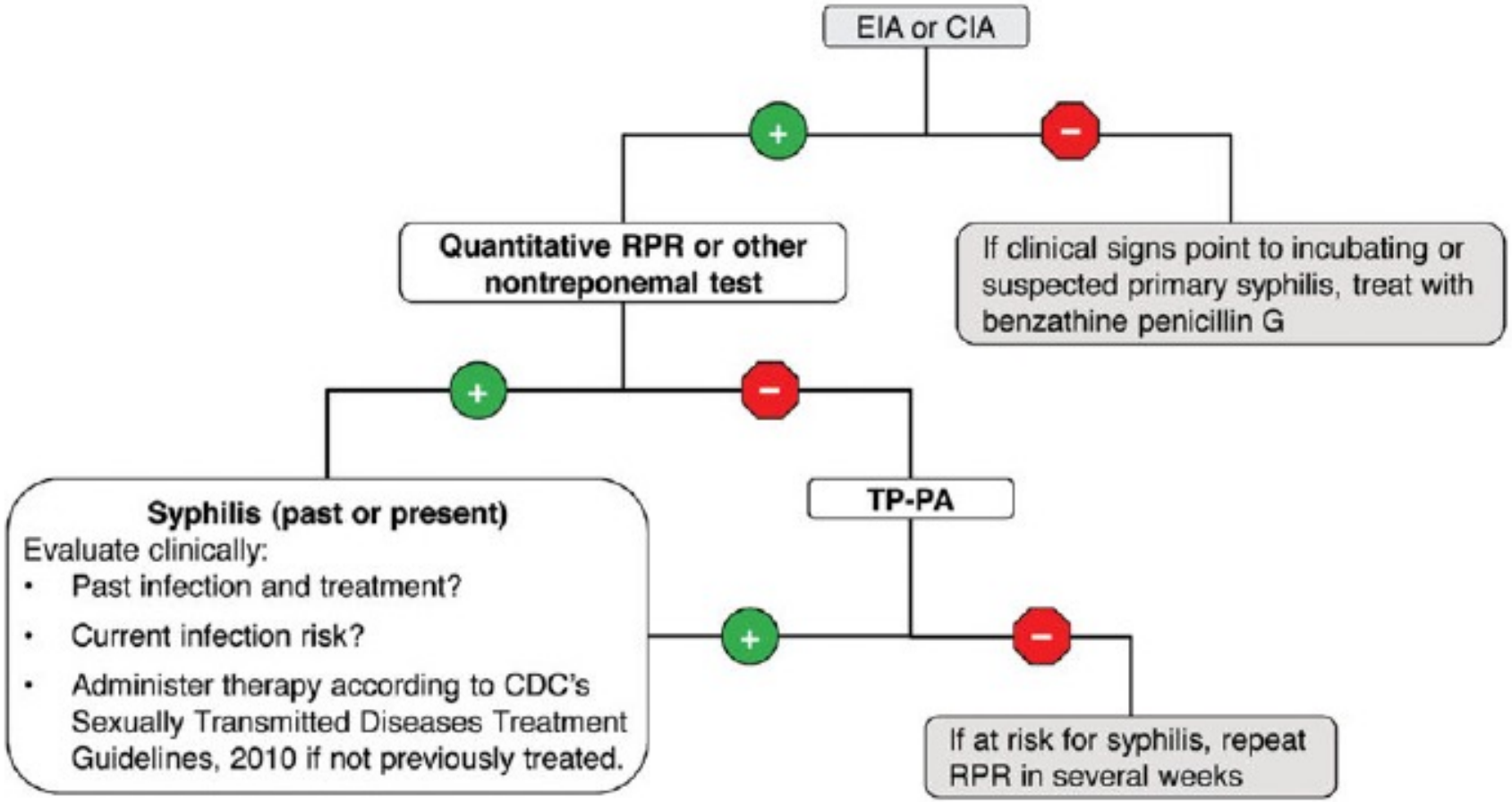




”Traditional” syphilis testing algorithm



Reverse Testing Algorithm



Screening

- No routine screening:
  1) men who have sex with women 2) women who are not pregnant
- MSM: at least annually
- Pregnant individuals: first prenatal visit +/- 28-wk GA and at delivery
- Individuals with HIV: first visit and then at least annually thereafter

Treatment

- Primary/Secondary: Benzathine penicillin G 2.4 M units IM, single

- Penicillin Allergy
  - Doxycycline 100 mg BID for 14 days
  - Azithromycin: 2-gm oral dose, single
  - Ceftriaxone 1 gm daily for 10 days

- CHECK allergy history in detail (severity, timing)
- Jarisch-Herxheimer reaction: Patient Education!

Post-Treatment Follow-up

- At least 4-fold decrease in non-treponemal titers

- Primary/Secondary Syphilis
  - Individuals w/o HIV: 6 and 12 months
  - Individuals with HIV: 3, 6, 9, 12, and 24 months
- Latent Syphilis
  - Individuals w/o HIV: 6, 12, and 24 months
  - Individuals with HIV: 6, 12, 18, and 24 months

Latent Syphilis

- **Early (acquired within a year)**
  - IM Benzathine Penicillin G 2.4 M units, a single dose
  - If PC allergy +: same with primary/secondary syphilis

- **Late (acquired > 1 year ago)**
  - IM Benzathine Penicillin G 2.4 M units x 3 weekly doses
  - If PC allergy +: doxycycline 100 mg BID x 28 days

Patient Education – Syphilis

- When to resume sexual activity?
  a) > 7 days after tx completion
  b) No mucosal and skin symptoms
  c) Partner treatment
- Partner notification: all sex partners in the prior 90 days
- Follow-up testing
- STI Prevention: number of sex partners, condom use, PrEP

HIV PrEP

Indications

- Recent STI with syphilis, gonorrhea, or chlamydia within 6 months
- Inconsistent condom use
- Drug use
- Partner with HIV infection

PrEP Options

TDF/FTC (Truvada®)
TAF/FTC (Descovy®)

Cabotegravir (CAB)
Apretude® - IM

References

- Lewis J, White PJ, Price MJ. Per-partnership transmission probabilities for Chlamydia trachomatis infection: evidence synthesis of population-based survey data. *Int J Epidemiol*. 2021;50(2):510-517. doi:10.1093/ije/dyaa202
- Ness RB, Soper DE, Holley RL, et al. Effectiveness of inpatient and outpatient treatment strategies for women with pelvic inflammatory disease: results from the Pelvic Inflammatory Disease Evaluation and Clinical Health (PEACH) Randomized Trial. *Am J Obstet Gynecol*. 2002;186(5):929-937. doi:10.1067/mob.2002.121625
- Centers for Disease Control and Prevention. Sexually Transmitted Disease Surveillance 2021.
- Centers for Disease Control and Prevention. Laboratory Recommendations for Syphilis Testing, US, 2024. https://www.cdc.gov/mmwr/volumes/73/rr/rr7301a1.htm
- Gadde J, Spence M, Wheeler B, Adkinson NF Jr. Clinical experience with penicillin skin testing in a large inner-city STD clinic. *JAMA*. 1993;270(20):2456-2463.
- Shenoy ES, Macy E, Rowe T, Blumenthal KG. Evaluation and Management of Penicillin Allergy: A Review. *JAMA*. 2019;321(2):188-199. doi:10.1001/jama.2018.19283
- Papp JR, Park IU, Fakile Y, Pereira L, Pillay A, Bolan GA. CDC Laboratory Recommendations for Syphilis Testing, United States, 2024. MMWR Recomm Rep 2024;73(No. RR-1):1–32. DOI: http://dx.doi.org/10.15585/mmwr.rr7301a1

Resources

- National STD Curriculum https://www.std.uw.edu
- UCSF Clinician-To-Clinician Advice: https://nccc.ucsf.edu
  - HIV, Hep C, SUD, PEP, PrEP
- Savoy M, et al. Sexual Health History: Techniques and Tips. Am Fam Physician. 2020;101(5):286-293.
- Dalby J, Stoner BP. Sexually Transmitted Infections: Updates From the 2021 CDC Guidelines. Am Fam Physician. 2022;105(5):514-520.

Acknowledgement

- Hilary Reno, MD, PhD, FIDSA
  Associate Professor, Infectious Disease, Washington University
  Medical Director, St. Louis County Sexual Health Clinic
  Medical Consultant, CDC, Division of STD Prevention

Contact information

- Kento Sonoda, MD, AAHIVS
  Email: kento.sonoda@health.slu.edu