Lancaster County Syphilis & HIV Symposium

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May 2, 2024
8:30am – 4:00pm

KC CARE HEALTH CENTER
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MATEC MIDWEST AIDS TRAINING + EDUCATION CENTER
nap
AETC Midwest
St. Louis STI/HIV Prevention Training Center
Washington University in St. Louis School of Medicine

Lancaster County Syphilis & HIV Symposium

Welcome & Introductions

Daemon Donigan & Kerry Kernen

Disclaimers

"This program is supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) as part of an award totaling $4,036,482 with 0 percentage financed with nongovernmental sources. The contents are those of the author(s) and do not necessarily represent the official views of, nor an endorsement, by HRSA, HHS or the U.S. Government."

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Additionally, "Funding for this presentation was made possible by grant #5 U1OHA29293-07-00."

Continuing Education

Physicians, Nurses, Other Participants

Physicians

ACCREDITATION: This activity has been planned and implemented in accordance with the accreditation requirements and policies of the Missouri State Medical Association (MSMA) through the joint providership of the St. Louis STI/HIV Prevention Training Center and MATEC-KS/NE. The St. Louis STI/HIV Prevention Training Center is accredited by the MSMA to provide continuing medical education for physicians.

DESIGNATION: The St. Louis STI/HIV Prevention Training Center designates this live activity for a maximum of 5.75 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Nursing Kansas City CARE Clinic is approved as provider of continuing nursing education by the Kansas State Board of Nursing. This course offering approved for 5.75 contact hours applicable for RN or LPN re-licensure. Kansas State Board of Nursing Approved Provider Number: LT0256-0609.

All Other Participants will receive a Certificate of Attendance for 5.75 hours.

*** COMPLETION OF THE EVALUATIONS ARE REQUIRED TO RECEIVE CONTINUING EDUCATION CREDIT**

MATEC Statement on Equity and Inclusion

MATEC has a strong commitment to fair, respectful and unbiased representation of humankind. We strive to be anti-racist, gender-affirming and honor all people in an authentic way. This is our goal in all our work, including this presentation.

Our commitment to you is that we take this stance seriously and invite you to do the same. We ask that if you find something offensive, off-putting, or inaccurate to please let us know.

We continue to grow and evolve and welcome you on our journey.

"Do the best you can until you know better. Then when you know better, do better."

-Dr. Maya Angelou

SYPHILIS
Nebraska 2024

DONAHUE | NEPHC | 4.5.24

NEBRASKA
Good Life. Great Mission.
DEPT. OF HEALTH AND HUMAN SERVICES

DIVISION OF PUBLIC HEALTH

AETC AIDS Education & Training Center Program Midwest

matec MIDWEST AIDS TRAINING + EDUCATION CENTER

CPN BUILDING THE CAPACITY OF THE NATION'S HIV PREVENTION WORKFORCE

Douglas County Health Department
Healthy. Vibrant. Everyone. Everywhere.

Lincoln Lancaster County Health Department

nap NEBRASKA AIDS PROJECT

KC CARE HEALTH CENTER
The heart of community healthcare

Washington University in St. Louis School of Medicine

STLPTC

St. Louis STI/HIV Prevention Training Center

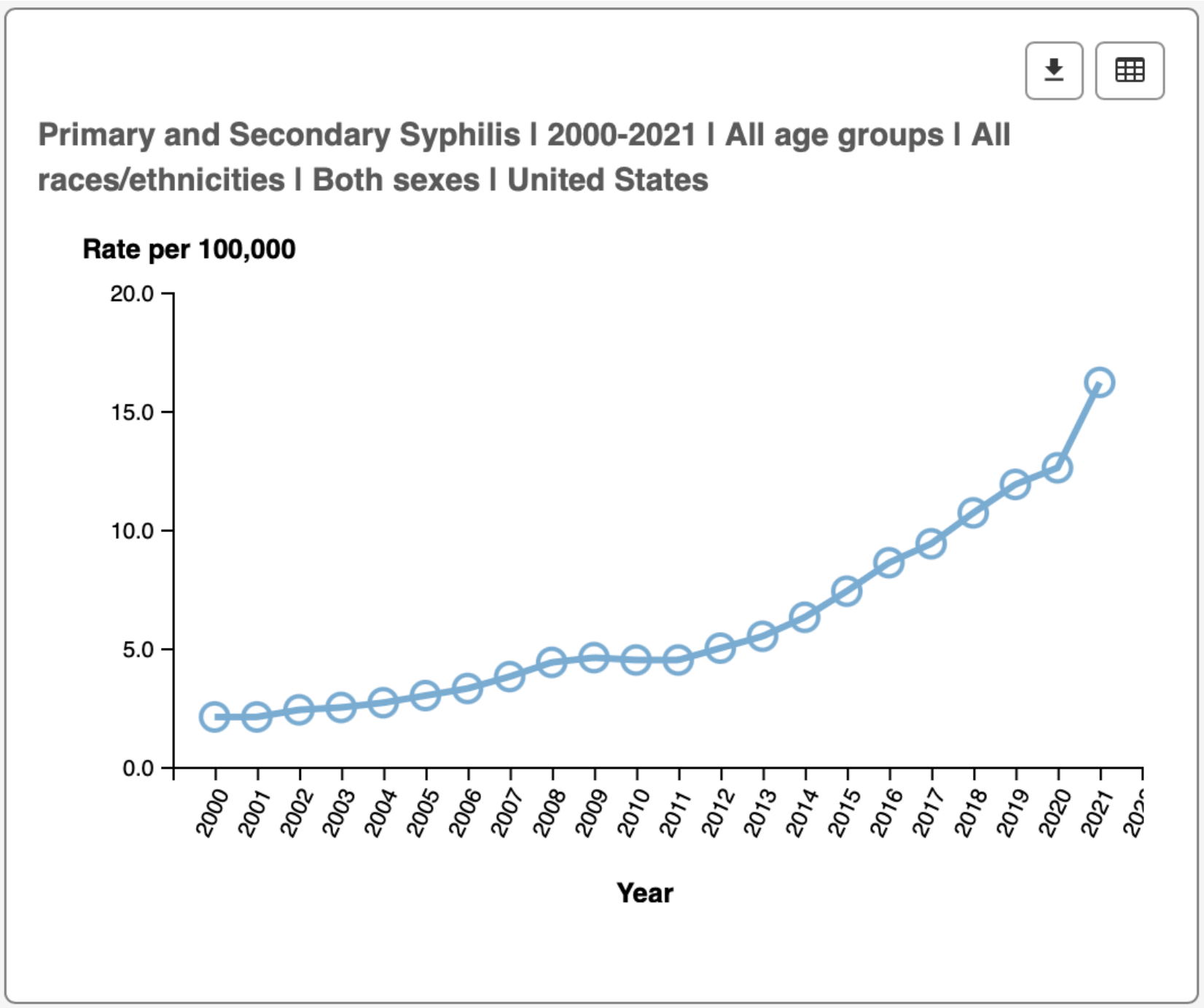
Disclosures

Nothing to disclose

Learning Objectives

A) Explore syphilis trends in the US, in Nebraska, and in specific populations
B) Identify four key syphilis interventions in Nebraska

THE PROBLEM: SYPHILIS HAS BEEN INCREASING SINCE THE EARLY 2000s



BREAKING

California Sen. Dianne Feinstein, the longest-serving female senator in U.S. history, h

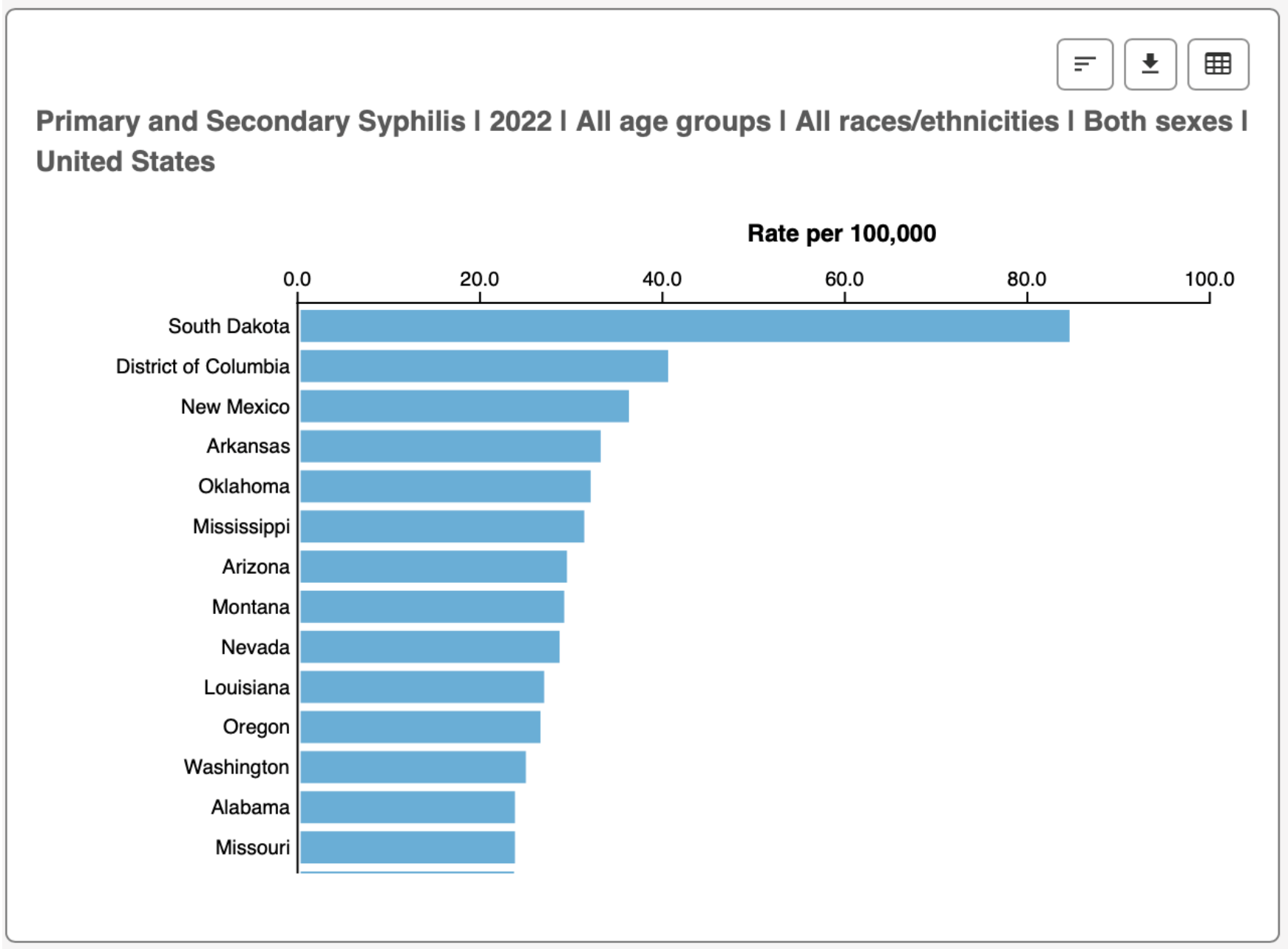
Syphilis cases at highest levels in 70 years in alarming trend

Syphilis cases reached their highest level since 1950, the report found.

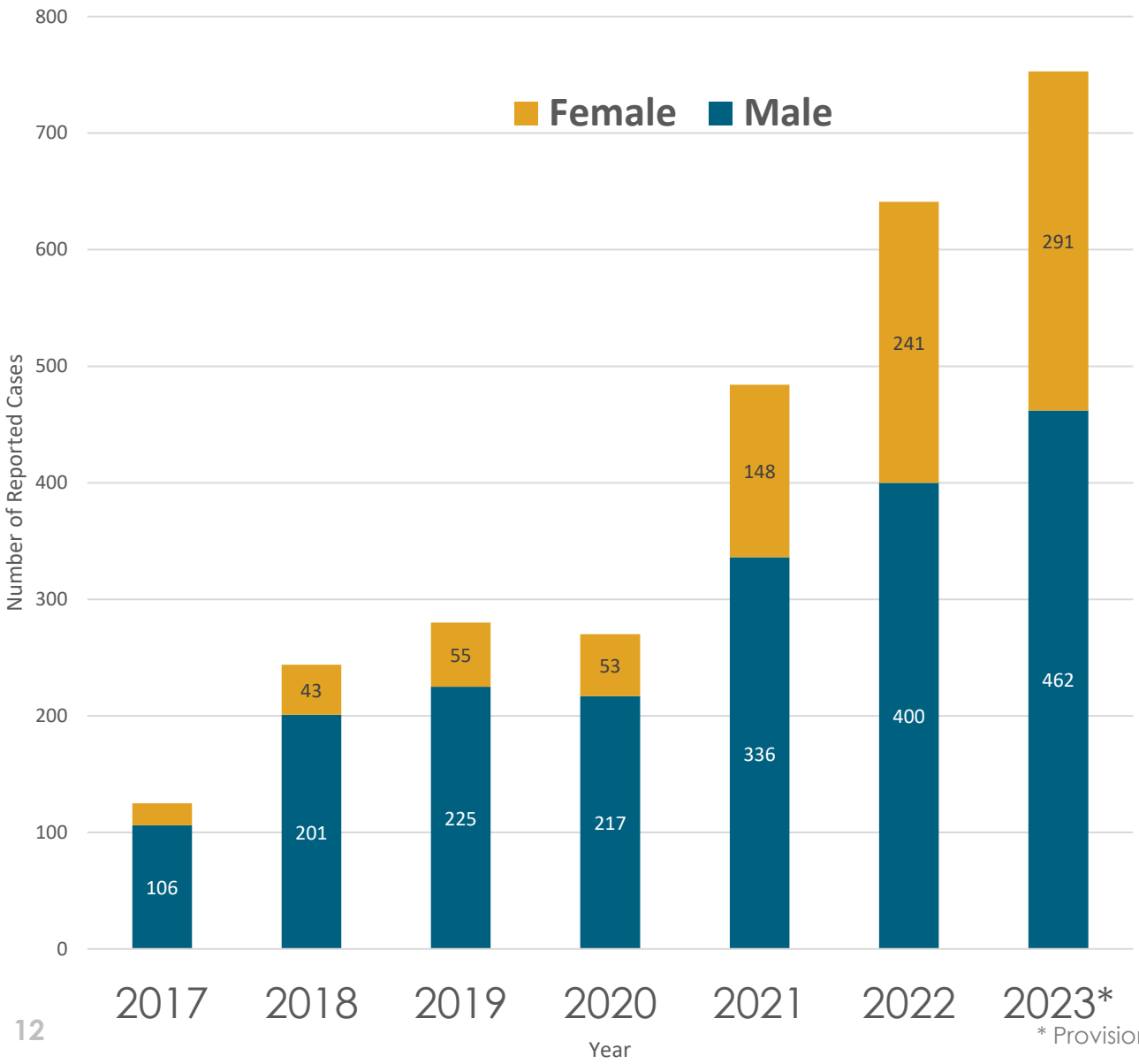
By Mary Kekatos
April 11, 2023, 3:25 PM

CDC report finds STIs 'show no signs of slowing down'
A new report from the CDC published Tuesday found cases of STIs, includ... Read More

SOUTH DAKOTA IS SEEING THE HIGHEST RATES IN ALL OF THE UNITED STATED



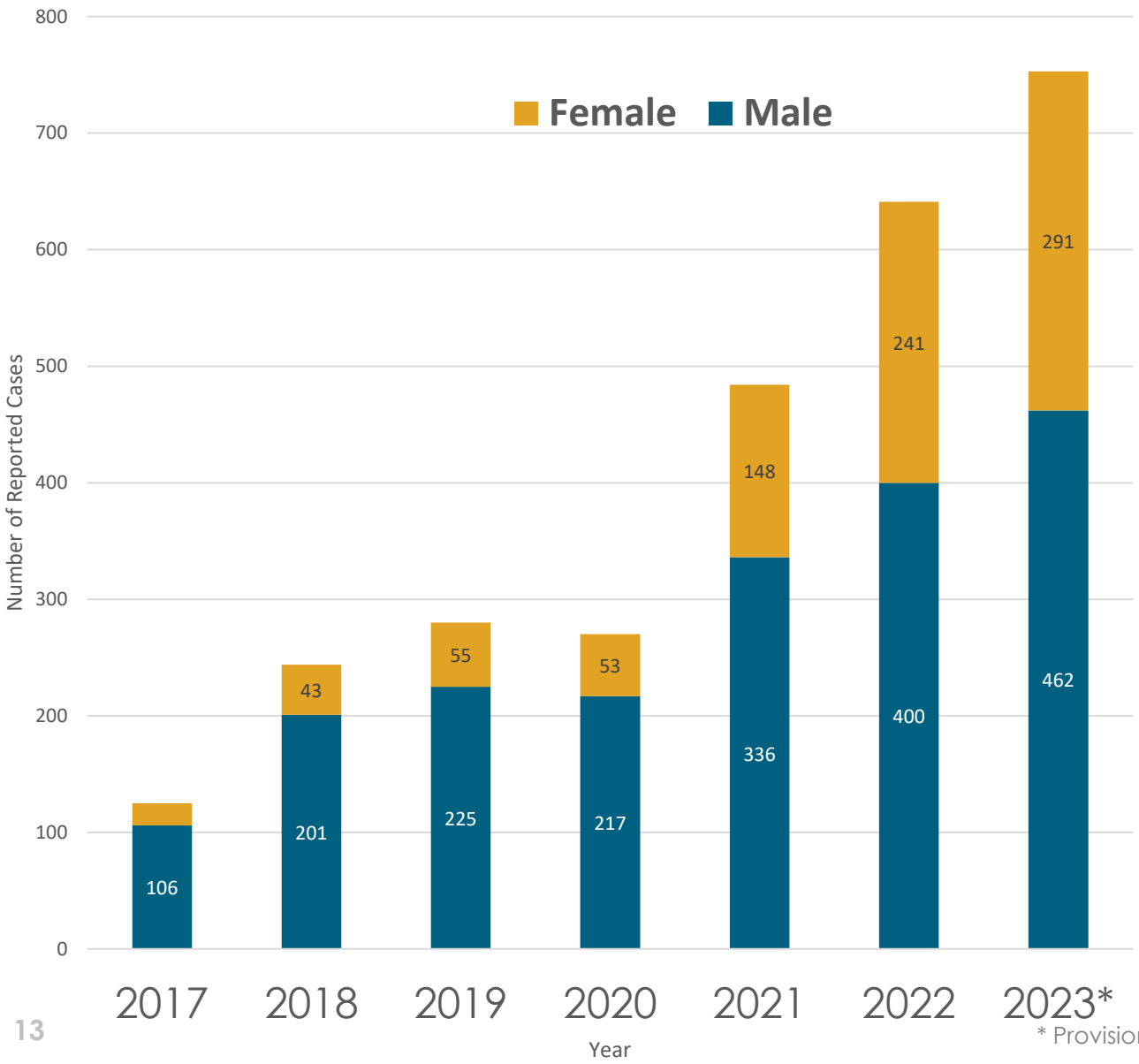
Number of Reported Syphilis Infections (all Stages), by Sex, Nebraska, 2017 through 2023*



* Provisional data

THE PROBLEM: NEBASKA HAS NOT BEEN INSULATED FROM THESE NATIONAL TRENDS

Number of Reported Syphilis Infections (all Stages), by Sex, Nebraska, 2017 through 2023*

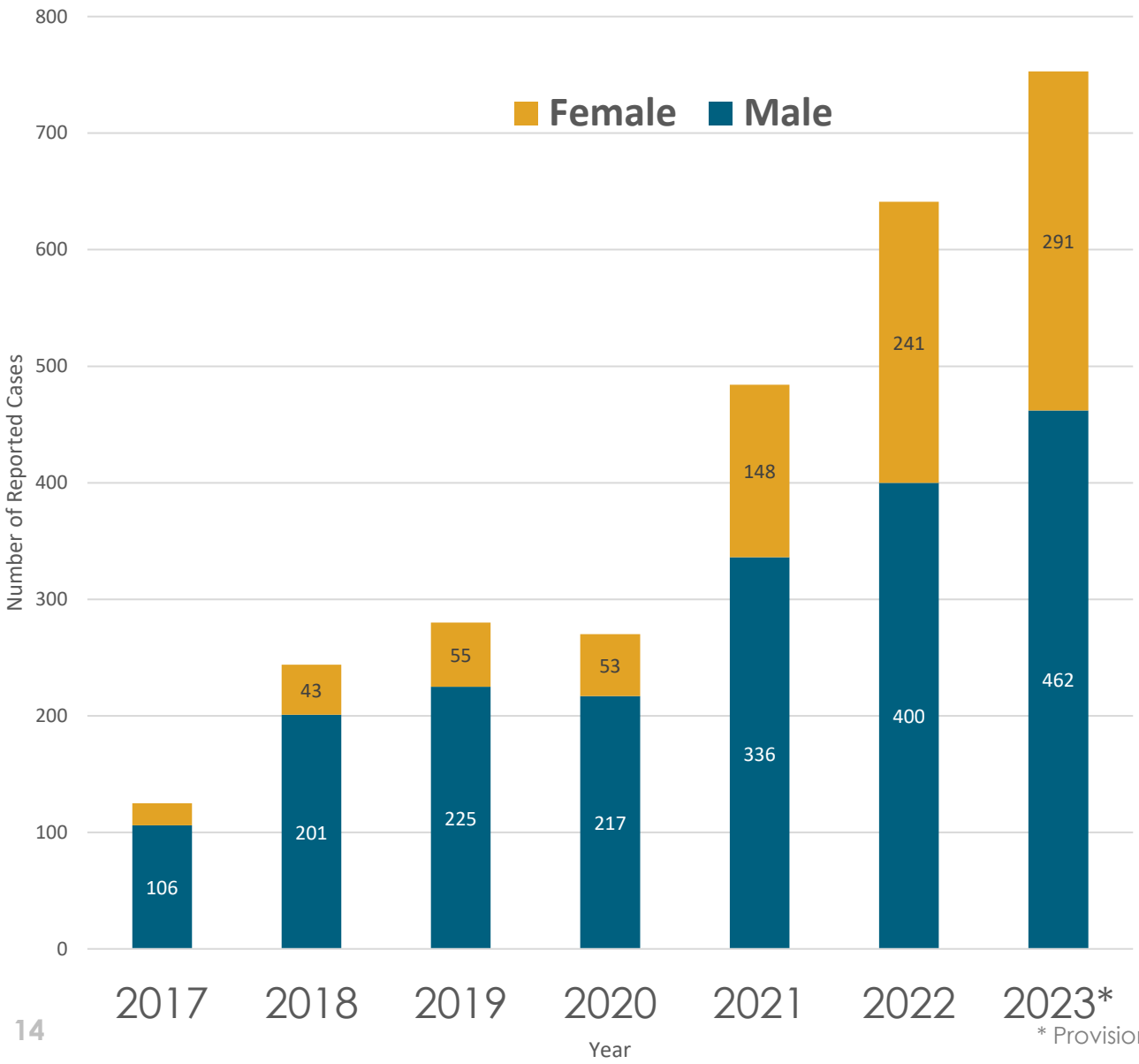


* Provisional data

THE PROBLEM: NEBASKA HAS NOT BEEN INSULATED FROM THESE NATIONAL TRENDS

NEBRASKA IS RECORDING THE HIGHEST SYPHILIS RATES EVER SEEN IN OUR STATE

Number of Reported Syphilis Infections (all Stages), by Sex, Nebraska, 2017 through 2023*

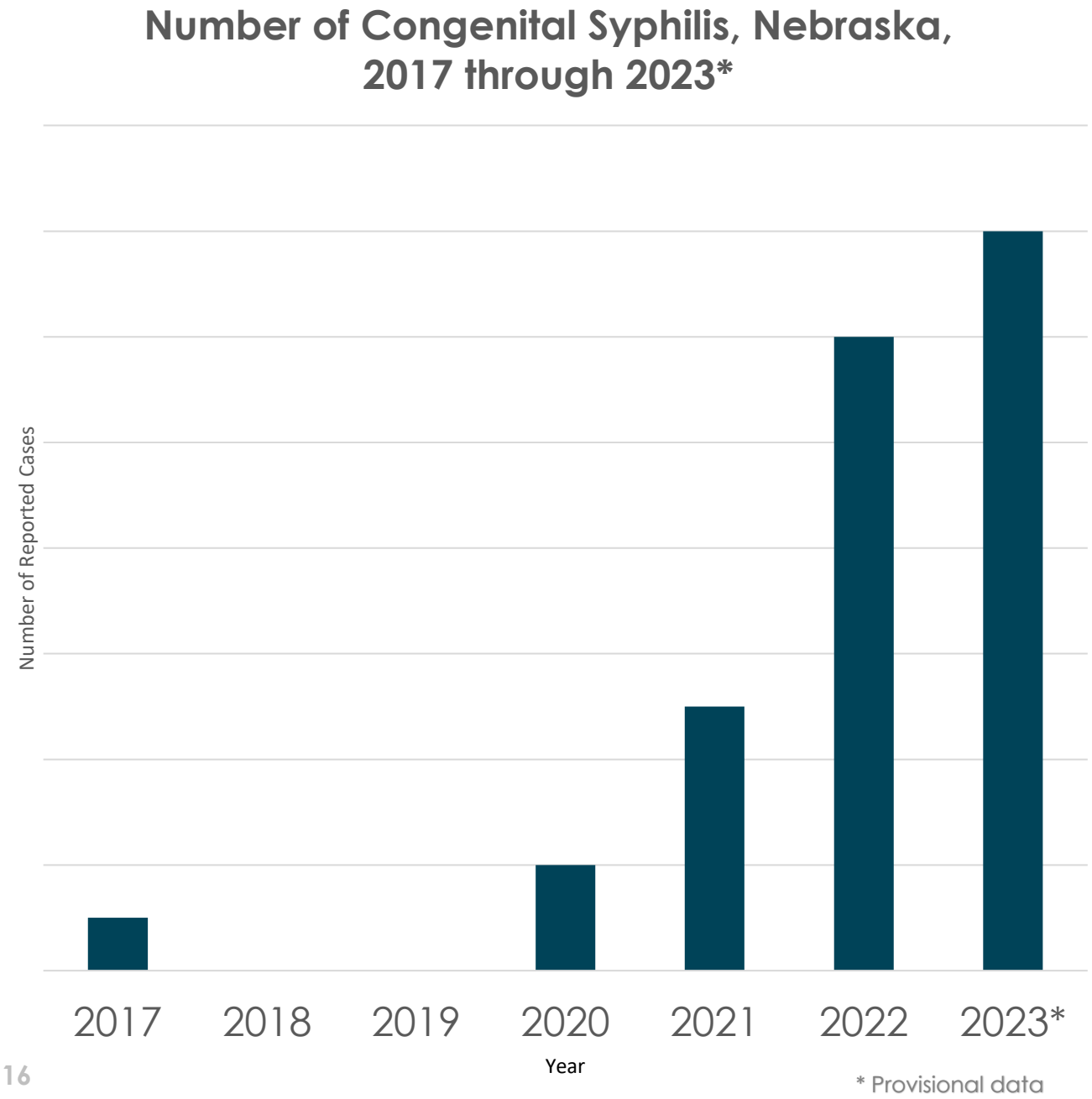


* Provisional data

THE PROBLEM: NEBASKA HAS NOT BEEN INSULATED FROM THESE NATIONAL TRENDS

NEBRASKA IS RECORDING THE HIGHEST SYPHILIS RATES EVER SEEN IN OUR STATE

MOST NEW CASES OCCUR AMONG MALES 20–40 YEARS OLD, BUT GREATEST PROPORTIONAL INCREASE IN FEMALES



THE PROBLEM: INCREASING RATES AMONG ADULTS ARE PRODUCING INCREASING RATES OF CONGENITAL SYPHILIS

Syphilis rates in 2023 are highest among Native American and black Nebraskans

	Rate per 100,000 2023	IRR
Native American	217	11
Black	136	7
White	19	

Native Americans are being infected at a rate 11x higher than whites

Blacks are being infected at a rate 7x higher than whites

PATHOGEN FACTOR
1. TREATMENT & GENOMICS

PRIMARY SECONDARY EARLY LATENT <1Y	35%	benzathine penicillin G IM x1
LATE LATENT >1Y UNKNOWN DURATION TERTIARY	65%	benzathine penicillin G IM x3
NEUROSYPHILIS OCULAR SYPHILIS OTOSYPHILIS	<1%	aqueous penicillin G IV

https://au.finance.yahoo.com/news/ra-ts-empty-supermarket-shelves-235618694.html

PRIMARY
SECONDARY
EARLY LATENT <1Y

35%

benzathine penicillin G IM

LATE LATENT >1Y
UNKNOWN DURATION
TERTIARY

65%

benzathine penicillin G IM

NEUROSYPHILIS
OCULAR SYPHILIS
OTOSYPHILIS

<1%

aqueous penicillin G IV

Chen et al. Detection of the A2058G and A2059G 23S rRNA Gene Point Mutations Associated with Azithromycin Resistance in Treponema pallidum by Use of a TaqMan Real-Time Multiplex PCR Assay, 2013. J. Clin. Microbiol. DOI: 10.1128/JCM.02770-12.

HOST FACTOR
2. AWARENESS

1. AWARENESS

PUBLIC PUBLICATIONS

LOCAL NEWS

Syphilis continues rapid increase in Nebraska, nation

Julie Anderson | Updated Jul 17, 2023

While final numbers are being compiled, the nation in 2022 may already have exceeded the most recent peak in syphilis cases recorded in 1990.

Nebraska Department of Health and Human Services

Nebraska CEHDAR

EpiLink Newsletter

August 2023

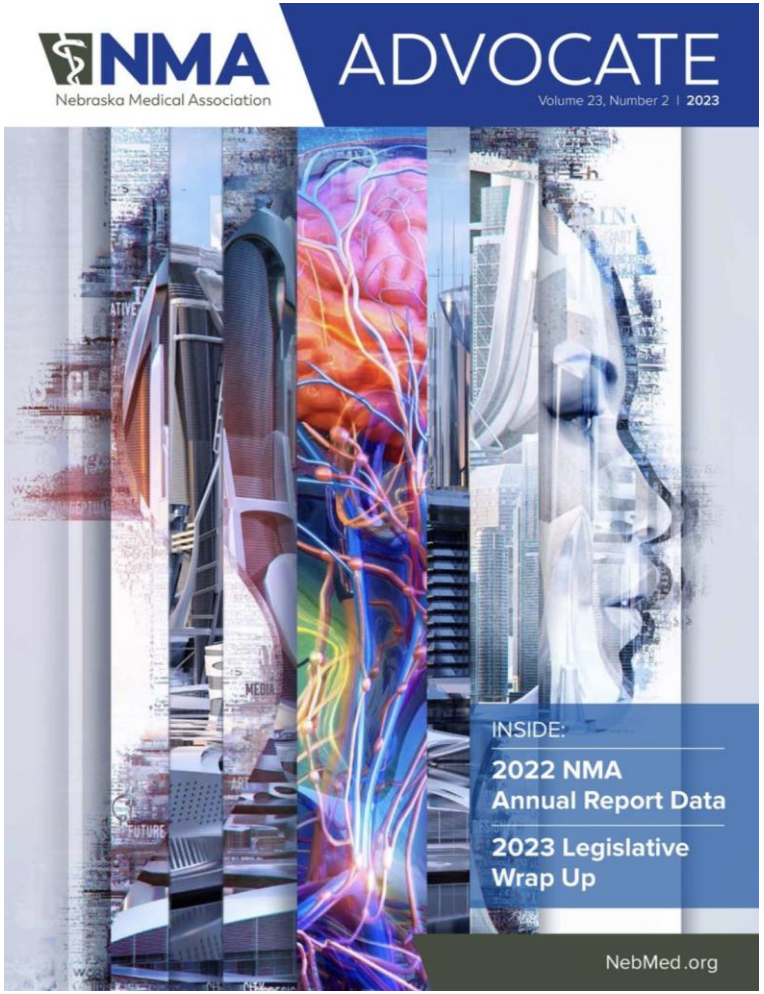
EpiData Link

Syphilis Incidence is Increasing at an Alarming Pace in Nebraska, Here's What You Need to Know:

Syphilis is making a comeback in the United States and in Nebraska. In the late 1990s and early 2000s the US was gaining momentum in syphilis elimination efforts. When we target syphilis, we're not just targeting syphilis – we are targeting HIV, maternal child health, and health equity. Despite the potential for elimination and the

1. AWARENESS

MEDICAL PUBLICATIONS



Nebraska Department of Health and Human Services

Health Alert Network

ALERT

July 18, 2023

Syphilis Incidence Continues Increasing in Nebraska

NMA ADVOCATE \ Volume 23, Number 2 | 2023

Syphilis is making a comeback in the US and in Nebraska. Here's what docs need to know:

By Matthew Donahue, MD
State Epidemiologist
Nebraska Department of Health & Human Services

last two decades (2000–2021), primary and secondary syphilis rates in the US increased from 2 to 16 cases per 100,000

1. AWARENESS

MEDICAL & PUBLIC HEALTH PRESENTATIONS

CDC
Centers for Disease Control and Prevention

SM

Creighton University

NALHD
Nebraska Association of Local Health Directors

ACP American College of Physicians®
Leading Internal Medicine, Improving Lives

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN®

ACOG
The American College of Obstetricians and Gynecologists

AMERICAN ACADEMY OF FAMILY PHYSICIANS
STRONG MEDICINE FOR AMERICA

ENVIRONMENTAL FACTOR
3. ACCESS TO TESTING

PRIMARY
SECONDARY
EARLY LATENT <1Y

35%

LATE LATENT >1Y
UNKNOWN DURATION
TERTIARY

65%

NEUROSYPHILIS
OCULAR SYPHILIS
OTOSYPHILIS

<1%

PRIMARY
SECONDARY
EARLY LATENT <1Y

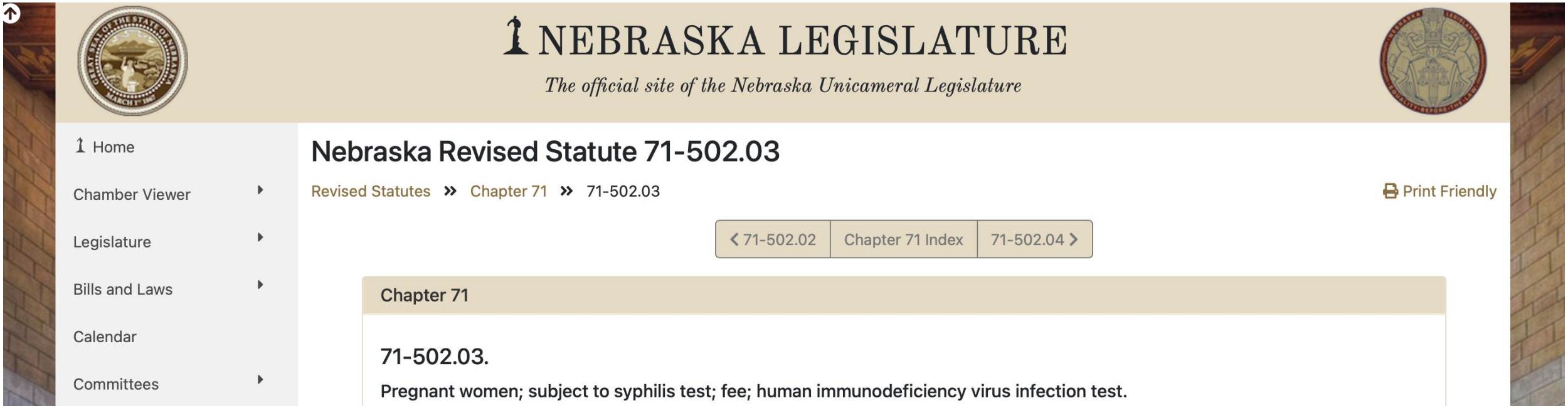
LATE LATENT >1Y
UNKNOWN DURATION
TERTIARY

} 76%

NEUROSYPHILIS
OCULAR SYPHILIS
OTOSYPHILIS

3. ACCESS TO TESTING

Screening pregnant people is required by law, best practice is screening three times, Medicaid will cover each



3. ACCESS TO TESTING

Syphilis home testing coming soon

ENVIRONMENTAL FACTOR
4. DIS WORKFORCE

"The recission of $400 million in STI (sexually transmitted infections) public health workforce funding as part of the debt ceiling deal is a devastating blow to the fight against rising STI rates."

"…Congress eliminated funding for the remaining two years, a total cut of $400 million and those 3,000 jobs."

-NCSD: National Coalition of STD Directors

APPLY COVID-19 KNOWLEDGE TO A GROWING EMERGENCY

TIMELINESS

Specimen collection to lab report

Lab report to investigation started

Investigation started to patient treated

Partner notified to partner treated

COMPLETION

Investigation started / all positive labs

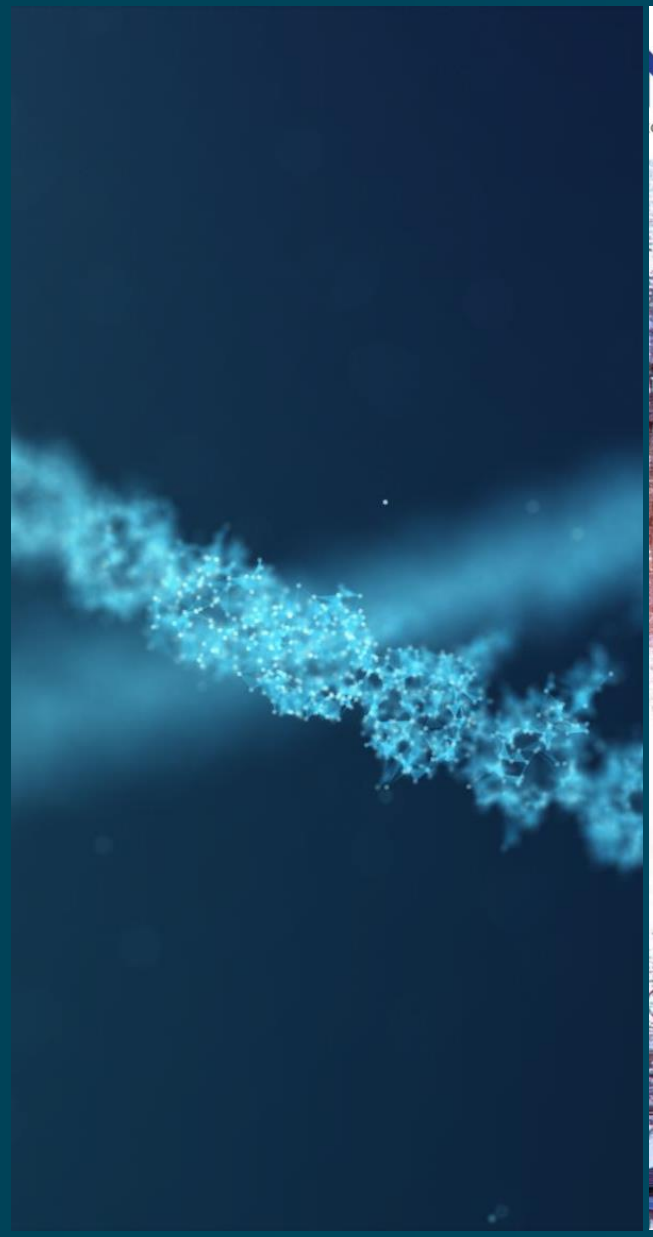
Investigations completed / investigations started

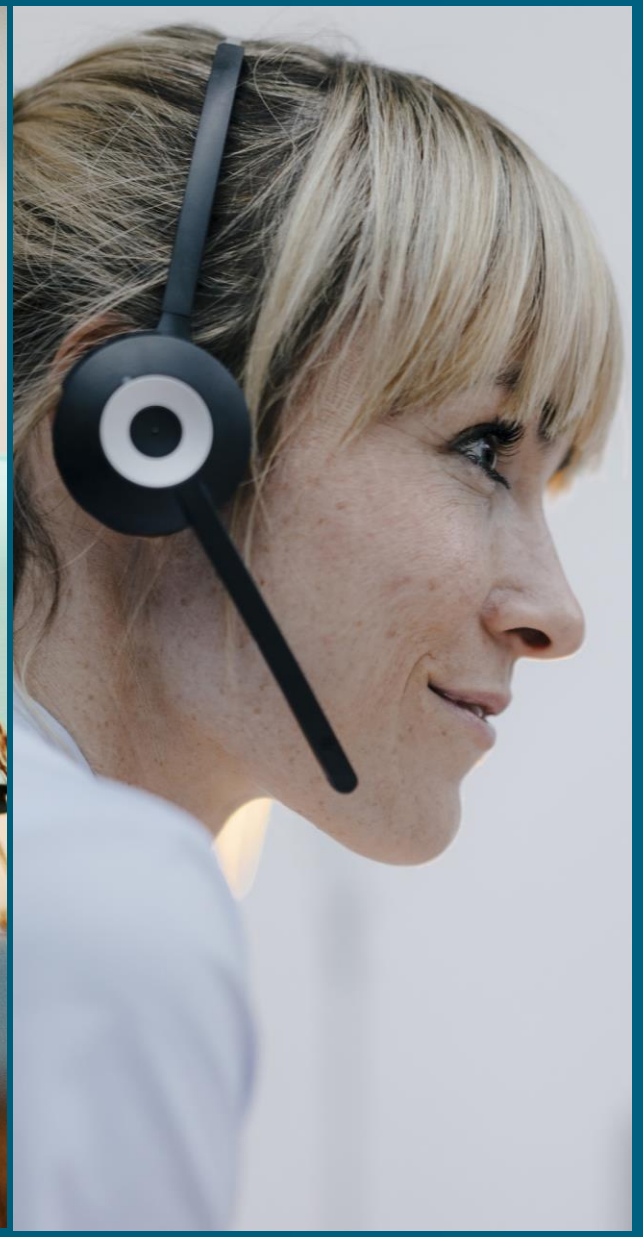
Partners identified / investigations completed

Patients treated / investigations completed

Partners treated / all partners identified

1. TREATMENT 2. AWARENESS 3. ACCESS 4. WORKFORCE





QUESTIONS?

Resources

- Leschinsky, D. (2024). Nebraska HIV/AIDS Epi Profile Update, Nebraska Department of Health and Human Services, HIV/AIDS Epidemiology.
- ABC source: https://abcnews.go.com/Health/stis-including-syphilis-rose-2nd-year-pandemic-cdc/story?id=98478883
- Centers for Disease Control and Prevention (2024). HIV Surveillance Report. Retrieved from https://www.cdc.gov
- https://www.cdc.gov/nchhstp/atlas/index.htm
- All pictures used in this presentation unless otherwise cited are from the MS 365 PowerPoint Stock Image Collection via subscription for creative content.

THANK YOU

DIVISION OF PUBLIC HEALTH

NEBRASKA
Good Life. Great Mission.
DEPT. OF HEALTH AND HUMAN SERVICES

MATTHEW DONAHUE, MD

Matthew.Donahue@Nebraska.gov

St. Louis
STI/HIV Prevention
Training Center

Syphilis!

JOSEPH CHERABIE MD MSC (HE/THEY)

MEDICAL DIRECTOR – ST LOUIS STI/HIV PREVENTION TRAINING CENTER

Disclosures

- I do not have any financial relationships to disclose.

- This presentation will not include discussion of pharmaceuticals or devices that have not been approved by the FDA.

Learning Objectives:

- Review current epidemiology of syphilis
- Identify the stages of syphilis and where diagnostic mistakes are made
- Discuss treatment in the time of medication shortages
- Describe a syndemic approach and why it may be essential to syphilis care

Tell me why syphilis is the best bacteria ever!!

Syphilis Overview

Spirochete Family

- Long slender bacteria, fraction of a micron diameter but can be up to 500 microns long
- Unique axial filaments, similar to bacterial flagella, giving its helical coiled structure
- Bacteria is able to move by rotating in place
- Not all bad -- some species live in cows' stomachs where they break down complex cellulose

Video provided by:
www.youtube.com/@LymeDiseaseData

"He who knows syphilis, knows medicine"
-Sir William Osler

- Origins of syphilis remain unclear
  - Pre-Columbian theory – originated in central Africa, introduced to Europe prior to Columbus
  - Columbian/New World theory – endemic in Hispaniola and brought to Europe by Columbus
- By 1505, the syphilis epidemic had spread across Europe to India and China
- Term first coined by Italian physician, Girolamo Fracastoro, in his 1530 poem *Syphilis Sive Morbus Gallicus* (Syphilis or the French disease)
- Fracastoro one of the first physicians to propose that syphilis spread through physical contact

Albrecht Durer's woodcut of a syphilitic man, 1496.

Singh AE et al. Syphilis: Review with Emphasis on Clinical, Epidemiologic, and Some Biologic Features. Clin Microbiol Rev. 1999 Apr; 12(2): 187–209.

Treponema pallidum pallidum (Syphilis)

- 30% risk after exposure by sexual contact
- Greatest infectivity is within 1st year (can be infectious for up to 4 years)
- Significant predictor of HIV risk
  - median time to HIV diagnosis found to be 1.6 years
- Incubation period 9-90 days
- Ulceration associated with primary syphilis

Pathela P et al. The high risk of an HIV diagnosis following a diagnosis of syphilis: a population-level analysis of New York City men. Clin Infect Dis. 2015 Jul 15;61(2):281-7.

Understanding Syphilis

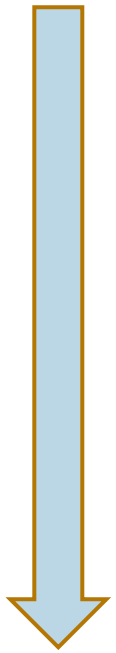
- Disseminates at every stage
- The more syphilis we see, the more unusual presentations we see
- Osler was right
- Consult without fear!
- Recent rise in cases is somewhat due to an increase in association with drug use
- Two things every patient with syphilis needs:
  - Neuro ROS (review of symptoms)→ further assessment
  - Assessment of pregnancy status

Syphilis - STI treatment Guidelines. (n.d.). https://www.cdc.gov/std/treatment-guidelines/syphilis.htm

Traditional Approach to Syphilis Staging

Primary
Secondary
Latent
- early latent: < 1 year
- late latent: ≥ 1 year

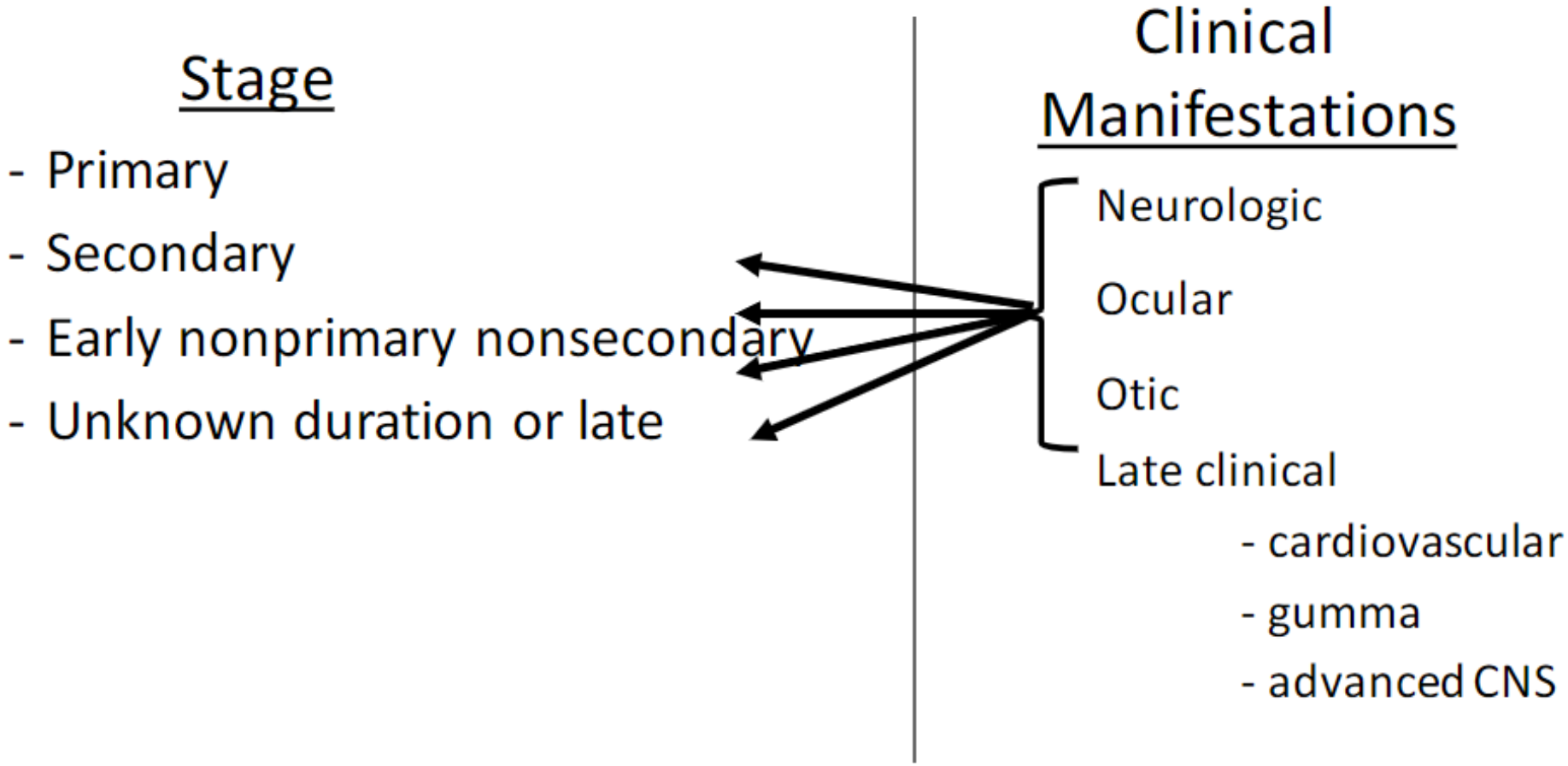
Late (tertiary)
- neurosyphilis
- cardiovascular syphilis
- gummatous syphilis



Linear Progression

Syphilis - STI treatment Guidelines. (n.d.). https://www.cdc.gov/std/treatment-guidelines/syphilis.htm

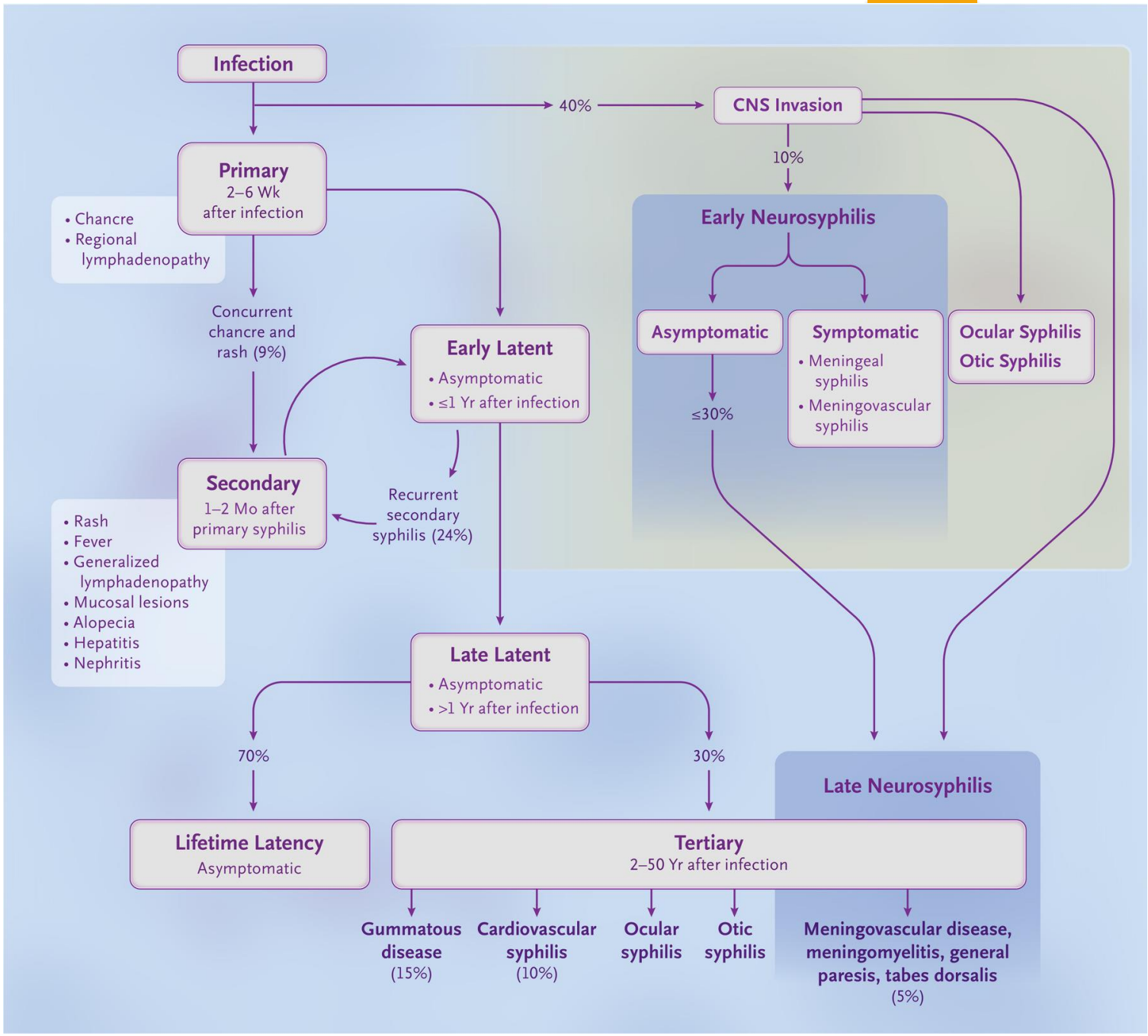
2018 Revised Syphilis Classification



Council of State and Territorial Epidemiologists (CSTE)Position Statement on Syphilis 17-ID-11Effective 01 Jan 2018
Council of State and Territorial Epidemiologists (cste.org)

CNS = Central Nervous System

Syphilis Disease Progression

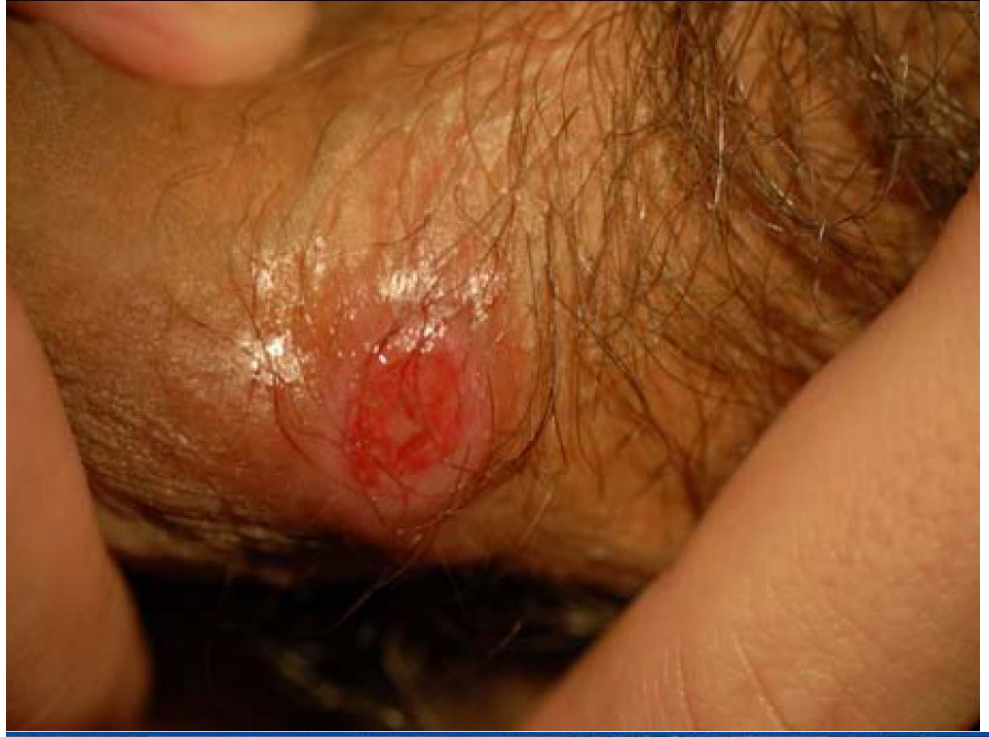


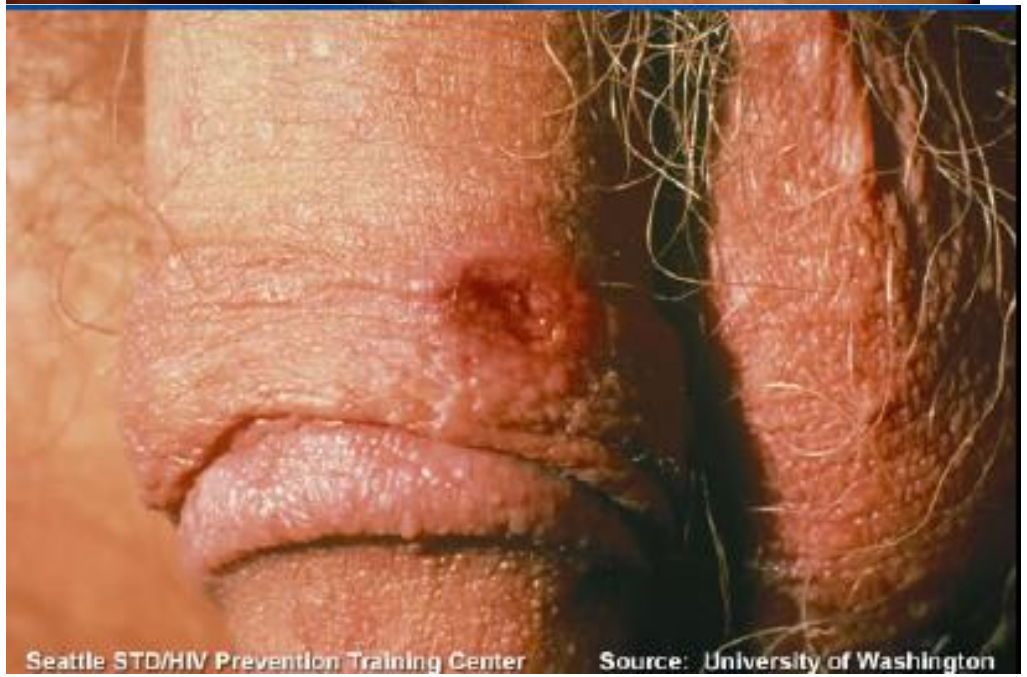
Ghanem et al N Engl J Med. 2020 Feb

Syphilis Ulcer / Chancre

- Clean-based, painless
- Indurated ulcers begin as a papule
- Can be extragenital, can be multiple
- Unilateral inguinal LAD (lymphadenopathy) common
- Heals spontaneously 1-8 weeks
- Goes unnoticed in 15-30% of cases

O'Byrne P, MacPherson P. Syphilis. BMJ. 2019 Jun 28;365:l4159. doi: 10.1136/bmj.l4159. Erratum in: BMJ. 2019 Jul 19;366:l4746. PMID: 31253629; PMCID: PMC6598465.





All images sourced from the National Network of Prevention Training Centers (NNPTC)

Pain and Genital Ulcer Disease (GUD)

Painful GUD

- HSV (Herpes simplex virus)
- Chancroid

Painless GUD

- Syphilis (not always!)
- LGV (Lymphogranuloma venereum) *(but LAD is painful)*
- Granuloma Inguinale

Syphilis - STI treatment Guidelines. (n.d.). https://www.cdc.gov/std/treatment-guidelines/syphilis.htm

Early Syphilis

- Incubation ~ 3 weeks
- Primary chancre resolves in 3-6 weeks
- Secondary systemic symptoms
  - Rash – macular rash followed by papular eruption; hyperpigment of palms/soles
  - Condyloma lata – wart like lesions in anogenital area
  - Miscellaneous – patchy alopecia, hepatitis (high ALP (alkaline phosphatase)), gastritis, periostitis, glomerulonephritis

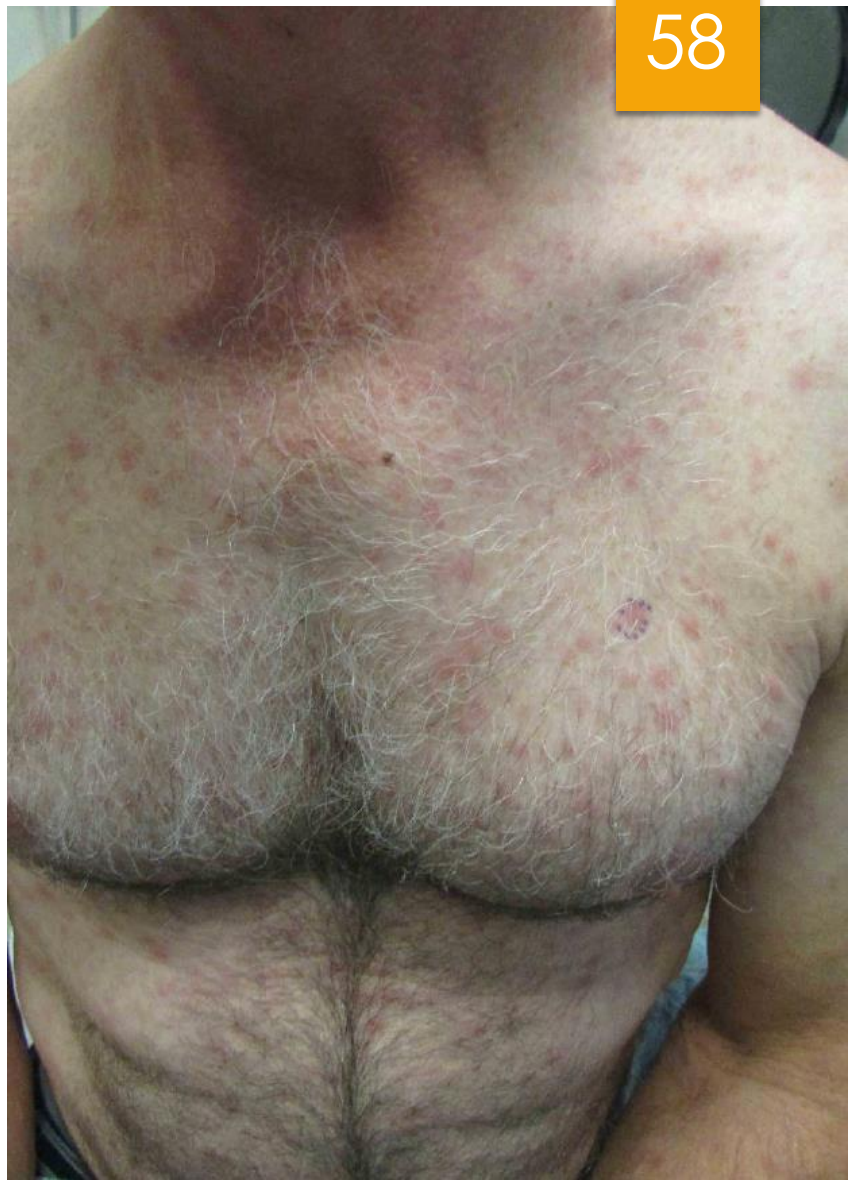
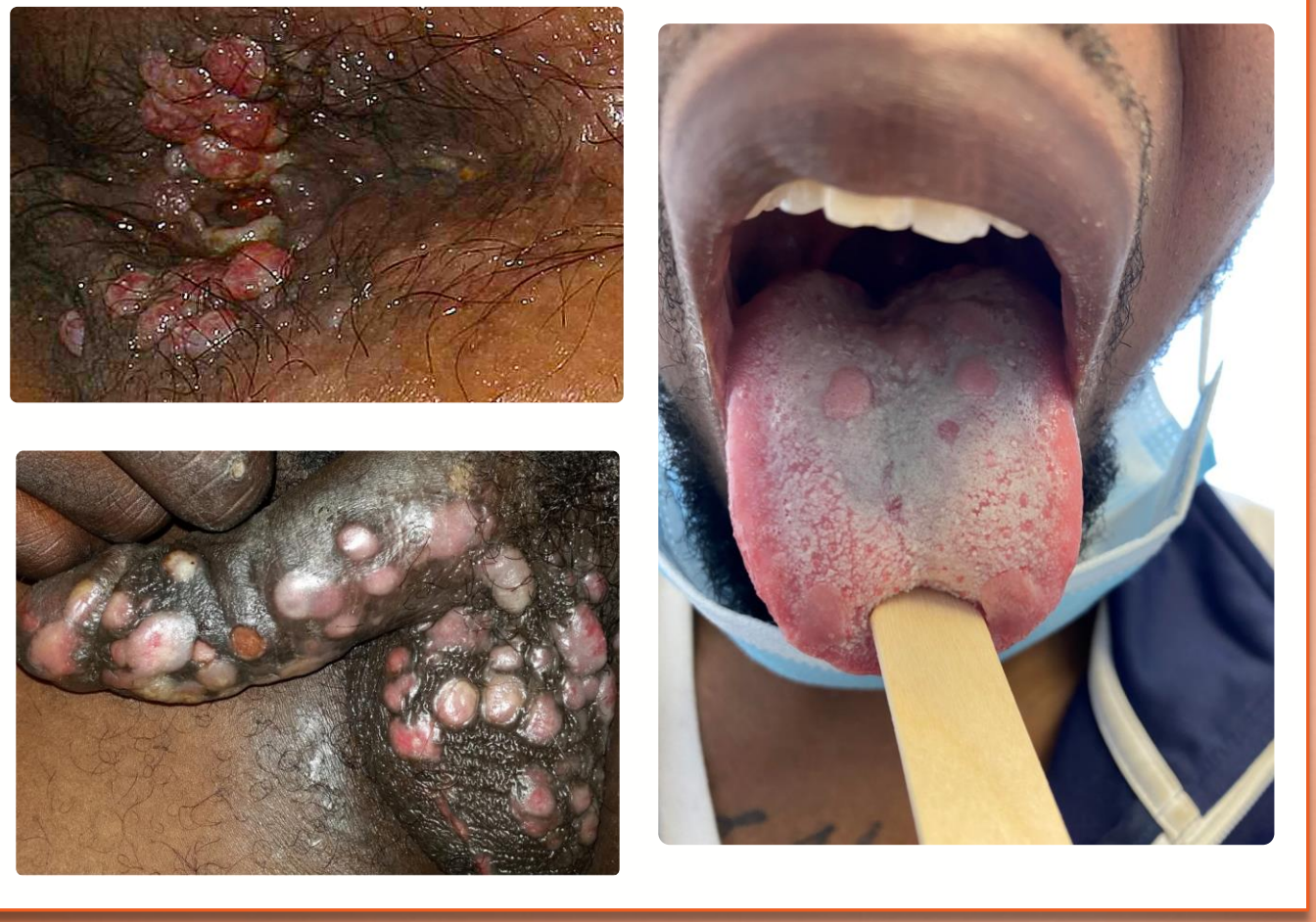


Image sourced from NNPTC

Syphilis - STI treatment Guidelines. (n.d.). https://www.cdc.gov/std/treatment-guidelines/syphilis.htm



Condyloma Lata

All images sourced from NNPTC

Syphilis - STI treatment Guidelines. (n.d.). https://www.cdc.gov/std/treatment-guidelines/syphilis.htm

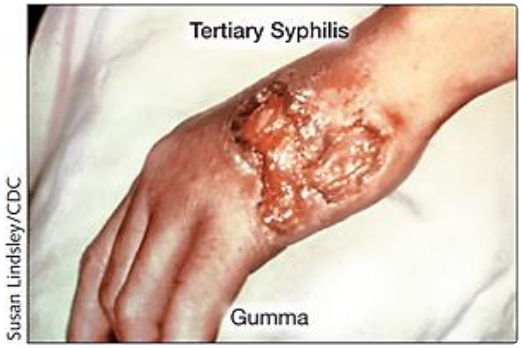
Neurosyphilis

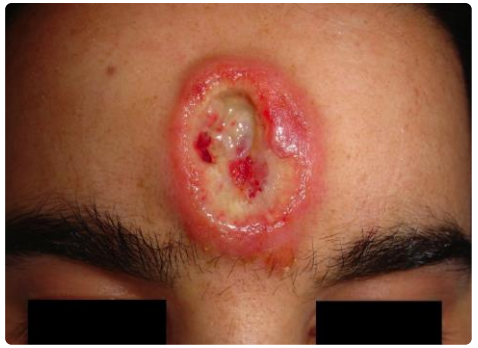
- Can occur at any stage of infection
- Early Neurosyphilis
  - Occurs within first year of infection
  - Mostly in HIV-infected (human immuno-deficiency virus) patients
  - Meningitis (HA (headache), photophobia, CN (cranial nerve) palsies)
- Late Neurosyphilis
  - Occurs ~10 years after infection
  - Meningovascular
    - Endarteritis of CNS (central nervous system) small vessels
    - CVA (MCA (middle cerebral artery)distribution) and seizures
  - Parechymatous
    - Destruction of nerve cells
    - Tabes Dorsalis, General Paresis (dementia, psychosis, AG (Argyll Robertson) pupil)

Syphilis - STI treatment Guidelines. (n.d.). https://www.cdc.gov/std/treatment-guidelines/syphilis.htm

Tertiary Syphilis

- Cardiovascular Syphilis
  - 15-30 years after latency
  - Aortic aneurysm (ascending), AI (aortic insufficiency), coronary artery stenosis, myocarditis
- Late Benign Syphilis
  - Formation of gummas
  - Granumolatous process involving skin, cartilage, bone

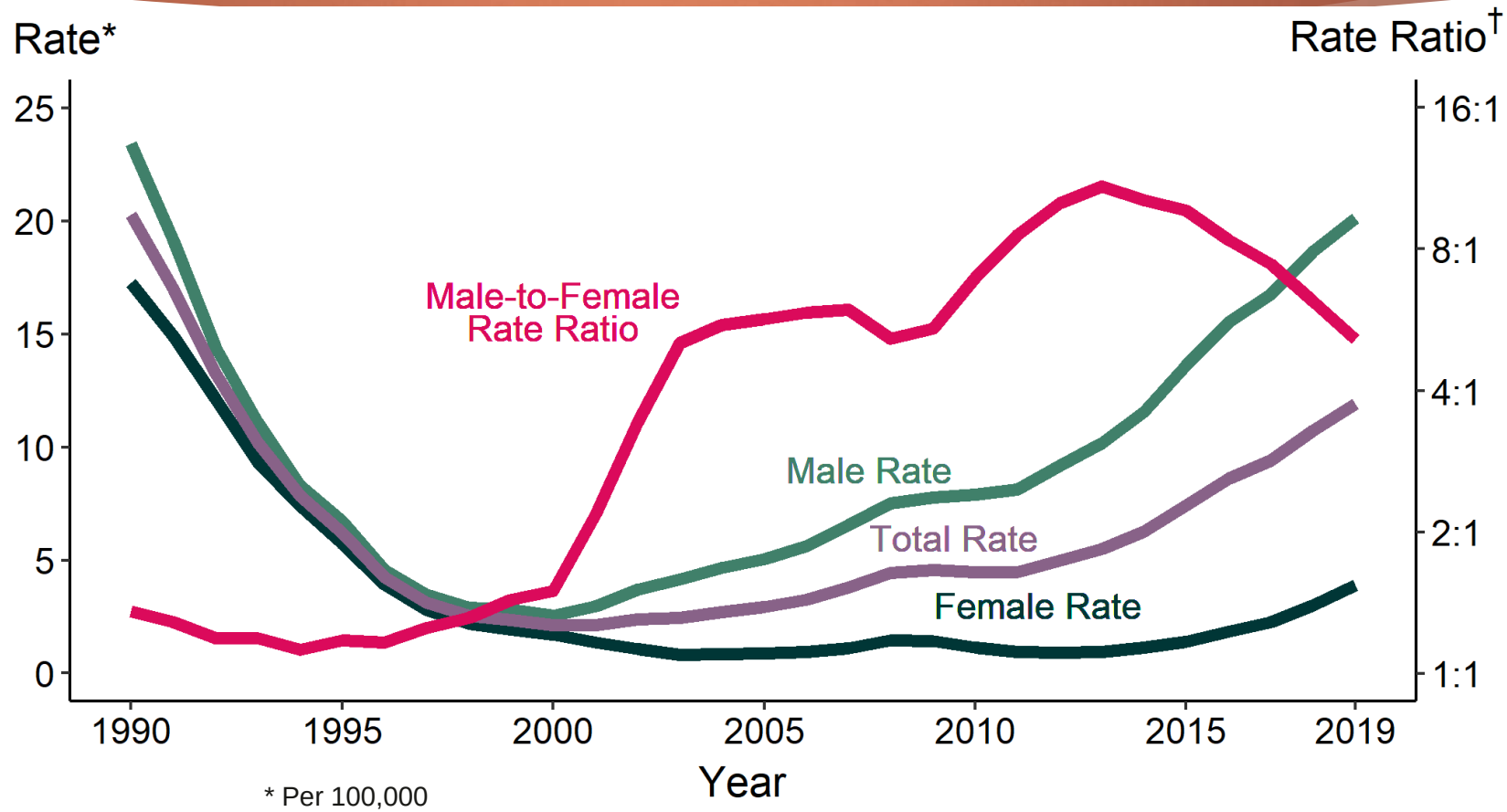




Imaged sourced through the NNPTC

Syphilis - STI treatment Guidelines. (n.d.). https://www.cdc.gov/std/treatment-guidelines/syphilis.htm

Primary and Secondary Syphilis Rates of Reported Cases by Sex and Male-to-Female Rate Ratios, United States, 1990–2019

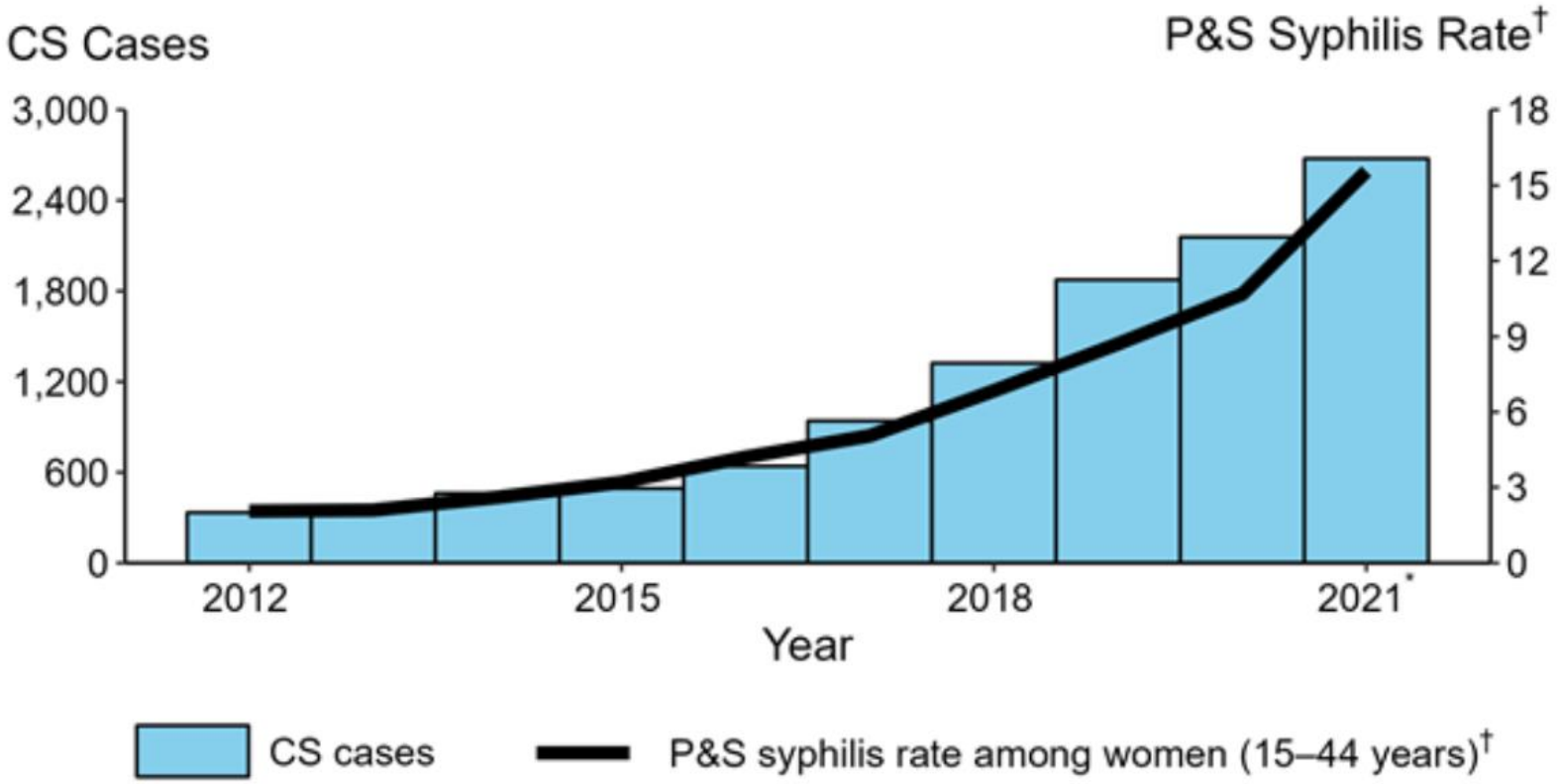


* Per 100,000

† Log scale

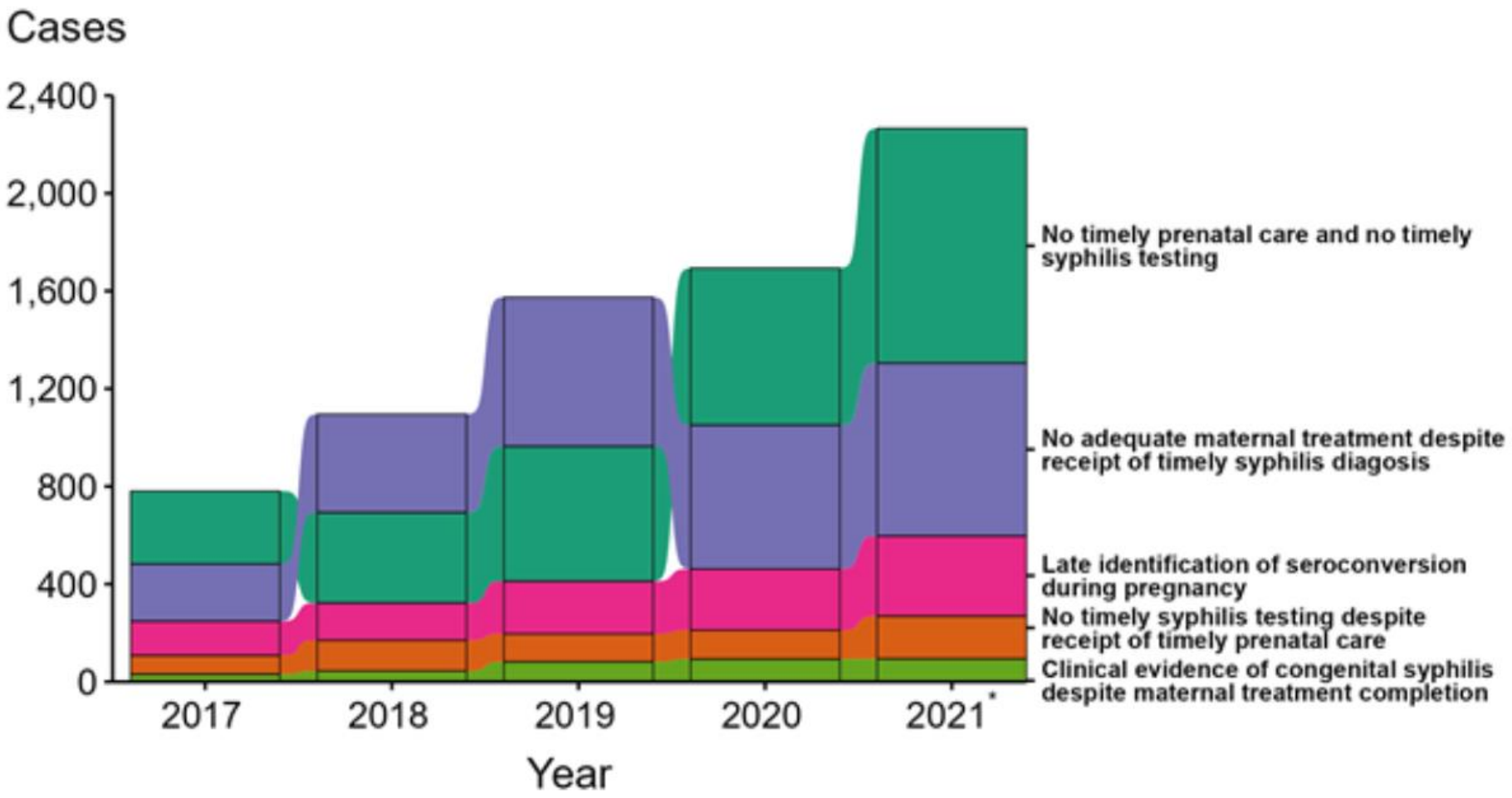
Centers for Disease Control and Prevention. Sexually Transmitted Disease Surveillance 2019. Atlanta: U.S. Department of Health and Human Services; 2021.

Congenital Syphilis — Reported Cases by Year of Birth and Rates of Reported Cases of Primary and Secondary Syphilis Among Women Aged 15–44 Years, United States, 2012–2021*



Syphilis - STI treatment Guidelines. (n.d.). https://www.cdc.gov/std/treatment-guidelines/syphilis.htm

Congenital Syphilis — Missed Prevention Opportunities among Mothers Delivering Infants with Congenital Syphilis, United States, 2017–2021*



Syphilis - STI treatment Guidelines. (n.d.). https://www.cdc.gov/std/treatment-guidelines/syphilis.htm

Congenital Syphilis in the United States (US)

Recent study found significant gaps in prenatal testing and treatment

- 28% lacked timely prenatal care and syphilis testing
- 9% had prenatal care but were not tested during pregnancy
- 31% diagnosed but not adequately treated
- 11% acquired syphilis during pregnancy

MMWR Morb Mortal Wkly Rep 2020;69:661-665

Congenital Syphilis Prevention

- Screen all women in early pregnancy
- Screen <u>again</u> <u>twice</u> in third trimester "*for communities and populations in which the prevalence of syphilis is high, and for women at high risk of infection*"
  - Screen at 28-32 weeks
  - Screen again at delivery

Sexually Transmitted Diseases Treatment Guidelines 2015.

Diagnosing Syphilis

Diagnosis of Syphilis

- *Treponema pallidum* has never been consistently demonstrated on histology nor can it be cultured well
- Direct detection methods would be ideal for early syphilis, but not widely available
  - Darkfield microscopy
  - PCR (polymerase chain reaction)
  - Direct fluorescent Ab test for T.pallidum (DFA-TA)
- Direct detection can miss up to 30% of primary cases
- Syphilis traditionally diagnosed with serologic tests

Syphilis - STI treatment Guidelines. (n.d.). https://www.cdc.gov/std/treatment-guidelines/syphilis.htm

Syphilis Serologic Diagnostics - Nontreponemal Tests

Abs against lipodial antigens released

- during cellular damage from the syphilis spirochete
- from the cell surfaces of the treponeme itself

Rapid Plasma Reagin (RPR) Test

- RPR card with cardiolipin antigen detects reagin from serum
- Reagin is serum Ab found in patients with syphilis
- Different dilutions of serum are tested against constant amount of cardiolipin antigen to determine "titer"

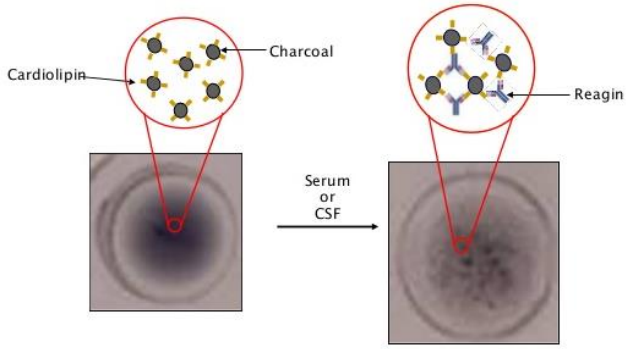
Venereal Disease Research Laboratory (VDRL) Test

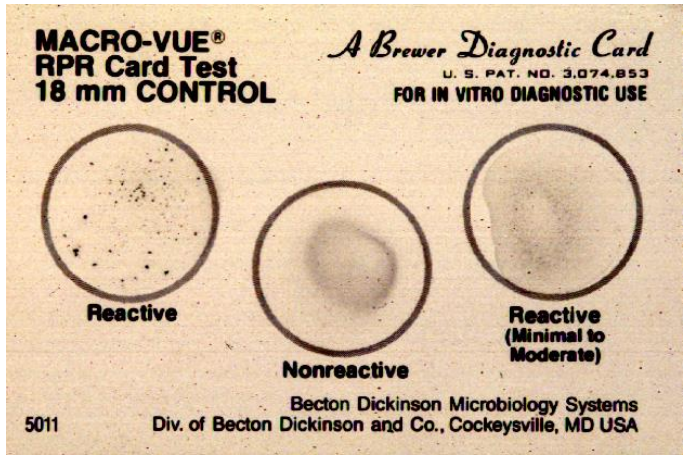
- Similar to RPR, agglutination assay
- Used primarily to screen CSF

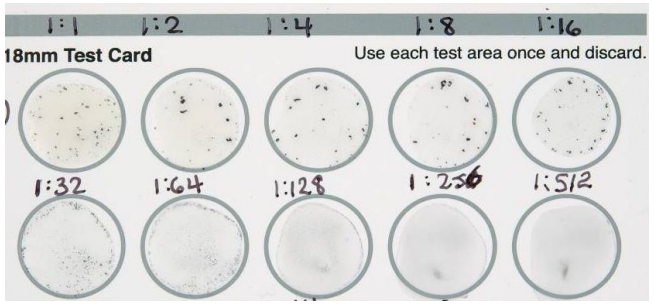
Abs = antibodies CSF = cerebrospinal fluid

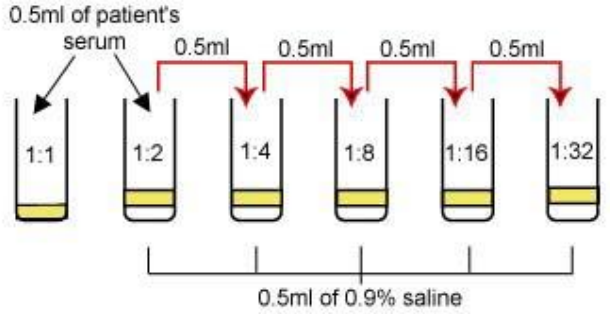
Syphilis - STI treatment Guidelines. (n.d.). https://www.cdc.gov/std/treatment-guidelines/syphilis.htm

Rapid Plasma Reagin (RPR) Test









Sources for Images:
Top left: Dr. T.V. Rao, MD
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Bottom Right: Copyright; Gary E. Kaiser, Ph.D. The Community College of Baltimore County, Catonsville Campus CC-BY-3.0

Serofast State/Serofast Reaction

- RPR should decline after therapy
- Successful tx (treatment) = 4-fold decrease in titer
- In some patients, titer may persist after the recommended therapy
- Seen more commonly in PWH (people with HIV), but also occurs in HIV negative folks

Papp, J. R., PhD, Park, I. U., MD, Fakile, Y., PhD, Pereira, L., PhD, Pillay, A., PhD, Bolan, G. A., MD, & Centers for Disease Control and Prevention. (2024). CDC Laboratory Recommendations for syphilis Testing, United States, 2024. In *Morbidity and Mortality Weekly Report Recommendations and Reports* (Vol. 73, Issue No. 1). https://www.cdc.gov/mmwr/volumes/73/rr/pdfs/rr7301a1-H.pdf

Syphilis Serologic Diagnostics - Treponemal Tests

Abs against T.pallidum proteins

- will have reactive tests for the remainder of their lives
- 15-25% of patients treated during Primary & Secondary stages will revert to being serologically non-reactive after 2-3 years

Fluorescent Treponemal Antibody Absorbed (FTA-ABS) test

Treponema Pallidum Particle Agglutination (TP-PA) Test

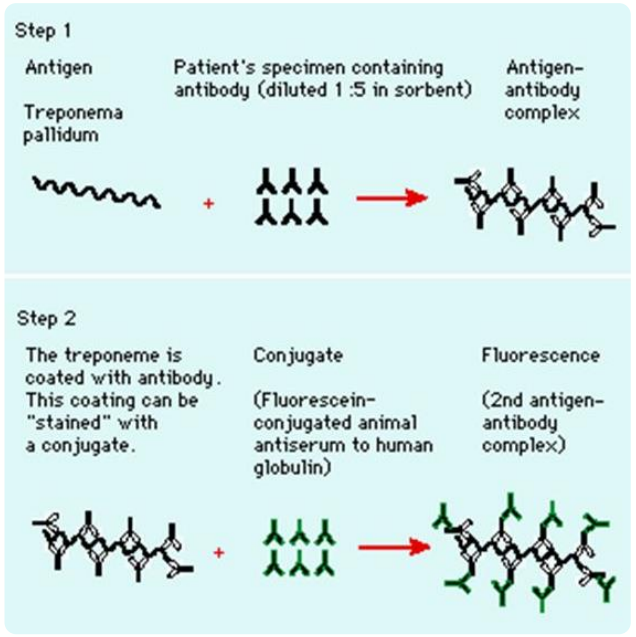
Enzyme Immunoassays (EIAs)

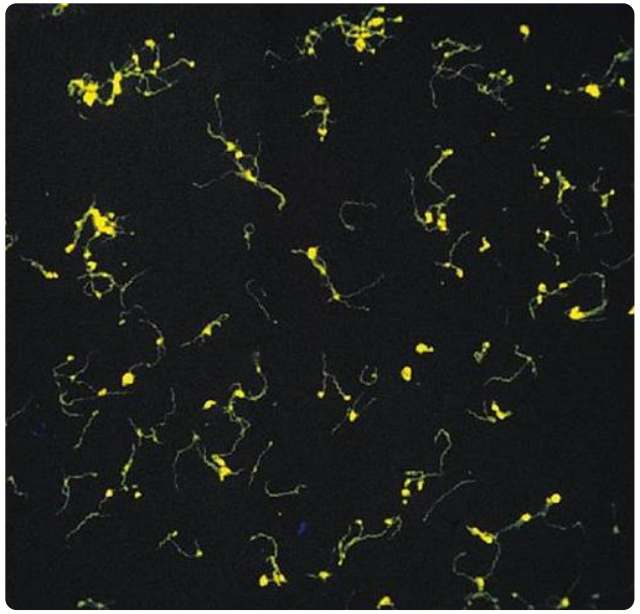
Chemiluminescence Immunoassays (CIAs)

Microbead Immunoassays (MBIA)

Syphilis laboratory information. (n.d.). https://www.cdc.gov/std/syphilis/lab/default.htm

Fluorescent Treponemal Antibody Absorbed Test (FTA-ABS)

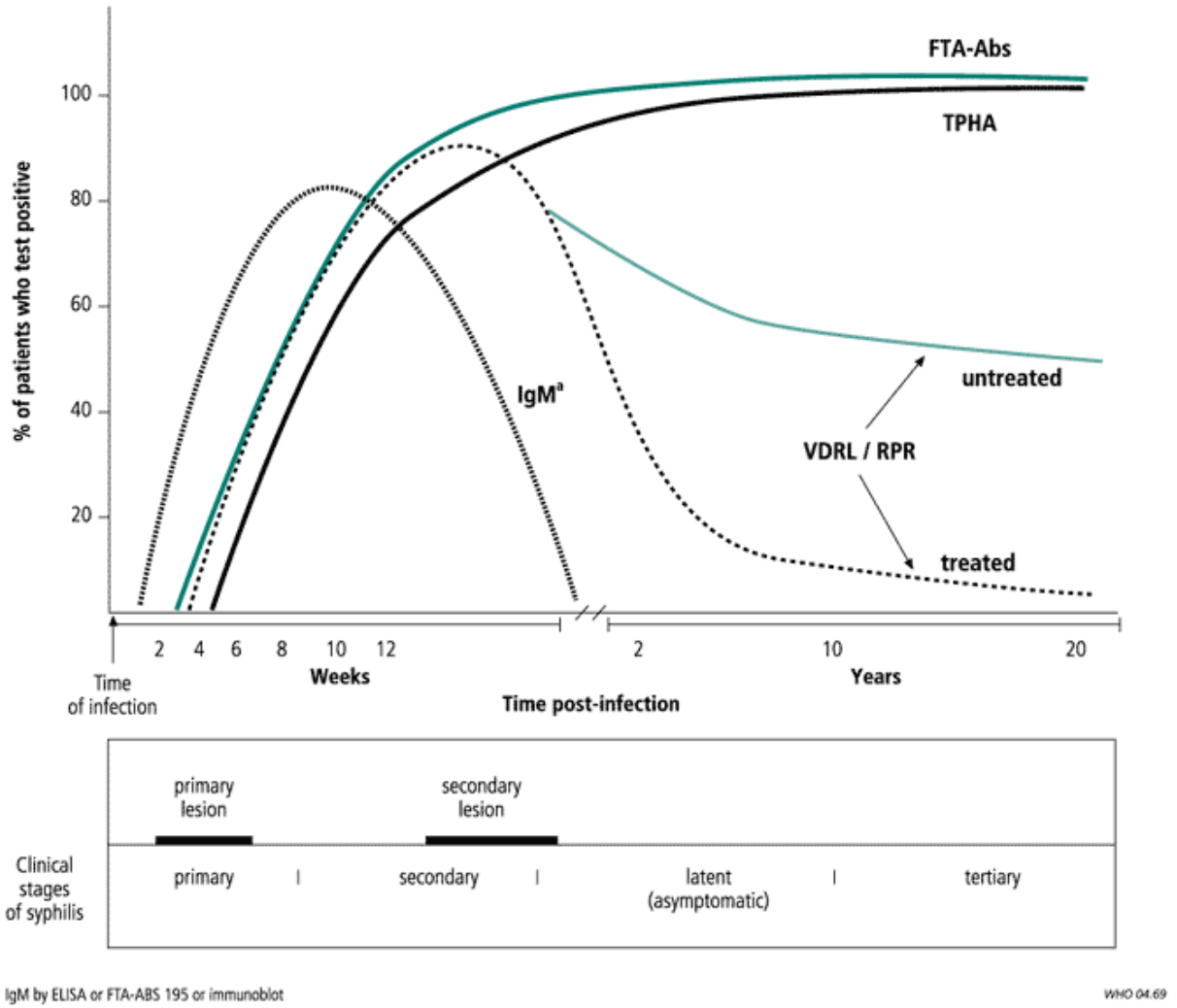




https://microbeonline.com/fluorescent-treponemal-antibody-absorption-fta-abs-test/

@inproceedings{Unemo2013LaboratoryDO, title={Laboratory diagnosis of sexually transmitted infections, including human immunodeficiency virus}, author={Magnus Unemo}, year={2013}, url={https://api.semanticscholar.org/CorpusID:73337475} }

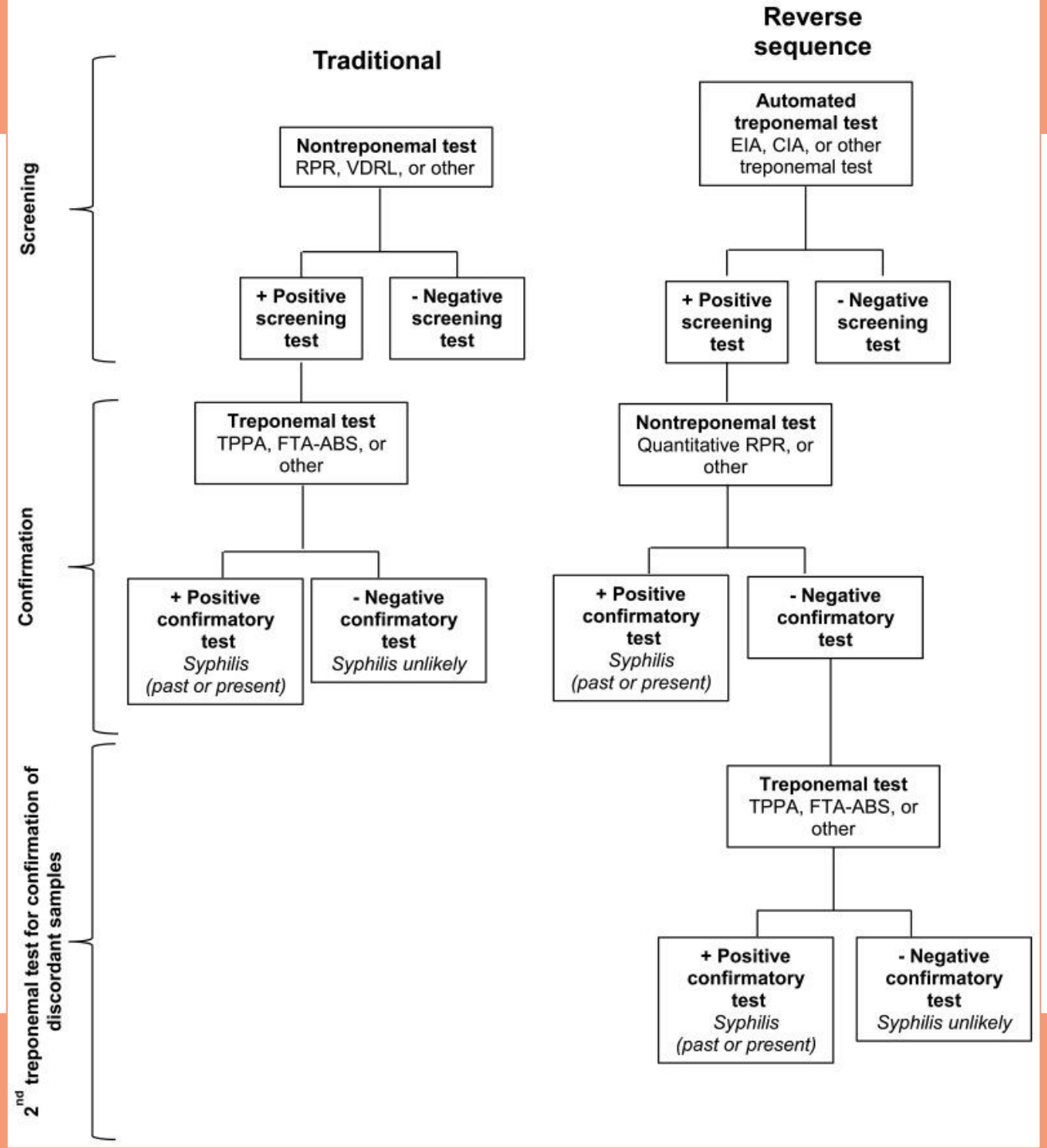
Fig. 1. **Common patterns of serological reactivity in syphilis patients**



[a] IgM by ELISA or FTA-ABS 195 or immunoblot

WHO 04.69

Henao-Martínez AF, Johnson SC. Diagnostic tests for syphilis: New tests and new algorithms. Neurol Clin Pract. 2014 Apr;4(2):114-122. doi: 10.1212/01.CPJ.0000435752.17621.48. PMID: 27606153; PMCID: PMC4999316.



Cantor A, Nelson HD, Daeges M, et al. Screening for Syphilis in Nonpregnant Adolescents and Adults: Systematic Review to Update the 2004 U.S. Preventive Services Task Force Recommendation [Internet]. Rockville (MD): Agency for Healthcare Research and Quality (US); 2016 Jun. (Evidence Syntheses, No. 136.) Figure 1, Screening Test Algorithms. Available from: https://www.ncbi.nlm.nih.gov/books/NBK368468/figure/ch1.f1/

Screening Algorithms

- Traditional Algorithm
  - Detects active infection
  - Can miss early primary infection as well as high titers (prozone)
  - Labor intensive (requires manual pipetting)

- Reverse Sequence Algorithm
  - Detects early primary infection that may be missed with traditional screening
  - Nontreponemal test needed to detect active infection
  - EIA/CIA have high throughput at low cost (180 tests/hour)
  - **Preferred in high incidence settings**

Syphilis - STI treatment Guidelines. (n.d.). https://www.cdc.gov/std/treatment-guidelines/syphilis.htm

Treating Syphilis

Table 2. Treatment Guidelines for Antimicrobial Management of Syphilis.*

For primary and secondary syphilis in nonpregnant adults, including HIV-infected adults:
Penicillin G benzathine, 2.4 million units in a single IM dose
Doxycycline, 100 mg orally twice a day for 14 days (first alternative)
Ceftriaxone, 1–2 g daily, IM or IV, for 10–14 days (second alternative)

For latent syphilis in nonpregnant adults, including HIV-infected adults:
Early latent: penicillin G benzathine, 2.4 million units in a single IM dose
Late latent: penicillin G benzathine, 7.2 million units total, administered in 3 IM doses of 2.4 million units each at 1-week intervals
Doxycycline, 100 mg orally twice a day for 28 days (alternative)

For late syphilis (gummas and cardiovascular manifestations) but not neurosyphilis:
Penicillin G benzathine, 7.2 million units total, administered in 3 IM doses of 2.4 million units each at 1-wk intervals

For neurosyphilis and ocular syphilis:
Aqueous crystalline penicillin G, 18–24 million units per day, administered in IV doses of 3–4 million units every 4 hr or as a continuous infusion, for 10–14 days
Penicillin G procaine, 2.4 million units in a single IM dose daily, plus probenecid, 500 mg administered orally four times a day, both for 10–14 days (alternative)

For primary and secondary syphilis in pregnancy:
Penicillin G benzathine, 2.4 million units in a single IM dose†

For latent syphilis in pregnancy:
Early latent: penicillin G benzathine, 2.4 million units in a single IM dose
Late latent: penicillin G benzathine, 7.2 million units total, administered in 3 IM doses of 2.4 million units each at 1-wk intervals

Syphilis Treatment

@article{Ghanem2020TheME, title={The Modern Epidemic of Syphilis.}, author={Khalil G. Ghanem and Sanjay Ram and Peter A. Rice}, journal={The New England journal of medicine}, year={2020}, volume={382 9}, pages={ 845-854 }, url={https://api.semanticscholar.org/CorpusID:211537893} }

Grace Period

What if patients don't come back exactly on time for their 2nd and 3rd shots?

- Most experts allow a 1-week grace period beyond the date patients are due to return for 2nd and 3rd doses
- Based on "expert opinion" and pharmacologic data

- But in pregnancy: **THERE IS NO GRACE PERIOD** Pregnant persons who do not return exactly on time (within 9 days) must re-start the entire 3-shot series

Syphilis - STI treatment Guidelines. (n.d.). https://www.cdc.gov/std/treatment-guidelines/syphilis.htm

Management of syphilis in pregnancy

Obtain previous treatment history to help management.

Some give an additional IM (intramuscular) dose 1 week after treatment.

Goal is 7 days between doses of IM bicillin but if a person misses a dose, effort should be focused on getting the dose within 2 days.

- Doses more than 9 days apart mean restarting treatment.

Ultrasound is used to monitor in second half of pregnancy but should not delay treatment.

For patients with early syphilis or high titers, Jarisch-Herxheimer reaction counseling is advised.

Syphilis - STI treatment Guidelines. (n.d.). https://www.cdc.gov/std/treatment-guidelines/syphilis.htm

Syphilis Treatment (PCN Allergy)

- SIGNIFICANTLY limited data supporting non-PCN therapy
- Low threshold to assume treatment failure, particularly in PWH
- Seriously consider PCN desensitization when able

Syphilis Stage	Treatment Course
Primary	Doxycycline 100mg q12h for 14 days Tetracycline 500mg q6h for 14 days Ceftriaxone 1-2g IM/IV q24h for 10-14 days Azithromycin 2 g in single dose
Secondary	
Early Non-Primary Non-Secondary (Early Latent)	Doxycycline 100mg q12h for 28 days Tetracycline 500mg q6h for 28 days
Syphilis of Unknown Duration (Late Latent)	
Late Syphilis	Consider PCN desensitization
Neurosyphilis & Ocular Syphilis	Consider PCN desensitization *Ceftriaxone 2g IM/IV for 10-14 days*

PCN = Penicillin

Syphilis - STI treatment Guidelines. (n.d.). https://www.cdc.gov/std/treatment-guidelines/syphilis.htm

Syphilis Stage	Intramuscular Benzathine Penicillin G	Oral Doxycycline (or Tetracycline)	Parenteral Ceftriaxone*
Primary, or Secondary	✔	• Limited studies, but many years of successful use • Acceptable alternative when penicillin is contraindicated or unavailable due to supply shortage	Comparable to benzathine penicillin in several small studies, but requires daily intramuscular/intravenous dosing of 1-2g daily x 10-14 days [a]
Early Latent Late Latent, Latent of Unknown Duration	✔		• Not well studied • Optimal dose and duration of therapy has not been defined
Syphilis During Pregnancy	✔	**Contraindicated**	• Not well studied
Syphilis in Persons Living with HIV	✔	• Not well studied • Should be used only in conjunction with close serologic and clinical follow-up • If there is significant risk of poor adherence, patients should undergo penicillin desensitization and treatment with standard stage-appropriate CDC-recommended penicillin regimen	

✔ Efficacy of benzathine penicillin is supported by strong observational studies, and decades of experience in achieving clinical resolution of symptoms, eliminating sexual transmission and preventing late sequelae.

[a] Although allergic cross-reactivity is rare with third generation cephalosporins in patients with a history of penicillin allergy, the use of ceftriaxone is contraindicated in persons with a history of an IgE-mediated penicillin allergy (eg, anaphylaxis, Stevens-Johnson syndrome and toxic epidermal necrolysis).[23]

New York City Department of Health and Mental Hygiene, and the New York City STD Prevention Training Center. The Diagnosis and Management of Syphilis: An Update and Review. March 2019.

Jarisch-Herxheimer Reaction

Systemic reaction which occurs when large quantities of toxins are released into the body as spirochetes die

- Fever, chills, headache, muscle aches
- Resolves within 1-2 days

Treat with acetaminophen, conservative care

- This is NOT an allergic reaction

Syphilis - STI treatment Guidelines. (n.d.). https://www.cdc.gov/std/treatment-guidelines/syphilis.htm

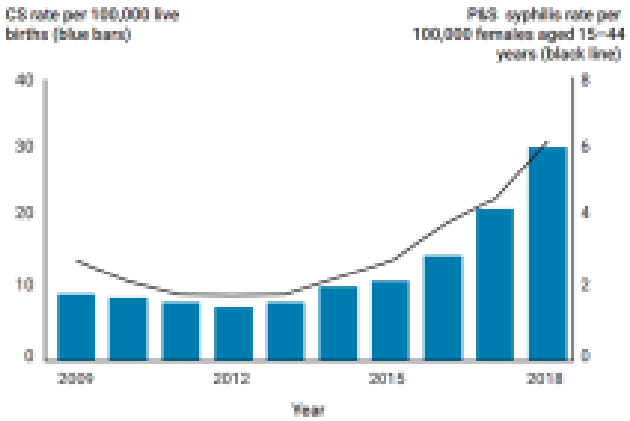
What's New in the 2021 CDC STI Treatment Guidelines?

- Atypical presentations are more common (painful chancres, condyloma lata etc.)
- No new data to warrant a change in treatment recommendations.
- Reaffirmation to reassure that a lack of serological response should be followed out to:
  - 12 months after syphilis of < 1 year duration
  - 24 month in case of syphilis of unknown duration or late syphilis
  - And that it may not be seen if RPR titer is <1:4

Syphilis - STI treatment Guidelines. (n.d.). https://www.cdc.gov/std/treatment-guidelines/syphilis.htm

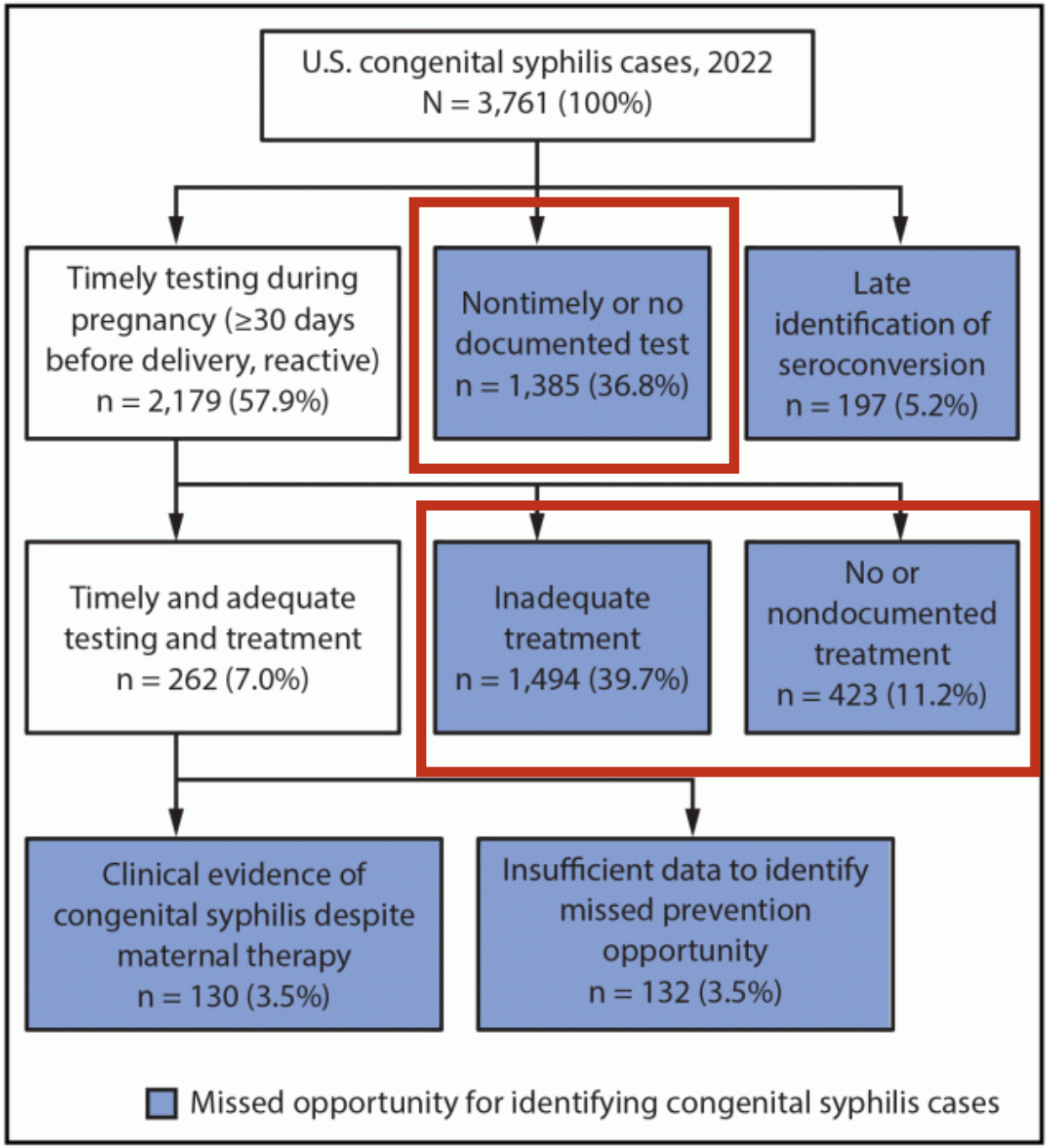
What's New in the 2021 CDC STI Treatment Guidelines?

- Neurosyphilis
  - No longer need to repeat the LP at 6 months after treatment if patient is recovered and has no symptoms.
  - In case of optho- and otic syphilis?
- Congenital syphilis
  - Screening at first visit, 28 weeks, and delivery if:
    - Multiple partners
    - Drug use
    - Late to prenatal care
    - Transactional sex
    - Incarceration
    - Homelessness
    - High community prevalence of syphilis



Syphilis - STI treatment Guidelines. (n.d.). https://www.cdc.gov/std/treatment-guidelines/syphilis.htm

Background



McDonald R, O'Callaghan K, Torrone E, et al. *Vital Signs*: Missed Opportunities for Preventing Congenital Syphilis — United States, 2022. MMWR Morb Mortal Wkly Rep 2023;72:1269–1274. DOI: http://dx.doi.org/10.15585/mmwr.mm7246e1

Background – Syphilis Health Check™ (SHC)

1. First FDA approved POC syphilis test

Detects IgM/IgG to T. pallidum using protein A conjugate to create Ag/Ab complex

10 minutes (Result valid for 5 min)

30-month shelf life

$200/kit ($10/test), $29/controls

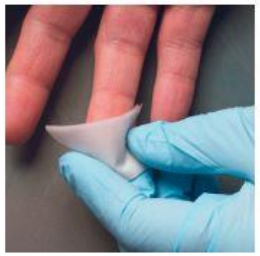
Image Source: Diagnosticsdirect2u.com

Bristow CC, Klausner JD, Tran A. Clinical Test Performance of a Rapid Point-of-Care Syphilis Treponemal Antibody Test: A Systematic Review and Meta-analysis. Clin Infect Dis. 2020 Jun 24;71(Suppl 1):S52-S57. doi: 10.1093/cid/ciaa350. PMID: 32578863; PMCID: PMC7312211.

Syphilis Health Check™ (SHC)

Step 1: Collect specimen

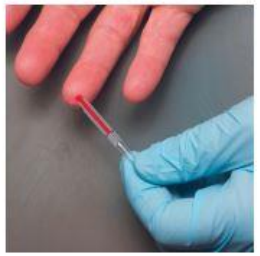
A. Wipe finger with alcohol pad.



B. Prick finger using sterile lancet.

C. Remove first drop of blood.

D. Collect blood using pipette.



DO NOT SQUEEZE BULB ON PIPETTE!

Allow the blood to flow into the pipette on its own.

"Milk" finger.

Hold pipette horizontally, touch tip to sample.

Step 2: Run the test

A. Add blood to sample well by squeezing bulb on pipette.

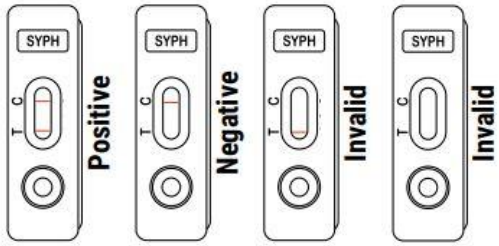
Well will turn red.
Allow blood to be absorbed.

B. Slowly add four (4) drops of diluent to the sample well.

C. Set timer for 10 minutes.

D. Read results no sooner than 10 minutes, and **no later than 15 minutes**.

Any line in the 'T' zone, even if faint, accompanied by a line in the 'C' zone should be interpreted as a positive result.



SHC Package insert: downloadhttps://www.diagnosticsdirect2u.com/downloadmanager/download.aspx?id=1.aspx (diagnosticsdirect2u.com)

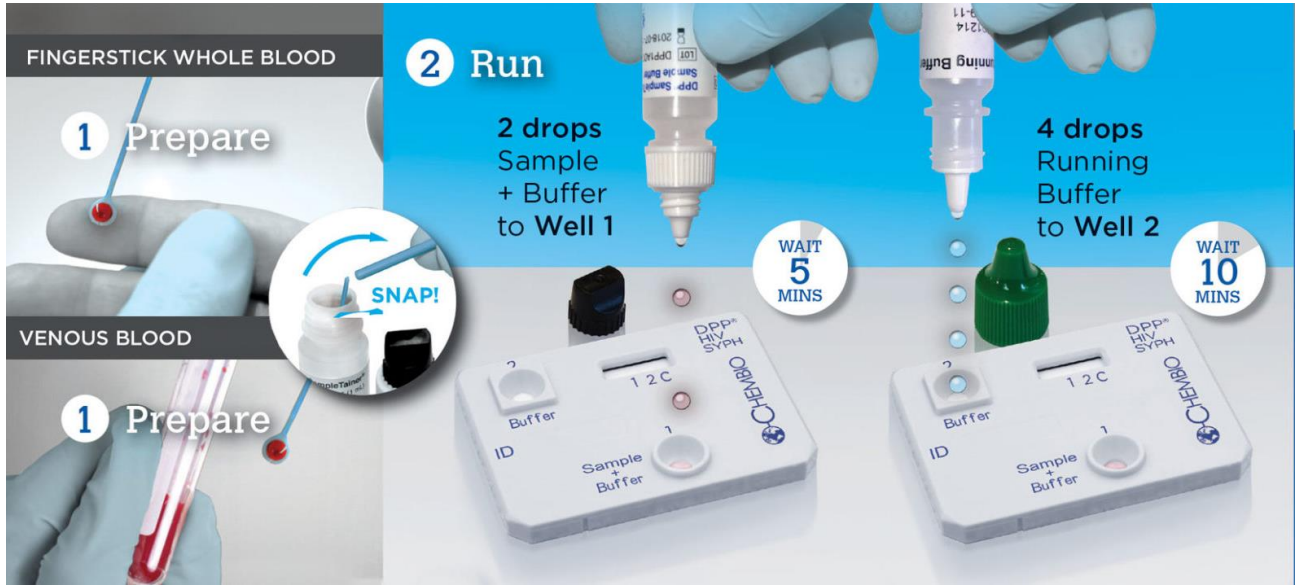
Background – Chembio DPP® HIV/Syphilis

Detects IgM/IgG to T. pallidum using protein A conjugate to create Ag/Ab complex

15 minutes (Result valid for 15 min)

24-month shelf life

$286/kit, $75/controls, $499/microreader (good for 3000 tests)



Information & Photos sourced from https://chembio.com/wp-content/uploads/2020/10/dpp-hiv-syph-protocols-2048x715.jpg

In a population of 1000 pregnant women with a true prevalence of 5%

Syphilis Health Check

48 infections detected

2 missed infections

19 misdiagnosed/overtreated

$210.38* Cost per case detected (in 340b setting)

Chembio DPP

45 infections detected

5 missed infections

43 misdiagnosed/overtreated

$228* Cost per case detected (in 340b setting)

*Non-340b bicillin price assumed as $250

https://pubmed.ncbi.nlm.nih.gov/23486496/

In a population of 1000 women with a prevalence of 1%...

Syphilis Health Check

9 infections detected

1 missed infections

30 misdiagnosed/overtreated

$2233.11* Cost per case detected (in 340b setting)

Chembio DPP

9 infections detected

1 missed infections

45 misdiagnosed/overtreated

$2667.78* Cost per case detected (in 340b setting)

*Non-340b bicillin price assumed as $250

https://pubmed.ncbi.nlm.nih.gov/23486496/

Summary

Syphilis Health Check

- Treponemal Only
  - Sensitivity: 50-71%
  - Specificity: 92-99%
- Combined trep/non-trep
  - Sensitivity: 77-100%
  - Specificity: 96-99%

Chembio DPP HIV-Syphilis

- Treponemal Only
  - Sensitivity: 47-100%
  - Specificity: 93-100%
- Combined trep/non-trep
  - Sensitivity: 79-100%
  - Specificity: 94-95%

https://pubmed.ncbi.nlm.nih.gov/23486496/

Summary

- Syphilis POC in the field with FS or whole blood generally not as sensitive compared to POC testing on serum or laboratory-based testing (CLIA/EIA, TPPA, RPR)
- Specificity for both Syphilis Health Check & Chembio meets WHO standards, but the sensitivity does not.
- POC more likely to miss cases that are treponemal+, RPR negative, or RPR+, treponemal + at lower titers
  - Little evidence that women who are RPR negative throughout pregnancy can transmit CS (Peterman et al, STD, 2013)

https://pubmed.ncbi.nlm.nih.gov/23486496/

Implementation considerations/gaps

- **Cost (~$7-10 USD retail)**
  - What is cost per case of syphilis detected?
  - What is cost per Disability Adjusted Life Year (miscarriage, stillbirth, congenital syphilis, low birth weight, and neonatal death)
- **CLIA waiver requirements**
  - CBOs (community-based organizations) or HDs (health departments) using syphilis POC in outreach settings must work under the CLIA certificate of an existing clinic/lab OR must apply for their own CLIA Certificate
- **Competency**
  - Although CLIA waived, testers must perform POCs at certain frequency to maintain competency and comply with CLIA (or need to retest with control and test specimens to regain competency)

https://pubmed.ncbi.nlm.nih.gov/23486496/

Should CDC recommend the use of POCT plus immediate treatment for syphilis screening to decrease congenital syphilis?

- CONSIDERATIONS
  - Population
  - Settings
  - Costs
  - Harms
  - Test requirements (CLIA, competency etc.)

https://pubmed.ncbi.nlm.nih.gov/23486496/

- Is this Syphilis?

Is this Syphilis?

SEROLOGY & ANTIGEN...	
RPR Screen	*Non Reactive **
Syphilis Ab by TP-PA	*POSITIVE ** !
HIV AB AG WITH REFLEX	
SYPHILIS TOTAL(IgG...	*REACTIVE* !

Is this Syphilis?

SEROLOGY & ANTIGEN...	
RPR Screen	*Non Reactive* *
Syphilis Diagnosis...	*REACTIVE* !
Syphilis Ab by TP-PA	*Negative* *
HIV AB AG WITH REFLEX	

Image created for educational purposes by Prevention Training Center in St. Louis

Is this Syphilis?

	1/26/2017 0917	1/26/2017 0918	2/16/2017 1057	4/10/2017 1713	9/19/2019 0807
SEROLOGY & ANTIGEN...					
RPR Screen			*Non Reactive* *	*Non Reactive* *	*Non Reactive* *
Syphilis Diagnosis...			*REACTIVE* !	*REACTIVE* !	
Syphilis Ab by TP-PA			*POSITIVE* * !	*POSITIVE* * !	*POSITIVE* * !
Rubella IgG Ab Qua...		*5* *	*9* *		
HIV AB AG WITH REFLEX					
SYPHILIS TOTAL(IgG...					*REACTIVE* !

Image created for educational purposes by Prevention Training Center in St. Louis

Is this Syphilis?

	4/6/2018 0545	4/8/2018 1113	4/11/2018 0427	12/10/2018 0930	2/22/2019 0950	2/22/2019 0951	6/11/2019 1028	6/11/2019 1029	8/26/2019 1028
SEROLOGY & ANTIGEN...									
HIV GENOTYPE									
RPR Screen	*REACTIVE* !								
RPR, Quant.	*512 ** ▲			*64* ▲	*64* ▲			*64* ▲	*64* ▲
Syphilis Diagnosis...	*REACTIVE* !								
Syphilis Post Trea...				*REACTIVE **	*REACTIVE **			*REACTIVE **	*REACTIVE **
HIV AB AG WITH REFLEX	C !								
HIV AB SUPPLEMENTA...	!								
HIV-1 VIRAL LOAD	!			!		!	!		!
HIV-1 GENOTYPIC IN...									

Image created for educational purposes by Prevention Training Center in St. Louis

Is this Syphilis?

	12/26/2018 1409	3/28/2019 1407	6/27/2019 1526	8/30/2019 1613	10/1/2019 1549
SEROLOGY & ANTIGEN...					
RPR, Quant.	*8* ▲	*2* ▲	*8* ▲	*8* ▲	*256* ▲
Syphilis Post Trea...	*REACTIVE **	*REACTIVE **	*REACTIVE **	*REACTIVE **	*REACTIVE **
HIV-1 VIRAL LOAD	!	!		!	

Image created for educational purposes by Prevention Training Center in St. Louis

Syphilis Cases

Case #1

- 35-year-old cisgender male presents with rash on palms and soles of his feet. He states that he has never had syphilis before in the past and has never been tested for syphilis previously.

- How would you treat?

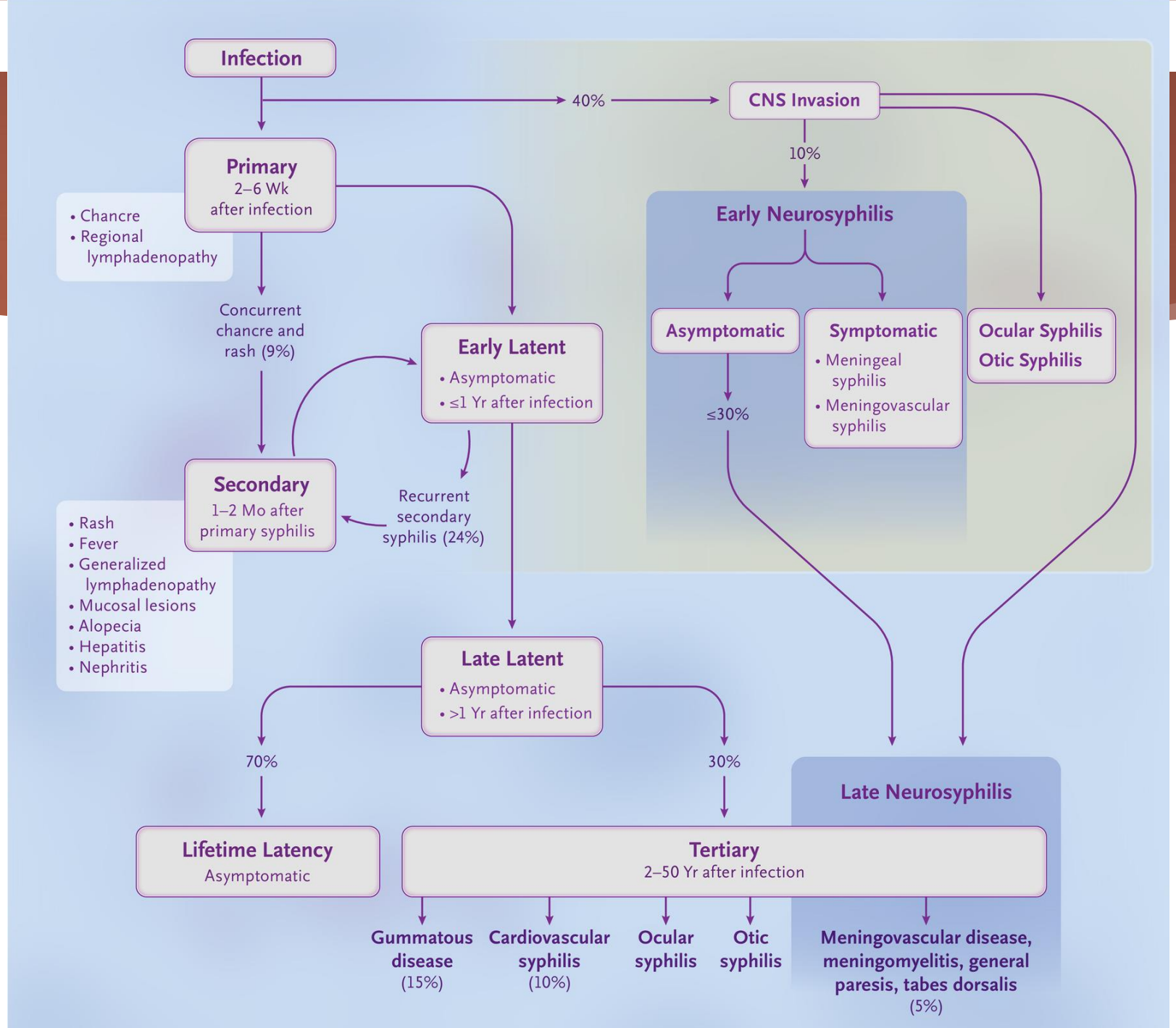
Case #2

- 28-year-old cisgender female presents to STI clinic for routine check up. She has never been tested for STIs in the past, has had 3 cisgender male partners in the last year, uses condoms 90% of the time.
- Her testing comes back with a RPR of 1:8. You call the state lab and confirm she has never had syphilis testing or a reactive test in the past.
- How would you treat?

Case #3

- 31-year-old cisgender male presents to STI clinic with ulcer on his penis and lymphadenopathy. He states the ulcer is painless, started 3 days ago, and he noticed swollen lymph nodes in his pelvic region. He also has developed ringing in his ears with his hearing loss which he describes as muffled hearing.

- What would you do next?



Ghanem, et al N Engl J Med. 2020 Feb

Questions?

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Lancaster County Syphilis & HIV Symposium

10-minute Break
Please be back promptly!

St. Louis
STI/HIV Prevention
Training Center

The Resurgence of Syphilis and Congenital Syphilis: What Do We Do Now?

Hilary Reno, MD, PhD, FIDSA
Professor, Washington University
PI, St. Louis STI/ HIV PTC
Medical Director, St. Louis Co Sexual Health Clinic
Medical Consultant, CDC, DSTDP

https://www.cdc.gov/std/treatment-guidelines

Image Source: ScienceSource.com

Disclosures

Disclosure: Dr. Reno has no relevant financial interests to disclose.

Funding: CDC DSTDP, St. Louis County DPH, NIH, Hologic grant to Wash U

St. Louis
STI/HIV Prevention
Training Center

Objectives

- Discuss Congenital Syphilis and contributing factors.
- Describe a syndemic approach and why it may be essential to reducing syphilis rates.

https://dhhs.ne.gov/han%20Documents/ALERT07182023.pdf

Nebraska Department of Health and Human Services

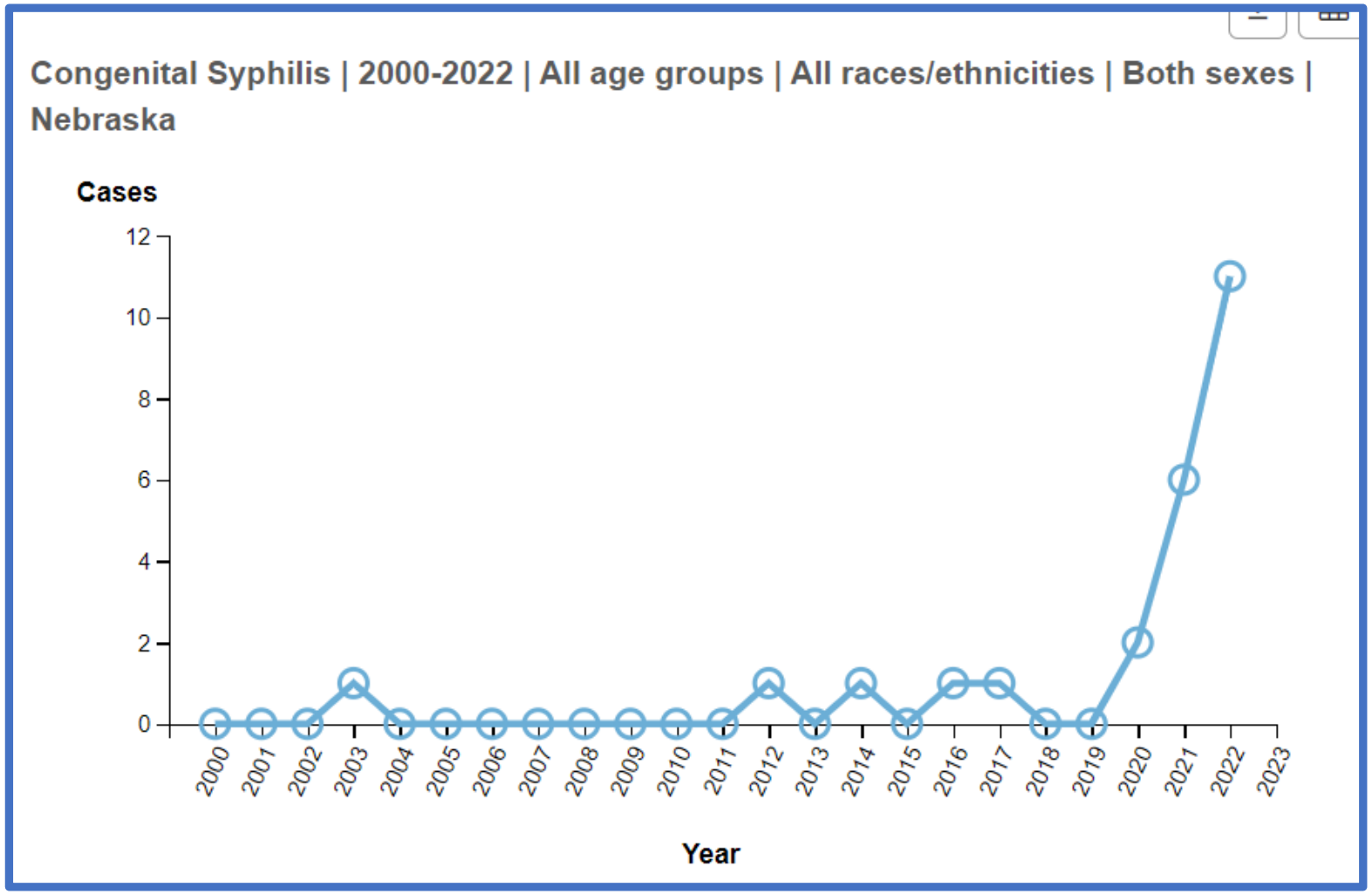
Health Alert Network

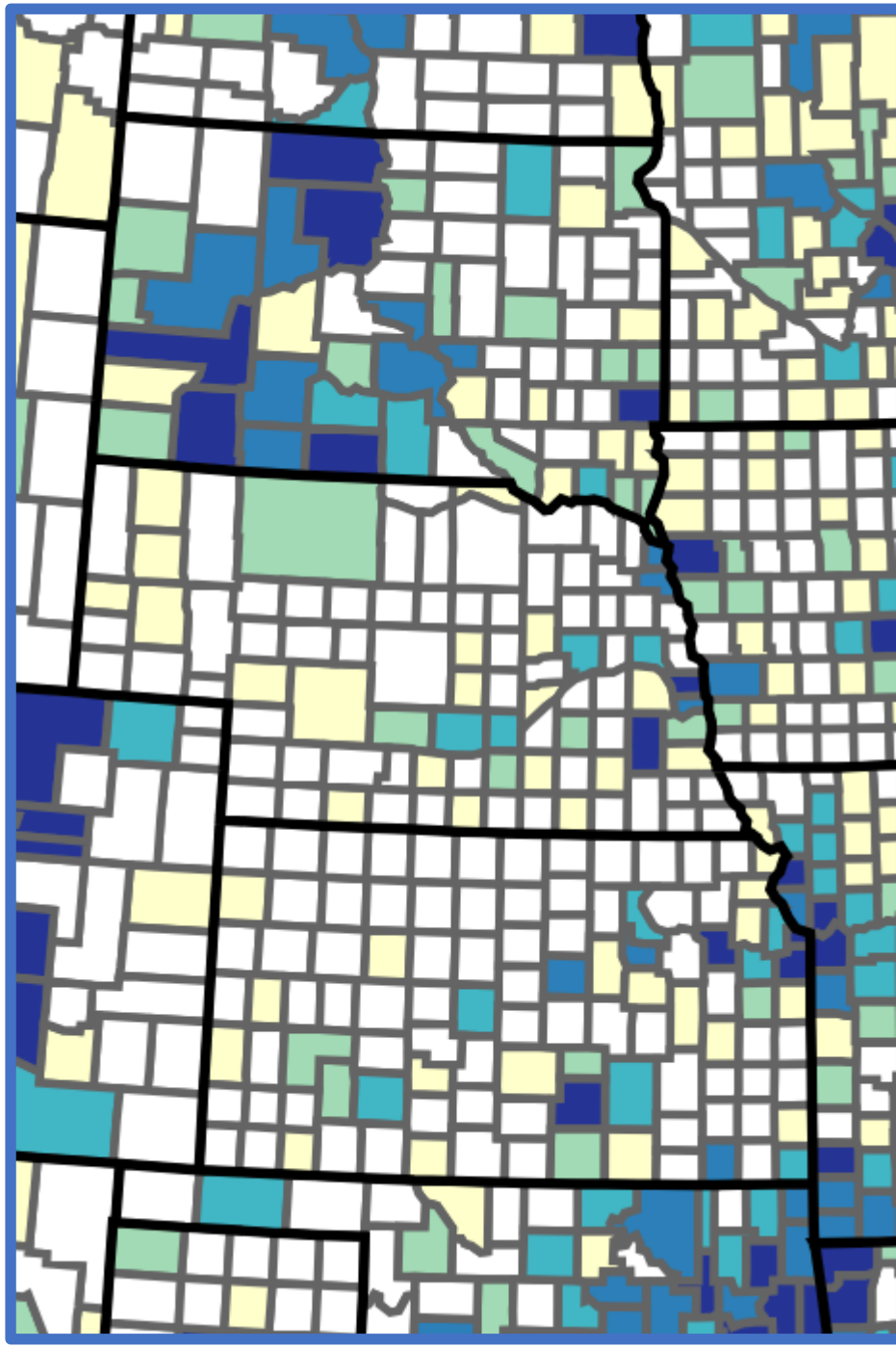
ALERT

July 18, 2023

Syphilis Incidence Continues Increasing in Nebraska

- Syphilis incidence is rapidly increasing in the United States and in Nebraska with notable trends in heterosexual and congenital transmission, and substantial disparities among Native American and black people
- Screening *must* increase to identify infections and the reverse screening algorithm is increasingly preferred; in pregnancy, screening is required by Nebraska law
- The stage of infection determines treatment dose and frequency; treatment requires intramuscular (IM) benzathine penicillin G (Bicillin L-A), which is in short supply nationally; DHHS and the Antimicrobial Stewardship Assessment & Promotion Program (ASAP) are helping clinicians navigate the shortage (and navigate treatment for patients with penicillin allergies) with resources found below
- Doxycycline postexposure prophylaxis (doxy-PEP) is an emerging strategy that should be considered for men who have sex with men and transgender women who have had a bacterial sexually transmitted





https://dhhs.ne.gov/han%20Documents/ALERT07182023.pdf

An example case

- Mom has adequate prenatal care with RPR (rapid plasma regain) NR (non-reactive) at 8 weeks gestation
- She presents with vaginal lesions at 35 weeks gestation
- HSV (herpes simplex virus) testing was negative
- No other STI (sexually transmitted infection) testing
- Treated with valacyclovir
- Presents in labor at 37 weeks
- No RPR at delivery
- Baby has work up at 5 months for slow weight gain and developmental delay
- Hip x-rays indicate periosteal abnormalities and CS (congenital syphilis) is diagnosed

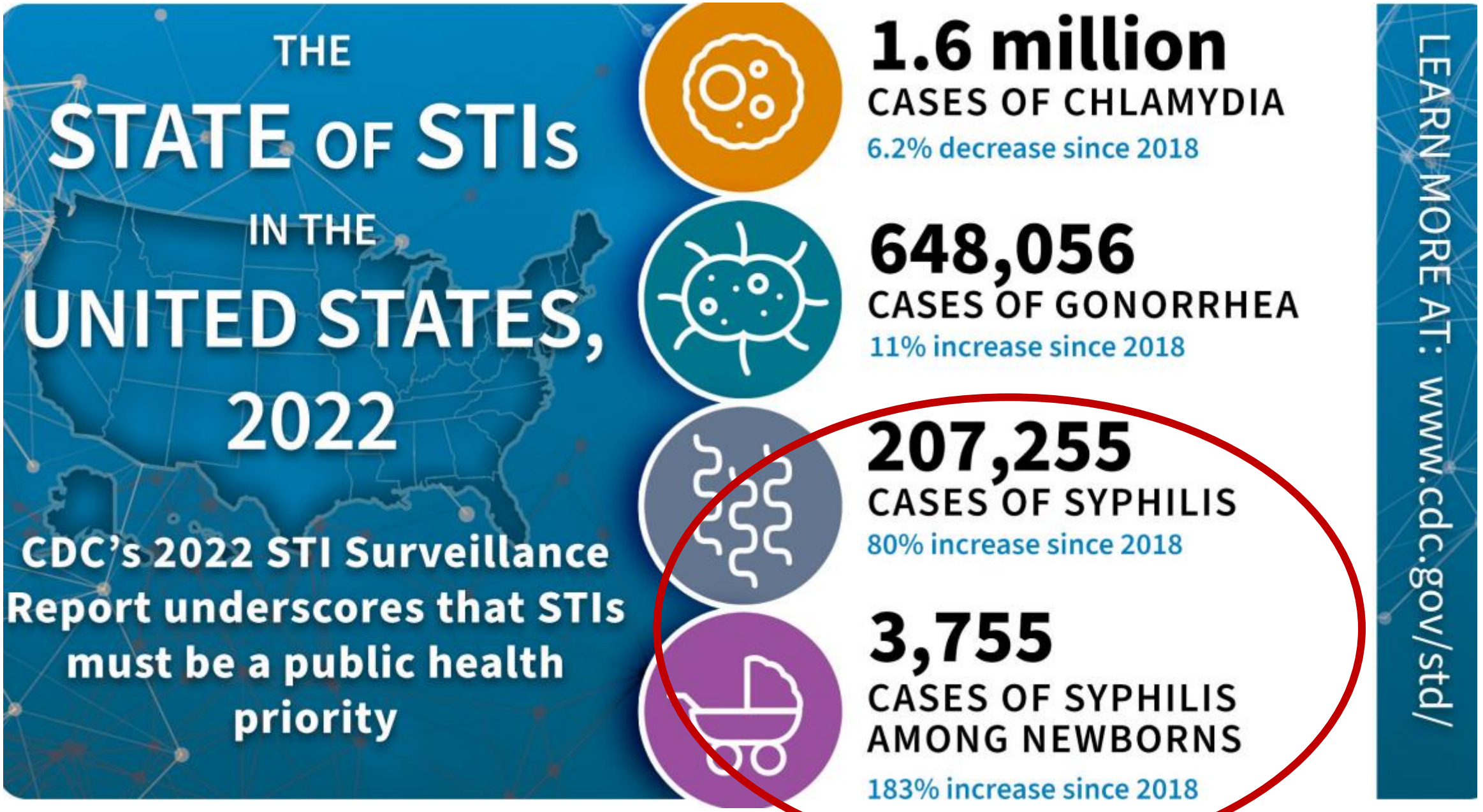


Image Source CDC.org = Centers for Disease Control and Prevention

Primary and Secondary Syphilis — Reported Cases by Sex and Sex of Sex Partners, United States, 2013–2022

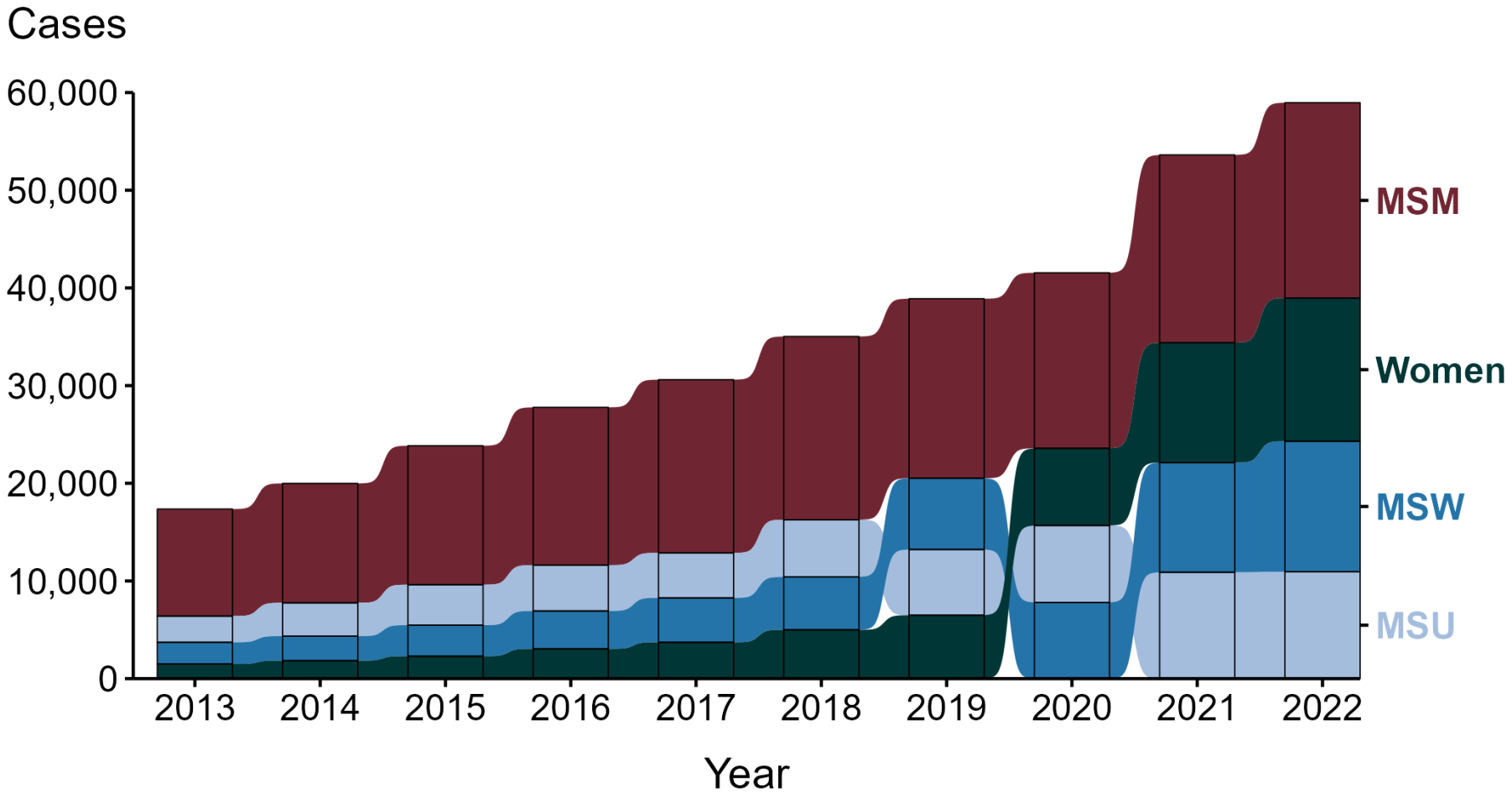
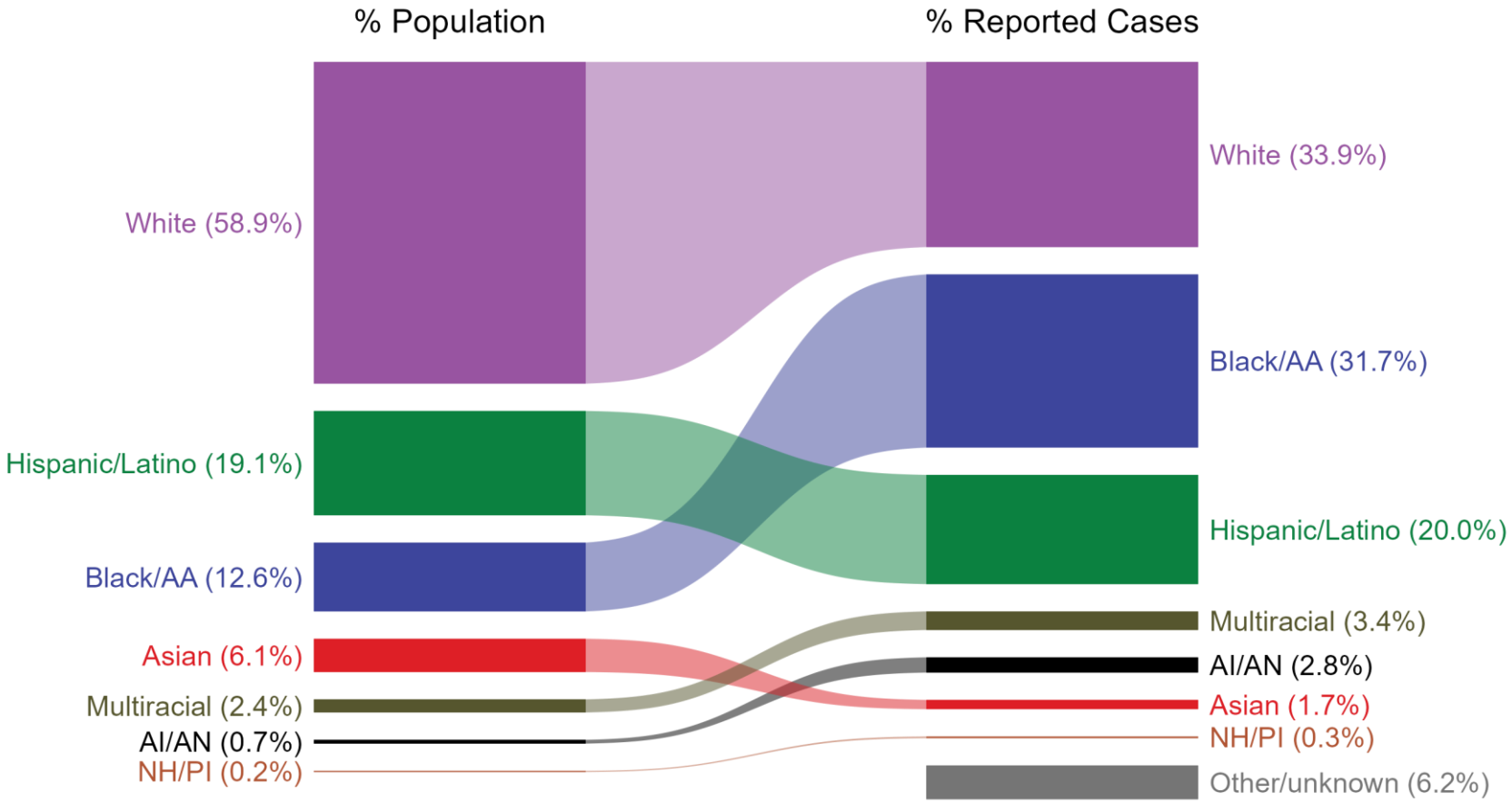


Image Source: cdc.org

ACRONYMS: MSM = Men who have sex with men; MSU = Men with unknown sex of sex partners; MSW = Men who have sex with women only

Primary and Secondary Syphilis — Total Population and Reported Cases by Race/Hispanic Ethnicity, United States, 2022



* Per 100,000

NOTE: In 2022, a total of 3,686 primary and secondary (P&S) syphilis cases (6.2%) had missing, unknown, or other race and were not reported to be of Hispanic ethnicity. These cases are included in the "other/unknown" category.

ACRONYMS: AI/AN = American Indian or Alaska Native; Black/AA = Black or African American; NH/PI = Native Hawaiian or other Pacific Islander

Congenital Syphilis — Rates of Reported Cases by Year of Birth, United States, 1941–2022

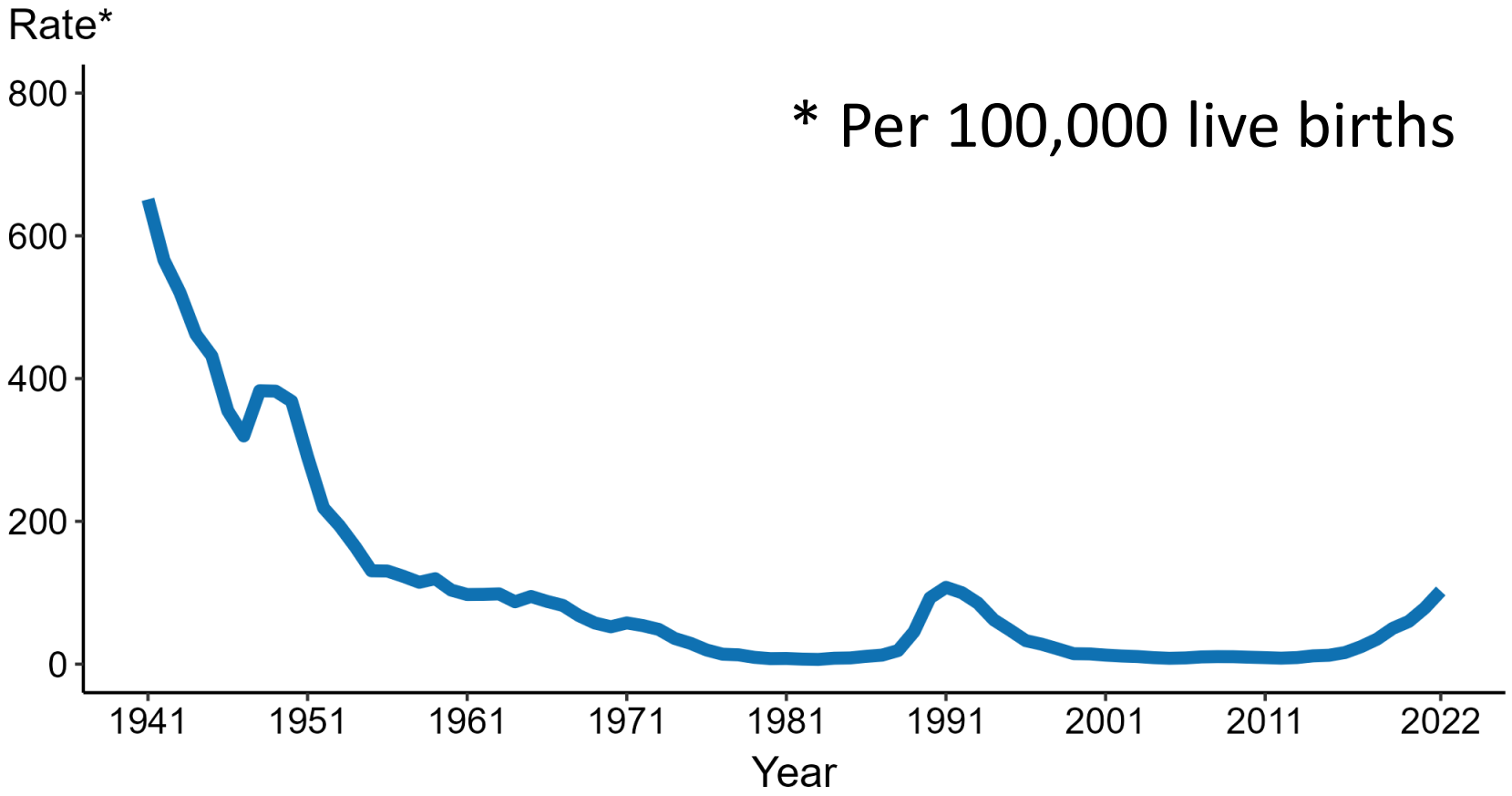
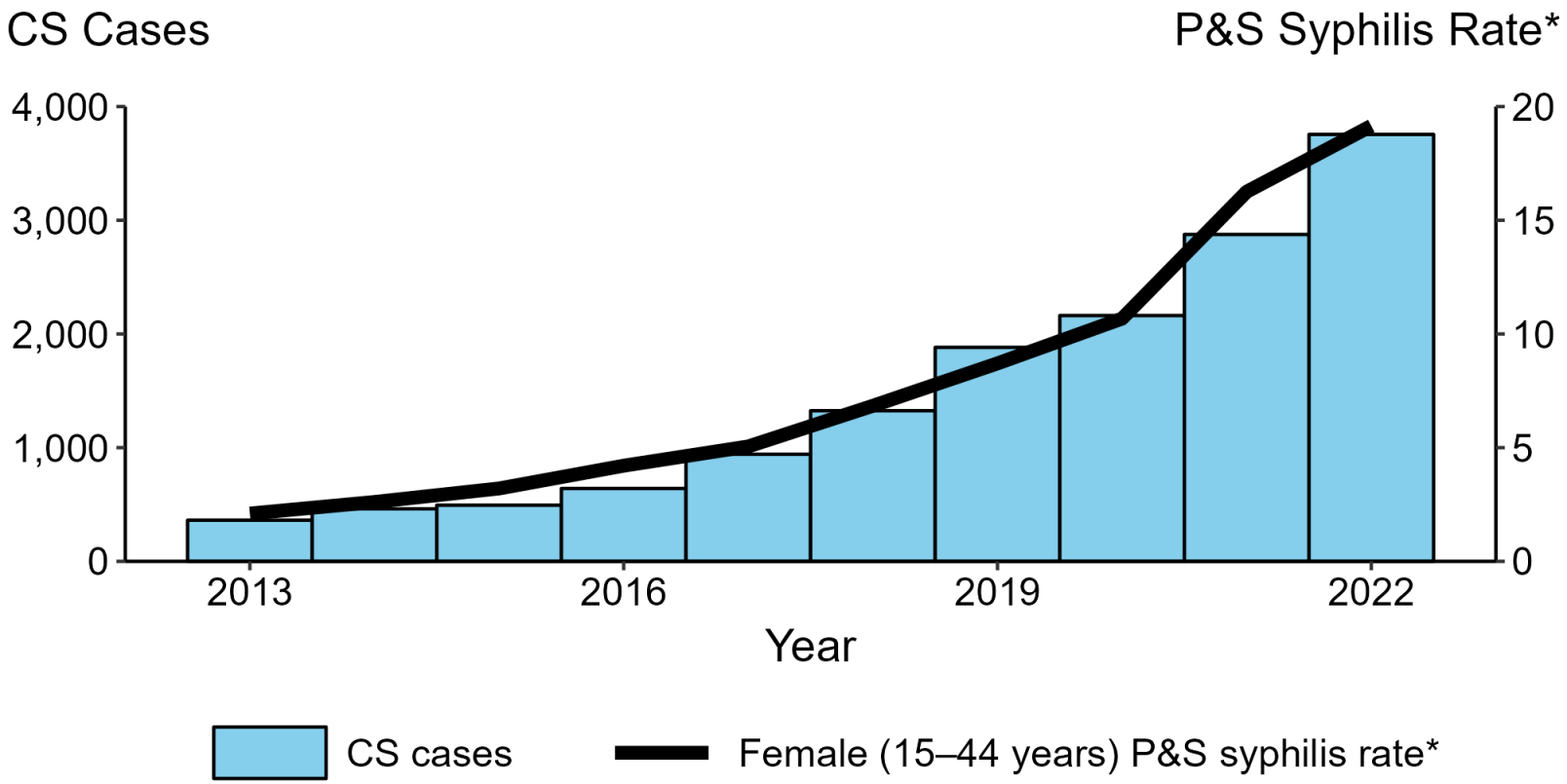


Image Source: cdc.org

Congenital Syphilis — Reported Cases by Year of Birth and Rates of Reported Cases of Primary and Secondary Syphilis Among Women Aged 15–44 Years, United States, 2013–2022



* Per 100,000

ACRONYMS: CS = Congenital syphilis; P&S Syphilis = Primary and secondary syphilis

Image Source: cdc.org

Syphilis— Reported Cases of Syphilis (All Stages) among Pregnant Women and Reported Cases of Congenital Syphilis by Year of Birth, United States, 2018–2022

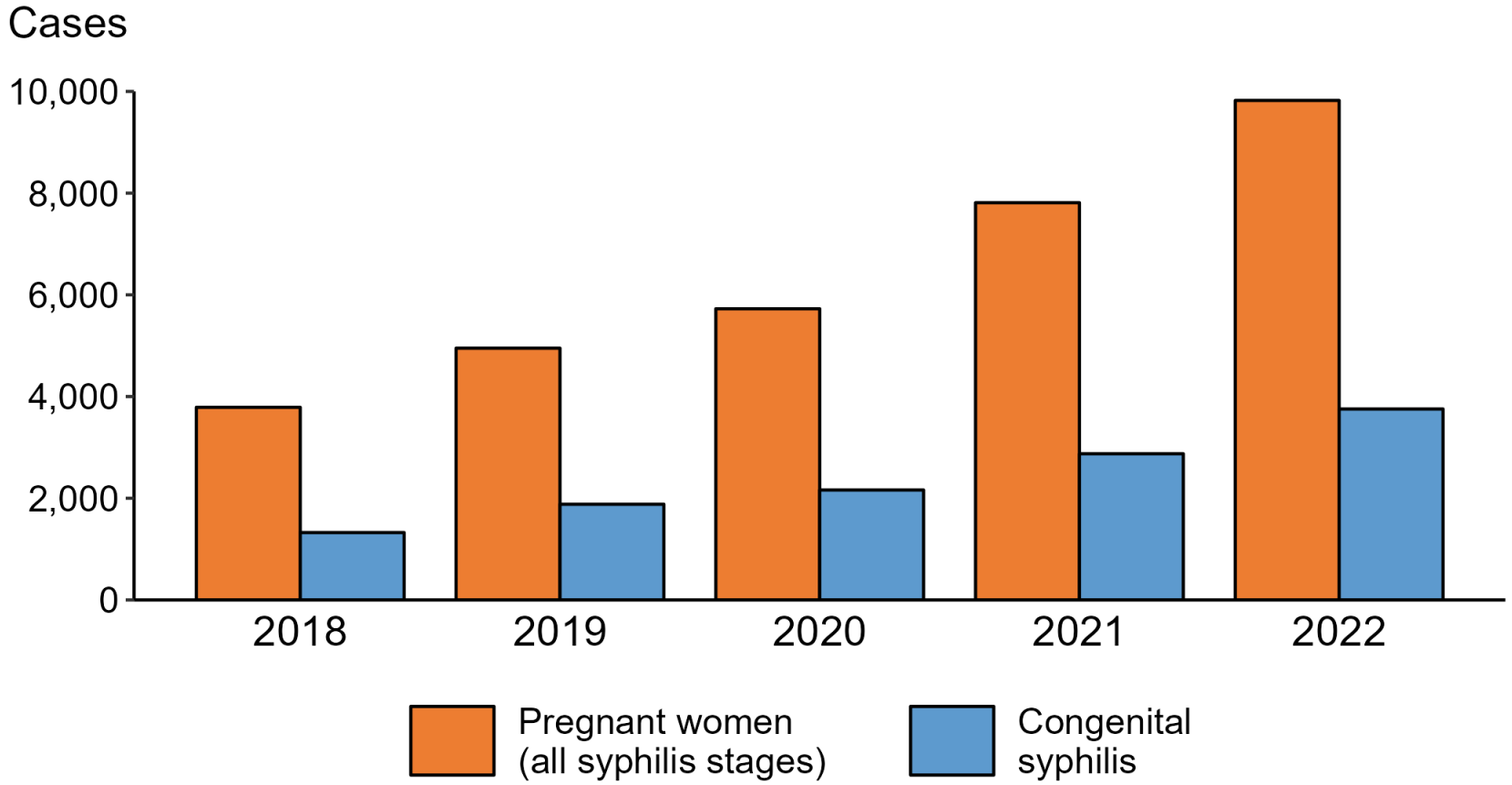
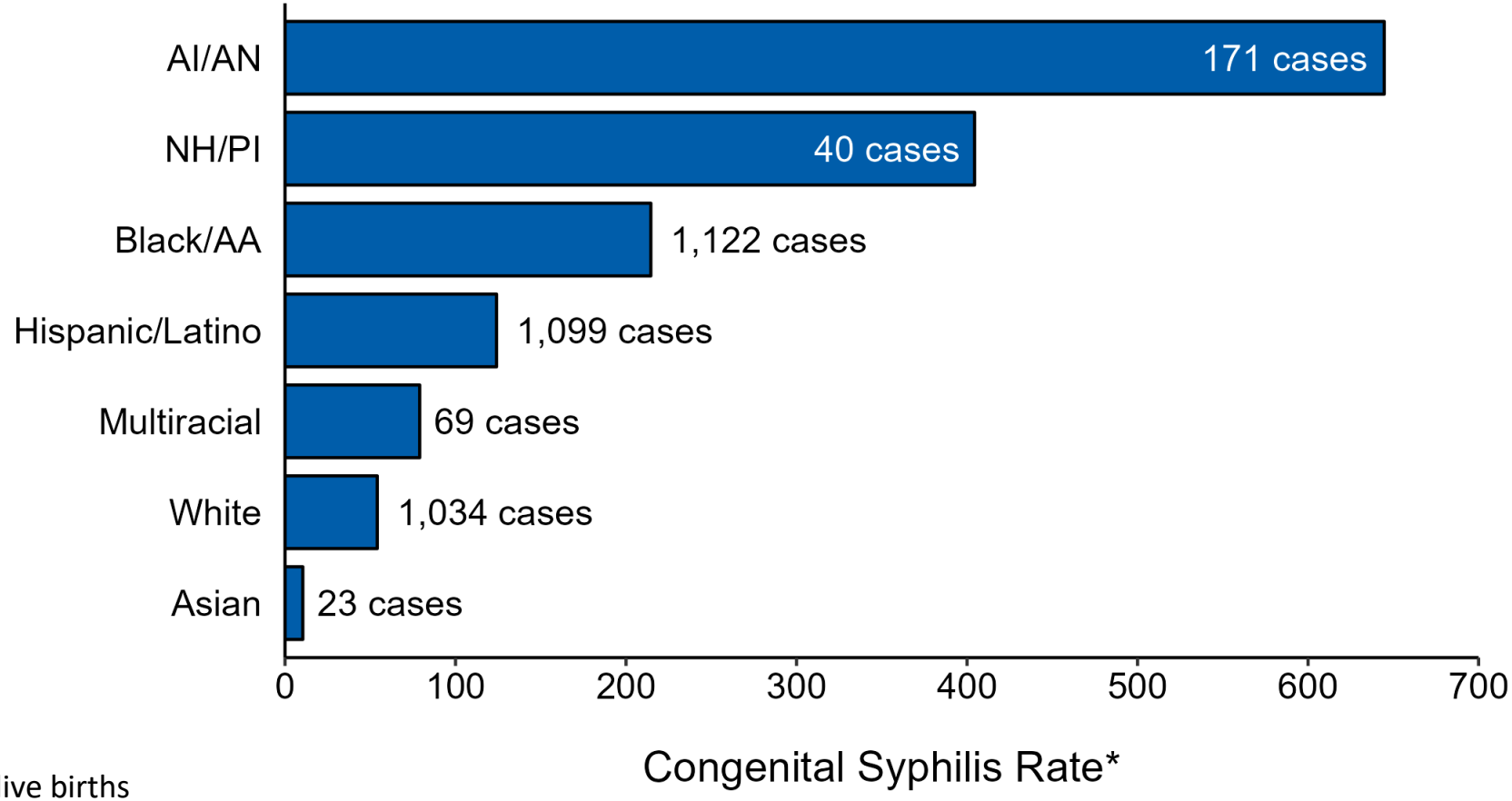


Image Source: cdc.org

Congenital Syphilis — Case Counts and Rates of Reported Cases by Race/Hispanic Ethnicity of Mother, United States, 2022



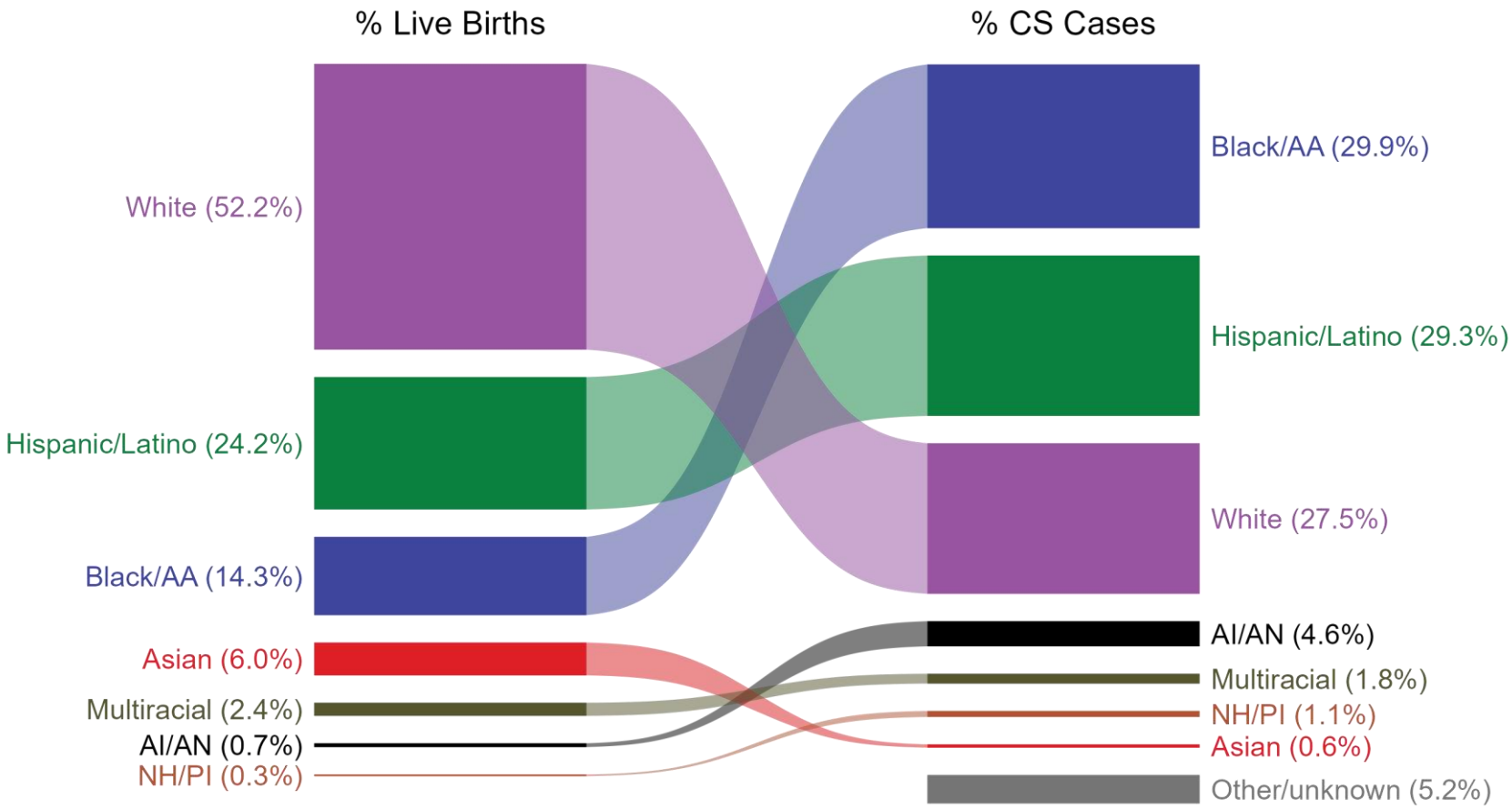
* Per 100,000 live births

NOTE: In 2022, a total of 197 congenital syphilis cases (5.2%) had missing, unknown, or other race and were not reported to be of Hispanic ethnicity.

ACRONYMS: AI/AN = American Indian or Alaska Native; Black/AA = Black or African American; NH/PI = Native Hawaiian or other Pacific Islander

Image Source: cdc.org

Congenital Syphilis — Total Live Births and Reported Cases by Race/Hispanic Ethnicity of Mother, United States, 2022

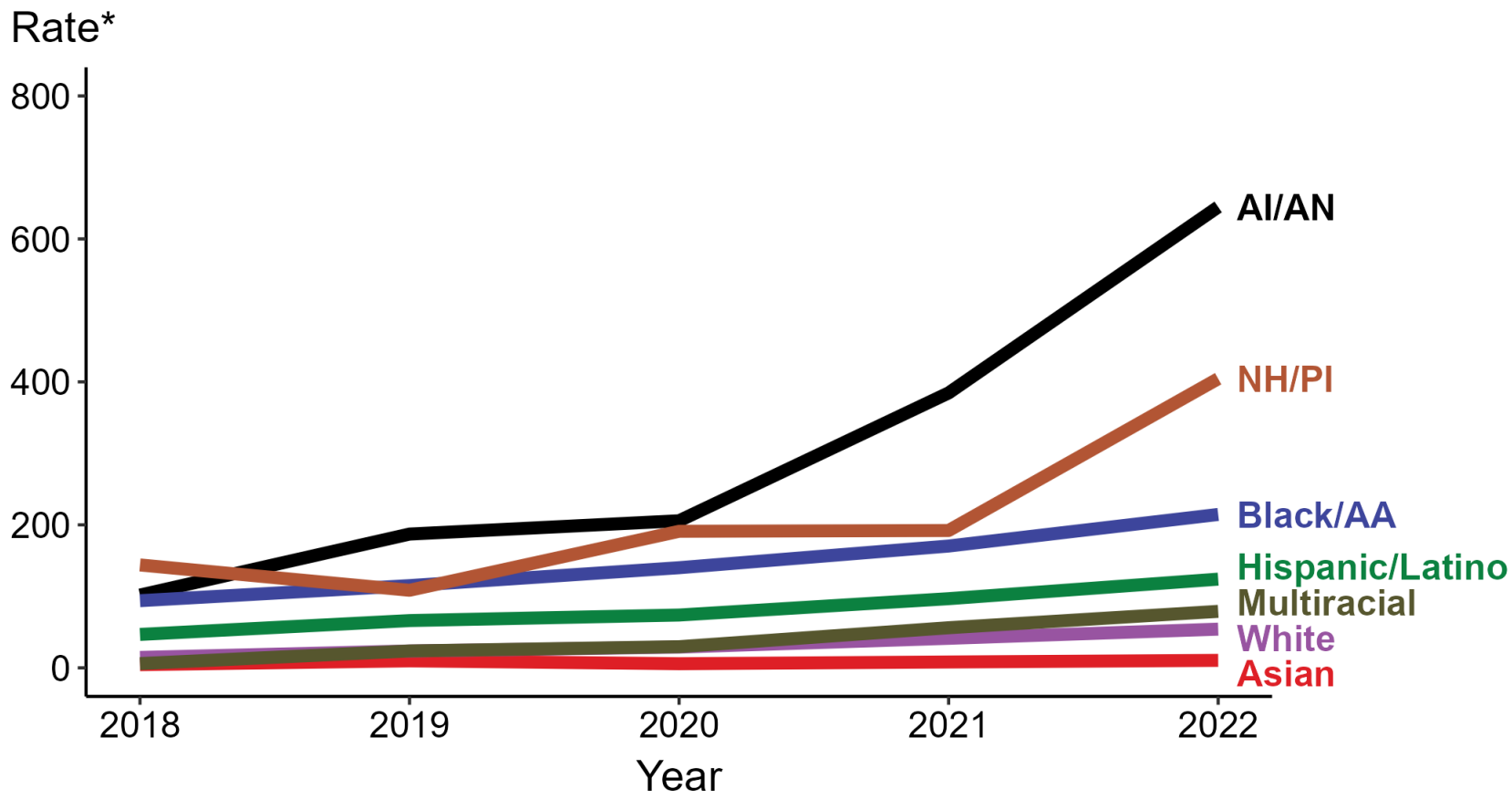


NOTE: In 2022, a total of 197 congenital syphilis cases (5.2%) had missing, unknown, or other race and were not reported to be of Hispanic ethnicity. These cases are included in the "other/unknown" category.

ACRONYMS: AI/AN = American Indian or Alaska Native; Black/AA = Black or African American; NH/PI = Native Hawaiian or other Pacific Islander

Image Source: cdc.org

Congenital Syphilis — Rates of Reported Cases by Year of Birth, Race/Hispanic Ethnicity of Mother, United States, 2018–2022



* Per 100,000 live births

ACRONYMS: AI/AN = American Indian or Alaska Native; Black/AA = Black or African American; NH/PI = Native Hawaiian or other Pacific Islander

Image Source: cdc.org

Primary and Secondary Syphilis — Rates of Reported Cases Among Women Aged 15–44 Years by Jurisdiction, United States and Territories, 2013–2022

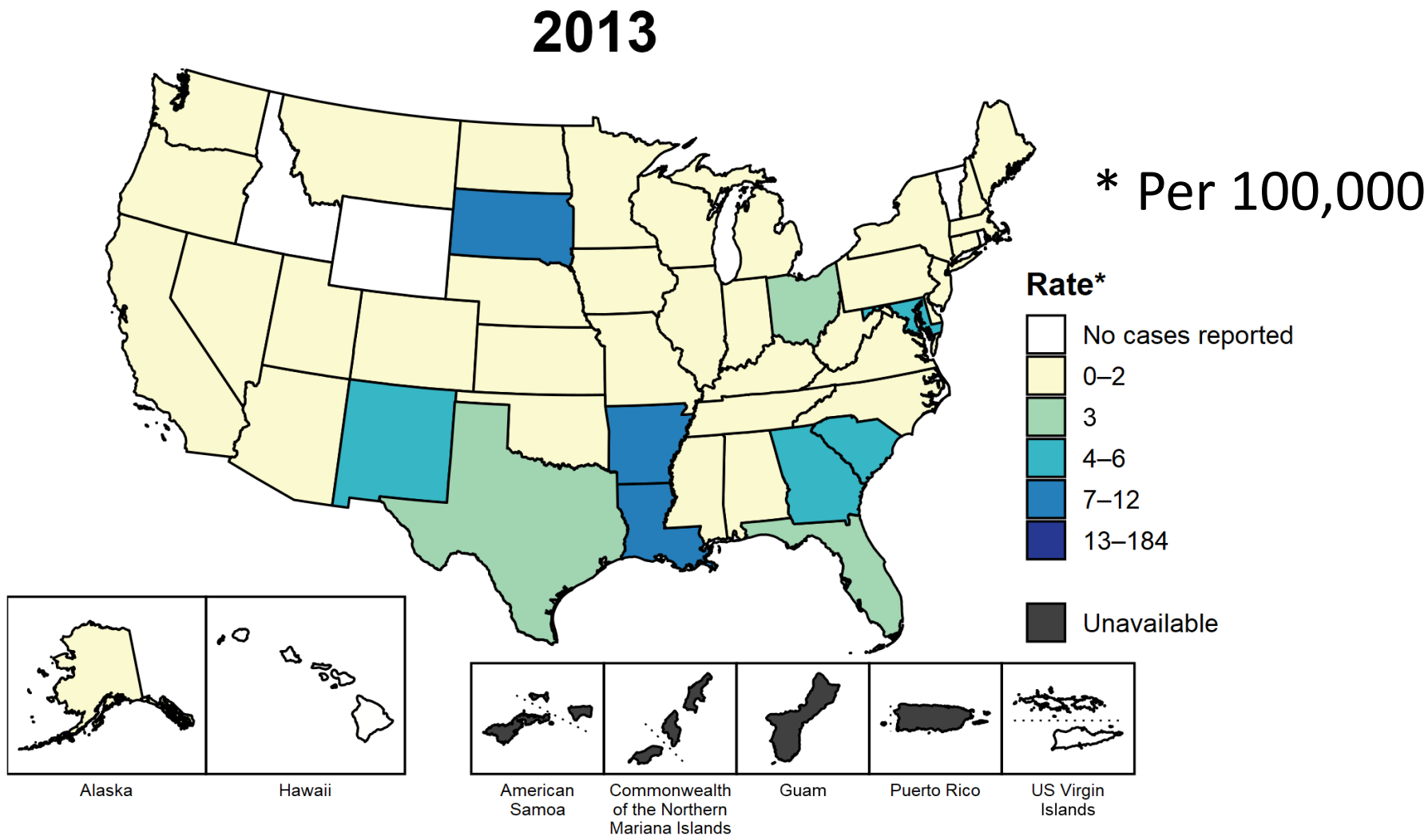


Image Source: cdc.org

Ensure quality care

Image Source:
Graiki/Getty Images

We need a syndemic approach

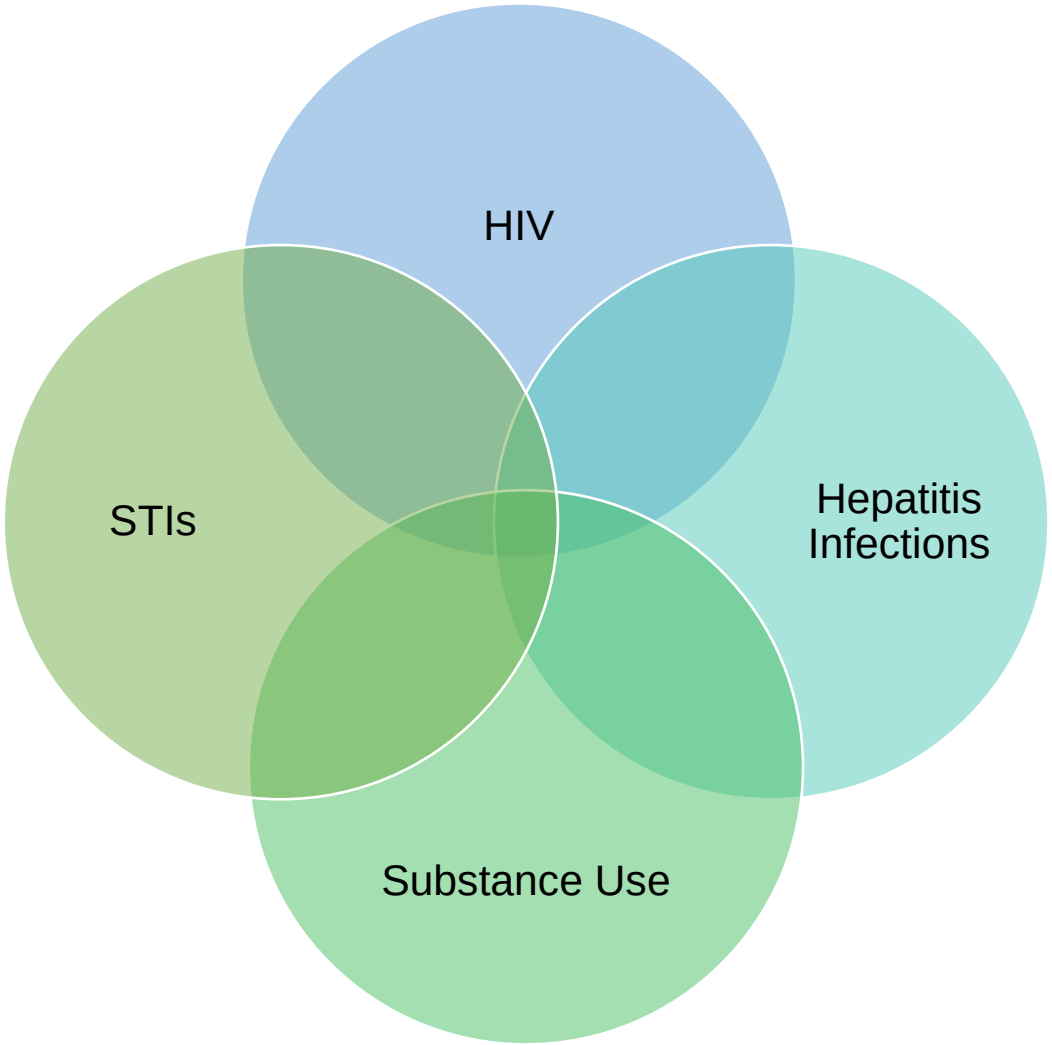


Image Source: Hilary Reno, MD, PhD

A syndemic approach

Free Inquiry - Special Issue: Gangs, Drugs & Violence *Volume 28, No. 1 May 2000 Page 13*

A DOSE OF DRUGS, A TOUCH OF VIOLENCE, A CASE OF AIDS: CONCEPTUALIZING THE SAVA SYNDEMIC

Merrill Singer, Hispanic Health Council

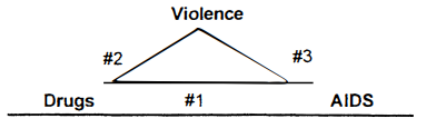
ABSTRACT

Gang violence, substance abuse and AIDS have been described as parallel epidemics in the U.S. inner city. This paper draws upon findings from a set of ethnographic and survey research projects in the Puerto Rican community of Hartford, CT to develop a conceptualization of the close interconnections between these three health and social problems. Rather than separate conditions, substance abuse, violence, and AIDS, referred to here as SAVA to stress the relationships among these three phenomena, are best thought of forming a single syndemic (a closely interrelated complex of health and social crises) that continues to take a significant toll on the lives and well-being of the urban poor.

INTRODUCTION

Gang-related and other violence, substance abuse, and AIDS have been described as concurrent epidemics among U.S. inner-city populations. The term epidemic, however, does not adequately describe the contemporary inner city health crisis, which is characterized by a set of closely interrelated, epidemic

FIGURE 1: SAVA Interconnections



Syndemics are stitched together by three rules:

1. two or more diseases **cluster** together in time or space;
2. these diseases **interact** in meaningful ways, whether social, psychological, or biological;
3. and harmful **social conditions** drive these interactions.

Image Source: Hilary Reno, MD, PhD

Congenital Syphilis

Image Source: Andrew Brookes AB Still Ltd

Substance Use Among P
Pregnancy — Arizona an

Weekly / January 20, 2023 / 72(3);63–67

Jeffrey M. Carlson, PhD[1]; Ayzsa Tannis, MPH[1]; Kate R. Woc
Breanne Anderson, MPH[3,4]; Keivon Hobeheidar[3]; Aisha Pr
Teri Willabus, MPH[7]; Elizabeth Burkhardt, MSPH[7]; Elizabet
MD[2]; Dana Meaney-Delman, MD[2]; Suzanne M. Gilboa, PhD
AUTHOR AFFILIATIONS)

View suggested citation

Summary

What is already known about this topic?

Substance use prevalence has increased among women
association with congenital syphilis is less clear.

What is added by this report?

During 2018–2021, the prevalence of substance use am
during pregnancy in Arizona and Georgia was nearly tw
congenital syphilis pregnancy outcome (48.1%) as amor
(24.6%). Approximately one half of persons who used su
and had a congenital syphilis pregnancy outcome had la

What are the implications for public health pract

The need for syphilis screening and treatment should b
care encounter during pregnancy, especially among per

Open Forum Infect Dis. 2022 Apr 3;9(5):ofac169.
doi: 10.1093/ofid/ofac169. eCollection 2022 May.

Characteristics of Pregnant Women With Syphilis and Factors Associated With Congenital Syphilis at a Chicago Hospital

Corinne Thornton [1], Lelia H Chaisson [2], Susan C Bleasdale [2]

Affiliations + expand

PMID: 35493123 PMCID: PMCS
Free PMC article

Abstract

Background: Congenital syphilis
years, in parallel with the resurge
women. An understanding of risk
infection can guide prevention of
diagnosis and treatment. We aim
maternal syphilis and congenital
Chicago, Illinois.

Methods: Maternal syphilis diagr
local health department reportin
congenital syphilis diagnoses, so
and other behavioral factors. Mat
congenital syphilis were assesse

Results: Of 106 maternal syphilis
(72%) had a known pregnancy ou
with congenital syphilis. Women
substance use each had a >5-fol
congenital syphilis. Cases with c
late or scant prenatal care and in
pregnancy. None were human imi
incarceration, intravenous substa
who have sex with men.

Conclusions: Maternal psychiatric illness and substance use may have complicated prenatal care and delayed syphilis treatment, describing a population in need of public health intervention. Women experiencing such barriers to care may benefit from closer follow-up after a prenatal syphilis diagnosis to prevent congenital transmission.

Review > Emerg Infect Dis. 2023 Oct;29(10). doi: 10.3201/eid2910.230421.

Spike in Congenital Syphilis, Mississippi, USA, 2016–2022

Manuela Staneva, Charlotte V Hobbs, Thomas Dobbs

PMID: 37735714 DOI: 10.3201/eid2910.230421

"In the multivariable analysis of clinical characteristics, the variable with the strongest association with CS was maternal substance use. Even after controlling for demographic risk factors, the CS cohort had almost 10 times higher odds of being affected by maternal illicit drug use than the cohort without CS (aOR,9.39, 95% CI 7.16–12.16)."

Congenital Syphilis

A serious congenital infection that results from the vertical transmission of the spirochete *Treponema pallidum* to a fetus during pregnancy

- Congenital syphilis can lead to:
  - Stillbirth
  - Prematurity
  - Significant neonatal morbidity
- Case fatality rate as high as 31%

Info & Image Source: CDC.org

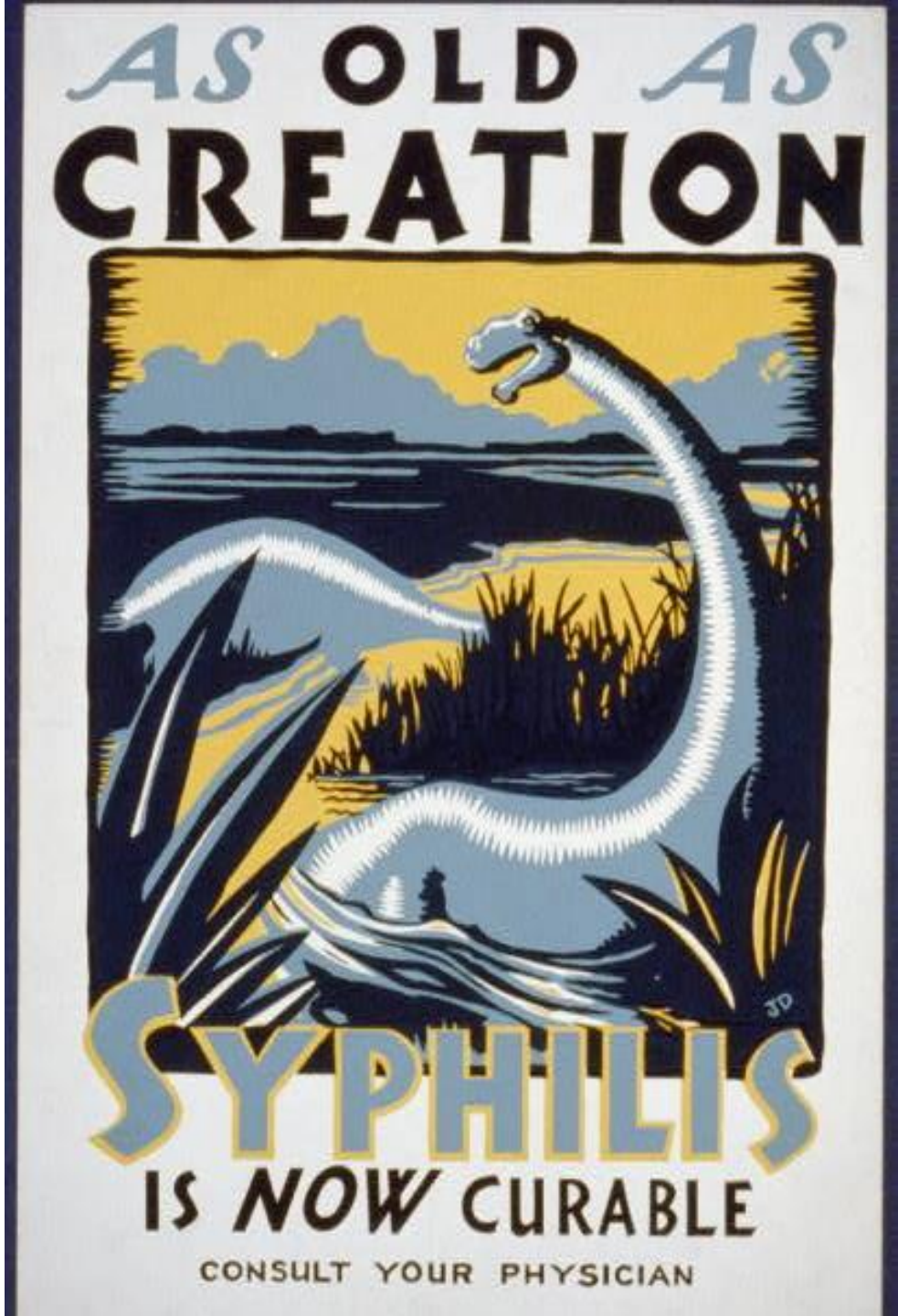
Timing of maternal infection impacts the risk of congenital syphilis

Risk of transmission is higher with:

1) earlier stages of maternal infection and

2) later gestational age at the time of infection

- 60-100% with primary/secondary syphilis during pregnancy
- 40% early latent
- <8% late latent



https://www.cdc.gov/std/syphilis/stdfact-congenital-syphilis.htm

Image Source: Washington University's Library Image Gallery

Manifestations of congenital syphilis are myriad

In utero

- Hydrops fetalis
- Preterm birth
- Miscarriage*
- Stillbirth*
- Perinatal death*

Early

- Hepatosplenomegaly
- Snuffles
- Lymphadenopathy
- Mucocutaneous lesions
- Pneumonia
- Bony changes
- Pseudoparalysis
- Edema
- Rash
- Hemolytic anemia
- Thrombocytopenia
- **Many newborns have no symptoms at all**

Late (>2 years)

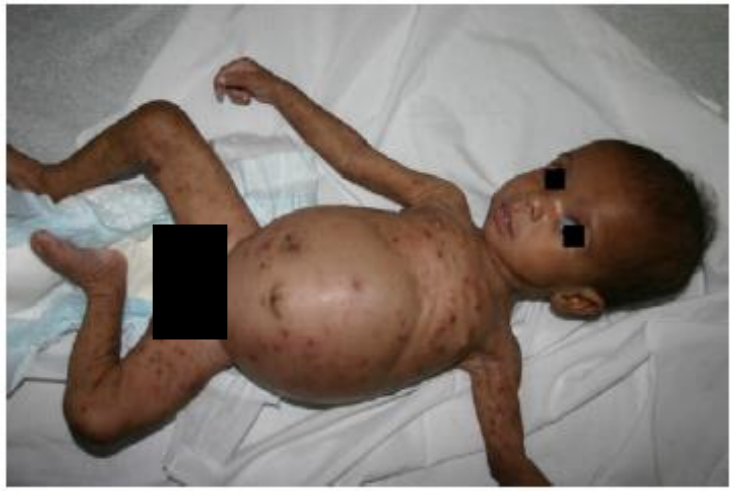
- Interstitial keratitis
- 8th CN (cranial nerve) deafness
- Hutchinson teeth
- Anterior shin bowing
- Frontal bossing
- Mulberry molars
- Saddle nose
- Clutton joints

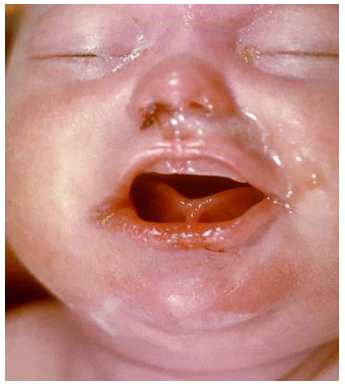
*Up to 40% risk of infant loss with untreated early syphilis

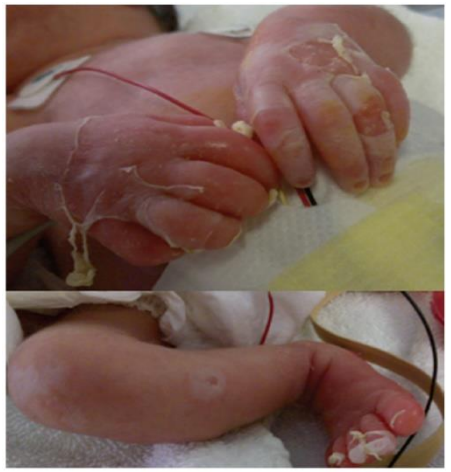
https://www.cdc.gov/ncbddd/birthdefects/surveillancemanual/chapters/chapter-5/chapter5-2.html#:~:text=Infants%20who%20remain%20undiagnosed%20and,)%2C%20joint%20swelling%20(clutton%20joints

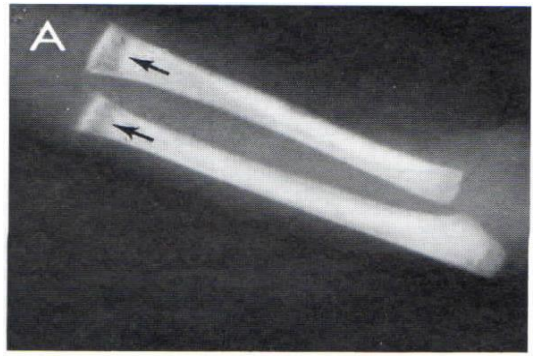
Congenital Syphilis-Exam

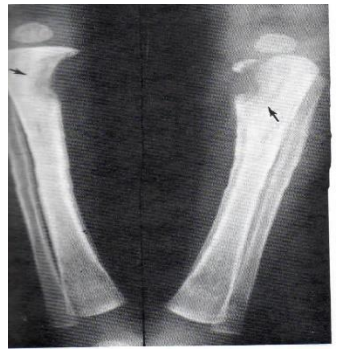
- Assess for jaundice, hepatosplenomegaly, rhinitis, skin rash, growth restriction, chorioretinitis; pseudoparalysis of an extremity (in infants outside the immediate neonatal period).
- Darkfield microscopic examination or PCR (polymerase chain reaction) testing of suspicious lesions or body fluids (e.g., bullous rash or nasal discharge) also should be performed.











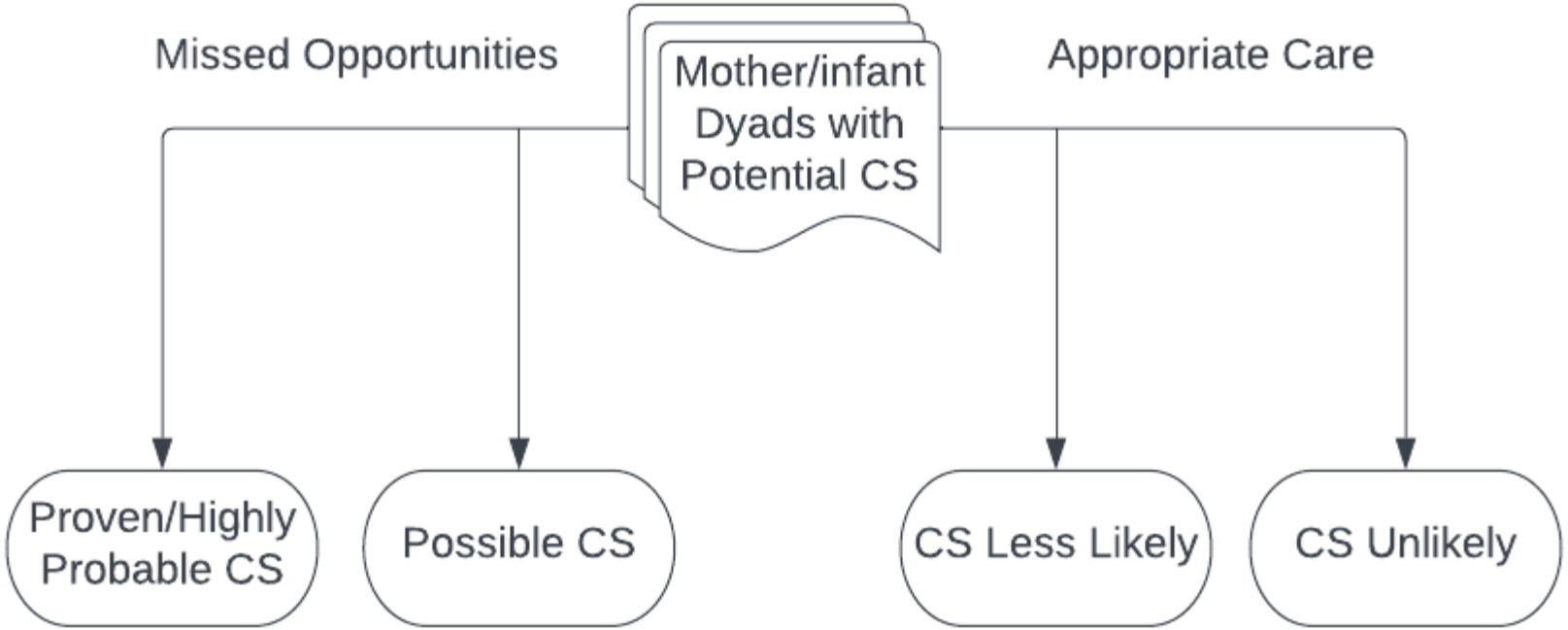
Photos courtesy Dr. Golden, CDC image library

Images and Information Sourced: https://www.cdc.gov/ncbddd/birthdefects/surveillancemanual/chapters/chapter-5/chapter5-2.html#:~:text=Infants%20who%20remain%20undiagnosed%20and,)%2C%20joint%20swelling%20(clutton%20joints

There is no single test that tells us if an infant has congenital syphilis

CDC Case Scenarios:

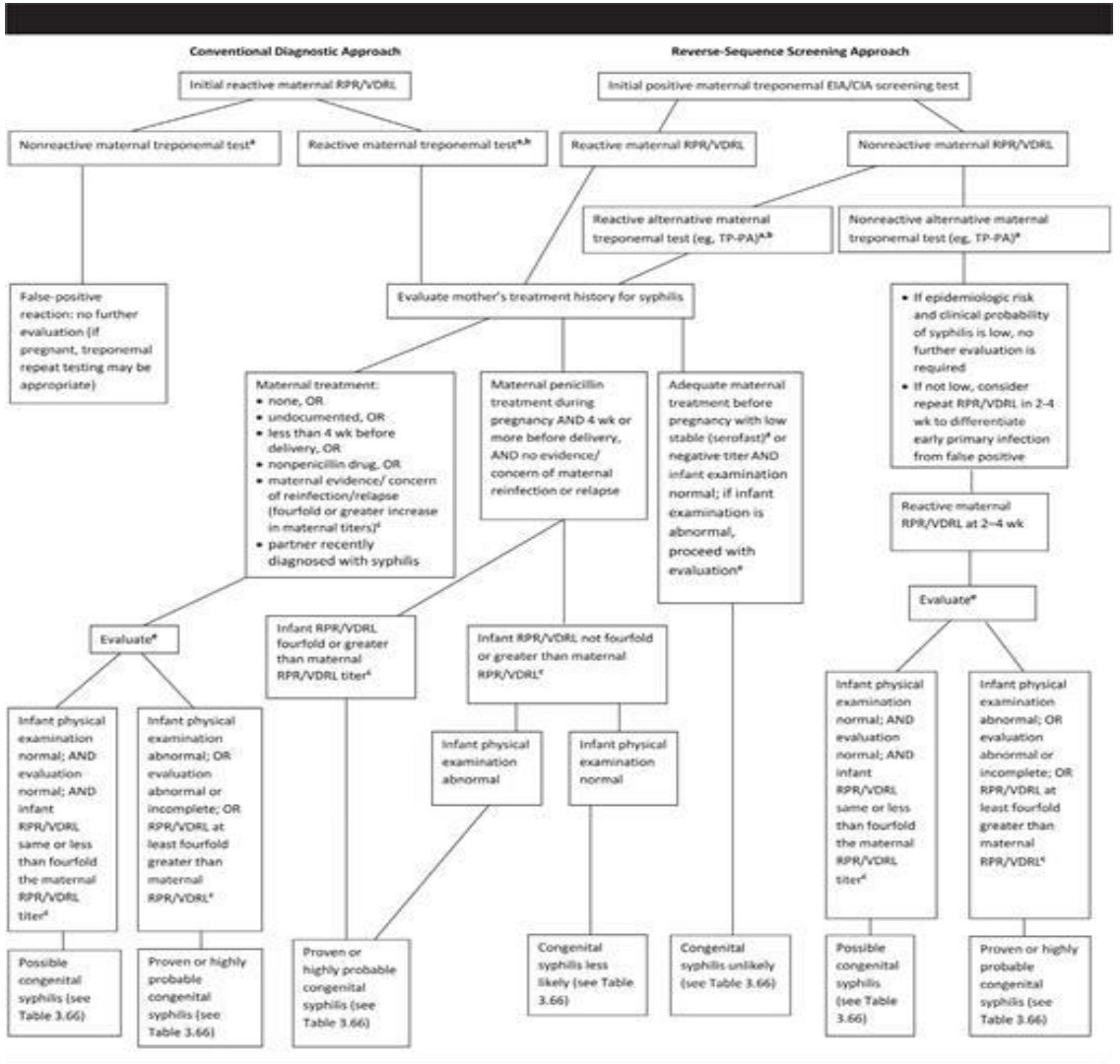
- Proven/Highly Probable
- Possible
- Less Likely
- Unlikely



Congenital syphilis is diagnosed based on a constellation of maternal and infant factors

Info & Image Source: https://www.cdc.gov/

Algorithms have been developed to help guide evaluation



RPR indicates rapid plasma reagin; VDRL, Venereal Disease Research Laboratory.

[a] *Treponema pallidum* particle agglutination (TP-PA) (which is the preferred treponemal test) or fluorescent treponemal antibody absorption (FTA-ABS).

[b] Test for human immunodeficiency virus (HIV) antibody. Infants of HIV-infected mothers do not require different evaluation or treatment for syphilis.

[c] A fourfold change in titer is the same as a change of 2 dilutions. For example, a titer of 1:64 is fourfold greater than a titer of 1:16, and a titer of 1:4 is fourfold lower than a titer of 1:16. When comparing titers, the same type of nontreponemal test should be used (eg, if the initial test was an RPR, the follow-up test should also be an RPR).

[d] Stable VDRL titers 1:2 or less or RPR 1:4 or less beyond 1 year after successful treatment are considered low serofast.

[e] Complete blood cell (CBC) and platelet count; cerebrospinal fluid (CSF) examination for cell count, protein, and quantitative VDRL; other tests as clinically indicated (eg, chest radiographs, long-bone radiographs, eye examination, liver function tests, neuroimaging, and auditory brainstem response). For neonates, pathologic examination of the placenta or umbilical cord with specific fluorescent antitreponemal antibody staining, if possible.

Red Book 2021

Initial evaluation includes an RPR and good physical exam

- At delivery:
  - Obtain a delivery RPR for mom and baby
  - Do a good infant physical exam
  - Ensure recent maternal testing for other STIs
    - HIV, Hep B (hepatitis B), Hep C (hepatitis C), GC/CT (gonorrhea-chlamydia)
  - Obtain a thorough history of maternal syphilis including:
    - Timing of diagnosis
    - Treatment method and dates
    - Maternal RPRs with dates to evaluate for response to therapy and relapse/reinfection

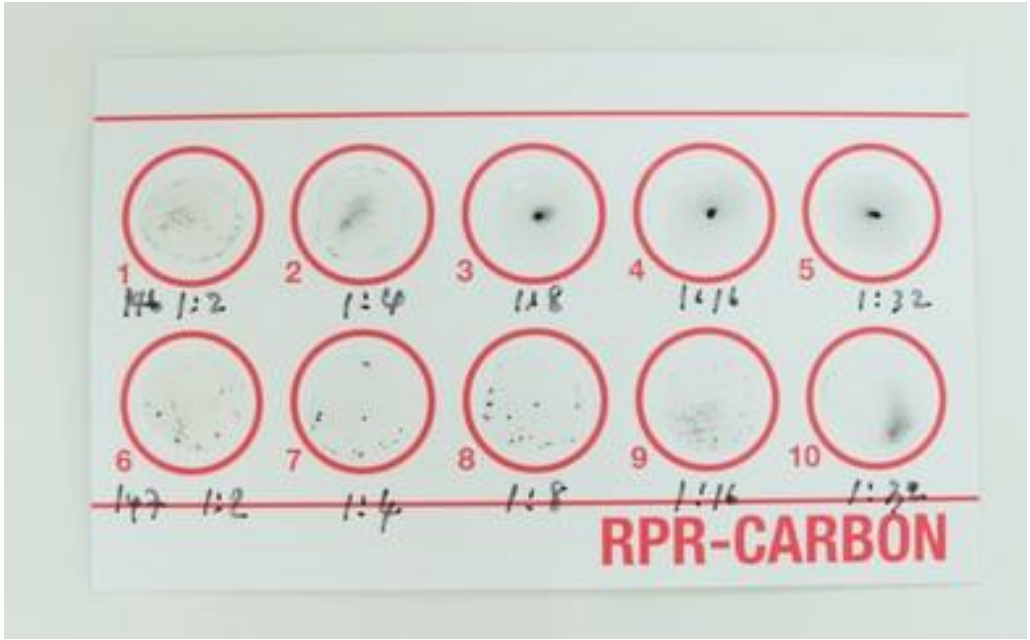


Image Source: Shutterstock

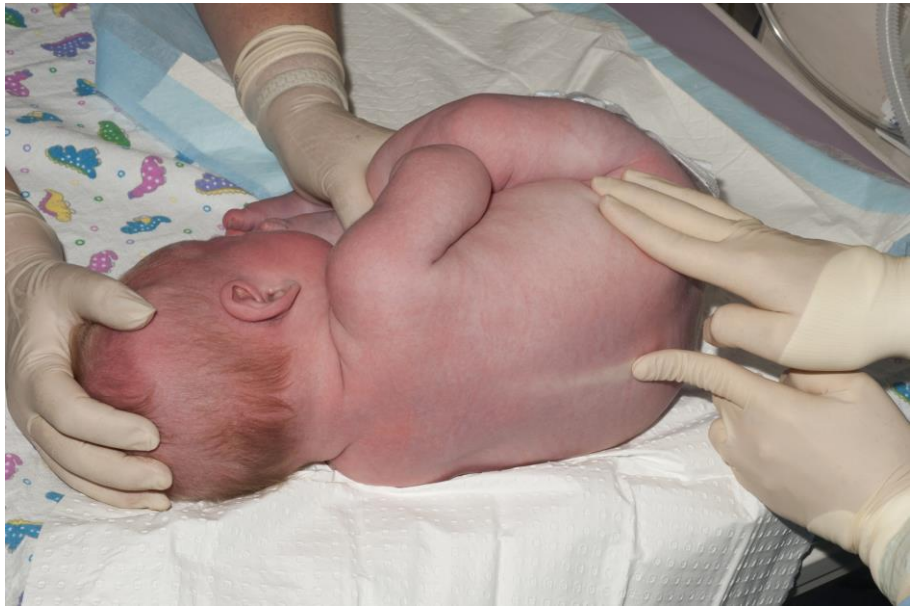
Above: RPR lab card demonstrating flocculation at different titers

https://www.cdc.gov/std/treatment-guidelines/pregnant.htm

Initial evaluation includes an RPR and good physical exam

- Infants whose mothers were not adequately treated during pregnancy have either:
  - Proven/highly probable congenital syphilis
  - Possible congenital syphilis
- These infants require further evaluation:
  - CBC (complete blood count), CMP (comprehensive metabolic panel)
  - Lumbar puncture with CSF VDRL (cerebrospinal fluid nontreponemal serologic test)
  - Long bone films
  - Hearing testing (ABR)
  - +/- Head ultrasound and eye exam

Image Source: methodsman.com



Above: An infant being prepared for a lumbar puncture

https://www.cdc.gov/std/treatment-guidelines/pregnant.htm

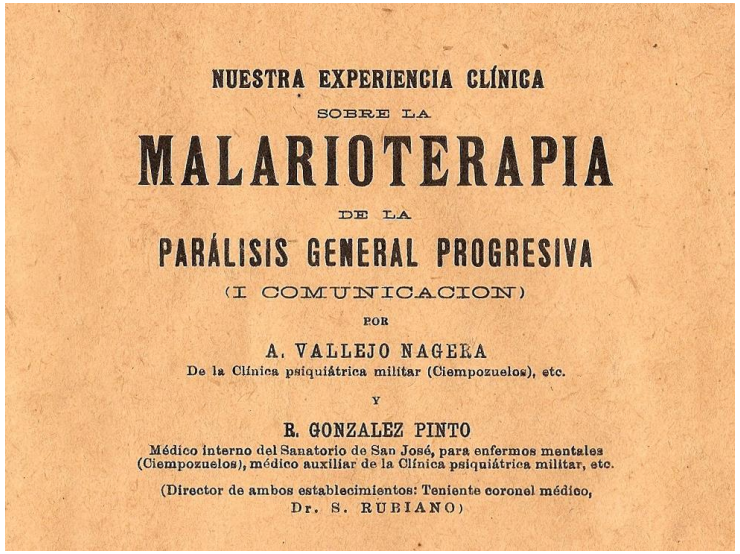
How *not* to treat congenital syphilis

Image Source: Marcel/Fotolia

Mercury:
The remedy of choice for 450 years!

Image Source: Chateau de Chantilly.fr

Giving wet nurses mercury: Because it's too toxic to give directly to babies!



NUESTRA EXPERIENCIA CLÍNICA
SOBRE LA
MALARIOTERAPIA
DE LA
PARÁLISIS GENERAL PROGRESIVA
(I COMUNICACION)
POR
A. VALLEJO NAGERA
De la Clínica psiquiátrica militar (Ciempozuelos), etc.
Y
R. GONZALEZ PINTO
Médico interno del Sanatorio de San José, para enfermos mentales (Ciempozuelos), médico auxiliar de la Clínica psiquiátrica militar, etc.
(Director de ambos establecimientos: Teniente coronel médico, Dr. S. RUBIANO)

source: Irwin W. Sherman. Drugs That Changed the World: How Therapeutic Agents Shaped Our Lives. CRC PRESS.

Malaria (pyrotherapy): Nobel Prize winning in 1927!

Management includes penicillin and close neurodevelopmental follow up

- Treatment:
  - Proven/highly probable congenital syphilis: IV (intravenous) PCN G (penicillin G benzathine) x 10 days
  - Possible congenital syphilis: usually IV PCN G x 10 days (can sometimes consider IM (intramuscular) Benzathine PCN G x1 dose)
  - Less likely congenital syphilis: IM Benzathine PCN G x1
  - Unlikely congenital syphilis: no treatment needed

Left: Dried Penicillin Sodium Salt, National Museum of American History

https://www.cdc.gov/std/treatment-guidelines

Management includes penicillin and close neurodevelopmental follow up

- Follow up:
  - Repeat RPR every 2-3 months until nonreactive
    - If up-trending or still reactive at 6-12 months, refer to pediatric ID (infectious disease)
  - Refer all to Early Intervention/First Steps
  - Consider social work evaluation

Left: Dried Penicillin Sodium Salt, National Museum of American History

Image Source: Adobe Stock

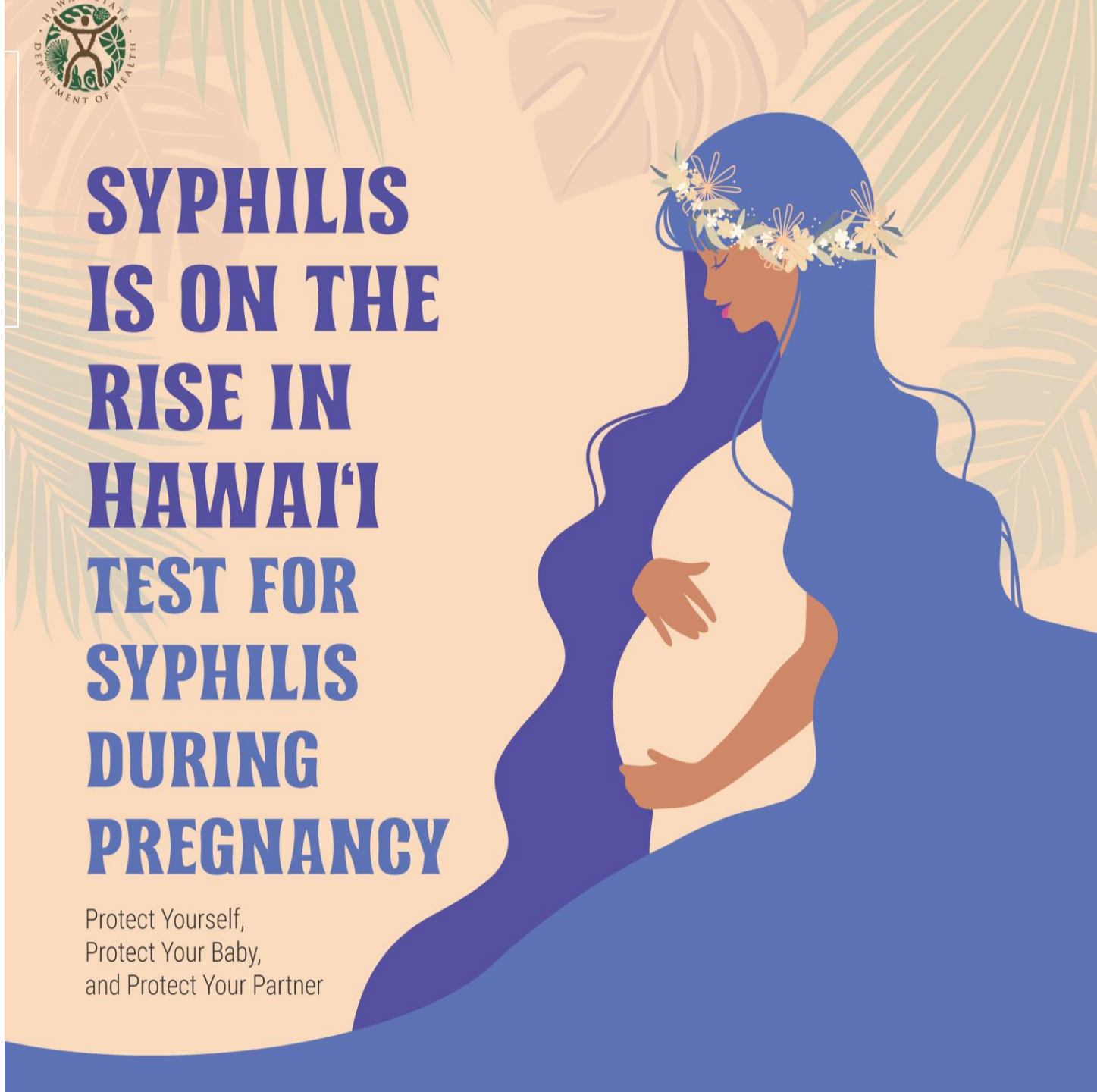
Ongoing Questions: Infant management and outcomes

- What are the long-term developmental outcomes of treated infants with congenital syphilis?
  - Paucity of data
  - Does appropriate treatment in infancy mean that neurodevelopment will be normal?
  - What interventions should be employed for postnatal follow up?
  - Potential confounders: in utero substance exposure, low SES (socioeconomic status)

https://www.cdc.gov/std/treatment-guidelines

What novel strategies can we employ to prevent congenital syphilis?

- Think outside of the box of traditional prenatal care
- Consider collaboration with substance use risk mitigation and treatment facilities, shelters, other housing resources, and the justice system
- Work with DIS (disease intervention specialists) to ensure treatment completion
- Syphilis linkage to care program
    - Modelled after perinatal HIV linkage to care



https://www.cdc.gov/std/treatment-guidelines

Image Source: Hawaii State Department of Health

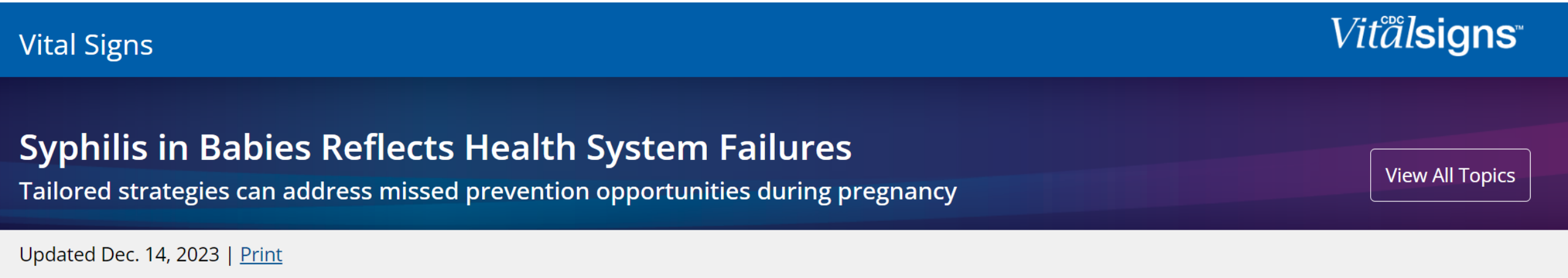
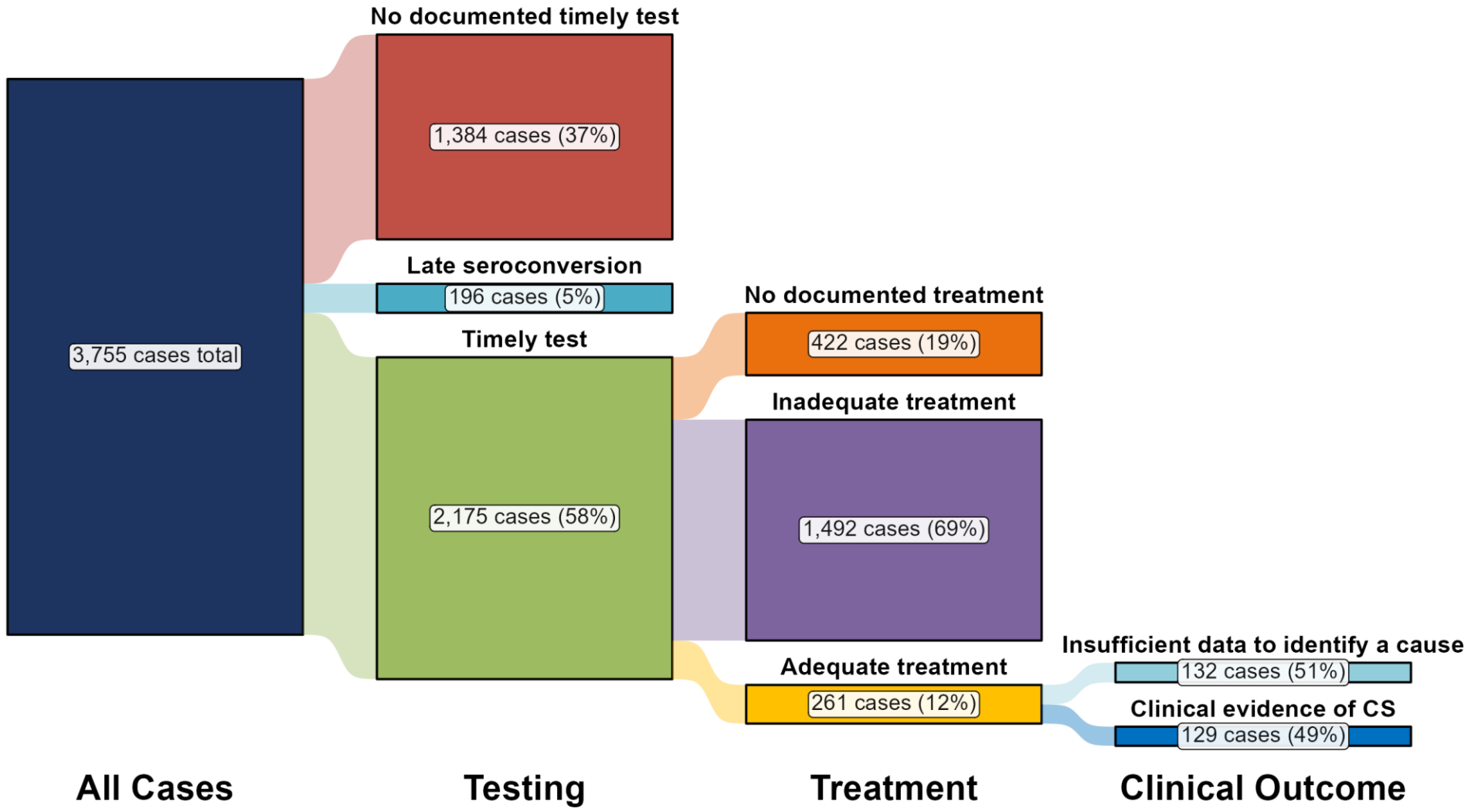


Image Source:
cdc.gov/vitalsigns

Congenital Syphilis — Distribution of Receipt of Testing and Treatment by Pregnant Persons with a Congenital Syphilis Outcome, United States, 2022



https://www.cdc.gov/std/treatment-guidelines

Congenital syphilis prevention: screening

- Screen all women in early pregnancy
- Screen again twice in third trimester “for communities and populations in which the prevalence of syphilis is high, and for women at high risk of infection”
    - Screen at 28 weeks
    - Screen again at delivery

Sexually Transmitted Diseases Treatment Guidelines 2021

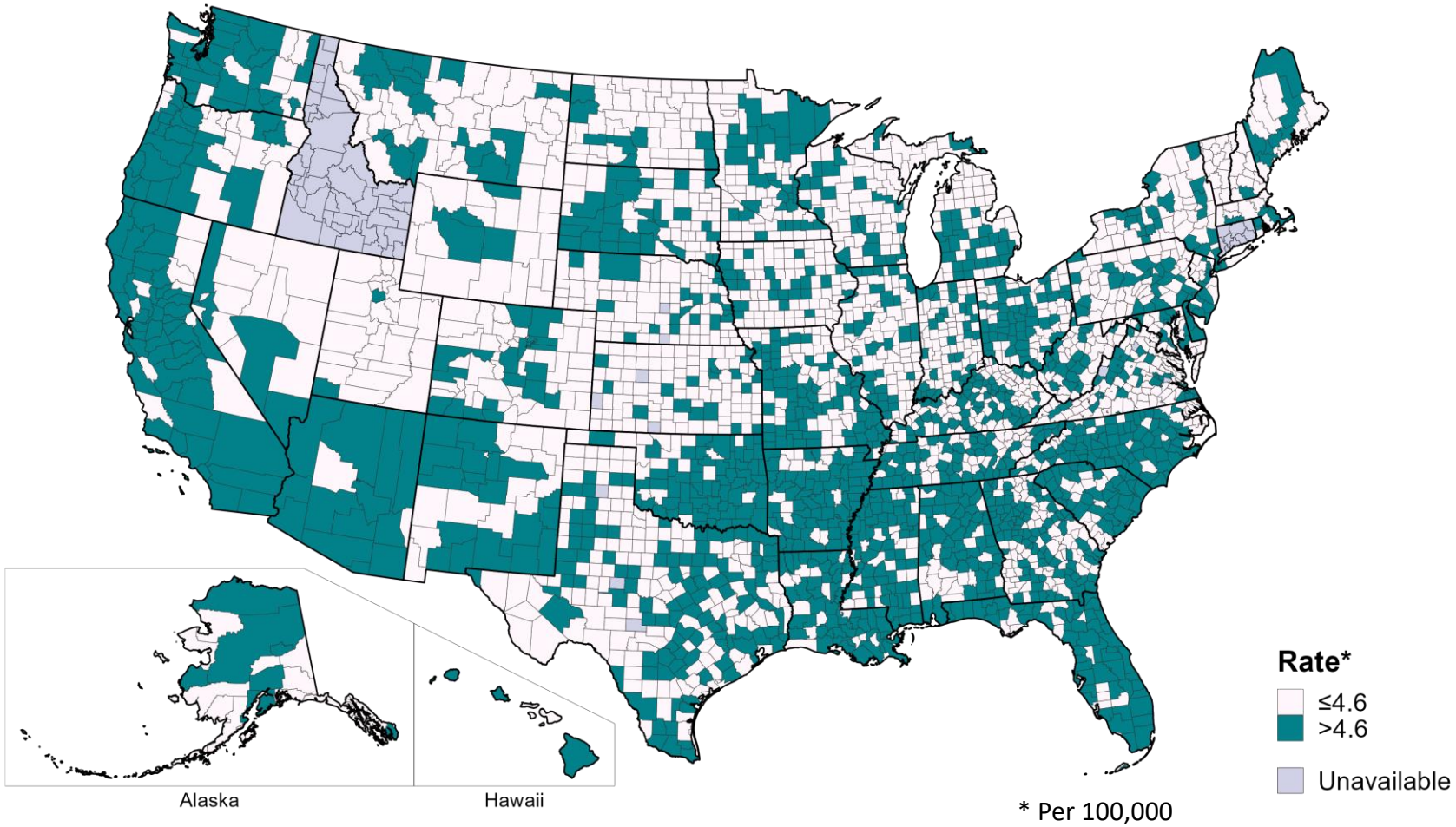
https://www.cdc.gov/std/treatment-guidelines

How to define “high syphilis prevalence?”

The Healthy People 2030 goal is to reduce the rate of primary and secondary syphilis cases among **females aged 15–44 years to 4.6 per 100,000 population**.** **In counties with a rate that exceeds this goal, offering syphilis testing to sexually active females aged 15–44 years** and their sex partners might help identify syphilis cases and prevent spread, support progress toward meeting the Healthy People 2030 goals, and reduce congenital syphilis. In 2021, 38% of U.S. counties, accounting for 72% of the U.S. population, had syphilis rates above the goal level††

McDonald R, O’Callaghan K, Torrone E, et al. *Vital Signs*: Missed Opportunities for Preventing Congenital Syphilis — United States, 2022. MMWR Morb Mortal Wkly Rep 2023;72:1269–1274.

Primary and Secondary Syphilis — Rates of Reported Cases Among Women Aged 15–44 Years by County, United States, 2022



* Per 100,000

NOTE: The Healthy People 2030 target for the rate of primary and secondary syphilis in women aged 15–44 years is 4.6 per 100,000.

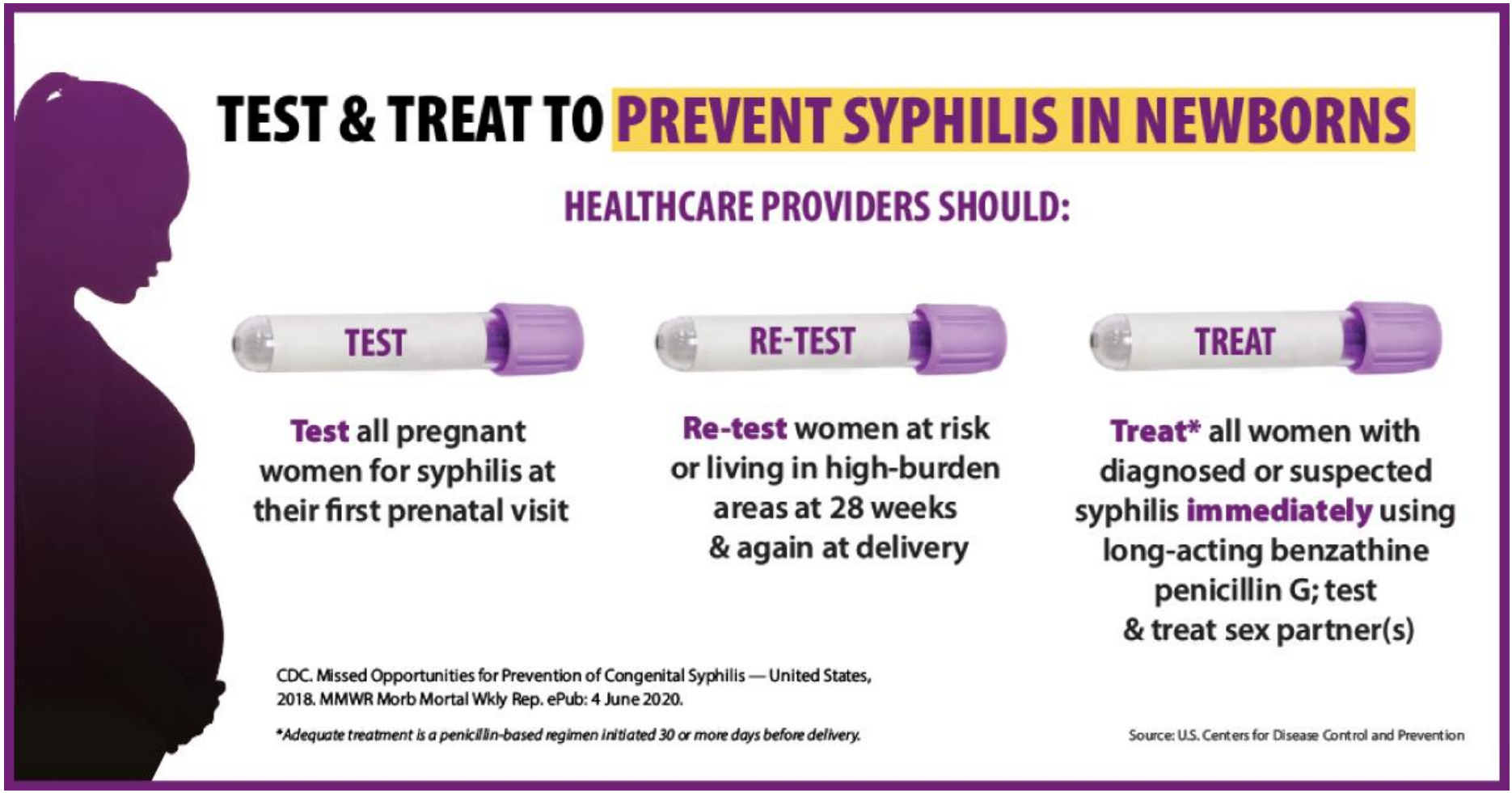
DATA TABLE: Rates of primary & secondary syphilis among women aged 15-44 years by county, 2021

County	State	Rate per 100,000	Offer syphilis testing to all sexually active people aged 15-44 years*
Box Butte	NE	55.1	Yes
Boyd	NE	0	No
Brown	NE	0	No
Buffalo	NE	9.3	Yes
Dakota	NE	50.3	Yes
Dawes	NE	0	No
Dawson	NE	0	No
Deuel	NE	0	No
Dixon	NE	0	No
Dodge	NE	15.2	Yes
Douglas	NE	17.1	Yes
Hall	NE	17.5	Yes

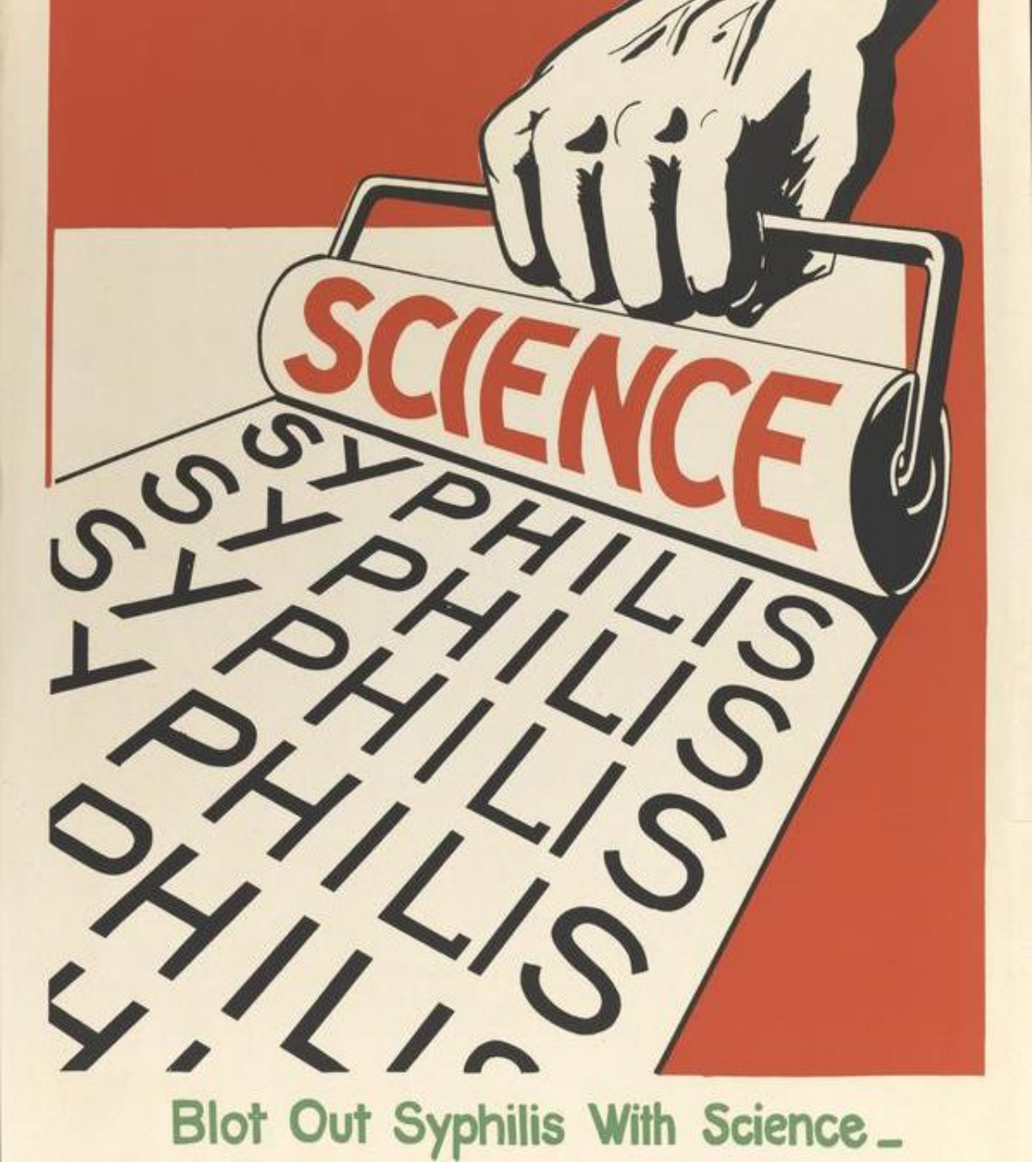
DATA TABLE: Rates of primary & secondary syphilis among women aged 15-44 years by county, 2021

County	State	Rate per 100,000	Offer syphilis testing to all sexually active people aged 15-44 years*
Lancaster	NE	14.1	Yes
Nuckolls	NE	169.8	Yes
Platte	NE	16.8	Yes
Saline	NE	37.8	Yes
Sarpy	NE	10.1	Yes
Saunders	NE	0	No
Scotts Bluff	NE	15.5	Yes
Seward	NE	30.5	Yes
Thurston	NE	159.7	Yes
Washington	NE	28.2	Yes
York	NE	77.6	Yes

Promotion of syphilis testing in pregnancy: once is not enough!



https://www.cdc.gov



Every encounter with the healthcare system is an opportunity for syphilis testing

Left: WPA Poster, c. 1950

Congenital syphilis prevention: Quality Care

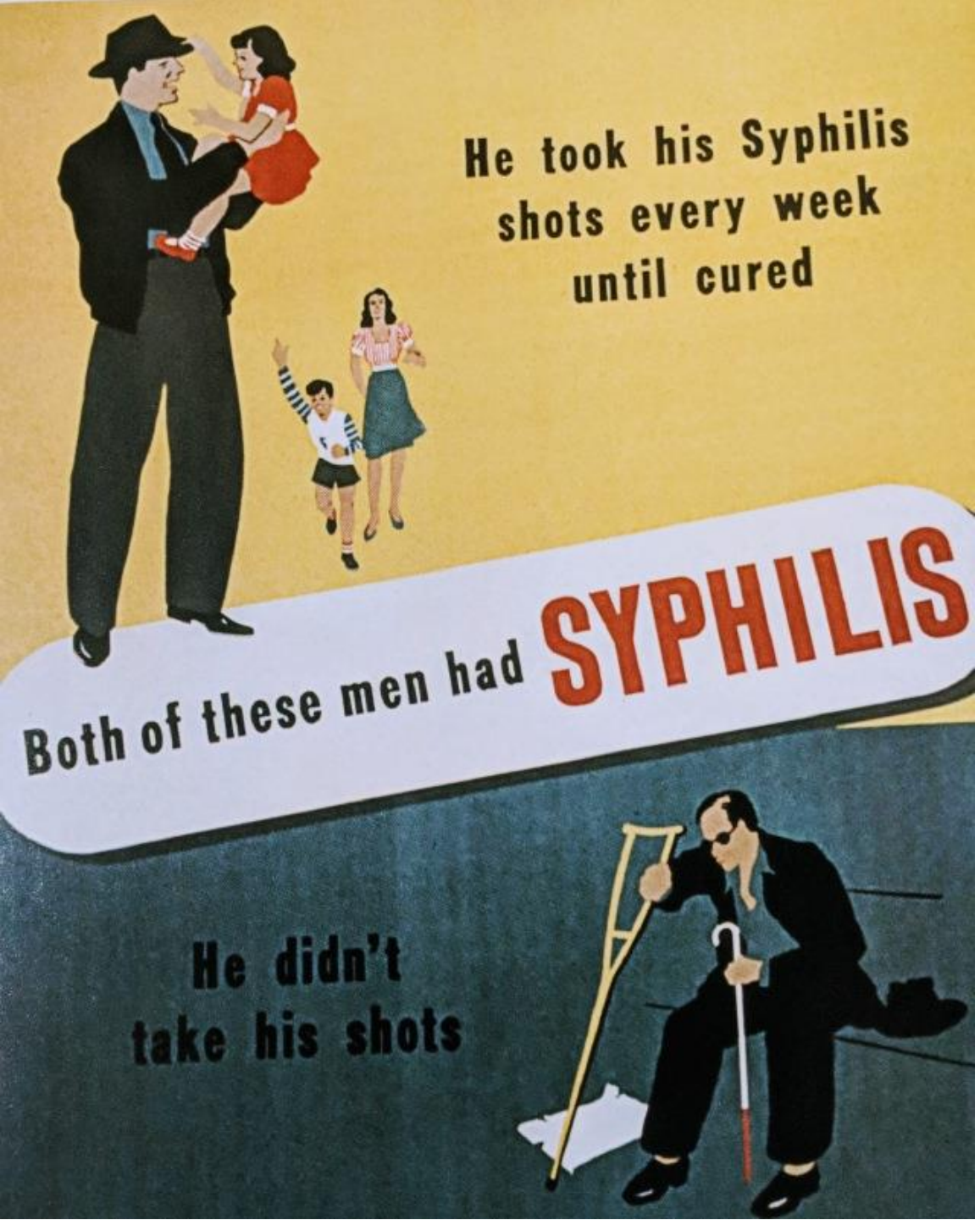
- Access to packaged STI testing for people of childbearing potential
- Counseling pregnant people on STI prevention
  - Especially in the later half of pregnancy: Consider HSV and syphilis
- Do not forget syphilis can occur in pregnancy
- Go to the CDC STI guidelines for diagnosis and classifying CS

https://www.cdc.gov

Management of syphilis in pregnancy

- Obtain previous treatment history to help management
- Management is the same as non-pregnant people
- For P+S, ES, some give an additional IM dose 1 week after treatment
- Goal is 7 days between doses of IM bicillin but if a person misses a dose, effort should be focused on getting the dose within 2 days
  - Doses more than 9 days apart means restarting treatment
- Ultrasound is used to monitor in second half of pregnancy but should not delay treatment
- For patients with early syphilis or high titers, Jarisch-Herxheimer reaction counseling is advised
- Recheck RPR 8 weeks after treatment

https://www.cdc.gov



The bad news: Treating maternal syphilis is hard

- Provider confusion over appropriate treatment for different syphilis stages
- Difficulty facilitating three weekly doses for late latent syphilis
- Difficulty managing penicillin allergies

https://www.cdc.gov

Left: Unknown, 1941-1945

Slide: E. Daniels

Congenital Syphilis is <u>preventable</u> but…

- Timely prenatal care
- Timely syphilis testing
- Timely, stage-appropriate maternal treatment
- Timely identification of treatment failure, relapse, and seroconversion during pregnancy

Image Source: iStock Photos

Deadline to start treatment:
30 days prior to delivery!

https://www.cdc.gov

Beyond demographics, some themes emerge:

- Limited Prenatal Care
- Interactions with the Prison System
- Housing Instability
- Intimate Partner Violence
- Unemployment
- Substance Use
- Sex Work/Trafficking
- DCFS Involvement

Department of Children & Family Services

E. Daniels et al. Submitted

https://www.cdc.gov

What do we do now?

Screening for syphilis at encounters outside traditional prenatal care (e.g., emergency department, jail intake, syringe

ORIGINAL STUDY

Opt-Out, Routine Emergency Department Syphilis Screening as a Novel Intervention in At-Risk Populations

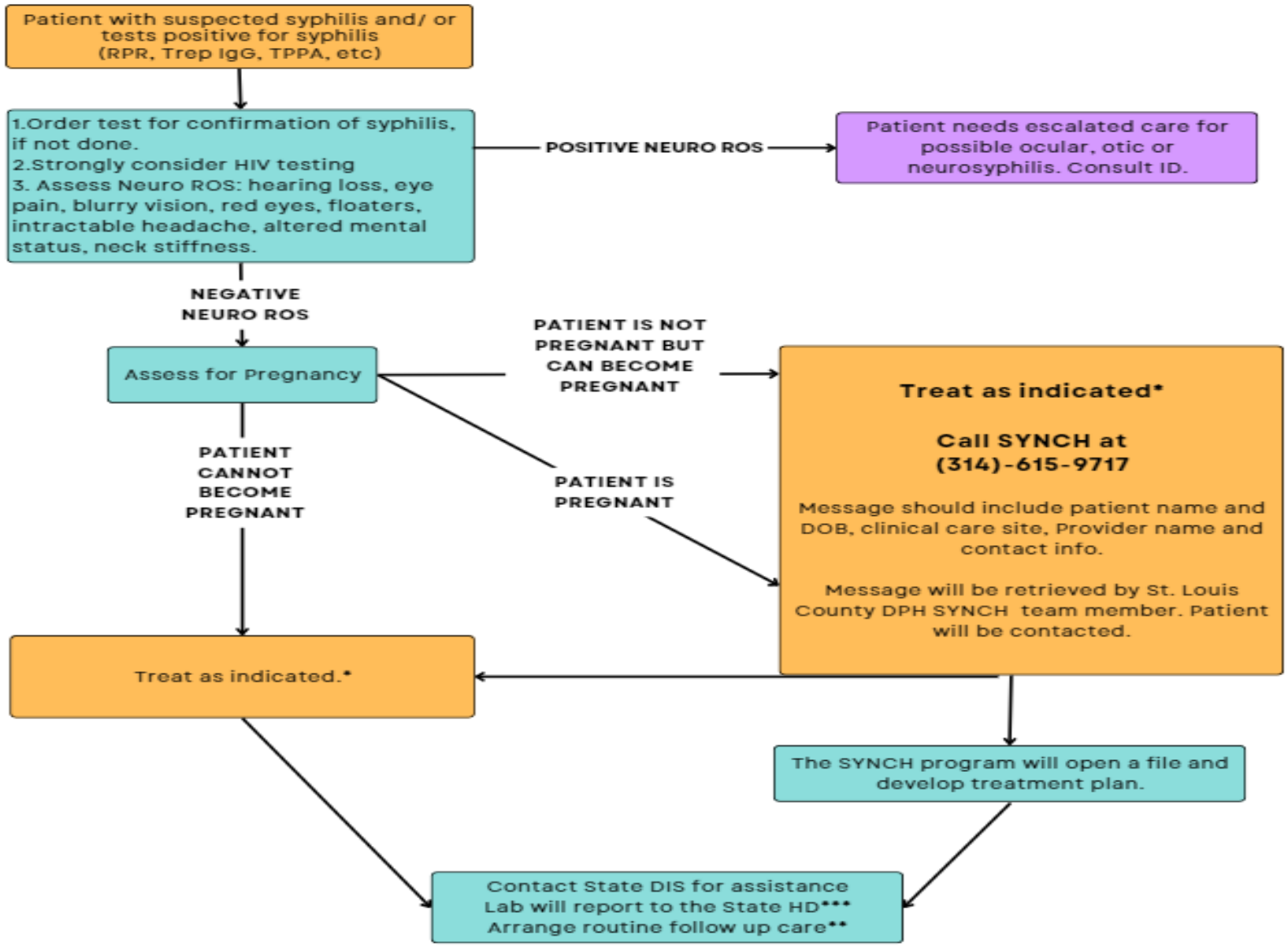
Kimberly A. Stanford, MD, MPH, Aniruddha Hazra, MD,† Eleanor Friedman, PhD, MS,†*
Samantha Devlin, MS,† Nolan Winkler, BA,†
Jessica P. Ridgway, MD, MS,† and John Schneider, MD, MPH†

A Syndemic approach to Congenital Syphilis

- **Ensure quality care**
- **Team management: DIS, clinician, community health worker, etc**
- **Assess for social vulnerabilities**
- **Learn from programs that are doing work in adjacent areas**
- **Collaborate**
- **Involve Community**
- **Always address prevention and stigma**

Image Source: FreePik

SYNCH : Syphilis Navigation Connection Helpline Program: Assistance for people with syphilis who are pregnant or could become pregnant



Reno, St Louis County DPH

Centers for Disease Control and Prevention
MMWR
Morbidity and Mortality Weekly Report
Recommendations and Reports / Vol. 70 / No. 4
July 23, 2021

Sexually Transmitted Infections Treatment Guidelines, 2021

No-cost online clinical consultation on the prevention, diagnosis, and treatment of STDs by your Regional PTC Clinical Faculty

www.STDCCN.org

St. Louis
STI/HIV Prevention
Training Center

QUESTIONS?

Contact Information

Hilary Reno, MD, PhD, FIDSA
Professor, Washington University
PI, St. Louis STI/ HIV PTC
Medical Director, St. Louis Co Sexual Health Clinic
Medical Consultant, CDC, DSTDP

Lancaster County Syphilis & HIV Symposium

Lunch – on your own

Please be back promptly

PUTTING TRAUMA-INFORMED PRINCIPLES INTO PRACTICE- SEXUAL HEALTH ASSESSMENTS

Joseph Cherabie, MD, MSc (he/they)
Medical Director St. Louis Prevention Training Center

Philana Liang, PA-C, MPH (she/her)
Program Manager St. Louis Prevention Training Center

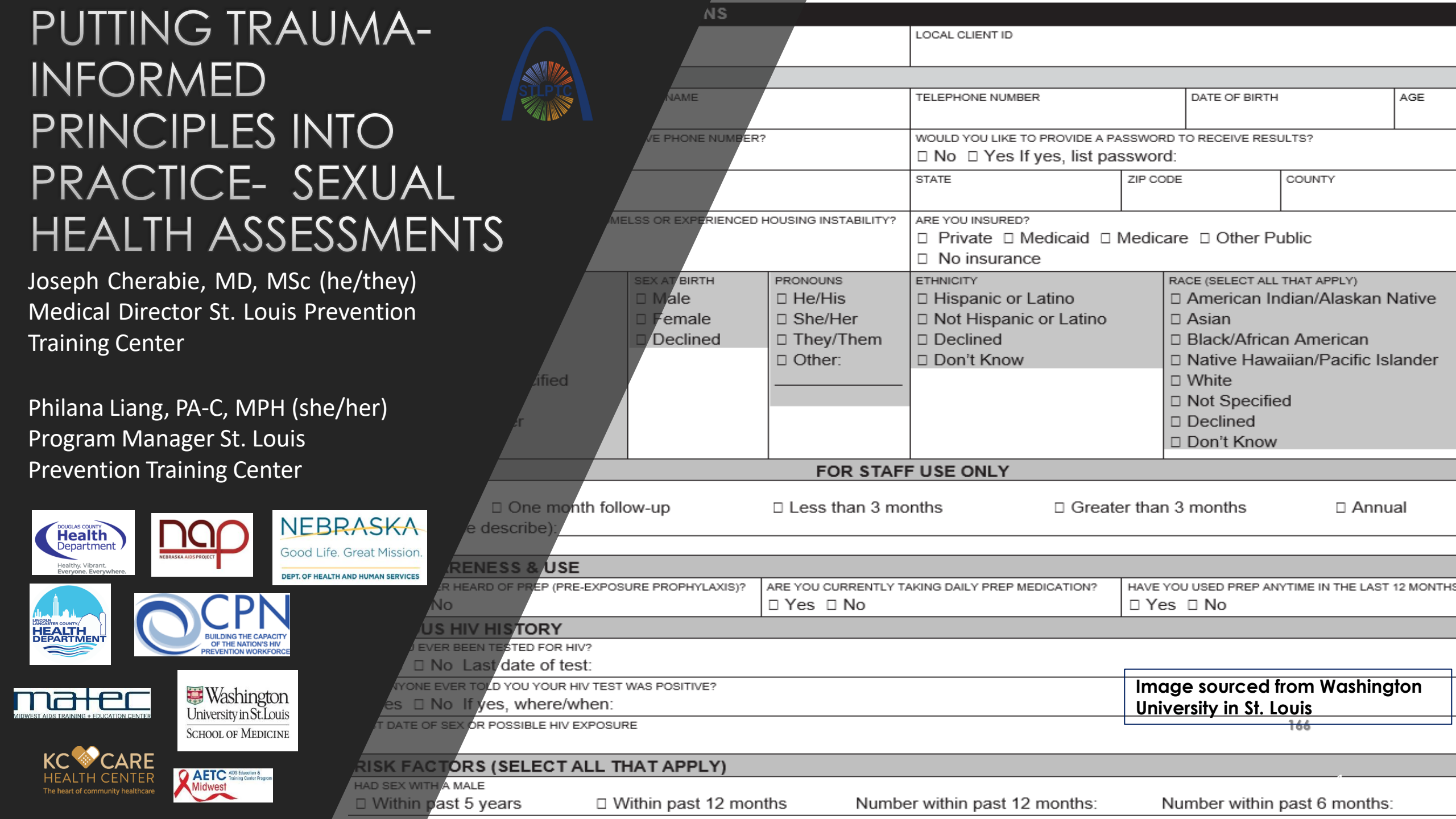


Image sourced from Washington University in St. Louis

NO FINANCIAL DISCLOSURES TO DECLARE

Learning Objectives

By the end of this presentation, participants will:

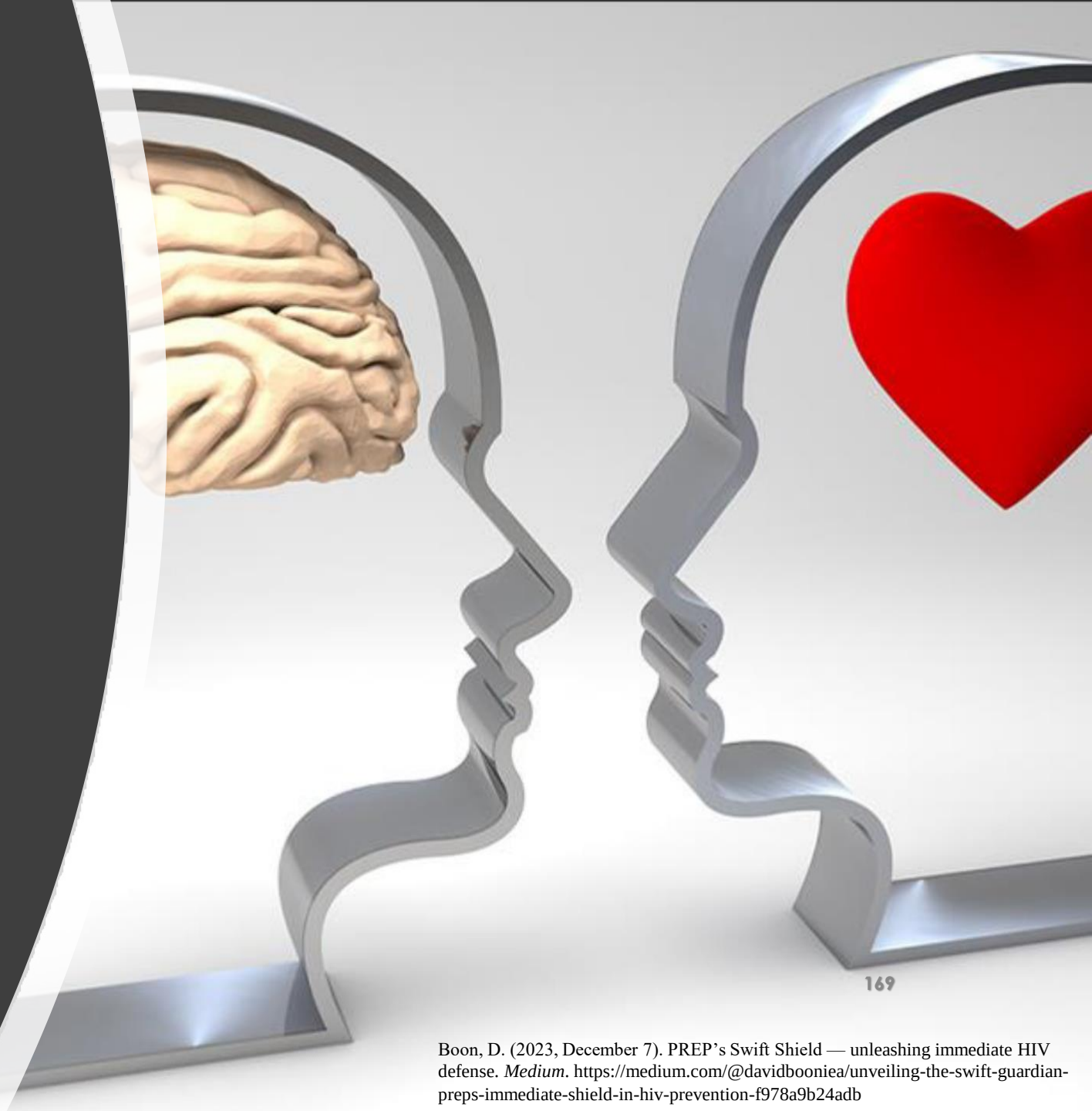
- Explore new CDC (Centers for Disease Control and Prevention) guidelines for sexual history taking
- Understand trauma-informed principles
- Identify areas to incorporate trauma-informed principles into sexual history taking
- Explore sexual self-efficacy scale for sexual health history taking

WHAT IS SEXUAL HEALTH?

Sexual health is a state of physical, emotional, mental and social well-being in relation to sexuality; it is not merely the absence of disease, dysfunction or infirmity. Sexual health requires a positive and respectful approach to sexuality and sexual relationships, as well as the possibility of having pleasurable and safe sexual experiences, free of coercion, discrimination and violence. For sexual health to be attained and maintained, the sexual rights of all persons must be respected, protected and fulfilled.

-WHO

www.who.int/sexual-and-reproductive-health-and-research/key-areas-of-work/sexual-health/defining-sexual-health



Boon, D. (2023, December 7). PREP's Swift Shield — unleashing immediate HIV defense. *Medium*. https://medium.com/@davidbooniea/unveiling-the-swift-guardian-preps-immediate-shield-in-hiv-prevention-f978a9b24adb

CDC'S GUIDE TO SEXUAL HISTORY TAKING

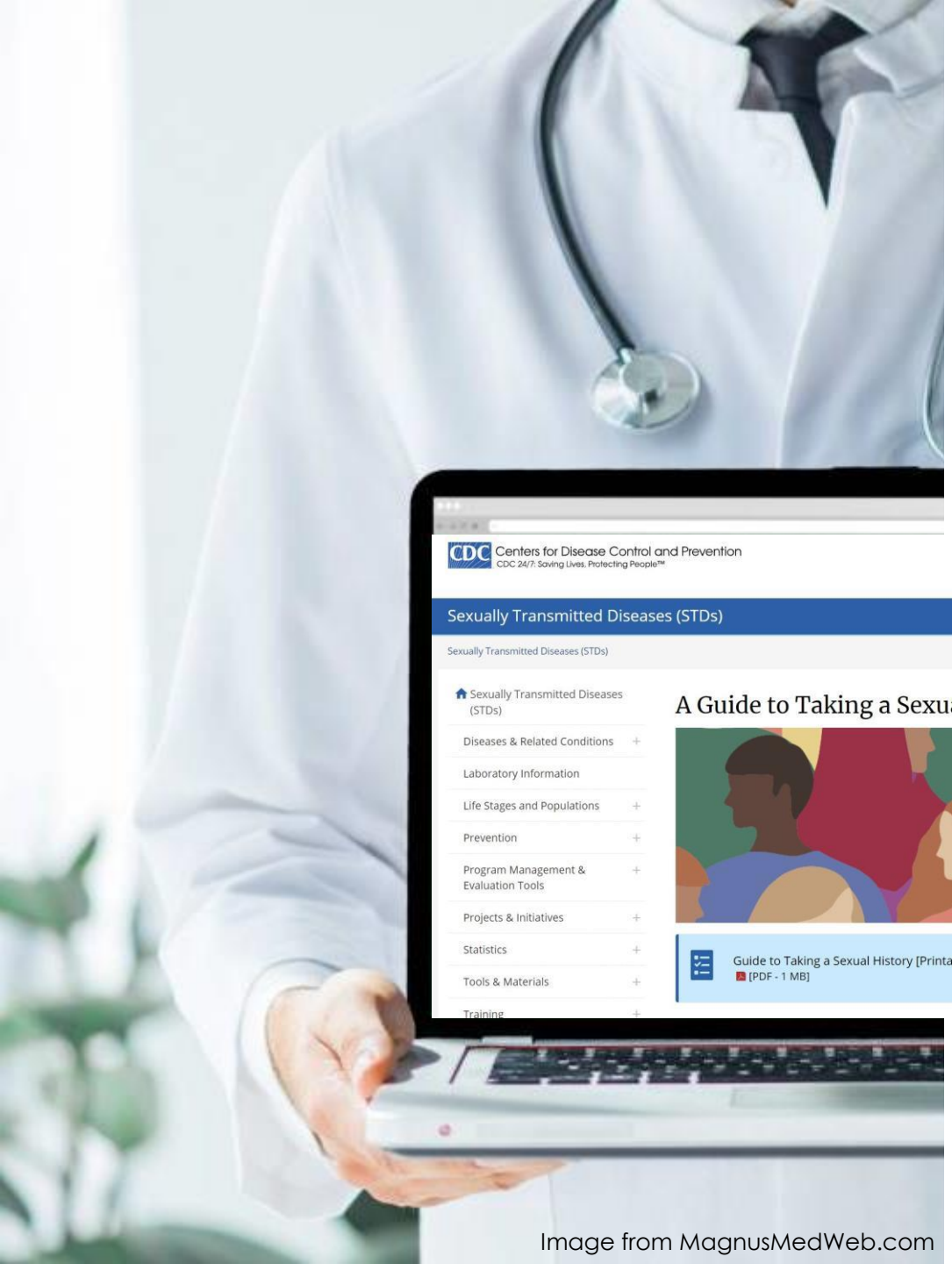
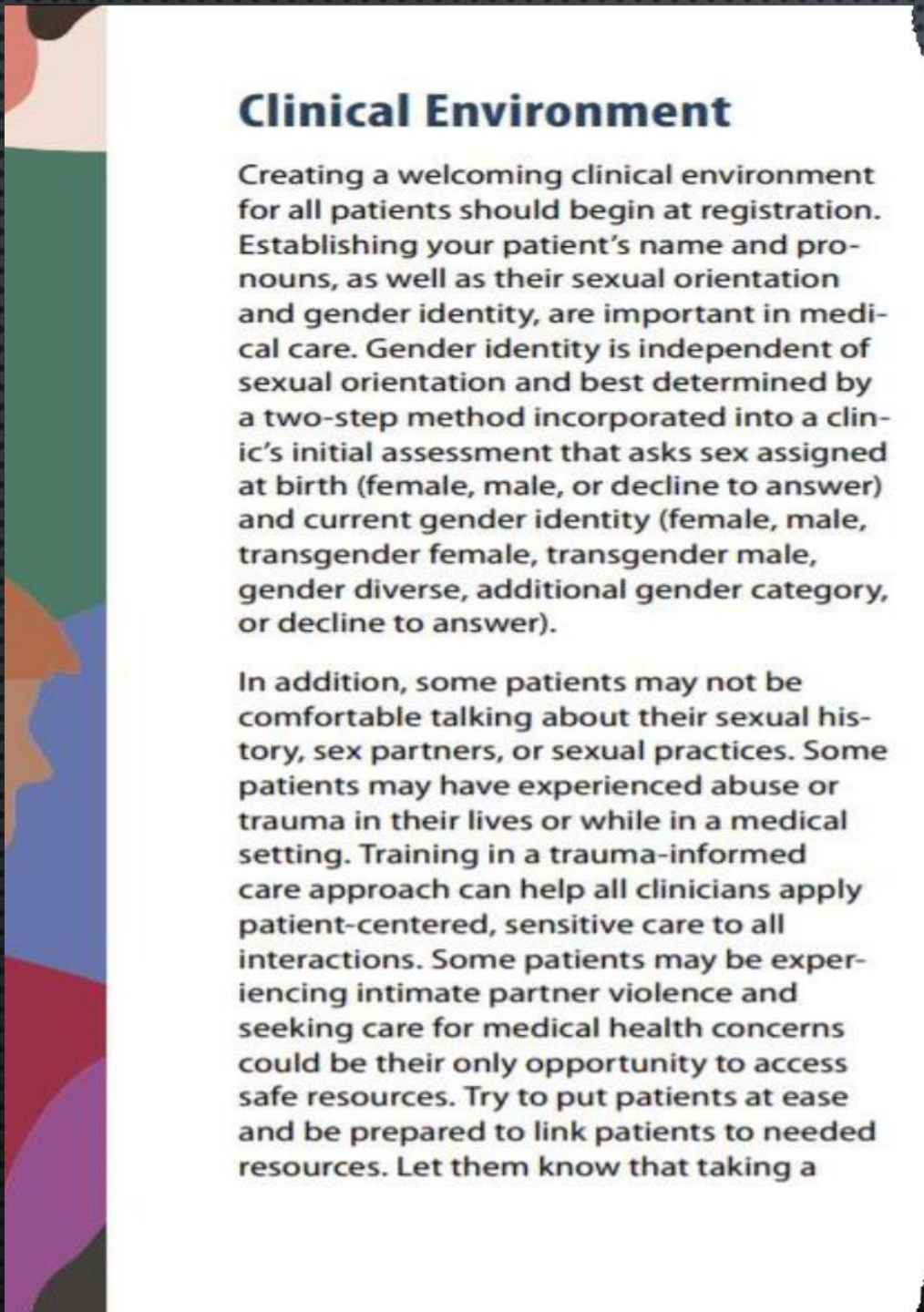


Image from CDC

Image from MagnusMedWeb.com

- **A sexual history should be taken as part of routine health care** in addition to when someone has symptoms
- Taking a sexual history helps identify one's likelihood of STIs (sexually transmitted infections) and offers opportunities for counseling
- Can help to address one's needs for wrap-around services

A guide to taking a sexual history. (n.d.). https://www.cdc.gov/std/treatment/sexualhistory.htm



Clinical Environment

Creating a welcoming clinical environment for all patients should begin at registration. Establishing your patient's name and pronouns, as well as their sexual orientation and gender identity, are important in medical care. Gender identity is independent of sexual orientation and best determined by a two-step method incorporated into a clinic's initial assessment that asks sex assigned at birth (female, male, or decline to answer) and current gender identity (female, male, transgender female, transgender male, gender diverse, additional gender category, or decline to answer).

In addition, some patients may not be comfortable talking about their sexual history, sex partners, or sexual practices. Some patients may have experienced abuse or trauma in their lives or while in a medical setting. Training in a trauma-informed care approach can help all clinicians apply patient-centered, sensitive care to all interactions. Some patients may be experiencing intimate partner violence and seeking care for medical health concerns could be their only opportunity to access safe resources. Try to put patients at ease and be prepared to link patients to needed resources. Let them know that taking a

PUTTING IT INTO PRACTICE

- Consent questions
  - Is it okay if I ask you some questions about your sexual health and sexual practices?
  - I ask all my patients these questions...your answers will be kept confidential.
  - These questions may bring up uncomfortable feelings...
  - Do you have any questions or concerns about your sexual health?

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A guide to taking a sexual history. (n.d.). https://www.cdc.gov/std/treatment/sexualhistory.htm

A Trauma-Informed Approach

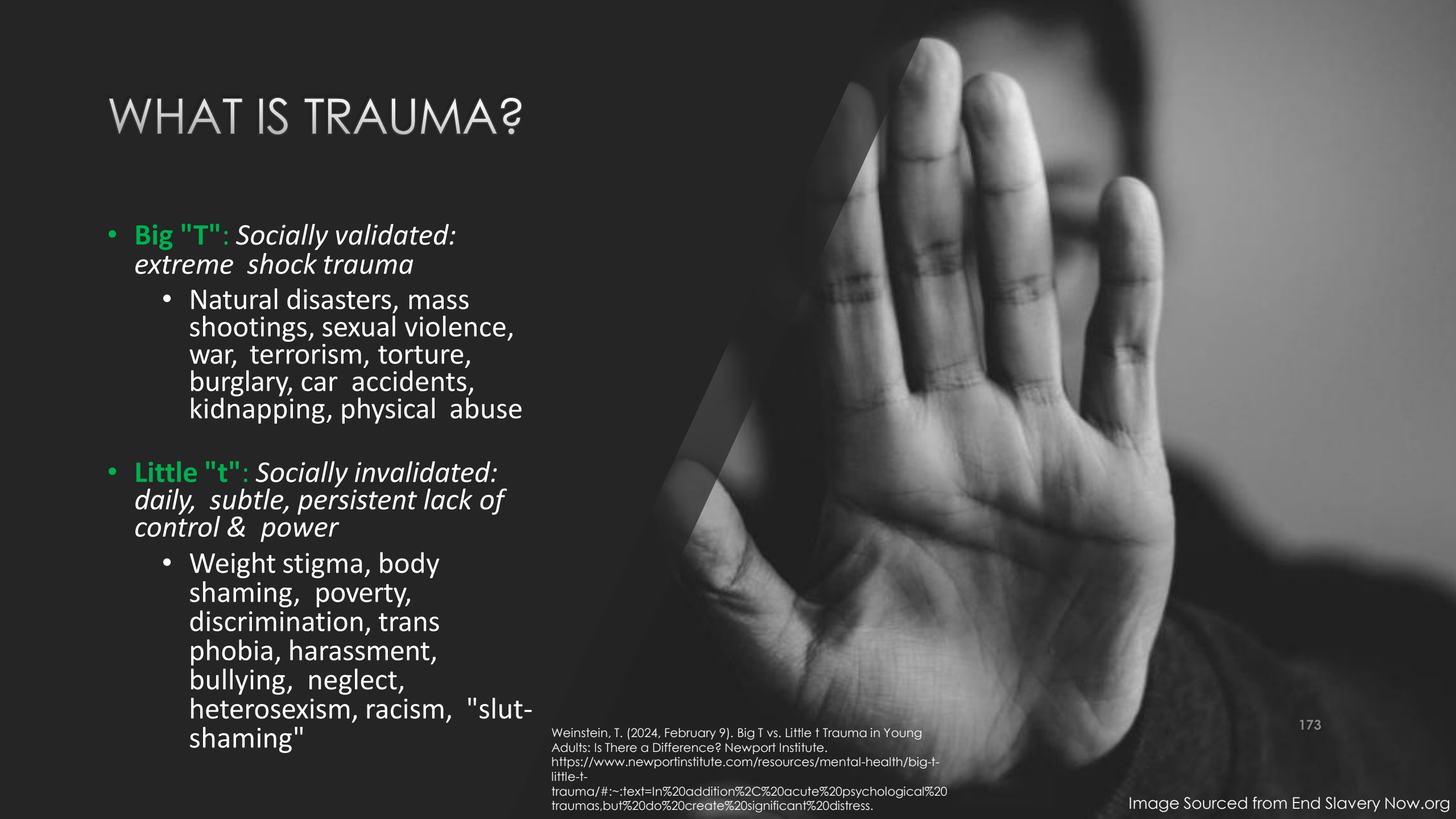
A trauma-informed approach in the human service field assumes that an individual is more likely than not to have a history of trauma. Trauma-Informed principles recognize the presence of trauma symptoms and acknowledge the role trauma may play in an individual's life - including service staff.

What is Trauma-Informed Care? (2023, October 20). University at Buffalo School of Social Work - University at Buffalo. https://socialwork.buffalo.edu/social-research/institutes-centers/institute-on-trauma-and-trauma-informed-care/what-is-trauma-informed-care.html#:~:text=Trauma%2DInformed%20Care%20(TIC),individual%27s%20life%2D%20including%20service%20staff.

Image source Louis Laves-Webb, LCSW, LPC-S & Associates

WHAT IS TRAUMA?

- **Big "T"**: *Socially validated: extreme shock trauma*
  - Natural disasters, mass shootings, sexual violence, war, terrorism, torture, burglary, car accidents, kidnapping, physical abuse
- **Little "t"**: *Socially invalidated: daily, subtle, persistent lack of control & power*
  - Weight stigma, body shaming, poverty, discrimination, trans phobia, harassment, bullying, neglect, heterosexism, racism, "slut-shaming"



Weinstein, T. (2024, February 9). Big T vs. Little t Trauma in Young Adults: Is There a Difference? Newport Institute. https://www.newportinstitute.com/resources/mental-health/big-t-little-t-trauma/#:~:text=In%20addition%2C%20acute%20psychological%20traumas,but%20do%20create%20significant%20distress.

Image Sourced from End Slavery Now.org

DESTIGMATIZING SEXUAL HEALTH: THE 8 "P"S

	"P"
1	Partners
2	Practices
3	Protection from STIs
4	Past history of STIs
5	Pregnancy Intention

	"P"
6	Preference
7	Pleasure
8	Partner Abuse

Source: Fenway Health

LANGUAGE SHIFTS

SAFETY |noun| the condition of being protected from or unlikely to cause danger, risk, or injury

- Sexual health and wellbeing
- Empowerment
- Pleasure
- Consent

https://www.britannica.com/dictionary/safety
Additional Information from STL PTC Staff

PREVENTION |noun| the act or practice of stopping something bad from happening

- Sexual health goal setting
- Meeting people where they are

https://www.britannica.com/dictionary/prevention
Additional Information from STL PTC Staff

Image from iStock

***RISK* |noun| a situation involving exposure to danger**

- **Susceptibility**
- **Sensitivity**
- **Vulnerability**

https://www.britannica.com/dictionary/Risk
Additional Information from STL PTC Staff

***NONCOMPLIANCE* |noun| failure or refusal to comply with something (such as a rule or regulation) : a state of not being in compliance**

- **Ability: "Are you able to____" ie: take a daily medication**
- **Missed ____**

https://www.britannica.com/dictionary/Noncompliance
Additional Information from STL PTC Staff

***TRANSMIT* |verb| to pass or spread (disease, infection, etc.) to another**

- **Acquisition**

https://www.britannica.com/dictionary/Transmit
Additional Information from STL PTC Staff

Image from iStock

INSTEAD OF THIS…

Instead of this...	Say this...
"Hello, I'm Doctor X."	"Hi, I'm Doctor X. I use he/him pronouns.
"Hey Guys!"	"Hey, (folks, y'all, people, everyone)!"
"Do you know how you can prevent STI's?"	Let's talk about your sexual health goals
"Why aren't you using protection?"	It's ok to have condomless sex. Are there times when you would like to try to use condoms more often?
"Now I'm going to..."	"Is it ok if I...?"
"Whats wrong (with you)"	"What happened (to you)"
"Good news", "Test results are good", "Everything came back clean"	"You do not have chlamydia in your penis."

Image created by St. Louis Prevention Training Center

Traditional	Trauma-Informed
Doing for people	Doing with people
What's wrong with you?	What happened to you?
Service provider as expert	Person as expert on own life
Symptoms and pathologies	Coping mechanisms
Treatment and cure	Healing and recovery
Non-compliant/disengaged	How can we better support you?
These are the service options	What might you need to live well?
Hierarchical	Sharing power

Image created by St. Louis Prevention Training Center

SEXUAL SELF-EFFICACY SCALE

Created & adapted by Susan Stiritz, MBA, PhD, MSW & Michael Gendernalik, MSW

NOTE – THOSE IN-PERSON WILL RECEIVE PHYSICAL COPIES OF THE SCALE

Sexual Self-Efficacy Scale

(Rate your degree of agreement with the statements, 1= no agreement 5= highest agreement)

1. Caring means putting the other's person's needs in front of my own

   1 2 3 4 5

2. I am able to tell my partner(s) to stop doing something that doesn't feel good

   1 2 3 4 5

3. I am confident I can communicate any concerns I have to my partner(s)

   1 2 3 4 5

4. Often I look happy on the outside, but feel angry inside

   1 2 3 4 5

5. I am scared of being overpowered by my partner(s)'s strength and being forced to do something I don't want to do

   1 2 3 4 5

6. I don't speak my feelings in an intimate relationship when I know they will cause disagreement

   1 2 3 4 5

7. I am confident I can choose relationships that are equal

   1 2 3 4 5

8. I can get what I need to ensure that neither I nor my partner(s) will acquire HIV

   1 2 3 4 5

9. I feel too embarrassed to ask my partner(s) about their sexual history

   1 2 3 4 5

10. I cannot tell the truth about my own sexual history

    1 2 3 4 5

11. I regularly get tested for STIs

    1 2 3 4 5

12. I can have an orgasm as often as my partner(s) does, if I want to

    1 2 3 4 5

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Michael Gendernalik, MSW

13. I can orgasm on my own

1 2 3 4 5

14. I am confident I can refrain from drinking or taking drugs to the point of blunting my judgment when I am hooking up

1 2 3 4 5

15. I am confident I can get my partner(s) to honor my requests

1 2 3 4 5

16. I am confident I can have a condom and/or dental dam used to protect me and a partner(s) from bodily fluid when we have sex

1 2 3 4 5

17. I can ask my partner(s) to get tested for STIs

1 2 3 4 5

18. Masturbation is healthy

1 2 3 4 5

19. I can easily tell my partner(s)or myself of my warm, positive feelings for them or myself

1 2 3 4 5

20. I am confident I will have sexual pleasure with my partner(s) when we next get together

1 2 3 4 5

Created and adapted by: Susan Stiritz, MBA, PhD, MSW
Michael Gendernalik, MSW

Power Scores (5*, 7, 9*, 10*, 15)

Q. 5	
Q. 7	
Q. 9	
Q. 10	
Q. 15	
Total	/25

Pleasure Scores (2, 12, 13, 18, 20)

Q. 2	
Q. 12	
Q. 13	
Q. 18	
Q. 20	
Total	/25

Protection Scores (8, 11, 14, 16, 17)

Q. 8	
Q. 11	
Q. 14	
Q. 16	
Q. 17	
Total	/25

Intimacy Scores (1*, 3, 4*, 6*, 19)

Q.1	
Q. 3	
Q. 4	
Q. 6	
Q. 19	
Total	/25

***Denotes that the score be reversed (i.e 1=5, 2=4, 3=3 and vice versa)**

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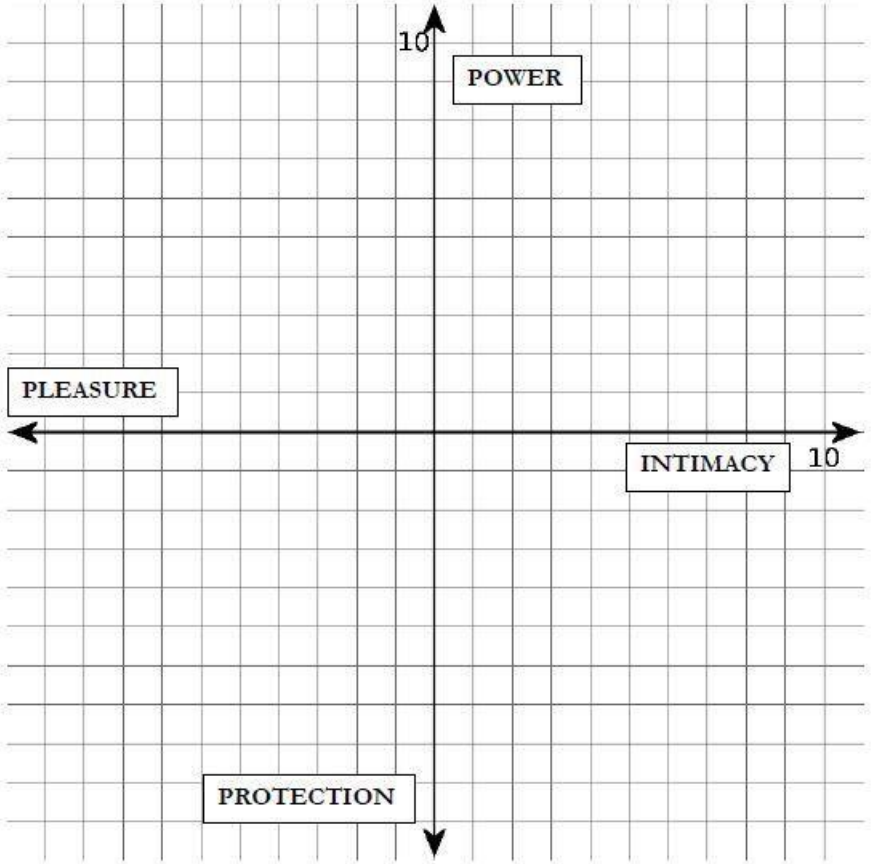

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Michael Gendernalik, MSW

Power

- I am scared of being overpowered by my partner(s)'s strength and being forced to do something I don't want to do*
- I am confident I can choose relationships that are equal and not those that are not
- I feel too embarrassed to ask my partner(s) about their sexual history*
- I cannot tell the truth about my own sexual history*
- I am confident I can get my partner(s) to honor my requests

Pleasure

- I am able to tell my partner(s) to stop doing something that doesn't feel good
- I can have an orgasm as often as my partner(s) does, if I want to
- I can orgasm on my own
- Mastrubation is healthy
- I am confident I will have sexual pleasure with my partner(s) when we next get together

Protection

- I can get what I need to ensure that neither I nor my partner(s) will acquire HIV
- I regularly get tested for STIs
- I am confident I can refrain from drinking or taking drugs to the point of blunting my judgment when I am hooking up
- I am confident I can have a condom and/or dental dam used to protect me and a partner(s) from bodily fluid when we have sex
- I can ask my partner(s) to get tested for STIs

Intimacy

- Caring means putting the other's person's needs in front of my own *
- I am confident I can communicate any concerns I have to my partner(s)
- Often I look happy on the outside, but feel angry inside*
- I don't speak my feelings in an intimate relationship when I know they will cause disagreement*
- I can easily tell my partner(s)/self of my warm, positive feelings for them/myself

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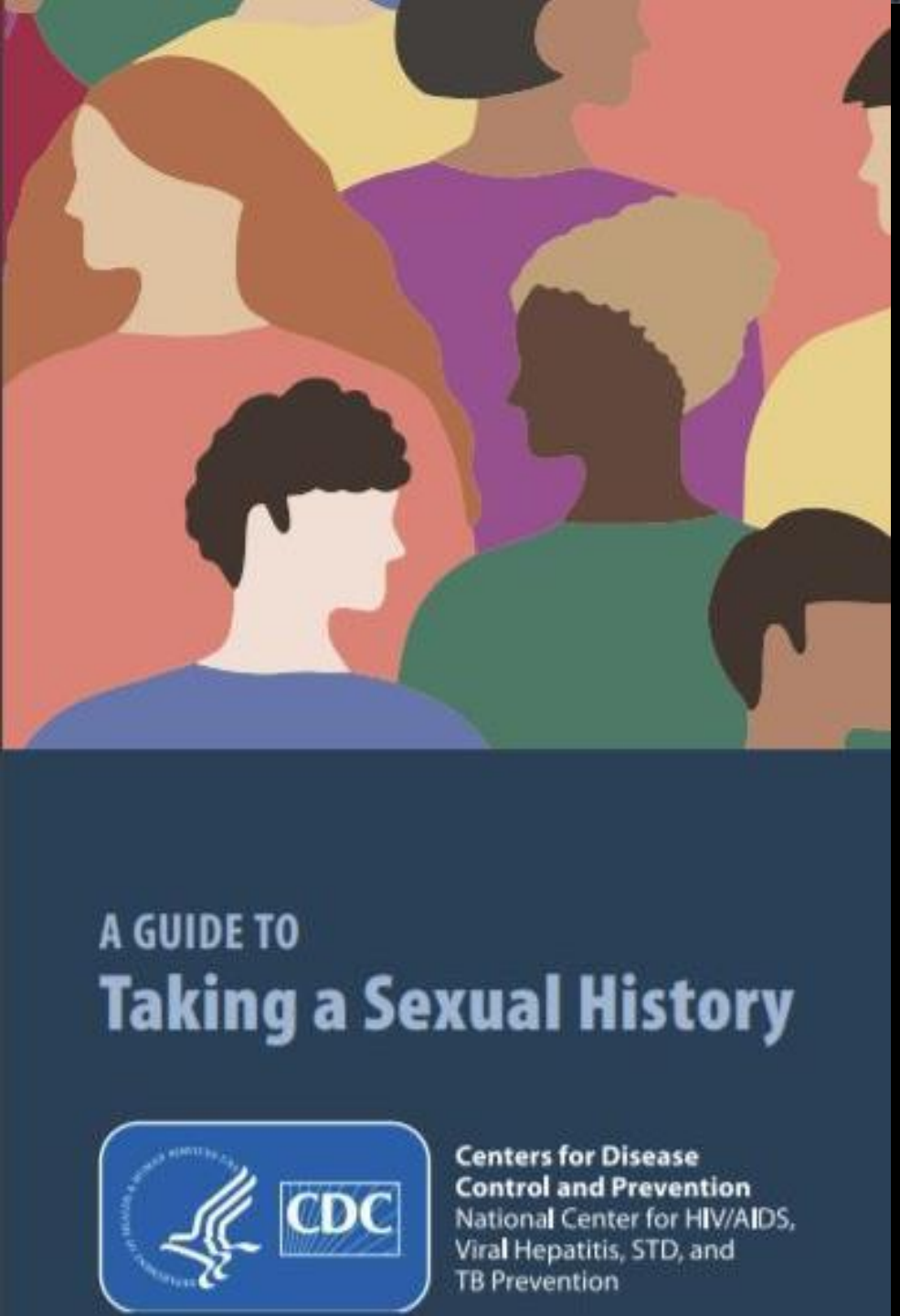
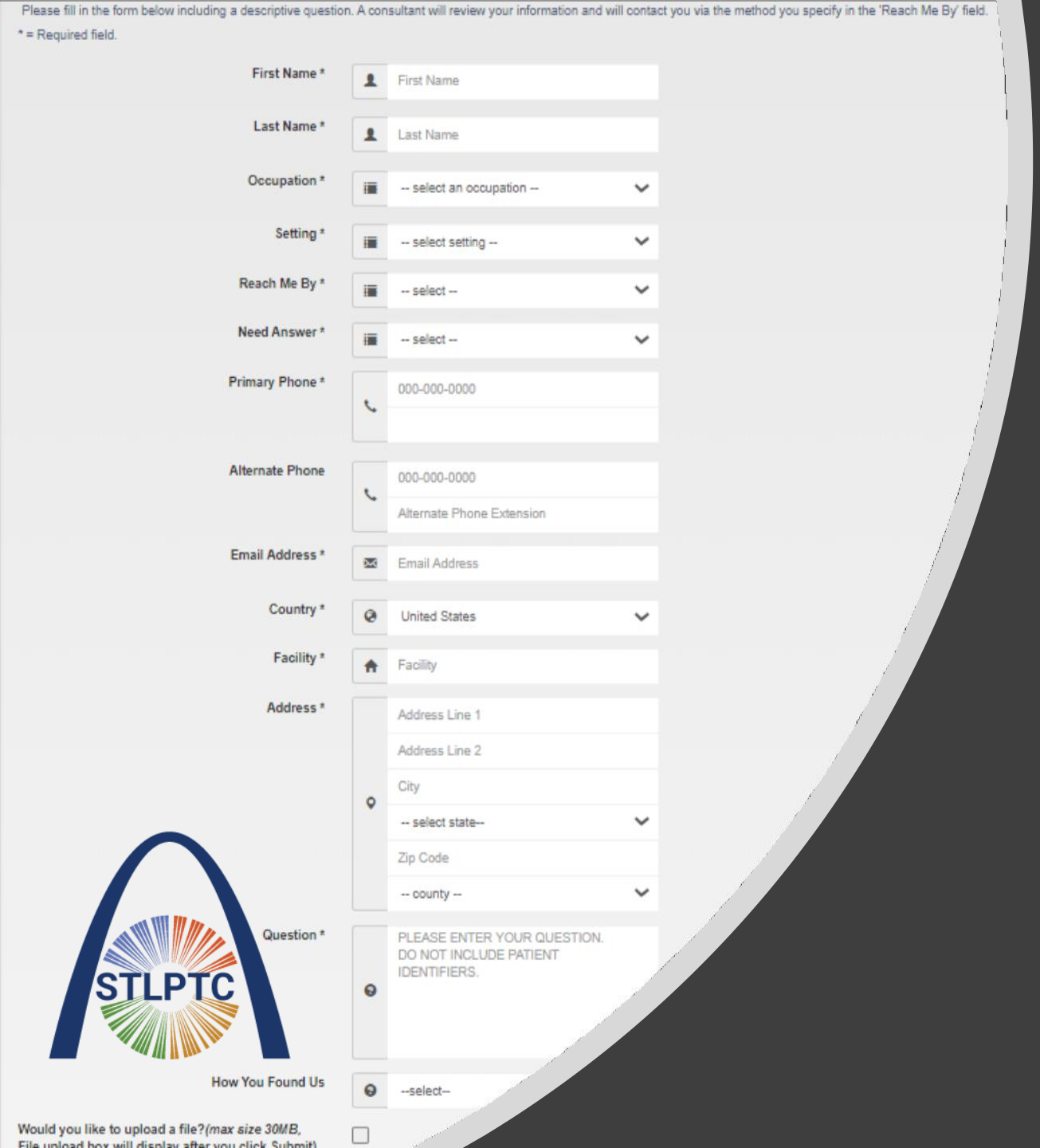


ACCESS THE GUIDE HERE…

- https://www.cdc.gov/std/treatment/sexualhistory.htm#five-ps
- https://www.cdc.gov/std/treatment/sexualhistory.pdf



For training and/or further technical assistance:

https://stdccn.org

QUESTIONS?

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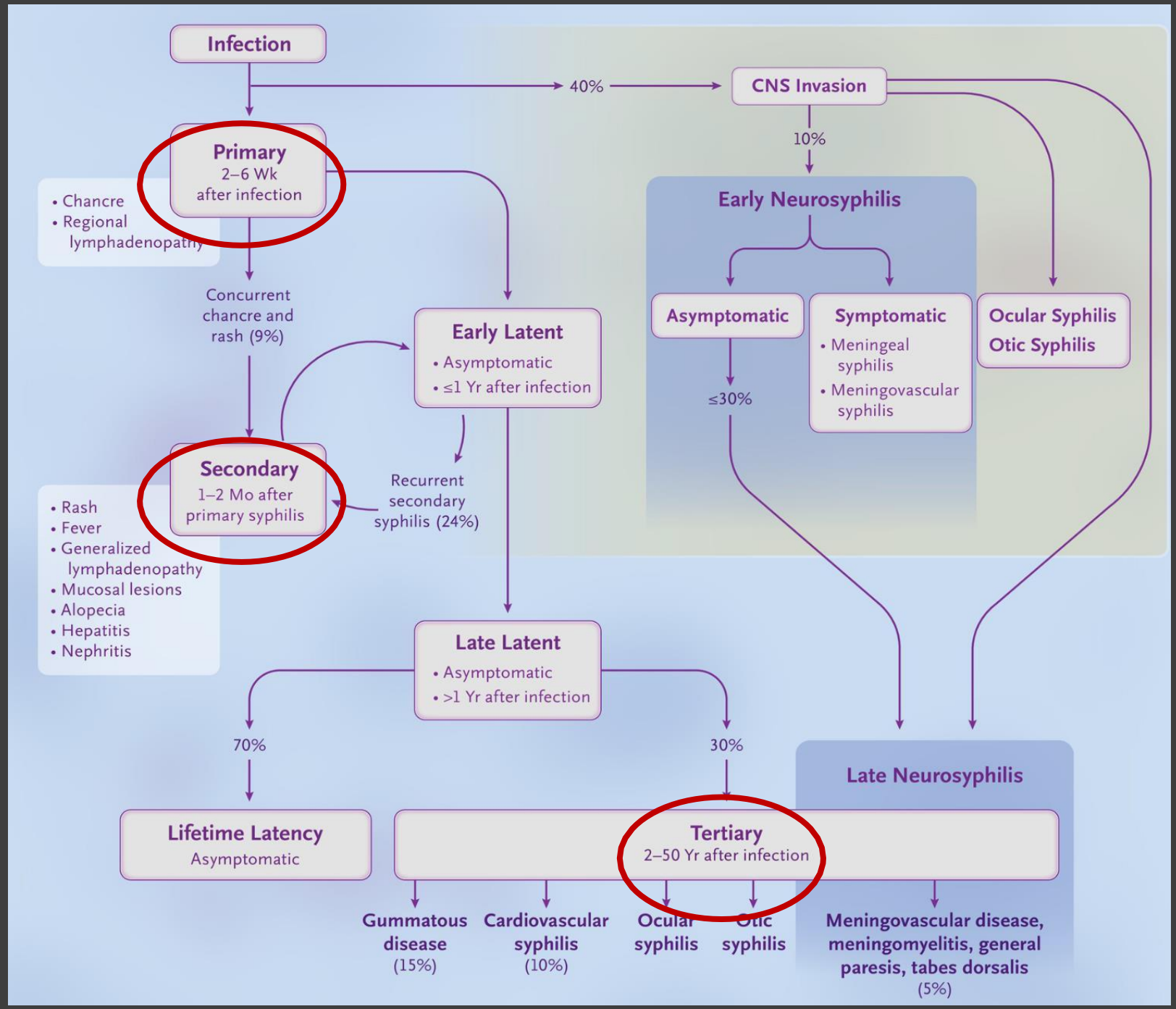
St. Louis
STI/HIV Prevention
Training Center

Interactive Syphilis Case Discussion

Image source: Fine Art America.com

Learning Objectives

The objective of our interactive case discussion is to identify common, uncommon and tricky syphilis cases that have been seen in the STI (sexually transmitted infections) Clinic and identify what the best methods of treatment and diagnosis are for each case.



Stages of Syphilis

Key Points:

- Ocular and otic syphilis can present at any stage of syphilis
- Without treatment, secondary syphilis can be recurrent
- Work with DIS (Disease Intervention Specialists)/ health department to review patient's history
- Consult with DIS, Infectious Disease (ID), colleague to stage correctly

Info & Image Source: Ghanem KG, Ram S, Rice PA. The Modern Epidemic of Syphilis. *N Engl J Med*. 2020;382(9):845-854. doi:10.1056/NEJMra1901593

Case 1: An uncomfortable sore

- 30-year-old cisgender male with HIV (CD4 850 [white blood count], VL UD [viral load undetectable]) on ART (antiretroviral therapy) (B/FTC/TAF [Bictegravir/Emtricitabine/Tenofovir Alafenamide, Biktarvy]). Coming to clinic for 'a sore' on penis.
- Two weeks ago, discomfort and noticed ulcer, went to urgent care
- Urgent care: Testing sent; no treatment given.
  - **HSV NAAT negative, RPR NR** (herpes simplex virus nucleic acid amplification test, rapid plasma regain non-reactive)
  - Told to follow up with his regular doctor.
  - Sore became larger, was quite raw, uncomfortable, but now "healing up"; no other symptoms.
- 3 male partners in last 6 months, condomless receptive and insertive oral and anal sex. No one with known STI.
- 6 mos ago: Syphilis EIA (enzyme immunoassay) and RPR NR.
- Vaccines UTD (up to date) (including hepatitis, mpox)
- Specific symptoms to query? Physical exam? Testing? Treatment?

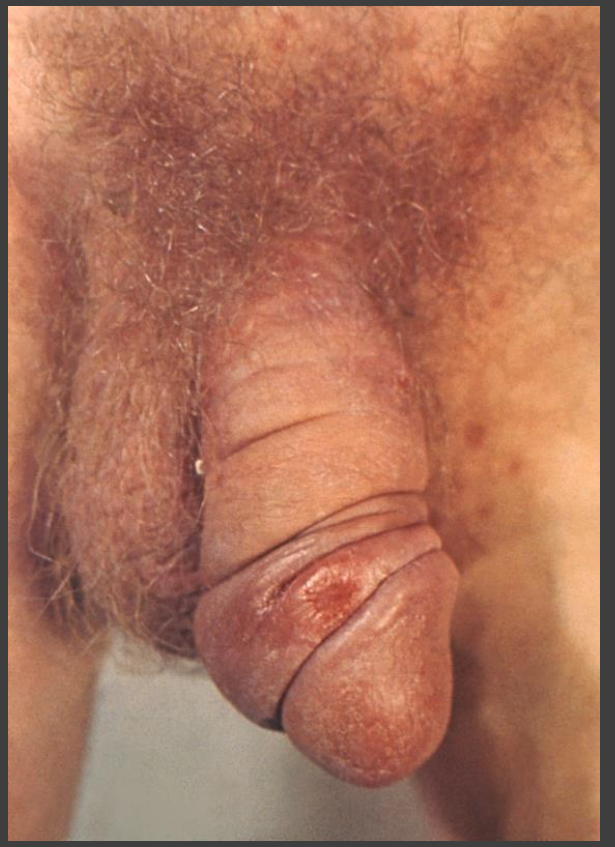


Image Source
https://phil.cdc.gov/Details.aspx?pid=17883

Case 1

- Healing chancre seen on exam, no other sx (symptoms) or signs. NG/CT (chlamydia trachomatis and Neisseria gonorrhoeae) 3 site testing negative.
- **Serologies: Treponemal test Reactive, Non-treponemal test titer 1:128**
- Tx (treatment): Benzathine penicillin G, 2.4 million units IM (intramuscular) X 1
- Follow up: At each visit: Ulcer healed, feels well, no neurologic, otic or ocular signs or symptoms. Denies being sexually active since being treated for syphilis, suppressed on ART.

Time	RPR	Action
Baseline	1:128	BPG IM X 1
3 months	1:64	---
6, 9 months	Missed visit	---
12 months	1:64	????
25 months	1:64	????

Image Source: https://www.cdc.gov/std/treatment-guidelines,Tuddenham et al. CID 2022, Park et al. CID 2022

Rapid Plasma Reagin (RPR) Test

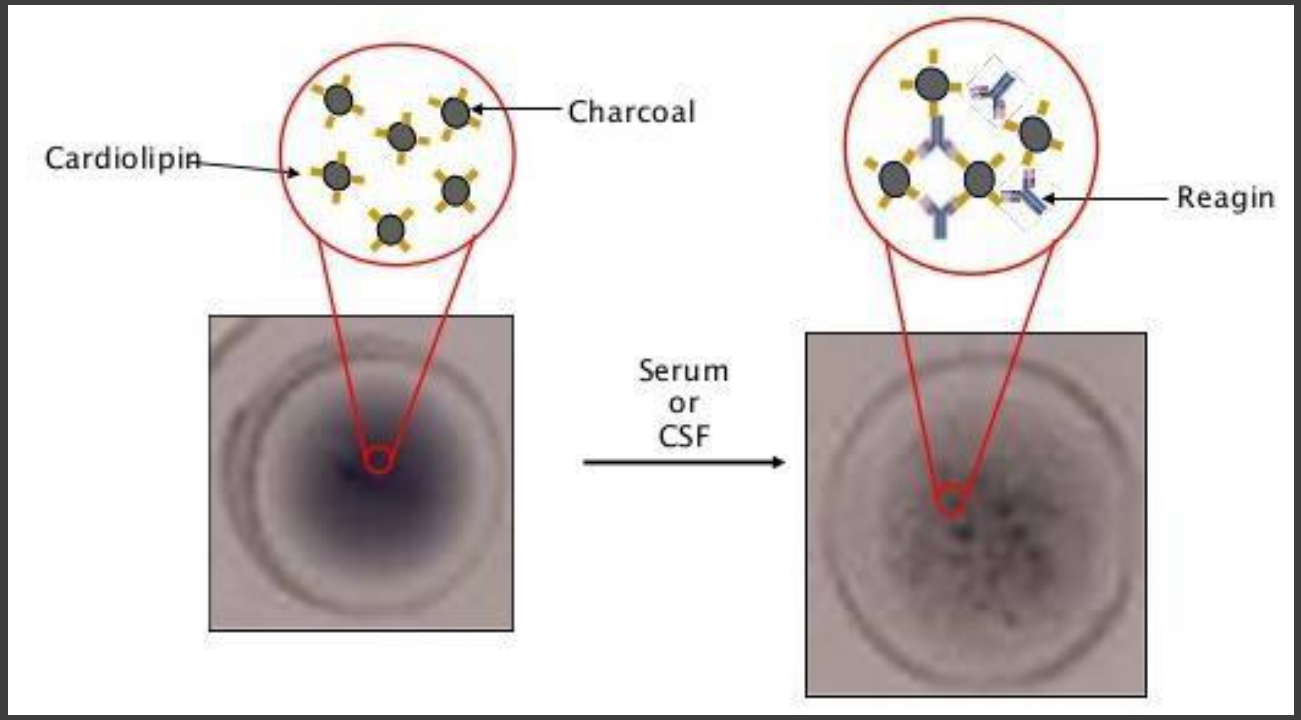


Image Source:
https://www.mshc.org.au/images/downloads/Clinical_education_-_Syphilis.pdf

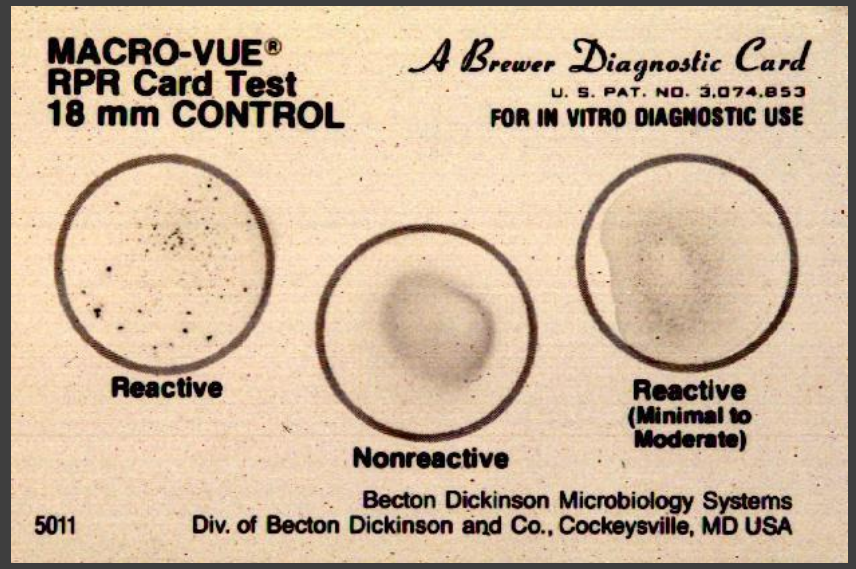


Image Source:
Oregon.gov/OHA

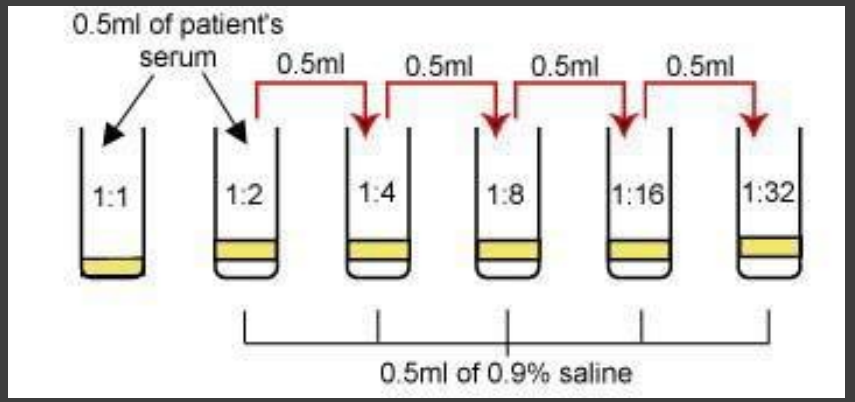


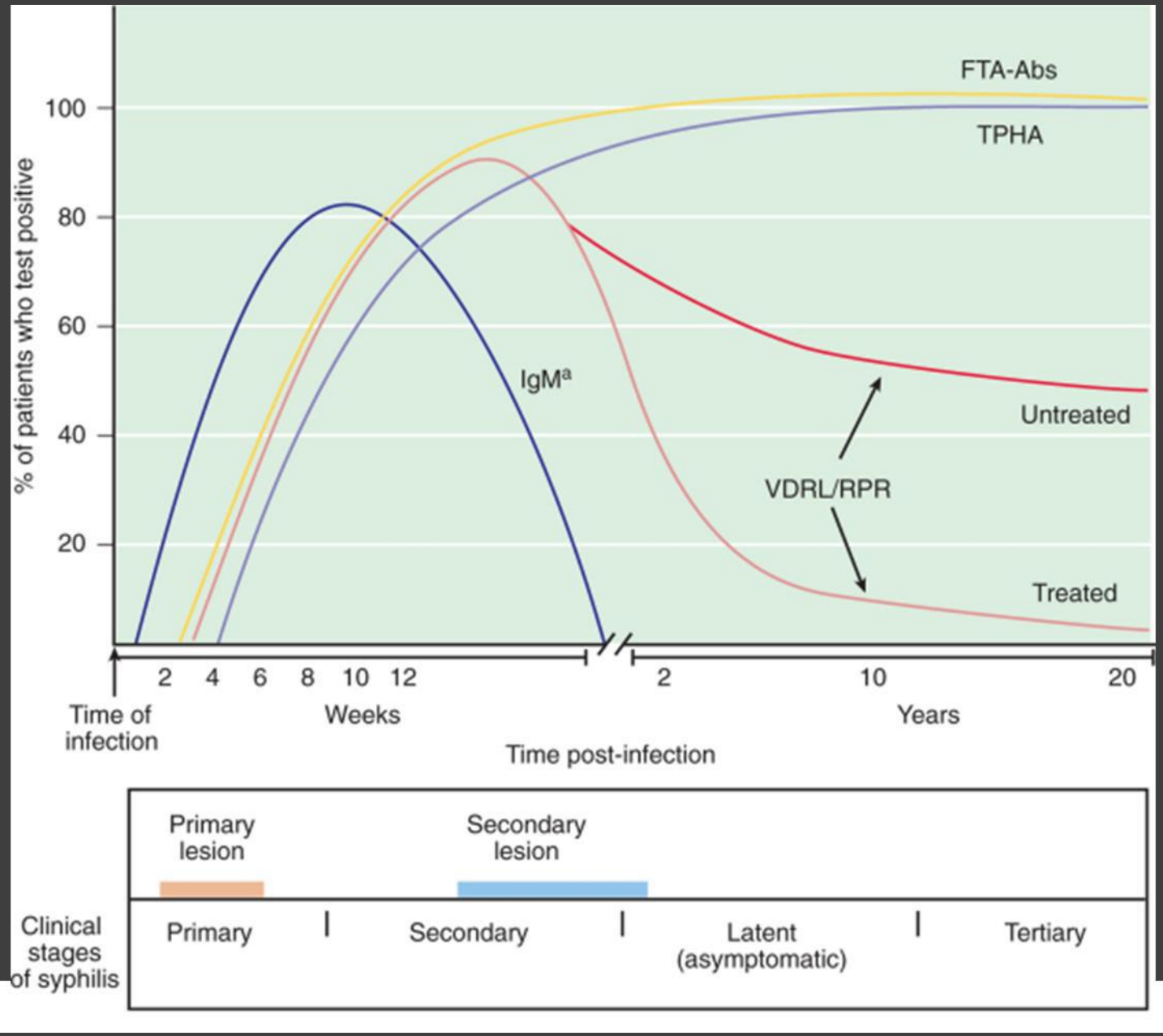
Image Source Microbiology Laboratory Manual by Gary E Kaiser, PhD, Professor of Microbiology

Case 1: Summary Points

- Sensitivity of syphilis serologies is not 100% in **primary syphilis.**
  - RPR: 62.5-76.1%, treponemal tests: 78-100%
  - Repeat testing in 2-4 weeks if high suspicion of primary syphilis; also consider empiric treatment.

- Classic primary syphilitic chancre is single and painless, but not all patients present exactly this way.
  - Towns et al. STI 2015: N=183 men with syphlilitic anogenital lesions
    - 84% penile/scrotal, 16% anal
    - 38% multiple, 49% painful, 20% painful and multiple

https://www.cdc.gov/std/treatment-guidelines,Tuddenham et al. CID 2022, Park et al. CID 2022, Towns et al. STI 2015
https://www.cdc.gov/std/treatment-guidelines,Tuddenham et al. CID 2022, Park et al. CID2022



Primary Syphilis:

Non-treponemal (RPR)
62.5-76.1% sensitive

Treponemal:
78-100% sensitive

Peeling et al. Bulletin of WHO 2004; 82(6):439-46

Case 1: Summary Points

- RPR should decline 4-fold within 12 months after therapy for 1° and 2° (primary and secondary) syphilis (24 mo allowed for PWH [people with HIV]) and within 24 months for latent syphilis.
- **BUT**: substantial proportion have ***inadequate serologic response*** (despite having no symptoms/signs that would raise concern for relapse/tx failure or exposures to raise concern for reinfection) after the appropriate interval.
  - At a minimum - serial neuro exams, clinical and serologic follow-up, assessment for HIV (if not known PWH).
  - *Consider*: Retreatment or CSF (cerebrospinal fluid) exam + retreatment, definitely if follow-up can not be ensured.
  - If an initially high titer >1:32 does not decrease at least fourfold 24 months after therapy for latent syphilis, retreatment and *consideration* of CSF exam is recommended.
  - Some are more aggressive in recommending LPs (lumbar puncture) and retreatment in PWH with inadequate serologic response, particularly if with low CD4 count and/or high RPR titer.

https://www.cdc.gov/std/treatment-guidelines,Tuddenham et al. CID 2022, Park et al. CID2022

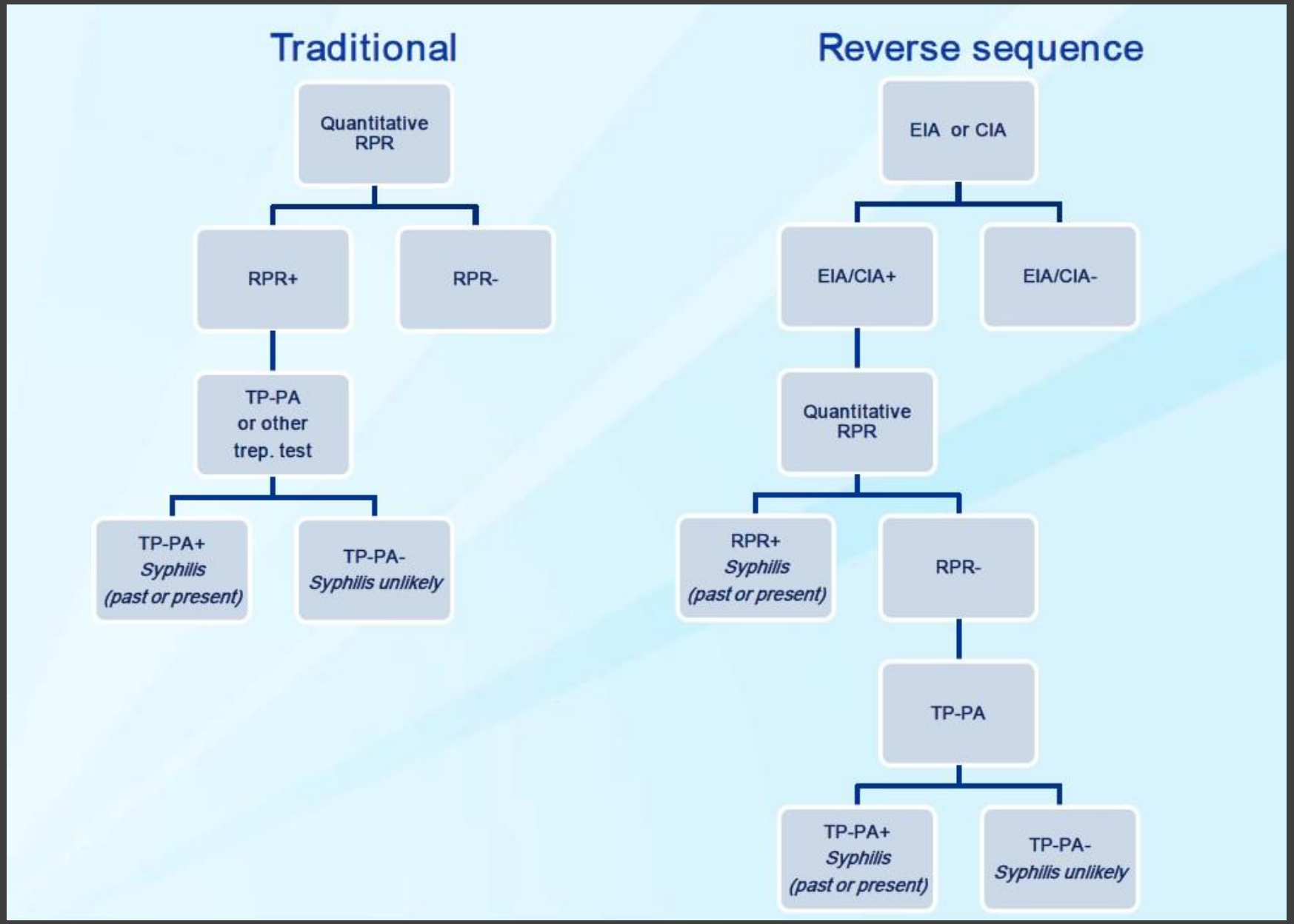
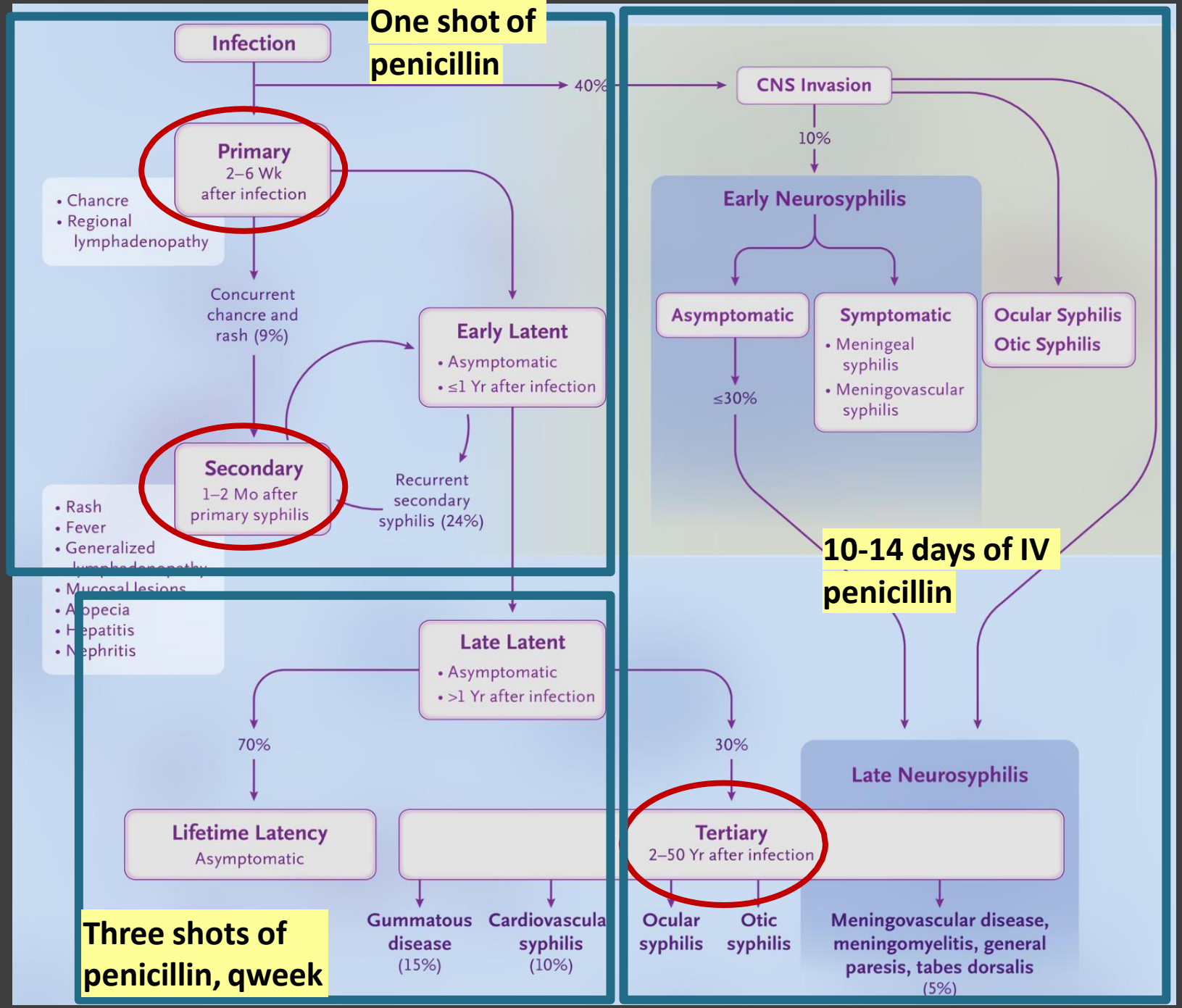


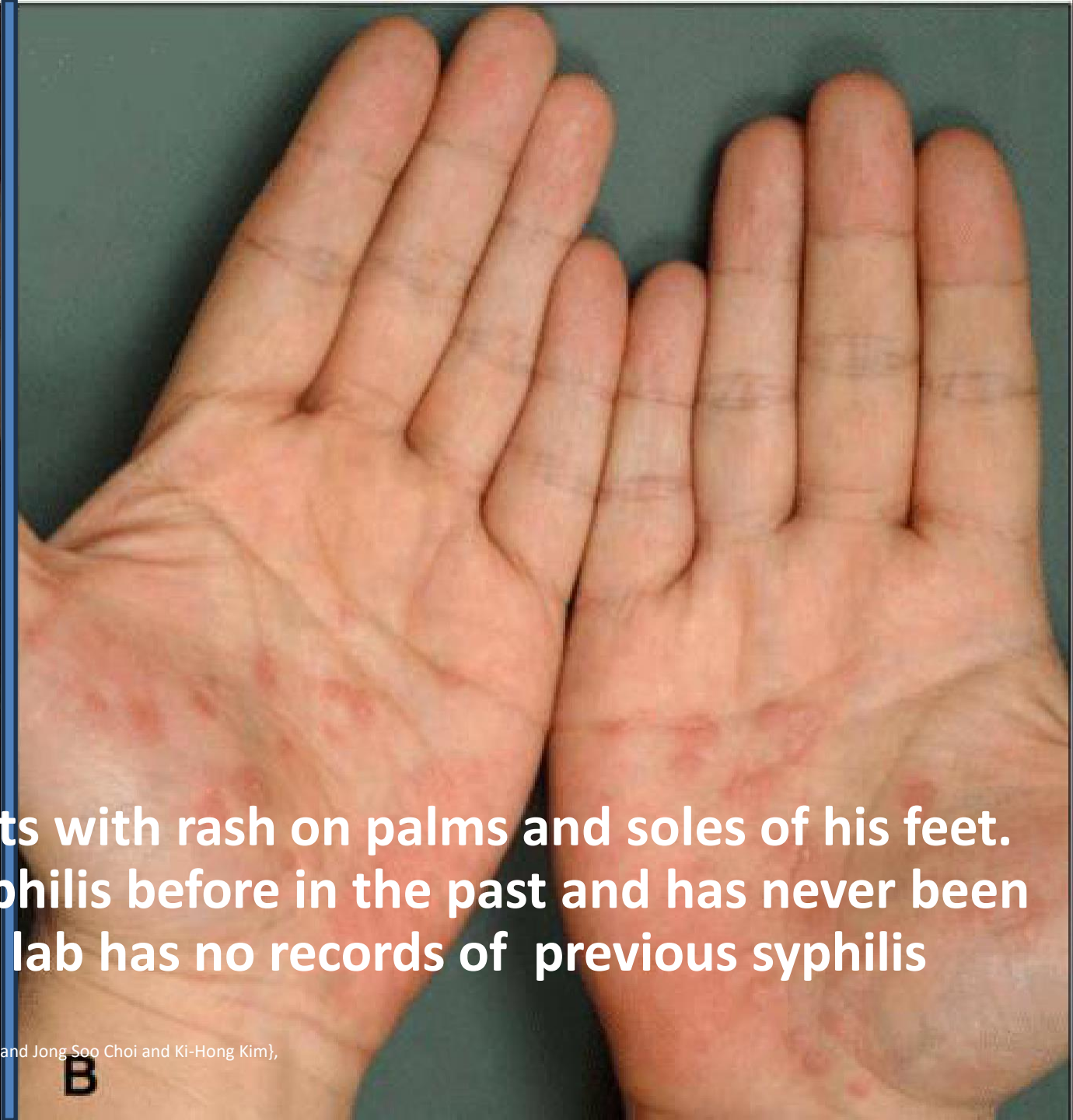
Image Source: National Network of Prevention Training Centers

Treatment of Syphilis

- Who MUST be treated with bicillin?
  - Pregnant people
  - Alternatives for treating neurosyphilis have little evidence of efficacy.



Ghanem KG, Ram S, Rice PA. The Modern Epidemic of Syphilis. *N Engl J Med*. 2020;382(9):845-854. doi:10.1056/NEJMra1901593



Case #2

35-year-old cisgender male presents with rash on palms and soles of his feet. He states that he has never had syphilis before in the past and has never been tested for syphilis previously. State lab has no records of previous syphilis testing.

A

B

@article{Kim2009ACO,
title={A case of palmoplantar lichen planus mimicking secondary syphilis.},
author={Young Sik Kim and Mi Hye Kim and Chan Woo Kim and Dong Hoon Shin and Jong Soo Choi and Ki-Hong Kim},
journal={Annals of dermatology}, year={2009}, volume={21 4}, pages={429-31},url={https://api.semanticscholar.org/CorpusID:29517485}}

Case #3

28-year-old cisgender female presents to STI clinic for routine checkup. She has never been tested for STIs in the past, has had 3 cisgender male partners in the last year, uses condoms 90% of the time. Her testing comes back with a RPR of 1:8. You call the state lab and confirm she has never had syphilis testing or a reactive test in the past.

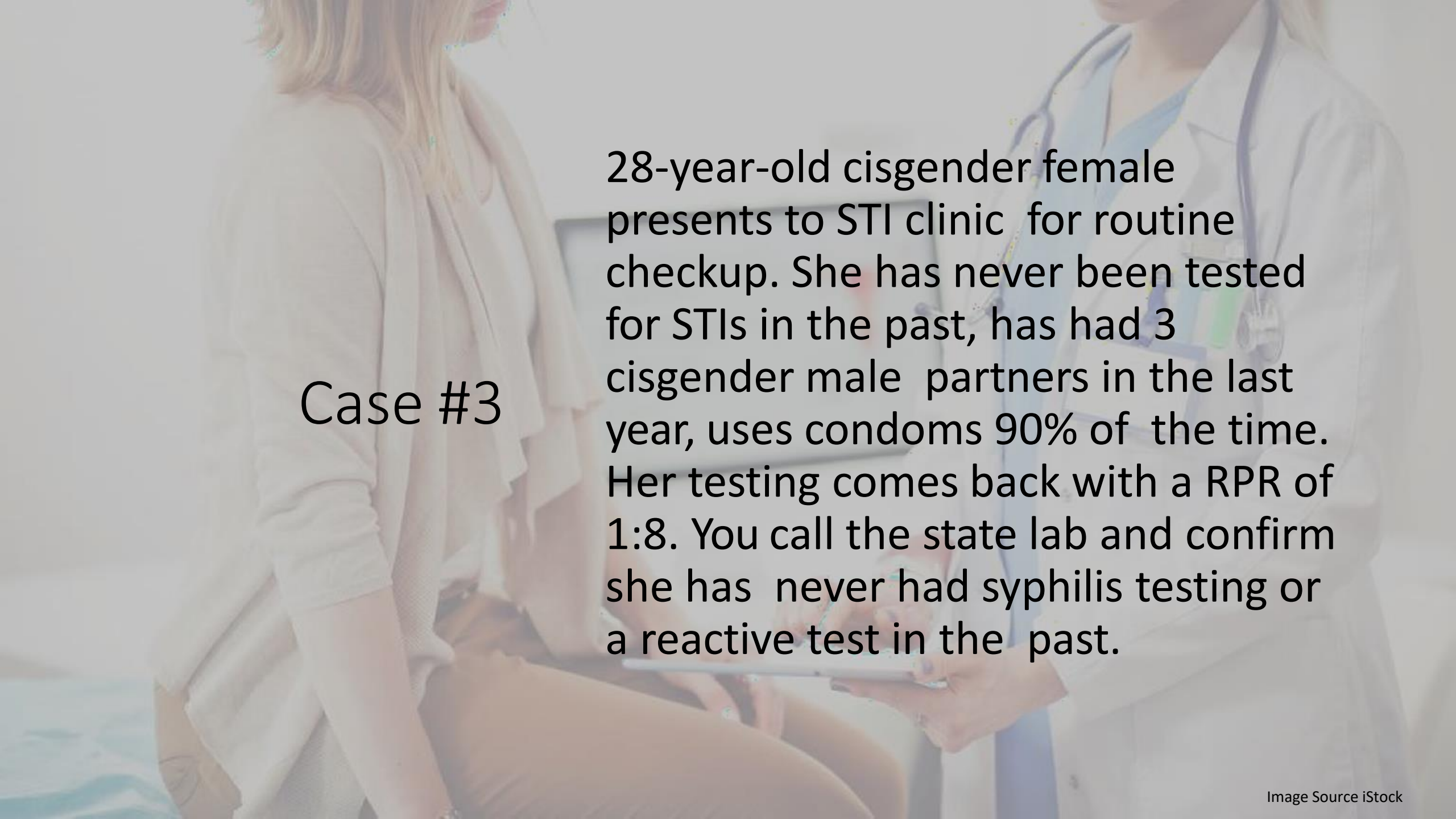


Image Source iStock

Case #4

31-year-old cisgender male presents to STI clinic with ulcer on his penis and lymphadenopathy. He states the ulcer is painless, started 3 days ago, and he noticed swollen lymph nodes in his pelvic region. He also has developed ringing in his ears with his hearing loss which he describes as muffled hearing. What would you do next?

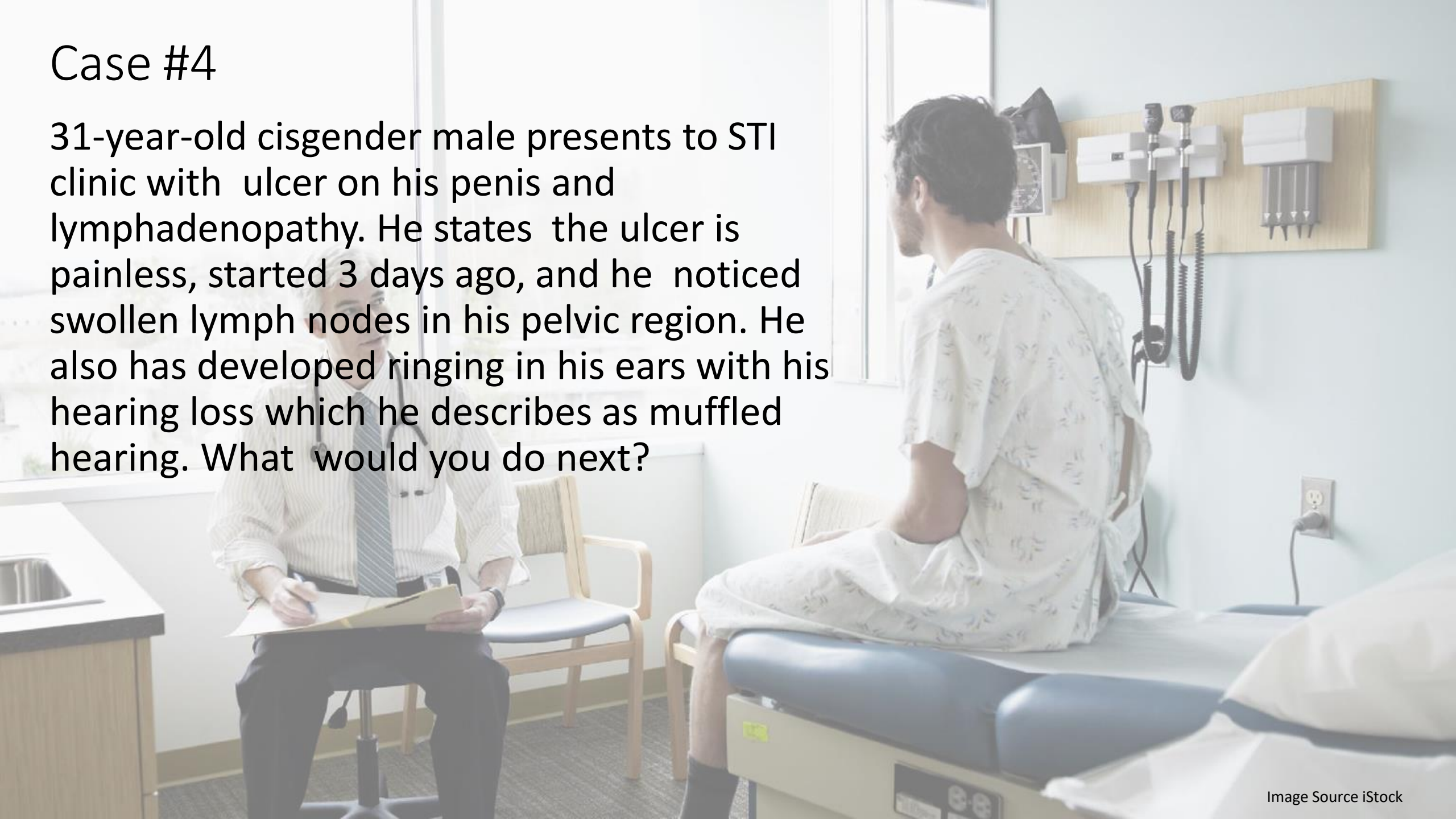


Image Source iStock

Case 4 continued

- He has no visual complaints, or other neurologic complaints, and no other symptoms on detailed questioning.
- Hearing is diminished bilaterally. Exam is otherwise normal.
- What do you do next?

Case 4 continued

- The patient is sent to the ER (emergency room)
- RPR is 1:128, treponemal test is positive as well. Other STI/HIV testing is negative
- Started on IV (intravenous) penicillin
- ENT (ear nose throat) is consulted, and bilateral sensory neural hearing loss is confirmed; ENT recommends oral prednisone to be tapered over 1-2 months.
- The patient is recommended to be treated with Aqueous crystalline penicillin G 18–24 million units per day, administered as 3–4 million units IV every 4 hours or continuous infusion for 10–14 days.
- He strenuously objects saying he does not want a PICC line, and also he “hates shots”. He says he will take any oral pill you give him. What do you recommend?

https://phil.cdc.gov/

Case 4 continued

- After extended discussion, the patient agrees to IV penicillin.
- He completes aqueous crystalline penicillin G 18–24 million units per day for 10– 14 days.
- At 6 months after treatment, RPR is 1:2 hearing has improved though he still has some subtle deficits on audiometry.

https://phil.cdc.gov/

Case 4: Summary Points

- All patients with syphilis should be queried regarding neurologic, ocular, and otic symptoms and undergo a neurologic exam.
- Among patients with isolated auditory abnormalities and reactive syphilis serology, CSF evaluation is likely to be normal and is **unnecessary.**
- Among persons with isolated ocular symptoms, confirmed ocular abnormalities on examination, and reactive syphilis serology, a CSF examination is **unnecessary.**
- All patients with ocular symptoms and reactive syphilis serology need a full ocular examination, including cranial nerve evaluation.

Are there oral options for neurosyphilis?

- UK (United Kingdom) guidelines allow doxycycline 200mg PO BID (twice daily by mouth) for 28 days as alternative treatment for neurosyphilis
- Little published data
- Girometti et al. retrospective chart review
- Compared neurosyphilis patients: N=16 patients treated with doxycycline to N=62 treated with procaine G penicillin 2.4 million units IM daily plus oral probenecid 500mg po four times a day for 10-14 days

J Antimicrob Chemother 2021; **76**: 1916–1919
doi:10.1093/jac/dkab100 Advance Access publication 30 March 2021

Journal of Antimicrobial Chemotherapy

Clinical and serological outcomes in patients treated with oral doxycycline for early neurosyphilis

Nicolò Girometti[1]*†, Muhammad H. Junejo[1]†, Diarmuid Nugent[1], Alan McOwan[1] and Gary Whitlock[1] on behalf of the 56 Dean Street Collaborative Group‡

Case 4 Summary Points

- There are **NO oral regimens currently guideline recommended in the U.S.** for treatment of neurosyphilis.
- **The CDC (Centers for Disease Control and Prevention) recommended regimen is aqueous crystalline penicillin G** 18–24 million units per day, administered as 3–4 million units IV every 4 hours or continuous infusion for 10–14 days
- The alternative regimen is **Procaine penicillin G** 2.4 million units IM once daily **PLUS Probenecid** 500 mg orally 4 times/day, both for 10–14 days but not available.
- Per the CDC**, Ceftriaxone** 1–2 g daily either IM or IV for 10–14 days can also be used as an alternative treatment for persons with neurosyphilis

https://phil.cdc.gov/

Case 5

26-year-old cisgender female presents at a walk-in STI clinic visit. She thinks she may be pregnant. She is unhoused and does not have insurance.

- -- STI testing and HIV testing is negative except that she has an RPR of 1:64.
- -- She has a positive hCG (human chorionic gonadotropin) urine test and is 10 weeks gestation by dates.
- -- She currently has no symptoms and a normal physical exam.

In collaboration with Disease Intervention Specialists (DIS), you learn that she has never had positive syphilis testing in the past.

- -- She states she is allergic to penicillin with history of rash and shortness of breath with amoxicillin.

How would you proceed?

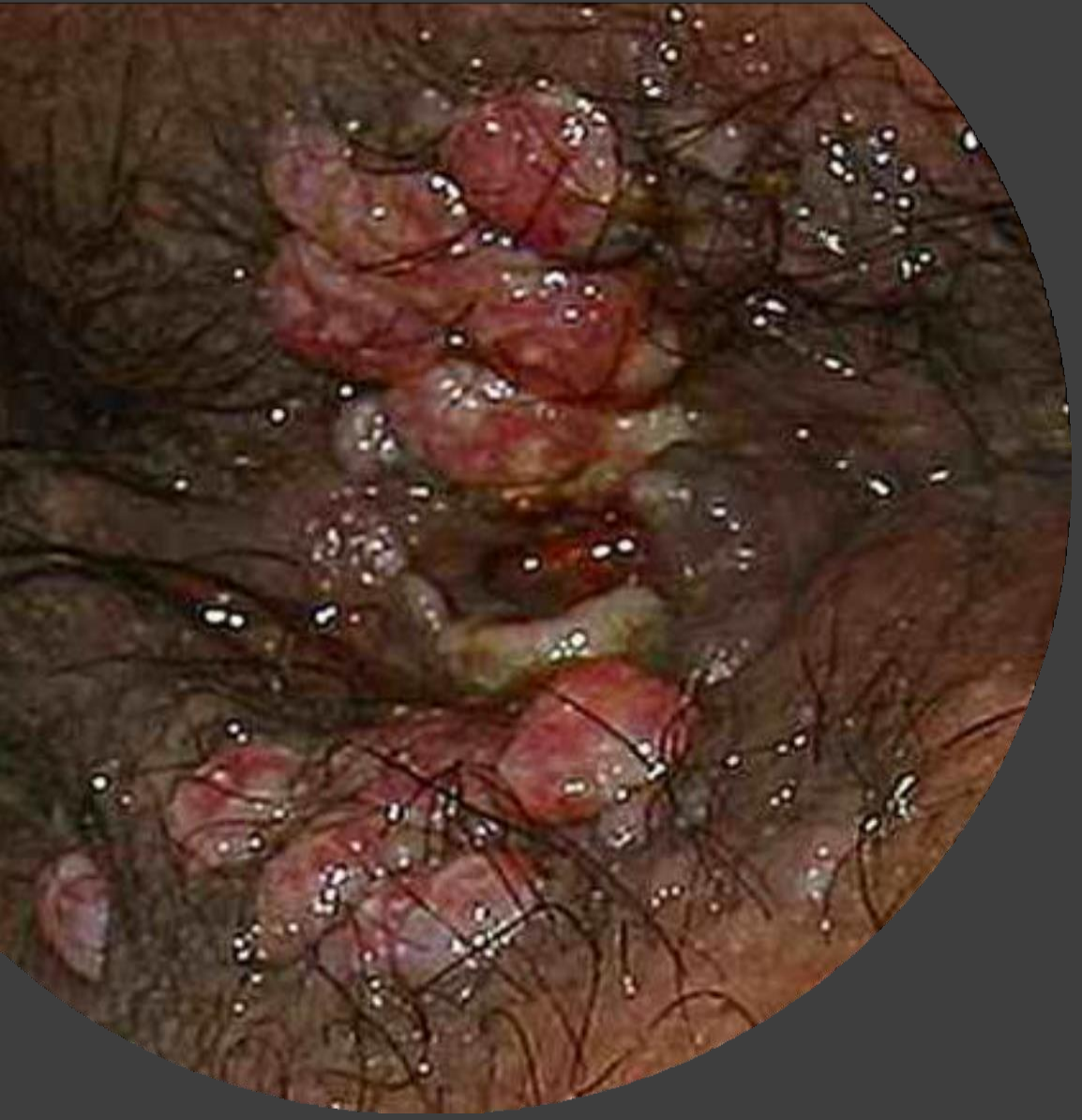


Image Source: National Network of Prevention Training Centers

Case #6

28-year-old cisgender male presenting to the hospital with pain around his rectum with serous drainage. Physical examination reveals: (see photo)

Patient had syphilis previously, with state lab reporting RPR 1 year ago at 1:32, with him at the time not having any symptoms, and him receiving one dose of 2.4 million units Penicillin G. Current RPR is 1:16.

Case #7

27-year-old cisgender female presents for follow-up of syphilis testing from recent ED (emergency department) visit. Patient reports history of syphilis diagnosed approximately 1 year ago. RPR at that time found to be 1:32 and patient was treated with 2.4 million units IM Penicillin G weekly for 3 weeks. Repeat testing 6 months later showed RPR 1:8. During her recent ED visit for vaginal discharge, she was found to have reactive syphilis screen with RPR of 1:16 as well as positive pregnancy screen. She is approximately 7 weeks pregnant by LMP (last menstrual period). Patient is sexually active with single cisgender male partner; he was also treated for syphilis at the time of her initial diagnosis.

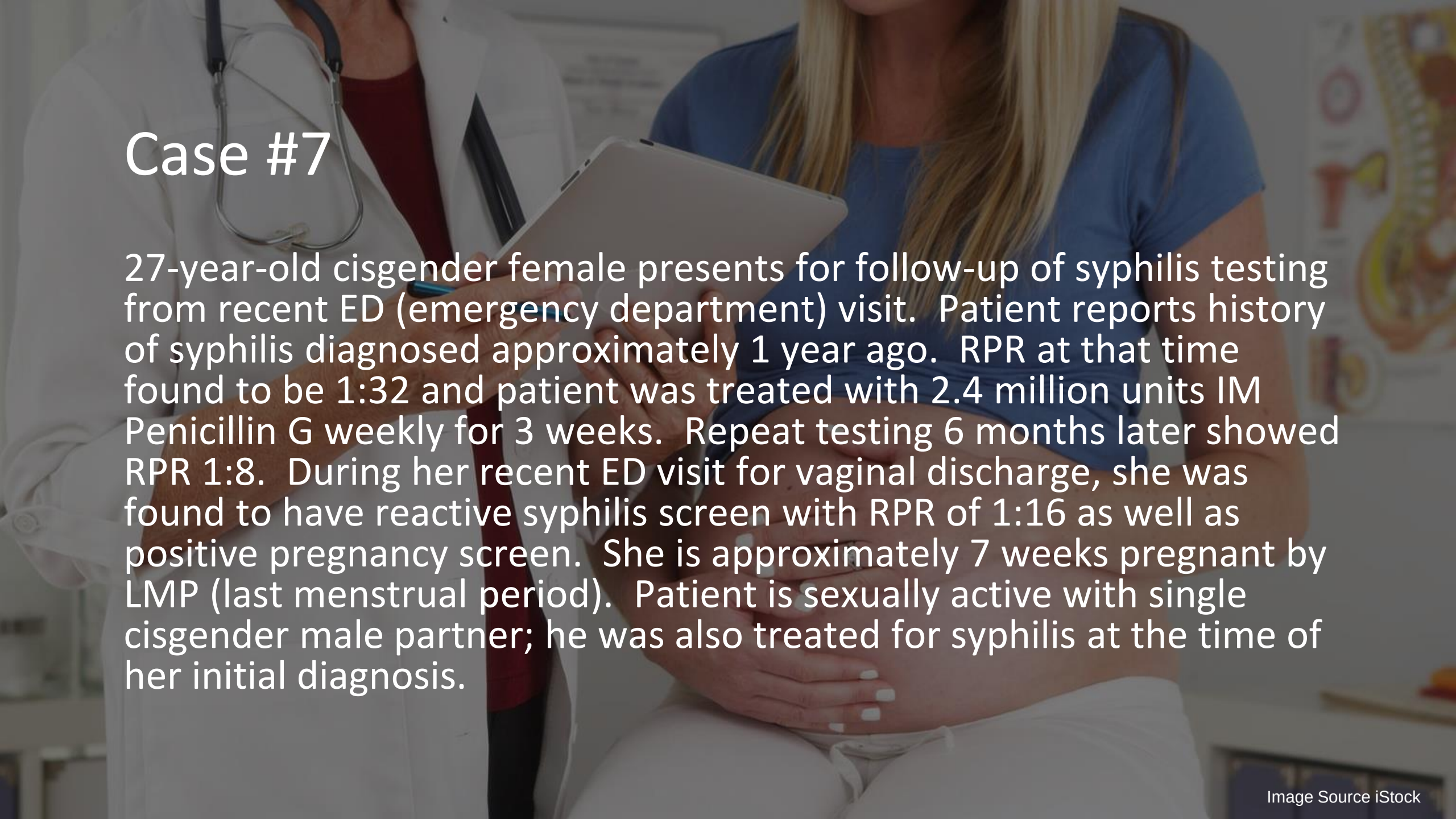


Image Source iStock

Case #8

35-year-old transmasculine patient presents for PrEP (post-exposure prophylaxis) follow-up. Patient endorses new “lumps” on their tongue and change in sense of taste for the past week.

Patient reports missing 2-3 doses of PrEP in the past 30 days. They are sexually active with 4 cisgender male partners in the past 90 days, reporting using condoms 30% of the time.

Exam reveals multiple raised lesions on tongue with surrounding white plaques which cannot be removed by a tongue blade (pictured). Patient has no other STI related symptoms or exposures. HIV and STI testing is pending.

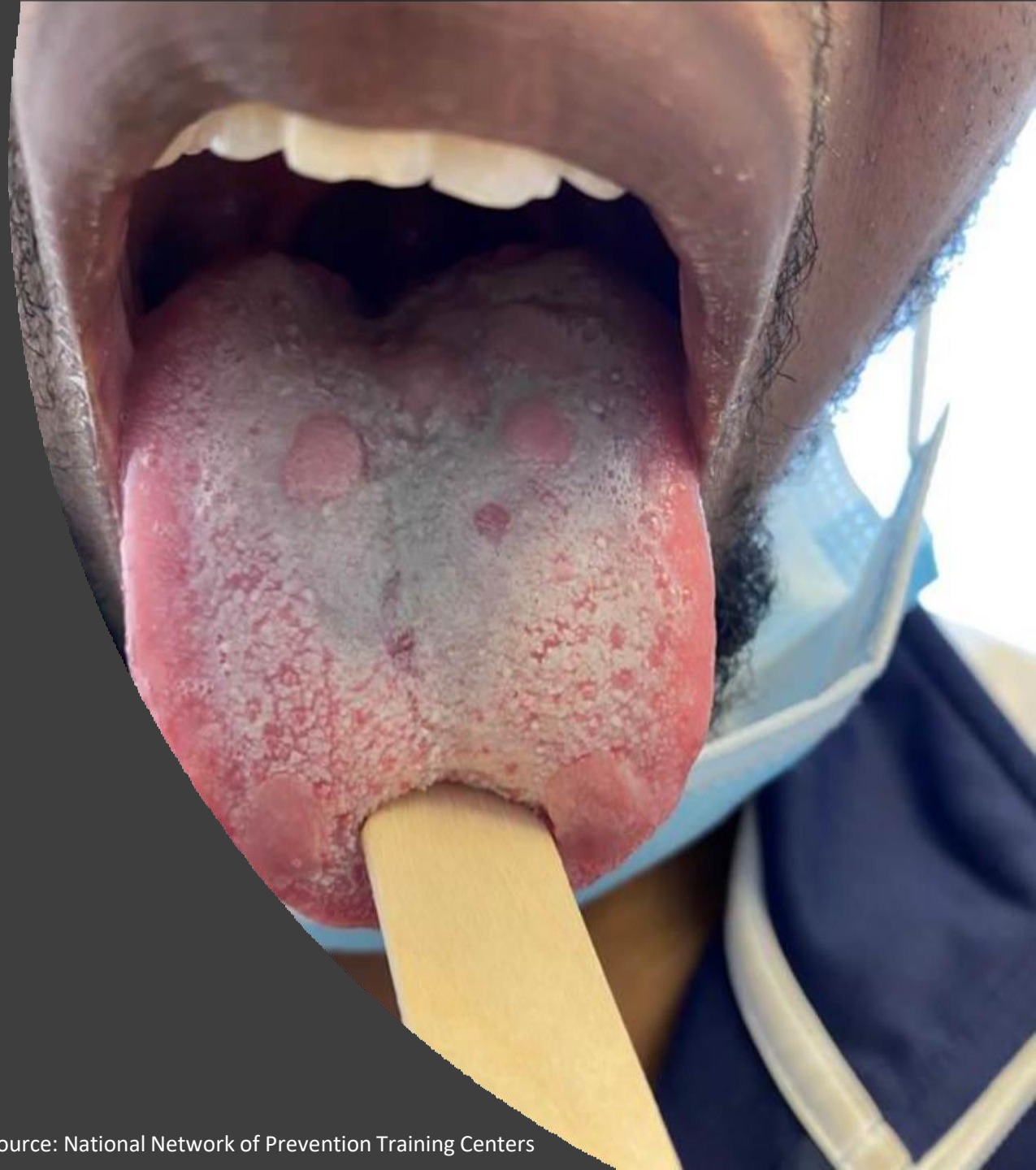


Image Source: National Network of Prevention Training Centers

Case #9

72-year-old cisgender male is hospitalized for worsening of baseline dementia. Work-up in-house revealed reactive syphilis screen with RPR 1:4. Patient is unable to provide any history. Per local health department, patient was treated for primary syphilis 25 years ago with IM Penicillin G x1, however no subsequent syphilis screening available.

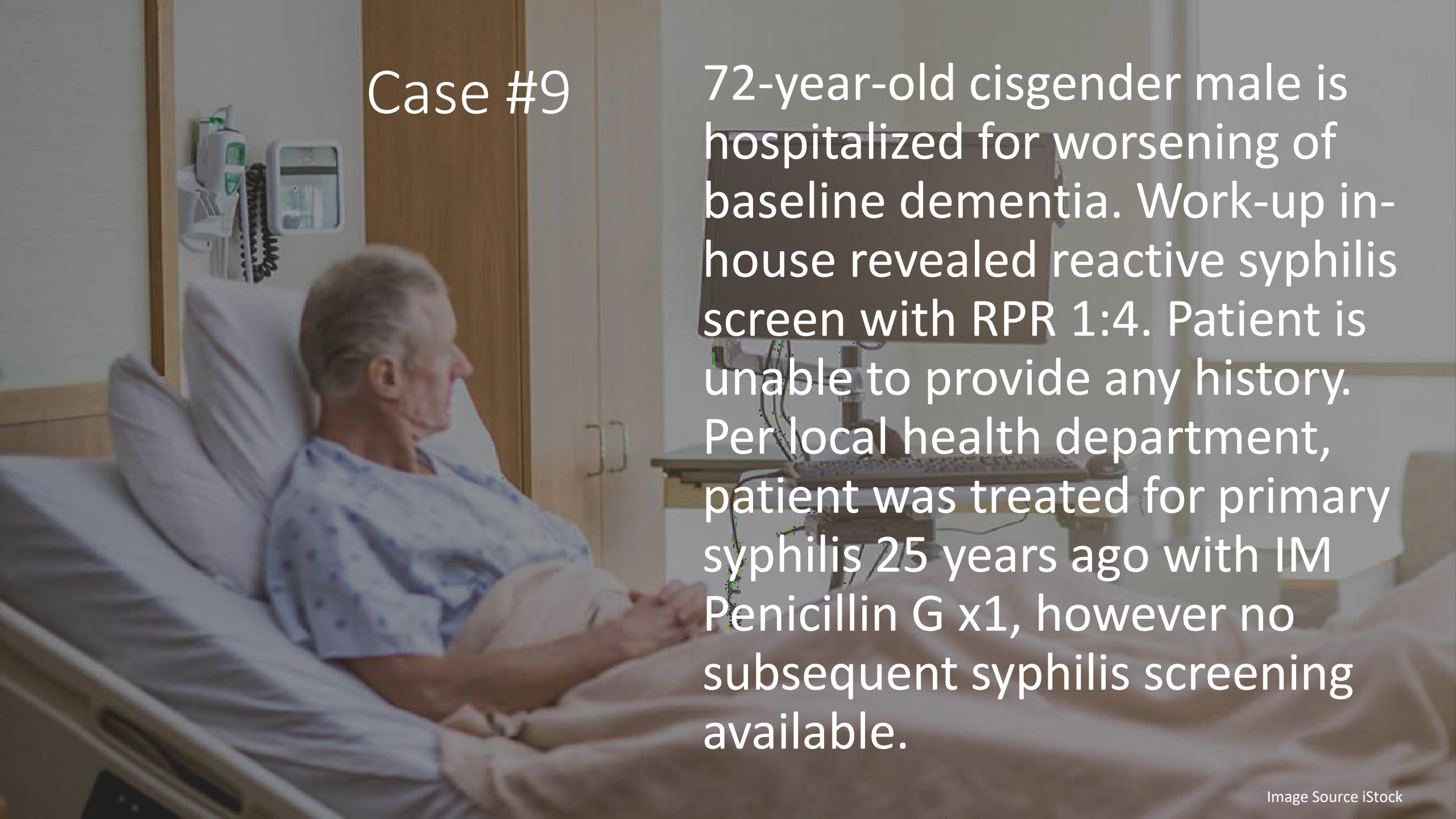


Image Source iStock

Case #10

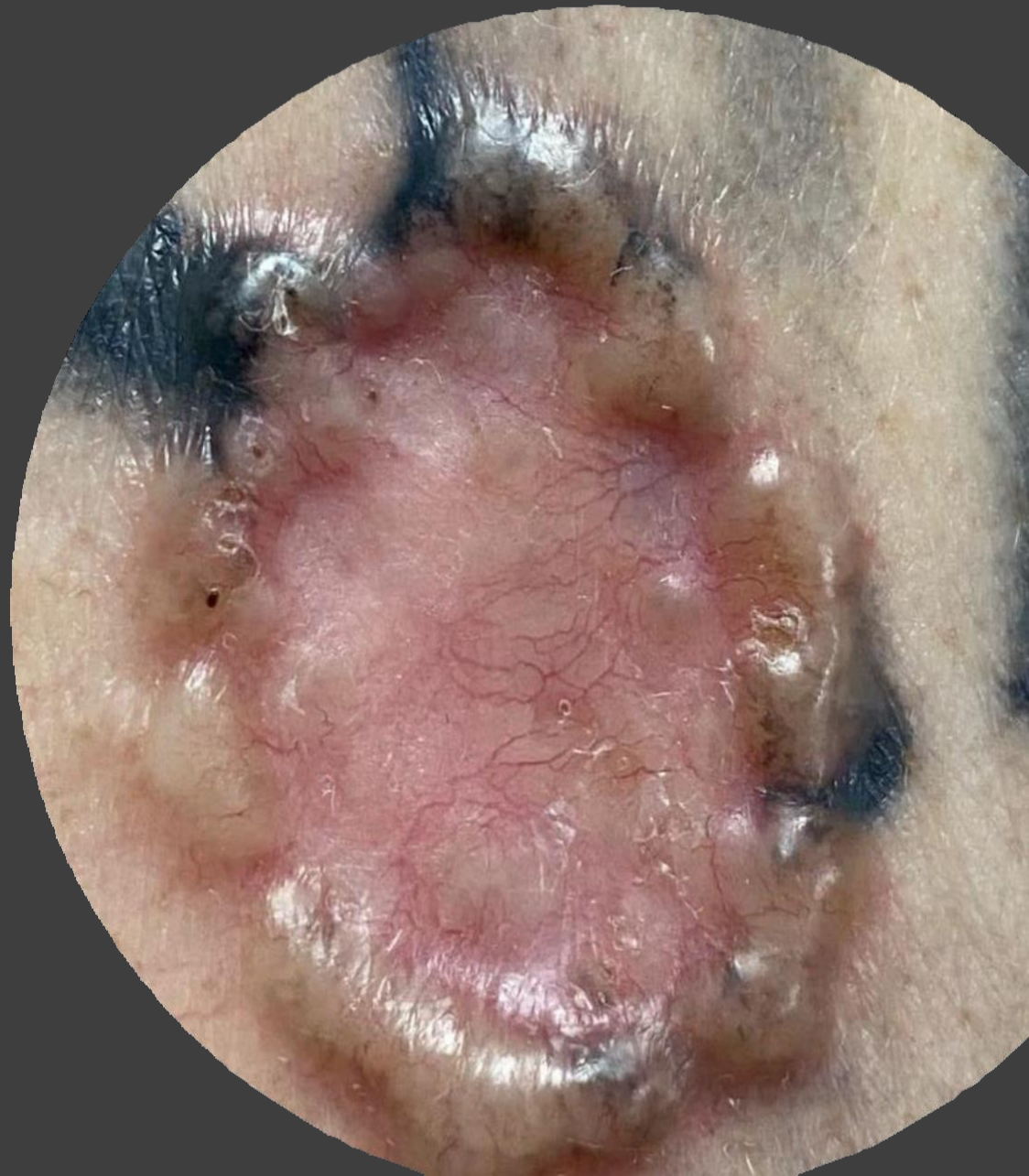
- 37-year-old cisgender female presents for follow-up after routine STI screening returned reactive for syphilis with RPR 1:2.
- Patient reports history of syphilis diagnosed during a prior pregnancy in her 20s; she reports she had no symptoms but was treated with an “antibiotic shot in the butt”.
- Patient reports she had routine STI testing since but largely consisted of only vaginal swabs as she usually defers any blood work.

Image Source iStock

Case #11

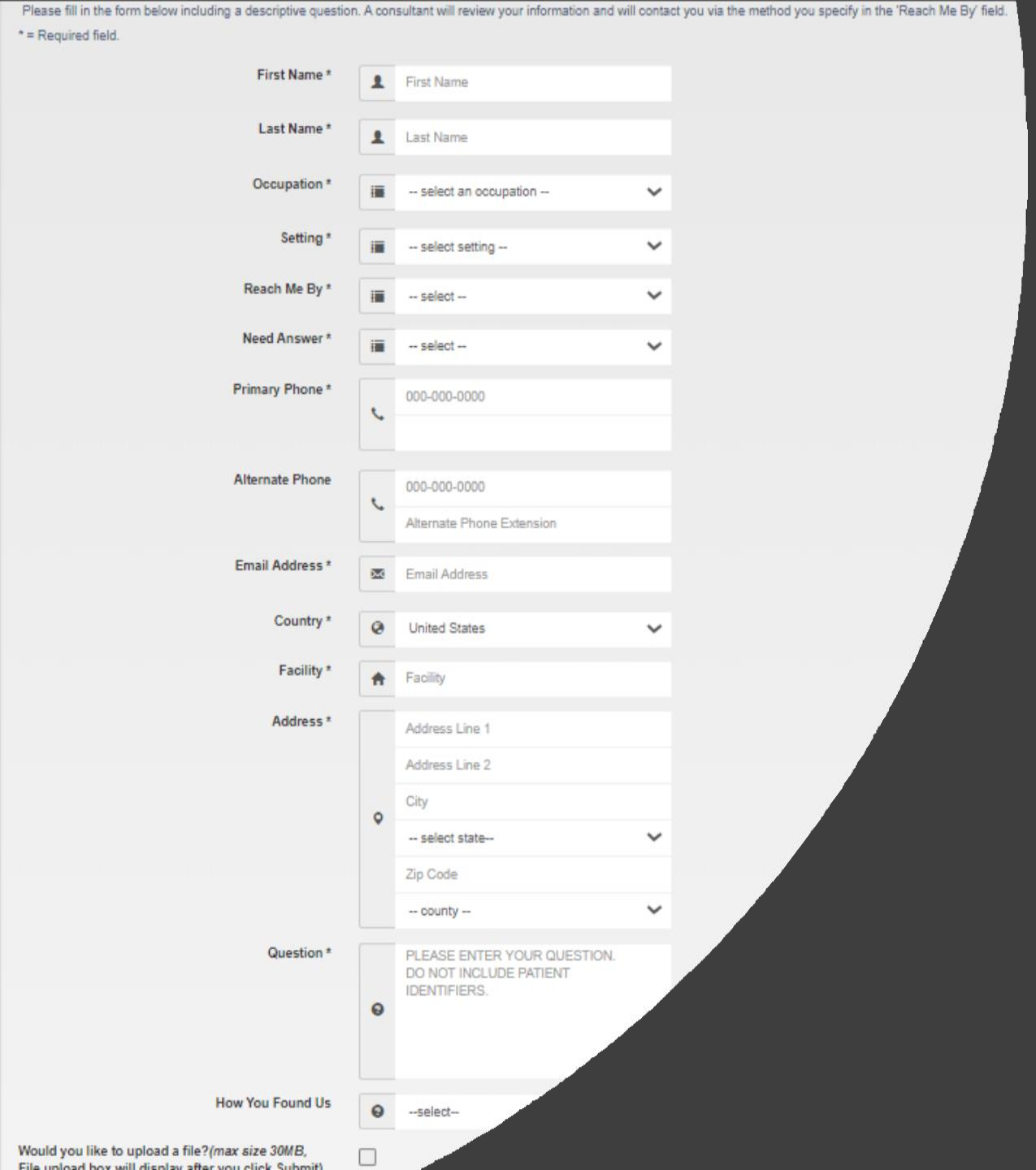
28-year-old transfeminine patient with HIV presents to establish care. She was diagnosed with HIV 7 years ago but was unable to be linked to care until now. On presentation, she reports non-tender skin lesion on her chest which has been ongoing for the past 3-4 weeks (pictured). Only other associated symptoms are some intermittent right sided blurry vision with significant number of “floaters” she has recently noticed. Lab testing prior to visit shows CD4 249 mm/cm3, HIV VL 20,143 copies/mL, and reactive syphilis screen with RPR 1:128. Patient reports no prior history of syphilis, believes she was tested at time of HIV diagnosis and was negative then.

Image Source: NNPTC



Case #12

25-year-old cisgender woman who presents for STI workup but is currently asymptomatic. She denies any rash, headache, vulvar lesions, ulcers, vaginal discharge. She reports 2 cisgender male sexual partners in the last 3 months, uses condoms occasionally. Her RPR is reactive at 1:256, with reactive TP-PA (treponema pallidum-particle agglutation), non-reactive HIV test, negative G/C NAAT. You call the health department, and she has no previous RPRs on file. When you do a neuro review of systems, she states that she has been having some vision changes which she describes as floaters and double vision at times, and that she has had a headache more frequently within the last week which she attributed to stress. The rest of her neuro ROS (review of symptoms) is benign. What should you do?



For further training and/or technical assistance requests:

https://stdccn.org

QUESTIONS?

Lancaster County Syphilis & HIV Symposium

10-minute Break
Please be back promptly!

St. Louis
STI/HIV Prevention
Training Center

HIV PRE-EXPOSURE PROPHYLAXIS (PrEP)
AND
POST-EXPOSURE PROPHYLAXIS (PEP)
IN SEXUAL HEALTH CLINICAL SETTINGS

WASHINGTON UNIVERSITY SCHOOL OF MEDICINE

Disclosures

WASHINGTON UNIVERSITY SCHOOL OF MEDICINE

(NO RELEVANT DISCLOSURES)

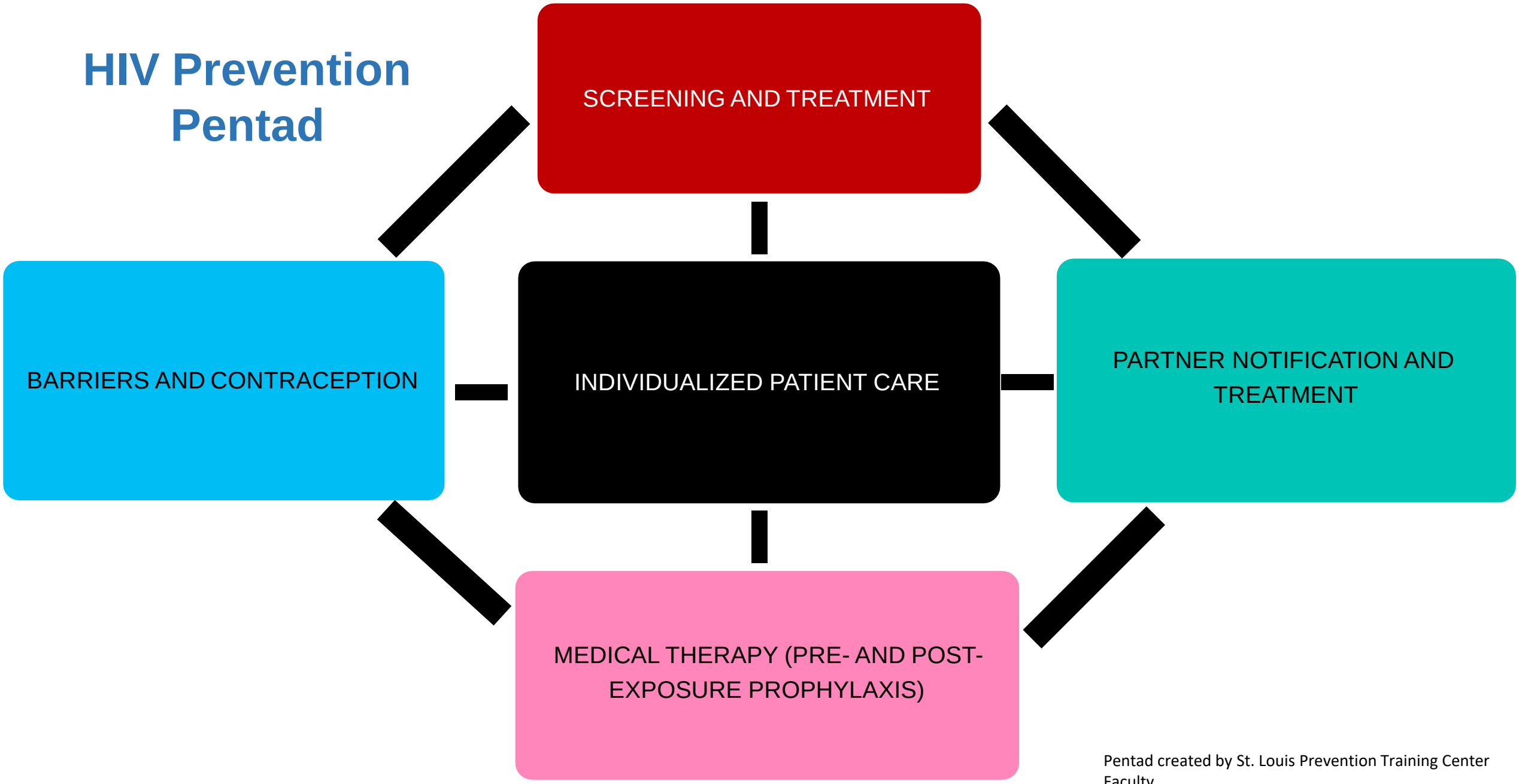
OBJECTIVES

Image Source: www.aidsmap.com

- PrEP 101
- Review of major changes in 2021 CDC (Centers for Disease Control and Prevention) PrEP treatment guidelines
- Implementation of PrEP care in sexual health clinical settings

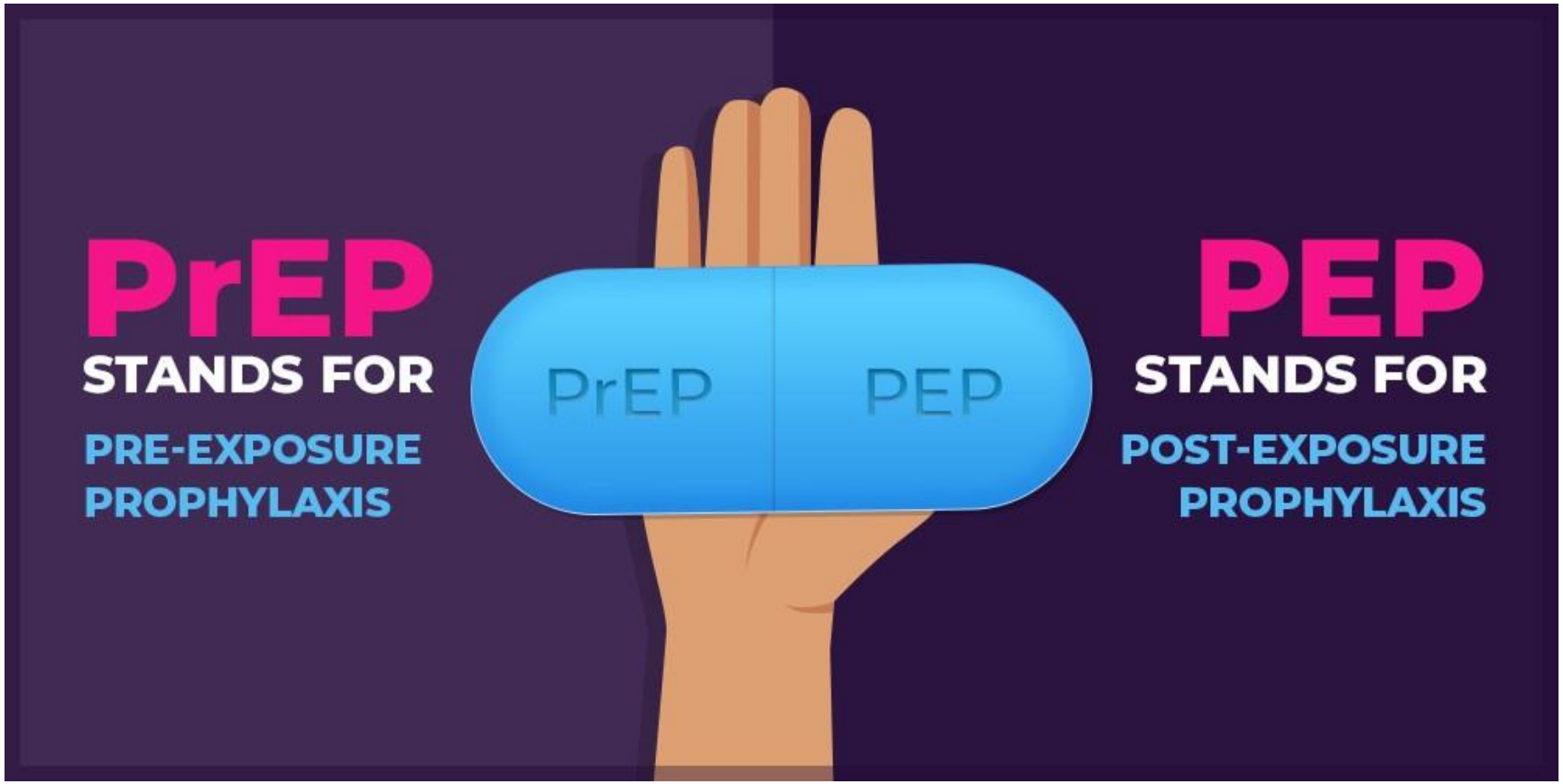
WHAT DO WE MEAN WHEN WE SAY HIV PREVENTION??

HIV Prevention Pentad



Pentad created by St. Louis Prevention Training Center Faculty

PrEP and PEP



CDC.GOV

WHAT DOES PREP IMPLEMENTATION LOOK LIKE IN YOUR CLINIC?

HIV EPIDEMIOLOGY – United States (US)

- 1.19 million people in the US living with HIV in 2020
- 30,635 new HIV diagnoses (decreased by 8% from 2016)

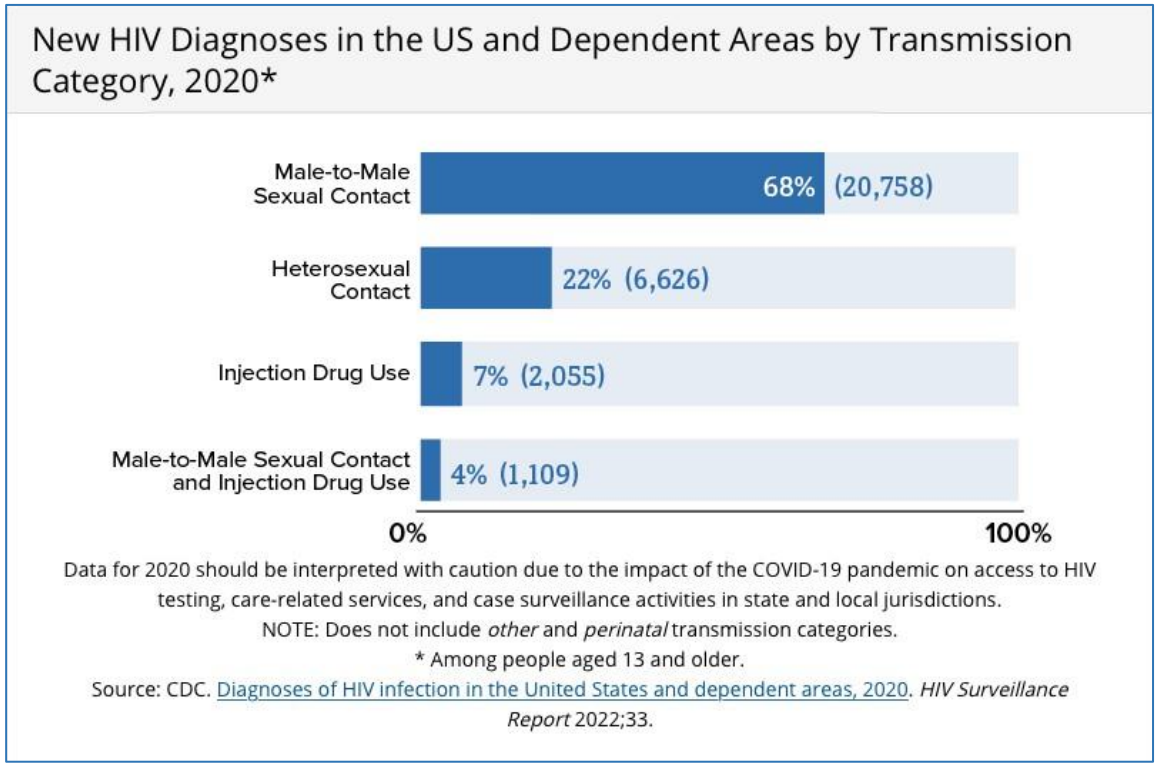


Image Source: CDC.gov

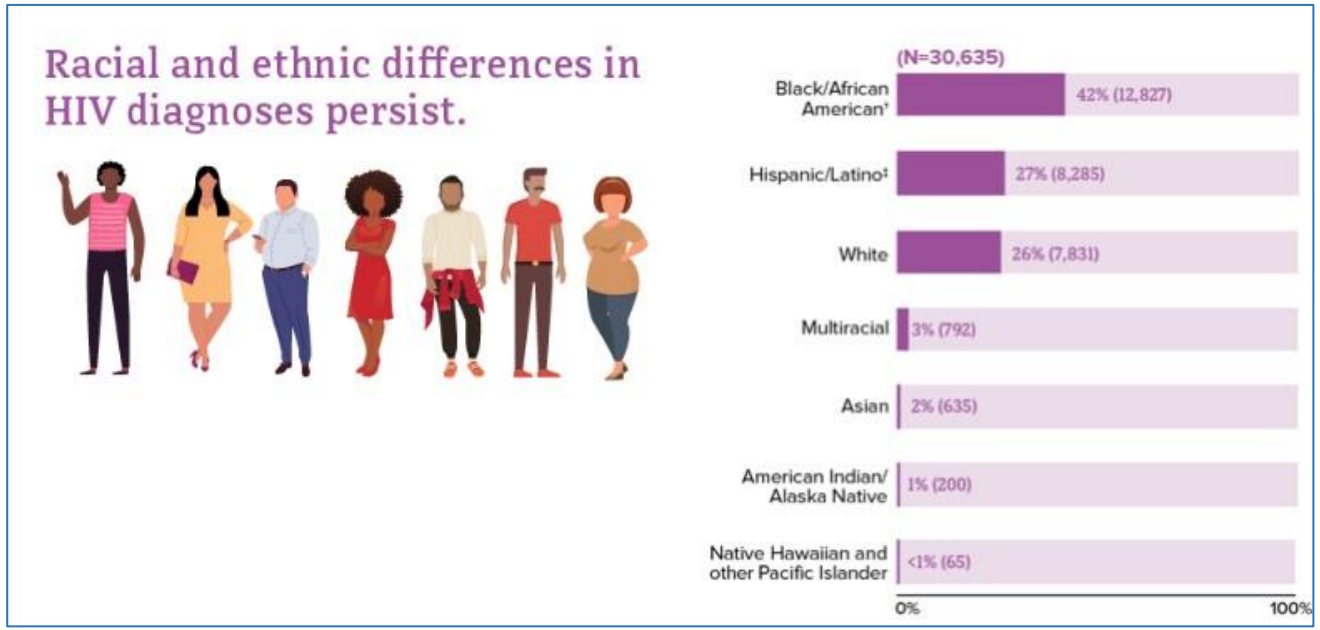
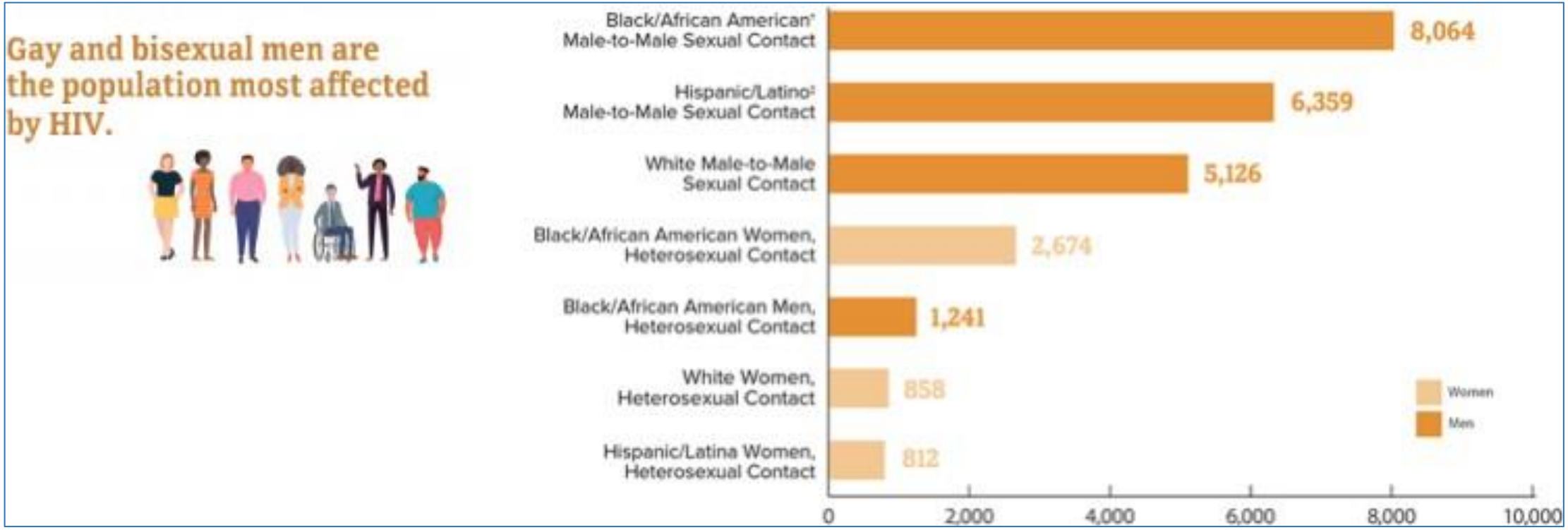


Image Source: CDC.gov

HIV/AIDS & STDs (cdc.gov)

HIV EPIDEMIOLOGY - US



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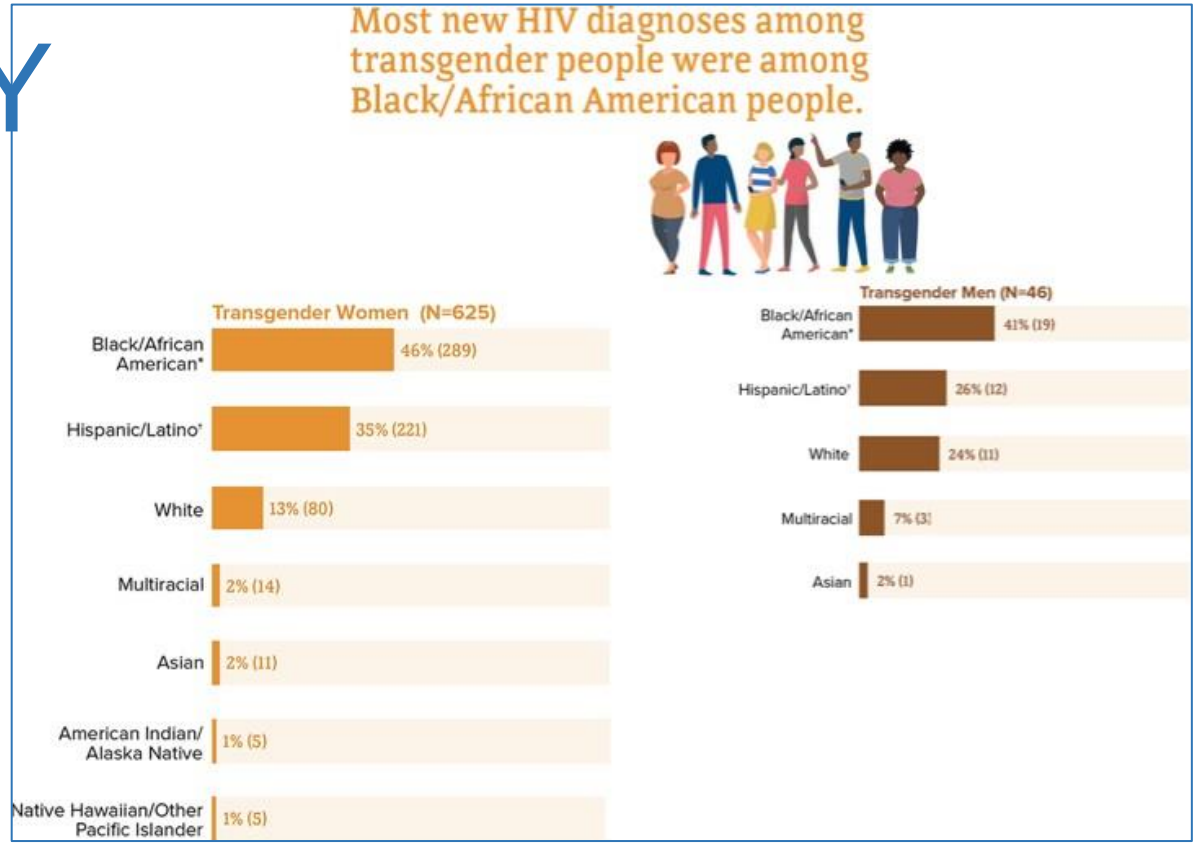
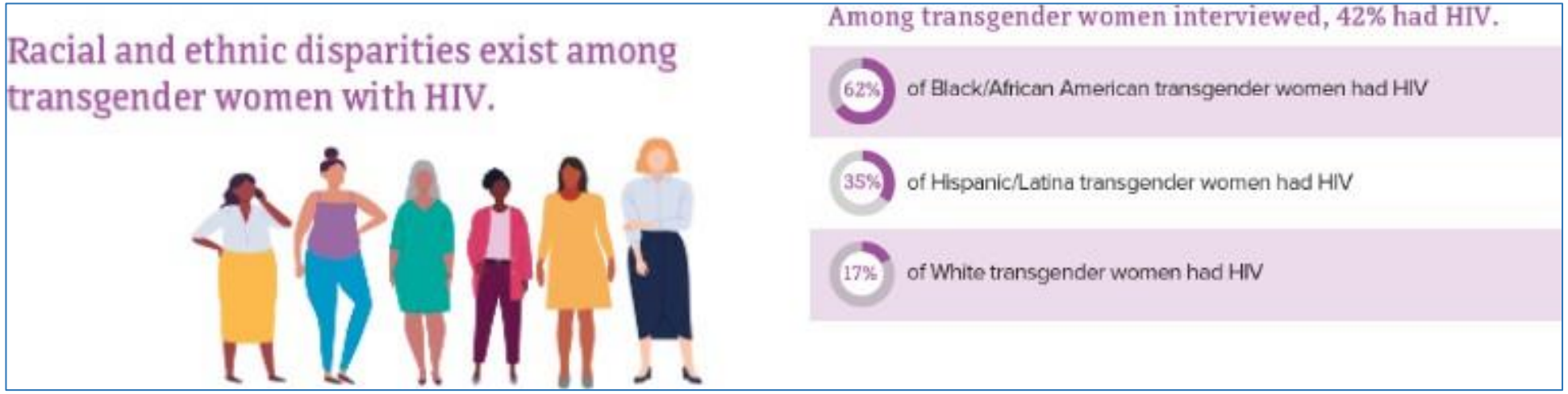
HIV EPIDEMIOLOGY

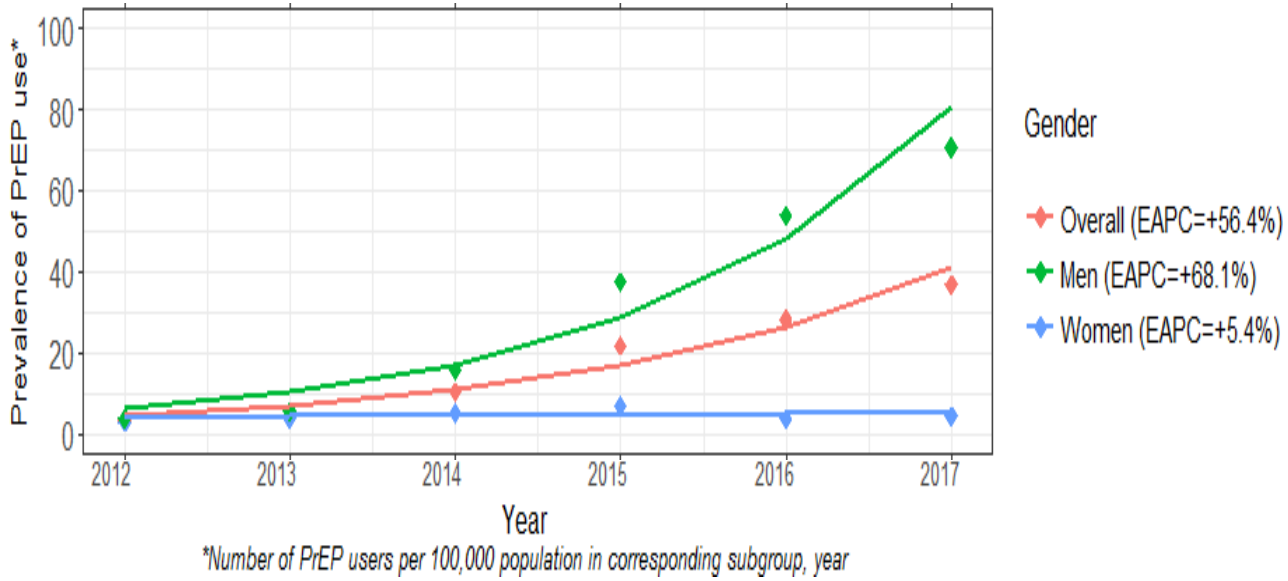




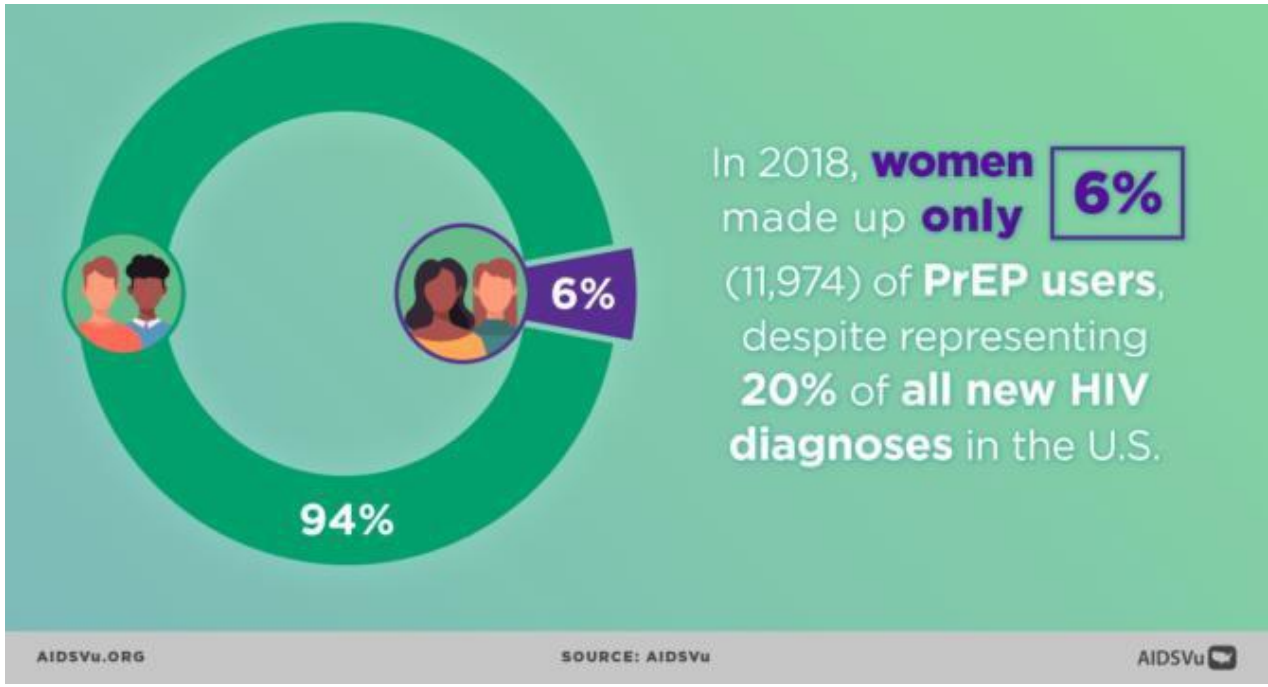
CDC.GOV

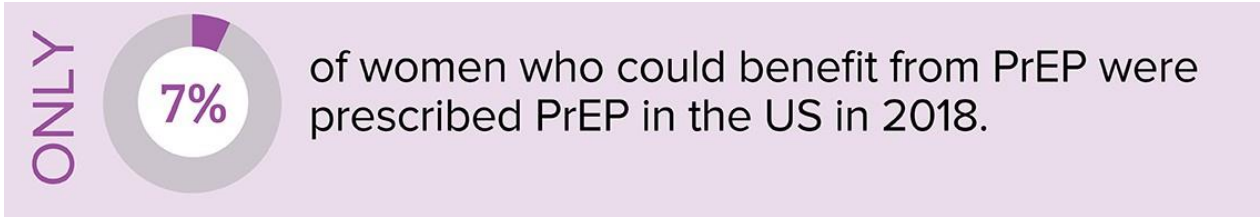
PREP USE IN WOMEN IS ESPECIALLY LOW

PrEP Use by Gender, US, 2012- 2017



*Number of PrEP users per 100,000 population in corresponding subgroup, year





Information & Photos Sullivan P, et al, Ann Epidemiol 2019

USPHS (United States Public Health Service) PrEP Guidelines Timeline

2012 - Truvada (TDF/FTC) approved by FDA (Federal Drug Administration) for PrEP

2014 - CDC PrEP Guidelines - "Recommended daily HIV Prevention Pill for those at Substantial Risk"

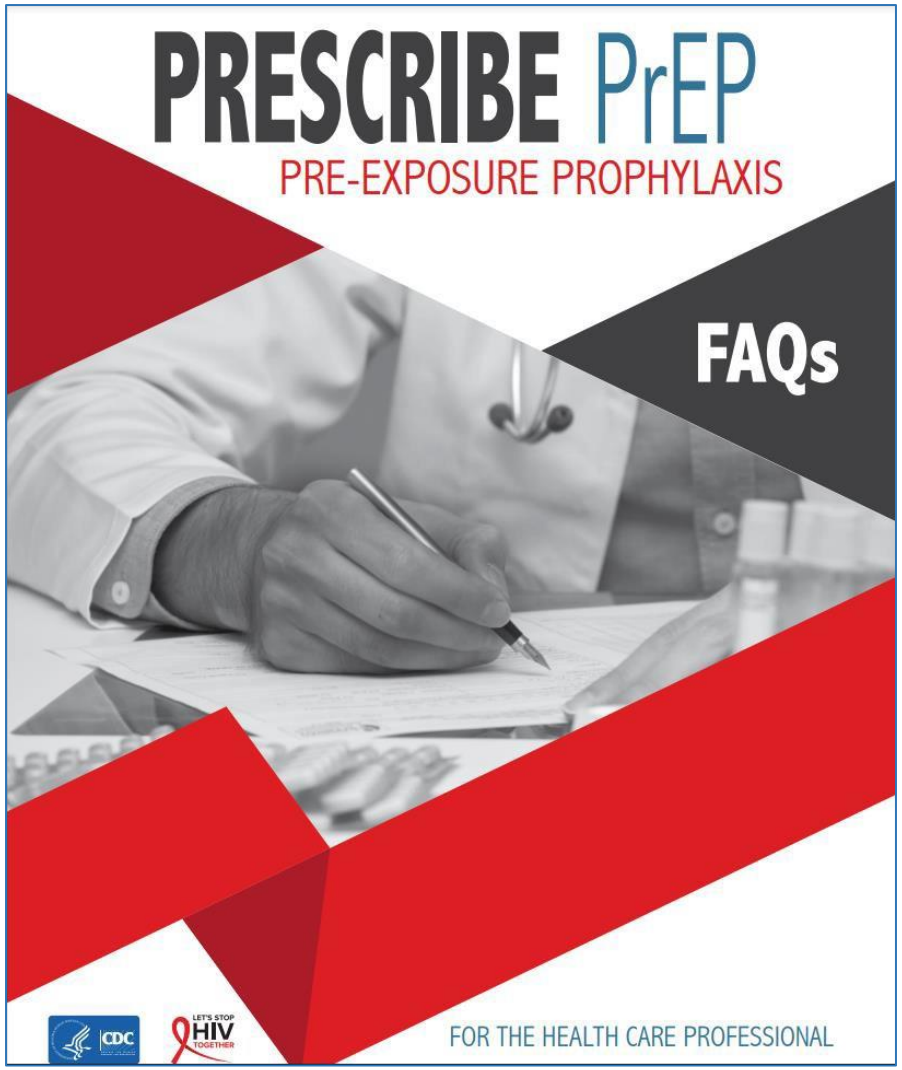
2017 –Updated CDC PrEP guidelines

2019 Descovy (TAF/FTC) approved by FDA for PrEP for Men who have Sex with Men / Transgender Women (MSM/TGW)

2021 - Apretude (Cabotegravir) approved for PrEP & Updated Guidelines

CDC.gov – Preexposure Prophylaxis for the prevention of HIV infection in the United States – 2021 Update

HIV PrEP Effectiveness



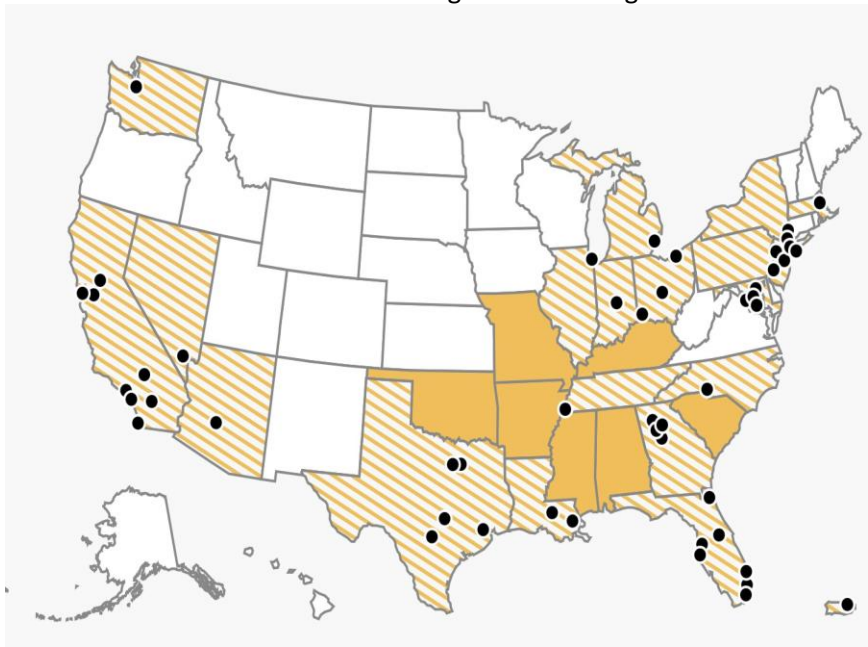
Transmission Route	Effectiveness Estimate	Interpretation
Sexual	~99%	Very high levels of adherence to PrEP ensures maximum effectiveness.
Injection drug use	74% – 84%	These estimates are based on tenofovir alone and not necessarily when taken daily. The effectiveness may be greater for the two-drug oral therapy and if used daily.

CDC.GOV

ENDING THE HIV EPIDEMIC

- **Four Pillars:**
  - Diagnose all individuals with HIV as early as possible after infection
  - Treat HIV infection rapidly and effectively to achieve sustained viral suppression
  - Prevent individuals from acquiring HIV infection, including the use of pre-exposure prophylaxis (PrEP)
  - Rapidly detect and respond to emerging clusters of HIV infection to further reduce new transmissions

Image source: HIV.gov



Diagnose | Indicators to Monitor progress | Ending the HIV Epidemic | CDC. (n.d.). https://www.cdc.gov/endhiv/indicators/diagnose.html#:~:text=The%20initiative%20includes%20four%20pillars,that%20can%20end%20the%20epidemic.&text=Knowing%20one%27s%20status%20is%20a,powerful%20prevention%20and%20treatment%20tools.

Vital Signs: Status of Human Immunodeficiency Virus Testing, Viral Suppression, and HIV Preexposure Prophylaxis — United States, 2013–2018

Weekly / December 6, 2019 / 68(48);1117–1123

On December 3, 2019, this report was posted online as an MMWR *Early Release.*

Norma S. Harris, PhD[1]; Anna Satcher Johnson, MPH[1]; Ya-Lin A. Huang, PhD[1]; Dayle Kern, MA[1]; Paul Fulton[2]; Dawn K. Smith, MD[1]; Linda A. Valleroy, PhD[1]; H. Irene Hall, PhD[1]
(View author affiliations)

- 18.1% of individuals who meet indications for PrEP are currently on PrEP
- 5.9% of Black individuals who meet indications are on PrEP
- 10.9% of Hispanic/Latino individuals who meet indications are on PrEP
- 42.1% of White individuals who meet indications are on PrEP
- Age disparity - highest age group 25-44 years old (21.5-21.9%)

PrEP UPTAKE

AHEAD Dashboard

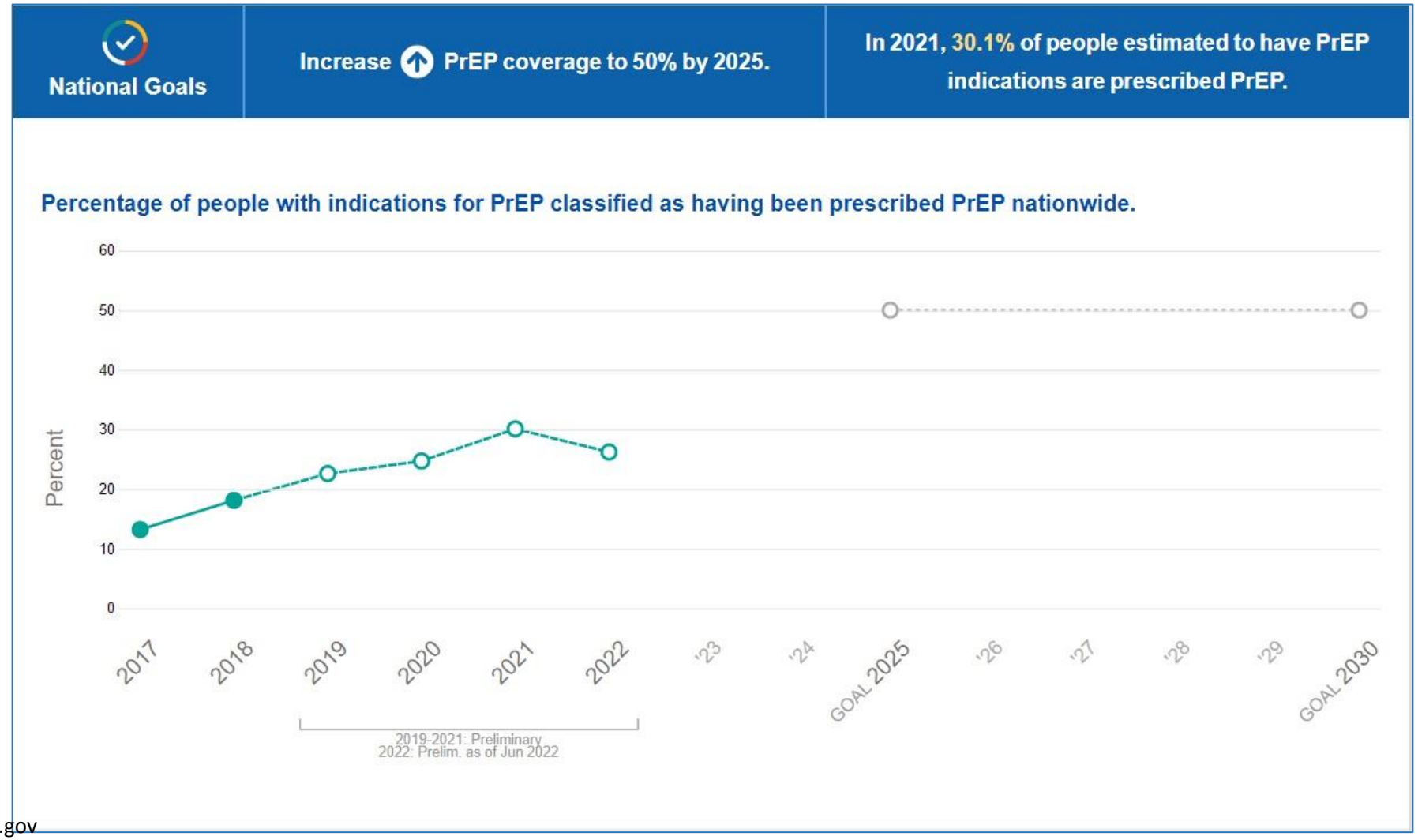


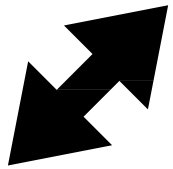
Image source: ahead.hiv.gov

Nunn AS, Brinkley-Rubinstein L, Oldenburg CE, Mayer KH, Mimiaga M, Patel R, Chan PA. Defining the HIV pre-exposure prophylaxis care continuum. AIDS. 2017 Mar 13;31(5):731-734. doi: 10.1097/QAD.0000000000001385. PMID: 28060019; PMCID: PMC5333727.

PrEP Continuum of Care

IDENTIFICATION OF INDIVIDUALS WITH HIGHER LIKELIHOOD OF HIV ACQUISITION

LINKAGE TO PREP SERVICES AND PROVIDERS



INITIATION OF PREP

PROVIDER PREPARED AND WILLING TO PROVIDE PREP

ENGAGEMENT AND RETENTION IN PREP CARE

CASE #1

33 year-old cisgender male who is presenting to get started on PrEP. He currently reports one cisgender male sexual partner who is HIV negative; no other sexual partners in the last 2 years; denies any history of STIs (sexually transmitted infections) in the past. His last HIV test was 6 months ago and was non-reactive. Currently he shows no signs of acute HIV on physical examination.

Would you:

A) Prescribe PrEP

B) Not prescribe PrEP as the patient does not meet indications

C) I have no idea what to do in this scenario!

WHO SHOULD GET PrEP?

2021 USPHS PrEP GUIDELINES UPDATE

MAJOR CHANGES

- Increased and simplified indications
- Increased access to PrEP
- More options for PrEP (TAF/FTC & Cabotegravir)
  - How to give Cabotegravir
- Laboratory testing changes (some simpler, some more complex)

CDC.gov – Preexposure Prophylaxis for the prevention of HIV infection in the United States – 2021 Update

MAJOR CHANGES – MORE INDICATIONS

- "Added recommendation to inform all sexually active adults and adolescents about PrEP"
- Simplified indications for PrEP for all sexually active persons and PWID (people who inject drugs)

Table 1a: Summary of Clinician Guidance for Daily Oral PrEP Use

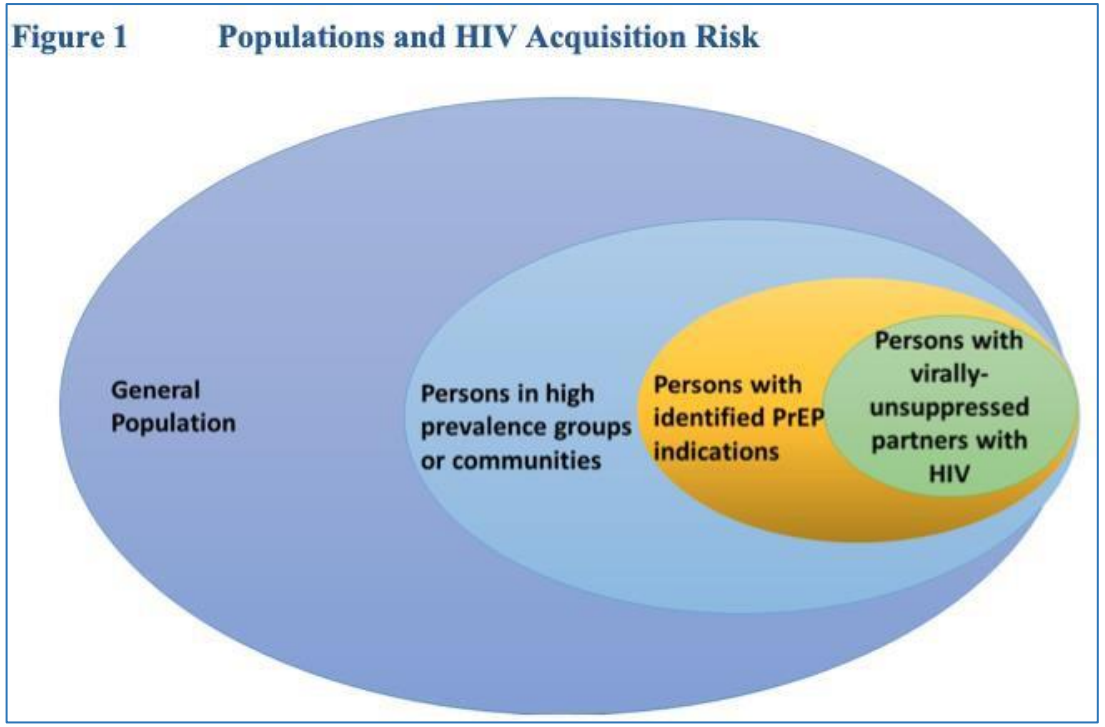
	Sexually-Active Adults and Adolescents[1]	Persons Who Inject Drug[2]
Identifying substantial risk of acquiring HIV infection	Anal or vaginal sex in past 6 months AND any of the following: • HIV-positive sexual partner (especially if partner has an unknown or detectable viral load) • Bacterial STI in past 6 months[3] • History of inconsistent or no condom use with sexual partner(s)	HIV-positive injecting partner OR Sharing injection equipment
Clinically eligible	**ALL OF THE FOLLOWING CONDITIONS ARE MET:** • Documented negative HIV Ag/Ab test result within 1 week before initially prescribing PrEP • No signs/symptoms of acute HIV infection • Estimated creatinine clearance ≥30 ml/min[4] • No contraindicated medications	
Dosage	• Daily, continuing, oral doses of F/TDF (Truvada®), ≤90-day supply OR • For men and transgender women at risk for sexual acquisition of HIV; daily, continuing, oral doses of F/TAF (Descovy®), ≤90-day supply	
Follow-up care	**Follow-up visits at least every 3 months to provide the following:** • HIV Ag/Ab test and HIV-1 RNA assay, medication adherence and behavioral risk reduction support • Bacterial STI screening for MSM and transgender women who have sex with men[3] – oral, rectal, urine, blood • Access to clean needles/syringes and drug treatment services for PWID **Follow-up visits every 6 months to provide the following:** • Assess renal function for patients aged ≥50 years or who have an eCrCl <90 ml/min at PrEP initiation • Bacterial STI screening for all sexually-active patients[3] – [vaginal, oral, rectal, urine- as indicated], blood **Follow-up visits every 12 months to provide the following:** • Assess renal function for all patients • Chlamydia screening for heterosexually active women and men – vaginal, urine • For patients on F/TAF, assess weight, triglyceride and cholesterol levels	

Info & Image source: CDC.gov – Preexposure Prophylaxis for the prevention of HIV infection in the United States – 2021 Update

MAJOR CHANGES – MORE INDICATIONS

- "Routinely taking a sexual history is a necessary first step to identify…which specific sexual behaviors may place them at risk for, or protect them from, HIV acquisition."

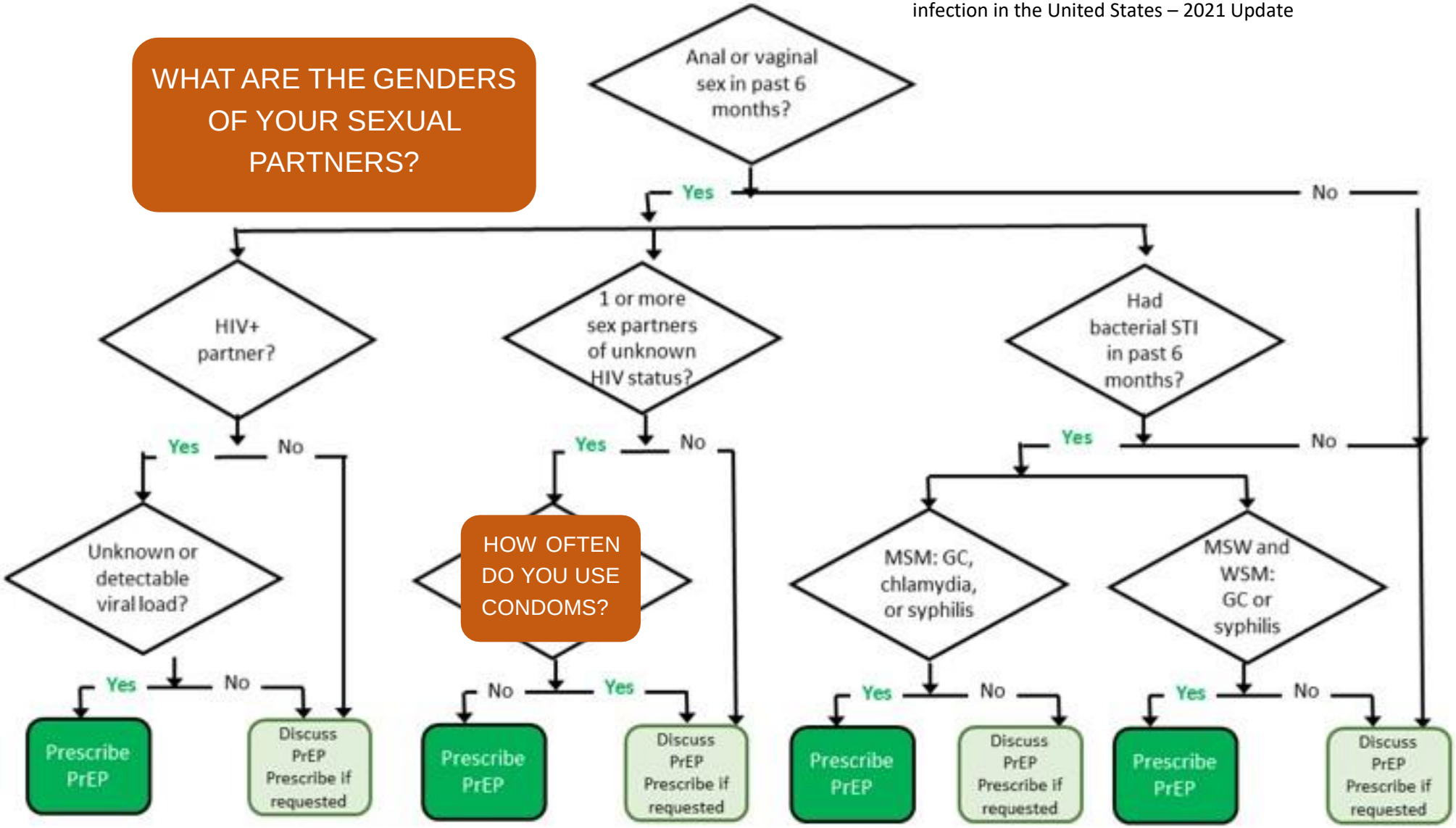
- Should not be limited to select patients, but rather all patients



Info & Image Source: CDC.gov – Preexposure Prophylaxis for the prevention of HIV infection in the United States – 2021 Update

Figure 2 Assessing Indications for PrEP in Sexually Active Persons

Image Source: CDC.gov – Preexposure Prophylaxis for the prevention of HIV infection in the United States – 2021 Update



Preexposure Prophylaxis for the Prevention of HIV Infection in the United States – 2021 Update Clinical Practice Guideline

Figure 3 Assessing Indications for PrEP in Persons Who Inject Drugs

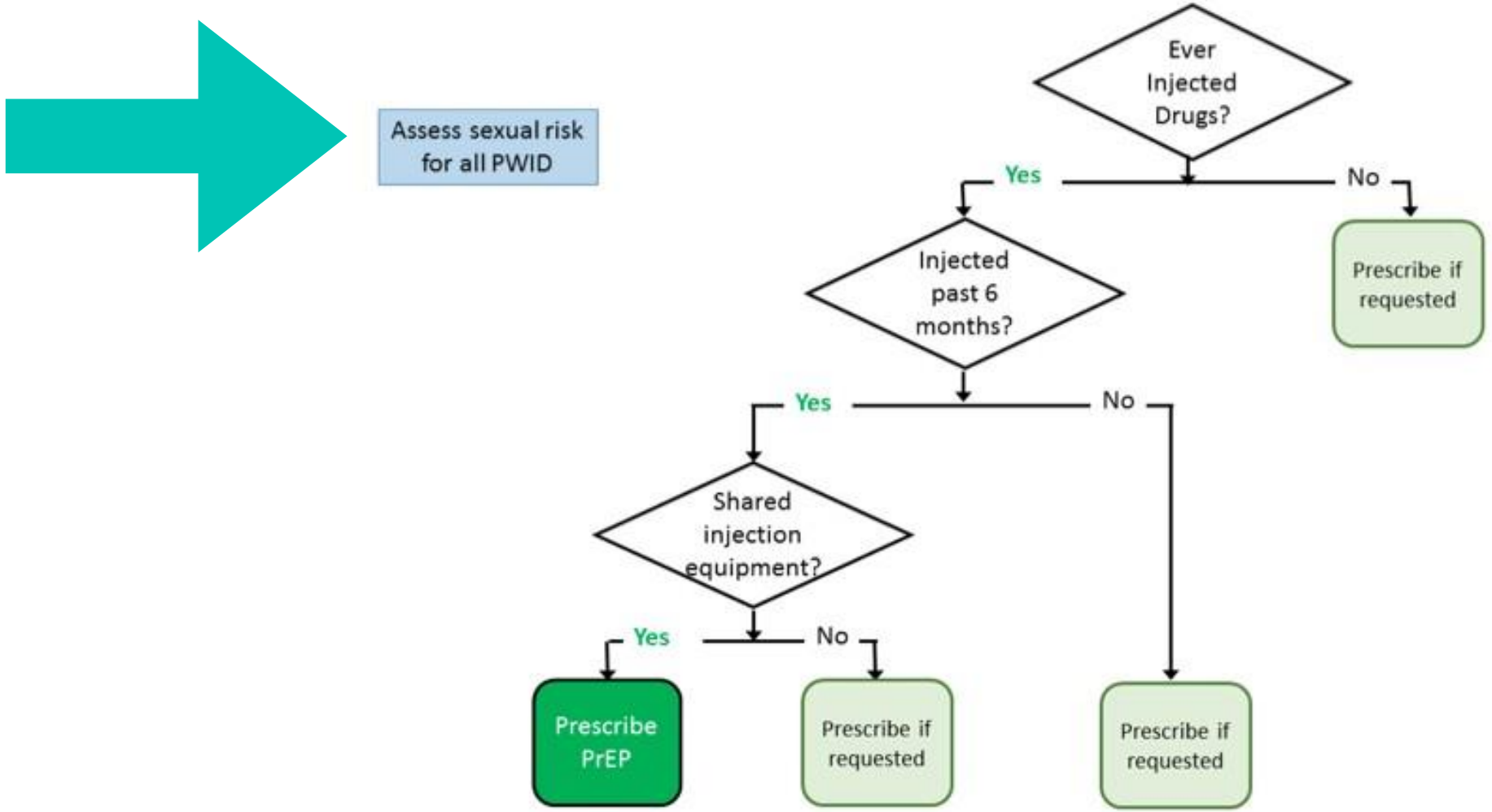


Image Source: CDC.gov – Preexposure Prophylaxis for the prevention of HIV infection in the United States – 2021 Update

PRESCRIBE
IF
REQUESTED!!

CASE #2

26-year-old cisgender woman is presenting in your STI clinic for vaginal discharge. She reports 4 cisgender male partners in the last year, has a history of chlamydia diagnosed 1 year ago, and gonorrhea diagnosed 2 years ago. She uses depo shots for contraception and does not use condoms. Her tests are positive for chlamydia on vaginal swab, and you decide to treat with doxycycline. You ask if she has heard about PrEP and she states she is interested. Her HIV test is non-reactive, and she has normal kidney function.

A) Prescribe TDF/FTC once daily

B) Prescribe TAF/FTC once daily

C) Prescribe Cabotegravir injection once every 2 months

D) A or B

E) A or C

F) None of the above as she doesn’t meet indications

INCREASED ACCESS to PrEP

- TDF/FTC - approved for all sexually active individuals + PWID – now generic!
- TAF/FTC - FDA approved as of 2019 (Discover Trial) - approved for cisgender men who have sex with cisgender men (MSM) and transgender women
- Cabotegravir - FDA approved as of 2021 (HPTN083, superiority) - approved for all sexually active individuals

CDC.gov – Preexposure Prophylaxis for the prevention of HIV infection in the United States – 2021 Update

TDF VS. TAF

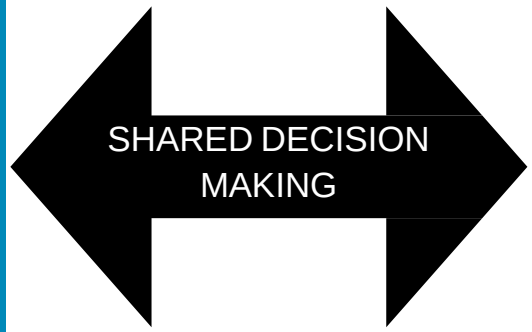
- Discover Trial
  - 96-week data
    - TAF/FTC equally effective compared to TDF/FTC

PRO TDF

-GENERIC AVAILABLE
-MORE INDICATIONS
-LESS METABOLIC CHANGES / WEIGHT GAIN
-2+1+1 (MSM)

CON TDF

-RENAL (CrCl (creatinine test) > 60) AND BONE DENSITY ISSUES
-LARGER PILL



PRO TAF

-LESS RENAL AND BONE COMPLICATIONS
-CAN BE USED CrCl > 30
-SMALLER PILL

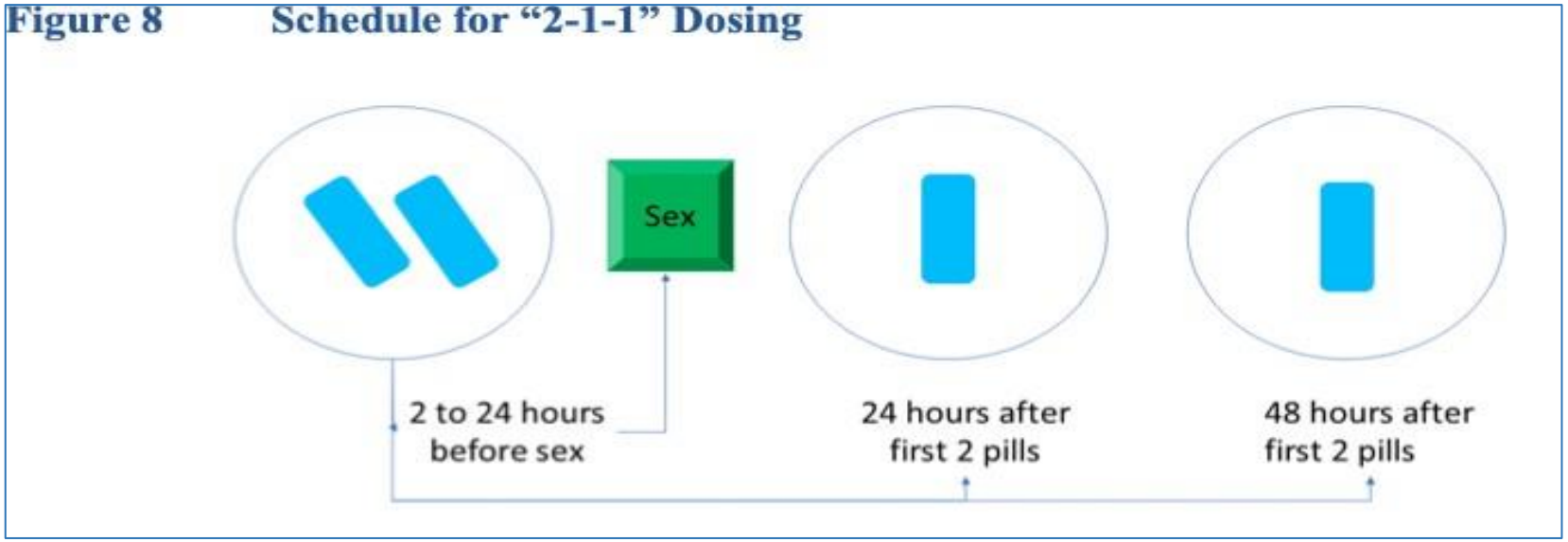
CON TAF

-POSSIBLE METABOLIC CHANGES / WEIGHT GAIN
-LESS INDICATIONS (MSM, TGW)

CDC.gov – Preexposure Prophylaxis for the prevention of HIV infection in the United States – 2021 Update

On Demand PrEP

- 2 (+n)+1+1 regimen
- Not FDA approved
- IPERGAY and Prevenir open label study (equally effective to daily PrEP)
- Only been studied in cisgender men who have sex with cisgender men (MSM) on TDF



Info & Image Source: CDC.gov – Preexposure Prophylaxis for the prevention of HIV infection in the United States – 2021 Update

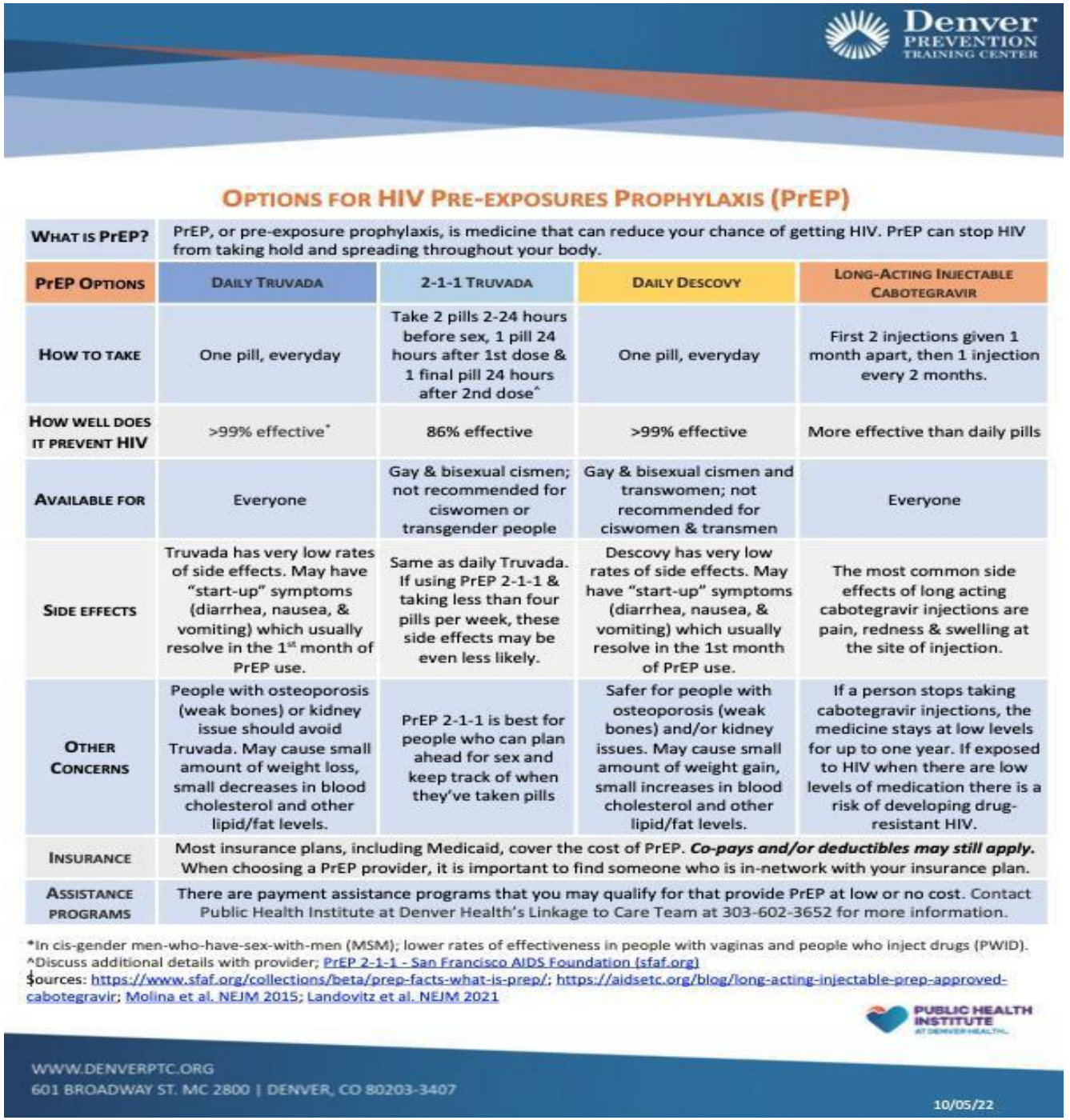
CABOTEGRAVIR

Table 1b: Summary of Clinician Guidance for Cabotegravir Injection PrEP Use

	Sexually-Active Adults	Persons Who Inject Drugs[1]
Identifying substantial risk of acquiring HIV infection	Anal or vaginal sex in past 6 months AND any of the following: • HIV-positive sexual partner (especially if partner has an unknown or detectable viral load) • Bacterial STI in past 6 months[2] • History of inconsistent or no condom use with sexual partner(s)	HIV-positive injecting partner OR Sharing injection equipment
Clinically eligible	**ALL OF THE FOLLOWING CONDITIONS ARE MET:** • Documented negative HIV Ag/Ab test result within 1 week before initial cabotegravir injection • No signs/symptoms of acute HIV infection • No contraindicated medications or conditions	
Dosage	• 600 mg cabotegravir administered as one 3 ml intramuscular injection in the gluteal muscle o Initial dose o Second dose 4 weeks after first dose (month 1 follow-up visit) o Every 8 weeks thereafter (month 3,5,7, follow-up visits etc)	
Follow-up care	**At follow-up visit 1 month after first injection** • HIV Ag/Ab test and HIV-1 RNA assay **At follow-up visits every 2 months (beginning with the third injection – month 3) provide the following:** • HIV Ag/Ab test and HIV-1 RNA assay • Access to clean needles/syringes and drug treatment services for PWID **At follow-up visits every 4 months (beginning with the third injection- month 3) provide the following:** • Bacterial STI screening[2] for MSM and transgender women who have sex with men[2] – oral, rectal, urine, blood **At follow-up visits every 6 months (beginning with the fifth injection – month 7) provide the following:** • Bacterial STI screening[1] for all heterosexually-active women and men – [vaginal, rectal, urine - as indicated], blood **At follow-up visits at least every 12 months (after the first injection) provide the following:** • Assess desire to continue injections for PrEP • Chlamydia screening for heterosexually active women and men – vaginal, urine **At follow-up visits when discontinuing cabotegravir injections provide the following:**	
	• Re-educate patients about the "tail" and the risks during declining CAB levels • Assess ongoing HIV risk and prevention plans • If PrEP is indicated, prescribe daily oral F/TDF or F/TAF beginning within 8 weeks after last injection • Continue follow-up visits with HIV testing quarterly for 12 months	

Image Source: CDC.gov – Preexposure Prophylaxis for the prevention of HIV infection in the United States – 2021 Update

DECISION TOOL



Denver PREVENTION TRAINING CENTER

OPTIONS FOR HIV PRE-EXPOSURES PROPHYLAXIS (PrEP)

WHAT IS PrEP?	PrEP, or pre-exposure prophylaxis, is medicine that can reduce your chance of getting HIV. PrEP can stop HIV from taking hold and spreading throughout your body.			
PrEP OPTIONS	**DAILY TRUVADA**	**2-1-1 TRUVADA**	**DAILY DESCOVY**	**LONG-ACTING INJECTABLE CABOTEGRAVIR**
HOW TO TAKE	One pill, everyday	Take 2 pills 2-24 hours before sex, 1 pill 24 hours after 1st dose & 1 final pill 24 hours after 2nd dose^	One pill, everyday	First 2 injections given 1 month apart, then 1 injection every 2 months.
HOW WELL DOES IT PREVENT HIV	>99% effective*	86% effective	>99% effective	More effective than daily pills
AVAILABLE FOR	Everyone	Gay & bisexual cismen; not recommended for ciswomen or transgender people	Gay & bisexual cismen and transwomen; not recommended for ciswomen & transmen	Everyone
SIDE EFFECTS	Truvada has very low rates of side effects. May have "start-up" symptoms (diarrhea, nausea, & vomiting) which usually resolve in the 1st month of PrEP use.	Same as daily Truvada. If using PrEP 2-1-1 & taking less than four pills per week, these side effects may be even less likely.	Descovy has very low rates of side effects. May have "start-up" symptoms (diarrhea, nausea, & vomiting) which usually resolve in the 1st month of PrEP use.	The most common side effects of long acting cabotegravir injections are pain, redness & swelling at the site of injection.
OTHER CONCERNS	People with osteoporosis (weak bones) or kidney issue should avoid Truvada. May cause small amount of weight loss, small decreases in blood cholesterol and other lipid/fat levels.	PrEP 2-1-1 is best for people who can plan ahead for sex and keep track of when they've taken pills	Safer for people with osteoporosis (weak bones) and/or kidney issues. May cause small amount of weight gain, small increases in blood cholesterol and other lipid/fat levels.	If a person stops taking cabotegravir injections, the medicine stays at low levels for up to one year. If exposed to HIV when there are low levels of medication there is a risk of developing drug-resistant HIV.
INSURANCE	Most insurance plans, including Medicaid, cover the cost of PrEP. ***Co-pays and/or deductibles may still apply.*** When choosing a PrEP provider, it is important to find someone who is in-network with your insurance plan.			
ASSISTANCE PROGRAMS	There are payment assistance programs that you may qualify for that provide PrEP at low or no cost. Contact Public Health Institute at Denver Health's Linkage to Care Team at 303-602-3652 for more information.			

*In cis-gender men-who-have-sex-with-men (MSM); lower rates of effectiveness in people with vaginas and people who inject drugs (PWID).
^Discuss additional details with provider; PrEP 2-1-1 - San Francisco AIDS Foundation (sfaf.org)
$ources: https://www.sfaf.org/collections/beta/prep-facts-what-is-prep/; https://aidsetc.org/blog/long-acting-injectable-prep-approved-cabotegravir; Molina et al. NEJM 2015; Landovitz et al. NEJM 2021

PUBLIC HEALTH INSTITUTE AT DENVER HEALTH

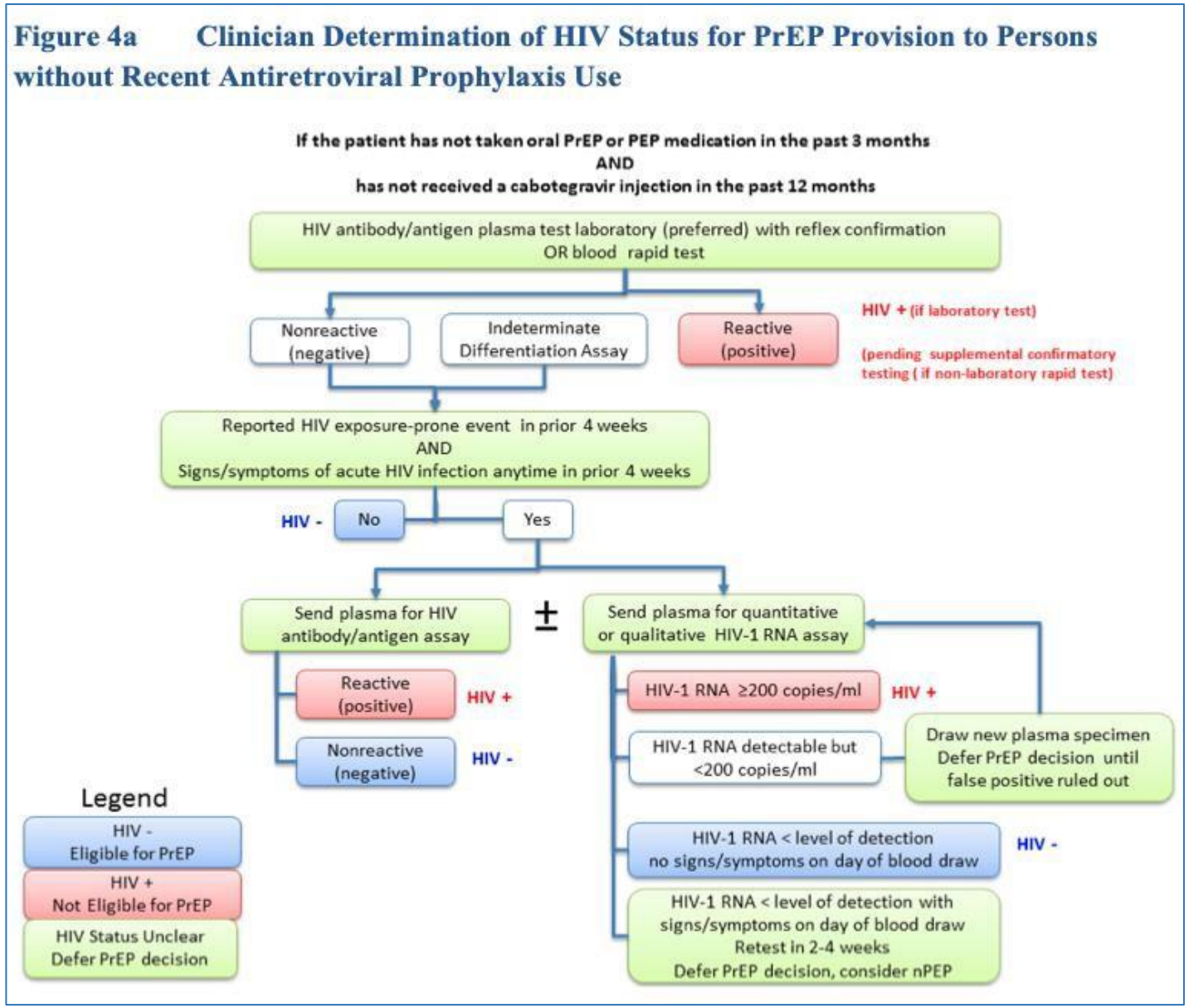
WWW.DENVERPTC.ORG
601 BROADWAY ST. MC 2800 | DENVER, CO 80203-3407

10/05/22

Image Source: Denver Prevention Training Center

HIV TESTING

- Clinicians should document negative HIV test results within a week before initiating PrEP
- HIV Ag/Ab (antigen / antibody) test
- Acute HIV – Important to diagnose to prevent resistance



Info & Image Source: CDC.gov – Preexposure Prophylaxis for the prevention of HIV infection in the United States – 2021 Update

BUT NOT SO FAST…

- HPTN083
  - HIV detection delayed compared to HIV-1 RNA assay (nucleic acid test or viral load test)
    - Mean 62 day for infections present at baseline
    - Mean 98 days for incident infections
  - Not just cabotegravir . . . F/TDF delay by 34 days for baseline and 31 days for incident infections
- HIV-1 RNA for all patients?

CDC.gov – Preexposure Prophylaxis for the prevention of HIV infection in the United States – 2021 Update

LESS FREQUENT LABS (TDF AND TAF)

- At least every 3 months:
  - Repeat HIV testing and assess for signs or symptoms of acute infection
  - Prescription or refill for 90 days
  - Medication adherence and risk-reduction
  - Conduct STI testing for all sexually active with signs or symptoms or asymptomatic MSM
- At least every 6 months:
  - Monitor CrCl for age 50 or greater or who have CrCl<90 at PrEP initiation
    - If CrCl declining rapidly
  - STI screening all sexually active MSM and TGW
- At least every 12 months:
  - CrCl for all patients
  - Triglyceride, cholesterol, and weight for F/TAF
  - Chlamydia screening for heterosexual men and women

CDC.gov – Preexposure Prophylaxis for the prevention of HIV infection in the United States – 2021 Update

Table 5 Timing of Oral PrEP-associated Laboratory Tests

Test	Screening/Baseline Visit	Q 3 months	Q 6 months	Q 12 months	When stopping PrEP
HIV Test	X*	X			X*
eCrCl	X		If age ≥50 or eCrCL <90 ml/min at PrEP initiation	If age <50 and eCrCl ≥90 ml/min at PrEP initiation	X
Syphilis	X	MSM /TGW	X		MSM/TGW
Gonorrhea	X	MSM /TGW	X		MSM /TGW
Chlamydia	X	MSM /TGW	X		MSM /TGW
Lipid panel (F/TAF)	X			X	
Hep B serology	X				
Hep C serology	MSM, TGW, and PWID only			MSM,TGW, and PWID only	

* Assess for acute HIV infection (see Figure 4)

CDC.gov – Preexposure Prophylaxis for the prevention of HIV infection in the United States – 2021 Update

LABS -CABOTEGRAVIR

Table 7 Timing of CAB PrEP-associated Laboratory Tests

Test	Initiation Visit	1 month visit	Q2 months	Q4 months	Q6 months	Q12 months	When Stopping CAB
HIV*	X	X	X	X	X	X	X
Syphilis	X			MSM^/TGW~ only	Heterosexually active women and men only	X	MSM/TGW only
Gonorrhea	X			MSM/TGW only	Heterosexually active women and men only	X	MSM/TGW only
Chlamydia	X			MSM/TGW only	MSM/TGW only	Heterosexually active women and men only	MSM/TGW only

* HIV-1 RNA assay

X all PrEP patients

^ men who have sex with men

~ persons assigned male sex at birth whose gender identification is female

CDC.gov – Preexposure Prophylaxis for the prevention of HIV infection in the United States – 2021 Update

CASE #3

27-year-old TGW presenting to start on PrEP. They are HIV negative, have normal kidney function, show no signs of acute HIV on physical examination. They would like to be started right away but ask how long it takes for PrEP to be effective. You are starting them through shared decision making on TDF/FTC.

A) 7 days

B) 14 days

C) 21 days

D) Not enough data

TIME TO EFFECTIVENESS

- TDF/FTC
  - Rectal tissue - approximately 7 days
  - Cervicovaginal tissue - 20 days

- But what about on demand?
  - TAF/FTC and Cabotegravir – no data yet available

- IAS Guidelines 2022:
  - Cisgender men – take two pills at once and effective within 24 hours
  - Other individuals – at least 7 days

CDC.gov – Preexposure Prophylaxis for the prevention of HIV infection in the United States – 2021 Update

PERICONCEPTION, PREGNACY AND BREASTFEEDING

- TDF/FTC can be used safely
- Useful in sero-discordant couples
- Little data on TAF/FTC and Cabotegravir
- Stay tuned for results from HPTN 084- cabotegravir in pregnancy

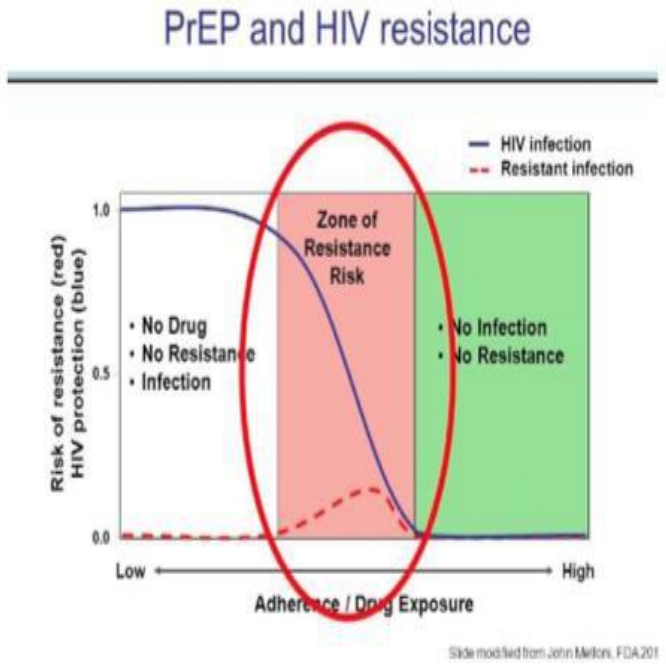
➢ Perspective/anonymously submit info about pregnancy with TDF/FTC, TAF/FTC or Cabotegravir for PrEP to Antiretroviral Pregnancy Registry at: **http://www.apregistry.com**

CDC.gov – Preexposure Prophylaxis for the prevention of HIV infection in the United States – 2021 Update

DISCONTINUING ORAL AND INJECTABLE PrEP

Figure 7 The trade-off of PrEP drug levels and risk of HIV infection with resistant virus

- Oral PrEP
  - Efficacy wanes 7-10 days after discontinuation
  - If client has HBV (hepatitis B virus), monitor for flare ups
- Cabotegravir
  - Levels can take 44-67 weeks to be undetectable and low
  - Low levels can increase likelihood of HIV resistance
  - Follow up quarterly for 12 months after discontinuing medication, obtain HIV-1 RNA test
  - If PrEP still indicated, can use oral TDF/FTC or TAF/FTC within 8 weeks of last injection
- Document in health record HIV status at time of discontinuation, reason for discontinuation



CDC.gov – Preexposure Prophylaxis for the prevention of HIV infection in the United States – 2021 Update

PrEP Innovations

MULTIPURPOSE PREVENTION TECHNOLOGIES

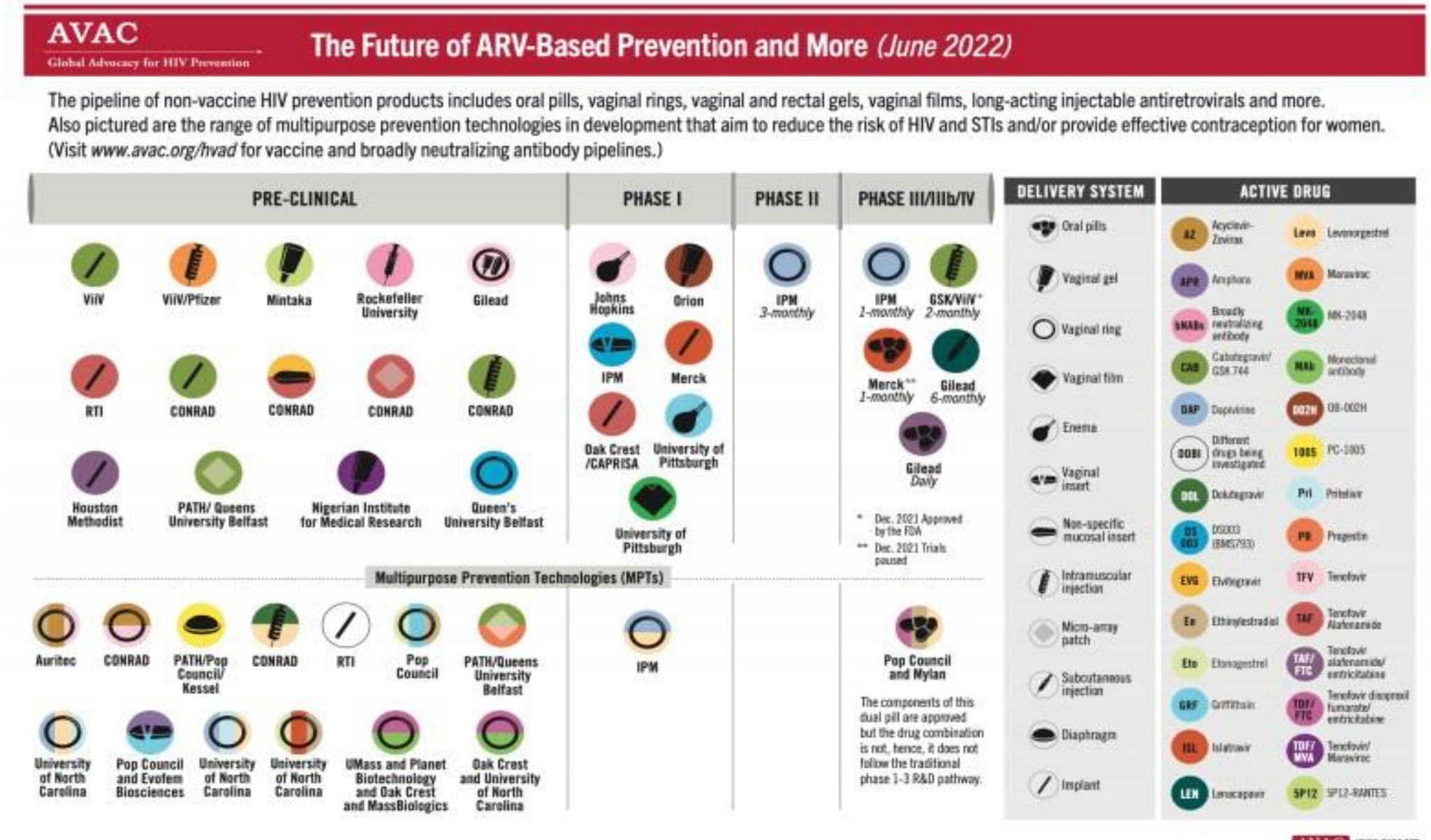
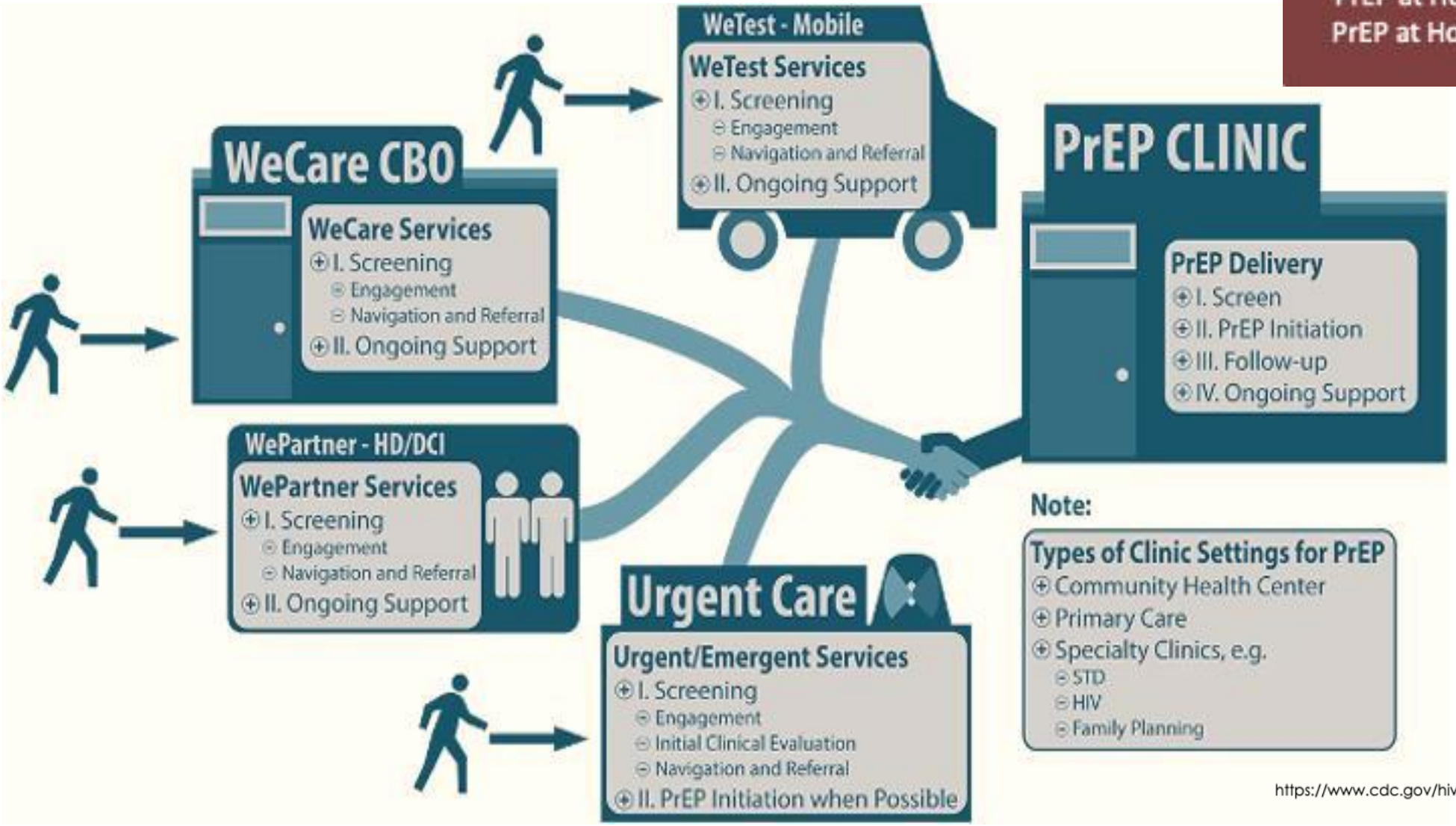


Image Source: AVAC.org

INNOVATIONS IN PREP IMPLEMENTATION

Innovations in PrEP Implementation:
Same-Day PrEP
Integrated Testing & PrEP in Pharmacies
TelePrEP in clinics/CBOs/Pharmacies
PrEP at Home (with tele + home testing)
PrEP at Hotspots (i.e., at the bath house)



https://www.cdc.gov/hiv/effective-interventions/prevent/prep/index.html

SAME DAY PrEP and TELE- PrEP

- POC (point of care) HIV test – Ag/Ab, HIV RNA preferred but only if same day results
  - Do not use oral fluid HIV test (3rd generation)
- Draw blood for creatinine
- Provide assistance for patients eligible to enroll in health insurance, mediation co-pay assistance, or medication assistance programs
- Give 90-day supply (previously 30 day with follow up)
- Guidance on Providing PrEP by Telehealth
  - Home specimen collection kits
  - More resources: https://www.primehealthco.com/teleprep

CDC.gov – Preexposure Prophylaxis for the prevention of HIV infection in the United States – 2021 Update

COSTS

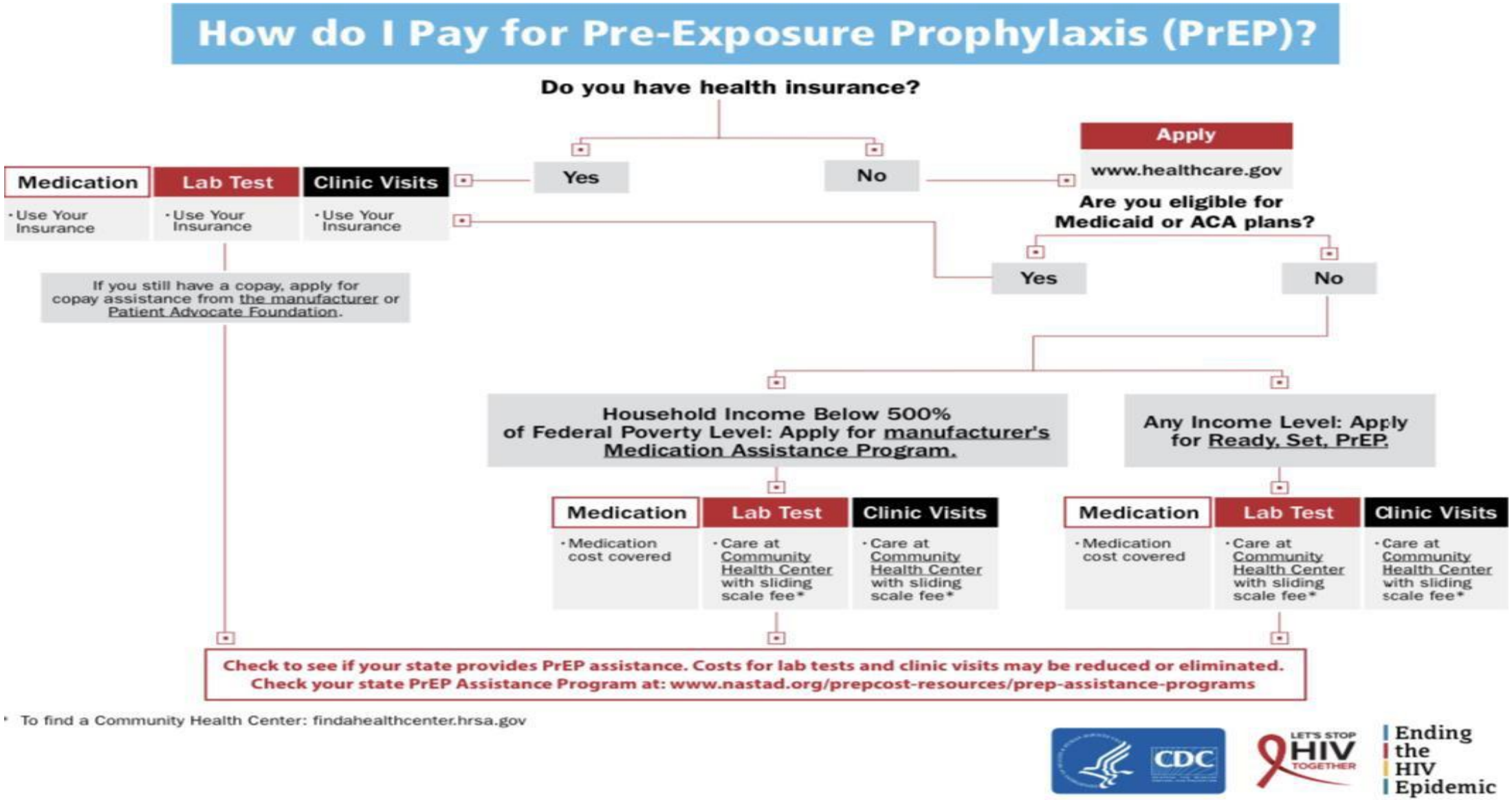


Image Source: Do you have health insurance? | Paying for PrEP | PrEP | HIV Basics | HIV/AIDS | CDC. (n.d.). https://www.cdc.gov/hiv/basics/prep/paying-for-prep/index.html

COSTS

- Generic TDF/FTC
- 340B funding
- USPSTF (United States Prevention Services Task Force) Grade A recommendation – qualified health plans need to provide at least one PrEP option and associated PrEP initiation and monitoring services without cost sharing
  - Braidwood ruling
  - Gilead Advancing Access program – no-cost medications to uninsured individuals under 500% of federal poverty level
- Ready, Set, PrEP - no-cost medications for qualified individuals who lack prescription drug coverage
- Lab costs are the biggest burden for the uninsured
  - No Medicaid expansion, and insurance plans that do not benefit from cost-sharing protections

Do you have health insurance? | Paying for PrEP | PrEP | HIV Basics | HIV/AIDS | CDC. (n.d.). https://www.cdc.gov/hiv/basics/prep/paying-for-prep/index.html

FINANCING TOOLS

Image Source: NASTAD.org

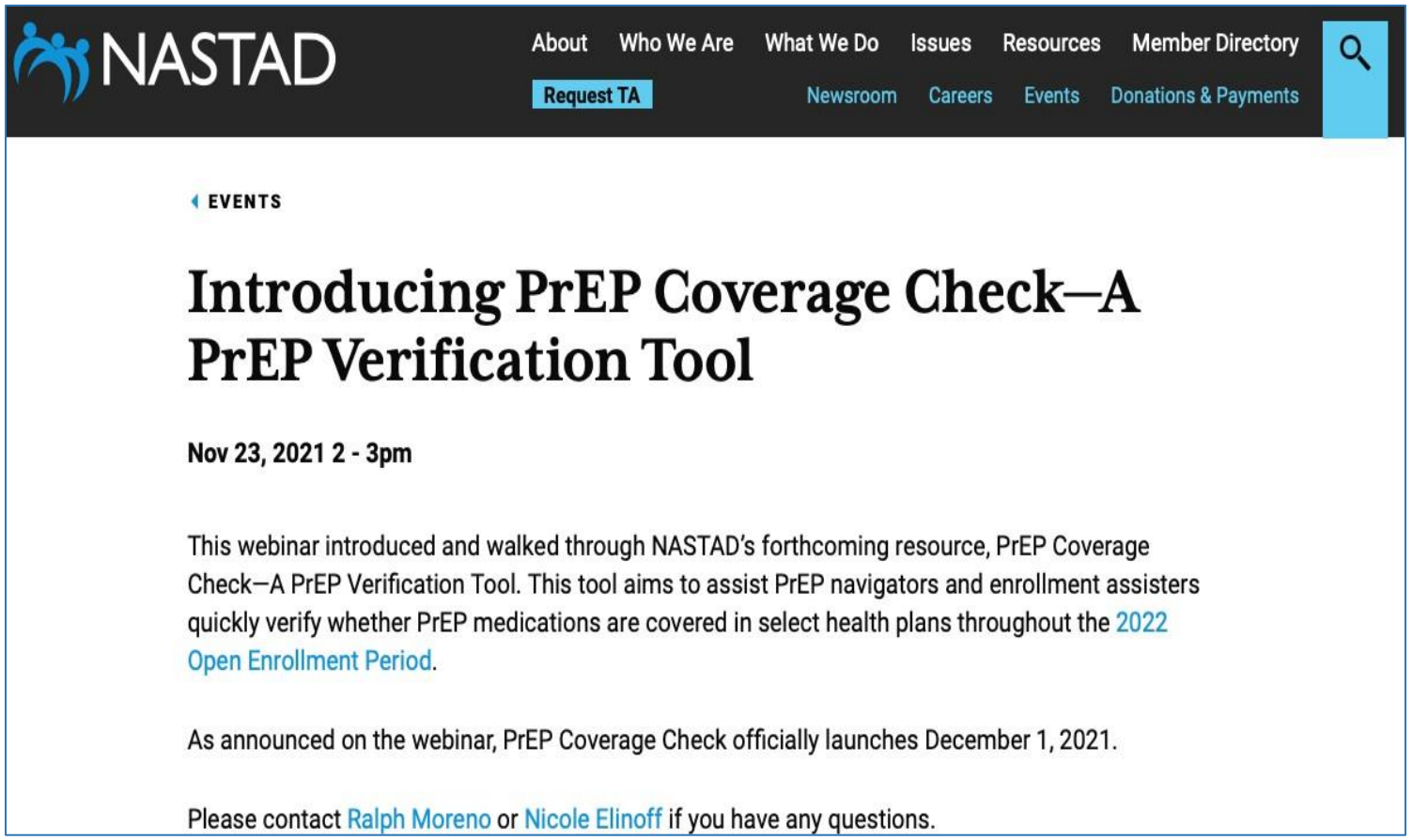


Image Source: NASTAD.org

WHY PREP IN STI CLINICS?

PrEP in the STI Clinic

- NACCHO (National Association of County and City Health Officials) Survey 2020:
  - 46% of local health departments (LHD) were engaged in PrEP implementation
  - 68% of LHDs linked individuals to PrEP providers (most commonly to FQHCs (Federally Qualified Health Centers) followed by private providers, CBOs (community-based organizations), and Planned Parenthood)
  - 42% prescribe PrEP in their clinic (up from 10% in 2015)
  - 81% do not provide PrEP starter packs
  - 80% have PrEP navigator / coordinator staff
    - Majority view role of LHDs in increasing communication and strategies to promote PrEP, education and outreach, and refer or link individuals to PrEP providers
  - 1/3 LHDs do not have funding to support work – biggest challenge to implementing PrEP
    - Lack of staff, difficulty reaching underserved populations, and lack of healthcare providers in community

https://www.naccho.org/uploads/downloadable-resources/Programs/Community-Health/NACCHO360_2021_PrEP-Survey_Final_Conference_Slides.pdf

PrEP in STI Clinics

Original Investigation | Infectious Diseases

December 11, 2019

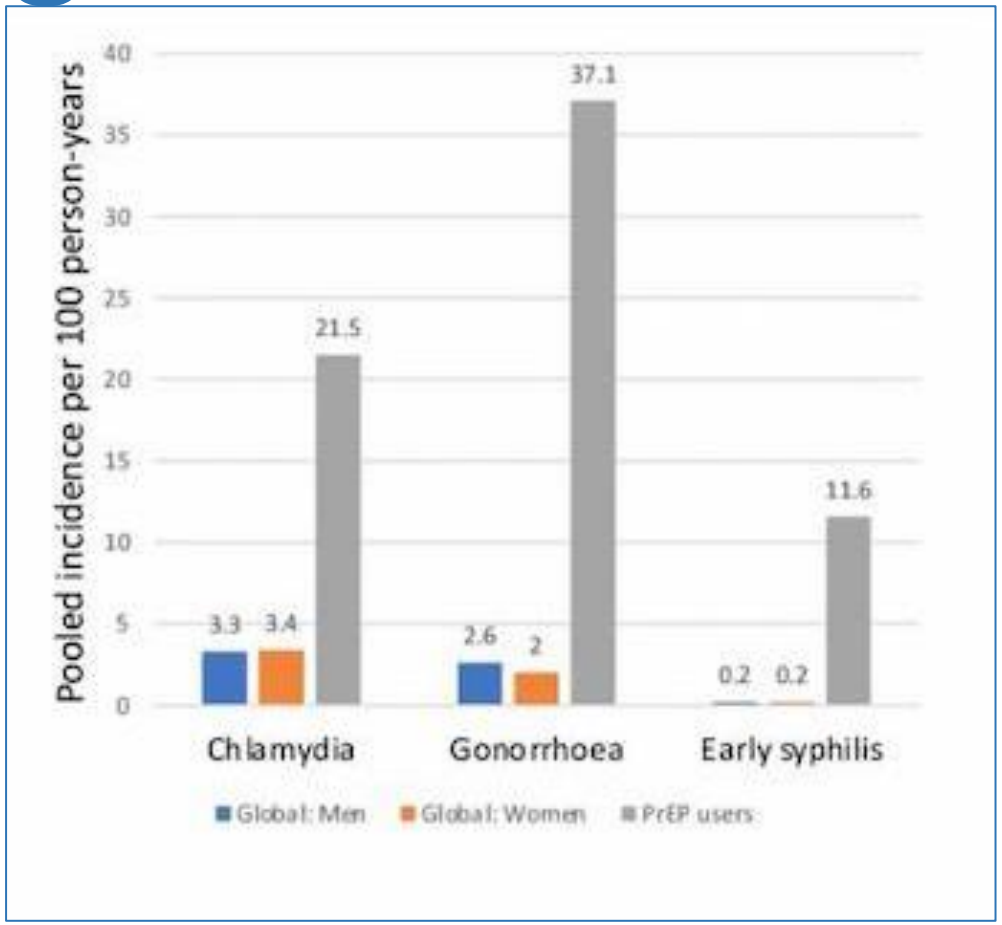
Global Epidemiologic Characteristics of Sexually Transmitted Infections Among Individuals Using Preexposure Prophylaxis for the Prevention of HIV Infection

A Systematic Review and Meta-analysis

Jason J. Ong, PhD, MBBS[1,2]; Rachel C. Baggaley, MSc, MBBS[3]; Teodora E. Wi, MD[3]; et al

» Author Affiliations | Article Information

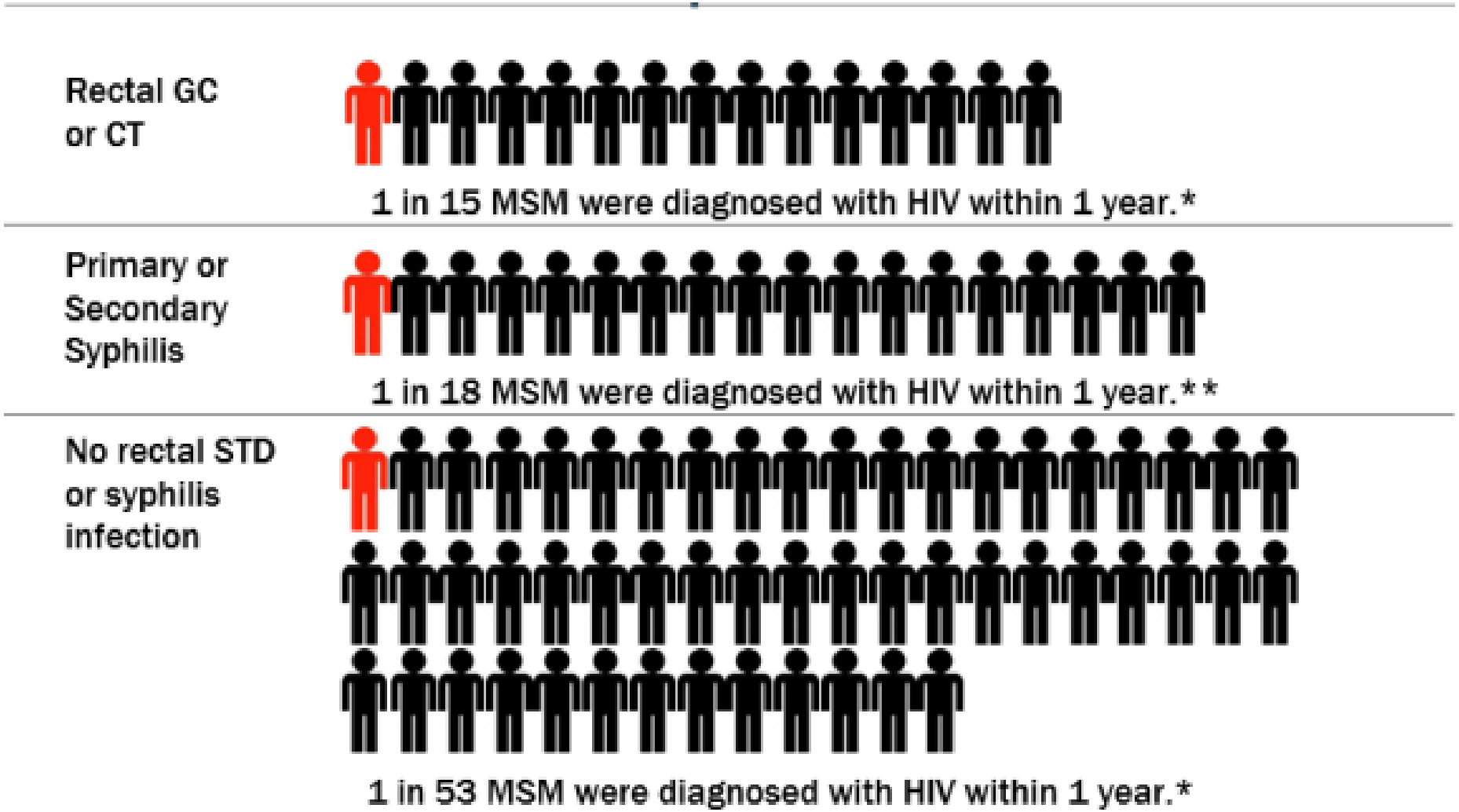
JAMA Netw Open. 2019;2(12):e1917134. doi:10.1001/jamanetworkopen.2019.17134



- Higher rates of STIs among PrEP users
  - 10x higher incidence of gonorrhea, chlamydia, and early syphilis in PrEP users compared to non-PrEP users

Images and Info Sourced: Jason J. Ong, PhD, MBBS; Rachel C. Baggaley, MSc, MBBS; Teodora E. Wi, MD; et al

PrEP in STI Clinics



*STD Clinic Patients, New York City. Pathela, CID 2013:57;
**Matched STD/HIV Surveillance Data, New York City. Pathela, CID 2015:61

Image Source: idac.org

Patient Disengagement from an HIV Pre-Exposure Prophylaxis Program in a Sexually Transmitted Disease Clinic

Julia C. Dombrowski, MD, MPH[1,2,3], **Matthew R. Golden, MD, MPH**[1,2,3], **Lindley A. Barbee, MD, MPH**[1,2], and **Christine M. Khosropour, PhD, MPH**[3]

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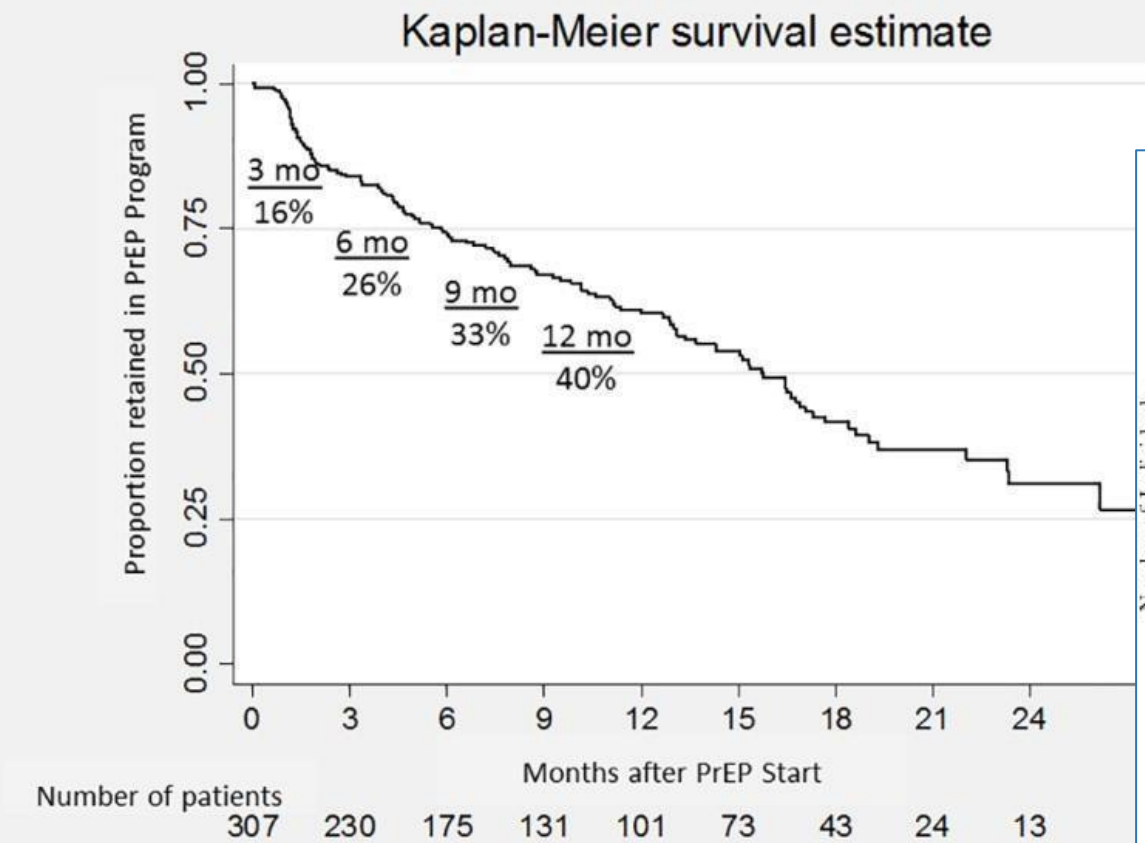
[2]Public Health – Seattle & King County HIV/STD Program, Seattle, WA

[3]Department of Epidemiology, University of Washington, Seattle, WA

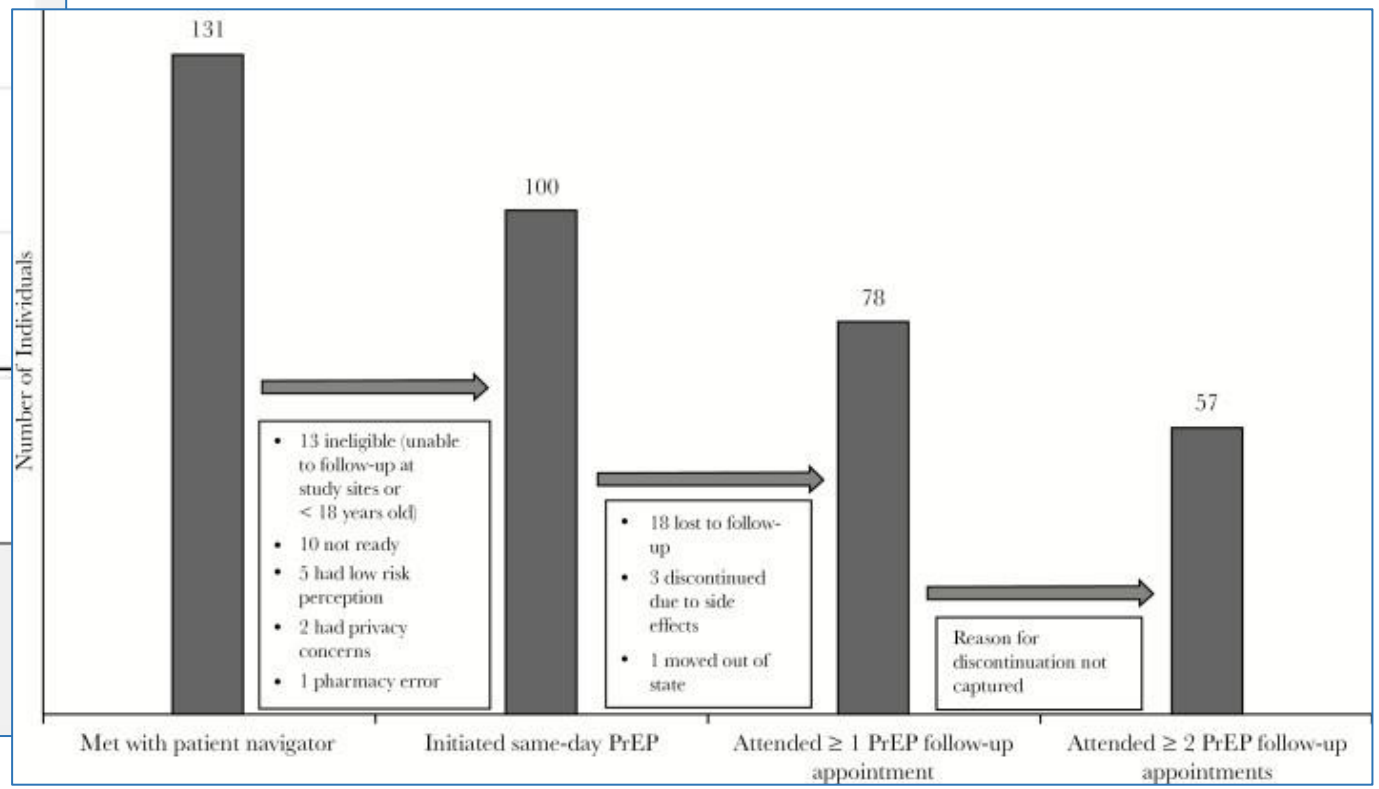


Same-Day HIV Pre-Exposure Prophylaxis (PrEP) Initiation During Drop-in Sexually Transmitted Diseases Clinic Appointments Is a Highly Acceptable, Feasible, and Safe Model that Engages Individuals at Risk for HIV into PrEP Care

Kevin F Kamis ✉, Grace E Marx, Kenneth A Scott, Edward M Gardner, Karen A Wendel, Mia L Scott, Angela E Montgomery, Sarah E Rowan

Open Forum Infectious Diseases, Volume 6, Issue 7, July 2019, ofz310, https://doi.org/10.1093/ofid/ofz310

Published: 27 June 2019 **Article history** ▾



HIV Preexposure Prophylaxis and Sexual Satisfaction Among Men Who Have Sex With Men

Marcus, Julia L. PhD[*,†]; Sewell, Whitney C. PhD[*]; Powell, Victoria E. MPH[*]; Ochoa, Aileen MPH[*]; Mayer, Kenneth H. MD[†,‡]; Krakower, Douglas S. MD[*,†,‡]

TABLE 1 - Comparison of Sexual Satisfaction Between Respondents Who Used Preexposure Prophylaxis (PrEP) and Those Who Did Not Use PrEP in the Past 6 Months: US Online Survey, May 2019

	PrEP Users (n = 2942)	PrEP Nonusers (n = 4697)	*P*
"Thinking about your sex life during the last six months, please rate your satisfaction with the following aspects:"			
Individual scale items, mean (SD)			
The intensity of my sexual arousal	3.73 (0.91)	3.67 (0.98)	0.009
The quality of my orgasms	3.68 (0.95)	3.61 (1.04)	0.007
My "letting go" and surrender to sexual pleasure during sex	3.64 (1.05)	3.56 (1.11)	0.001
My focus/concentration during sexual activity	3.61 (0.96)	3.55 (1.03)	0.009
The way I sexually react to my partner(s)	3.76 (0.92)	3.70 (1.01)	0.006
My body's sexual functioning	3.44 (1.08)	3.49 (1.12)	0.10
My emotional opening up in sex	3.35 (1.11)	3.34 (1.14)	0.73
My mood after sexual activity	3.76 (0.98)	3.67 (1.06)	<0.001
The frequency of my orgasms	3.42 (1.14)	3.39 (1.18)	0.34
The pleasure I provide to my partner(s)	3.94 (0.91)	3.89 (0.97)	0.023
The balance between what I give and receive in sex	3.54 (1.03)	3.50 (1.09)	0.14
My partner(s)' emotional opening up during sex	3.26 (1.07)	3.28 (1.11)	0.41
My partner(s)' initiation of sexual activity	3.38 (1.10)	3.33 (1.17)	0.09
My partner(s)' ability to orgasm	3.77 (1.01)	3.76 (1.06)	0.74
My partner(s)' surrender to sexual pleasure ("letting go")	3.67 (1.00)	3.63 (1.07)	0.18
The way my partner(s) take care of my sexual needs	3.49 (1.09)	3.43 (1.15)	0.038
My partner(s)' sexual creativity	3.30 (1.11)	3.23 (1.19)	0.011
My partner(s)' sexual availability	3.13 (1.15)	3.11 (1.21)	0.45
The variety of my sexual activities	3.37 (1.11)	3.27 (1.17)	<0.001
The frequency of my sexual activity	2.99 (1.24)	2.83 (1.29)	<0.001
Subscale 1: ego-focused, mean (SD)	36.32 (7.48)	35.80 (8.22)	0.007
Subscale 2: partner(s) and sexual activity, mean (SD)	33.83 (8.37)	33.31 (9.07)	0.014
Full scale, mean (SD)	70.19 (14.74)	69.24 (16.08)	0.012

PRO STI CLINIC FOR PREP

- Can help cover individuals where cost of labs is an issue
- Most STI clinic patients qualify for PrEP
- STIs increase likelihood of HIV acquisition
- Higher rates of STIs among PrEP users (but we are checking frequently . . .)
- Cons:
  - Not built for follow up
  - Financial burden
  - Lack of dedicated staff

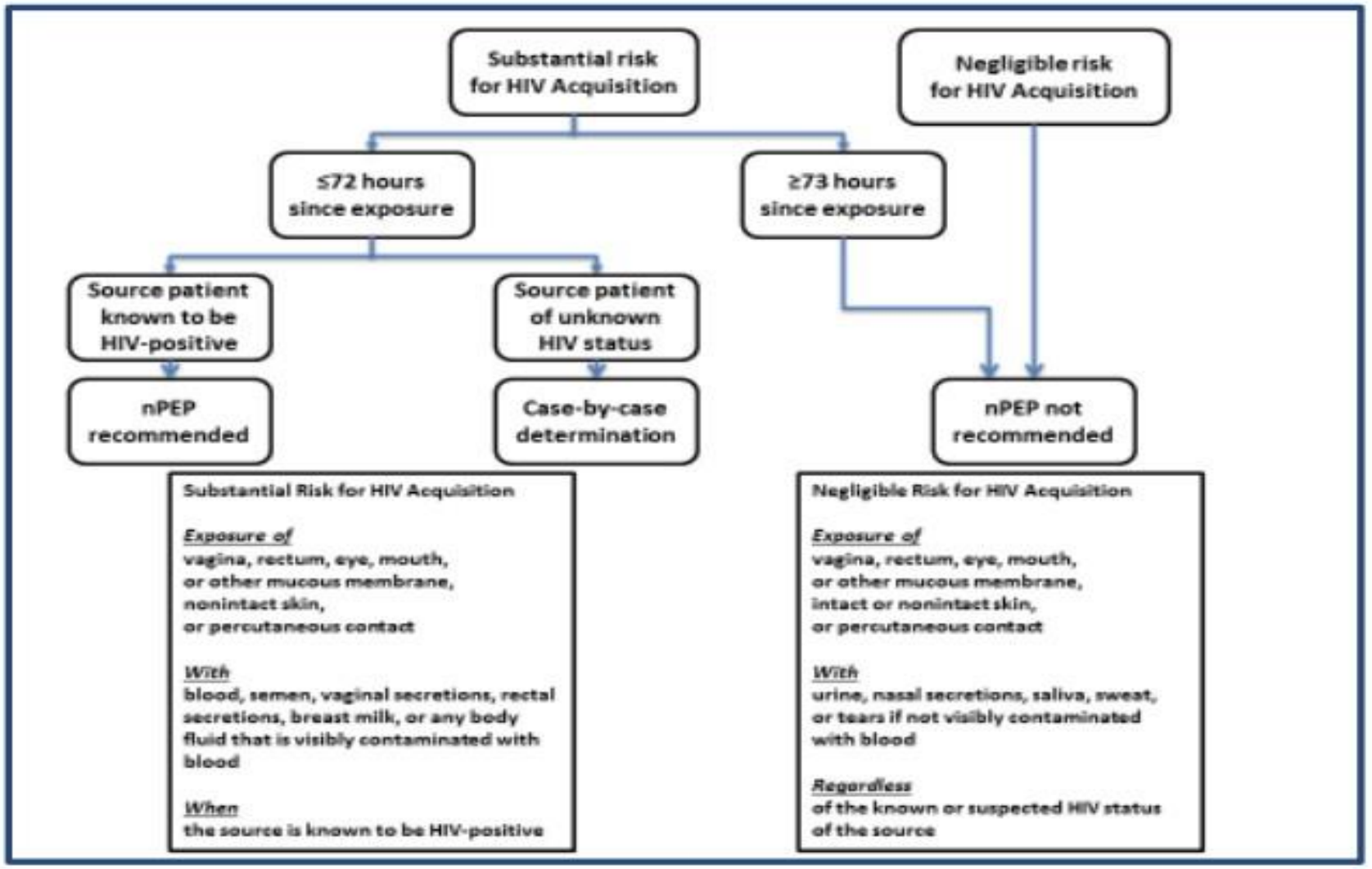
https://www.naccho.org/uploads/downloadable-resources/Programs/Community-Health/NACCHO360_2021_PrEP-Survey_Final_Conference_Slides.pdf

WHAT OBSTACLES DO YOU FORESEE IN YOUR CLINICS IN IMPLEMENTING THE NEW PrEP GUIDELINES?

HIV Post-Exposure Prophylaxis (PEP)

HIV PEP

Figure 1. Algorithm for evaluation and treatment of possible nonoccupational HIV exposures



https://www.cdc.gov/hiv/pdf/programresources/cdc-hiv-npep-guidelines.pdf

Table 1. Estimated per-act risk for acquiring human immunodeficiency virus (HIV) from an infected source, exposure act[a]

Exposure type	Rate for HIV acquisition per 10,000 exposures
Parenteral	
Blood transfusion	9,250
Needle sharing during injection drug use	63
Percutaneous (needlestick)	23
Sexual	
Receptive anal intercourse	138
Receptive penile-vaginal intercourse	8
Insertive anal intercourse	11
Insertive penile-vaginal intercourse	4
Receptive oral intercourse	Low
Insertive oral intercourse	Low
Other[b]	
Biting	Negligible
Spitting	Negligible
Throwing body fluids (including semen or saliva)	Negligible
Sharing sex toys	Negligible

Source: http://www.cdc.gov/hiv/policies/law/risk.html

[a] Factors that may increase the risk of HIV transmission include sexually transmitted diseases, acute and late-stage HIV infection, and high viral load. Factors that may decrease the risk include condom use, male circumcision, antiretroviral treatment, and preexposure prophylaxis. None of these factors are accounted for in the estimates presented in the table.

[b] HIV transmission through these exposure routes is technically possible but unlikely and not well documented.

https://www.cdc.gov/hiv/pdf/programresources/cdc-hiv-npep-guidelines.pdf

Table 5. Preferred and alternative antiretroviral medication 28-day regimens for nPEP[a,b]

Age group	Preferred/ alternative	Medication
Adults and adolescents aged ≥ 13 years, including pregnant women, with normal renal function (creatinine clearance ≥ 60 mL/min)	**Preferred**	A 3-drug regimen consisting of tenofovir DF 300 mg ***and*** fixed dose combination emtricitabine 200 mg (Truvada[c]) once daily ***with*** raltegravir 400 mg twice daily ***or*** dolutegravir 50 mg once daily
	Alternative	A 3-drug regimen consisting of tenofovir DF 300 mg ***and*** fixed dose combination emtricitabine 200 mg (Truvada) once daily ***with*** darunavir 800 mg (as 2, 400-mg tablets) once daily ***and*** ritonavir[b] 100 mg once daily
Adults and adolescents aged ≥ 13 years with renal dysfunction (creatinine clearance ≤59 mL/min)	**Preferred**	A 3-drug regimen consisting of zidovudine ***and*** lamivudine, with both doses adjusted to degree of renal function ***with*** raltegravir 400 mg twice daily ***or*** dolutegravir 50 mg once daily
	Alternative	A 3-drug regimen consisting of zidovudine ***and*** lamivudine, with both doses adjusted to degree of renal function ***with*** darunavir 800 mg (as 2, 400-mg tablets) once daily ***and*** ritonavir[b] 100 mg once daily
Children aged 2–12 years	**Preferred**	A 3-drug regimen consisting of tenofovir DF, emtricitabine, and raltegravir, with each drug dosed to age and weight[d]
	Alternative	A 3-drug regimen consisting of zidovudine ***and*** lamivudine ***with*** raltegravir ***or*** lopinavir/ritonavir[b], with raltegravir and lopinavir/ritonavir dosed to age and weight[d]
	Alternative	A 3-drug regimen consisting of tenofovir DF ***and*** emtricitabine ***and*** lopinavir/ritonavir[b], with each drug dosed to age and weight[d]

https://www.cdc.gov/hiv/pdf/programresources/cdc-hiv-npep-guidelines.pdf

Table 2. Recommended schedule of laboratory evaluations of source and exposed persons for providing nPEP with preferred regimens

Test	Source	Exposed persons			
	Baseline	Baseline	4–6 weeks after exposure	3 months after exposure	6 months after exposure
		For all persons considered for or prescribed nPEP for any exposure			
HIV Ag/Ab testing[a] (or antibody testing if Ag/Ab test unavailable)	✓	✓	✓	✓	✓[b]
Hepatitis B serology, including: hepatitis B surface antigen hepatitis B surface antibody hepatitis B core antibody	✓	✓	—	—	✓[c]
Hepatitis C antibody test	✓	✓	—	—	✓[d]
		For all persons considered for or prescribed nPEP for sexual exposure			
Syphilis serology[e]	✓	✓	✓	—	✓
Gonorrhea[f]	✓	✓	✓[g]	—	—
Chlamydia[f]	✓	✓	✓[g]	—	—
Pregnancy[h]	—	✓	✓	—	—
		For persons prescribed tenofovir DF+ emtricitabine + raltegravir or tenofovir DF+ emtricitabine + dolutegravir			
Serum creatinine (for calculating estimated creatinine clearance[i])		✓	✓	—	—
Alanine transaminase, aspartate aminotranferase		✓	✓	—	—
	For all persons with HIV infection confirmed at any visit				
HIV viral load	✓	✓[j]			
HIV genotypic resistance	✓	✓[j]			

https://www.cdc.gov/hiv/pdf/programresources/cdc-hiv-npep-guidelines.pdf

PrEP Following PEP:
An Effective HIV Risk-Reduction Strategy

Gary Whitlock
Chelsea and Westminster NHS Foundation Trust, London, UK

- Patients who came in for PEP were also offered quick start for PrEP
  - left with PrEP to start immediately after finishing PEP
    - called PEP2PrEP

Patient Characteristics

Gary Whitlock
Chelsea and Westminster NHS Foundation Trust, London, UK

- Median age 29 years
- PEP exposure: 85% condomless, receptive anal sex
- Previous PrEP use among 44%
  - No supply (30%)
  - On PrEP holiday (25%)
  - Spontaneous sex (15%)
  - Incorrect PrEP dose (13%)
  - Unknown (17%)

PEP2PrEP Results

PrEP Following PEP:
An Effective HIV Risk-Reduction Strategy
Gary Whitlock
Chelsea and Westminster NHS Foundation Trust, London, UK

- 212 (74%) subsequently started PrEP
- Of the 212 PrEP users, 114 (54%) returned for ongoing PrEP
- PEP users who transitioned to PrEP were
  - more likely to have used PrEP before
  - been to 56DS before
  - have had sex with multiple individuals during PEP-associated exposure

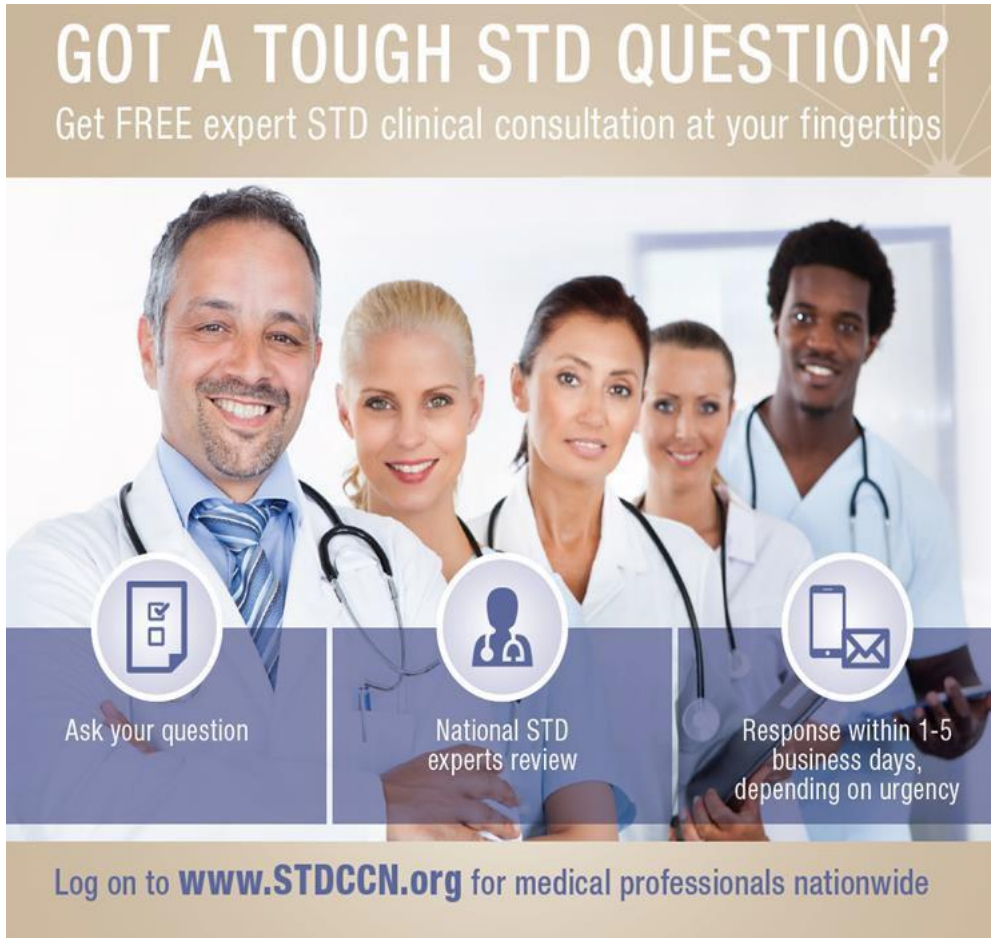
Conclusion

PrEP Following PEP:
An Effective HIV Risk-Reduction Strategy
Gary Whitlock
Chelsea and Westminster NHS Foundation Trust, London, UK

- Subsequent PrEP uptake after PEP was high
- A majority return for PrEP follow up
- PEP is an important HIV prevention service especially for PrEP users
- Discussing PrEP during PEP consultations provides opportunities for quick-start PrEP and all prevention modalities

DON'T FORGET! ASK US YOUR DIFFICULT CLINICAL QUESTIONS USING THE STD CLINICAL CONSULTATION NETWORK!

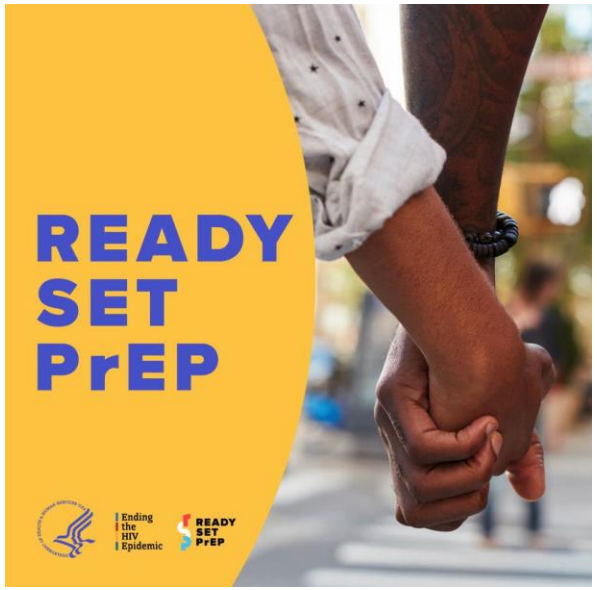
www.STDCCN.org

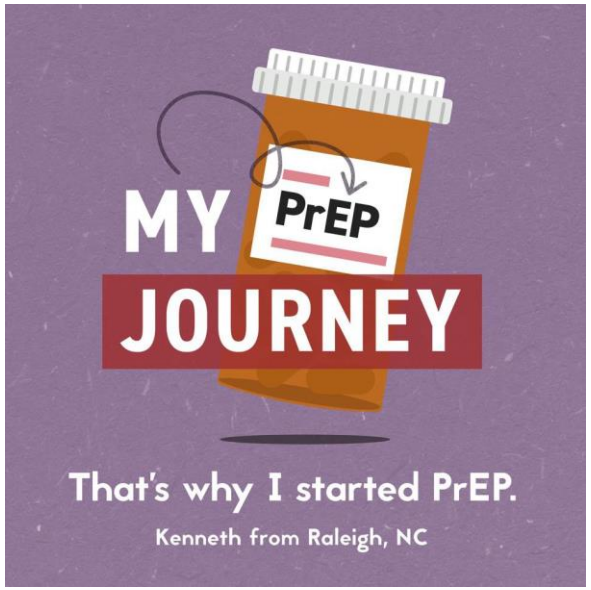


No-cost online clinical consultation on the prevention, diagnosis, and treatment of STIs by your regional PTC (prevention training center) Clinical Faculty

#STOPHIVTOGETHER

https://www.cdc.gov/stophivtogether/hiv-prevention/index.html





QUESTIONS?

St. Louis
STI/HIV Prevention
Training Center

MIDWEST AIDS TRAINING + EDUCATION CENTER

AETC AIDS Education & Training Center Program
Midwest

KC CARE
HEALTH CENTER
The heart of community healthcare

NEBRASKA
Good Life. Great Mission.
DEPT. OF HEALTH AND HUMAN SERVICES

NEBRASKA AIDS PROJECT

CPN
BUILDING THE CAPACITY OF THE NATION'S HIV PREVENTION WORKFORCE

Washington University in St. Louis
SCHOOL OF MEDICINE

LINCOLN LANCASTER COUNTY
HEALTH DEPARTMENT

DOUGLAS COUNTY
Health Department
Healthy. Vibrant.
Everyone. Everywhere.

Post-Exposure Prophylaxis

PHILANA LIANG PA-C, MPH

ST. LOUIS STI/HIV PREVENTION TRAINING CENTER

Disclosures

- No financial relationships to disclose
- This presentation will include discussion of pharmaceuticals that have not been approved by the FDA
  - "off-label" use of doxycycline as Pre-Exposure (PrEP) and Post-Exposure (PEP) Prophylaxis for bacterial sexually transmitted diseases (STI)

Trigger Warning: We will discuss post-exposure prophylaxis in the setting of sexual assault

Objectives

- Discuss STI Prevention Methods
- Introduce DoxyPEP (Doxycycline Post-Exposure Prophylaxis)
- Review Major Studies on DoxyPEP
- Discuss Pros and Cons of DoxyPEP
- Discuss HIV Post-Exposure Prophylaxis

Let's start with a case:

19-year-old transgender-woman presents to her local sexual health clinic for routine STI testing

- She works as a semi-professional dance instructor
- She makes additional money as a commercial sex worker
- She is sexually active with "a few" male partners both personally and professionally
- She engages in insertive and receptive oral and anal sex
- She wants to be tested for "ALL the STIs"

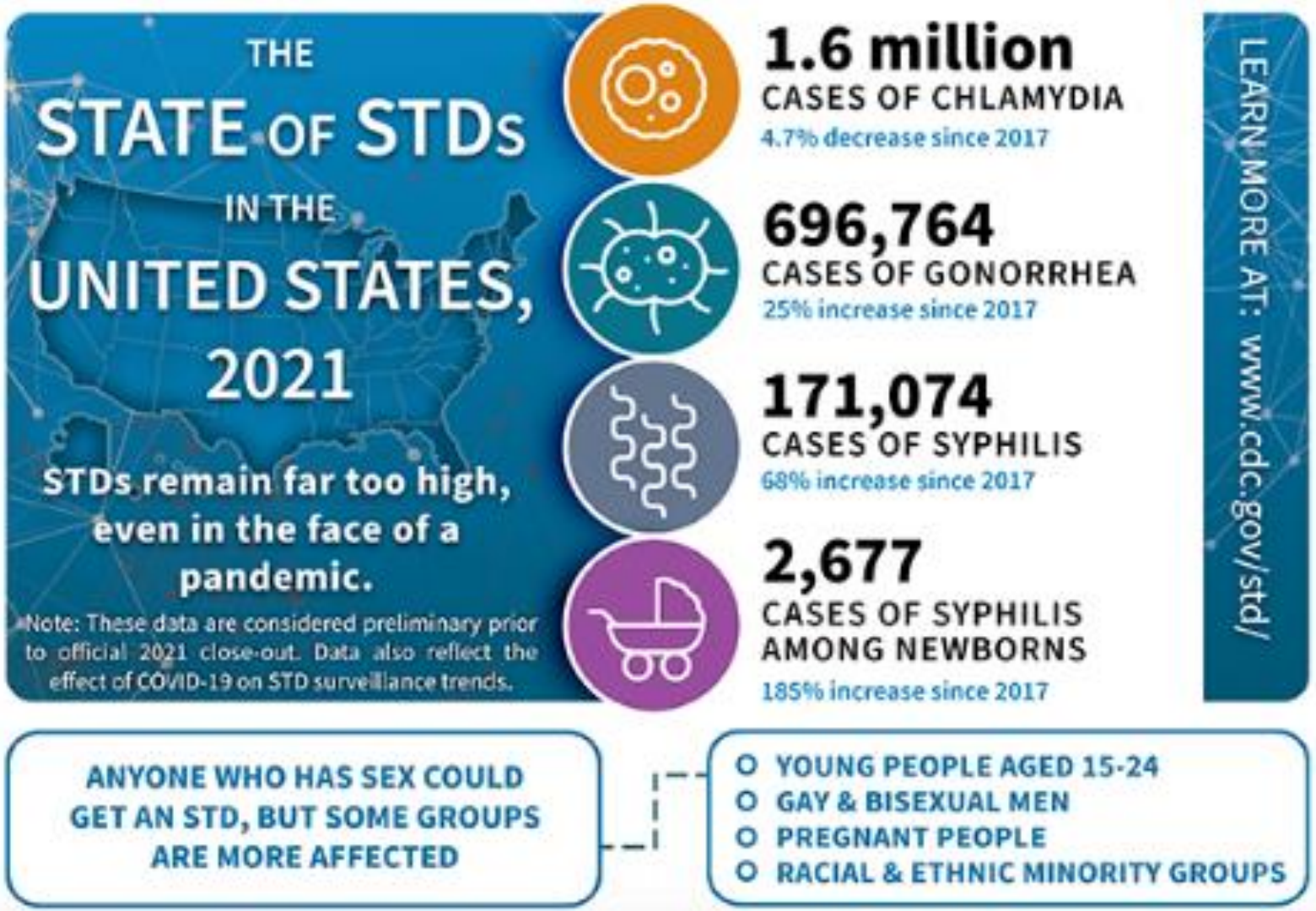
What testing would you send?

Case

- A) G/C NAAT Urine, RPR, HIV (gonorrhea/chlamydia nucleic acid amplification test, rapid plasma regain, human immunodeficiency virus)
- B) G/C NAAT Urine, rectal, oral, RPR, HIV
- C) G/C NAAT Urine, rectal, oral, Mycoplasma genitalium PCR (polymerase chain reaction), RPR, HIV
- D) G/C NAAT Urine, rectal, oral, HSV IgM/G (herpes simplex virus immunoglobulin), RPR, HIV

A) Need triple screening given oral and rectal exposures
C) Do not screen for M. Gen - only test if patient has persistent urethritis despite tx (treatment)
D) Do not screen for HSV except in very specific situations

https://www.cdc.gov



https://www.cdc.gov

What are we currently doing for STI prevention?

- CDC (CENTERS FOR DISEASE CONTROL AND PREVENTION) STI GUIDELINES OFFER CLINICAL PREVENTION GUIDANCE INCLUDING:
  - Assessment, education, counseling of persons at increased likelihood of acquiring STI
  - Primary prevention methods
    - Vaccination (HPV [human papillomavirus], hepatitis)
    - Condom use
    - PrEP/PEP for HIV prevention
    - HIV treatment as prevention/U=U (undetectable equals untransmitable)
    - Abstinence and Monogamy
  - Expedited Partner Therapy
  - Retesting/Rescreening at 3 months

https://www.cdc.gov

Holistic Approach to STI Prevention

- Harm Reduction
- Screening/Treatment
- Destigmatization/ Normalization of Sexual Health

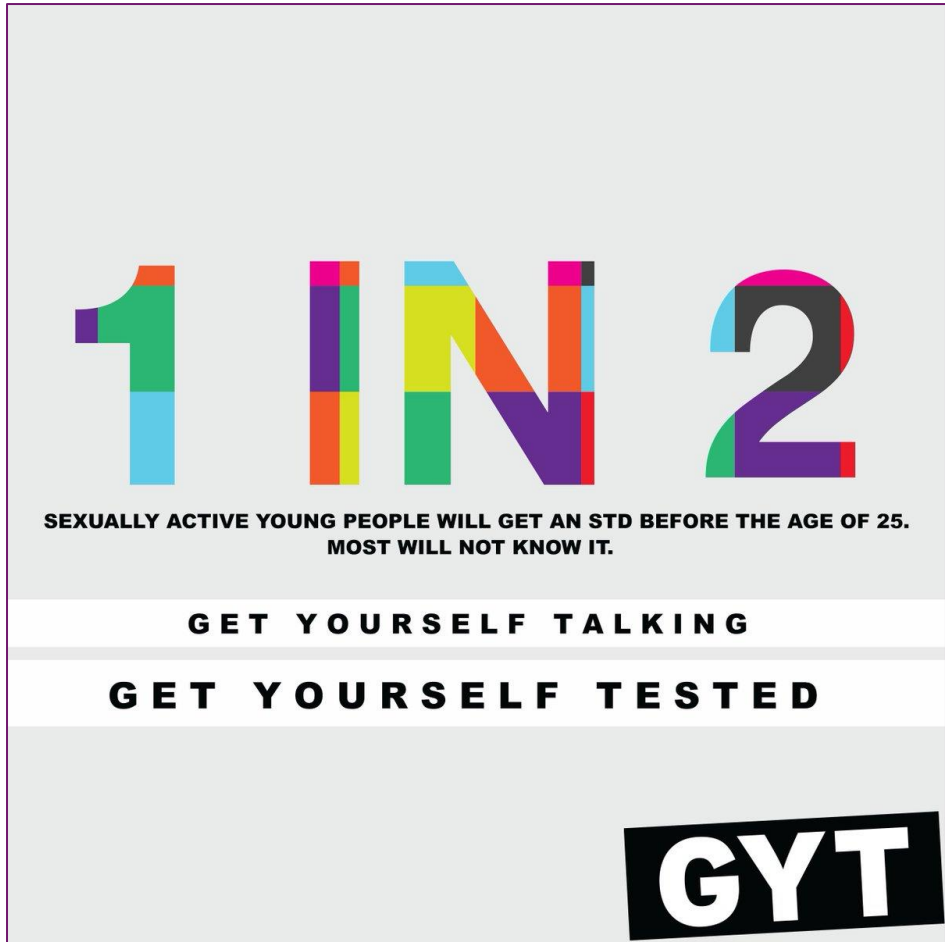
https://www.cdc.gov

STI Screening

Why do we screen for STIs?

- To detect asymptomatic STIs
- To prevent complications from untreated infections
- To decrease likelihood of HIV transmission
- To improve sexual health

Image Source: CDC Get Yourself Tested Campaign



https://www.cdc.gov

SCREENING RECOMMENDATIONS FOR GONORRHEA AND CHLAMYDIA

Population	Gonorrhea	Chlamydia	Extragenital screening (pharynx, rectum)	Retesting if gonorrhea or chlamydia is treated
Women< 25 years	Annual screening	Annual screening	*Rectal screening can be considered based on sexual behaviors and exposure.*	Retesting in 3 months
Women > 25 years old with risk factors*	Annual screening	Annual screening	*Rectal screening can be considered based on sexual behaviors and exposure.*	Retesting in 3 months
Pregnant people < 25 years old	First prenatal visit; retest in third trimester	First prenatal visit; retest in third trimester	none	Test of cure in 4 weeks; retesting in 3 months
Pregnant people > 25 years with risk factors*	First prenatal visit; retest in third trimester	First prenatal visit; retest in third trimester	none	Test of cure in 4 weeks; retesting in 3 months
Men < 25 years who have sex with women	Should be considered in certain clinical settings.	Should be considered in certain clinical settings.	none	Retesting in 3 months
Men who have sex with men**	At least annual screening	At least annual screening	At least annual screening	Retesting in 3 months
Transgender persons	At least annual screening	At least annual screening	At least annual screening	Retesting in 3 months

*if increased risk for an infection as indicated by new sex partner, more than one sex partner, a sex partner with concurrent partners, a sex partner who has an STI, or **exchanging sex for money or needs**

**quarterly screening for some sexually active MSM will improve STI case finding.

https://www.cdc.gov

SCREENING RECOMMENDATIONS FOR SYPHILIS

Population	Syphilis
Women < 25 years	Recommended if at increased risk
Women > 25 years old with risk factors*	Recommended if at increased risk
Pregnant people < 25 years old	First prenatal visit; if high risk, retest early in third trimester and at delivery
Pregnant people > 25 years with risk factors*	same
Men < 25 years who have sex with women	Recommended if at increased risk
Men who have sex with men**	At least annual screening
Transgender persons	At least annual screening

*Increased risk includes living in an area with higher syphilis prevalence, a history of incarceration or sex work, living with HIV, etc.

**quarterly screening for some sexually active MSM will improve STI case finding.

https://www.cdc.gov

The Problem of Data and Priority Populations

Population risk does not equal individual risk

The Goal: Patient-centered and individualized care

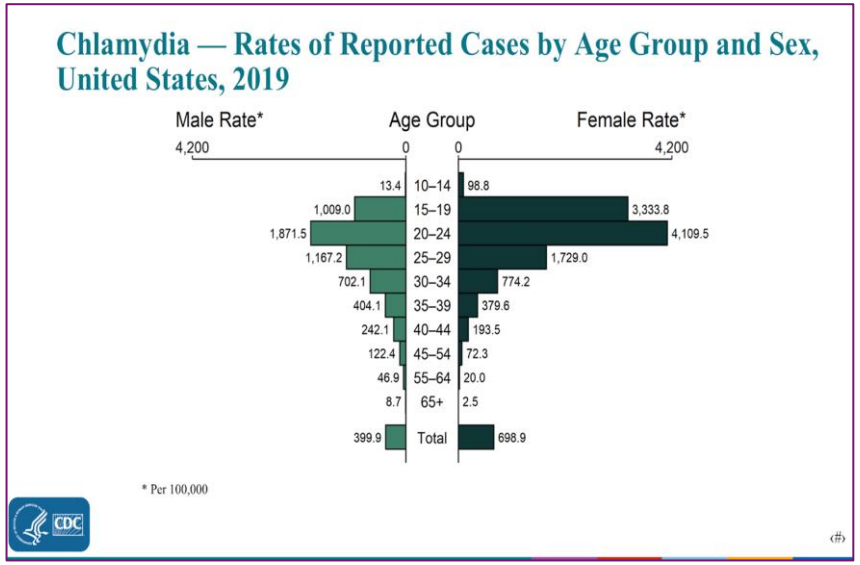


Image Source: cdc.gov

Image Source: Trevor Erindish Doniganartworks

Case continued

- When you call her with the results she says, "Oh that's the 3rd time I've had that this year."

How would you counsel this patient?

What could you offer her to reduce her risk of recurrent STIs?

Have you heard about use of Doxycycline to prevent STI?

A. Yes, I have heard about this
B. Yes, I have heard about this and am currently taking or prescribing doxycycline for this indication
C. No, I have not heard about this

Doxycycline

- Second-generation tetracycline antibiotic
- Widely available, inexpensive, and well tolerated
- Broad spectrum of anti-microbial activity
- Used to treat multiple STIs
  - 1st line therapy for Chlamydia trachomatis infections
  - Alternative therapy for P&S (primary and secondary) syphilis infections
  - No longer used to treat N.gonorrhea (Neisseria) due to tetracycline resistance
- **Teratogenic drug class**, contraindicated in pregnancy

Image Source: Fusion Pet

https://www.cdc.gov

PrEP
Pre-Exposure prophylaxis

PEP
Post-Exposure Prophylaxis

What is Pre-Exposure Prophylaxis

- Taking medicine prior to exposure to decrease the likelihood of infection.
- Term usually refers to HIV prophylaxis or PrEP

https://www.cdc.gov

Doxycyline Pre-exposure Prophylaxis (DOXY PrEP) - 2015

Image Source: Cureffi.org

- Randomized controlled pilot study of MSM WH (men who have sex with men with HIV)
- Subjects (n=30) were block randomized
  - Doxycycline hyclate 100mg daily for 36 weeks
  - Incentive-based arm for remaining STD-free (in addition to compensation to enroll in study)
- 73% reduction in syphilis, gonorrhea, or chlamydia in those taking Doxy PrEP with no difference in reported sexual behaviors between the two groups
- Additional doxy PrEP studies ongoing including DuDHS, DaDHS, Syphilaxis

Bolan RK, Beymer MR, Weiss RE, Flynn RP, Leibowitz AA, Klausner JD. Doxycycline Prophylaxis to Reduce Incident Syphilis among HIV-Infected Men who have Sex with Men who Continue to Engage in High Risk Sex: A Randomized, Controlled Pilot Study. Sexually transmitted diseases. 2015;42(2):98-103.

What is Post-Exposure Prophylaxis?

- Taking medicine after a single and specific exposure with increased likelihood of infection
- Usually considered urgent with a defined window period to start medication after the exposure in order for the treatment to be effective
- Term was previously used primarily to describe HIV prophylaxis after an exposure

https://www.cdc.gov

Post-exposure prophylaxis with doxycycline to prevent sexually transmitted infections in men who have sex with men: an open-label randomised substudy of the ANRS IPERGAY trial

*Jean-Michel Molina, Isabelle Charreau, Christian Chidiac, Gilles Pialoux, Eric Cua, Constance Delaugerre, Catherine Capitant, Daniela Rojas-Castro, Julien Fonsart, Béatrice Bercot, Cécile Bébéar, Laurent Cotte, Olivier Robineau, François Raffi, Pierre Charbonneau, Alexandre Aslan, Julie Chas, Laurence Niedbalski, Bruno Spire, Luis Sagaon-Teyssier, Diane Carette, Soizic Le Mestre, Veronique Doré, Laurence Meyer, for the ANRS IPERGAY Study Group**

IPERGAY Trial on Doxy PEP

- IPERGAY trial - French study in 2015 that showed the effectiveness of on-demand Truvada (TDF/FTC - tenofovir disoproxil and emtricitabine) dosing for HIV PrEP in MSM
- Extended protocol was amended to include a study of doxycycline PEP for STIs
- Open-label randomized trial MSM and TWSM (transgender women who have sex with men) without HIV (n=232) were randomly assigned (1:1)
  - **single oral dose of 200 mg doxycycline PEP within 24h after sex (max 3x/week)**
- Primary endpoint was the occurrence of a first STI (gonorrhea, chlamydia, or syphilis) during the 10-month follow-up

Molina JM, Charreau I, Chidiac C, et al; ANRS IPERGAY Study Group. Postexposure prophylaxis with doxycycline to prevent sexually transmitted infections in men who have sex with men: an open-label randomised substudy of the ANRS IPERGAY trial. Lancet Infect Dis 2018; 18:308–17

IPERGAY Trial on Doxy PEP

Demographics (n=232)

- 95% white
- Average age of 38
- 86% employed; 92% reported some college
- Average 10 partners in past 8 weeks
- Average 10 sex actions in past 4 weeks
- 17% with STI at baseline visit
- Followed for median 8.7 months

Molina JM, Charreau I, Chidiac C, et al; ANRS IPERGAY Study Group. Postexposure prophylaxis with doxycycline to prevent sexually transmitted infections in men who have sex with men: an open-label randomised substudy of the ANRS IPERGAY trial. Lancet Infect Dis 2018; 18:308–17

Results

- 73 PATIENTS PRESENTED WITH NEW STI DURING FOLLOW-UP
  - 28 in PEP group (9 month-probability of 22%)
  - 45 in no PEP group (9 month-probability of 42%)

- **OCCURRENCE OF FIRST STI LOWER IN PEP COMPARED TO NO-PEP GROUP (HR OF 0.53 (95% CI 0.33-0.85))**

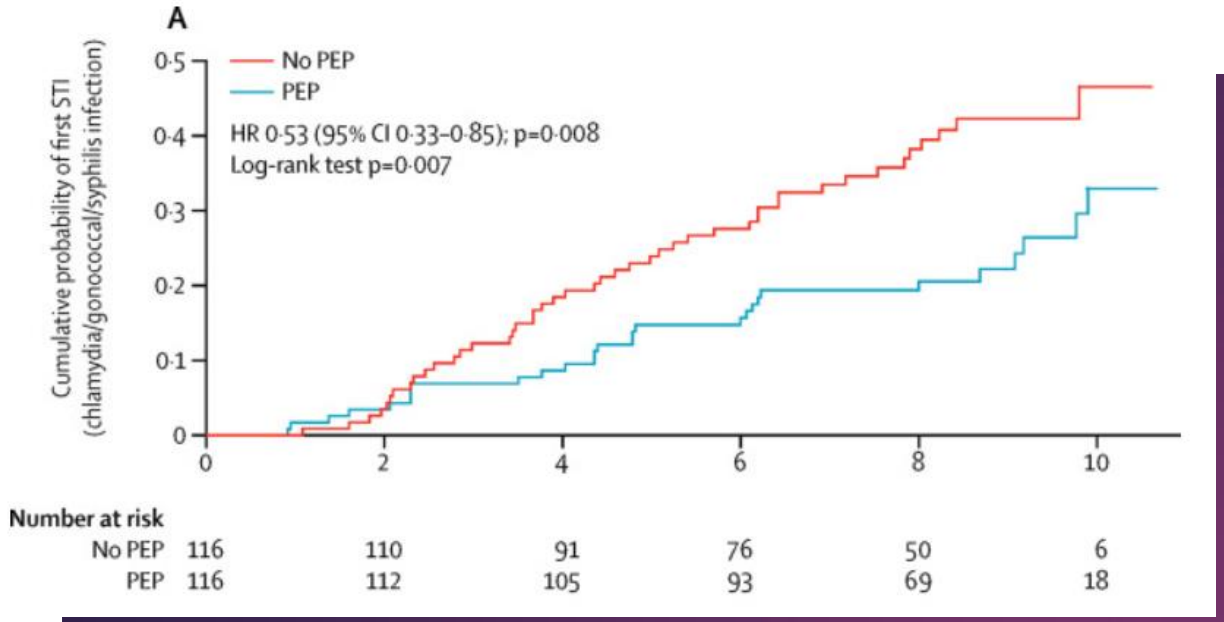
Molina JM, Charreau I, Chidiac C, et al; ANRS IPERGAY Study Group. Postexposure prophylaxis with doxycycline to prevent sexually transmitted infections in men who have sex with men: an open-label randomised substudy of the ANRS IPERGAY trial. Lancet Infect Dis 2018; 18:308–17

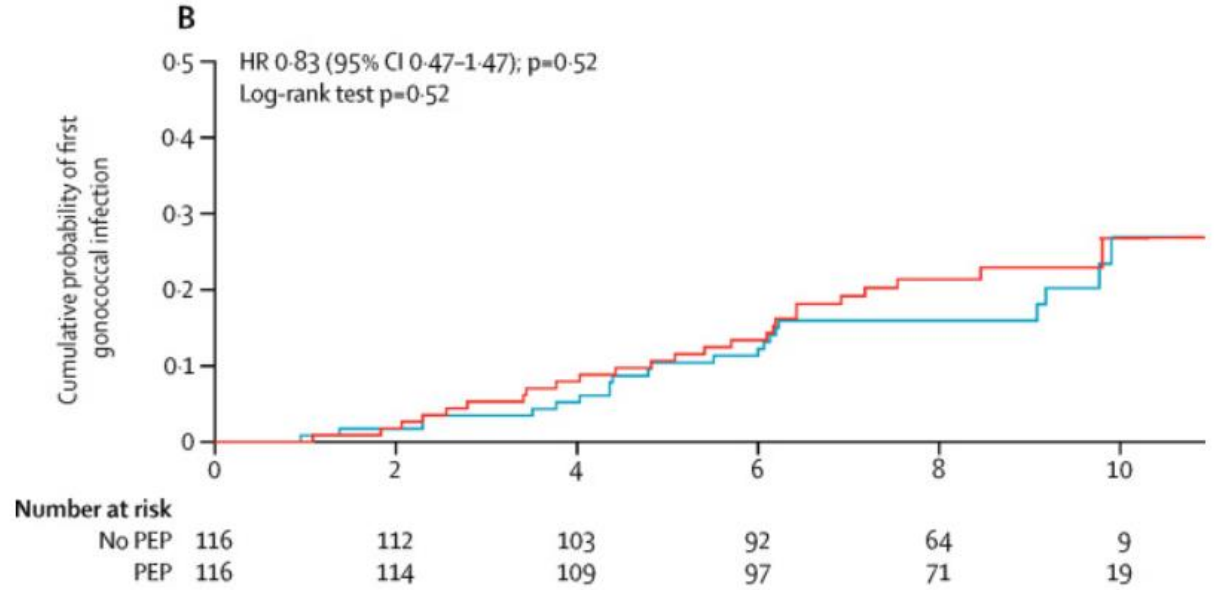
Results

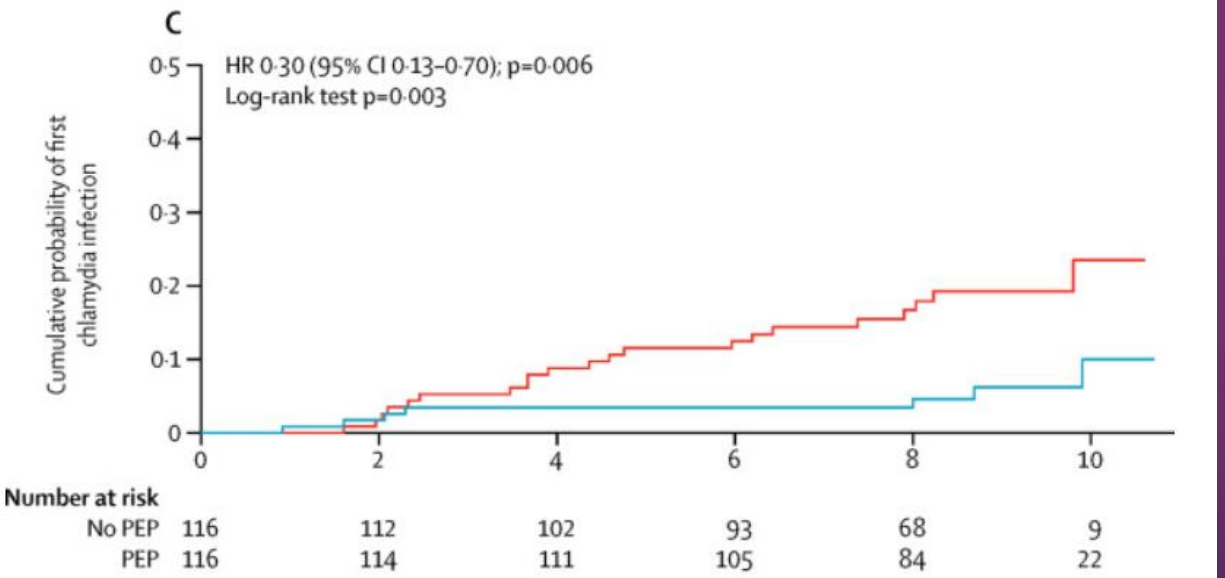
- **28 PATIENTS WITH NEW EPISODE OF CHLAMYDIA**
  - 7 in PEP group (9-month prob 6%)
  - 21 in no PEP group (19%)
  - HR 0.30 (95% CI 0.13 – 0.70); p=0.006
- **13 PATIENTS WITH NEW EPISODE OF SYPHILIS**
  - 3 in PEP group (3%)
  - 10 in no PEP group (11%)
  - HR 0.27 (95% CI 0.07 – 0.98); p=0.047
- **47 PATIENTS WITH NEW EPISODE OF GONORRHEA**
  - 22 in PEP group (16%)
  - 25 in no PEP group (23%)
  - HR 0.83 (95% CI 0.47 – 1.47); p=0.52

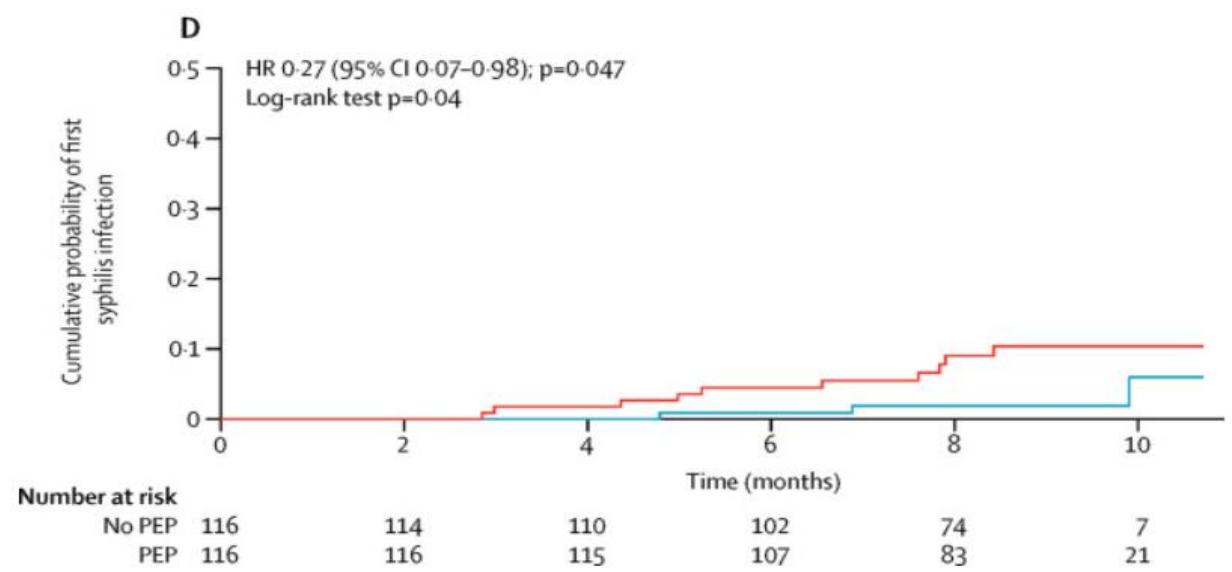
ipergay
ANRS
Intervention Préventive
de l'Exposition aux Risques
avec et pour les Gays

Molina JM, Charreau I, Chidiac C, et al; ANRS IPERGAY Study Group. Postexposure prophylaxis with doxycycline to prevent sexually transmitted infections in men who have sex with men: an open-label randomised substudy of the ANRS IPERGAY trial. Lancet Infect Dis 2018; 18:308–17









Images Sourced from: Molina JM, Charreau I, Chidiac C, et al; ANRS IPERGAY Study Group. Postexposure prophylaxis with doxycycline to prevent sexually transmitted infections in men who have sex with men: an open-label randomised substudy of the ANRS IPERGAY trial. Lancet Infect Dis 2018; 18:308–17

IPERGAY

- Doxy PEP reduced the occurrence of a first episode of bacterial STI by 47%
  - no significant difference in reported sexual behaviors or condom use
- Reduction of chlamydia and syphilis infections by 70% and 73% respectively with 200mg Doxy PEP
- Rates of gonococcal infections between the two groups did not differ
  - No change in genotypic markers of tetracycline resistance
- No HIV seroconversions were observed

Molina JM, Charreau I, Chidiac C, et al; ANRS IPERGAY Study Group. Postexposure prophylaxis with doxycycline to prevent sexually transmitted infections in men who have sex with men: an open-label randomised substudy of the ANRS IPERGAY trial. Lancet Infect Dis 2018; 18:308–17

Adverse Effects with Doxy PEP

- Participants used on average 6.8 pills of doxycycline a month
- Frequency of Grade 3 or 4 AE (adverse events) did not differ
- Higher rates of GI (gastrointestinal) AEs in Doxy PEP group
- 8 patients (7%) discontinued doxycycline due to AEs

	PEP (n=116)	No PEP (n=116)	p value
Any adverse events	106 (91%)	104 (90%)	0·65
Any serious adverse events	5 (4%)	10 (9%)	0·18
Any grade 3 or 4 events	4 (3%)	8 (9%)	0·24
Treatment discontinuation because of adverse events	8 (7%)	NA	..
Gastrointestinal adverse events	62 (53%)	47 (41%)	0·05
Drug-related gastrointestinal adverse events	29 (25%)	16 (14%)	0·03
Nausea or vomiting	10 (9%)	3 (3%)	..
Abdominal pain	14 (12%)	5 (4%)	..
Diarrhoea	6 (5%)	9 (8%)	..
Other gastrointestinal disorders	5 (4%)	1 (1%)	..
Confirmed laboratory events			
Elevated plasma creatinine			
All grades	15 (13%)	15 (13%)	1·00
Grade 2	3 (3%)	0 (0%)	..
Proteinuria grade 2 or worse	4 (3%)	5 (4%)	0·73
Glycosuria grade 2 or worse	1 (<1%)	1 (<1%)	1·00
Elevated ALT concentrations			
All grades	14 (12%)	20 (17%)	0·27
Grade 4	1 (<1%)	2 (2%)	1·00

Data are n (%). Only the first occurrence of adverse events per patient was reported. ALT=alanine aminotransferase. PEP=post-exposure prophylaxis (with doxycycline).

Table 3: **Adverse events according to study group**

Molina JM, Charreau I, Chidiac C, et al; ANRS IPERGAY Study Group. Postexposure prophylaxis with doxycycline to prevent sexually transmitted infections in men who have sex with men: an open-label randomised substudy of the ANRS IPERGAY trial. Lancet Infect Dis 2018; 18:308–17

DOXYPEP Trial

- Randomized open-label trial for MSM/TGW with HIV or on PrEP living in San Francisco and Seattle with gonorrhea, chlamydia, or early syphilis w/in past year
- Randomized 2:1 to doxy 200mg up to 72hrs following condomless sex vs no doxy
- STI testing at enrollment, quarterly, and when symptomatic
- Primary Endpoint: At least one incident STI (GC/CT/syphilis) during a follow-up quarter
  - All STI endpoints adjudicated by blinded endpoint committee

https://programme.aids2022.org/Abstract/Abstract/?abstractid=13231

Intervention: Open label doxycycline 200mg taken as PEP within 72 hours after condomless sexual contact

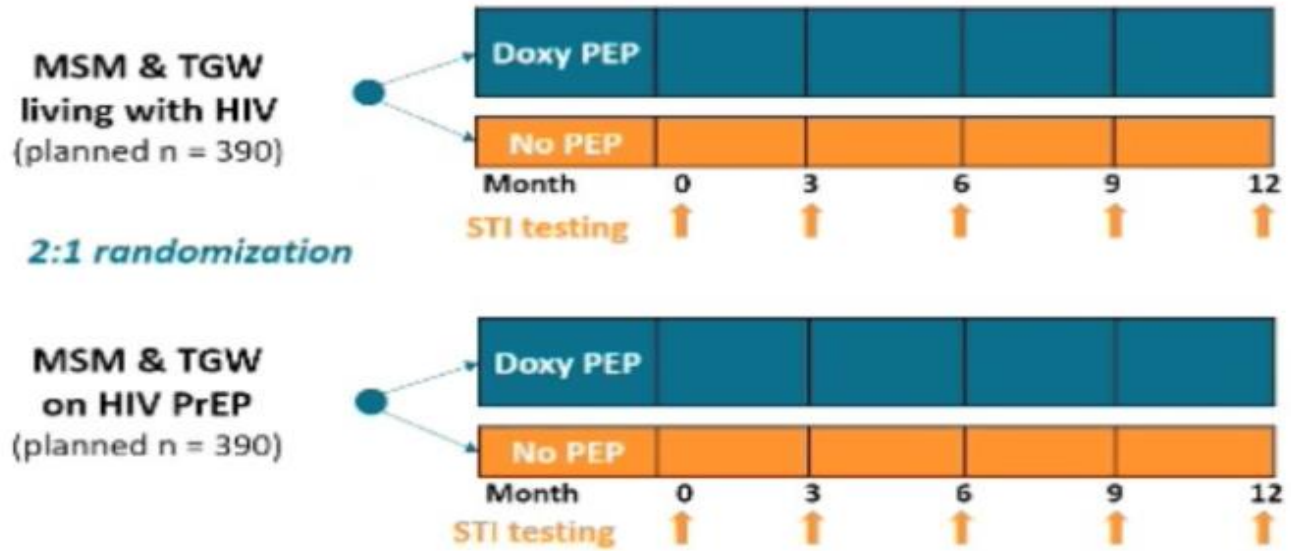
Maximum of 200 mg every 24 hours

Inclusion criteria:

- Male sex at birth
- Living with HIV or on PrEP
- ≥ 1 STI in past 12 months
- Condomless sex with ≥ 1 male partner in past 12 months

STI Testing: Quarterly 3 site GC/CT testing + RPR, GC culture before treatment

Sites: San Francisco & Seattle HIV & STI clinics



https://programme.aids2022.org/Abstract/Abstract/?abstractid=13231

DOXYPEP

Primary endpoint and stopping rules

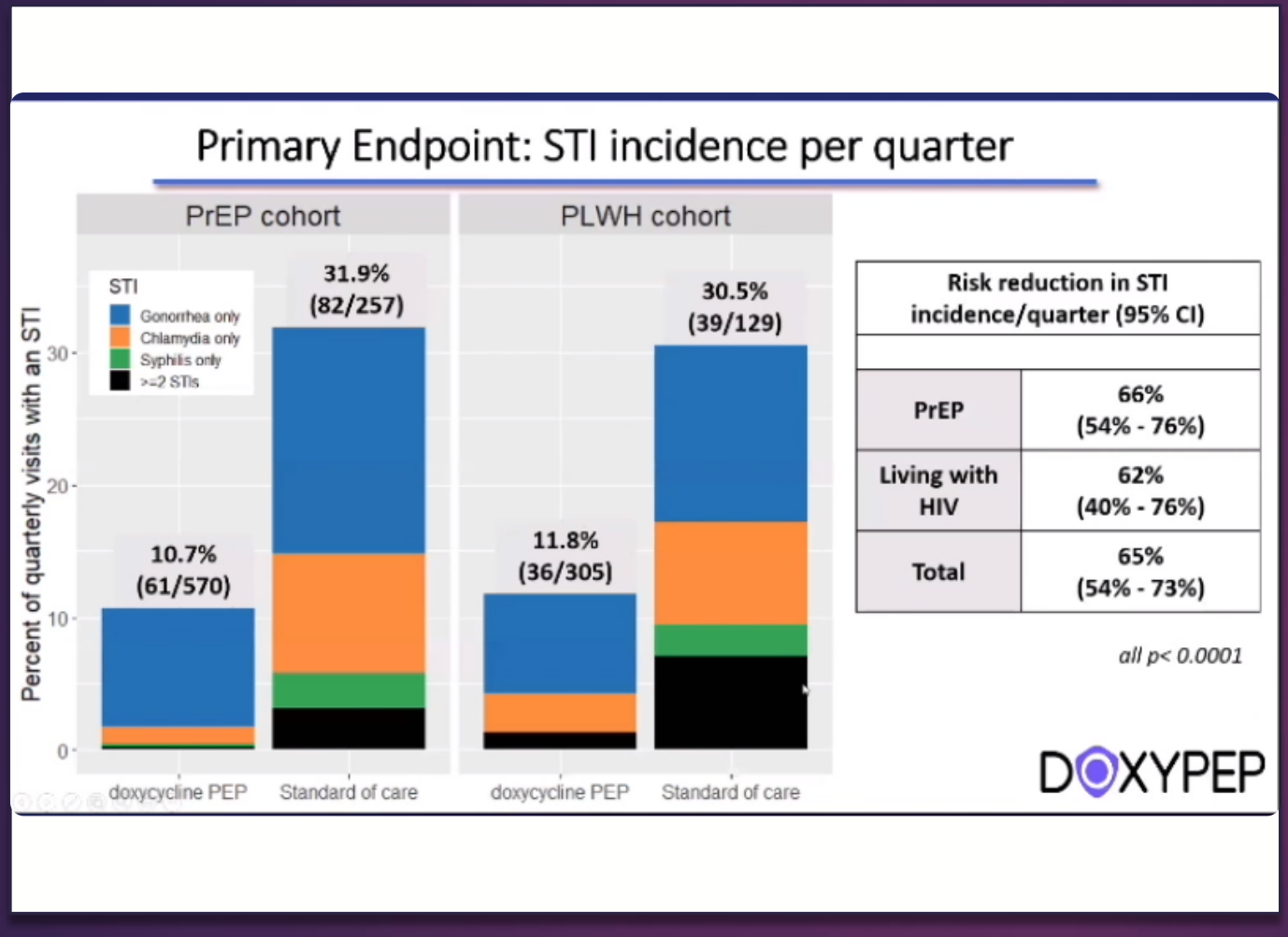
- **1° Endpoint**: At least one incident STI (GC/CT/syphilis) during a follow-up quarter
  - All STI endpoints adjudicated by blinded endpoint committee
- **Power:** 80% power to detect a decrease in quarterly STI prevalence from 10% to 5%, powered separately for PrEP & PLWH cohorts
- **Stopping rules:** only if both cohorts cross stopping boundary for proven effectiveness based on one-sided alpha of 0.025 for each cohort.

5/13/2022 Scheduled interim analysis: DSMB recommended stopping enrollment due to significant effectiveness in both cohorts

DOXYPEP

https://programme.aids2022.org/Abstract/Abstract/?abstractid=13231

Results



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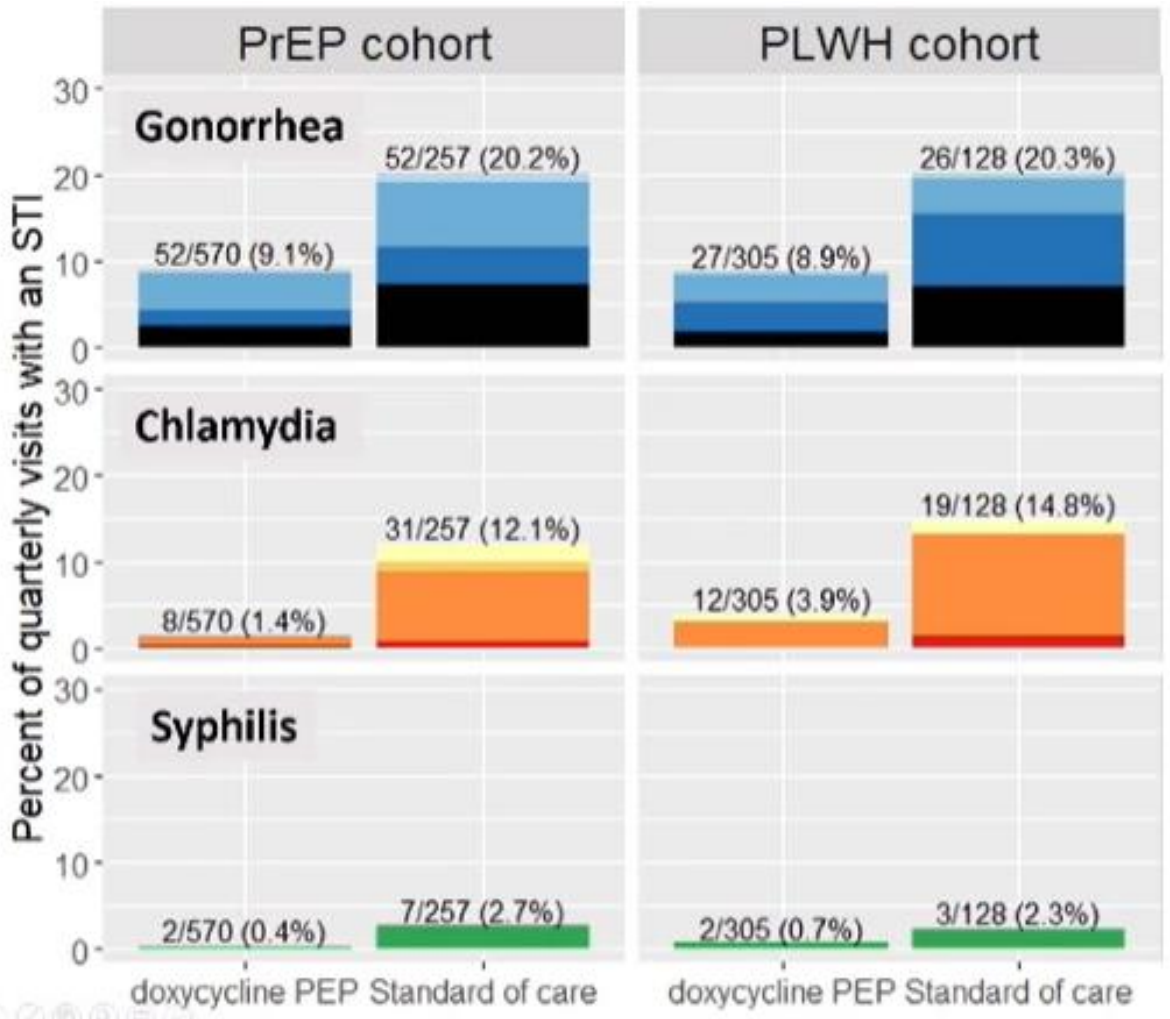


Individual STI incidence by study arm & cohort

Risk reduction in each STI per quarter (95% CI)

	PrEP	PLWH
GC	55% (35%-68%) *p<0.0001*	57% (29%-74%) *p=0.001*
CT	88% (75%-95%) *p<0.0001*	74% (43%-88%) *p=0.0007*
Syphilis	87% (41%-97%) *p=0.0084*	77% (-71%, 96%) *p=0.095*

DOXYPEP

https://programme.aids2022.org/Abstract/Abstract/?abstractid=13231

Doxy PEP was safe & acceptable, with high adherence

- **AEs attributed to doxycycline PEP:**
  No grade 3+ adverse events, grade 2+ lab abnormalities, or SAEs
- **Tolerability and acceptability:**
  - 1.5% discontinued due to intolerance or participant preference
  - 88% reported doxycycline PEP was acceptable/very acceptable
- **Adherence:** Median 7.3 (IQR 1–10) sex acts (anal/vaginal/frontal) per month, with 87% covered by doxycycline per self-report

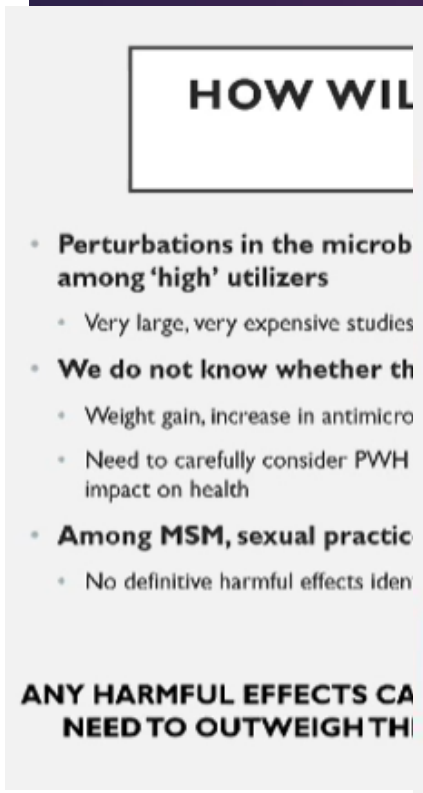
< 10 doses/month:	54%
10–20 doses/month:	30%
≥ 20 doses/month:	16%

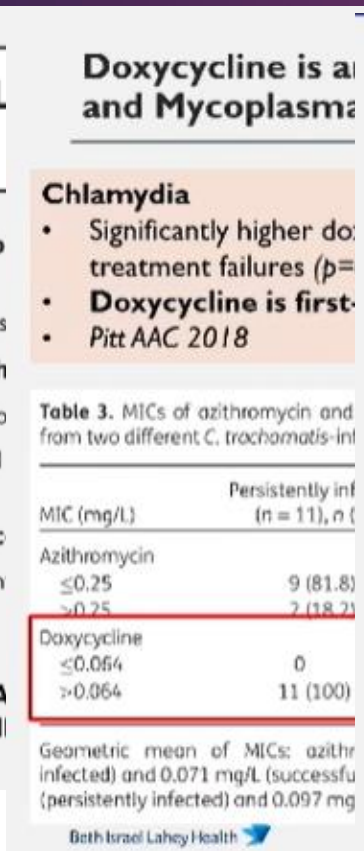
Based on mean difference between pills dispensed and returned for pill count

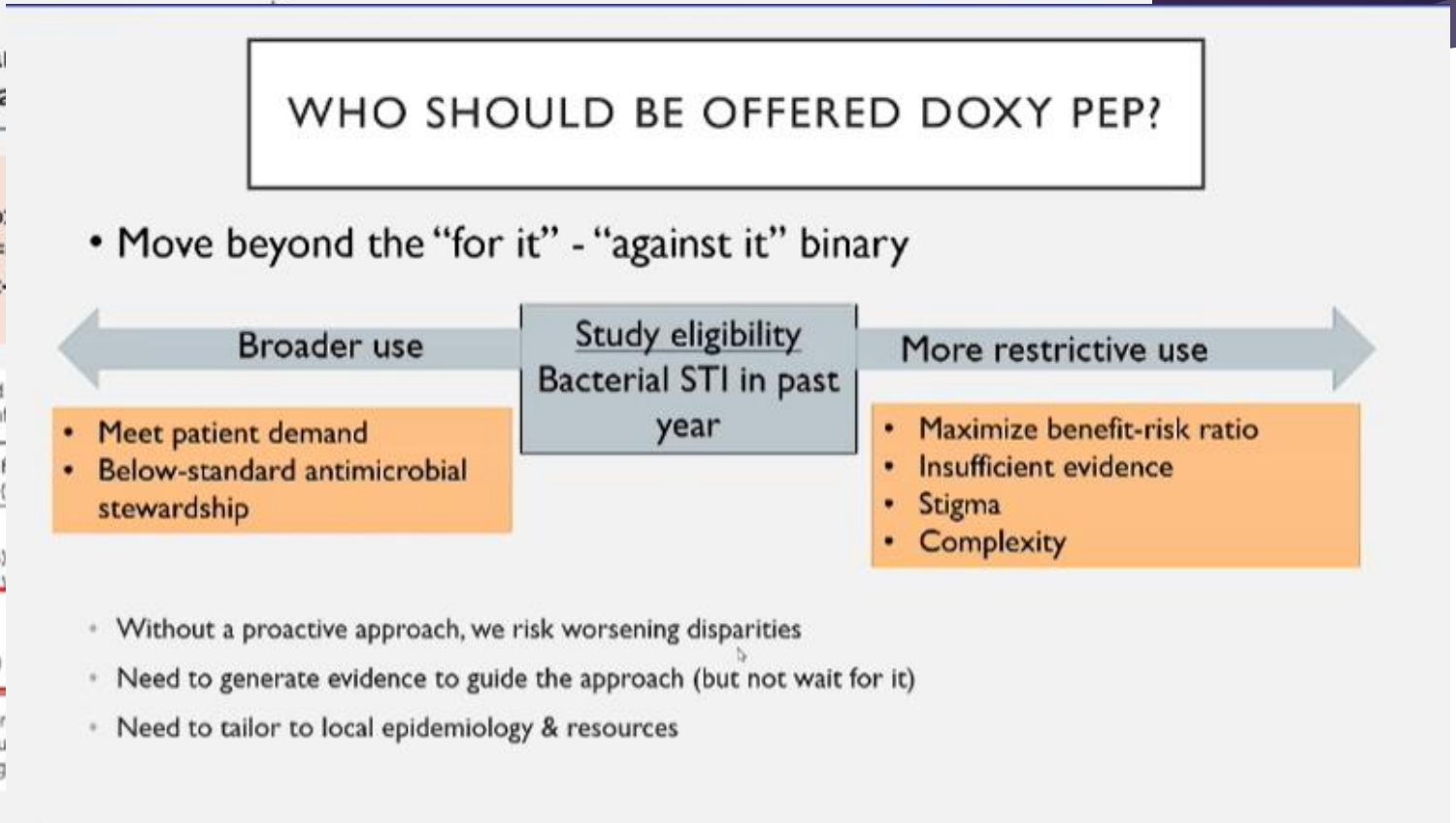
Luetkemeyer A, et al. AIDS 2022; Montreal, Canada; July 29-Aug 2, 2022; Abst. OALBX0103.

What are the possible consequences of DoxyPEP?

Thoughtful discussion of Doxy-PEP







Images Sourced: Beth Israel Lahey Health

Concern for Antimicrobial Resistance

- Tetracycline resistance already seen in gonorrhea (higher in MSM)
- Chlamydia treatment failure see in 5-23% of cases, however clear resistance to tetracycline not identified
- Mycoplasma genitalium (MG) emerging cause of NGU (non-gonococcal urethritis) in MSM, seeing resistance to tetracycline
- No established standards for identifying or measuring doxycycline resistance in NG, CT, MG, or TP (treponema pallidium)
- Concern for resistance of commensal flora (staphylococcus, streptococcus, etc)

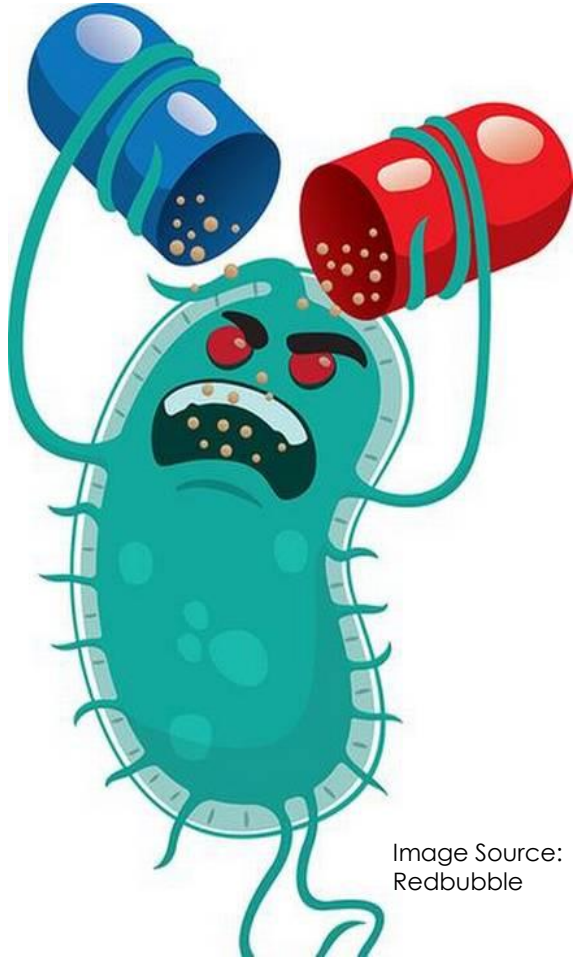


Image Source: Redbubble

https://www.cdc.gov/std/treatment-guidelines/default.htm

Other issues

- dPEP trial (Stewart et al) in Kenya did not show efficacy of doxyPEP in cisgender women (18-30 years old)
  - Hair samples showed that doxycycline was detected in only 44% of participants in the doxycycline arm
  - Some experienced social harm
- A study of tissue samples indicated that Doxycycline achieves adequate concentrations in vaginal and cervical tissue

https://www.cdc.gov/std/treatment-guidelines/default.htm

Interest in DoxyPEP

- Survey of MSM and TWSM seen at STI Clinics in Toronto and Vancouver found:
  - 60.1% would be willing to use doxy PEP
  - 44.1% would be willing to use doxy PrEP

- Survey of Australian MSM found:
  - 52.7% would be very or slightly likely to use doxycycline to prevent syphilis
  - 75.8% felt very or slightly strongly that chemoprophylaxis would help reduce syphilis infections in their communities

Fusca L, Hull M, Ross P, et al. Exposure Prophylaxis Among Gay, Bisexual and Other Men Who Have Sex With Men in Vancouver and Toronto. Sex Transm Dis. 2020 Jan 17. Epub ahead of print

Wilson DP, Prestage GP, Gray RT, et al. Chemoprophylaxis is likely to be acceptable and could mitigate syphilis epidemics among populations of gay men. Sex Transm Dis 2011; 38:573–9

Interest in DoxyPEP

- Large multi-city sample of individuals using a gay social networking app
  - 84% of participants expressed interest in trying doxy PEP
  - **African-American and Hispanic/Latinx respondents had higher interest in doxycycline-PEP than White respondents**

- Prevalence of doxycycline PEP/PrEP use in Seattle
  - **9.3% reported already using doxycycline prophylaxis**
  - Willingness to take doxycycline prophylaxis was more common among those with HIV (62%) or on PrEP (60%)

Spinelli MA, et al. High Interest in Doxycycline for Sexually Transmitted Infection Postexposure Prophylaxis in a Multicity Survey of Men Who Have Sex With Men Using a Social Networking Application. Sex Transm Dis. 2019;46(4):e32-e34.

Dombrowski JC. Doxycycline Prophylaxis Use among Cisgender Men and Transgender Persons who have Sex with Men in Seattle. CDC STD Prevention Conference 2020.

Priority Population for Doxy PEP/PrEP

- Large proportion of STIs occur among those with repeat infections
- In Massachusetts between 2014 - 2016
  - 0.2% of the general population acquired ≥1 repeat STI diagnoses
  - Accounted for 27.7% of all STIs during the same period
- "Core" disease transmitters disproportionately effected by STI morbidity
- Novel STI prevention efforts need to start with this population

Hsu KK, Molotnikov LE, Roosevelt KA, et al. Characteristics of Cases With Repeated Sexually Transmitted Infections, Massachusetts, 2014-2016. *Clin Infect Dis*. 2018;67(1):99-104. doi:10.1093/cid/ciy029

POPULATION HEALTH DIVISION
SAN FRANCISCO DEPARTMENT OF PUBLIC HEALTH

Health Update

Doxycycline Post-Exposure Prophylaxis Reduces Incidence of Sexually Transmitted Infections

October 20, 2022

Recommendations

1. **Recommend doxy-PEP** to cis men and trans women who: 1) have had a bacterial STI in the past year and 2) report condomless anal or oral sexual contact with ≥ 1 cis male or trans female partner in the past year. These were the eligibility criteria used for the DoxyPEP study. Patients with a history of syphilis should be prioritized for doxy-PEP.

2. **Offer doxy-PEP using shared decision making** to cis men, trans men and trans women who report having multiple cis male or trans female sex partners in the prior year, even if they have not previously been diagnosed with an STI.

3. An ongoing randomized controlled trial in Kenya is assessing the safety and efficacy of doxy-PEP in cis women. **At this time, there is insufficient evidence to recommend doxy-PEP for STI prevention for individuals who report receptive vaginal sex.** If used in people who are able to become pregnant, pregnancy testing should be conducted as doxycycline use should be avoided during pregnancy.

4. **When initiating doxy-PEP, discuss the following key points with patients:**

   a. Efficacy:
      i. In persons taking HIV PrEP, doxy-PEP reduced syphilis by 87%, chlamydia by 88% and gonorrhea by 55%.
      ii. In PLWH, doxy-PEP reduced syphilis by 77%, chlamydia by 74% and gonorrhea by 57%.
      iii. Efficacy against other bacterial STIs is not known, and doxy-PEP does not prevent HIV, monkeypox (MPX) or other viral infections, for example HPV and HSV.

   b. Dosing and prescribing:
      i. 200 mg of doxycycline should be taken ideally within 24 hours but no later than 72 hours after condomless oral, anal or vaginal sex.
      ii. Doxycycline can be taken as often as every day, depending on frequency of sexual activity, but individuals should not take more than 200 mg within a 24 hour period.
      iii. Either doxycycline hyclate delayed release 200 mg (1 tab) OR doxycycline hyclate or monohydrate immediate release 100 mg (2 tabs taken simultaneously) are acceptable.
      iv. Immediate release may be less expensive than delayed release and should be equivalently bioavailable.
      v. For ICD10 diagnosis code, use Z20.2 (Contact with and (suspected) exposure to infections with a predominantly sexual mode of transmission).

- SFDPH

POPULATION LEVEL IMPACT?

- Data from 3 STI clinics in San Francisco may show the impact of Doxy-PEP use.

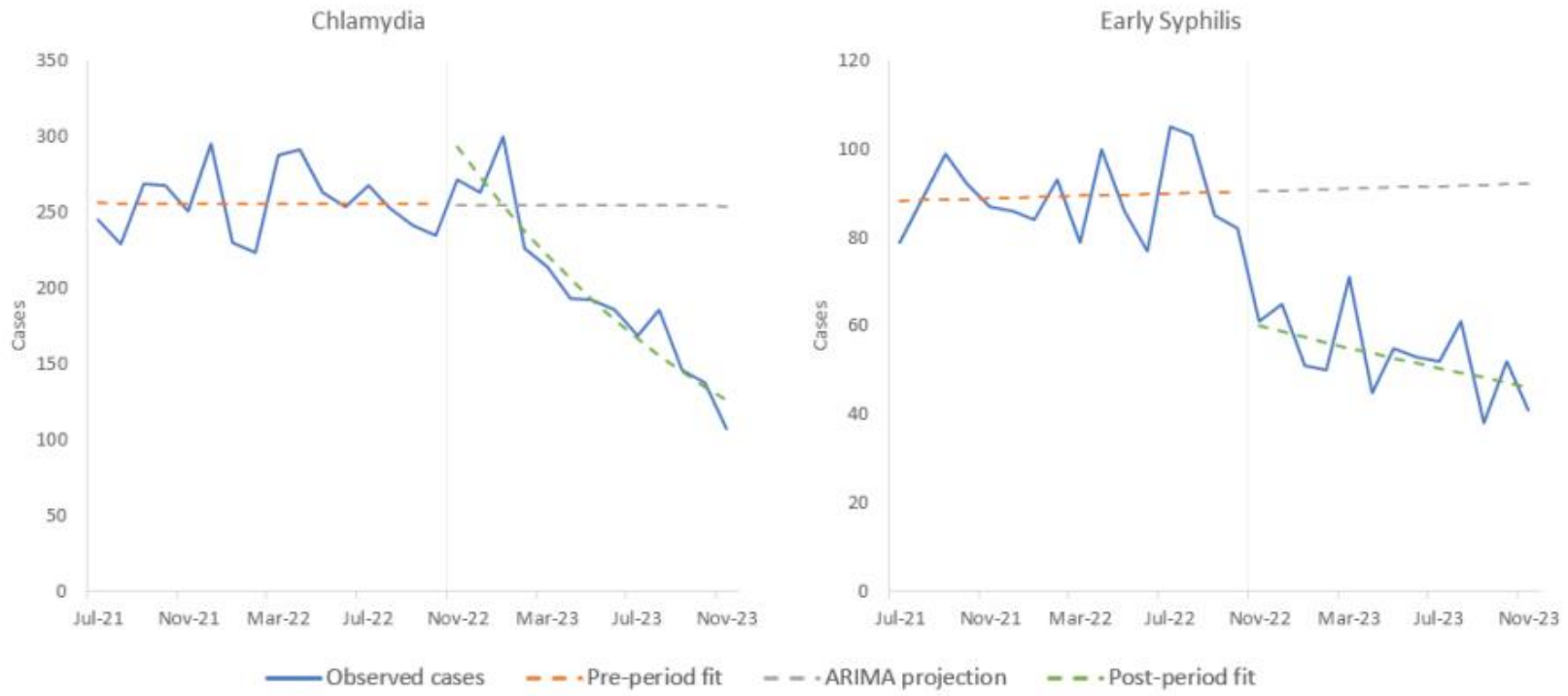
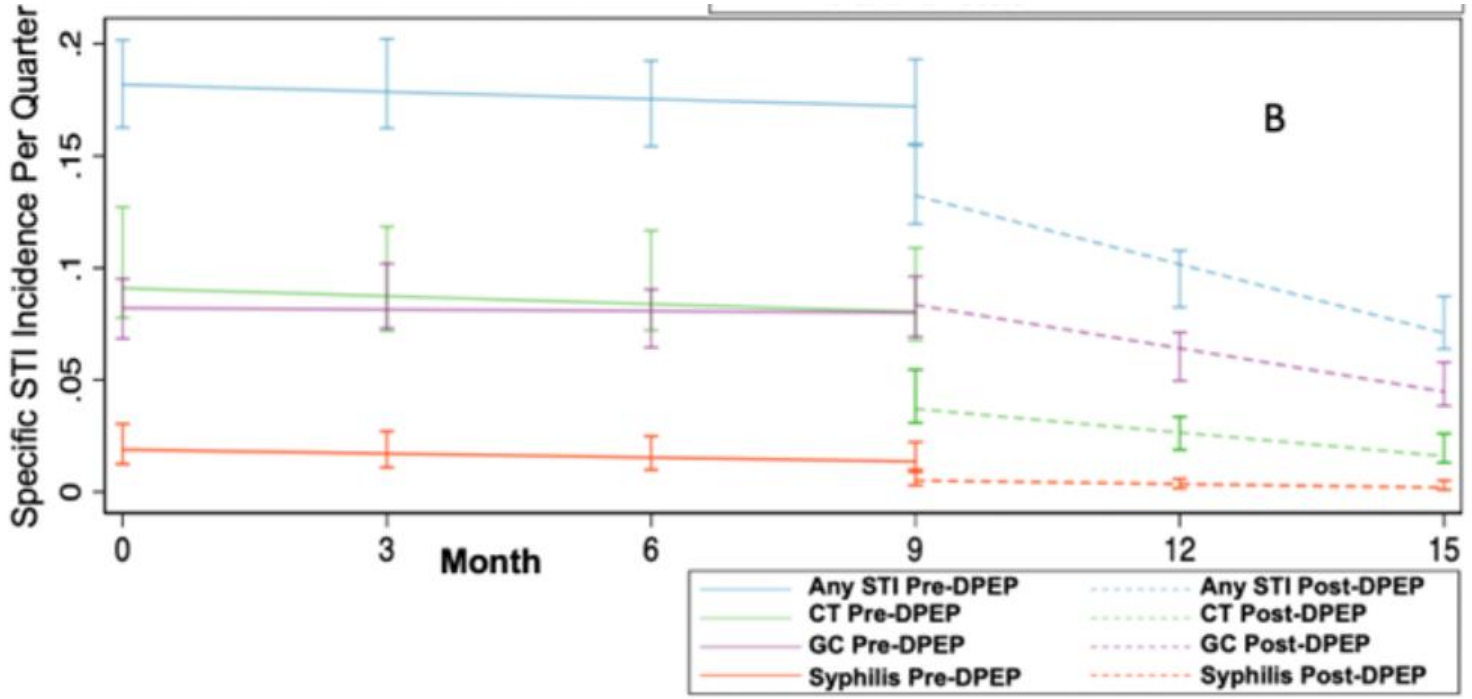


Figure. Observed and modelled chlamydia and early syphilis cases among MSM and TGW in San Francisco pre and post doxy-PEP implementation

IMPLEMENTATION

- San Francisco (Scott et al)
  - >1200 on Doxy-PEP (39%)
  - 33% white, 29% Hispanic, 4% Black
  - 58% reduction in any STI



So where do we go from here?

- While initial data is promising, we are still awaiting safety, and effectiveness of Doxy PrEP/PEP on a larger scale
- Several questions/concerns remain:
  - Ideal dosing? PEP vs PrEP?
  - Long term AE data needed
  - Clearly identify target population
  - Monitoring resistance to STIs as well as commensal flora
  - Education efforts, distinguishing HIV PEP/PrEP from Doxy PEP/PrEP
- Urgency of ongoing STI burden on MSM and TWSM compels us to act now

https://www.cdc.gov/std/treatment-guidelines/default.htm

IMPLEMENTATION

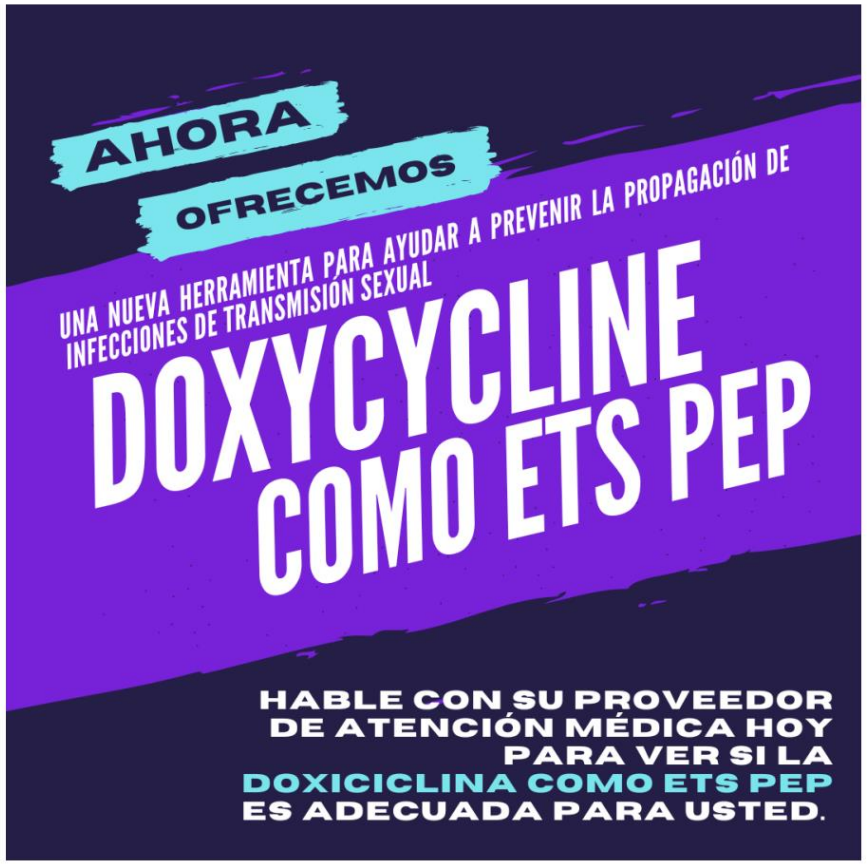


Image Source: National Coalition of STD Directors

What is PEP?

- Taking antiretrovirals after a single and specific exposure with increased likelihood of HIV transmission to stop HIV infection in people who are HIV-negative
- Examples: sex (consensual/non-consensual/transactional) or percutaneous (needlestick injuries or sharing syringes/injection equipment) with someone who has or might have HIV
- PEP must be started as soon as possible to be effective – within 72 hours of a possible exposure – and continued for 4 weeks
- Some patients who need PEP can and should consider PrEP

https://www.cdc.gov/std/treatment-guidelines/default.htm

Why Do We Still Need PEP

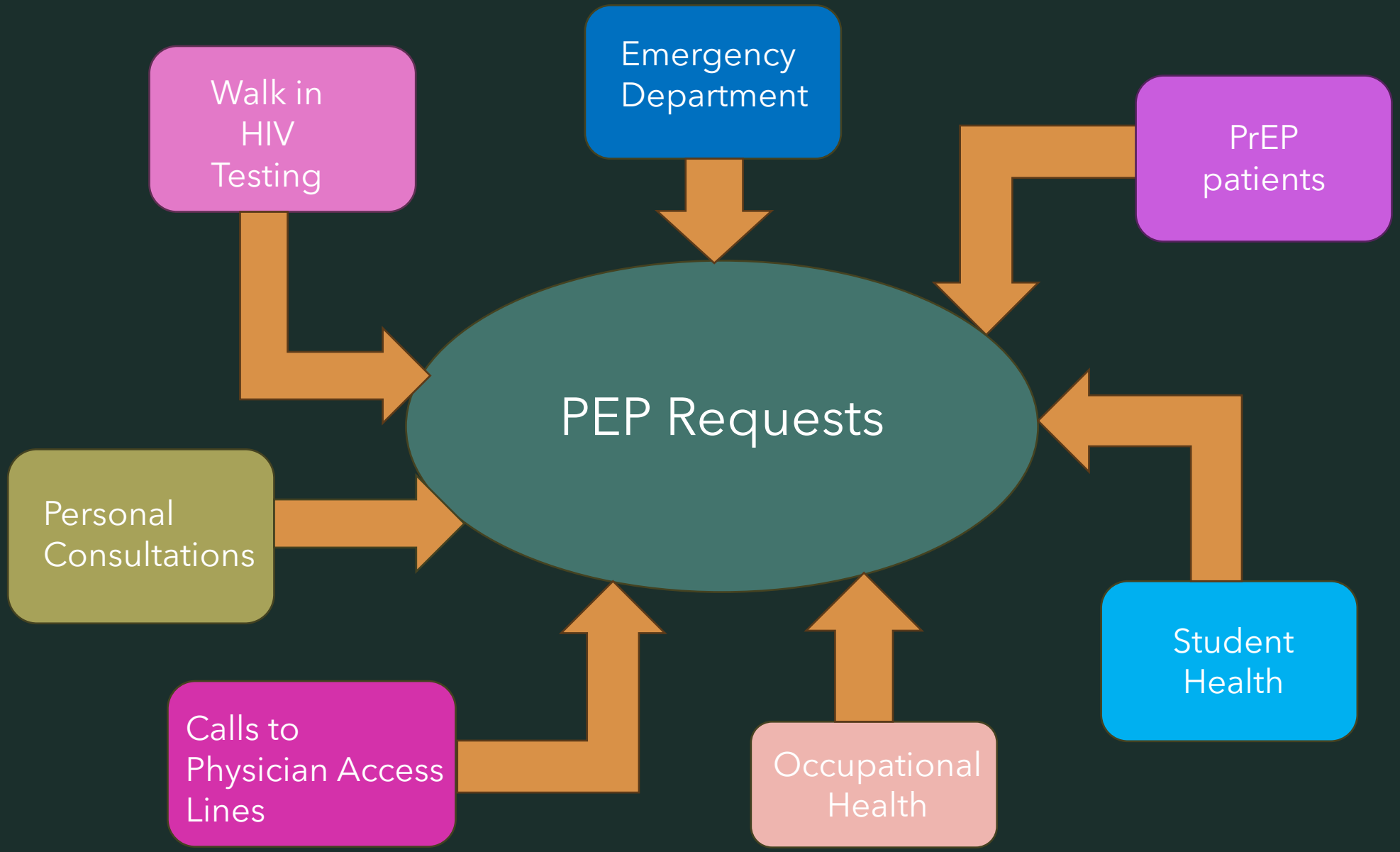
- Promoting PrEP for HIV prevention is an ideal primary prevention approach*
- Engagement in condomless sexual behavior may be infrequent or sporadic—a barrier to PrEP uptake and persistence.
- Individuals prescribed PrEP can have lapses in adherence resulting in a recommended course of nPEP prior to reinitiating PrEP.*
- There is need for all of the currently known biomedical HIV prevention approaches—PrEP, nPEP (non-occupational PEP), and TasP (treatment as prevention)—widely available to end the HIV epidemic in the US.

John, S. A., Quinn, K. G., Pleuhs, B., Walsh, J. L., & Petroll, A. E. (2020). HIV post-exposure prophylaxis (PEP) awareness and non-occupational PEP (nPEP) prescribing history among U.S. Healthcare Providers. *AIDS and Behavior*, *24*(11), 3124–3131. https://doi.org/10.1007/s10461-020-02866-6

Why Do We Still Need PEP

- “It’s really the only tool that can be used after an exposure to HIV has already occurred.” Dr. Yawetz
- “Available data indicate that PEP is effective when taken as recommended and true PEP failures are rare. So it’s possible for us to consider that the over 30,000 HIV infections annually represent missed opportunities for PEP.” Dr. Tanner
- “If you have a PrEP program you must have a PEP program.” Dr. Whitlock

John, S. A., Quinn, K. G., Pleuhs, B., Walsh, J. L., & Petroll, A. E. (2020). HIV post-exposure prophylaxis (PEP) awareness and non-occupational PEP (nPEP) prescribing history among U.S. Healthcare Providers. *AIDS and Behavior*, *24*(11), 3124–3131. https://doi.org/10.1007/s10461-020-02866-6



John, S. A., Quinn, K. G., Pleuhs, B., Walsh, J. L., & Petroll, A. E. (2020). HIV post-exposure prophylaxis (PEP) awareness and non-occupational PEP (nPEP) prescribing history among U.S. Healthcare Providers. *AIDS and Behavior*, *24*(11), 3124–3131. https://doi.org/10.1007/s10461-020-02866-6

Patients on PrEP Still Need PEP

- 282 GBMSM, 6 Transwomen
- Median age 29 years
- PEP exposure: 85% condomless, receptive anal sex
- Previous PrEP use among 44%
  - No supply (30%)
  - On PrEP holiday (25%)
  - Spontaneous sex (15%)
  - Incorrect PrEP dose (13%)
  - Unknown (17%)

John, S. A., Quinn, K. G., Pleuhs, B., Walsh, J. L., & Petroll, A. E. (2020). HIV post-exposure prophylaxis (PEP) awareness and non-occupational PEP (nPEP) prescribing history among U.S. Healthcare Providers. *AIDS and Behavior*, *24*(11), 3124–3131. https://doi.org/10.1007/s10461-020-02866-6

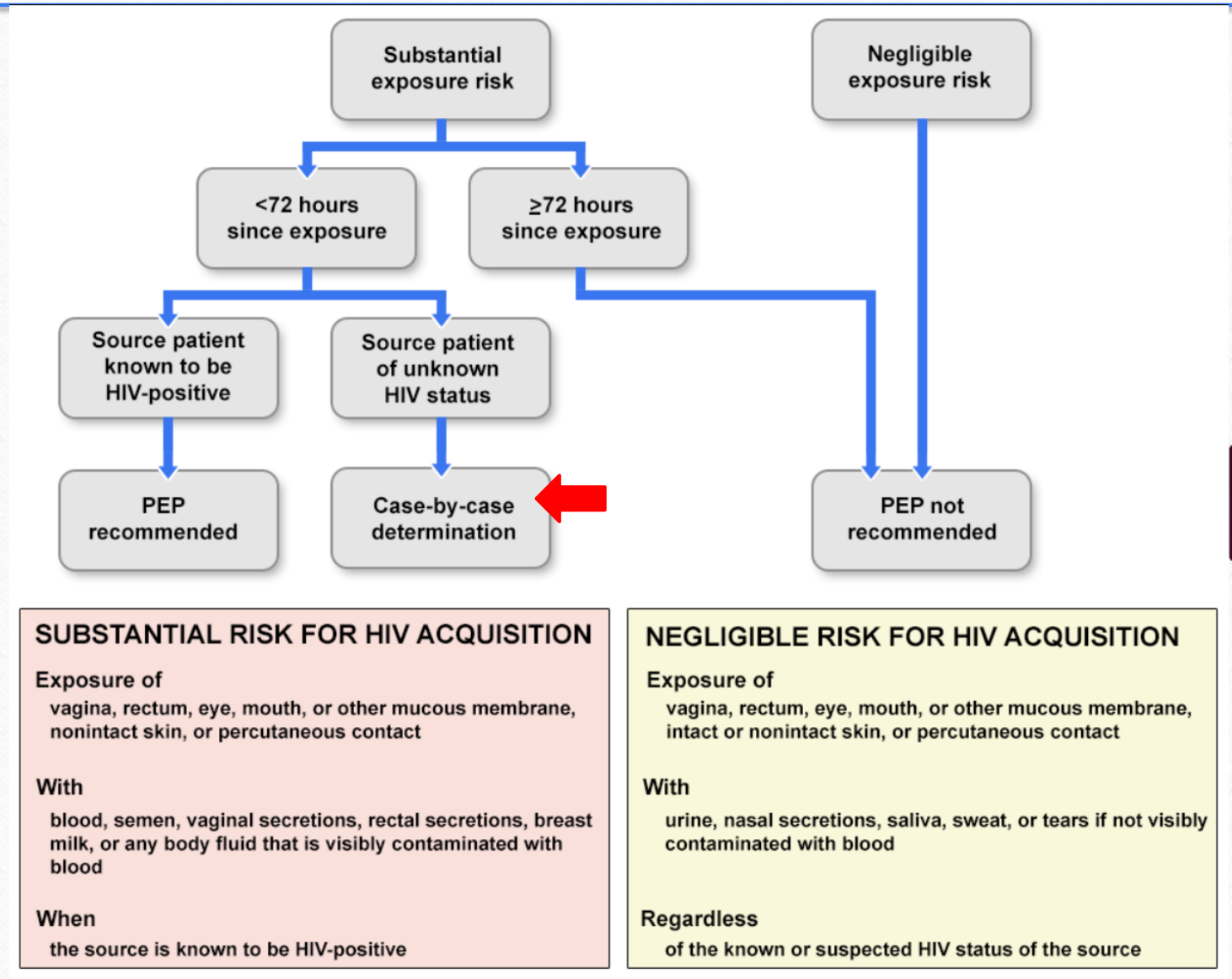
WHEN is HIV PEP needed?

Contact with potentially contaminated body fluids from an HIV-infected source in the vagina, rectum, eye, mouth or other mucous membrane, non-intact skin, or perforated skin (eg, needle stick)

If the source is of unknown HIV status, a **case-by-case determination may be made regarding the use of PEP.**

https://www.cdc.gov/std/treatment-guidelines/default.htm

Algorithm for evaluation and treatment of possible HIV exposures



Updated Guidelines for Antiretroviral Postexposure Prophylaxis after Sexual, Injection-Drug Use, or Other Nonoccupational Exposure to HIV – United States, 2016. MMWR Morb Mortal Wkly Rep, 2016. **65**(17): p. 458.

Estimated Per-Act Probability of Acquiring HIV from an Infected Source, by Exposure Act*

Type of Exposure	Risk per 10,000 Exposures
Parenteral	
Blood Transfusion	9,250
Needle-Sharing During Injection Drug Use	63
Percutaneous (Needle-Stick)	23
Sexual	
Receptive Anal Intercourse	138
Insertive Anal Intercourse	11
Receptive Penile-Vaginal Intercourse	8
Insertive Penile-Vaginal Intercourse	4
Receptive Oral Intercourse	Low
Insertive Oral Intercourse	Low
Other^	
Biting	Negligible
Spitting	Negligible
Throwing Body Fluids (Including Semen or Saliva)	Negligible
Sharing Sex Toys	Negligible

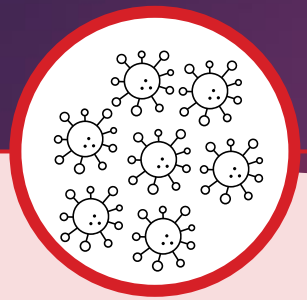
* Factors that may increase the risk of HIV transmission include sexually transmitted diseases, acute and late-stage HIV infection, and high viral load. Factors that may decrease the risk include condom use, male circumcision, antiretroviral treatment, and pre-exposure prophylaxis. None of these factors are accounted for in the estimates presented in the table.

^ HIV transmission through these exposure routes is technically possible but unlikely and not well documented.

Source:

- Patel P, Borkowf CB, Brooks JT. Et al. Estimating per-act HIV transmission risk: a systematic review. AIDS. 2014. doi: 10.1097/QAD.0000000000000298.
- Pretty LA, Anderson GS, Sweet DJ. Human bites and the risk of human immunodeficiency virus transmission. Am J Forensic Med Pathol 1999;20(3):232-239.

Factors that Increase Likelihood of HIV Transmission



Acute infection, ~the 12 weeks after contracting HIV, can increase transmission likelihood **26 times**, raising a 1.43% risk to 37%—higher than 1 in 3. This is because viral load skyrockets during the acute phase.

Presence of other sexually transmitted infections (STIs) can amplify risk by as much as **8 times.**

Exposure to gender inequality and intimate partner violence can raise a woman's HIV risk **1.5 times**.

Source: AAHIVM. Heads or Tails. https://aahivm.org/wp-content/uploads/2022/09/HIV-risk-transmission.pdf, Last Accessed: 2/28/2023.

Gender Based Violence (USAIDS)

- HIV and gender-based violence (GBV) are syndemic. HIV epidemic control cannot be achieved without addressing gender inequality and GBV.
- PEP is an essential service in GBV programming. Understanding the barriers, best practices, and lessons learned from existing interventions is necessary to improve USAID (United States Agency for International Development) programs and increase PEP completion.

Infographic: Pep adherence spotlight: Preventing and responding to gender- based violence in USAID's HIV programs (text version): Basic page. U.S. Agency for International Development. (2022, December 22). Retrieved April 4, 2023, from https://www.usaid.gov/global-health/health-areas/hiv-and-aids/resources/infographic-pep-adherence-spotlight-pep-text

HIV and Sexual Assault

PEP is the only proven method of reducing HIV acquisition after exposure, and it should be offered in cases of sexual assault.

Increased risk of HIV infection in sexual assault has been associated with:

Trauma at the exposure site

- Genitorectal trauma - 50% to 85% [Sachs and Chu 2002; Jones, et al. 2009; Sommers, et al. 2012]
- Anogenital trauma - 20% to 85% [Riggs, et al. 2000; Grossin, et al. 2003; Jones, et al. 2003; Sugar, et al. 2004; Laitinen, et al. 2013; Larsen, et al. 2015]

Absence of barrier protection

- High rates of condomless receptive anal intercourse (88%) and vaginal penetration (>60%) [Draughon Moret, et al. 2016]
- Perpetrators of intimate partner violence
  - Unlikely to use condoms (or use condoms inconsistently)
  - Likely to force sexual intercourse without a condom
  - Likely to have sexual intercourse with other partners [Raj, et al. 2006; Casey, et al. 2016; Stephenson and Finneran 2017].

There are published reports of HIV seroconversion following sexual assault [Murphy, et al. 1989; Claydon, et al. 1991; Albert, et al. 1994; Myles, et al. 2000]

ORIGINAL ARTICLE

A Case–Control Study of HIV Seroconversion in Health Care Workers after Percutaneous Exposure

Denise M. Cardo, M.D., David H. Culver, Ph.D., Carol A. Ciesielski, M.D., Pamela U. Srivastava, M.S., Ruthanne Marcus, M.P.H., Dominique Abiteboul, M.D., Julia Heptonstall, M.R.C.Path., Giuseppe Ippolito, M.D., Florence Lot, M.D., Penny S. McKibben, David M. Bell, M.D., and the Centers for Disease Control and Prevention Needlestick Surveillance Group

- Effect of occupational PEP (ZDV – zidovudine- monotherapy) on HIV seroconversion
- Identified risk factors for the transmission of HIV to health care workers (HCWs) from the U.S., France, Italy, and the UK who had experienced exposure to HIV-infected blood
- Cases: Those who had HIV seroconversion temporally associated with the exposure, and no other reported exposures to HIV
- Controls: HIV negative at the time of exposure, and for at least six months after
- No difference in the rate at which PEP was offered to cases or controls after controlling for HIV transmission risk
- HIV seroconversion among HCWs who had received PEP after occupational exposure was reduced by approximately 81%, compared to those who did not receive PEP

N Engl J Med 1997; 337:1485-1490

Sexual Assault and HIV Postexposure Prophylaxis at an Urban African Hospital

Eric Munene Muriuki, MBChB, MSc,[1,,2] Joshua Kimani, MBChB, MPH,[2,,3] Zipporah Machuki, BS, MSc,[2] James Kiarie, MBChB, MMed, MPH,[1,,4,,5,,6] and Alison C. Roxby, MD, MSc[4,,7]

Reviewed hospital charts of survivors of sexual violence attending the Gender Based Violence Recovery Center between 2009 and 2012 in Nairobi, Kenya

Survivors were mainly female, and 16% were children under 10 years old

Of 385 survivors, 207 initiated PEP (ZDV/3TC [lamivdune] plus LPV/r [lopinavir/ritonavir])

Only 70 completed the full 28-day course and 21 returned for a three-month follow up

No seroconversions were reported among those who came for a repeat HIV test

Recommended Antiretroviral nPEP Regimens

Age Group	Preferred/ Alternative	Medications (28 day course)
Adults and adolescents aged ≥ 13 years, including pregnant women, with normal renal function (creatinine clearance ≥ 60 mL/min)	**Preferred**	A 3-drug regimen consisting of tenofovir OF 300 mg **and** fixed dose combination emtricitabine 200 mg (TDF/FTC) once daily ***with*** raltegravir 400 mg twice daily ***or*** dolutegravir 50 mg once daily
	Alternative	A 3-drug regimen consisting of tenofovir OF 300 mg **and** fixed dose combination emtricitabine 200 mg (TDF/FTC) once daily ***with*** darunavir 800 mg (as 2, 400 mg tablets) once daily ***and*** ritonavir 100 mg once daily
Adults and adolescents aged ≥ 13 years with renal dysfunction (creatinine clearance ≤ 59mL/min)	**Preferred**	A 3-drug regimen consisting of zidovudine ***and*** lamivudine, with both doses adjusted to degree of renal function ***with*** raltegravir 400 mg twice daily ***or*** dolutegravir 50 mg once daily
	Alternative	A 3-drug regimen consisting of zidovudine ***and*** lamivudine, with both doses adjusted to degree of renal function ***with*** darunavir 800 mg (as 2,400mg tablets) once daily ***and*** ritonavir[b] 100 mg once daily

Source: 2016 CDC nPEP Guidelines Update (page 31 of 91)

Safety and Tolerability of Once Daily Coformulated Bictegravir, Emtricitabine, and Tenofovir Alafenamide for Postexposure Prophylaxis After Sexual Exposure

Kenneth H. Mayer, MD,[a,b,c] Marcy Gelman, NP,[a] Johnathon Holmes, NP,[a] Jessica Kraft, NP,[a] Kathleen Melbourne, PharmD,[d] and Matthew J. Mimiaga, ScD, MPH[a,e]

- Individuals accessing PEP at a Boston community health center between August 2018 and March 2020 were enrolled in an open label study of co-formulated BIC/FTC/TAF (Bictegravir/emtricitabine/tenofovir alafenamide – Biktarvy), taken as one pill daily for 28 days
- The most common side effects: nausea or vomiting (15.4%), fatigue (9.6%), diarrhea/loose stools (7.7%) - less common than historical controls using other PEP regimens
- Only 1 participant discontinued the regimen because of fatigue, and all other side effects were self-limited.
- Almost all participants (90.4%) completed the indicated regimen, which was a higher completion rate compared with earlier PEP regimens, and none became HIV-positive.
- **Conclusions**: BIC/FTC/TAF co-formulated as a single daily pill was found to be safe, well-tolerated, and highly acceptable for PEP, and compared more favorably than historical PEP regimens used at an urban health center
- *Can be used when the standard regimens are not accessible*
- *Patient assistance is available*

J Acquir Immune Defic Syndr Volume 90, Number 1, May 1, 2022

Labs for PEP

- Baseline HIV rapid test
  - If rapid HIV baseline test is not available, *there should be no delay in starting PEP*
  - Oral HIV tests are not recommended for the purposes of PEP
- Pregnancy test
- Serum liver enzymes
- BUN (blood urea nitrogen)/creatinine
- STI screening
  - NAAT testing for chlamydia and gonorrhea, and a blood test for syphilis
- Hepatitis B (HBV) surface antigen, surface antibody, and core antibody
- Hepatitis C (HCV) antibody

The first dose of PEP should always be expedited; testing can wait until after PEP has been initiated.

Image Source: iStock Photos

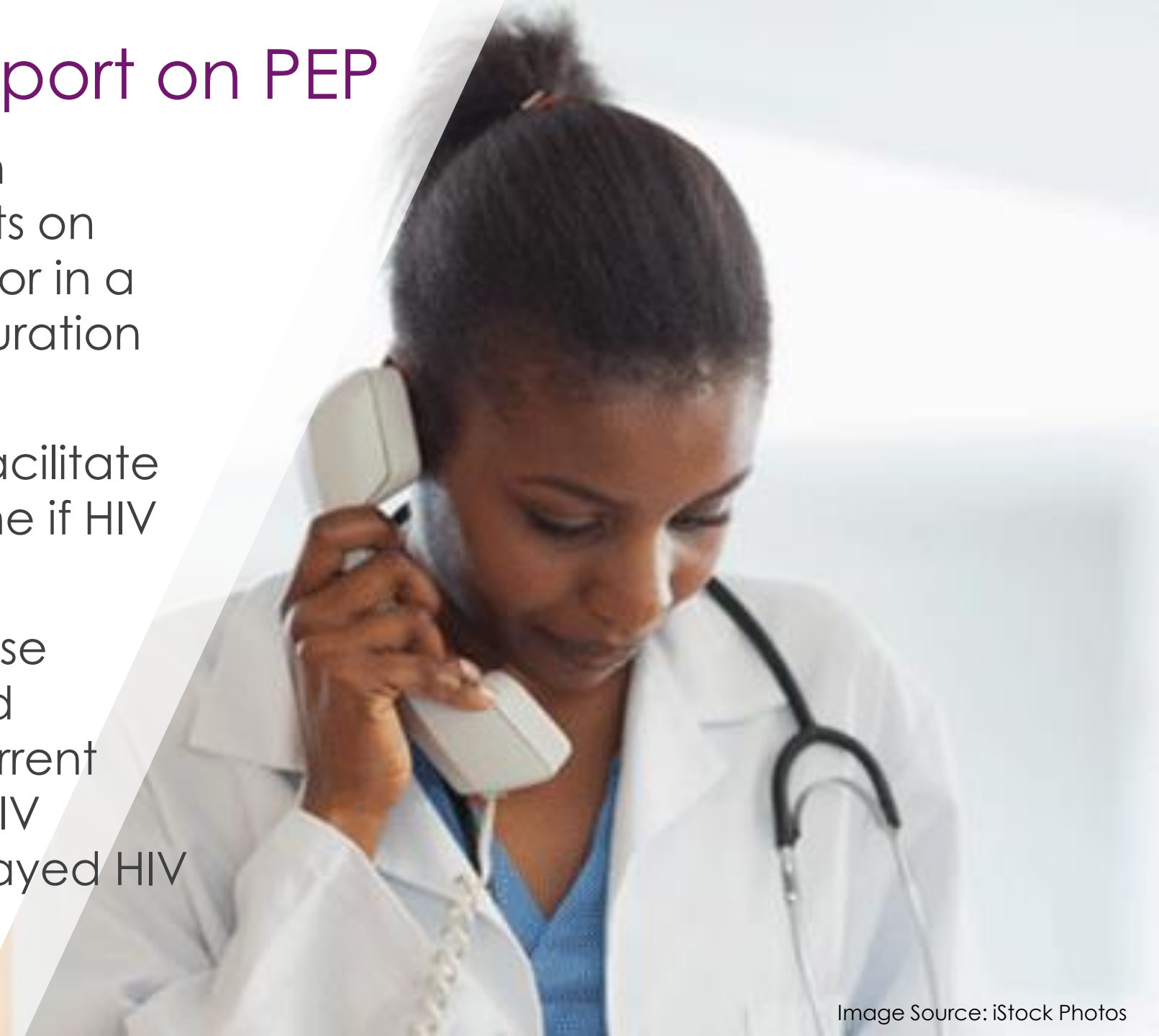
Recommended Schedule of Laboratory Evaluations of Source and Exposed Patients for Providing nPEP

Test	Source Baseline	Baseline	4–6 Weeks After Exposure	3 Months After Exposure	6 Months After Exposure
*For all patients considered for or prescribed nPEP for **any exposure***					
HIV Ag/Ab testing[a] (or antibody testing if Ag/Ab test unavailable)	■	■	■	■	■[b]
HBV serology, including: HBV surface antigen HBV surface antibody HBV core antibody	■	■	—	—	■[c]
HCV antibody test	■	■	—	—	■[d]
For all patients considered for or prescribed nPEP for sexual exposure					
Syphilis serology[e]	■	■	■	—	■
Gonorrhea[f]	■	■	■[g]	—	—
Chlamydia[f]	■	■	■[g]	—	—
Pregnancy[h]	—	■	■	—	—
For patients prescribed: TDF + F + RAL or TDF + F + DTG					
Serum creatinine (for calculating estimated creatinine clearance[i])	—	■	■	—	—
Alanine transaminase, aspartate aminotransferase	—	■	■	—	—

Info & Image Source :https://www.cdc.gov/std/treatment-guidelines/default.html

Follow up and Support on PEP

- Providers should maintain contact with their patients on PEP, either by telephone or in a clinic visit for the entire duration of PEP
- Ensure adherence and facilitate follow-up HIV to determine if HIV infection has occurred
- Additionally, people whose sexual or injection-related exposures result in concurrent acquisition of HCV and HIV infection might have delayed HIV seroconversion



https://www.cdc.gov/std/treatment-guidelines/default.htm

Image Source: iStock Photos

What about PEP in Pregnancy?

- If the person exposed to HIV is pregnant, expert consultation should be sought
- In general, however, **PEP is indicated at any time during pregnancy when a significant exposure has occurred**, despite a possible risk to the pregnant patient and the fetus
- The recommended PEP regimen remains the same
- PrEP is also indicated in pregnancy

https://www.cdc.gov/std/treatment-guidelines/default.htm

Image Source: iStock Photos

References

- HTTPS://WWW.CDC.GOV/STD/STATISTICS/PREVALENCE-INCIDENCE-COST-2020.HTM
- HTTPS://WWW.CDC.GOV/STD/DSTDP/STI-FUNDING-AT-WORK/JURISDICTIONAL-SPOTLIGHTS/MISSOURI.PDF
- BOLAN, ROBERT K., ET AL. "DOXYCYCLINE PROPHYLAXIS TO REDUCE INCIDENT SYPHILIS AMONG HIV-INFECTED MEN WHO HAVE SEX WITH MEN WHO CONTINUE TO ENGAGE IN HIGH-RISK SEX." SEXUALLY TRANSMITTED DISEASES, VOL. 42, NO. 2, 2015, PP. 98–103., HTTPS://DOI.ORG/10.1097/OLQ.0000000000000216.
- GRANT, JULIANA S, ET AL. "DOXYCYCLINE PROPHYLAXIS FOR BACTERIAL SEXUALLY TRANSMITTED INFECTIONS." CLINICAL INFECTIOUS DISEASES, VOL. 70, NO. 6, 2019, PP. 1247–1253., HTTPS://DOI.ORG/10.1093/CID/CIZ866.
- MOLINA, JEAN-MICHEL, ET AL. "POST-EXPOSURE PROPHYLAXIS WITH DOXYCYCLINE TO PREVENT SEXUALLY TRANSMITTED INFECTIONS IN MEN WHO HAVE SEX WITH MEN: AN OPEN-LABEL RANDOMISED SUBSTUDY OF THE ANRS IPERGAY TRIAL." THE LANCET INFECTIOUS DISEASES, VOL. 18, NO. 3, 2018, PP. 308–317., HTTPS://DOI.ORG/10.1016/S1473-3099(17)30725-9.
- HTTPS://PROGRAMME.AIDS2022.ORG/ABSTRACT/ABSTRACT/?ABSTRACTID=13231
- HTTPS://PROGRAMME.AIDS2022.ORG/PAGMATERIAL/PPT/3552_5222/DOXYPEP_AIDS_2022.FINAL.REVISED.PDF

QUESTIONS?

Contact Information

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(314) 362-2439; phliang@wustl.edu

Lancaster County Syphilis & HIV Symposium

Thank you, resources, & evaluations

Daemon Donigan

MATEC Resources

- National Clinician Consultation Center http://nccc.ucsf.edu/
  - HIV Management
  - Perinatal HIV
  - HIV PrEP
  - HIV PEP line
  - HCV Management
  - Substance Use Management
- AETC National HIV Curriculum https://aidsetc.org/nhc
- AETC National HIV-HCV Curriculum https://aidsetc.org/hivhcv
- National PrEP Curriculum https://www.hivprep.uw.edu
- Hepatitis B Online https://www.hepatitisb.uw.edu
- Hepatitis C Online https://www.hepatitisc.uw.edu
- AETC National Coordinating Resource Center https://aidsetc.org/
- Additional Trainings https://matec.info

AETC AIDS Education & Training Center Program Midwest

Opioid Response Network

- **Help is here!** The *Opioid Response Network (ORN)* is your resource for no-cost education, training and consultation to enhance efforts addressing opioid and stimulant use disorders.

- *ORN* has consultants in every state and territory to deploy across prevention, treatment, recovery and harm reduction.

- **Share your needs via the "SUBMIT A REQUEST" form at OpioidResponseNetwork.org.** Within one business day, your regional point person will be in touch to learn more.

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