WELCOME to the

Getting In Sync with Sexual Health ECHO:

STIs – Testing, Treatment and Prevention

Series created in partnership with the

New England AIDS Education and Training Center

This ECHO series is supported by Award # TR7HA53199 from the Health Resources and Services Administration (HRSA), HHS. 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. Any trade/brand names for products mentioned are for training and identification purposes only.

Series Learning Objectives/Schedule

- Describe how to obtain a sexual history in a culturally competent manner in order to provide counseling on STI prevention based on risk
- Explain how to accurately identify individuals who require STI screening, including the procedure for obtaining the appropriate specimens for testing
- Identify the medications used for the prevention and treatment of STIs

Date	Session Title
9/3/2024	STI Epidemiology and At Risk Populations
9/17/2024	Sexual History Taking and Sexual Culture/Practices
10/1/2024	Gonorrhea, Chlamydia/LGV, Trichomonas, DoxyPEP
10/15/2024	Syphilis
10/29/2024	HSV
11/12/2024	HIV (PrEP and nPEP)
11/26/2024	Hepatitis B and C
12/10/2024	HPV, Mpox, Mycoplasma/Ureplasma

STI Epidemiology in the U.S.

Antonia Altomare, DO, MPH

Infectious Diseases and International Health

Dartmouth Health

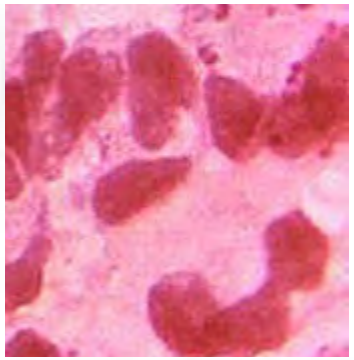
ES. Evening Standard + Follow 203.6K Followers

London's gonorrhoea rate doubles in decade amid warning of antibiotic resistant cases

sky news Sky News + Follow 411.4K Followers

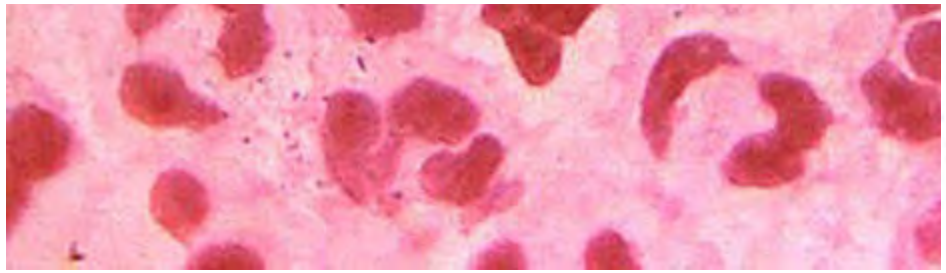
Gonorrhoea could become 'untreatable' as cases of the STI reach record level

ES. Evening Standard + Follow 203.6K Followers



Rise in drug-resistant STI prompts concern among health officials

Story by Ella Pickover • 14h • 2 min read



STD cases rose 5% from 2020 to 2023, with biggest jumps among older adults, data show

News brief | *July 9, 2024*

Mary Van Beusekom, MS

NZ Herald + Follow 16.2K Followers

Syphilis cases on the rise in New Zealand: What you need to know about the STI

Nova Scotia

Nova Scotia launches take-home STI testing kit, a first in Atlantic Canada

'Getting tested and treated is the way to stop the spread,' says infectious disease specialist

Lyndsay Armstrong · The Canadian Press · Posted: Aug 13, 2024 1:26 PM EDT | Last Updated: August 13

As syphilis cases continue to surge in the US, recent federal efforts aim to tackle the alarming trend

By Deidre McPhillips, CNN

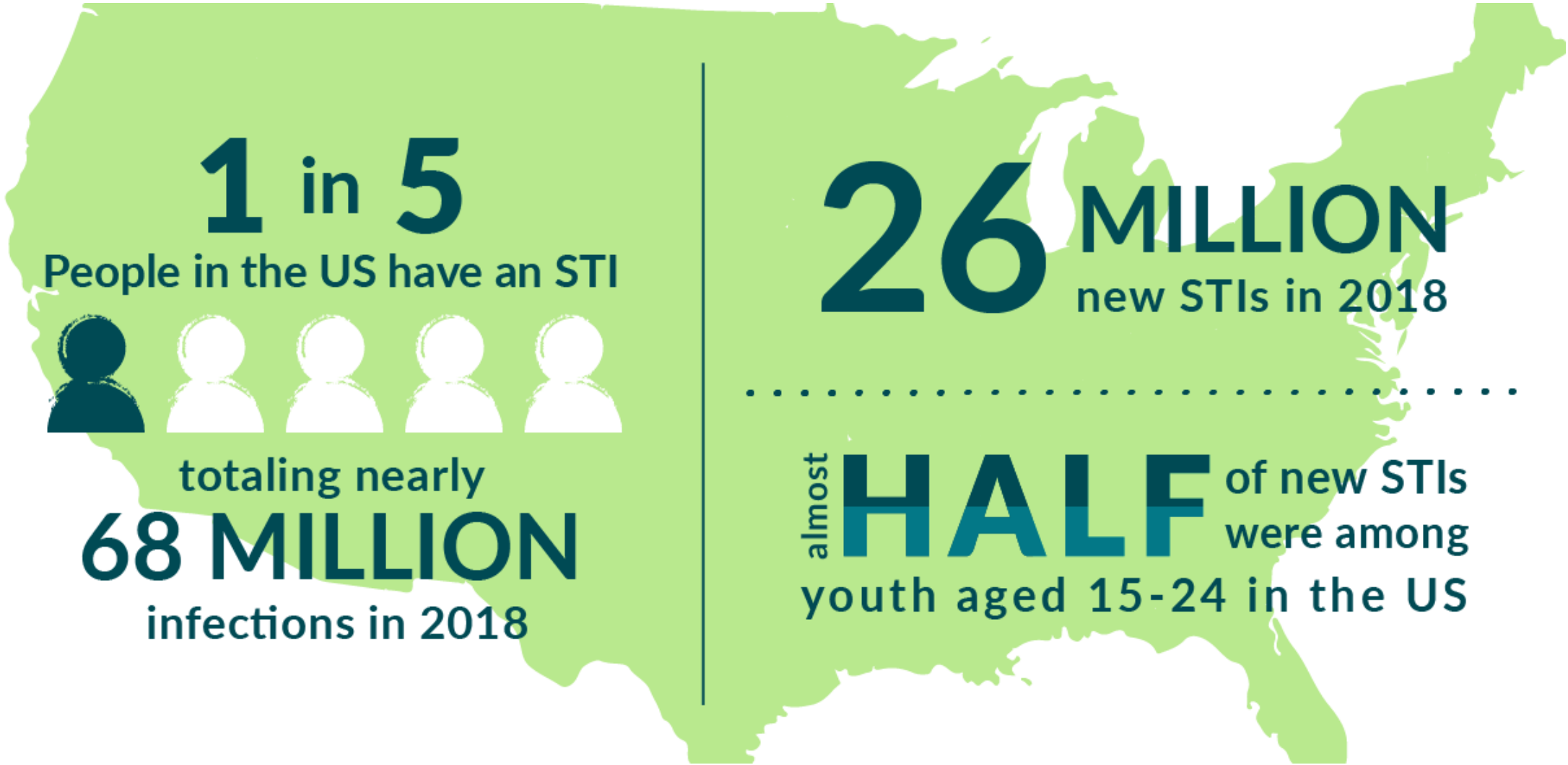
5 minute read · Updated 5:15 PM EST, Tue January 30, 2024

ABC News + Follow

Mpox declared a public health emergency, WHO says

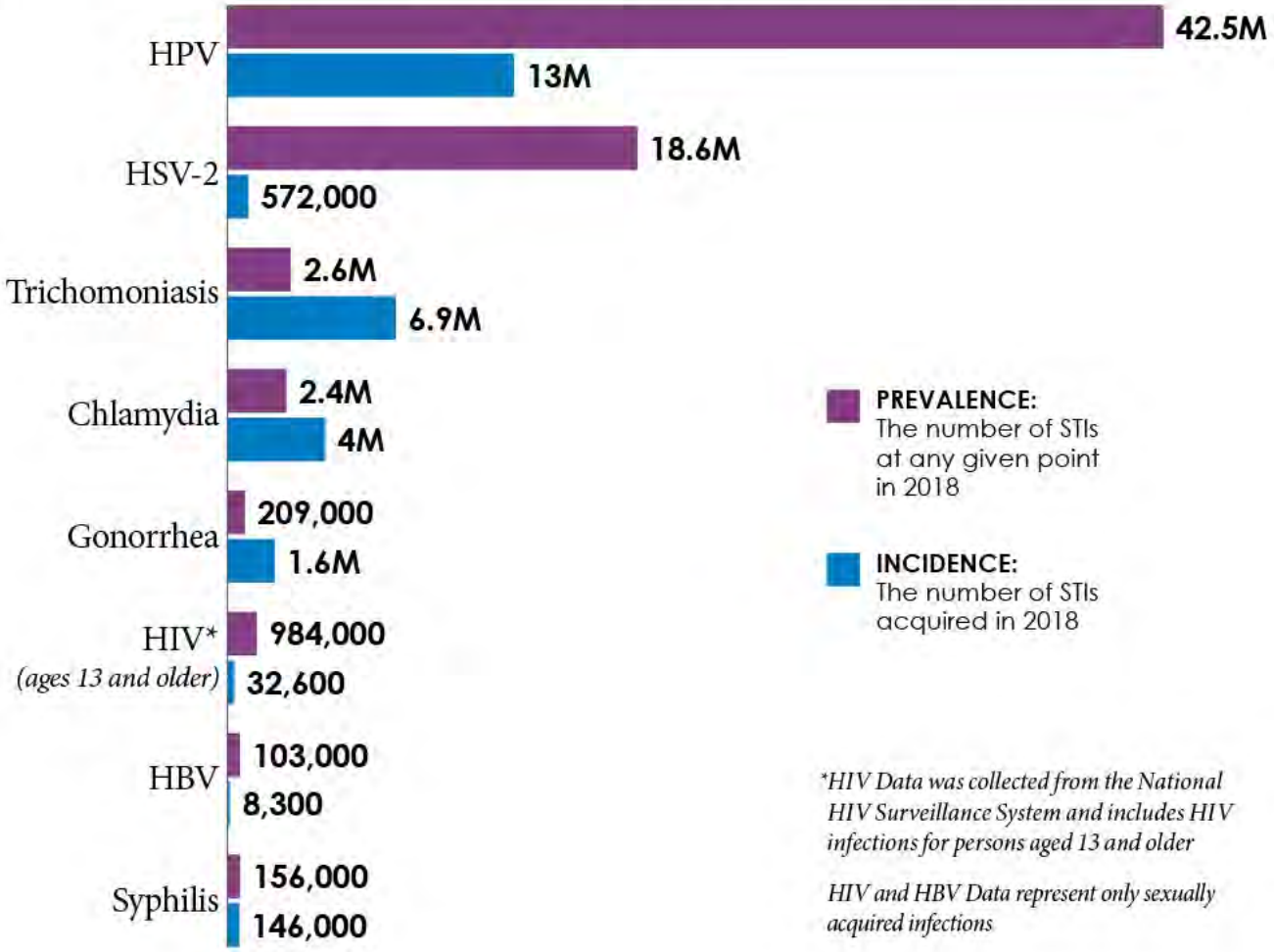
Dartmouth Health

Project ECHO



LATEST CDC ESTIMATES REVEAL NEARLY 68 MILLION STIs IN THE U.S., AND MORE THAN 26 MILLION NEW INFECTIONS

Estimated number of new and existing sexually transmitted infections



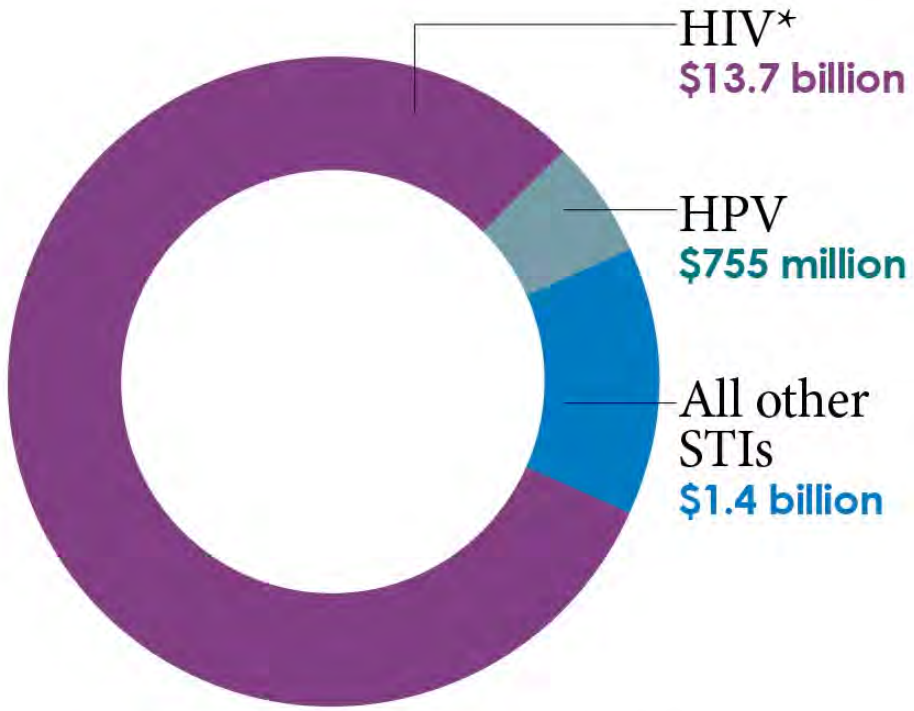
PREVALENCE: The number of STIs at any given point in 2018

INCIDENCE: The number of STIs acquired in 2018

**HIV Data was collected from the National HIV Surveillance System and includes HIV infections for persons aged 13 and older*

HIV and HBV Data represent only sexually acquired infections

New STIs total nearly **$16 BILLION** in direct medical costs



**HIV Data represent only sexually acquired infections*

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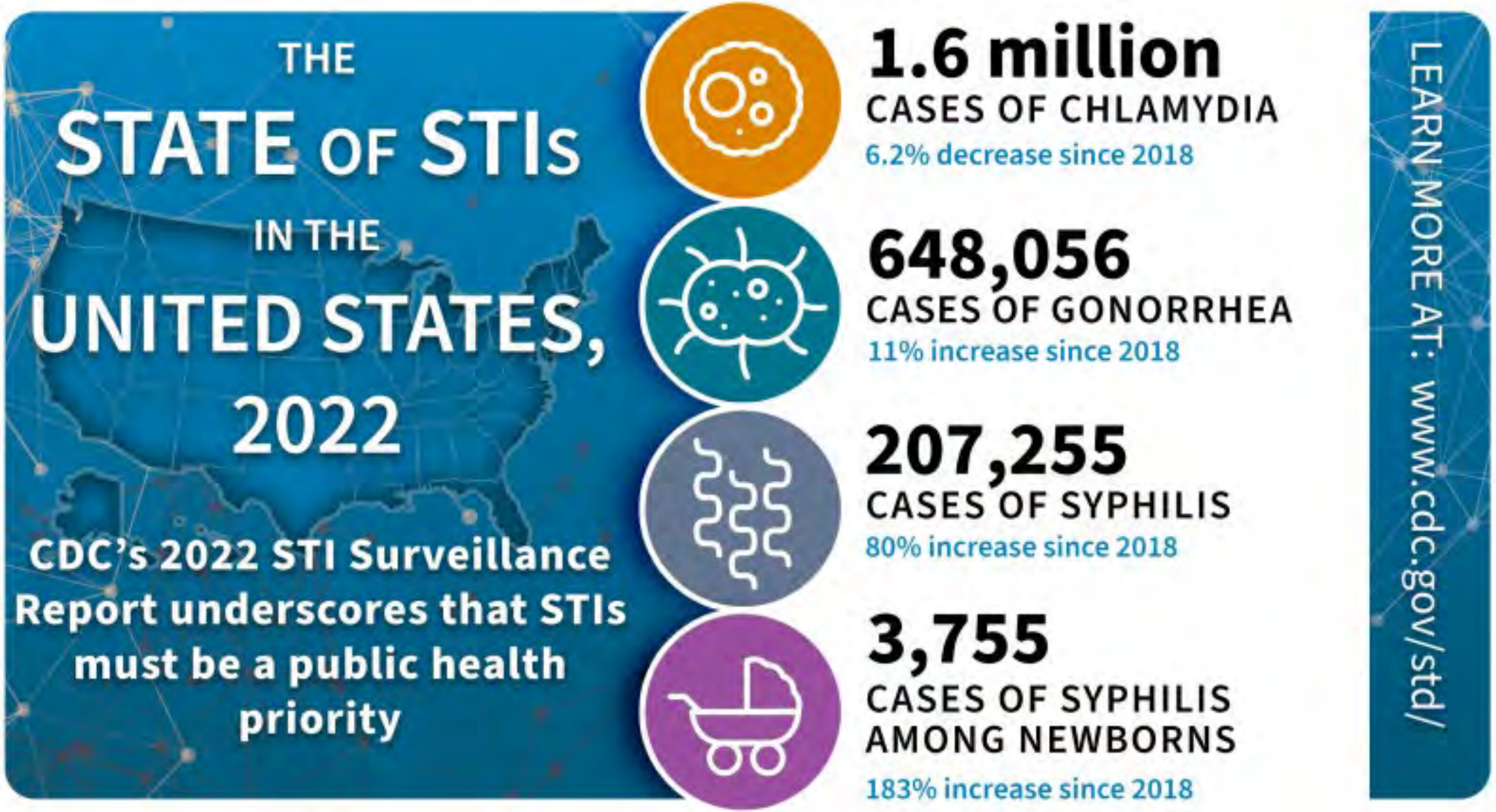
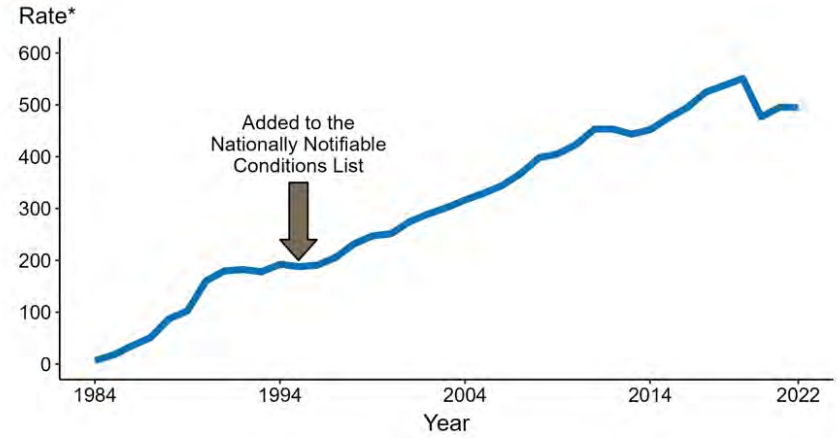


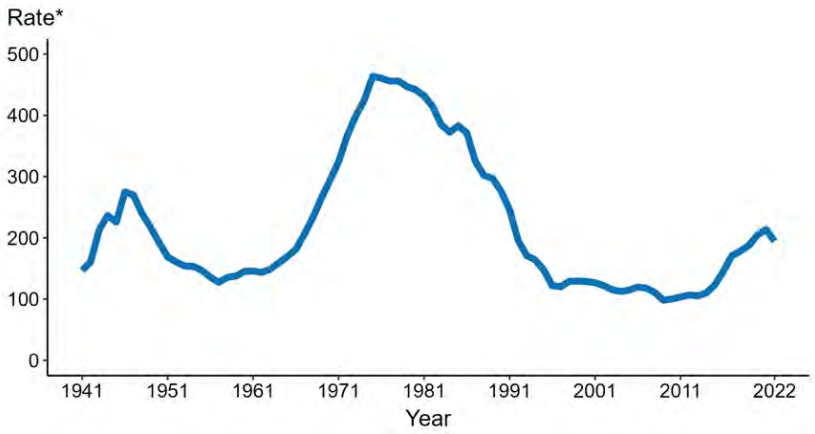

LEFT UNTREATED, STDS CAN CAUSE:
!!!
!!!
INCREASED RISK OF GIVING OR GETTING HIV
LONG-TERM PELVIC/ABDOMINAL PAIN
INABILITY TO GET PREGNANT OR PREGNANCY COMPLICATIONS
PREVENT THE SPREAD OF STDS WITH THREE SIMPLE STEPS:
talk
test
treat
Rx

Chlamydia — Rates of Reported Cases by Year, United States, 1984–2022



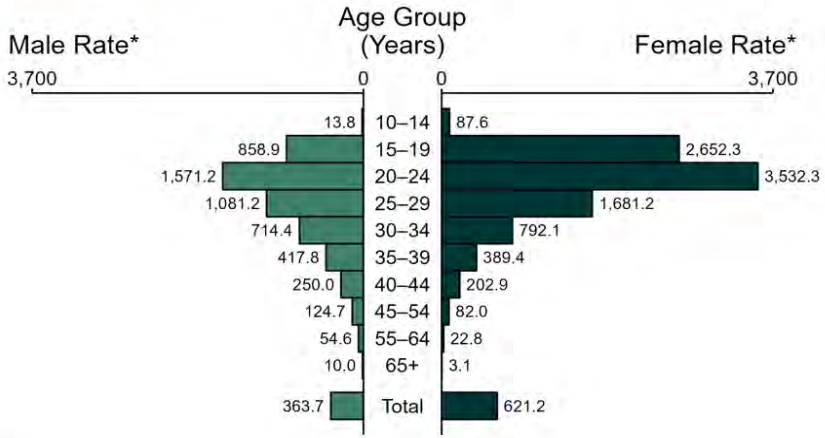
* Per 100,000

Gonorrhea — Rates of Reported Cases by Year, United States, 1941–2022



* Per 100,000

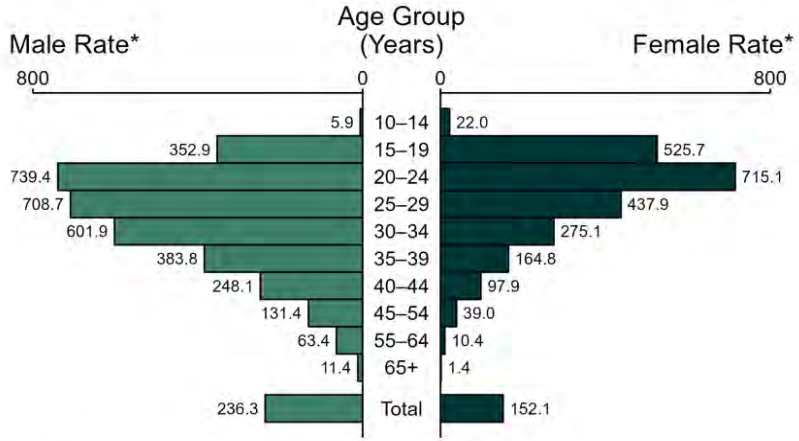
Chlamydia — Rates of Reported Cases by Age Group and Sex, United States, 2022



* Per 100,000

NOTE: Total includes cases of all ages, including those with unknown age.

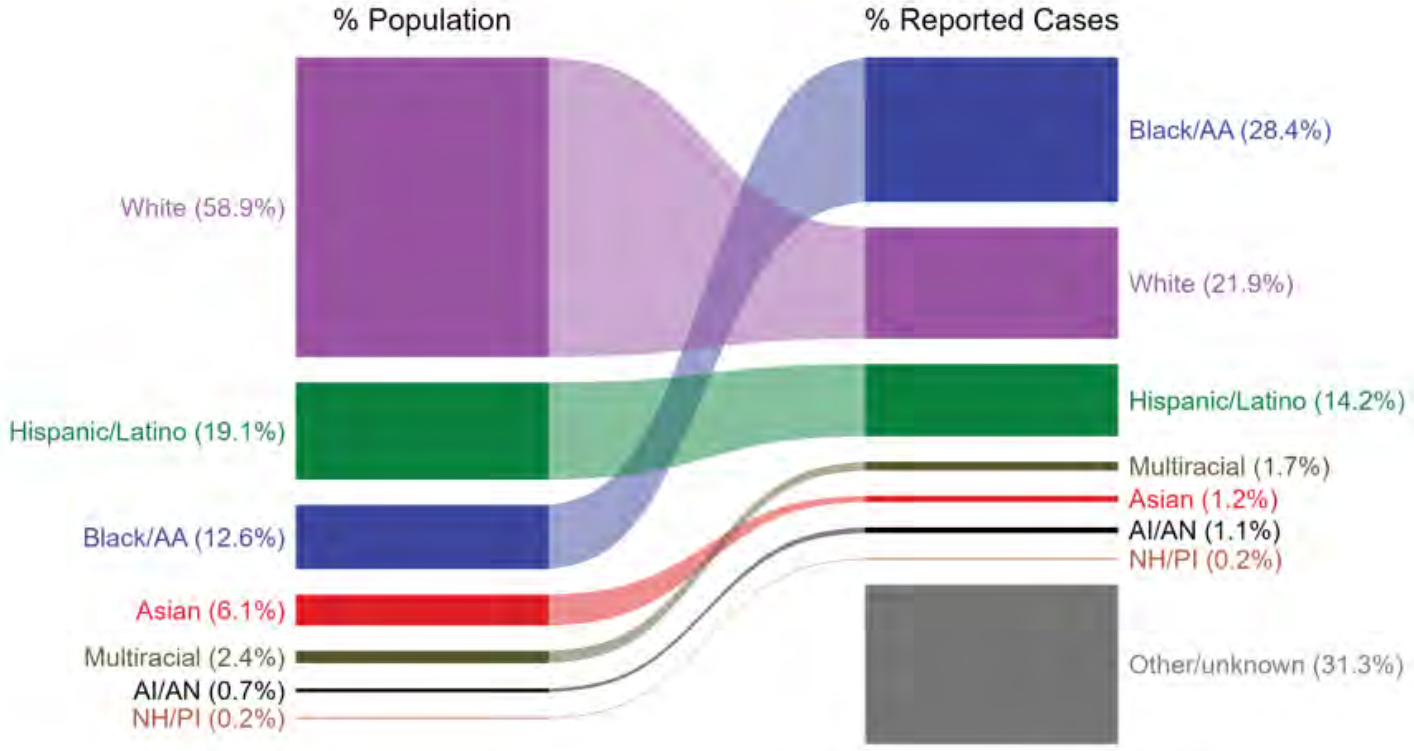
Gonorrhea — Rates of Reported Cases by Age Group and Sex, United States, 2022



* Per 100,000

NOTE: Total includes cases of all ages, including those with unknown age.

Chlamydia — Total Population and Reported Cases by Race/Hispanic Ethnicity, United States, 2022



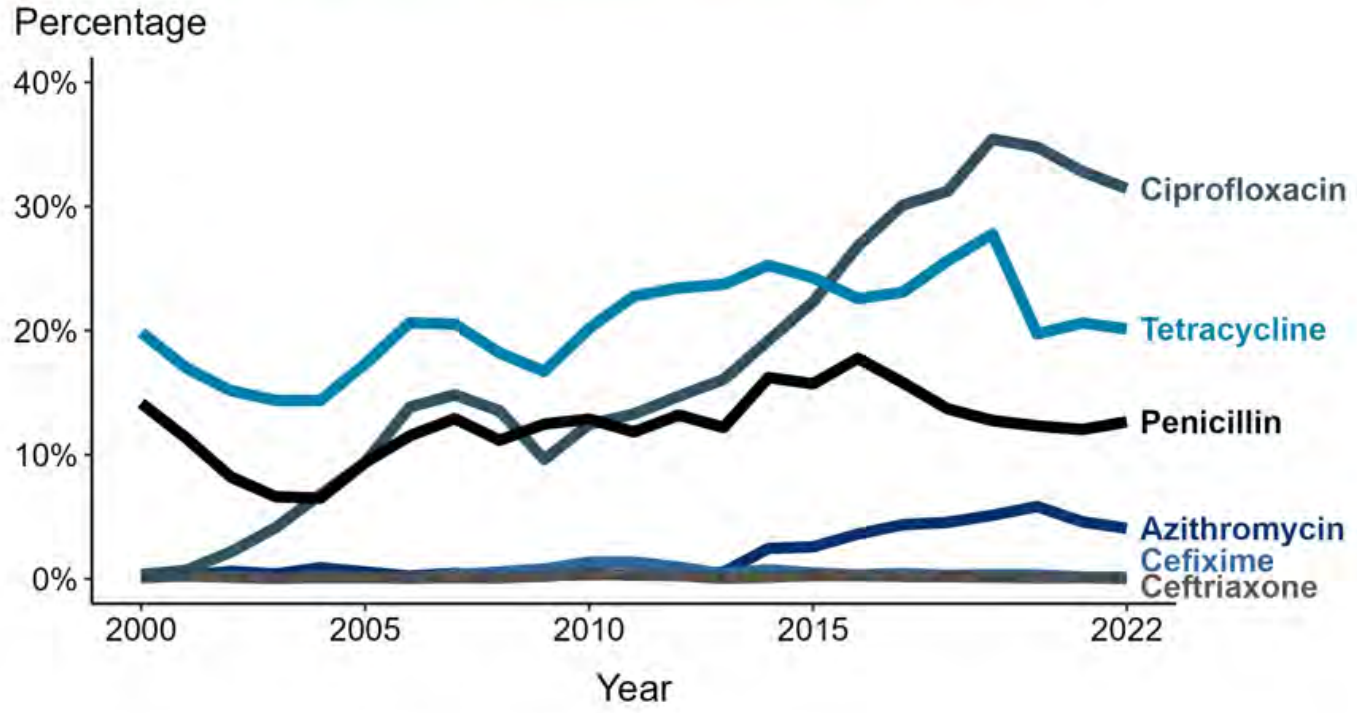
* Per 100,000

NOTE: In 2022, a total of 515,552 chlamydia cases (31.3%) 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

Neisseria gonorrhoeae — Prevalence of Tetracycline, Penicillin, or Ciprofloxacin Resistance* or Elevated Cefixime, Ceftriaxone, or Azithromycin Minimum Inhibitory Concentrations (MICs)†, by Year — Gonococcal Isolate Surveillance Project (GISP), 2000–2022

- Half of all infections in 2022 were estimated to be resistant or have elevated minimum inhibitory concentrations (MICs) to at least one antibiotic.
- Almost all circulating strains in the United States remain susceptible to ceftriaxone, the primary recommended treatment for uncomplicated gonorrhea.

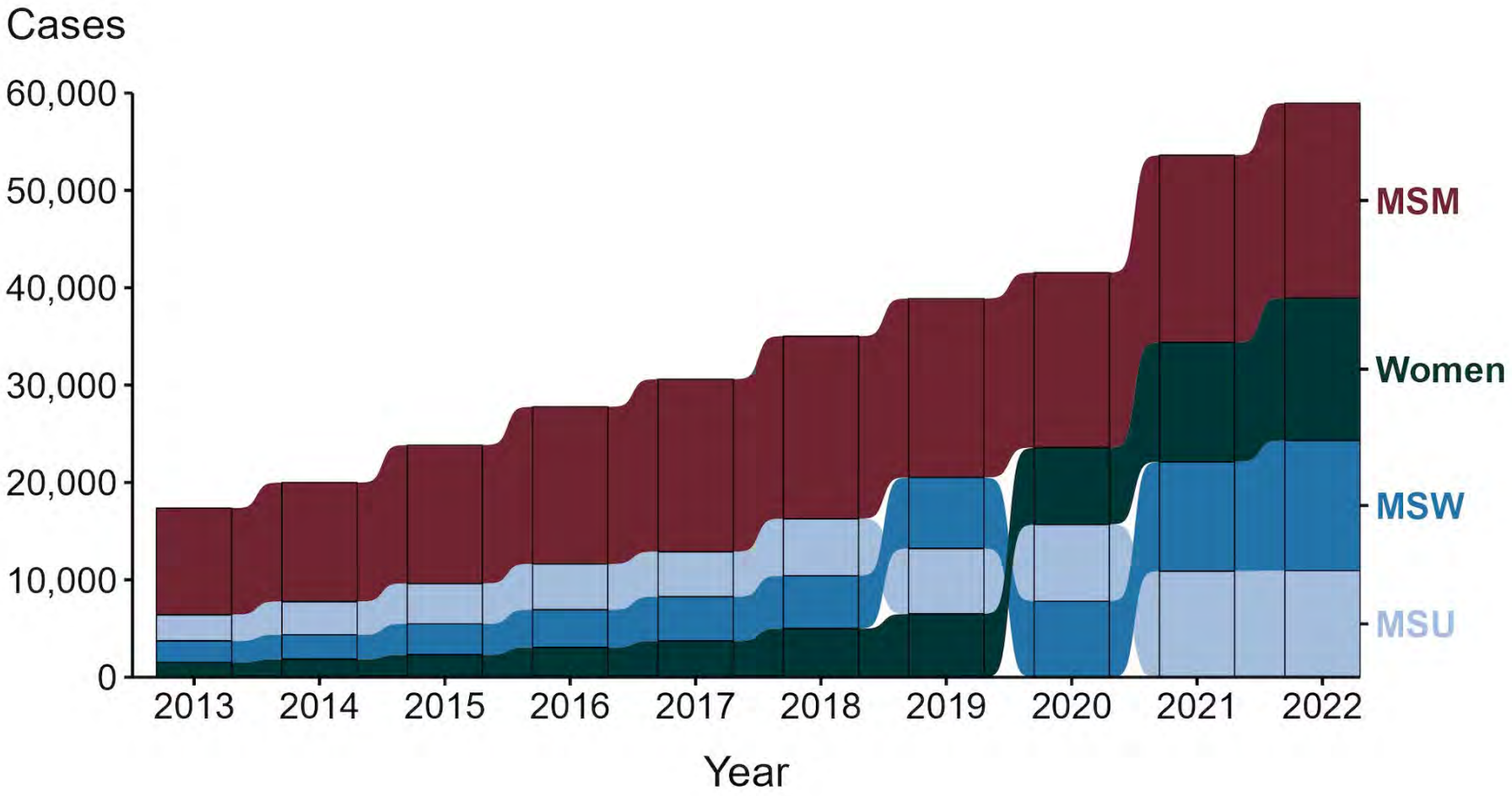


* Resistance: Ciprofloxacin: MIC ≥ 1.0 µg/mL; Penicillin: MIC ≥ 2.0 µg/mL or Beta-lactamase positive; Tetracycline: MIC ≥ 2.0 µg/mL

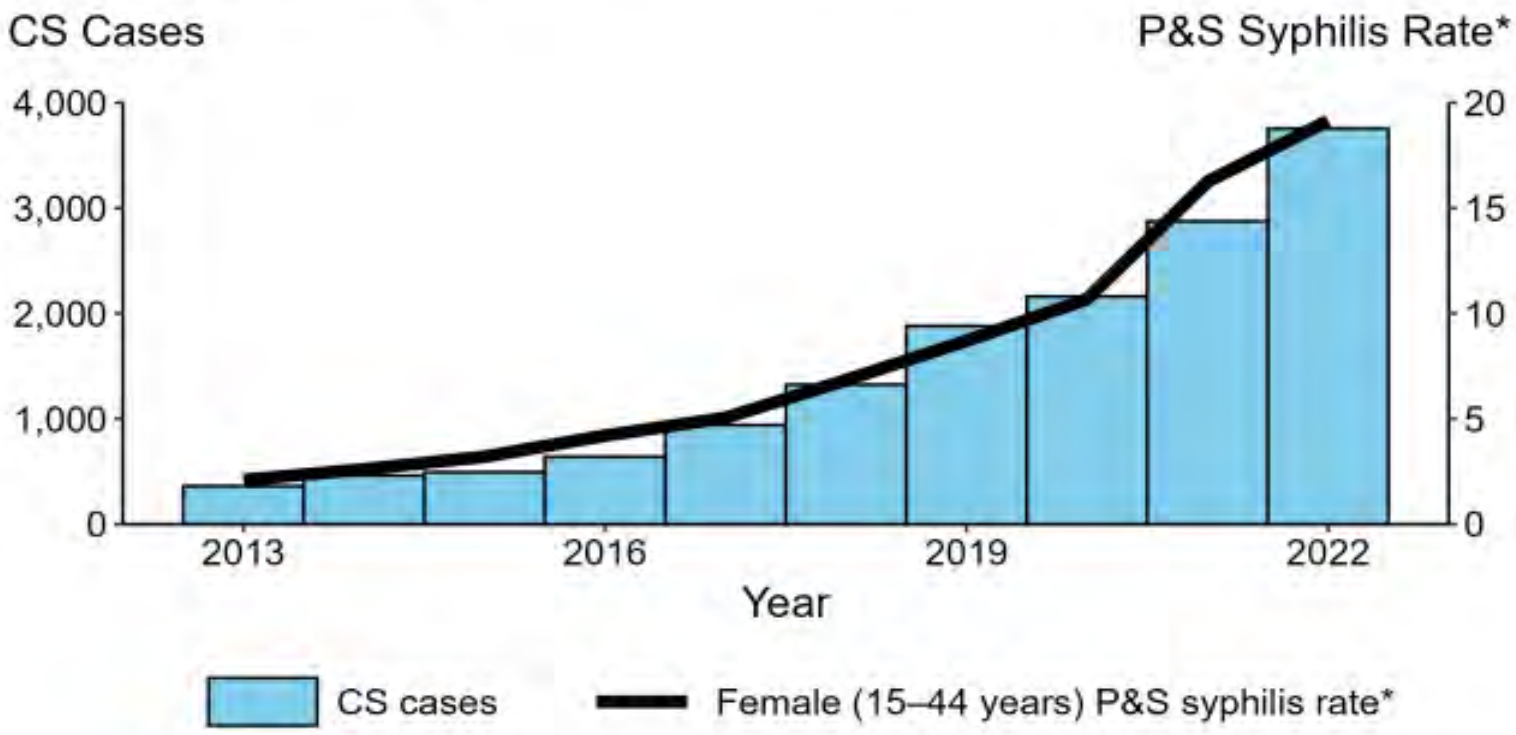
† Elevated MICs: Azithromycin: MIC ≥ 1.0 µg/mL (2000–2004); ≥ 2.0 µg/mL (2005–2022); Ceftriaxone: MIC ≥ 0.125 µg/mL; Cefixime: MIC ≥ 0.25 µg/mL

NOTE: Cefixime susceptibility was not tested in 2007 and 2008.

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



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



[PNG - 128 KB]

"* Per 100,000 _ACRONYMS: CS = Congenital syphilis; P&S Syphilis = Primary and secondary syphilis "

Dartmouth Health

Morbidity and Mortality Weekly Report

Vital Signs: Missed Opportunities for Preventing Congenital Syphilis — United States, 2022

10x

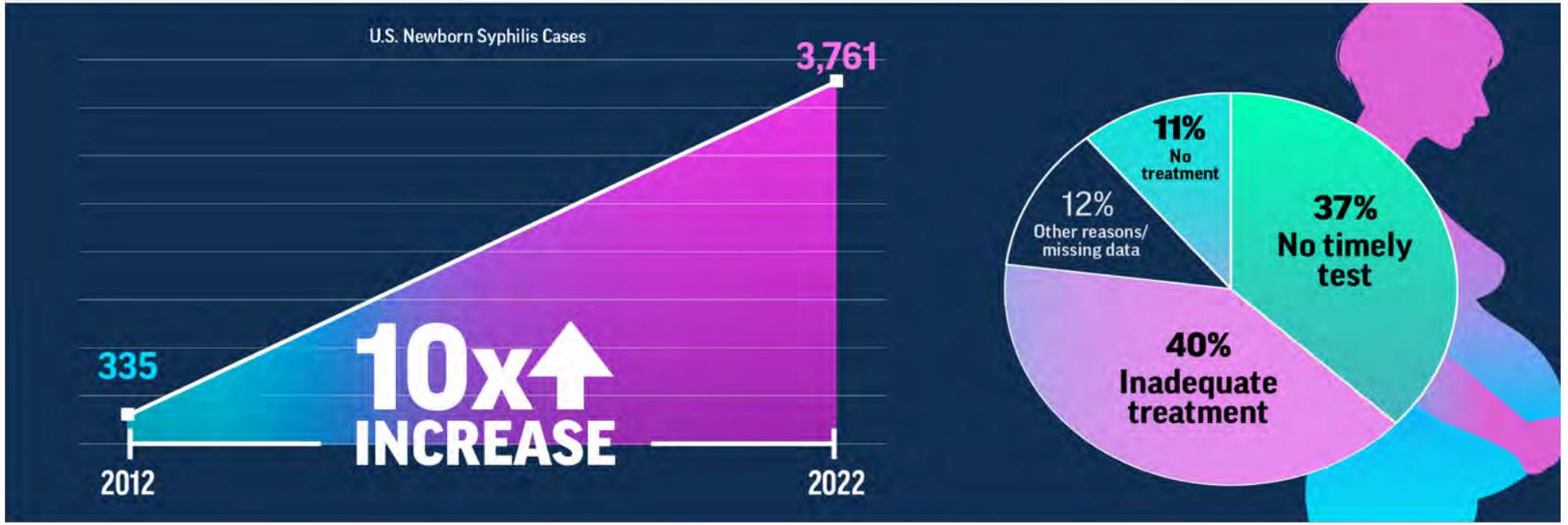
Over 10 times as many babies were born with syphilis in 2022 than in 2012.

9 in 10

Timely testing and treatment during pregnancy might have prevented almost 9 in 10 (88%) cases in 2022.

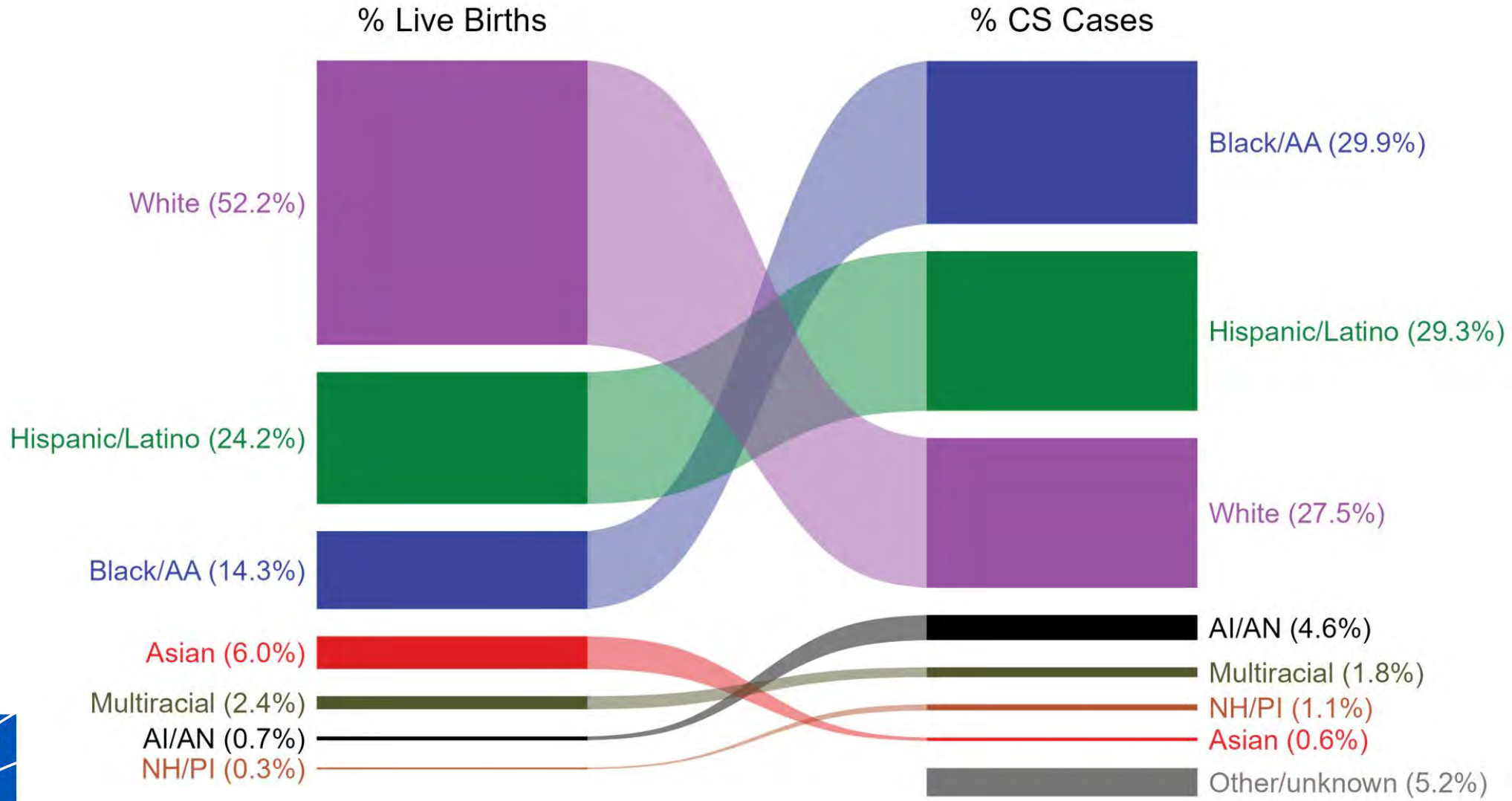
2 in 5

Two in 5 (40%) people who had a baby with syphilis did not get prenatal care.

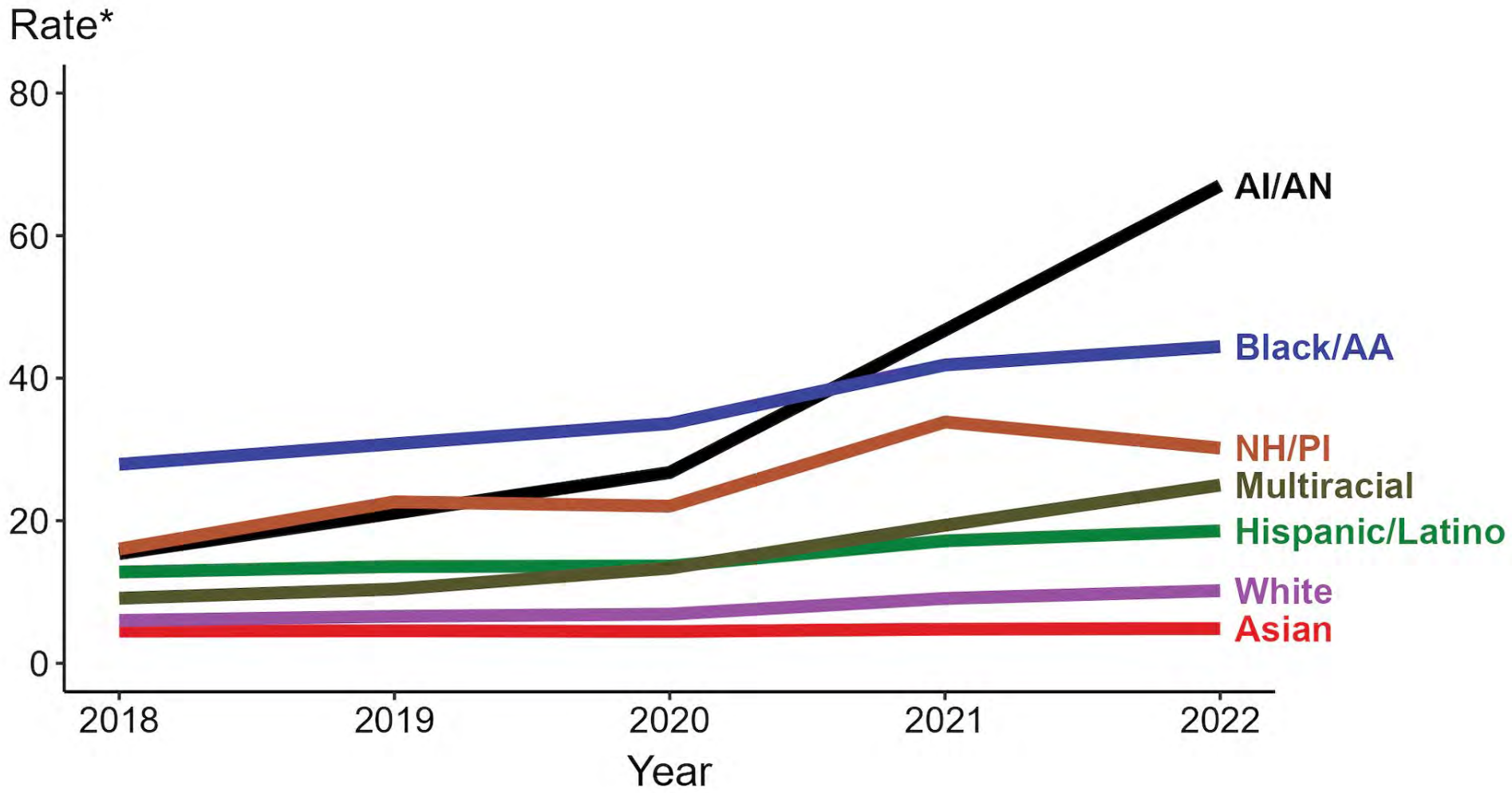


https://www.cdc.gov/vitalsigns/newborn-syphilis/index.html

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



Primary and Secondary Syphilis — Rates of Reported Cases by Race/Hispanic Ethnicity, United States, 2018–2022



* Per 100,000

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

2022 Disparities

- **50%** of reported cases of STIs were among **adolescents and young adults aged 15–24 years.**
- **31%** of all cases of chlamydia, gonorrhea, and syphilis were among **non-Hispanic Black or African American persons**, even though they made up only approximately 12.6% of the US population.
- **MSM** are disproportionally impacted by STDs, including gonorrhea and syphilis.
- **36% of MSM with syphilis** also had **HIV**.

"These disparities are unlikely explained by differences in sexual behavior and rather reflect differential access to quality sexual health care, as well as differences in sexual network characteristics."

National Overview of STIs, 2022 (cdc.gov)

Knowledge of HIV status in the US, 2022*

In 2022, an estimated **1.2 million people** had HIV.

For every 100 people with HIV

87 knew their HIV status.

* Among people aged 13 and older.

Source: CDC. Estimated HIV incidence and prevalence in the United States, 2018–2022. *HIV Surveillance Supplemental Report*, 2024; 29(1).

Ending the HIV Epidemic

Overall Goal: Increase the estimated percentage of people with HIV who have received an HIV diagnosis to at least 95% by 2025 and remain at 95% by 2030.

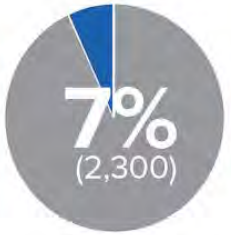
[Fast Facts: HIV in the United States | HIV | CDC]

Estimated HIV infections in the US by transmission category, 2022

There were **31,800 estimated new HIV infections** in the US in 2022. Of those:

were among gay, bisexual, and other men who reported male-to-male sexual contact*

were among people who reported heterosexual contact



were among people who inject drugs

* Includes infections attributed to male-to-male sexual contact *and* injection drug use (men who reported both risk factors).

Source: CDC. Estimated HIV incidence and prevalence in the United States, 2018–2022. *HIV Surveillance Supplemental Report*, 2024; 29(1).

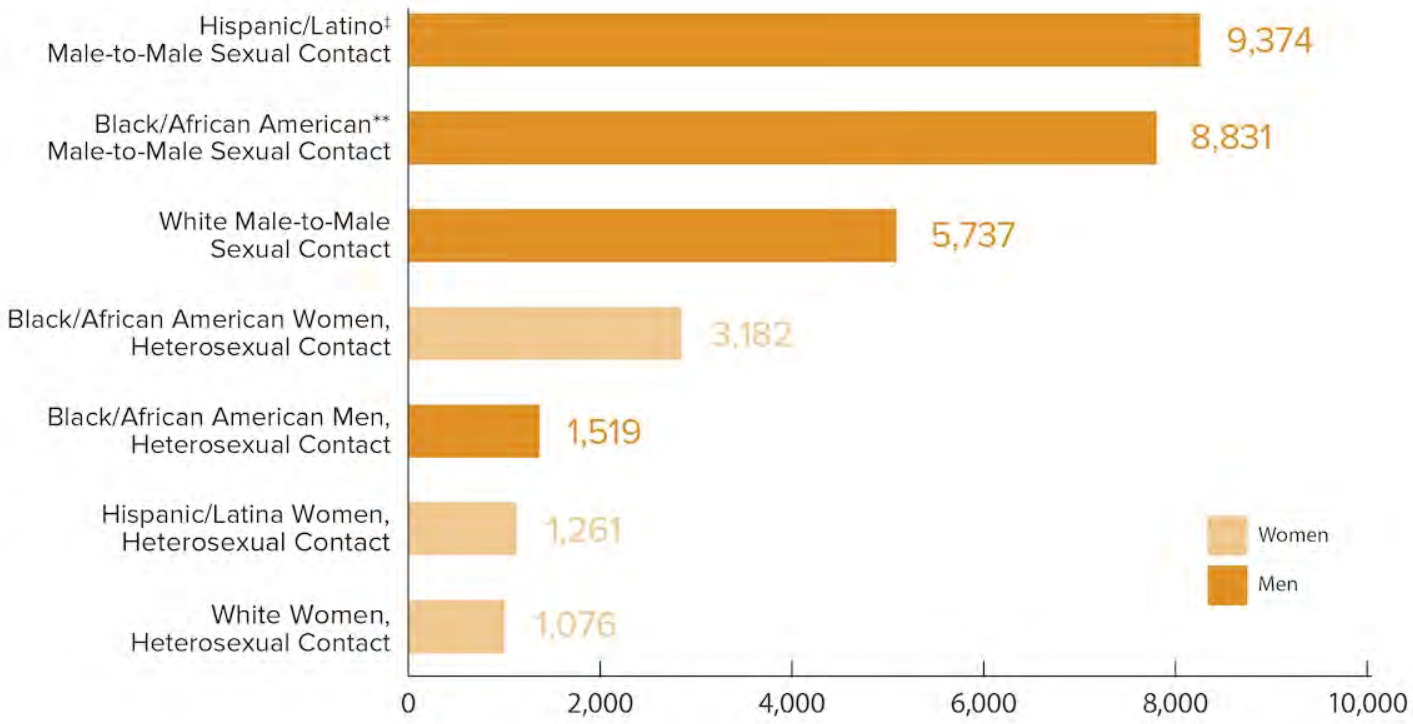
Ending the HIV Epidemic

Overall Goal: Decrease the estimated number of new HIV infections to 9,300 by 2025 and 3,000 by 2030.

[Fast Facts: HIV in the United States | HIV | CDC]

HIV diagnoses in the US and 6 territories and freely associated states for the most-affected subpopulations, 2022*†

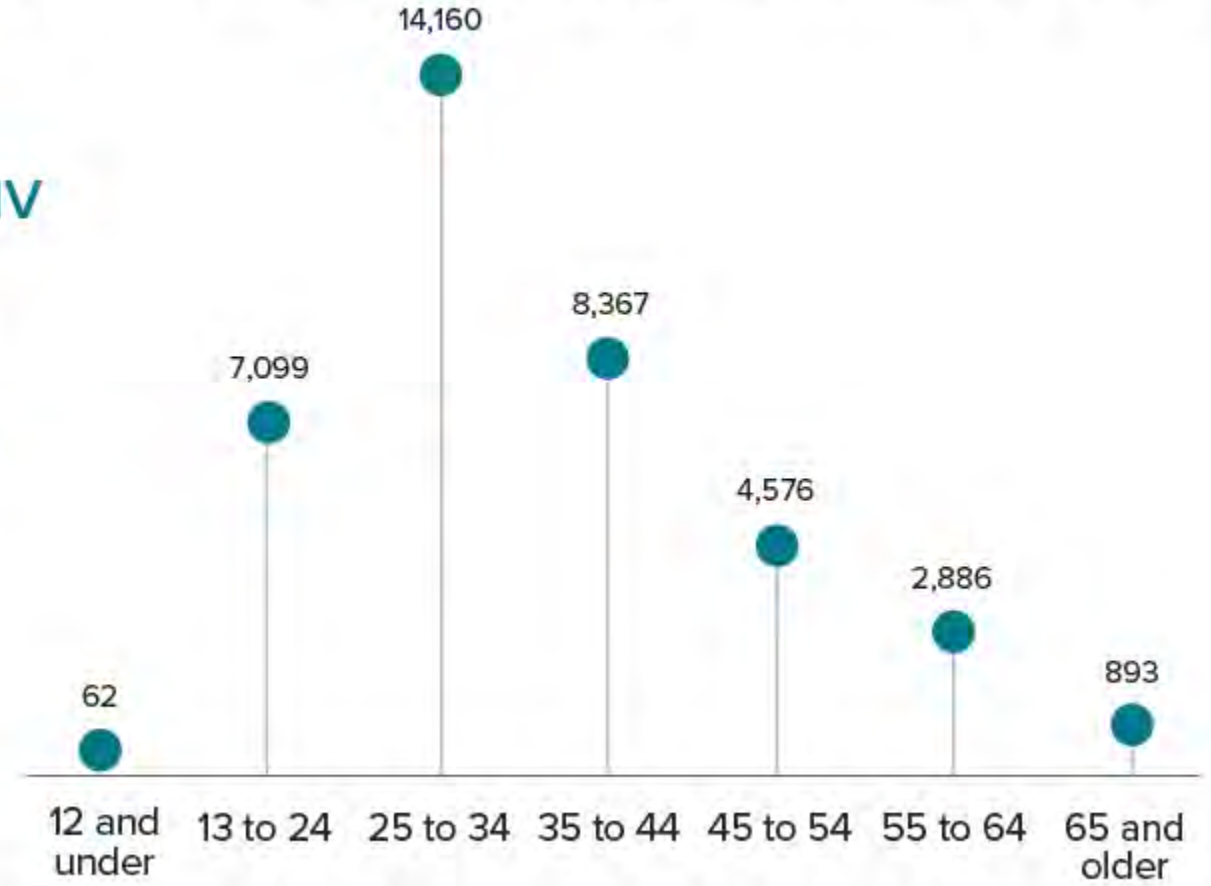
Gay and bisexual men are the population most affected by HIV.



[Fast Facts: HIV in the United States | HIV | CDC]

HIV diagnoses in the US and 6 territories and freely associated states by age, 2022

In 2022, 37,981 people received an HIV diagnosis in the US and 6 territories and freely associated states. People aged 13 to 34 accounted for more than half (56%) of new HIV diagnoses in 2022.

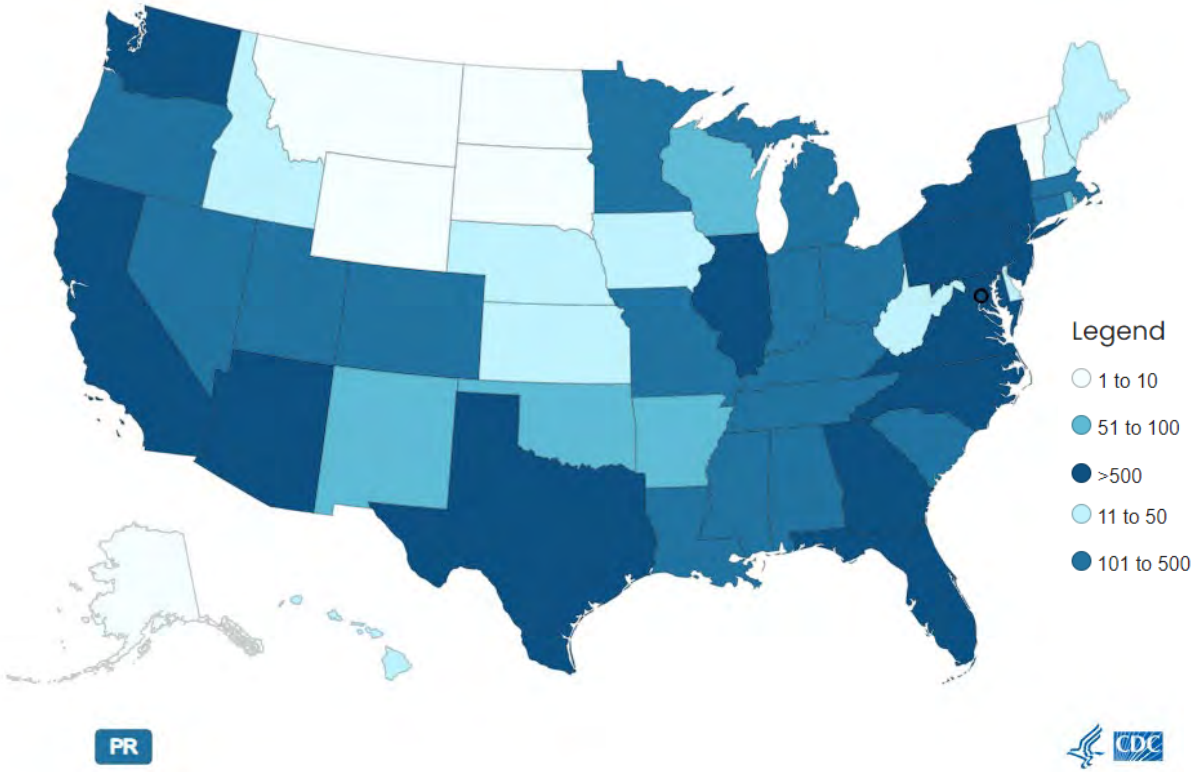


Source: CDC. Diagnoses, deaths, and prevalence of HIV in the United States and 6 territories and freely associated states, 2022. *HIV Surveillance Report*, 2022;35.

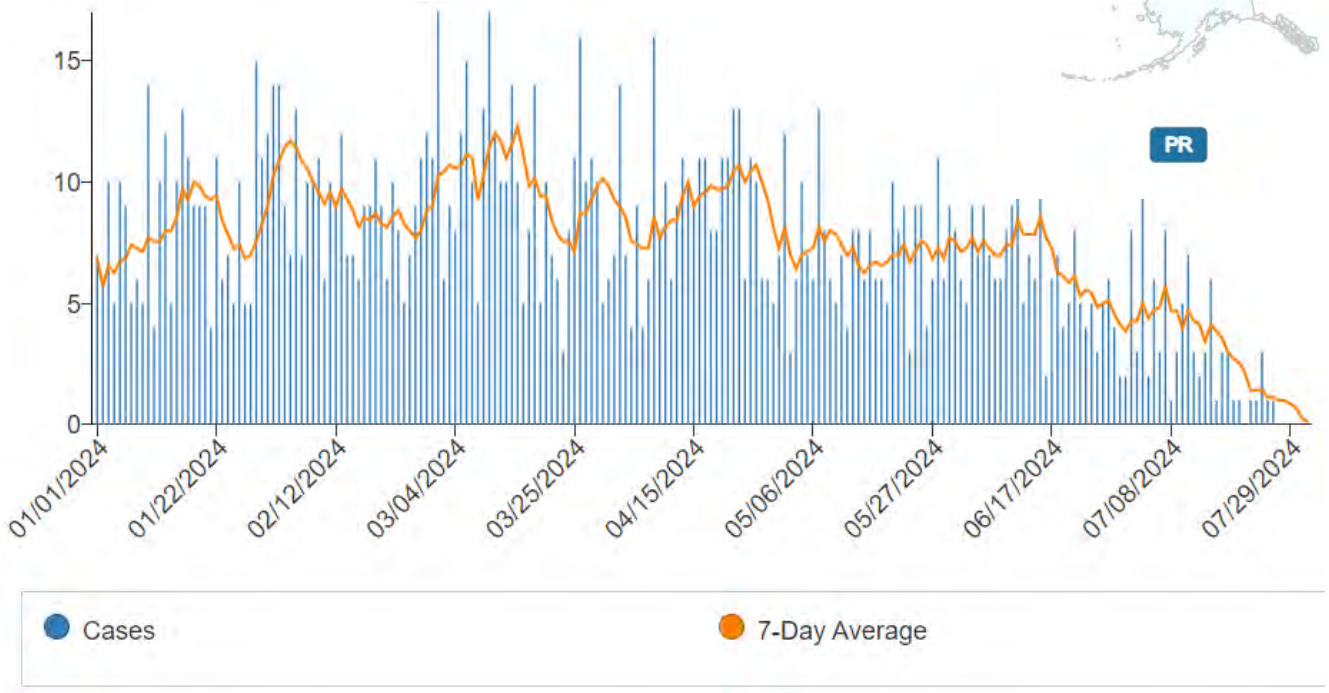
[Fast Facts: HIV in the United States | HIV | CDC]

Mpox Outbreak 2022-2023

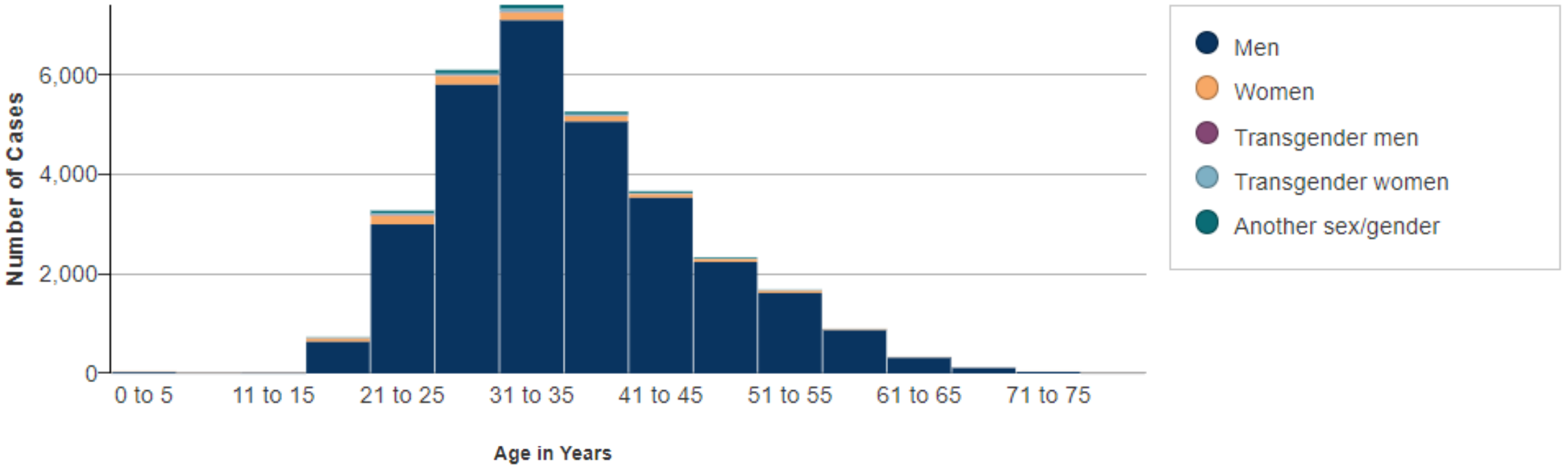
- Total cases: 32,063
- Total deaths: 58



Case Trends



Mpox cases reported to CDC: Age and Gender



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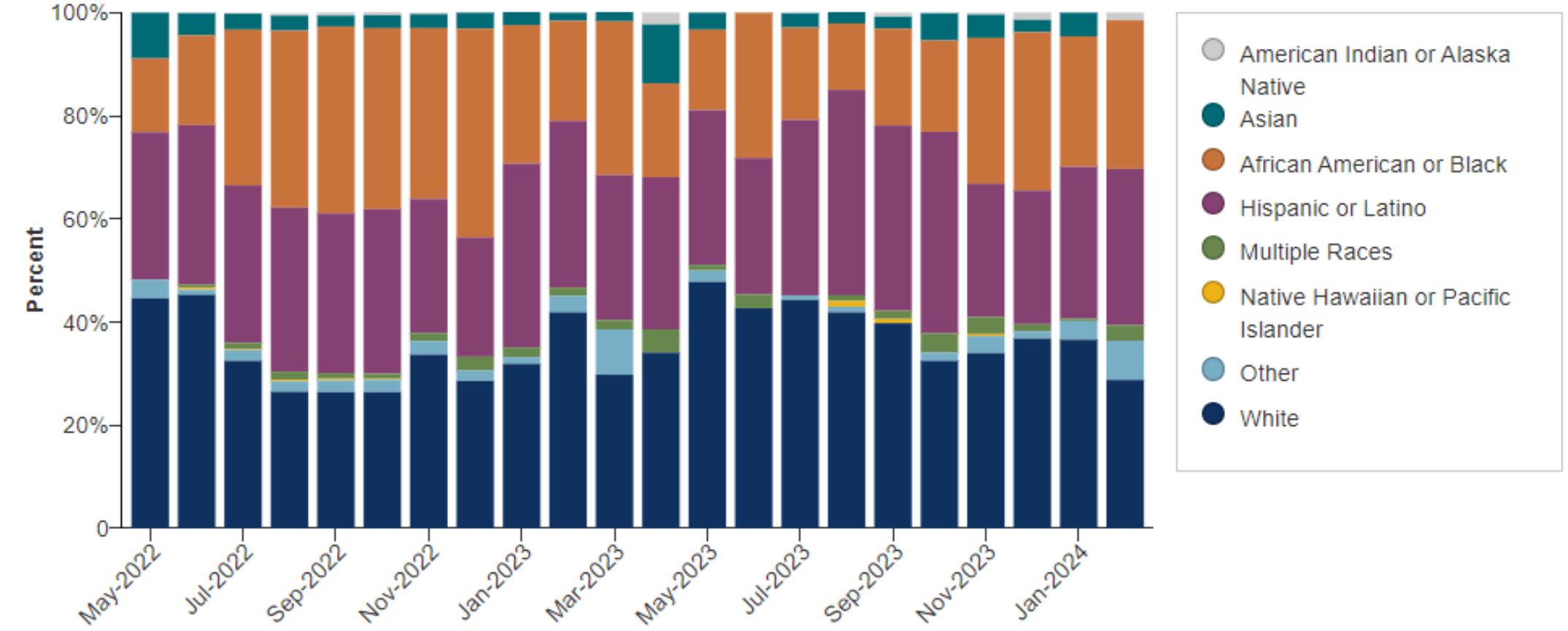
Proportion of All Cases by Race and Ethnicity by Month



Hepatitis C

Acute hepatitis C

4,848
There were 4,848 new cases of acute hepatitis C reported during 2022

67,400
There were 67,400 estimated acute HCV infections during 2022

Chronic hepatitis C

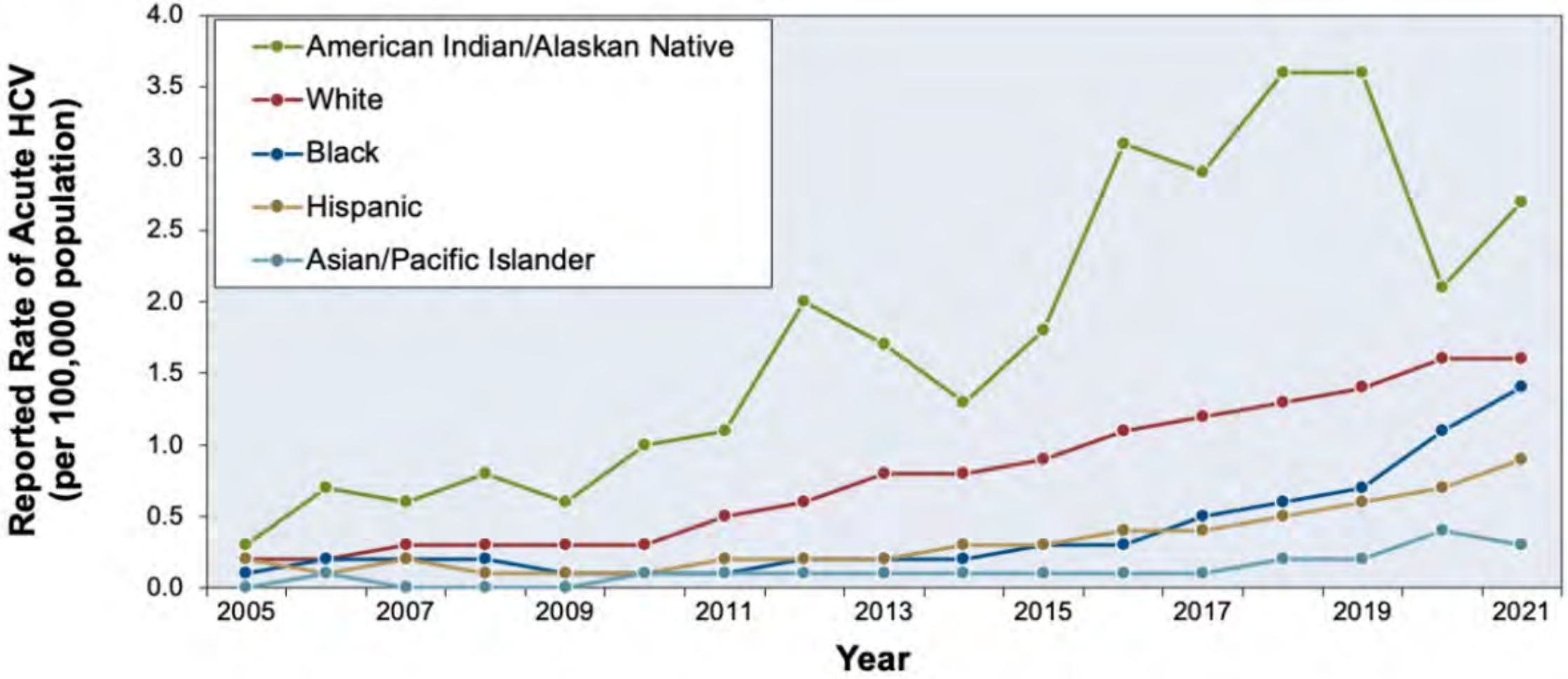
93,805
There were 93,805 cases of newly reported chronic hepatitis C during 2022

12,717
There were 12,717 hepatitis C-related deaths reported during 2022

During 2022, rates of acute hepatitis C were highest among males, persons aged 30–39 years, non-Hispanic American Indian/Alaska Native (AI/AN) persons, and those living in the Eastern and Southeastern states. Among cases with risk information reported, the most common was injection drug use.

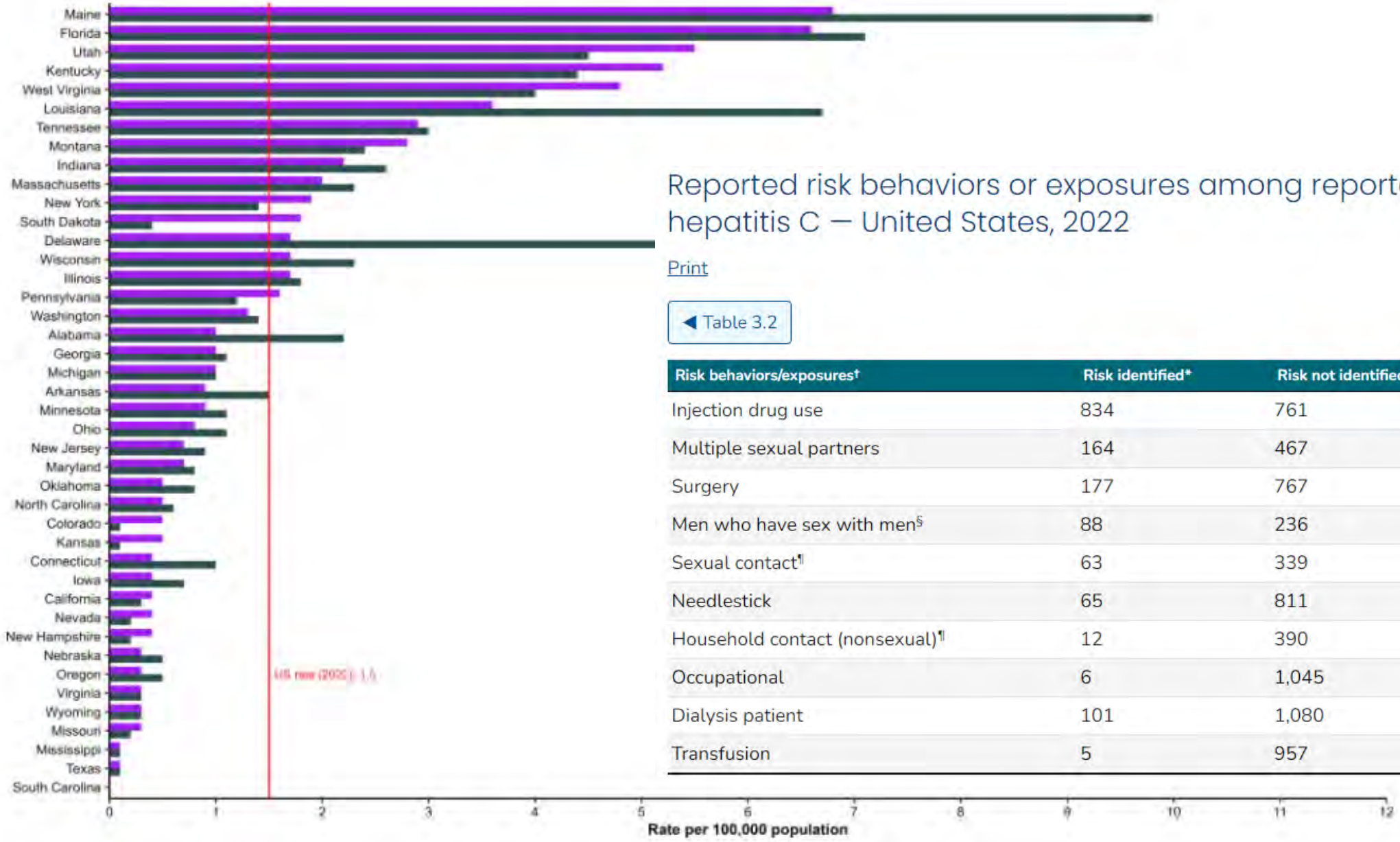
Figure 3. Acute Cases of HCV, United States

Figure 3D. Reported Rates of Acute HCV, by Race/Ethnicity, 2005-2021



Source: Centers for Disease Control and Prevention (CDC). 2021 Viral Hepatitis Surveillance Report—Hepatitis C. Published August 2023.

Rates* of reported cases† of acute hepatitis C, by state or jurisdiction — United States, 2021–2022



Reported risk behaviors or exposures among reported cases* of acute hepatitis C — United States, 2022

Print

◀ Table 3.2

Table 3.4 ▶

Risk behaviors/exposures†	Risk identified*	Risk not identified	Risk data missing
Injection drug use	834	761	3,253
Multiple sexual partners	164	467	4,217
Surgery	177	767	3,904
Men who have sex with men§	88	236	2,903
Sexual contact¶	63	339	4,446
Needlestick	65	811	3,972
Household contact (nonsexual)¶	12	390	4,446
Occupational	6	1,045	3,797
Dialysis patient	101	1,080	3,667
Transfusion	5	957	3,886

Hepatitis B

Number of reported cases* and estimated infections† of acute hepatitis B — United States, 2015–2022

Print

◀ Hepatitis B

Figure 2.2 ▶

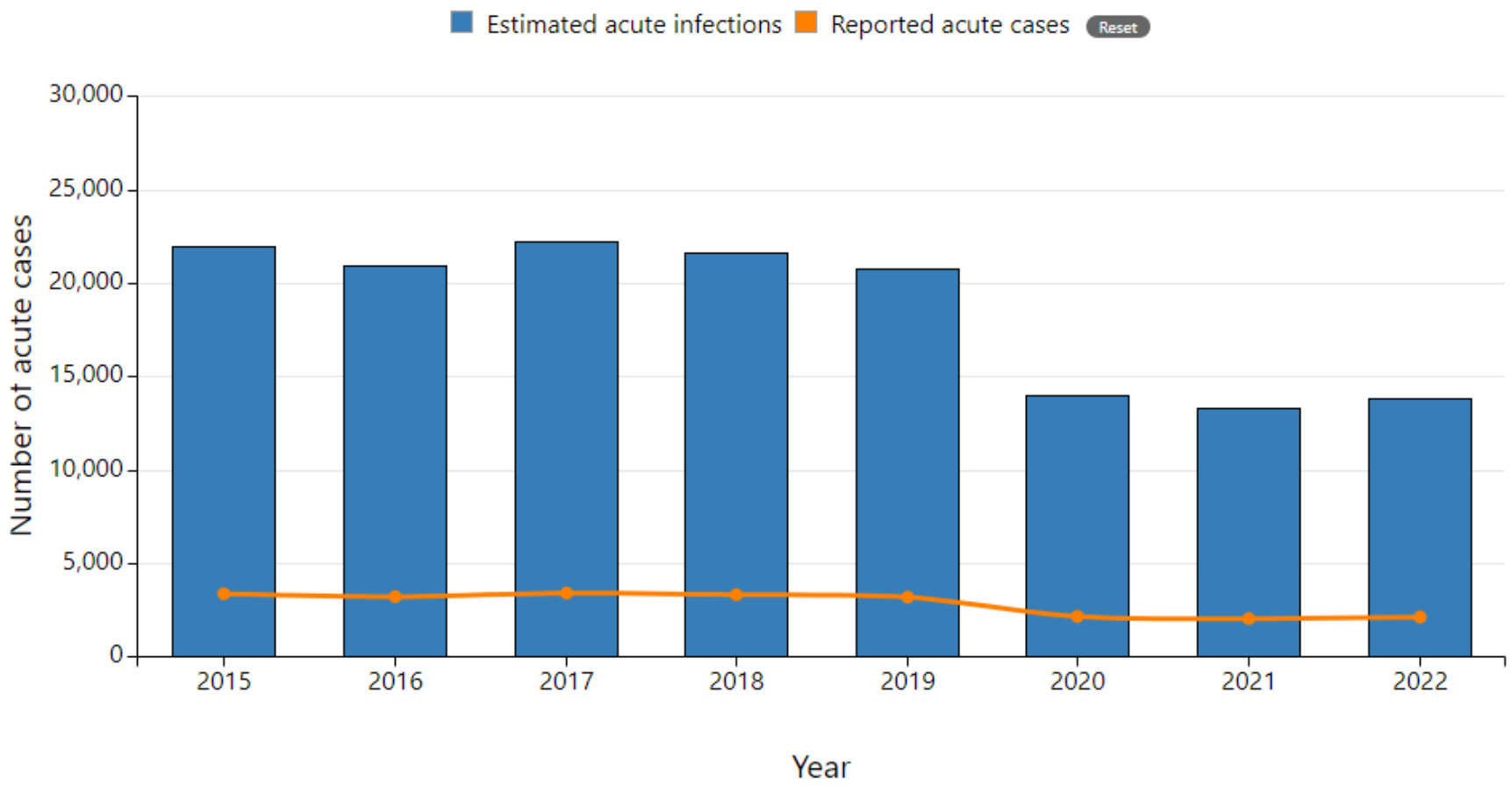
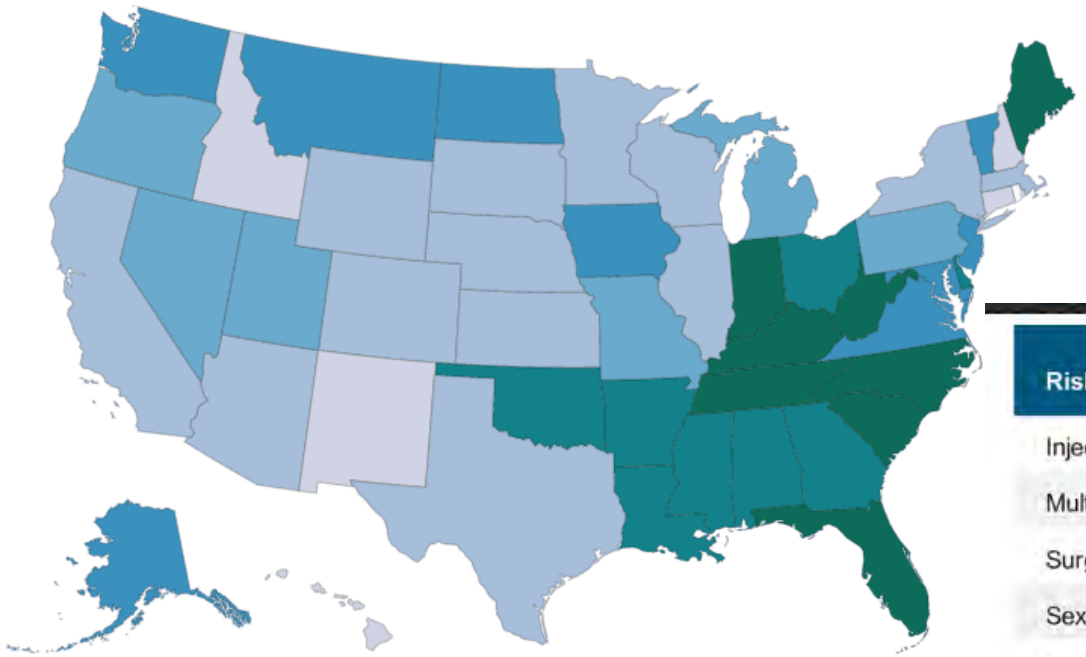


Figure 3 - Rates of Reported Acute Hepatitis B Virus: rates of Reported Cases, by State or Jurisdiction, United States, 2020

Source: Centers for Disease Control and Prevention (CDC). 2020 Viral Hepatitis Surveillance Report—Hepatitis B. Published September 2022.



Cases/100,000 Population

- Data unavailable
- No reported cases
- 0.0 - 0.2
- 0.3 - 0.4
- 0.5 - 0.6
- 0.7 - 1.2
- 1.3 - 3.2

Risk Behaviors/Exposures	Risk identified*	No risk identified	Risk data missing
Injection drug use	402	713	1,042
Multiple sexual partners	124	512	1,521
Surgery	91	688	1,378
Sexual contact§	46	498	1,613
Needlestick	36	742	1,379
Men who have sex with men¶	64	281	952
Household contact (non-sexual)§	9	535	1,613
Dialysis patient	31	786	1,340
Occupational	1	970	1,186
Transfusion	1	809	1,347

Figure 11 - Acute Hepatitis B Virus: Reported Risk Behaviors or Exposures, United States, 2020

* Reported confirmed cases.

† Reported cases may include more than one risk behavior/exposure. Case reports with at least one of the following risk behaviors/exposures reported 6 weeks to 6 months prior to symptom onset or documented seroconversion if asymptomatic: 1) injection drug use;2) multiple sexual partners; 3) underwent surgery; 4) men who have sex with men; 5) sexual contact with suspected/confirmed hepatitis B case; 6) sustained a percutaneous injury; 7) household contact with suspected/confirmed hepatitis B case; 8) occupational exposure to blood; 9) dialysis; and 10) transfusion.

§ Cases with more than one type of contact reported were categorized according to a hierarchy: (1) sexual contact; (2) household contact (nonsexual).

¶ A total of 1,297 acute hepatitis B cases were reported among males in 2020.

Source: Centers for Disease Control and Prevention (CDC). 2020 Viral Hepatitis Surveillance Report—Hepatitis B. Published September 2022.

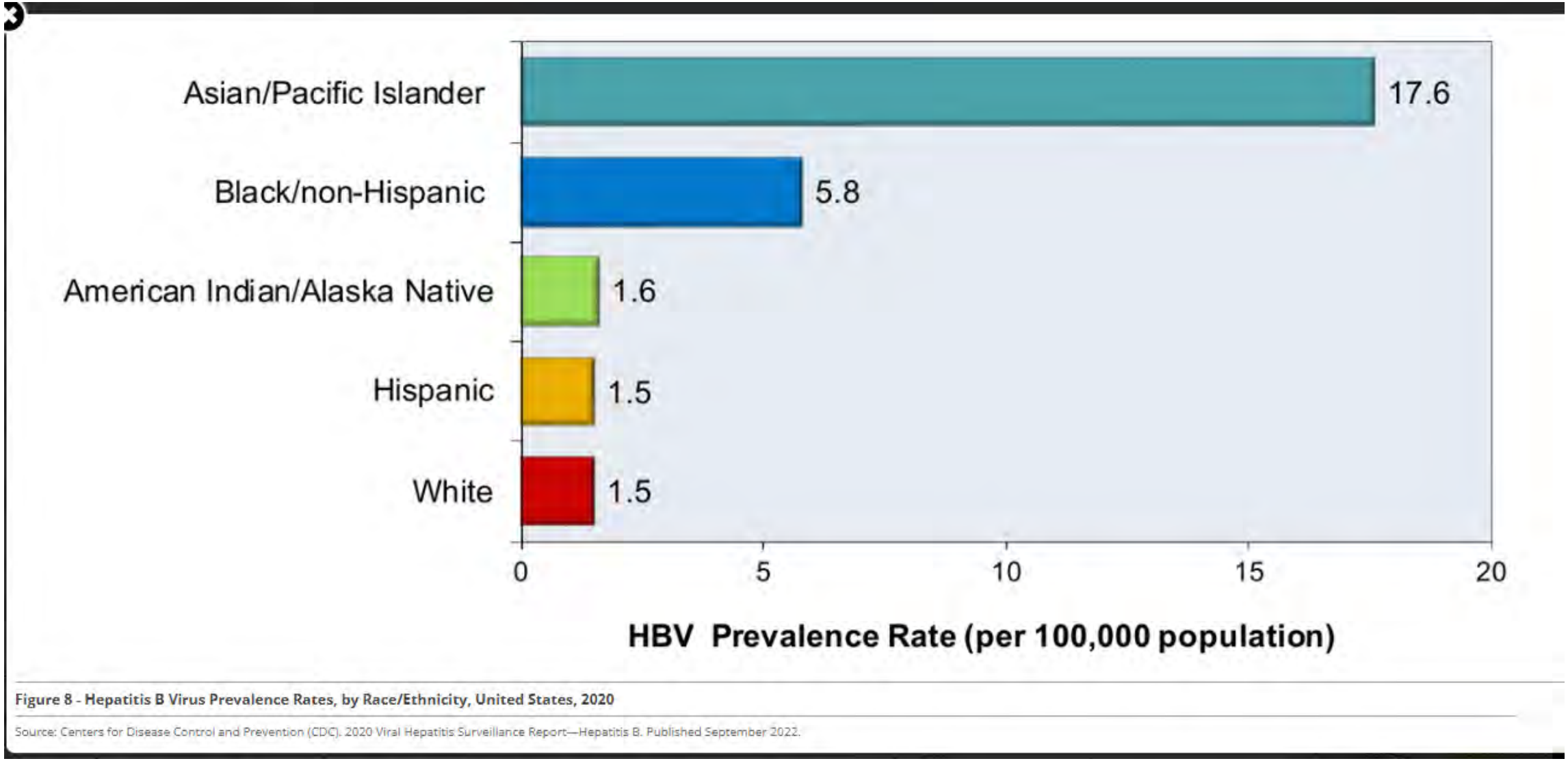


Figure 8 - Hepatitis B Virus Prevalence Rates, by Race/Ethnicity, United States, 2020

Source: Centers for Disease Control and Prevention (CDC). 2020 Viral Hepatitis Surveillance Report—Hepatitis B. Published September 2022.

Improving Screening, Testing, and Treatment of Bacterial STIs

Based on the Rutgers School of Nursing Health Resources and Services Administration funded study, routine sexually transmitted infection (STI) screening and testing found:

94% **of study participants** reported that answering questions about their sexual behaviors on a computer or tablet was "easy" or "very easy."

In only

14%

of cases of detected chlamydia, gonorrhea and/or syphilis did study participants report symptoms on their sexual history survey.

That means that

86%

of those found to have a bacterial STI in the study **were asymptomatic.** Without routine screening and testing, these would have been missed.

Of 175 different cases of chlamydia or gonorrhea

67%
were extragenital
(rectal or pharyngeal)

and

33%
were urogenital infections.
(urine or genital)

- HIV/Syphilis/ HepC* Serologies
- Pharyngeal GC NAAT**
- Urine GC/CT NAAT
- Rectal GC/CT NAAT**

Addressing STIs: Ask. Test. Treat. Repeat.

Our goal….

To provide the information, resources, and tools necessary to empower you to confidently assess risk, test, treat and counsel on prevention for a variety of STIs.

Mycoplasma

Gonorrhea

Chlamydia

Syphilis

Trichomonas

Herpes

HIV

Hepatitis A/B/C

HPV

Mpox

Talking about sex and sexual health is the first step in ending the epidemic.

Dartmouth Health

Project ECHO

WELCOME to the

Getting In Sync with Sexual Health ECHO:
STIs – Testing, Treatment and Prevention

Session 2, Sexual History Taking and Sexual Culture/Practices,
September 17, 2024

Sexual History Taking and Sexual Culture and Practices

Cathleen Morrow MD
Alena Shoemaker MD
DARTMOUTH HEALTH

Disclaimer

- ‘Expertise’ vs Experience
- Beware considering self an ‘expert’ in this content
- Don’t shy away from gaining experience
- The more you practice, the better you will be at this

Principles - Taking a Sexual History

- No assumptions!
- Curiosity + Concern
- Appreciative Inquiry
- Coming to terms with your personal bias, ideas, ‘norms’ - this is not easy to do
- Personal comfort -practice and scripts may be helpful
- Recognition that patient age, gender, appearance, attitude strongly impact your capacity to take a good history
- Attention to affect: patients
- Attention to affect: yours

Dialogue with patient

- Many people have concerns about sex at sometime in their lives. Do you have any concerns at this time?
- If you have any concerns related to sexual health is there anything you'd like to discuss?
- Do you currently have any concerns related to your risk of sexually transmitted infections?

Dialogue with patient

- May I ask you a few questions about your sexual health and sexual practices? I understand these questions are personal, but they are important to your overall health.
- At this point in the visit I usually ask some questions about your sexual life. Will that be okay?
- I ask these questions to all my patients, regardless of age, gender, or relationship status. These questions are as important as others about your physical and mental health. Like all our visits this information is strictly confidential unless you or someone else is being hurt or is in danger. Do you have any questions about this before we proceed?

The 5 P’s

To further guide your dialogue with your patient, the 5 “Ps” may be a useful way to help you remember the major aspects of a sexual history.

1. Partners
2. Practices
3. Protection from STIs
4. Past History of STIs
5. Pregnancy Intention

Partners

- To assess the risk of STI, important to determine the number and gender of patients sexual partners
- Never make assumptions about gender or sexual identity of patients partners
- If a single partner overall last 12 months still important to know if a new partner
- Directly inquire about partners risks, prior sexual partners, concurrent partners, history of current substance use

Practices

- I have more specific questions about your sexual practices to better understand your risks for STI's. We have different tests depending on body parts involved. Would that be ok?
- What body parts are involved when you have sex? Do you have anal sex? Oral sex? Genital sex? Are you a top and/or a bottom?
- Do you meet partners online or through apps?
- Have you ever exchanged sex for needs? (e.g. housing, money or drugs?)

Past STI History

- Have you ever been tested for STI’s and HIV? Would you like to be tested?
- Have you ever been diagnosed with an STI in the past? When? Were you treated?
- Have you had any recurrent symptoms?
- Has your current partner or former been diagnosed with an STI? Treated?
- Were you tested for the same STI?
- Do you know your partners HIV status?

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Sexual Culture

Initiation of Sexual Activity

- Average age in US: females 17.2/ males 16.8 and increasing
- Factors associated with sexual initiation include family structure, religious affiliation, mothers education, neighborhood stability/disorder, social networks, gang exposure, experiences of discrimination, school connectedness

Terminology - Review ‘sexual culture’

- Array of terms to describe sexual behaviors: allosexual, autosexual, omnisexual, demisexual, finnsexual, zedsexual, allotroposexual, androsexual, asexual
- ‘Types’ of sexuality: 7, 9,15, 21, 25

Sexual Culture

- Complex, multifactorial including:
- Age, gender identity, family dynamics, cultural and religious orientation and upbringing, societal ‘norms’ and pressures, sexual orientation, sexual identities, beliefs, and behaviors
- Can be strongly influenced by social media; particularly so for adolescents

Sexual Culture

- What is normal?
- The patient in front of you!
- Responsibility of the provider to understand their own knowledge gaps, limitations, biases and manage them in order to provide the best care.
- Not a simple matter - case example from my practice

Language and meaning

- Assumptions - does the word ‘monogamous’ mean the same thing to all of us?
- Gender? Binary vs fluidity?
- SEX?

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Race - Ethnicity and Sexual Culture

- Assumptions are dangerous and particularly so if your patient is from a culture or ethnic background you have no experience caring for.
- Beware of your historical ethnic/cultural bias
- “Tell me more” important terminology
- Examination and recognition of your own cultural beliefs about sexuality

Risks/ Don’t Miss:

- H/O violence? Past/ present
- Abuse - sexual and other
- Coercion/safety associated with sexual practices
- Physical exam should never be neglected or undervalued
- Training in trauma informed care highly valuable in both the history taking and physical exam portions of the care of patients

Monogamy?

- ‘Play’ partners
- Friends with benefits
- Polyamory aka consensual nonmonogamy
- Relationship anarchy

Prevention of STI’s

- Anticipatory guidance: Adolescents
- Anticipatory guidance: Adults
- Newly divorced, separated, re-entering the ‘dating’ scene after long term monogamous relationships
- Aging

Resources

https://www.cdc.gov/std/treatment/SexualHistory.pdf

https://nationalcoalitionforsexualhealth.org/tools/for-healthcare-providers/video-series

Dartmouth Health

THANK YOU!

Dartmouth Health

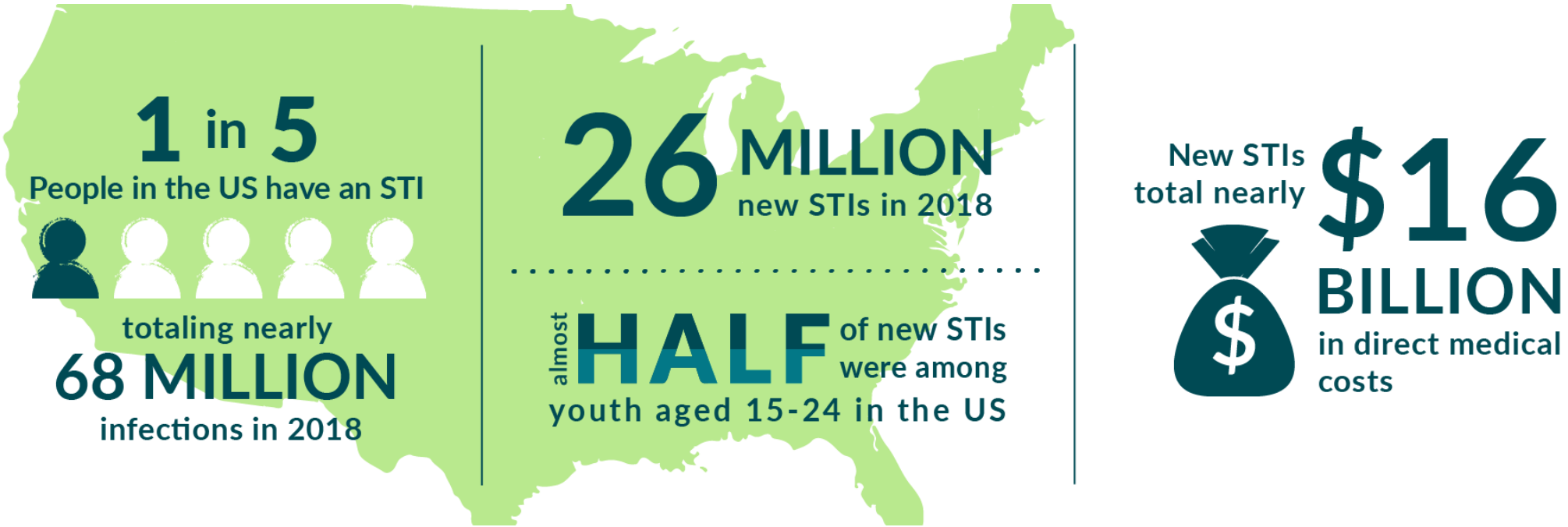
Project ECHO®

WELCOME to the

Getting In Sync with Sexual Health ECHO:
STIs – Testing, Treatment and Prevention

Session 3,Gonorrhea, Chlamydia/LGV, Trichomonas, DoxyPEP,
October 1, 2024

STI for Primary Care 2024



Bryan J. Marsh, MD

Associate Professor of Medicine

Infectious Disease Physician

Co-medical Director Ryan White HIV Clinic

Agenda

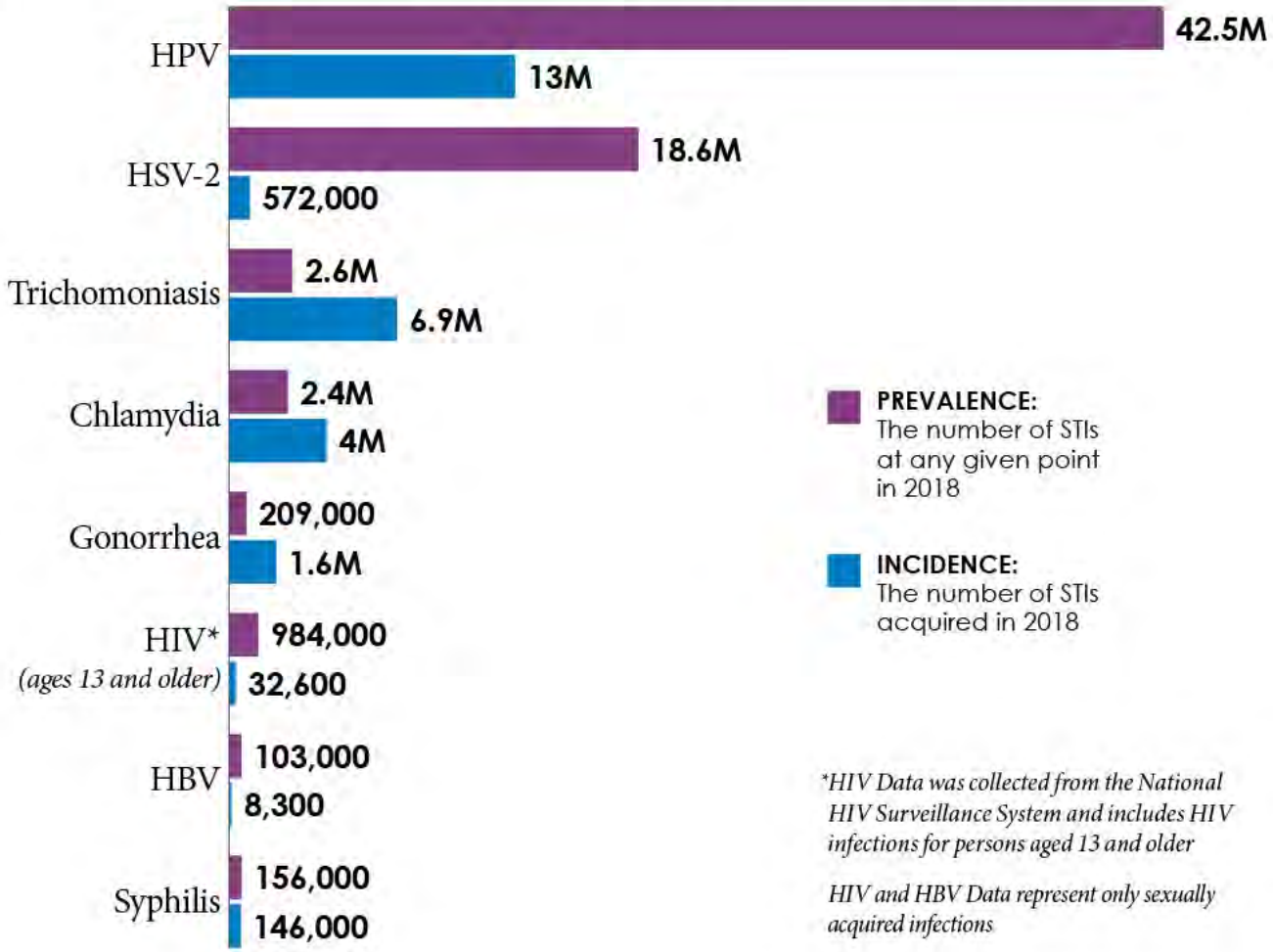
- Review presentation, screening and testing guidelines, treatment and follow up for:
  - Neisseria gonorrhea
  - Chlamydia trachomatis
  - Trichomonas vaginalis
  - +/- Mycoplasma genitalium
- Review US guidelines for doxycycline post-exposure prophylaxis (doxy-PEP) for bacterial STIs
- Case discussion

STI Differential by Condition

Condition	Disease	Organisms
Genital ulcers	Genital herpes Syphilis Lymphogranuloma venereum Chancroid Granuloma inguinale (donovanosis)	HSV Treponema pallidum Chlamydia trachomatis (L1-3) Haemophilus ducreyi Klebsiella granulomatis
Urethritis/Cervicitis	Gonorrhea Chlamydia Trichomoniasis Nongonococcal urethritis	Neisseria gonorrhoeae Chlamydia trachomatis Trichomonas vaginalis Mycoplasma genitalium
Vaginitis	Trichomoniasis Candidiasis Bacterial vaginosis	Trichomonas vaginalis Candida species Gardnerella vaginalis Ureaplasma Mycoplasma Anaerobes
Anogenital warts	Condyloma acuminate	HPV

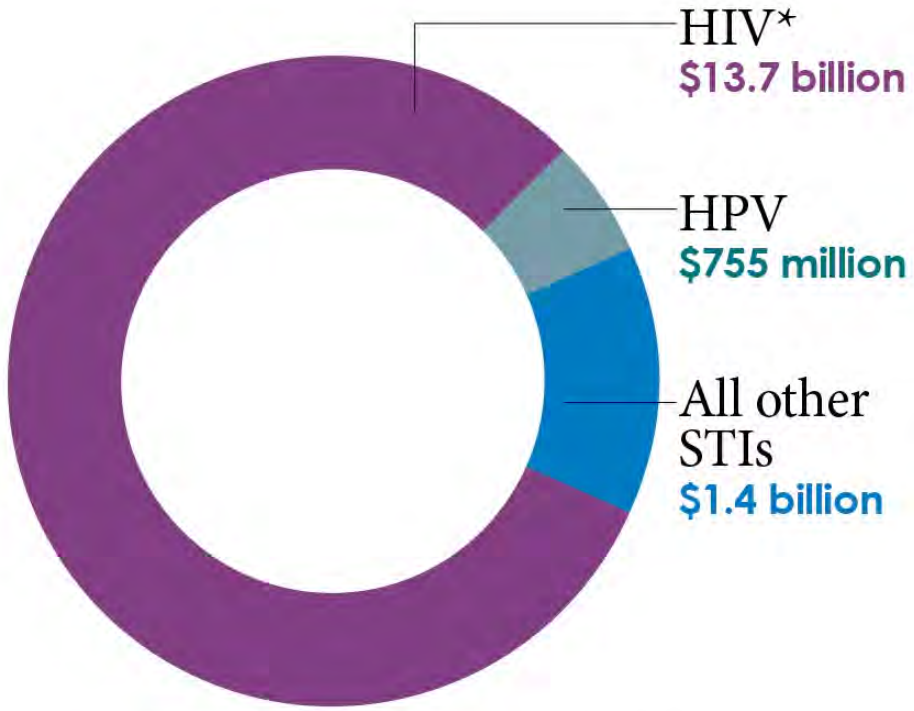
LATEST CDC ESTIMATES REVEAL NEARLY 68 MILLION STIs IN THE U.S., AND MORE THAN 26 MILLION NEW INFECTIONS

Estimated number of new and existing sexually transmitted infections



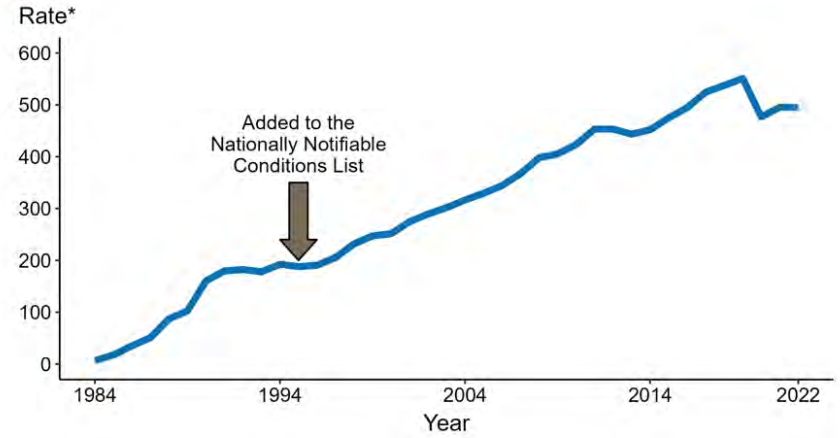
*HIV Data was collected from the National HIV Surveillance System and includes HIV infections for persons aged 13 and older

HIV and HBV Data represent only sexually acquired infections



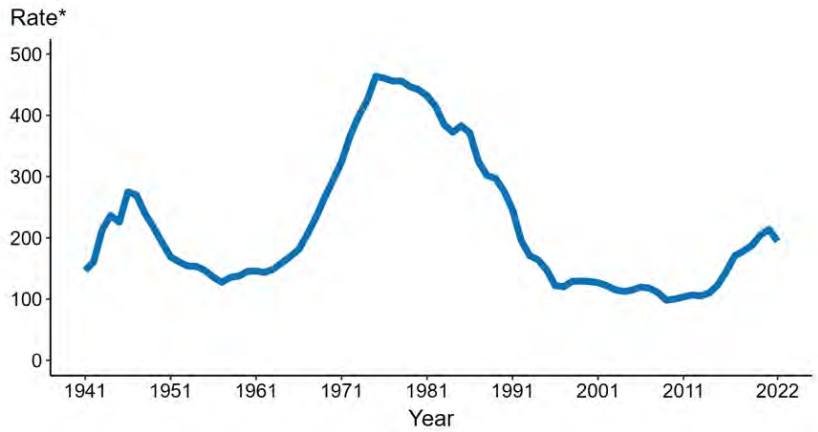
HIV Data represent only sexually acquired infections

Chlamydia — Rates of Reported Cases by Year, United States, 1984–2022



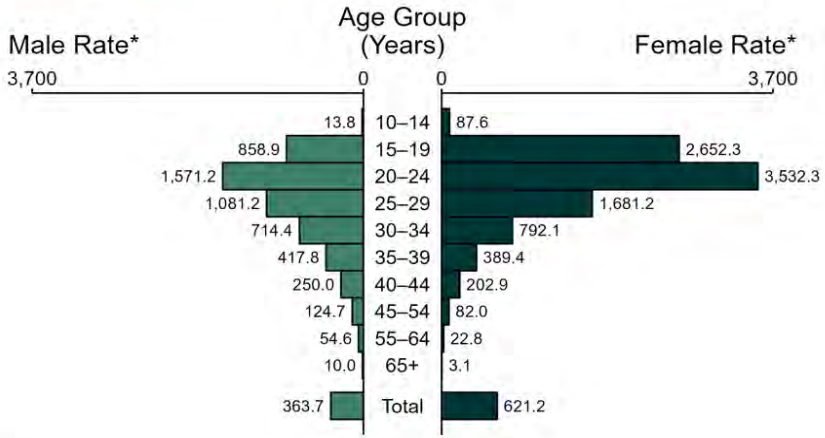
* Per 100,000

Gonorrhea — Rates of Reported Cases by Year, United States, 1941–2022



* Per 100,000

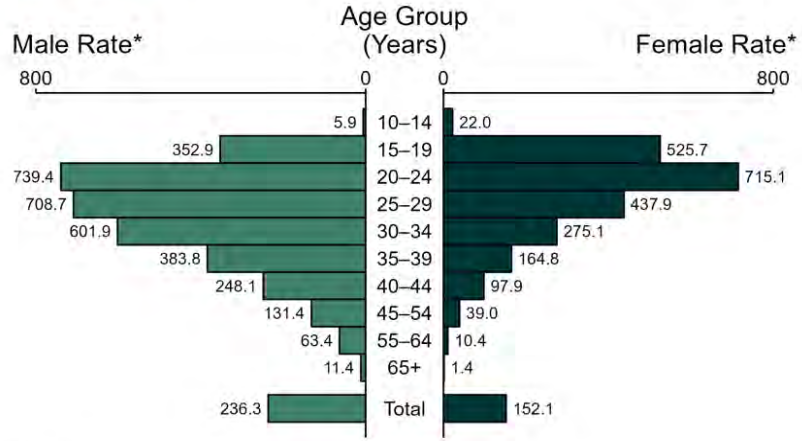
Chlamydia — Rates of Reported Cases by Age Group and Sex, United States, 2022



* Per 100,000

NOTE: Total includes cases of all ages, including those with unknown age.

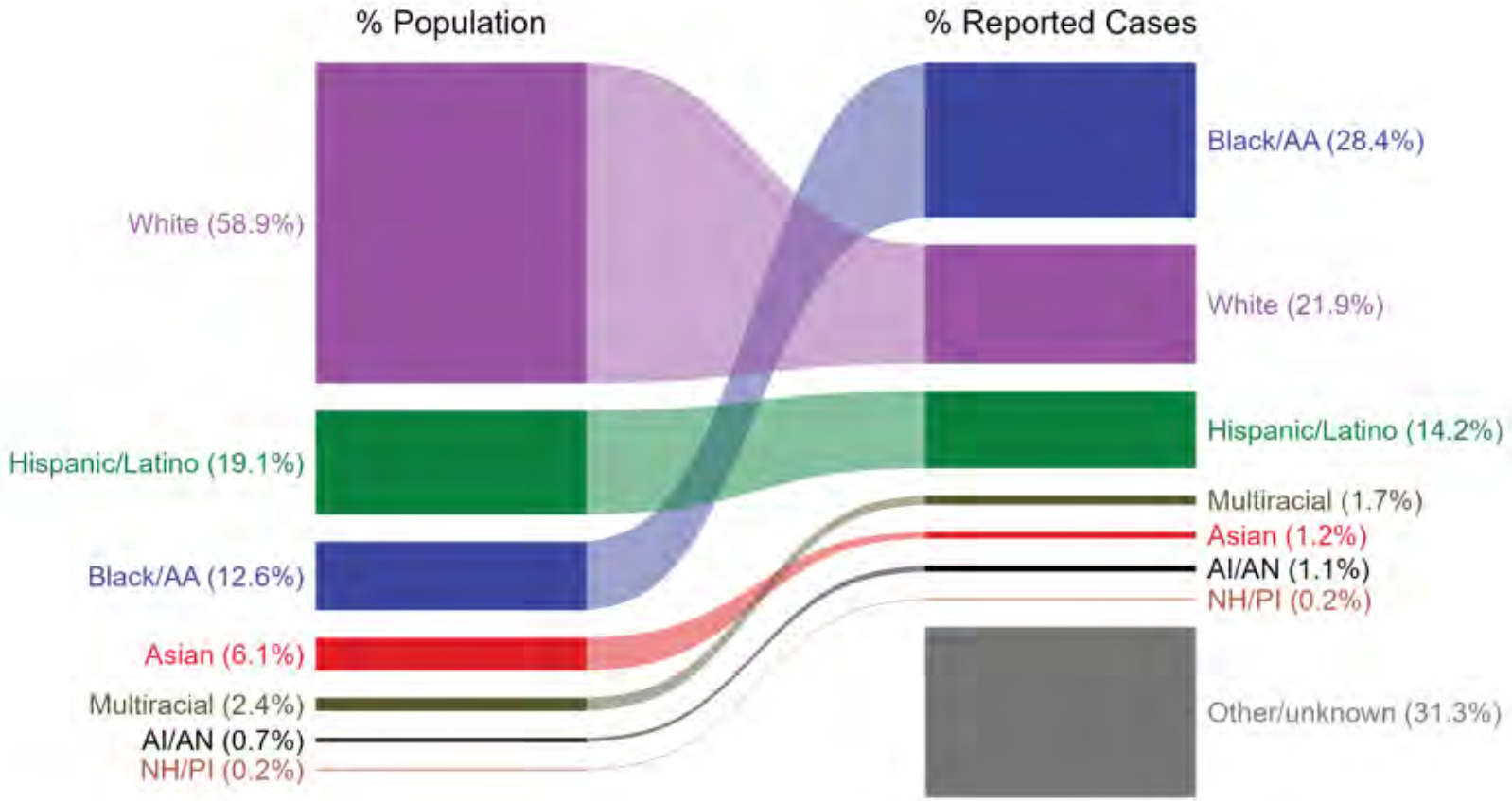
Gonorrhea — Rates of Reported Cases by Age Group and Sex, United States, 2022



* Per 100,000

NOTE: Total includes cases of all ages, including those with unknown age.

Chlamydia — Total Population and Reported Cases by Race/Hispanic Ethnicity, United States, 2022



* Per 100,000

NOTE: In 2022, a total of 515,552 chlamydia cases (31.3%) 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

USPSTF Screening Recommendations for Gonorrhea and Chlamydia (2021)

Recommendation Summary

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

- A previous or coexisting STI
- A new or more than 1 sex partner
- A sex partner having sex with other partners at the same time
- A sex partner with an STI
- Inconsistent condom use when not in a mutually monogamous relationship
- A history of exchanging sex for money or drugs
- A history of incarceration

Sexually Transmitted Infections Treatment Guidelines, 2021

Detection of STIs in Special Populations

Print

Pages in this Section

- Pregnant Women
- Adolescents
- Children
- MSM
- WSW and WSWM
- Transgender and Gender Diverse Persons
- Persons in Correctional Facilities

Detection of STIs in Special Populations (cdc.gov)

MSM

Gonorrhea and Chlamydia

The following testing is recommended for MSM:

- A test for urethral infection* with *N. gonorrhoeae* and *C. trachomatis* among men who have had insertive intercourse during the preceding year (urine NAAT is preferred).
- A test for rectal infection* with *N. gonorrhoeae* and *C. trachomatis* among men who have had receptive anal intercourse during the preceding year (rectal NAAT is preferred).
- A test for pharyngeal infection* with *N. gonorrhoeae* among men who have had receptive oral intercourse during the preceding year (pharyngeal NAAT is preferred).
- Testing for *C. trachomatis* pharyngeal infection is not recommended.

* Regardless of condom use during exposure.

MSM ‘Triple Dip’

HIV/Syphilis/
HepC* Serologies

Pharyngeal GC NAAT

Urine GC/CT NAAT

Rectal GC/CT NAAT

National Network of
STD Clinical Prevention
Training Centers

Missed Opportunities

- Extragenital gonorrhea and chlamydia were common among MSM attending STI clinic and more than **70% of extragenital GC infections and 85% of extragenital CT infections** were associated with **negative urethral tests** at the same visit and would not have been detected with urethral screening alone.
- Of those (with HIV) diagnosed with an STI who had multisite testing, **96% were positive only at an extragenital site**.

Patton. Extragenital CG and Chl testing among MSM. CID. 2014.
Geba. Extragenital screening in people with HIV. OFID. 2022.

Improving Screening, Testing, and Treatment of Bacterial STIs

Based on the Rutgers School of Nursing Health Resources and Services Administration funded study, routine sexually transmitted infection (STI) screening and testing found:

94% **of study participants** reported that answering questions about their sexual behaviors on a computer or tablet was "easy" or "very easy."

In only

14%

of cases of detected chlamydia, gonorrhea and/or syphilis did study participants report symptoms on their sexual history survey.

That means that

86%

of those found to have a bacterial STI in the study **were asymptomatic.** Without routine screening and testing, these would have been missed.

Of 175 different cases of chlamydia or gonorrhea

67%
were extragenital (rectal or pharyngeal)

and

33%
were urogenital infections. (urine or genital)

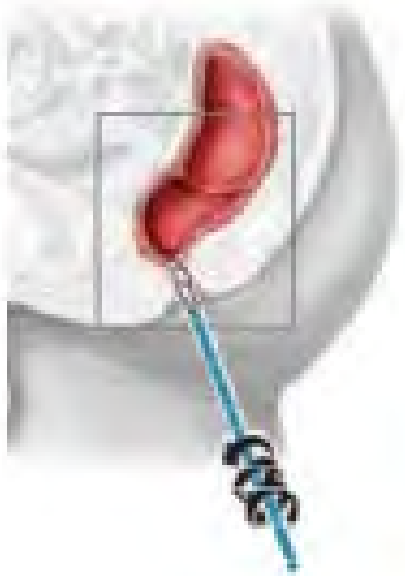
Addressing STIs: Ask. Test. Treat. Repeat.

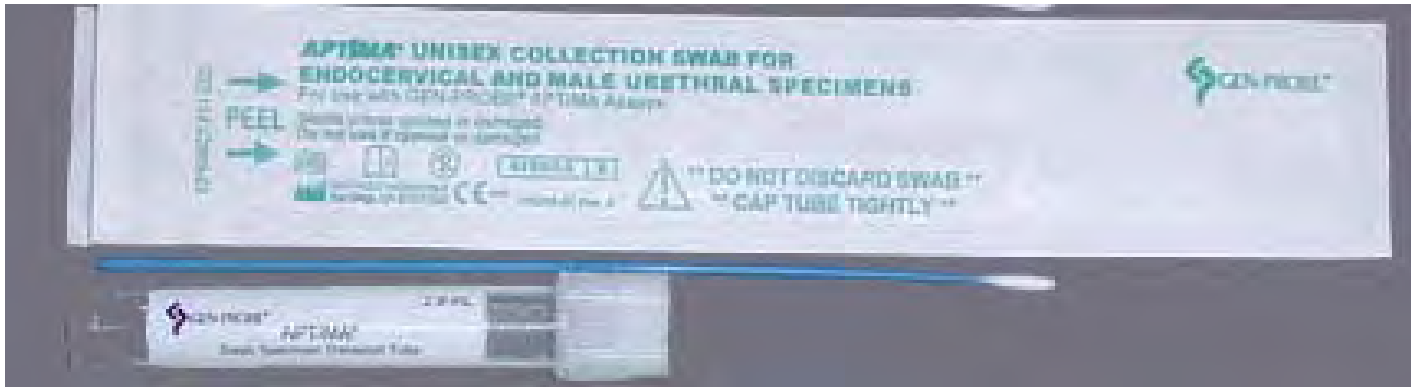
Chlamydia and Gonorrhea Diagnostics

- Nucleic acid amplification testing (NAAT) is the ‘gold standard’
- Vaginal or cervical swabs or first-void urine
  - Patient-collected vaginal swab specimens are equivalent in sensitivity and specificity to those collected by a clinician
  - Sensitivity and specificity from urine sample are comparable to cervical and urethral samples for detection of chlamydia in women
- Can also be used for vaginal, oropharyngeal, rectal, urethral, and conjunctival specimen.
- Test ALL sites of exposure!

Cook et al. Ann Intern Med. 2005.

Specimen Collection





Chlamydia manifestations

- **Men or women**
  - Oropharyngeal and rectal: usually asymptomatic
  - Conjunctivitis
  - Lymphogranuloma venereum (LGV)
  - Reactive arthritis
- **Men**
  - Urethritis and epididymitis
- **Women**
  - Cervicitis (80% of all) and urethritis
  - Pelvic Inflammatory Disease
    - 3% in 2 weeks, 10% in 1 year
    - 20% infertile, 30% chronic pain, 1% ectopic pregnancy when conceive
  - Perihepatitis (Fitz-Hugh-Curtis syndrome)
- **Children**
  - Conjunctivitis
  - Pneumonia

Chlamydia Treatment

Recommended Regimens for Chlamydial Infection

Doxycycline 100 mg orally 2 times/day for 7 days

Alternative Regimens

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

- Persons should abstain from sexual intercourse for 7 days after treatment.
- Partners (within 60 days of dx) should be tested and treated.
- Persons who receive a diagnosis of chlamydia should be tested for HIV, gonorrhea, and syphilis.

Chlamydial Infections - STI Treatment Guidelines (cdc.gov)

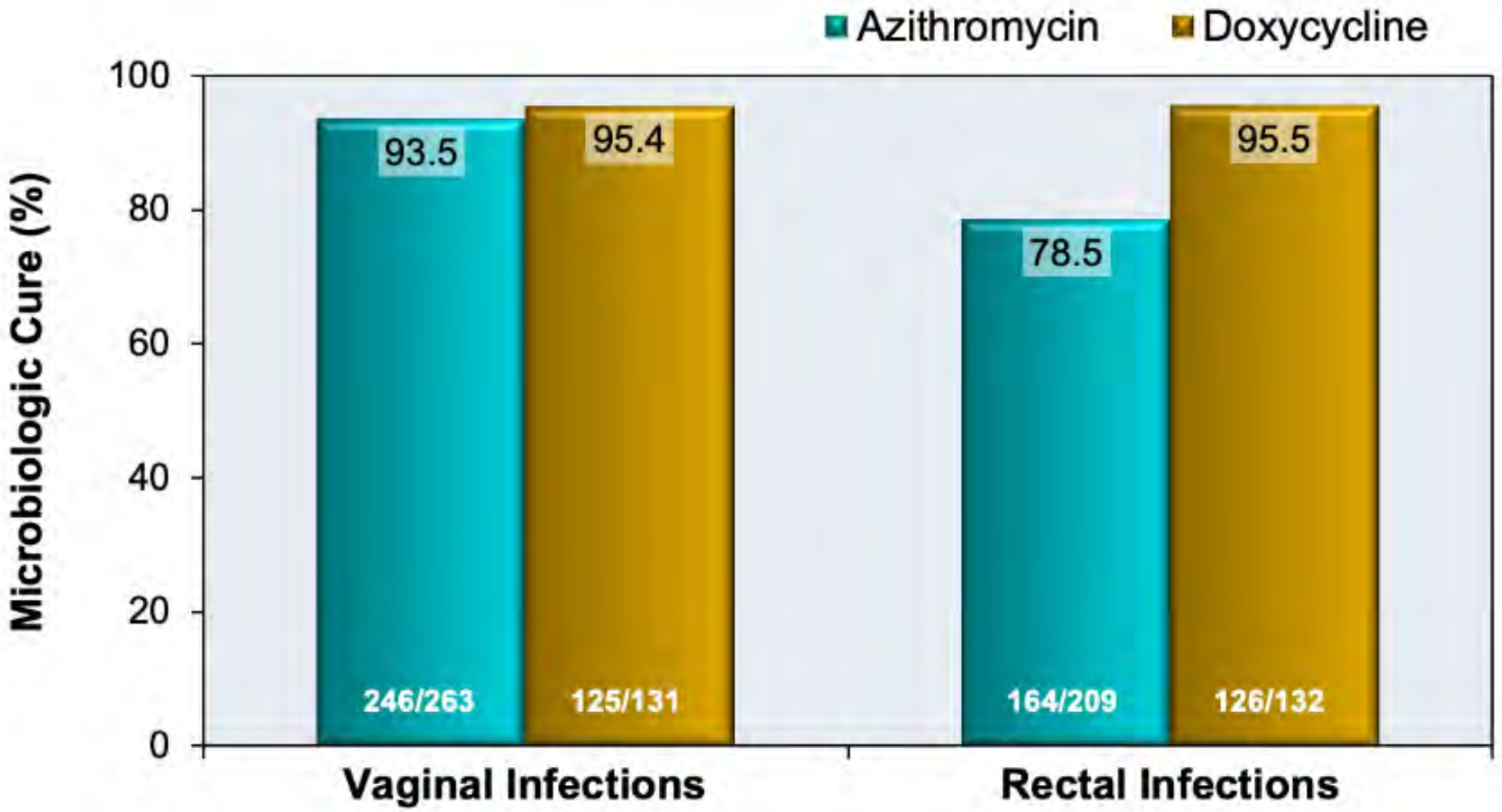


Figure 7 (Image Series) - Azithromycin versus Doxycycline in Uncomplicated Rectal and Vaginal Chlamydial Infections in Women (FEMCure)
B. Results: Microbiologic Cure at 4 Weeks
Abbreviations: CT+ = *Chlamydia trachomatis*-positive

Source: Dukers-Muijrers NHTM, Wolffs PFG, De Vries H, et al. Treatment effectiveness of azithromycin and doxycycline in uncomplicated rectal and vaginal *Chlamydia trachomatis* infections in women: a multicenter observational study (FemCure). Clin Infect Dis. 2019;69:1946-54.

7A 7B

38 y/o MSM with well controlled HIV on ART presenting with constipation and severe anorectal pain with rectal urgency and some incontinence for several months.

- Engages in unprotected anal receptive, anal insertive and oral sex with multiple male partners.
- Evaluated by colorectal surgery for routine follow up for history of abnormal anal pap and found to have **proctitis with anal fistula**.
- Urine gonorrhea/chlamydia NAAT negative

Follow up with ID (weeks later – patient still symptomatic)

- **Rectal chlamydia NAAT positive**

LGV (Lymphogranuloma venereum)

- Caused by *C. trachomatis* serovars L1-3
- Most commonly causes tender unilateral inguinal lymphadenopathy, with or without genial ulcer
- Rectal infection can cause a syndrome mimicking IBD with proctocolitis leading to chronic colorectal fistulas and strictures
- Diagnosis is made based on compatible clinical syndrome PLUS positive *C. trachomatis* NAAT on *rectal swab*
- Treatment is **Doxycycline 100mg PO BID x 21 days**

Gonorrhea manifestations

- **Men or women**
  - Pharyngeal: usually asymptomatic; pharyngitis
  - Anorectal: usually asymptomatic; proctitis
  - Conjunctivitis
  - Disseminated gonococcal infection: skin, joint, liver, heart, meninges
- **Men**
  - Urethritis and epididymitis
- **Women**
  - Cervicitis
  - Pelvic Inflammatory Disease
    - infertility, chronic pelvic pain, risk of ectopic pregnancy
  - Perihepatitis (Fitz-Hugh-Curtis syndrome)
- **Children**
  - Conjunctivitis
  - Any case beyond the newborn should be considered possible sexual abuse

Gonorrhea Treatment

Recommended Regimen for Uncomplicated Gonococcal Infection of the Cervix, Urethra, or Rectum Among Adults and Adolescents

Ceftriaxone 500 mg* IM in a single dose for persons weighing <150 kg

If chlamydial infection has not been excluded, treat for chlamydia with doxycycline 100 mg orally 2 times/day for 7 days.

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

- Test of cure is recommended 7-14 days after treatment for pharyngeal infection
- Symptoms that persist after treatment should be evaluated by culture for *N. gonorrhoeae* (with or without simultaneous NAAT) and antimicrobial susceptibility.

Gonococcal Infections Among Adolescents and Adults - STI Treatment Guidelines (cdc.gov)

Gonorrhea Treatment

Alternative Regimens

If cephalosporin allergy:

Gentamicin 240 mg IM in a single dose

PLUS

Azithromycin 2 g orally in a single dose

If ceftriaxone administration is not available or not feasible:

Cefixime 800 mg* orally in a single dose

* If chlamydial infection has not been excluded, providers should treat for chlamydia with doxycycline 100 mg orally 2 times/day for 7 days.

Gonococcal Infections Among Adolescents and Adults - STI Treatment Guidelines (cdc.gov)

25M with 2 days of left knee pain. Visited Philippines 1 month ago, where he had unprotected sex with multiple partners. On exam T 38.9, left knee is swollen, red and painful. He also has several painful papules on his extremities.

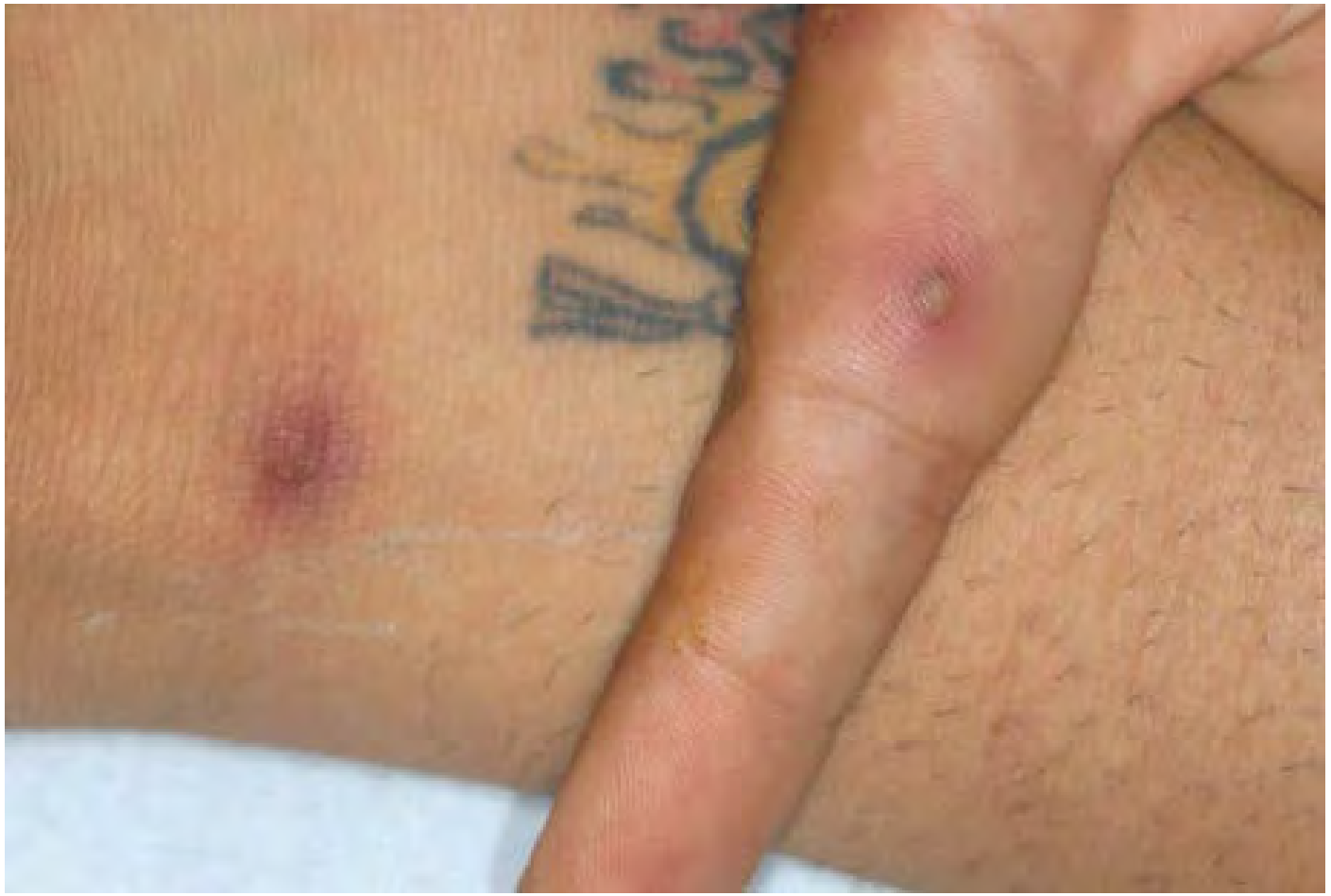


Image from UpToDate

Disseminated Gonococcal Infection

- Petechial or pustular skin lesions, asymmetric polyarthralgia, tenosynovitis, oligoarticular septic arthritis.
- Rarely endocarditis and meningitis.

Recommended Regimen for Gonococcal-Related Arthritis and Arthritis-Dermatitis Syndrome

Ceftriaxone 1 g IM or by IV every 24 hours

Switch to PO 24-48hr after clinical improvement, total treatment course of at least 7 days

If chlamydial infection has not been excluded, providers should treat for chlamydia with doxycycline 100 mg orally 2 times/day for 7 days.

Recommended Regimen for Gonococcal Meningitis and Endocarditis

Ceftriaxone 1–2 g IV every 12-24 hours

Duration for meningitis 10-14 days, endocarditis > 4 weeks

If chlamydial infection has not been excluded, providers should treat for chlamydia with doxycycline 100 mg orally 2 times/day for 7 days.

Gonococcal Infections Among Adolescents and Adults - STI Treatment Guidelines (cdc.gov)

Follow up for Chlamydia and Gonorrhea

- Test of cure is not advised for non-pregnant persons (exception is throat).
- Repeat testing should be done 3 months after treatment given risk for re-infection.

*Pregnant women with chlamydial infection should have a test of cure 3-4 wk after treatment.

Trichomoniasis (*Trichomonas vaginalis*)

- The most common curable STI globally
- Recommendations almost entirely focused on cisgender women and those born with a vagina
- In the US: prevalence 3.7 million, incidence 1.1 million
- In women:
  - The large majority of infections are asymptomatic
  - One of the three causes of chronic vaginitis
    - Minimal vaginal discharge, mild pruritis and/or dyspareunia
  - If symptomatic: premature rupture of membranes and preterm labor, with a 30% increased risk of preterm birth
  - Women with HIV: prevalence 50% (!), increased risk of PID, and increased risk of HIV transmission
- In men:
  - Largely asymptomatic, but up to 13% of nongonococcal urethritis

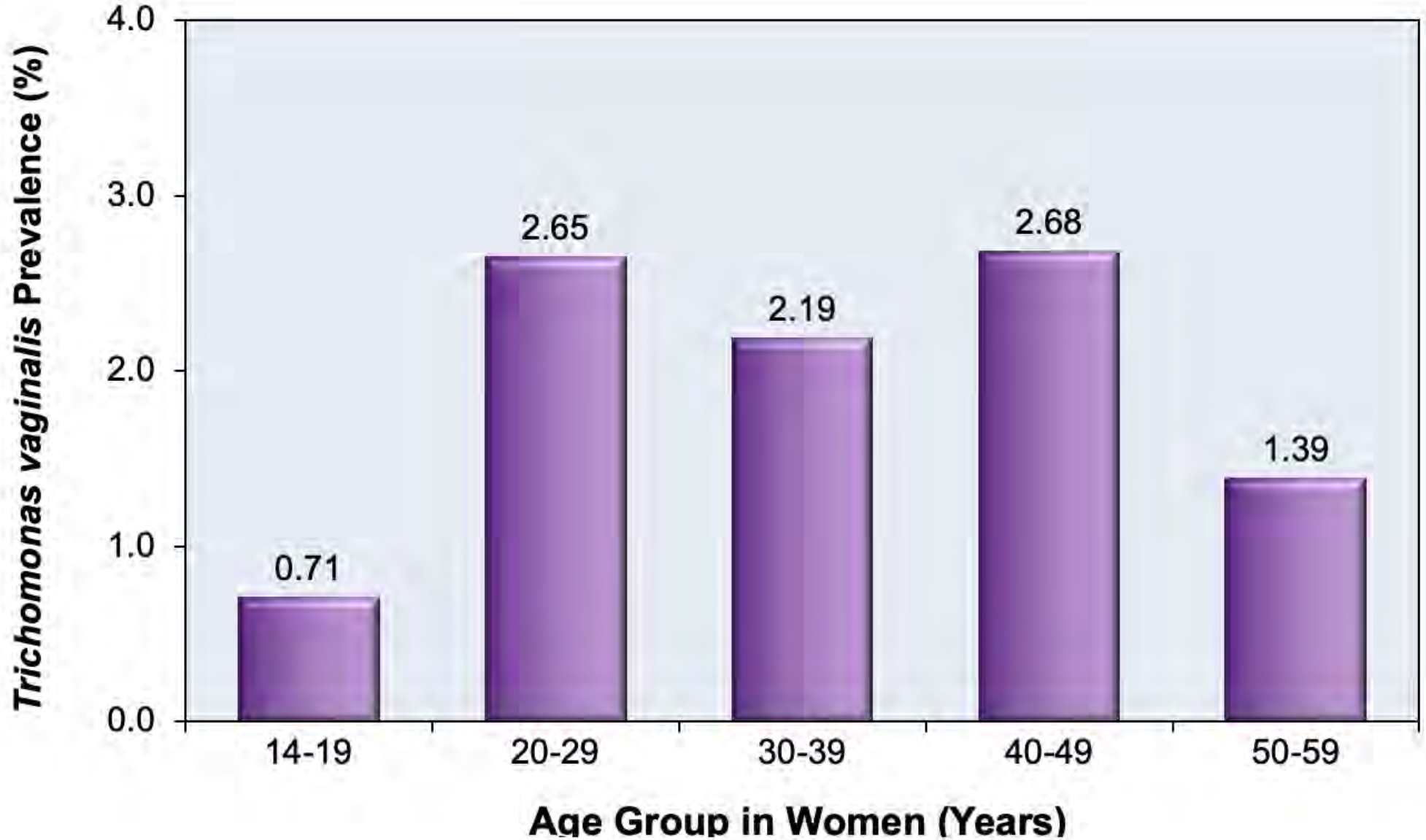


Figure 8 - Prevalence of *Trichomonas vaginalis* Among Civilian, Noninstitutionalized Females Aged 14 to 59 Years: United States, 2013 to 2016

Source: Flagg EW, Meites E, Phillips C, Papp J, Torrone EA. Prevalence of *Trichomonas vaginalis* among civilian, noninstitutionalized male and female population aged 14 to 59 years: United States, 2013 to 2016. Sex Transm Dis. 2019;46:e93-e96.

Trichomonas Diagnostics

- Wet mount: sensitivity +/- 50%
- Culture: cumbersome, but necessary to test for antibiotic resistance
- Nucleic acid amplification testing (NAAT) is the ‘gold standard’
  - Vaginal or cervical swabs, urine and liquid Pap smear specimens
  - Sensitivity >95%
  - Most not approved for use in men
  - Not recommended for anorectal testing (no evidence of disease)
- Point-of-Care Testing: assorted

Trichomonas Screening

- Screening “may be considered”
  - Women in high prevalence settings (STI clinics or correctional facilities)
  - Asymptomatic women at high risk of acquiring infection (women with multiple sex partners, who exchange sex for money or drugs, or history of STIs)
  - Sensitivity and specificity from urine sample are comparable to cervical and urethral samples for detection of chlamydia in women
  - All sexually active women with HIV at diagnosis and annually
- Not recommended for pharynx or rectum
- Not recommended for men
- Retest women at three months after treatment

Table 2. 2021 STI Treatment Guidelines: Trichomoniasis

Treatment of Trichomoniasis

HIDE

Recommended Regimen for Women

Metronidazole
500 mg orally twice a day for 7 days

Recommended Regimen for Men

Metronidazole
2 g orally in a single dose

Alternative Regimen for Women and Men

Tinidazole
2 g orally in a single dose

Source: Workowski KA, Bachmann LH, Chan PA, et al. Sexually transmitted infections treatment guidelines, 2021. Diseases characterized by vaginal itching, burning, irritation, odor or discharge: trichomoniasis. MMWR Recomm Rep. 2021;70(No. RR-4):1-187. [2021 STI Treatment Guidelines]

Trichomonas Treatment

- Persistent/recurrent infection
  - With reexposure: repeat first-line therapy
  - Without reexposure:
    - Women: 7 days metronidazole or tinidazole 2 gm daily
    - Men: 7 days metronidazole 500 mg orally twice daily
- Treatment failure after second-line treatment
  - Request a special kit from the CDC for resistance testing
    - Test Order | Submitting Specimens to CDC | Infectious Diseases Laboratories | CDC
- Pregnancy?
  - No benefit to treatment if asymptomatic

Mycoplasma genitalium

- Causes non-chlamydial, non-gonococcal urethritis.
- Can also cause cervicitis and PID.
- People with persistent or recurrent urethritis and cervicitis should be screened.
- Asymptomatic screening not recommended at this time.
- Diagnosis via NAAT (FDA cleared for use with urine and urethral, penile meatal, endocervical, and vaginal swab samples)
- Treatment 2-stage approach due to high rates of macrolide resistance

Mycoplasma genitalium

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

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

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

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

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

Doxy PEP

U.S. Centers for Disease Control and Prevention
MMWR
Morbidity and Mortality Weekly Report
Recommendations and Reports / Vol. 73 / No. 2
June 6, 2024

CDC Clinical Guidelines on the Use of Doxycycline Postexposure Prophylaxis for Bacterial Sexually Transmitted Infection Prevention, United States, 2024

BOX 1. CDC recommendations for use of doxycycline as postexposure prophylaxis for bacterial sexually transmitted infections prevention

Return

Recommendation*	Strength of recommendation and quality of evidence†
• Providers should counsel all gay, bisexual, and other men who have sex with men (MSM) and transgender women (TGW) with a history of at least one bacterial sexually transmitted infection (STI) (specifically, syphilis, chlamydia or gonorrhea) during the past 12 months about the benefits and harms of using doxycycline (any formulation) 200 mg once within 72 hours (not to exceed 200 mg per 24 hours) of oral, vaginal, or anal sex and should offer doxycycline postexposure prophylaxis (doxy PEP) through shared decision-making. Ongoing need for doxy PEP should be assessed every 3–6 months.	AI High-quality evidence supports this strong recommendation to counsel MSM and TGW and offer doxy PEP.
• No recommendation can be given at this time on the use of doxy PEP for cisgender women, cisgender heterosexual men, transgender men, and other queer and nonbinary persons.	Evidence is insufficient to assess the balance of benefits and harms of the use of doxy PEP

*Although not directly assessed in the trials included in these guidelines, doxy PEP could be discussed with MSM and TGW who have not had a bacterial STI diagnosed during the previous year but will be participating in sexual activities that are known to increase likelihood of exposure to STIs.

† See Table.

The evidence

- 4 studies on efficacy of Doxy PEP
  1. IPERGAY – MSM and TGW taking Truvada for HIV PrEP, risk reduction (RR) 70% for chlamydia and 73% for syphilis, no significant reduction for gonorrhea
  2. DoxyPEP – MSM and TGW with HIV or on HIV PrEP, RR 56% for gonorrhea, 81% for chlamydia, 82% for syphilis, NNT to prevent a quarterly incident of STI was 4.7 in the PrEP cohort and 5.3 in PLWH
  3. DOXYVAC – MSM on HIV PrEP, RR 51% for gonorrhea, 89% for chlamydia, 79% for syphilis
  4. RCT – Kenyan cisgender women, no significant reduction in all bacterial STIs largely due to non-adherence

Potential harms

- 3 studies reported adverse events
  1. IPERGAY – GI side effects more commonly reported in PEP groups (53%)
  2. DoxyPEP – 1 lab abnormality, 3 adverse events, non serious
  3. DOXYVAC – GI side effects causing 3 individuals to discontinue PEP
- Larger systematic literature review on use of doxy for acne treatment, malaria prophy, and rosacea treatment showed increase risk of GI and dermatologic adverse events compared to placebo.

Potential harms

- Resistance in commensals and co-occurring pathogens
  - DoxyPEP – 12mo follow up
    - Staph aureus nares colonization decreased 14% in doxy group with 8% increase in doxy resistance
    - 24% of gonococcal isolates were doxy resistant at baseline, 11% of incident isolates in SOC and 30% in doxy group
  - DOXYVAC
    - 100% of gonococcal isolates were doxy resistant at baseline, 67% of incident infections in doxy group vs 81% in the no PEP group

Recommendations

- Initial PEP visit
  - Screen and treat as indicated for STIs every 3-6 months.
  - Counsel on risk reduction strategies including condom use, consideration of reducing the number of partners, and accessing HIV PEP, PrEP or HIV treatment as indicated.
  - Discuss risks and benefits of doxycycline PEP including potential side effects such as photosensitivity, esophagitis and esophageal discomfort, gastrointestinal intolerance (nausea, vomiting, diarrhea) and the potential for the development of antimicrobial resistance in other pathogens and commensal organisms.
  - Discuss the need to take doxycycline exactly as prescribed and only for its intended purpose.
  - Counsel on potential drug interactions including the importance of separating the doxycycline dose by at least 2 hours from antacids and supplements that contain calcium, iron, magnesium or sodium bicarbonate. No clinically relevant interactions between doxycycline and gender-affirming hormonal therapy is likely, however, other forms of birth control should be used by people of reproductive potential who are on hormonal contraceptives.
  - Provide enough doses of doxycycline to last until the next follow-up visit, based on individual assessment through shared decision making.

Recommendations

- Follow up PEP visit
  - STI screening every 3-6 months.
  - Assess for side effects from doxycycline.
  - Provide risk reduction counseling and condoms.
  - Re-assess need for doxycycline PEP.
  - Provide enough doses of doxycycline until next follow-up visit, based on individual assessment through shared decision making.

Additional Considerations

- Screen for hepatitis B and C infection; vaccinate against hepatitis B if susceptible.
- Administer other vaccines as indicated (MPOX, hepatitis A, human papillomavirus).
- Refer for comprehensive primary care, mental health services, substance use treatment and other services, as appropriate.

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WELCOME to the

Getting In Sync with Sexual Health ECHO:
STIs – Testing, Treatment and Prevention

Session 4, Syphilis, October 15, 2024

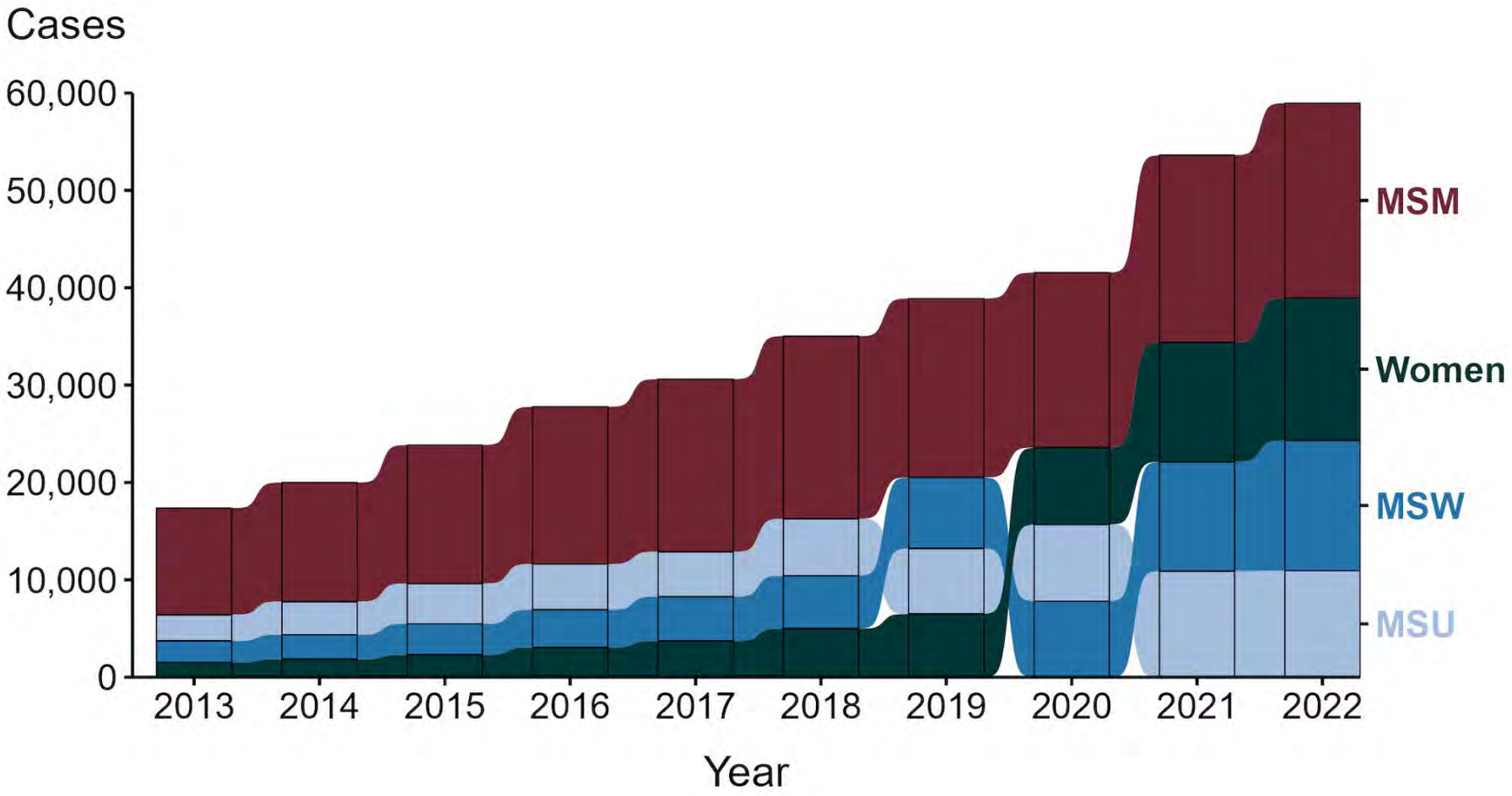
Getting In Sync with Sexual Health ECHO: Syphilis

Antonia Altomare, DO, MPH

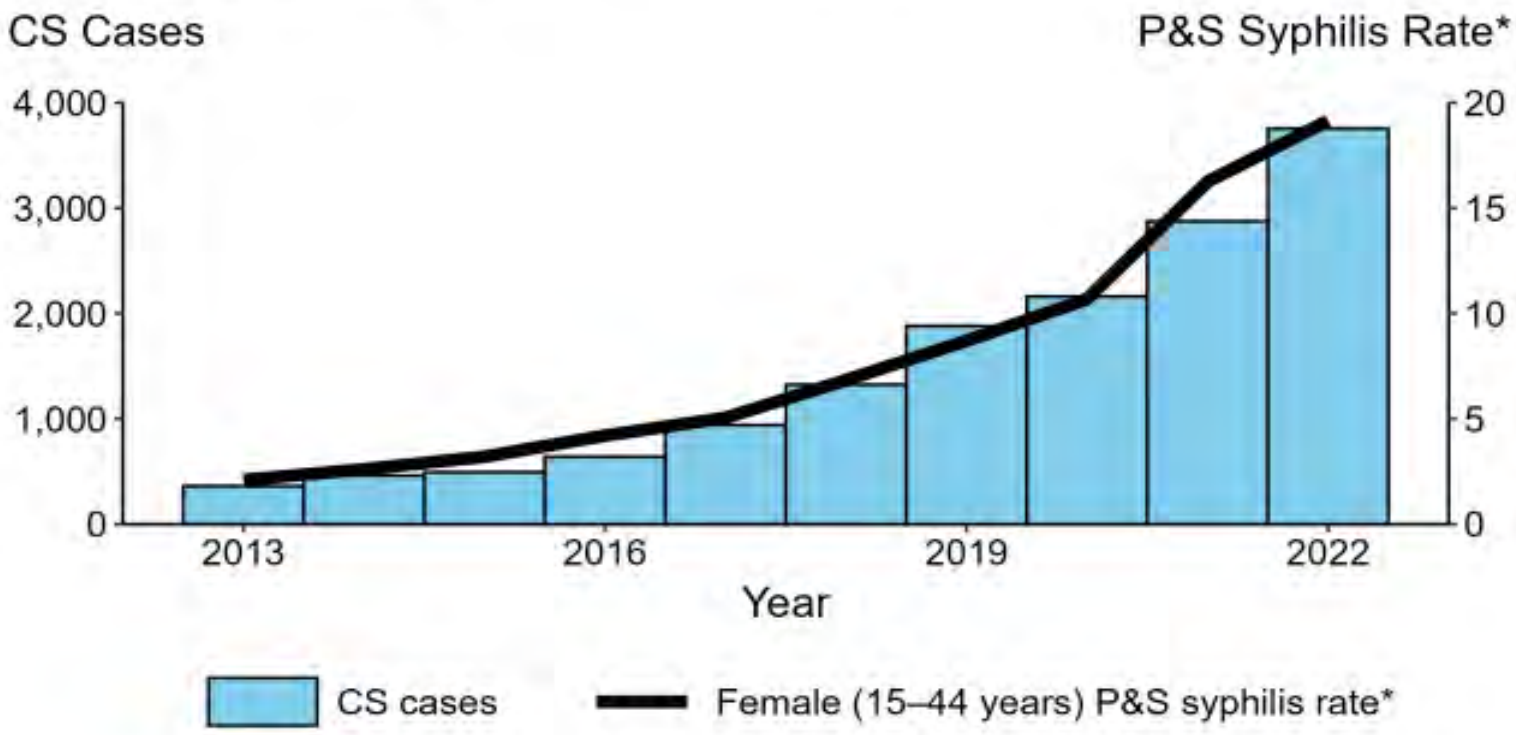
Infectious Diseases and International Health

Dartmouth Health

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



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



[PNG - 128 KB]

"* Per 100,000 _ACRONYMS: CS = Congenital syphilis; P&S Syphilis = Primary and secondary syphilis "

Vital Signs: Missed Opportunities for Preventing Congenital Syphilis — United States, 2022

10x

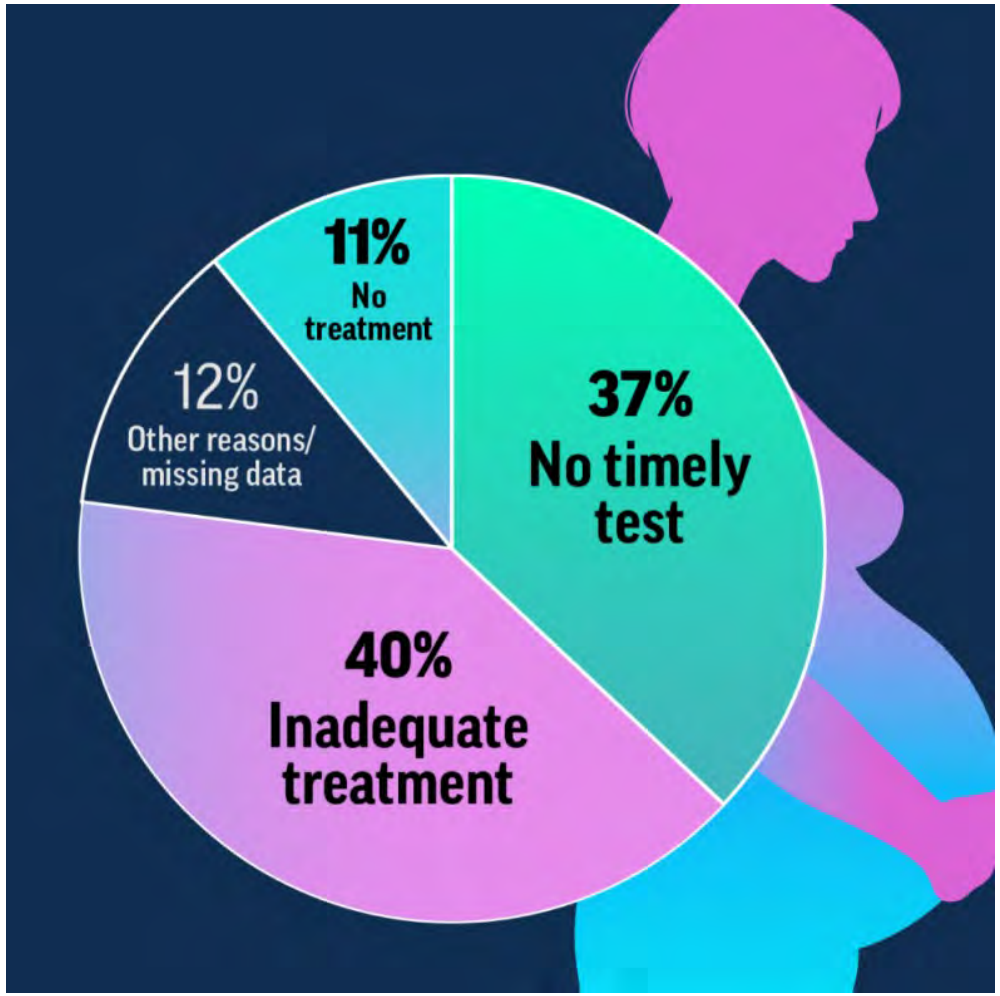
Over 10 times as many babies were born with syphilis in 2022 than in 2012.

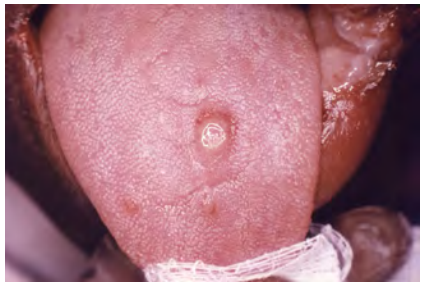
9 in 10

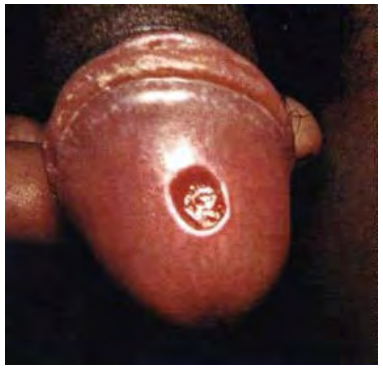
Timely testing and treatment during pregnancy might have prevented almost 9 in 10 (88%) cases in 2022.

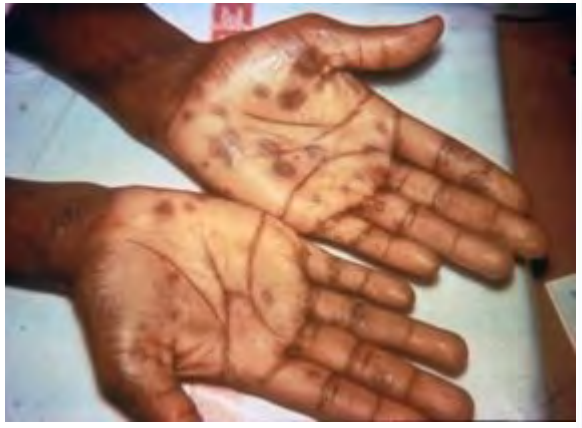
2 in 5

Two in 5 (40%) people who had a baby with syphilis did not get prenatal care.









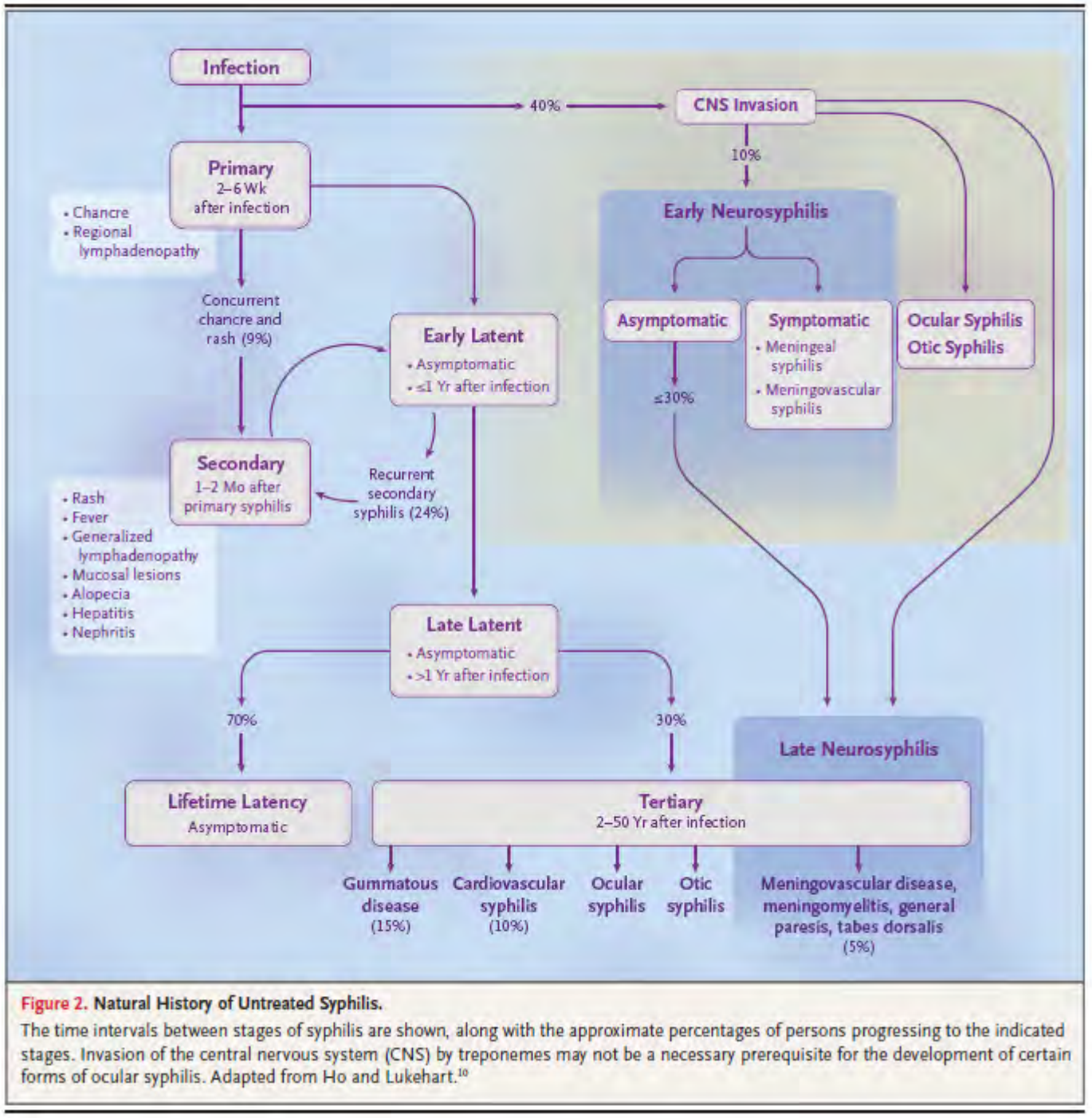
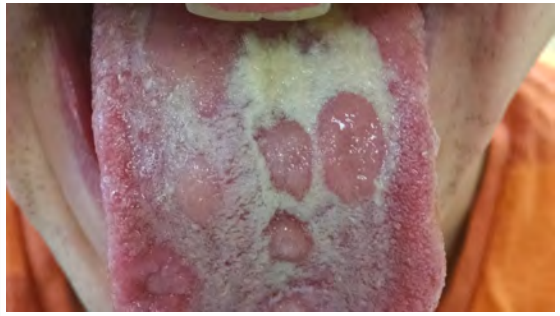
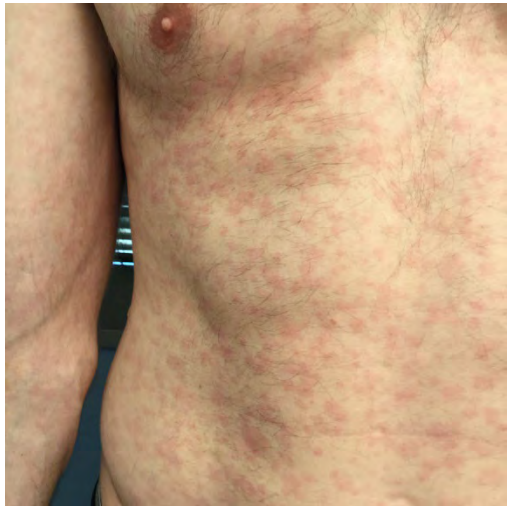


Figure 2. Natural History of Untreated Syphilis.

The time intervals between stages of syphilis are shown, along with the approximate percentages of persons progressing to the indicated stages. Invasion of the central nervous system (CNS) by treponemes may not be a necessary prerequisite for the development of certain forms of ocular syphilis. Adapted from Ho and Lukehart.[10]





Images: CDC, Ocular Syphilis (ophthalmologybreakingnews.com), National STD Curriculum

N Engl J Med 2020;382:845-54.
DOI: 10.1056/NEJMra1901593

USPSTF Screening Recommendations for Syphilis

2022

Population	Recommendation	Grade
Asymptomatic, nonpregnant adolescents and adults who are at increased risk for syphilis infection	The USPSTF recommends screening for syphilis infection in persons who are at increased risk for infection.	A

- Risk of syphilis is higher in men who have sex with men; persons with HIV infection or other sexually transmitted infections; persons who use illicit drugs; and persons with a history of incarceration, sex work, or military service.
- However, clinicians should be aware of how common syphilis infection is in their community and assess patient's individual risk.

2018

Population	Recommendation	Grade
Pregnant women	The USPSTF recommends early screening for syphilis infection in all pregnant women.	A

Syphilis Screening in Pregnancy – 2021 CDC STI Treatment Guidelines

- All pregnant women should be tested for syphilis at their first prenatal visit.
- For women at high risk for infection*, serologic testing should be performed twice during the third trimester: once at 28–32 wk gestation and again at delivery.
- Any woman who has a fetal death after 20 wk gestation should be tested for syphilis.
- No mother or neonate should leave the hospital without maternal serologic status having been documented at least once during pregnancy, and if the mother is considered high risk, documented at delivery.
- Concurrent HIV screening recommended for all pregnant woman.

*Women at high risk

- Diagnosed with a STI during pregnancy
- Exchanging sex for drugs or money
- Multiple sex partners
- Late entry into care (second trimester or later)
- No prenatal care
- Residence in an area of high syphilis prevalence
- Methamphetamine or heroin use
- Incarceration of woman or her partner
- Unstable housing or homelessness

2021 CDC STI Treatment Guidelines

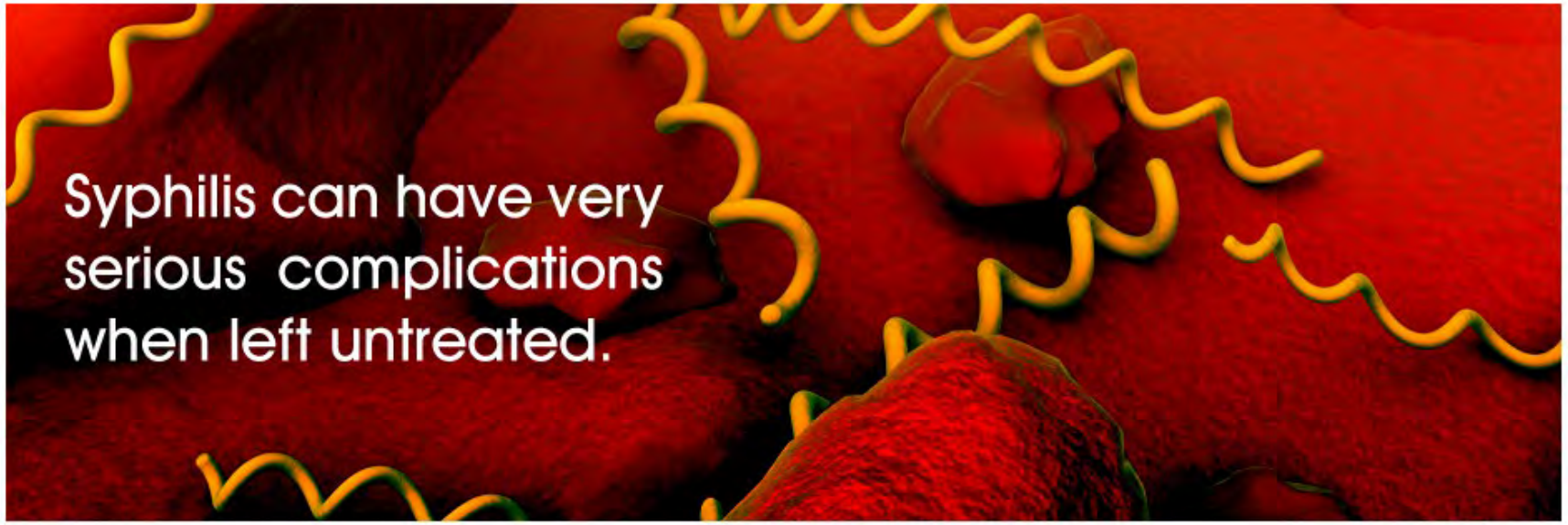
Syphilis in Pregnancy

- Transplacental transmission of *T. pallidum* can occur at any time during gestation but occurs with increasing frequency as gestation advances.
- Women with untreated primary or secondary syphilis are more likely to transmit syphilis to their fetuses than women with latent disease.
- If acquired within 4 years of delivery, can lead to infection in fetus in 80% of cases and may result in stillbirth or infant death in up to 40%.
  - The risk of transmission is only 2% after four years.
- *T. pallidum* is not transferred in breast milk, but transmission may occur if the mother has a chancre on her breast.

N Engl J Med. 1952;247(2):48.

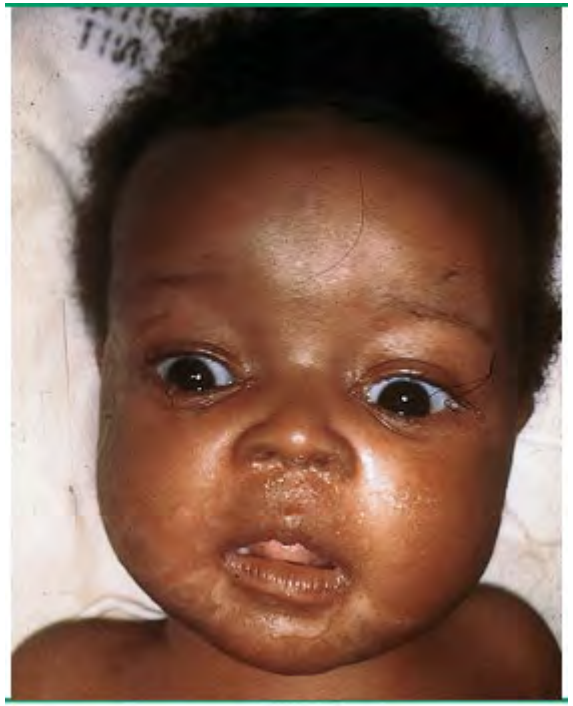
Complications of syphilis in pregnancy

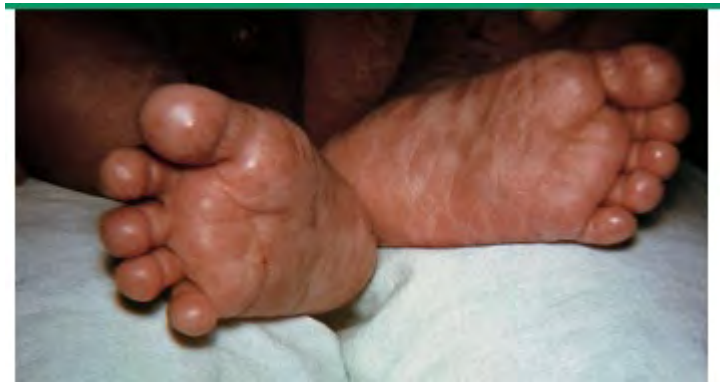
- Miscarriage
- Preterm birth
- Stillbirth
- Impaired fetal growth
- Congenital infection
- Neonatal mortality



Congenital Syphilis

- Wide spectrum of clinical manifestations
- Only severe cases are clinically apparent at birth
  - 60-90% of live-born neonates with congenital syphilis are asymptomatic at birth
- Bones, liver, pancreas, intestine, kidney, and spleen are the most frequently and severely involved



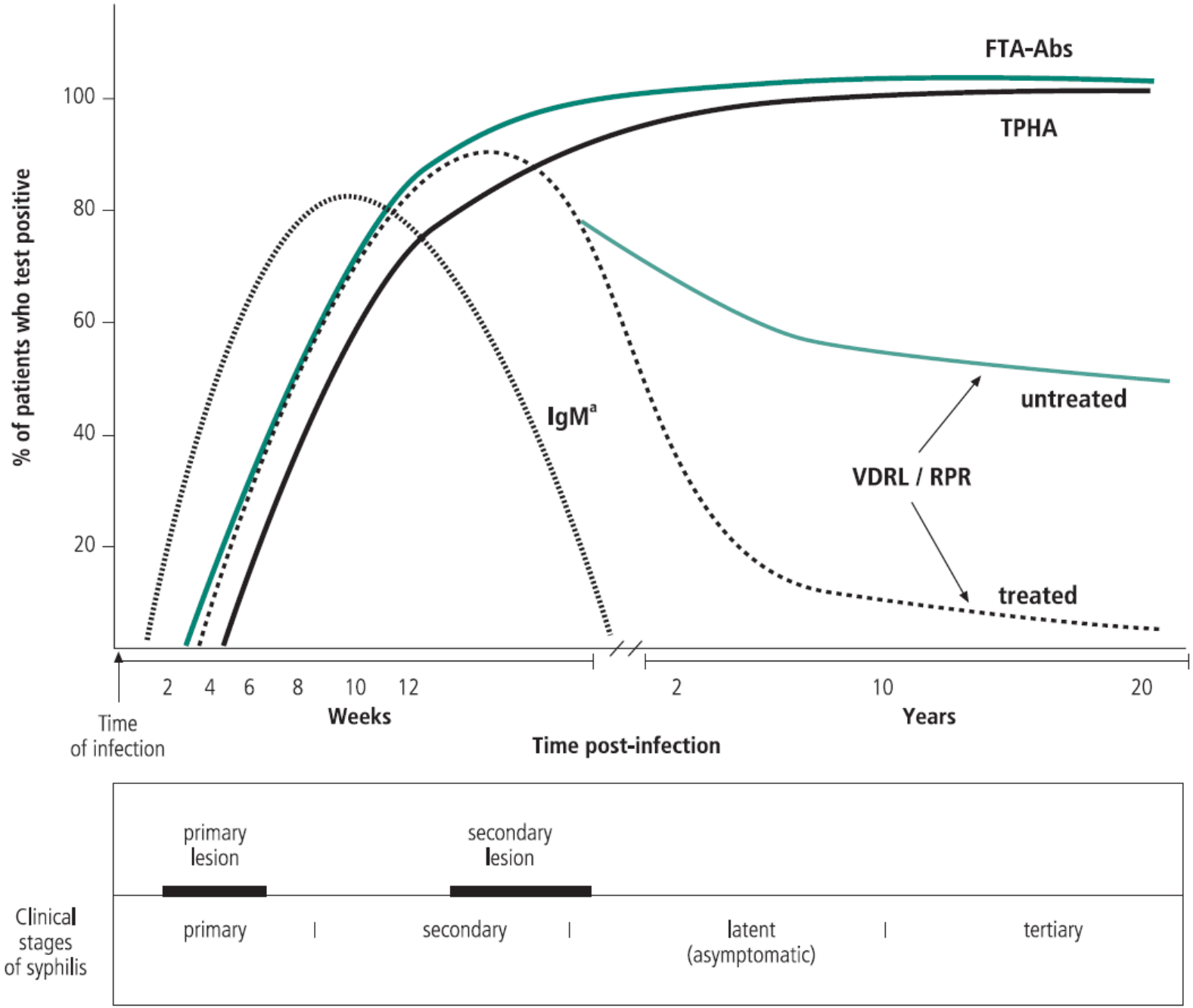


Pediatr Infect Dis J. 2012;31(9):988
MMWR Morb Mortal Wkly Rep. 2015;64(44):1241

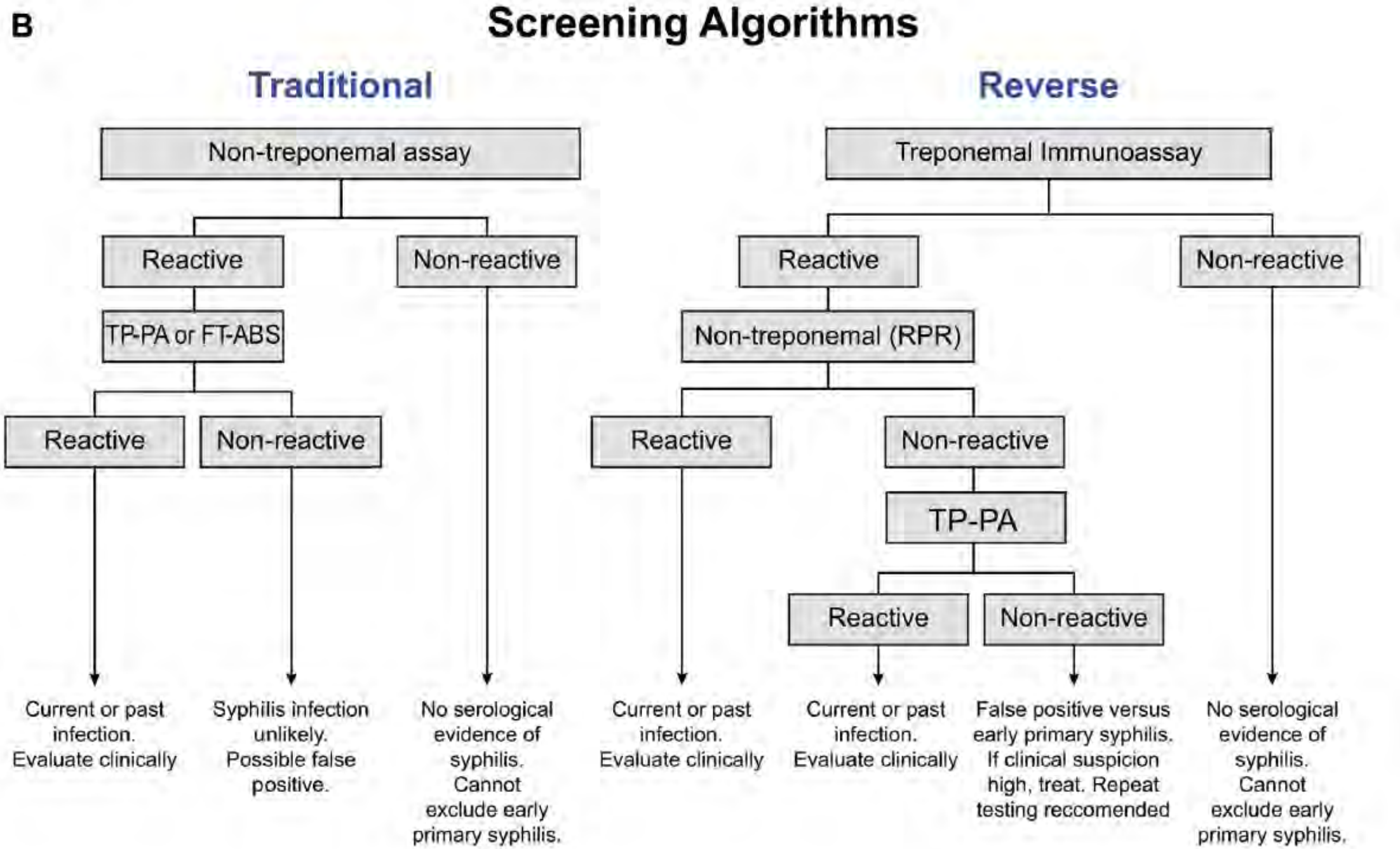
Serologic Tests

- Nontreponemal – nonspecific, low cost, able to quantify response to treatment
  - Rapid plasma reagin (RPR)
  - Venereal Disease Research Laboratory (VDRL)
  - Toluidine Red Unheated Serum Test (TRUST)

- Treponemal – more complex, expensive, specific, qualitative
  - Fluorescent treponemal antibody absorption (FTA-ABS)
  - *T. pallidum* particle agglutination assay (TPPA)
  - *T. pallidum* enzyme immunoassay (TP-EIA)
  - Microhemagglutination test for antibodies to *Treponema pallidum* (MHA-TP)
  - Chemiluminescence immunoassay (CIA)



Rac et al. Syphilis during pregnancy: a preventable threat to maternal-fetal health. AJOG. 2017.



Rac et al. Syphilis during pregnancy: a preventable threat to maternal-fetal health. AJOG. 2017.

False-positive tests

Nontreponemal tests

- Biologically due to pregnancy
  - 31% FP VDRL
- Acute febrile illness
- Recent immunization
- Autoimmune disorders
- IVDU
- Chronic liver disease
- HIV

Treponemal tests

- Biologically due to pregnancy
  - 47-88% FP TP-EIA or CIA
- Advanced age
- Tumor
- Dialysis
- Autoimmune disease
- Other spirochetal infections, malaria, leprosy

Hence all positive tests need confirmatory testing!

Genitourin Med. 1990;66(2):76
Clin Microbiol Rev. 1995;8(1):1

J Med Assoc Thai. 2016;99(2):119
Clin Infect Dis. 2015;61(7):1049.
Sex Transm Dis. 2011;38(12):1126

False-negative Nontreponemal test

- Very early infection (primary or secondary)
  - 20-30% of patients presenting with chancre will have negative nontreponemal test
- Prozone reaction
  - Antibody titers are high (as often seen in secondary syphilis), an overabundance of antibodies interferes with clumping of antigen-antibody complexes
  - Occurs in pregnancy, HIV and neurosyphilis
- Early treatment preventing antibody formation
- Late infection (nontreponemal tests become nonreactive over time)

Clin Infect Dis. 2010;51(6):700
Ann Intern Med. 1986;104(3):368

Treatment of Syphilis

- Primary, secondary, or early latent (<1yr) syphilis
  - **Benzathine penicillin G 2.4 million units IM x 1**
  - Alternative: Doxycycline 100mg PO BID x 14 days
- Late latent (>1yr)
  - **Benzathine penicillin G 2.4 million units IM weekly x 3 weeks**
  - Alternative: Doxycycline 100mg PO BID x 28 days
- Neurosyphilis, ocular or otic syphilis
  - **IV Penicillin G x 14 days**
  - Alternative: Procaine penicillin G 2.4 million units IM once daily PLUS Probenecid 500 mg orally 4 times/day, both for 10–14 day

2021 CDC STI Treatment Guidelines

Treatment of Syphilis in Pregnancy

- **Penicillin is the gold standard for treatment.**
  - It is the only known effective antimicrobial for treating fetal infection and preventing congenital syphilis.
- Non-penicillin antibiotic regimens used for syphilis treatment in non-pregnant women are either contraindicated (eg, tetracycline, doxycycline), lack sufficient data regarding efficacy (eg, ceftriaxone), or do not cross the placental barrier completely so the fetus is not treated (eg, erythromycin, azithromycin).
- Missed doses >9 days between doses are not acceptable for pregnant women receiving therapy for late latent syphilis.

2021 CDC STI Treatment Guidelines

Jarisch-Herxheimer Reaction

- Acute systemic reaction that results from the rapid killing of spirochetes
  - Skin rash, fever/chills, tachycardia, arthralgias, pharyngitis, headache, leukocytosis
  - Onset 2-8 hours after treatment and resolves by 24 hours
  - Treatment is supportive
- Not an allergic reaction to penicillin
- More common in early stages of syphilis, higher bacterial load
- Has been reported in up to 45% of pregnant women and can lead to preterm labor, fetal heart rate abnormalities and stillbirth (depending on severity of fetal infection)
  - Consider giving first dose of Penicillin under 24hr continuous fetal monitoring

2021 CDC STI Treatment Guidelines
Eppes. Syphilis in pregnancy. AJOG. 2022.

Follow up

- Extremely important to document response to therapy and to reevaluate for reinfection.
- Monitor signs, symptoms, or serologic changes in nontreponemal titers.
- The goal is to achieve a 4-fold or greater decline in nontreponemal titer.
- For primary and secondary syphilis
  - Check titers at 6 and 12 months after treatment (it may take up to 12 mo to see 4-fold decline)
  - For people with HIV check at 3, 6, 9, 12, 24 months (it may take up to 24 mo to see 4-fold decline)
- For latent syphilis
  - Check titers at 6, 12, 24 months after treatment
  - For people with HIV check at 6, 12, 18, 24 months

Dartmouth Health

Project ECHO

CDC Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

Sexually Transmitted Infections Treatment Guidelines, 2021

[Syphilis - STI Treatment Guidelines (cdc.gov)]

National Network of STD Clinical Prevention Training Centers

STD Clinical Consultation Network

https://www.stdccn.org/

National STD Curriculum

[Core Concepts - Syphilis - Self-Study Lessons 2nd Edition - National STD Curriculum (uw.edu)]

WELCOME to the Getting In Sync with Sexual Health ECHO: STIs – Testing, Treatment, and Prevention

Session 5, HSV, October 29, 2024

Today's Program:

- Brief housekeeping
- Didactic: HSV – Kim Allen
- Case Presentation: Kim Allen
- Discussion
- Summary
- Up Next

Notes:

- Raise virtual hand or enter comments in chat at any time. We will call on you when it works. Please mute otherwise.
- To protect individual privacy, please use non-identifying information when discussing cases.
- We will be recording the didactic part of these sessions. *Participating in these session is understood as consent to be recorded. Thank you!*
- Closed Captioning will be enabled during sessions
- Questions to ECHO Tech Support thru personal CHAT

Genital Herpes Simplex Virus

Kimberly Allen, APRN, CPNP-AC, FNP-BC (she/her)

Assistant Director of Clinical Medical Services

Dartmouth Student Health Service I Primary Care

Objectives

- Discuss epidemiology of herpes simplex virus (HSV) infections
- Understand how HSV is transmitted
- Recognize clinical features of HSV
- Discuss tests available for HSV diagnosis and screening recommendations
- Address management options for HSV infections
- Highlight importance of patient counseling

Epidemiology

- Chronic, lifelong viral infection
- Genital HSV infections can be caused by type 1 and/or type 2
- Most cases of recurrent infection are caused by HSV-2
- HSV-1 is increasingly the cause of genital infections, especially among young women and MSM populations
- According to the WHO, an estimated 3.8 billion people under the age of 50 (64.2%) have HSV-1 and 519.5 million people aged 15-49 (13.3%) have HSV-2
- Prevalence is highest is low- and middle-income countries, with seroprevalence up to 90% in populations in sub-Saharan Africa and Latin America

Seroprevalence in the United States

Figure 2. Trends in age-adjusted prevalence of herpes simplex virus type 1 among persons aged 14–49, for the total population and by race and Hispanic origin: United States, 1999–2000 through 2015–2016

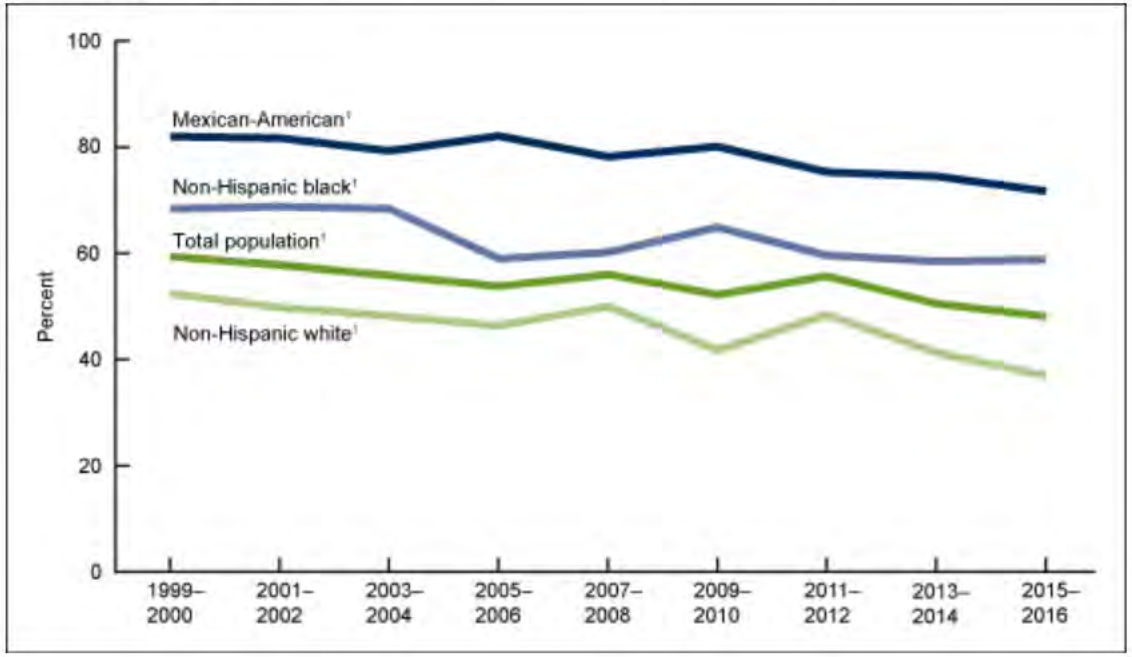
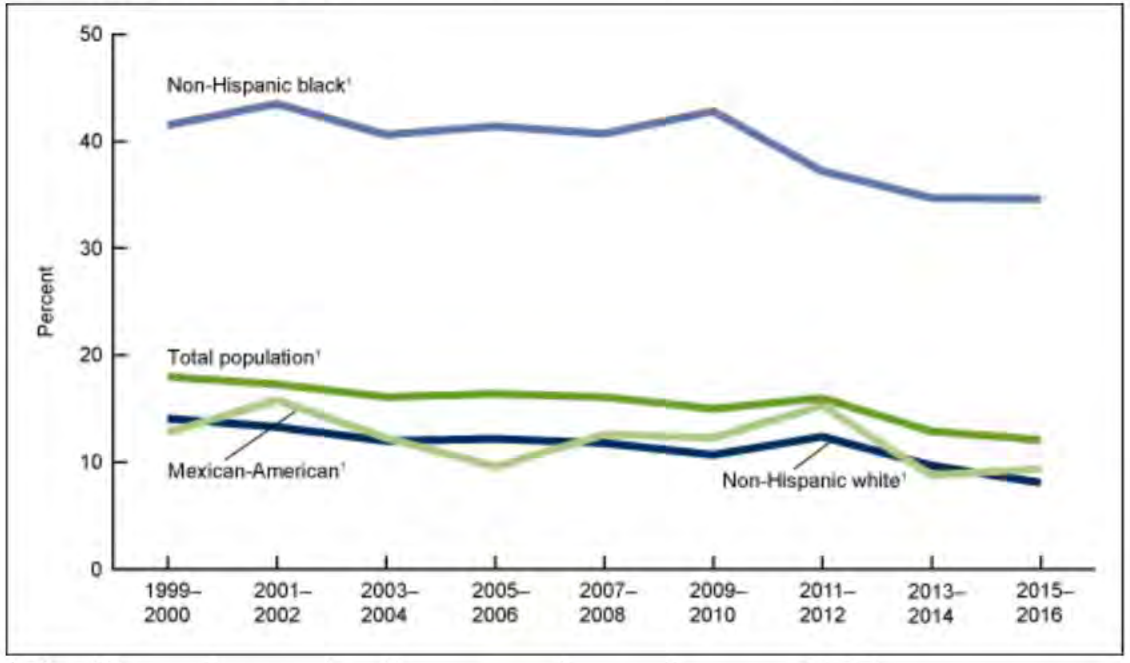


Figure 4. Trends in age-adjusted prevalence of herpes simplex virus type 2 among persons aged 14–49, for the total population and by race and Hispanic origin: United States, 1999–2000 through 2015–2016



2015–2016 National Health and Nutrition Examination Survey (NHANES)

Demographic Seroprevalence

Figure 1. Age-adjusted prevalence of herpes simplex virus type 1 among persons aged 14–49, by age group, sex, and race and Hispanic origin: United States, 2015–2016

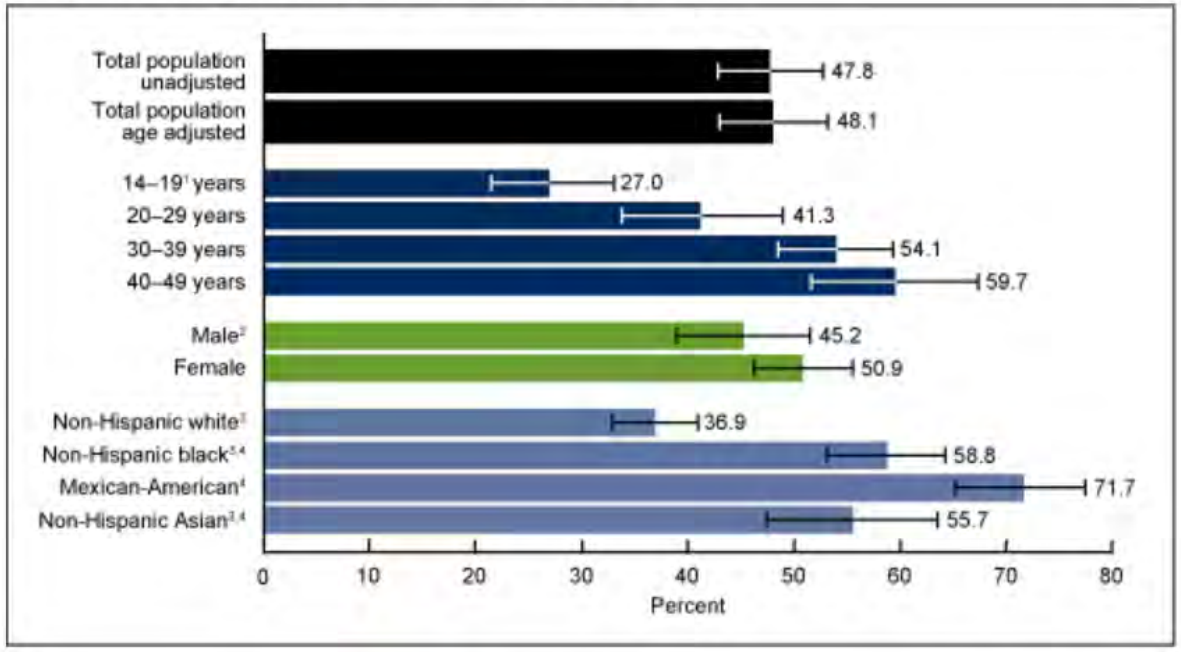
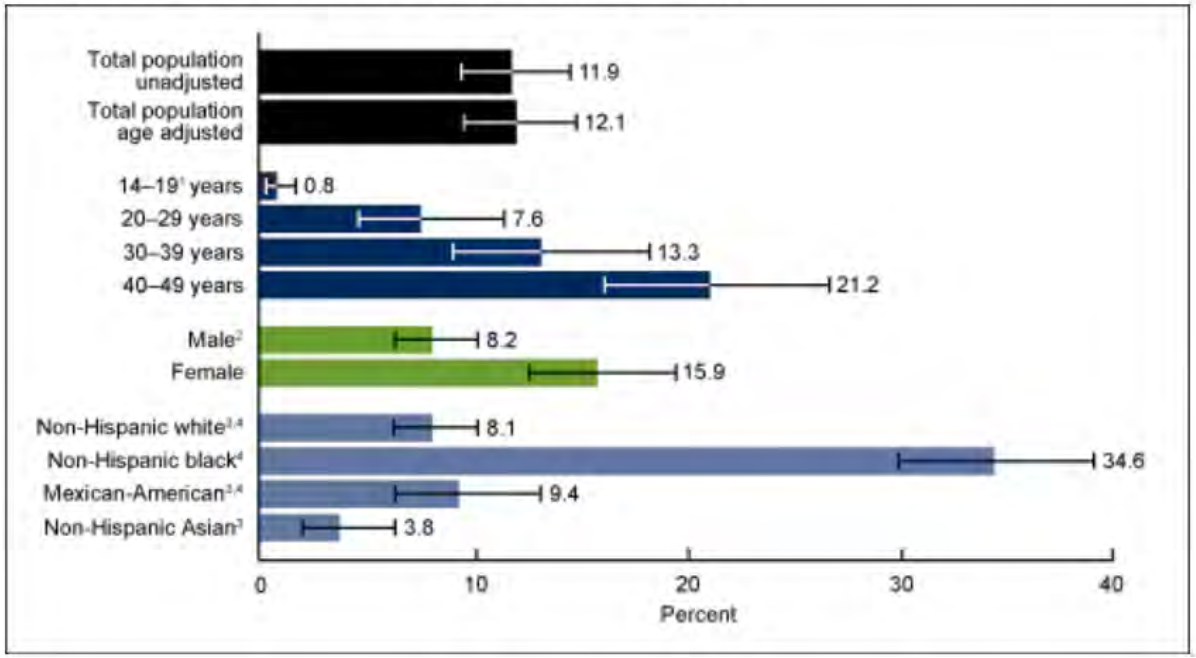


Figure 3. Age-adjusted prevalence of herpes simplex virus type 2 among persons aged 14–49, by age group, sex, and race and Hispanic origin: United States, 2015–2016



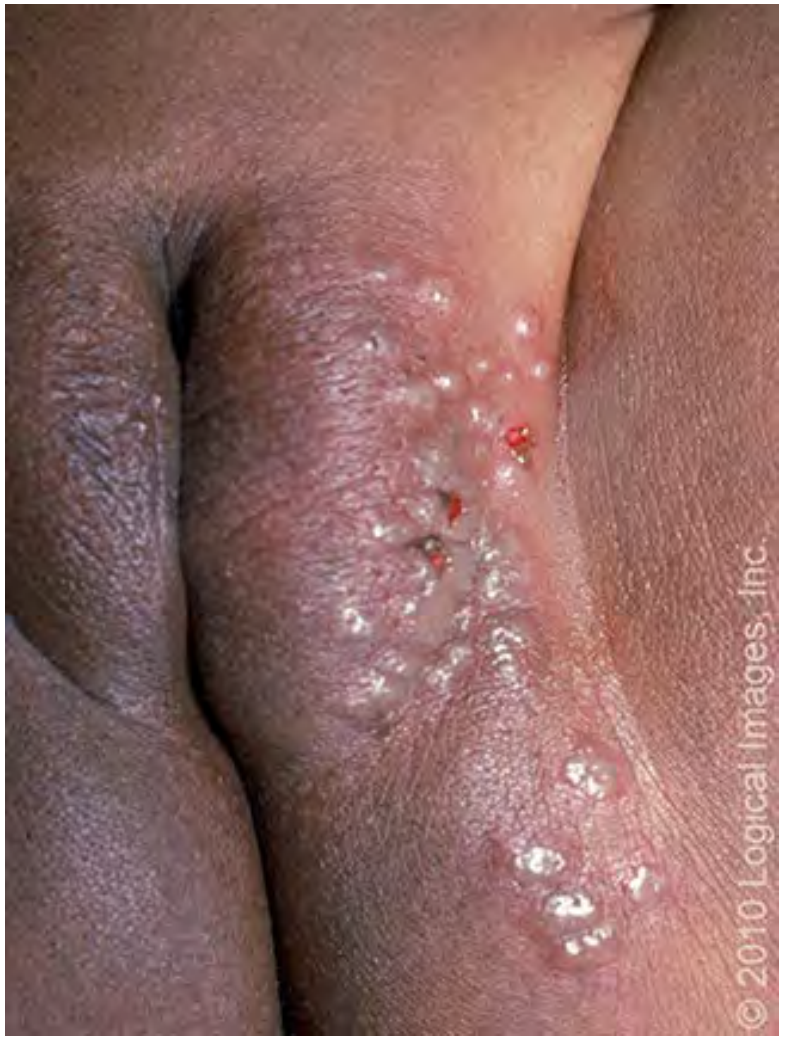
2015–2016 National Health and Nutrition Examination Survey (NHANES)

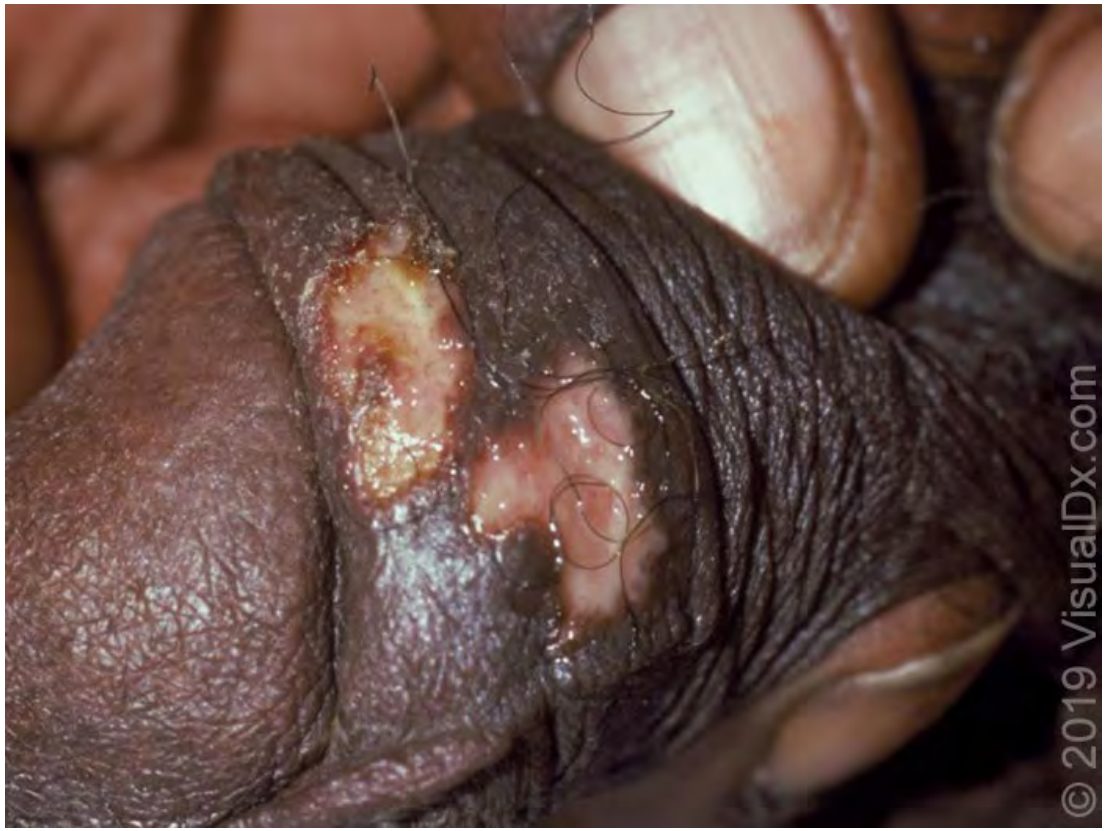
Transmission

- Occurs via contact with virus
- Asymptomatic intermittent viral shedding occurs after primary infection, even in the absence of genital lesions
- Most genital herpes infections are transmitted by people unaware that they have the infection or who are asymptomatic

Primary Infection

- Average incubation period for genital herpes is four days (range two to 12 days)
- Clinical manifestations are highly variable
- Initial presentation can be severe with painful genital ulcers, dysuria, fever, tender local inguinal lymphadenopathy, and headache
- However, the infection can also be mild, subclinical, or entirely asymptomatic
- Symptoms seem to be more severe in women than in men
- There are no clear differences in clinical presentation for HSV-1 vs HSV-2


© 2010 Logical Images, Inc.


© 2019 VisualDx.com

Recurrent Infection

- More common with HSV-2 vs HSV-1 (60% vs 14%) and in immunocompromised patients
- Typically less severe than primary infection
- Mean duration of lesions is generally shorter (10 versus 19 days) and the duration of viral shedding is usually two to five days
- Systemic symptoms are infrequent - approximately 25% of recurrent episodes are completely asymptomatic
- As many as 50% have prodromal symptoms before eruption such as local mild tingling or shooting pains in the buttocks, legs, and hips

Diagnosis

- Virologic Tests
  - Testing of choice when lesions are present
  - HSV PCR assays - more sensitive than viral cultures

- Serologic Tests
  - Type-specific antibodies develop during the first several weeks after infection and persist indefinitely
  - USPSTF recommends against routine serologic screening for genital HSV in asymptomatic adolescents and adults, including pregnant persons.
  - Consider screening for select populations
    - Pregnant persons with history of genital ulcers without confirmatory HSV testing
    - Individuals who have a partner with HSV

Management – First Episode of Genital HSV

Recommended Regimens*

Acyclovir† 400 mg orally 3 times/day for 7–10 days
OR
Famciclovir 250 mg orally 3 times/day for 7–10 days
OR
Valacyclovir 1 gm orally 2 times/day for 7–10 days

* Treatment can be extended if healing is incomplete after 10 days of therapy.

†Acyclovir 200 mg orally five times/day is also effective but is not recommended because of the frequency of dosing.

CDC Sexually Transmitted Infections Guidelines, 2021

Episodic Therapy

Recommended Regimens for Episodic Therapy for Recurrent HSV-2 Genital Herpes*
Acyclovir 800 mg orally 2 times/day for 5 days OR
Acyclovir 800 mg orally 3 times/day for 2 days OR
Famciclovir 1 gm orally 2 times/day for 1 day OR
Famciclovir 500 mg once, followed by 250 mg 2 times/day for 2 days OR
Famciclovir 125 mg 2 times/day for 5 days OR
Valacyclovir 500 mg orally 2 times/day for 3 days OR
Valacyclovir 1 gm orally once daily for 5 days

CDC Sexually Transmitted Infections Guidelines, 2021

Suppressive Therapy for Genital HSV-2

- Reduces frequency of recurrences by 70%–80%
- Decreases the rate of HSV-2 transmission for discordant heterosexual couples
- Adverse events and development of resistance related to long-term antiviral use are uncommon

Recommended Regimens

Acyclovir 400 mg orally 2 times/day
OR
Valacyclovir 500 mg orally once a day*
OR
Valacyclovir 1 gm orally once a day
OR
Famciclovir 250 mg orally 2 times/day

CDC Sexually Transmitted Infections Guidelines, 2021

Pain Management

- Tylenol/Ibuprofen
- Topical lidocaine
- Sitz Baths
- Cool compresses
- Pour warm water over genitals while urinating

Special Considerations - HIV

- Lesions might be severe, painful, and atypical and may worsen during first six months of ART due to an immune reconstitution inflammatory syndrome (IRIS)
- Viral shedding is increased
- Recommended therapy for first-episode is the same as for persons without HIV infection, although treatment courses might need to be extended for lesion resolution.
- Suppressive or episodic therapy decreases the symptom severity, but does not reduce the risk for either HIV or HSV transmission

CDC Sexually Transmitted Infections Guidelines, 2021

Recommended Regimens for Daily Suppressive Therapy Among Persons with HIV

Acyclovir 400–800 mg orally 2-3 times/day
OR
Famciclovir 500 mg orally 2 times/day
OR
Valacyclovir 500 mg orally 2 times/day

Recommended Regimens for Episodic Infection Among Persons with HIV

Acyclovir 400 mg orally 3 times/day for 5–10 days
OR
Famciclovir 500 mg orally 2 times/day for 5–10 days
OR
Valacyclovir 1 gm orally 2 times/day for 5–10 days

Special Considerations - Pregnancy

- Neonates can acquire HSV infection by intrauterine, perinatal, or postnatal transmission; most cases are acquired perinatally. Neonatal HSV infection causes serious morbidity and mortality and leaves many survivors with permanent sequelae.
- Prevention of neonatal herpes depends both on preventing acquisition of genital herpes during late pregnancy and avoiding exposure of the neonate to herpetic lesions and viral shedding during delivery.
- The risk for transmission to the neonate from an infected mother is high (30%–50%) among people who acquire genital herpes near the time of delivery and low (<1%) among people with prenatal histories of recurrent herpes or who acquire genital herpes during the first half of pregnancy.
- Those with recurrent genital herpetic lesions at the onset of labor should have a cesarean delivery to reduce the risk for neonatal HSV infection. Suppressive treatment starting at 36 weeks' gestation reduces the frequency of cesarean delivery.

Prevention of Transmission

- Condoms should be always used by patients with history of genital lesions or who only have serologic evidence of HSV-2
- Consistent condom use can decrease the risk of HSV-2 transmission to an uninfected partner by up to 96%.
- Transmission still remains a possibility even with consistent condom use due to shedding of virus from mucosa not shielded by condoms. Also commonly related to unprotected oral-genital contact.
- Persons with genital HSV-1 infection remain susceptible to HSV-2 infection.
- Serologic testing should be considered for partners without a clear diagnosis of genital HSV. Couples who are serologically discordant should be advised to abstain from intercourse when active lesions or prodromal symptoms are present.

Counseling

- It is important to recognize the psychological effects of a genital HSV diagnosis.
- Diagnosis may evoke anger, disbelief, low self-esteem, and fear of rejection by present and future sexual partners.
- Patients often benefit from learning about the chronic aspects of the disease after the acute illness subsides.
- Resources
  - CDC - https://www.cdc.gov/std/herpes/
    - National Sexually Transmitted Diseases (STD)/HIV Hotline – (800) 232 4636
  - American Sexual Health Association - https://www.ashasexualhealth.org/herpes/
  - National Herpes Hotline - (919) 361-8488

References

- Centers for Disease Control and Prevention. (2022, September 21). *Herpes - STI treatment guidelines*. Centers for Disease Control and Prevention. https://www.cdc.gov/std/treatment-guidelines/herpes.htm
- McQuillan G, Kruszon-Moran D, Flagg EW, Paulose-Ram, R. Prevalence of Herpes Simplex Virus Type 1 and Type 2 in Persons Aged 14–49: United States, 2015–2016. NCHS data brief, no 304. Hyattsville, MD: National Center for Health Statistics. 2018.
- World Health Organization. (2024, September 13). Herpes simplex virus. World Health Organization. https://www.who.int/news-room/fact-sheets/detail/herpes-simplex-virus

WELCOME to the Getting In Sync with Sexual Health ECHO: STIs – Testing, Treatment, and Prevention

Session 6, HIV (PrEP and nPEP), November 12, 2024

Before & After: HIV Prophylaxis Pre and Post-Exposure

Aubrey L. Byron, BSN, RN, ACRN

Dartmouth-Health, Section of Infectious Disease & International Health

Definitions

- **PrEP** – HIV Pre-Exposure Prophylaxis (we'll talk about PrEP first)

- **nPEP** – HIV Non-Occupational Post-Exposure Prophylaxis (then, we'll talk about nPEP)

USPSTF Recommendation

Population	Recommendation	Grade
Adolescents and adults at increased risk of HIV	The USPSTF recommends that clinicians prescribe preexposure prophylaxis using effective antiretroviral therapy to persons who are at increased risk of HIV acquisition to decrease the risk of acquiring HIV. See the Practice Considerations section for more information about identification of persons at increased risk and about effective antiretroviral therapy.	A

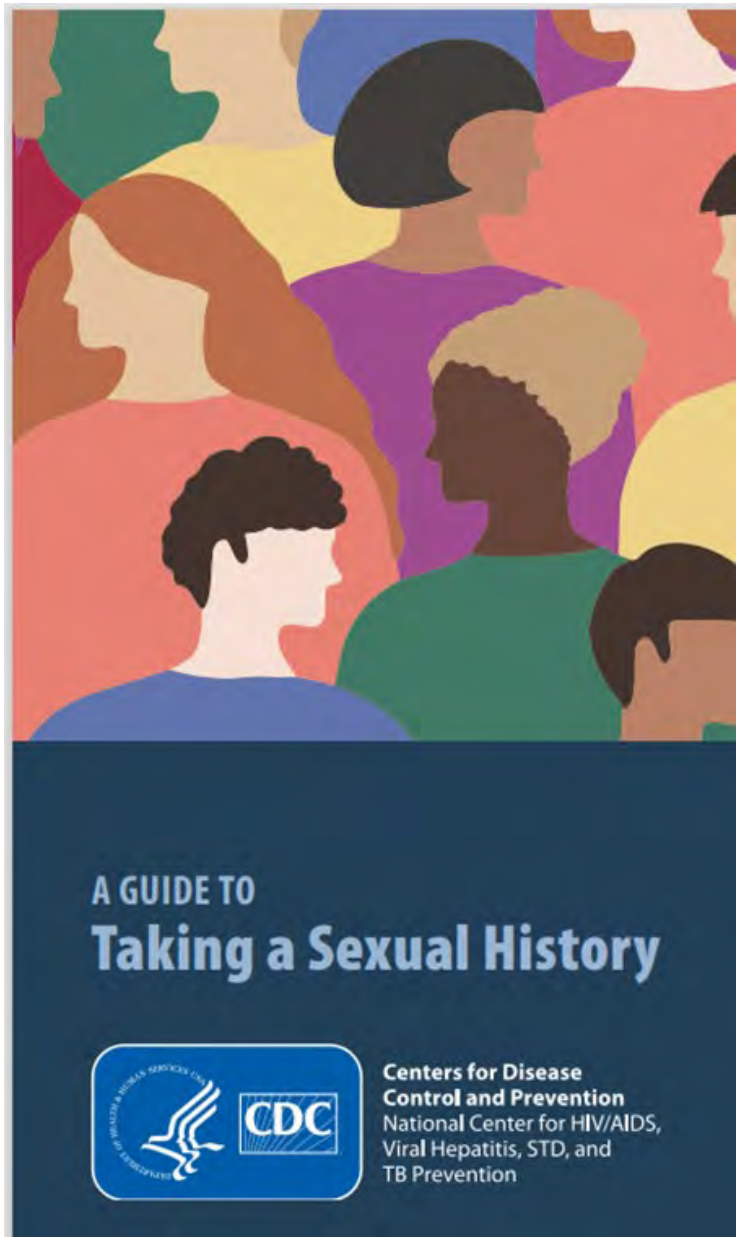
All sexually active adults and adolescents should be informed about PrEP for prevention of HIV acquisition

USPSTF, August 22, 2023

Recommendation: Prevention of Acquisition of HIV: Preexposure Prophylaxis | United States Preventive Services Taskforce

Assessing Risk?

Take a sexual health history.

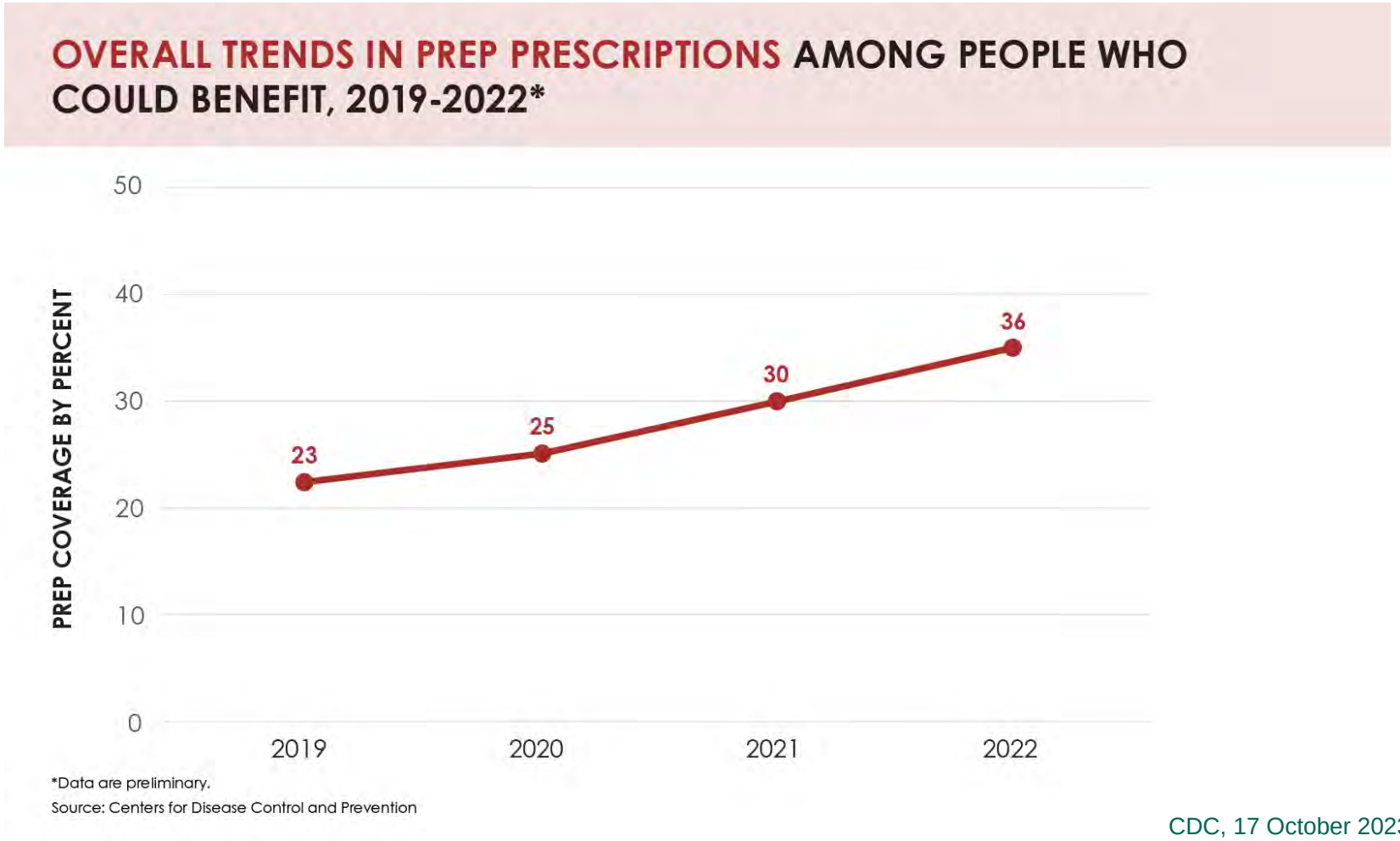


CDC 26 June 2024
https://www.cdc.gov/sti/hcp/clinical-guidance/taking-a-sexual-history.html

HIV. gov. 04 Dec 2023
EHE Overview | HIV.gov.

Expanding PrEP Coverage to Achieve EHE Goals

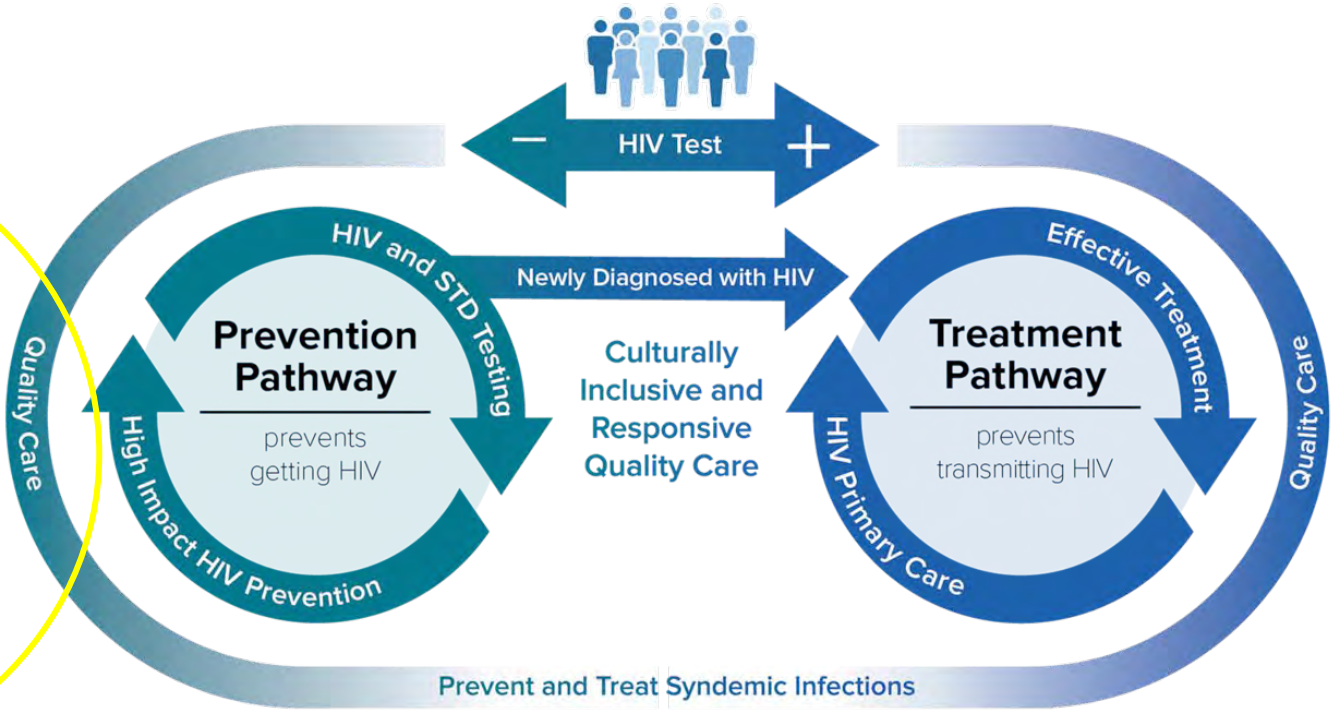
- Overall in 2022, 36% of the 1.2 million people who could benefit from PrEP were prescribed it, compared to 23% in 2019
- Progress in increasing PrEP uptake.



CDC, 17 October 2023
Expanding PrEP Coverage in the United States to Achieve EHE Goals | CDC NCHHSTP

Status Neutral HIV Prevention and Care

People whose HIV tests are negative are offered powerful prevention tools like PrEP, condoms, harm reduction (e.g. SSPs), and supportive services to stay HIV negative.

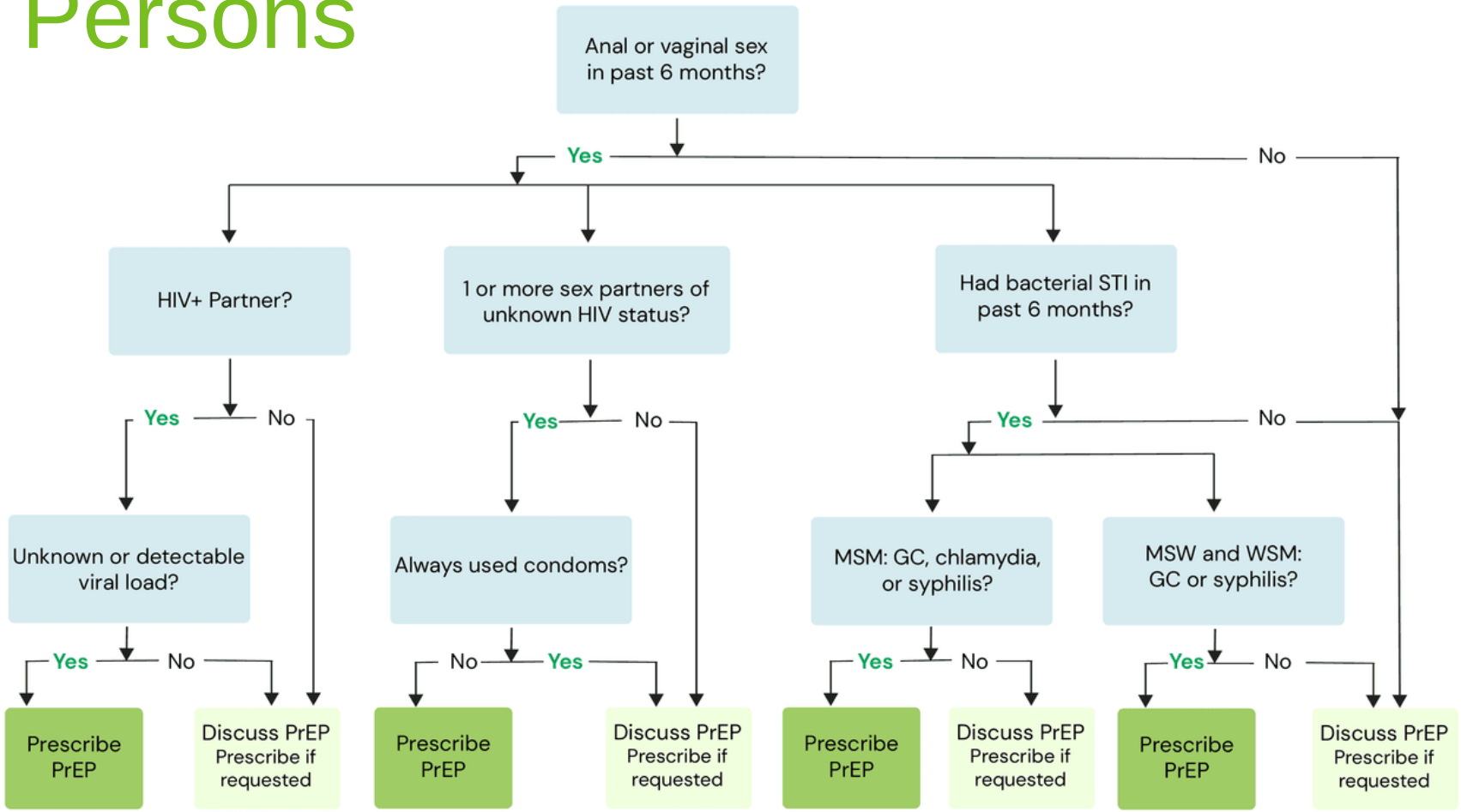


People whose HIV tests are positive enter primary care and are offered effective treatment and supportive services to achieve and maintain viral suppression.

Follow CDC guidelines to test people for HIV. Regardless of HIV status, quality care is the foundation of HIV prevention and effective treatment. Both pathways provide people with the tools they need to stay healthy and stop HIV.

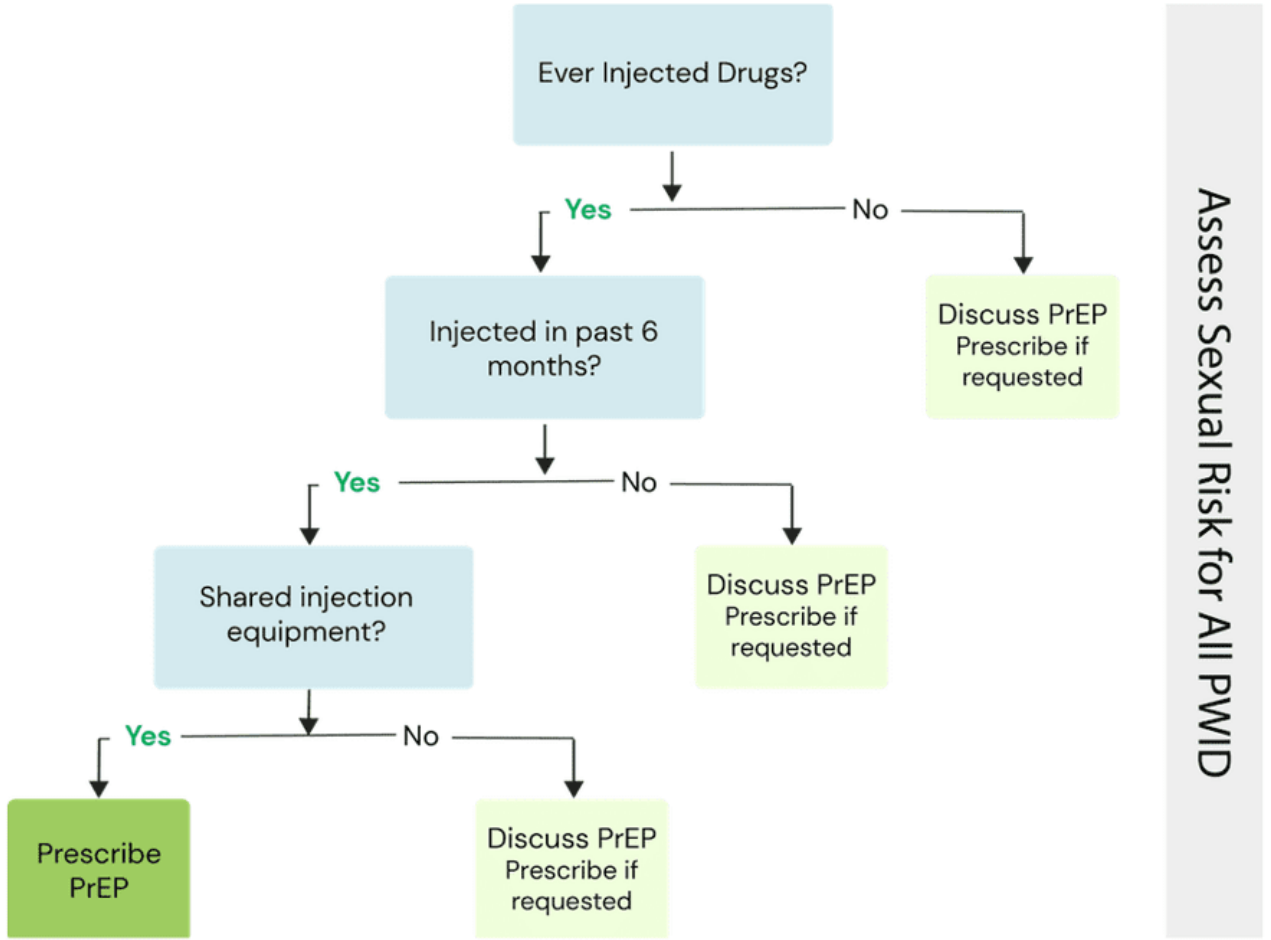
CDC. 01 MARCH 2023
Status Neutral HIV Prevention and Care | Prevent | Effective Interventions | HIV/AIDS | CDC

Assessing Indications for HIV PrEP in Sexually-Active Persons



Source: University of Washington PrEP Curriculum

Assessing Indications for HIV PrEP in PWID



Source: University of Washington PrEP Curriculum

How well does PrEP Work?

- When taken as prescribed
  - PrEP reduces the risk of getting HIV from **sex** by about **99%.**
  - PrEP reduces the risk of getting HIV from **injection drug use** by at least **74%.**

- Oral PrEP reaches maximum protection from HIV for:
  - **receptive anal sex** at about **7 days** of daily use
  - **receptive vaginal sex** at about **21 days** of daily use
  - **injection drug use** at about **21 days** of daily use

CDC. 18 JAN 2024
PrEP Effectiveness | PrEP | HIV Basics | HIV/AIDS | CDC

PrEP Medications

- PrEP is recommended for adults or adolescents
  - Weighing at least 35 kg (77 lb), at risk of HIV through sex or injection drug use.
- The U.S. Food and Drug Administration (FDA) has approved three medications for use as PrEP
  - Oral Meds:
    - Emtricitabine (F) in combination with tenofovir disoproxil fumarate (TDF), also known as Truvada ® (F/TDF)
    - Emtricitabine (F) in combination with tenofovir alafenamide (TAF), also known as Descovy ® (F/TAF)
      - F/TAF is not approved for use by women or other people who could get HIV through receptive vaginal sex.
  - Injectable Med:
    - Cabotegravir, also known as Apretude ®, given every 2 months via IM injection (ventrogluteal site preferred).

Adapted from CDC. Prescribing PrEP. A Guide for Helathcare Providers 2023. PrEP prescribing slide deck.pdf

Laboratory Testing – Oral PrEP

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	If age <50 and eCrCl ≥90	X
Hep B serology	X				
Hep C serology	MSM, TGW, and PWID only			MSM,TGW, and PWID only	

In practice/real life we screen everyone on PrEP every 3 or 4 months (not just MSM/TGW), as needed for the individual.

* Assess for acute HIV infection (see Figure 4)

US Public Health Service: PREEXPOSURE PROPHYLAXIS FOR THE PREVENTION OF HIV INFECTION IN THE UNITED STATES – 2021 UPDATE, A CLINICAL PRACTICE GUIDELINE

Laboratory Testing – Injectable PrEP

Test	Initiation Visit	1 month visit	Q2 months	Q4 months	Q6 months	Q12 months	When Stopping CAB
Chlamydia	X	[redacted]	[redacted]	MSM/TGW only	MSM/TGW only	Heterosexually active women and men only	MSM/TGW only

In practice/real life we screen everyone on PrEP every 3 or 4 months (not just MSM/TGW), as needed for the individual.

* 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

US Public Health Service: PREEXPOSURE PROPHYLAXIS FOR THE PREVENTION OF HIV INFECTION IN THE UNITED STATES – 2021 UPDATE, A CLINICAL PRACTICE GUIDELINE

Side Effects - PrEP

Side Effects	F/TDF (oral PrEP)	F/TAF (oral PrEP)	CAB (injectable PrEP)
Start-up Syndrome	- <10% of patients - Headache, nausea, abdominal discomfort lasting <1 month[1]	- <10% of patients - Headache, nausea, abdominal discomfort lasting <1 month[1]	- No reported start-up syndrome[1]
Kidney Safety	- Small decrease in creatinine clearance - Resolves after stopping drug[2]	- Less risk of kidney-related side effects[3]	- No reported risk of kidney-related side effects[1]
Bone Safety	- Small decreases in bone mineral density - Not associated with fractures[4]	- No reported bone safety issues[1]	- No reported bone safety issues[1]
Injection Site Reactions	- N/A	- N/A	- Pain, tenderness, local skin swelling - Typically, mild/moderate, brief[5]
Weight and Lipids	- No reported effects on weight or lipid levels[1]	- Weight gain - Increased triglycerides[3]	- No reported effects on weight or lipid levels[1]
Overall Safety	**All three types of PrEP are generally well tolerated, with side effects that are usually mild/moderate, manageable, and temporary[1]**		

[1] Centers for Disease Control and Prevention, US Public Health Service. *Preexposure prophylaxis for the prevention of HIV infection in the United States—2021 update—a clinical practice guideline.* Published December 2021. Accessed January 20, 2023. https://www.cdc.gov/hiv/pdf/risk/prep/cdc-hiv-prep-guidelines-2021.pdf

[2] Mugwanya KK, Wyatt C, Celum C, et al. Changes in glomerular kidney function among HIV-1-uninfected men and women receiving emtricitabine-tenofovir disoproxil fumarate preexposure prophylaxis: a randomized clinical trial. *JAMA Intern Med.* 2015;175(2):246-254. doi: 10.1001/jamainternmed.2014.6786

[3] Mayer KL, Molina, J-M, Thompson, MA, et al. Emtricitabine and tenofovir alafenamide vs emtricitabine and tenofovir disoproxil fumarate for HIV pre-exposure prophylaxis (DISCOVER): primary results from a randomised, double-blind, multicentre, active-controlled, phase 3, non-inferiority trial. *Lancet.* 2020;396(10246):239-254. doi: 10.1016/S0140-6736(20)31065-5

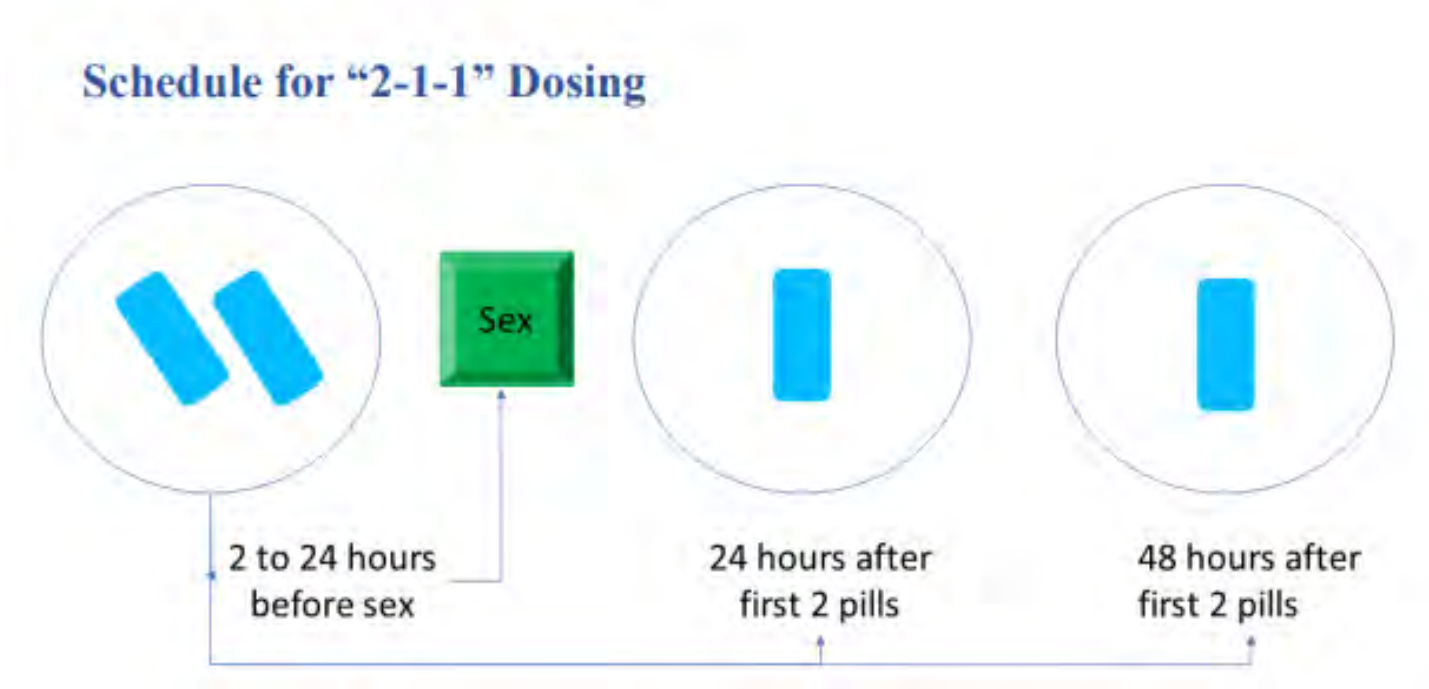
[4] Grohskopf LA, Chillag KL, Gvetadze R, et al. Randomized trial of clinical safety of daily oral tenofovir disoproxil fumarate among HIV-uninfected men who have sex with men in the United States. *J Acquir Immune Defic Syndr.* 2013;64(1):79-86. doi: 10.1097/QAI.0b013e31828ece33

[5] Landovitz RJ, Li S, Grinsztejn B, et al. Safety, tolerability, and pharmacokinetics of long-acting injectable cabotegravir in low-risk HIV-uninfected individuals: HPTN 077, a phase 2a randomized controlled trial. *PLoS Med.* 2018;15(11):e1002690. doi: 10.1371/journal.pmed.1002690

Adapted from CDC. Prescribing PrEP. A Guide for Helathcare Providers 2023. PrEP prescribing slide deck.pdf

On-Demand PrEP

- Not an FDA approved regimen, however two clinical trials have demonstrated efficacy of 86% of **2-1-1 dosing** only with **Truvada** and only for **MSM**.
- Indicated for MSM who have **infrequent sex** (less often than once a week) and **can anticipate sex** (or delay sex) to permit the doses at least 2 hours prior to sex.



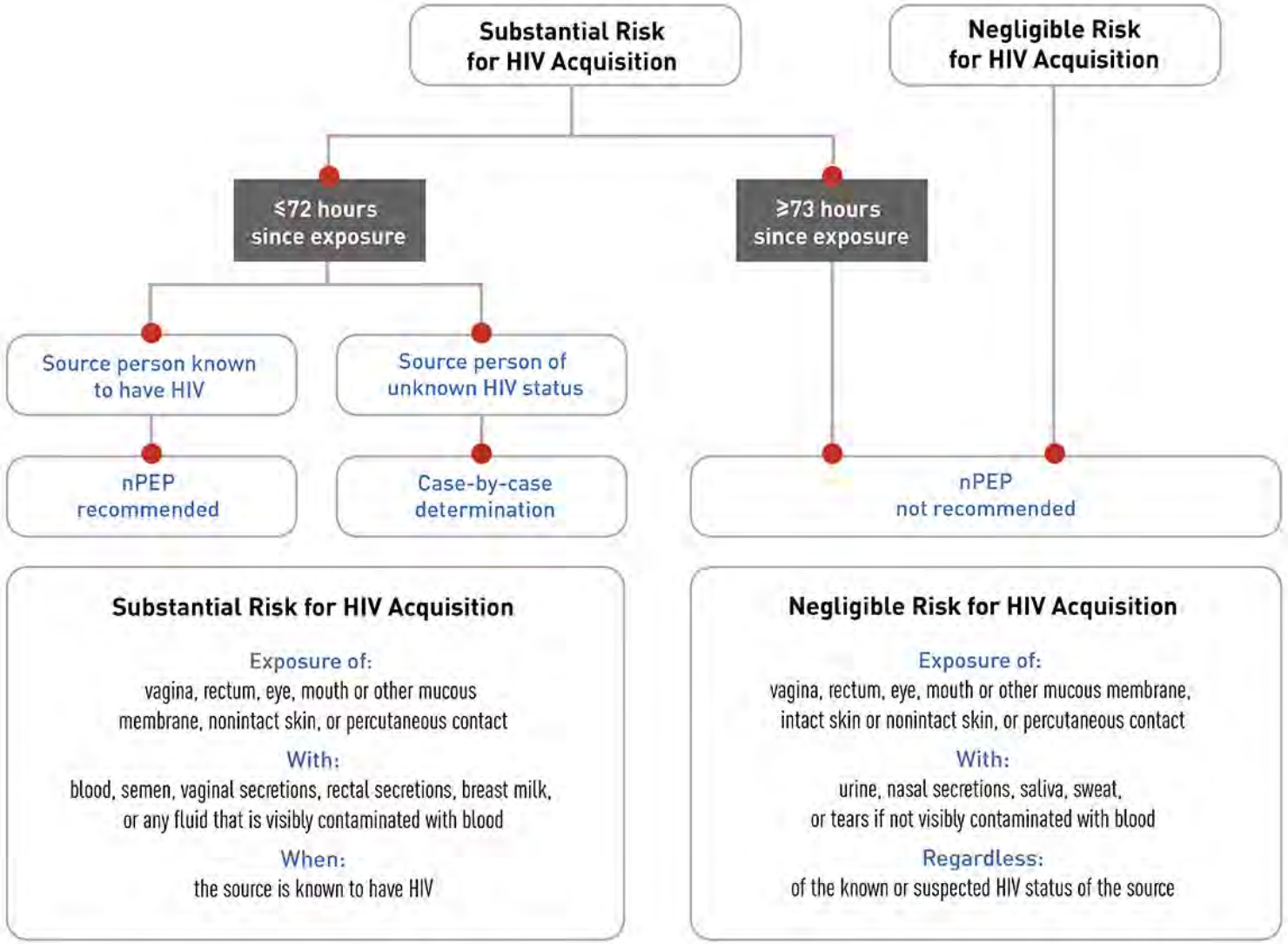
US Public Health Service: PREEXPOSURE PROPHYLAXIS FOR THE PREVENTION OF HIV INFECTION IN THE UNITED STATES – 2021 UPDATE, A CLINICAL PRACTICE GUIDELINE

Prescribing nPEP: ARVs

- **Early initiation** of PEP is essential!
- PEP must be **started within ≤ 72 hours** of possible exposure to HIV
- First dose needs to be given **ASAP**
- Who should consider taking PEP?
  - May have been exposed to HIV during sex
  - Shared needles or other equipment (works) to inject drugs
  - Were sexually assaulted
  - May have been exposed to HIV at work (occupational exposure)

HIVinfo.NIH.gov. 06 FEB 2024
Post-Exposure Prophylaxis (PEP) | NIH

Algorithm for Evaluation & Treatment of nPEP



CDC. 07 May 2024
Clinical Guidance for PEP | HIV Nexus | CDC

nPEP Regimen

tenofovir disoproxil fumarate (TDF)(300 mg) + emtricitabine (F)(200 mg) once daily	PLUS	raltegravir (RAL)(400 mg) twice daily or dolutegravir (DTG)(50 mg) once daily

- Preferred Regimen: Adults and adolescents aged ≥ 13 years, including pregnant women, with normal renal function (creatinine clearance ≥ 60 mL/min).
- Regimens for children and people with reduced renal function are also available. Contact the free National Clinician Consultation Center (NCCC) PEPline at 888-448-4911.

CDC. 07 May 2024. Clinical Guidance for PEP | HIV Nexus | CDC
AIDS Education and Training Centers Program. November 2021

Baseline Labs - nPEP

- 4th generation HIV Ag/Ab screen
- Pregnancy test
- Serum liver enzyme
- Blood urea nitrogen/creatinine
- STI screening (Syphilis, Gonorrhea, and Chlamydia)
- Hepatitis B (HBV): HBsAg, anti-HBs, anti-HBc
- Hepatitis C (HCV) antibody

CDC. 07 MAY 2024
Clinical Guidance for PEP | HIV Nexus | CDC

nPEP Medication Side Effects

- Most commonly reported side effects:
  - Nausea
  - Vomiting
  - Diarrhea
  - Fatigue

CDC 2016 nPEP Guidelines.
Updated Guidelines for Antiretroviral Postexposure Prophylaxis After Sexual, Injection-Drug Use, or Other Nonoccupational Exposure to HIV—United States, 2016

Sexual Assault and Abuse and STIs – Adolescents and Adults

Treatment

- **Compliance with follow-up visits is poor among survivors of sexual assault**
- **Presumptive treatments after a sexual assault are recommended**
  - An empiric antimicrobial regimen
  - Emergency contraception should be considered
  - Postexposure hepatitis B vaccination (with/without HBIG)
  - HPV vaccination
  - HIV nPEP 28 day course within 72 hours

Sexual Assault Nurse Examiner (SANE)

Healthcare provider who has received special training to provide comprehensive care to sexual assault survivors, including conducting a forensic exam (RAINN)

CDC. 22 July 2021

Sexual Assault and Abuse and STIs - STI Treatment Guidelines

Sexual Assault or Abuse of Children

- All U.S. states and territories have laws that require reporting of child abuse.
- Evaluating children for sexual assault or abuse should be conducted in a manner designed to minimize pain and trauma to the child.
- The risk for a child acquiring an STI as a result of sexual abuse or assault has not been well studied. Presumptive treatment for children who have been sexually assaulted or abused is not recommended because the incidence of most STIs among children is low after abuse or assault.

Updated Guidelines for Antiretroviral Postexposure Prophylaxis After Sexual, Injection Drug Use, or Other Nonoccupational Exposure to HIV—United States, 2016

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]

CDC. 22 July 2021

Sexual Assault and Abuse and STIs - STI Treatment Guidelines

Empiric Antimicrobial Regimen

Recommended Regimen for Adolescent and Adult Male Sexual Assault Survivors

Ceftriaxone 500 mg* IM in a single dose

PLUS

Doxycycline 100 mg 2 times/day orally for 7 days

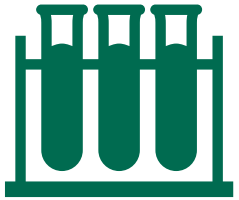
* For persons weighing ≥150 kg, 1 g of ceftriaxone should be administered.

CDC. 22 July 2021
Sexual Assault and Abuse and STIs - STI Treatment Guidelines

Other Management Considerations & Follow-Up

- Follow-up examinations:
  - Complete hepatitis B and HPV vaccinations
  - Complete counseling and treatment for STIs
  - Monitor side effects and adherence to PEP
  - Referral to counseling services/Linkage into care
  - Counsel the survivor regarding ongoing risk for HIV acquisition and if high risk bridge to PrEP.

- Follow up labs:
  - Repeat Syphilis testing: 4–6 weeks and 3 months
  - Repeat HIV testing: 6 weeks and 3 months



CDC. 22 July 2021.
Sexual Assault and Abuse and STIs - STI Treatment Guidelines

Dartmouth Health

Project ECHO

Centers for Disease Control and Prevention

HIV/AIDS Management

Expert clinical advice on providing optimal care to your HIV-positive patients, from initiating antiretroviral regimens to managing HIV/AIDS and comorbidities.

HIV/AIDS Guidelines »

Antiretroviral Drug Tables »

Get HIV/AIDS Management Advice

Perinatal HIV/AIDS

Immediate advice on HIV management in pregnant people and their infants, including referral to care.

Perinatal ReproID HIV Listserv »

Get Perinatal HIV Advice

Hepatitis C Management

Expert clinical advice on HCV testing, staging, monitoring, and treatment including hepatitis C mono- and co-infection.

Get Hepatitis C Management Advice

Substance Use Management

Expert clinical advice for healthcare providers on substance use evaluation and management.

National Substance Use Warmline »

California Substance Use Line »

Get Substance Use Management Advice

PEP: Post-Exposure Prophylaxis

Expert advice on managing occupational and non-occupational exposures to HIV and hepatitis B & C.

Online PEP Quick Guide »

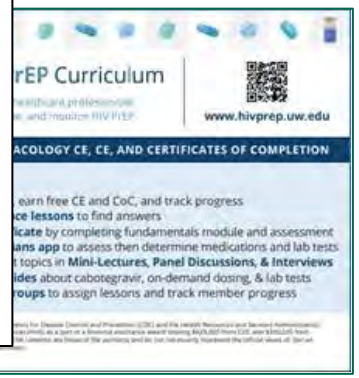
Get PEP Advice

PrEP: Pre-Exposure Prophylaxis

Up-to-date clinical advice on providing PrEP as a prevention tool, from determining when prescribing PrEP is appropriate to understanding follow-up tests.

Online PrEP Quick Guide »

Get PrEP Advice



WELCOME to the Getting In Sync with Sexual Health ECHO: STIs – Testing, Treatment, and Prevention

Session 7, Hepatitis B and C, November 26, 2024

Today's Program:

- Brief housekeeping
- Didactic: Hepatitis B and C–David de Gijsel
- Case Presentation: Bryan Marsh
- Discussion
- Summary
- Up Next

Notes:

- Raise virtual hand or enter comments in chat at any time. We will call on you when it works. Please mute otherwise.
- To protect individual privacy, please use non-identifying information when discussing cases.
- We will be recording the didactic part of these sessions. *Participating in these session is understood as consent to be recorded. Thank you!*
- Closed Captioning will be enabled during sessions
- Questions to ECHO Tech Support thru personal CHAT

Sexual Health

Hepatitis B & C

David de Gijsel, MD

Section of Infectious Diseases & International Health

November 26th, 2024

Overview

- Hepatitis B and C virus as sexually transmitted infections
- Epidemiology
- Screening
- Treatment
- Prevention

Dartmouth Health

Hepatitis B virus

Epidemiology

Prevalence

HBcAb positive

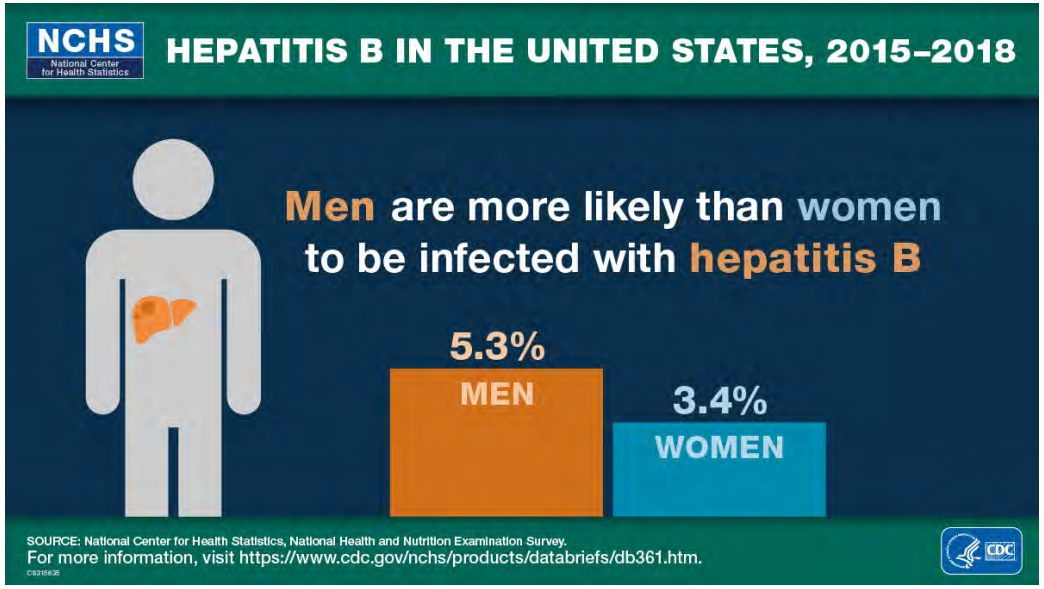
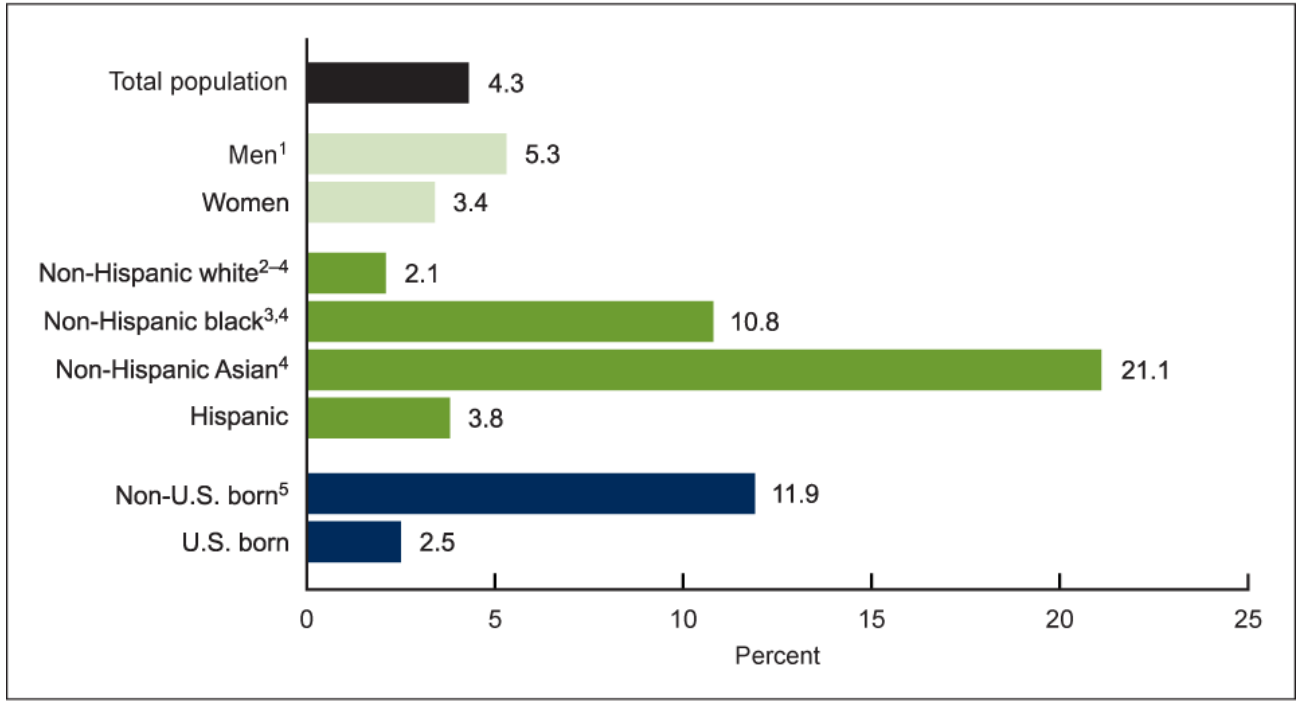


Figure 1. Age-adjusted prevalence of past or present hepatitis B virus infection among adults aged 18 and over, by sex, race and Hispanic origin, and U.S. birth status: United States, 2015–2018



[1]Significantly different from women.
[2]Significantly different from non-Hispanic black persons.
[3]Significantly different from non-Hispanic Asian persons.
[4]Significantly different from Hispanic persons.
[5]Significantly different from U.S.-born persons.
NOTES: The presence of antibody to hepatitis B core antigen is evidence of past or present infection. Percentages are age adjusted by the direct method to the 2000 projected U.S. population using age groups 20–29, 30–39, 40–49, 50–59, and 60 and over. U.S. born includes persons born within the 50 United States and the District of Columbia. Access data table for Figure 1 at: https://www.cdc.gov/nchs/data/databriefs/db361-tables-508.pdf#1.
SOURCE: NCHS, National Health and Nutrition Examination Survey, 2015–2018.

Kruszon-Moran D at al. Prevalence and trends in hepatitis B virus infection in the United States, 2015–2018. NCHS Data Brief, no 361. Hyattsville, MD: National Center for Health Statistics. 2020.

Epidemiology

Prevalence in high-risk groups

HBsAg positive

Table 2. Summary of HBV prevalence estimates in high-risk groups[a]

High-risk group	HBV prevalence estimate
Veterans (10,27)	0.3%–0.84%
Healthcare professionals (36)	0.1%–8.1%
Men who have sex with men	Not available
Prisoners (41)	0.9%–11.4%
Homeless patients (42,44)	0.4%–1.17%
People who inject drugs (46)	11.8%
Patients with HCV coinfection (63–67)	0.7%–5.8%
Patients with HIV coinfection (68,69)	3.0%–8.4%

HBV, hepatitis B virus; HCV, hepatitis C virus; HIV, human immunodeficieny virus

[a]Prevalence data derived from HBsAg positivity.

Official journal of the American College of Gastroenterology | ACG115(9):1429-1438, September 2020.

Epidemiology

Incidence and proportion of acute HBV infections sexually transmitted

TABLE 1. Unadjusted Number and Rate of Acute Hepatitis B Cases, Among Persons Ages 15 y and Older, United States, 2013–2018

Characteristics	Acute Cases*	Rate Per 100,000	IR (SE)	ST_{ACUTE}	Acute Cases†	Rate Per 100,000	IR (SE)
Overall	19,032	1.2	N/A	38.2%	7270	0.5	N/A
Demographic factors							
Sex							
Male	11,754	1.5	1.71 (0.03)	37.6%	4420	0.6	1.64 (0.04)
Female	7211	0.9	Reference	39.3%	2834	0.4	Reference
Age group, y							
15–29	1866	0.5	0.55 (0.02)	31.2%	582	0.1	0.41 (0.02)
30–39	5831	2.3	2.70 (0.05)	33.1%	1930	0.8	2.14 (0.07)
40–49	5646	2.3	2.69 (0.05)	41.5%	2343	1.0	2.67 (0.08)
50+	5689	0.9	Reference	41.9%	2384	0.4	Reference
Race/ethnicity							
Asian/Pacific Islander	344	0.4	0.80 (0.05)	36.1%	124	0.1	0.54 (0.05)
Non-Hispanic, Black	2296	1.2	2.58 (0.09)	68.1%	1419	0.7	2.97 (0.14)
Non-Hispanic, White	11,981	1.2	2.59 (0.08)	34.4%	4121	0.4	1.67 (0.07)
Hispanic	1143	0.5	Reference	53.5%	612	0.2	Reference
Geographic factors							
Region‡							
Southern	11,682	2.0	3.18 (0.08)	46.3%	5409	0.9	4.23 (0.18)
Western	1827	0.5	0.79 (0.03)	11.6%	212	0.1	0.27 (0.02)
Midwestern	3807	1.2	1.84 (0.05)	30.0%	1142	0.3	1.58 (0.08)
Northeastern	1716	0.6	Reference	34.8%	597	0.2	Reference
Rural/urban							
Rural geographic area	3342	2.3	2.18 (0.04)	25.5%	852	0.6	1.39 (0.05)
Urban geographic area	13,605	1.1	Reference	40.0%	5442	0.4	Reference

*Unadjusted number and rate of Hepatitis B infections in the United States, all means of transmission.

†Unadjusted number and rate of Hepatitis B infections in the United States, attributed to sexual transmission.

‡The 4 regions of residence used in this report are defined by the US Census Bureau as follows:

Northeastern: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont.

Midwestern: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin.

Western: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming.

Southern: Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia.

IR, incident rate; SE, standard error; ST_{ACUTE}, proportion of acute HBV infections attributed to sexual transmission.

Roberts, Henry et al. Incidence and Prevalence of Sexually Transmitted Hepatitis B, United States, 2013–2018. Sexually Transmitted Diseases 48(4):p 305-309, April 2021.

Screening

HBsAg

Hepatitis B *surface antigen*

HBsAb

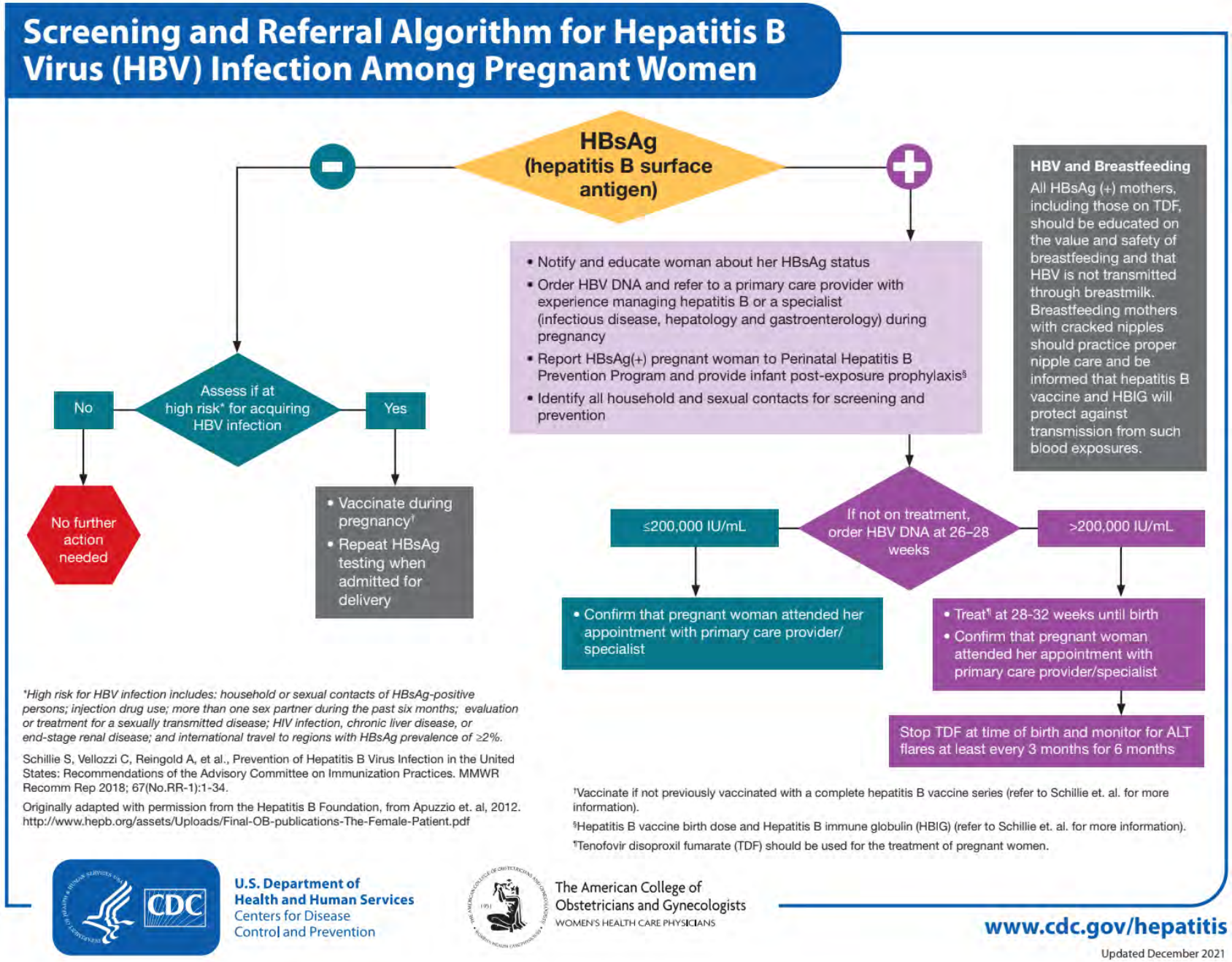
Hepatitis B *surface antibody*

HBcAb

Hepatitis B core antibody

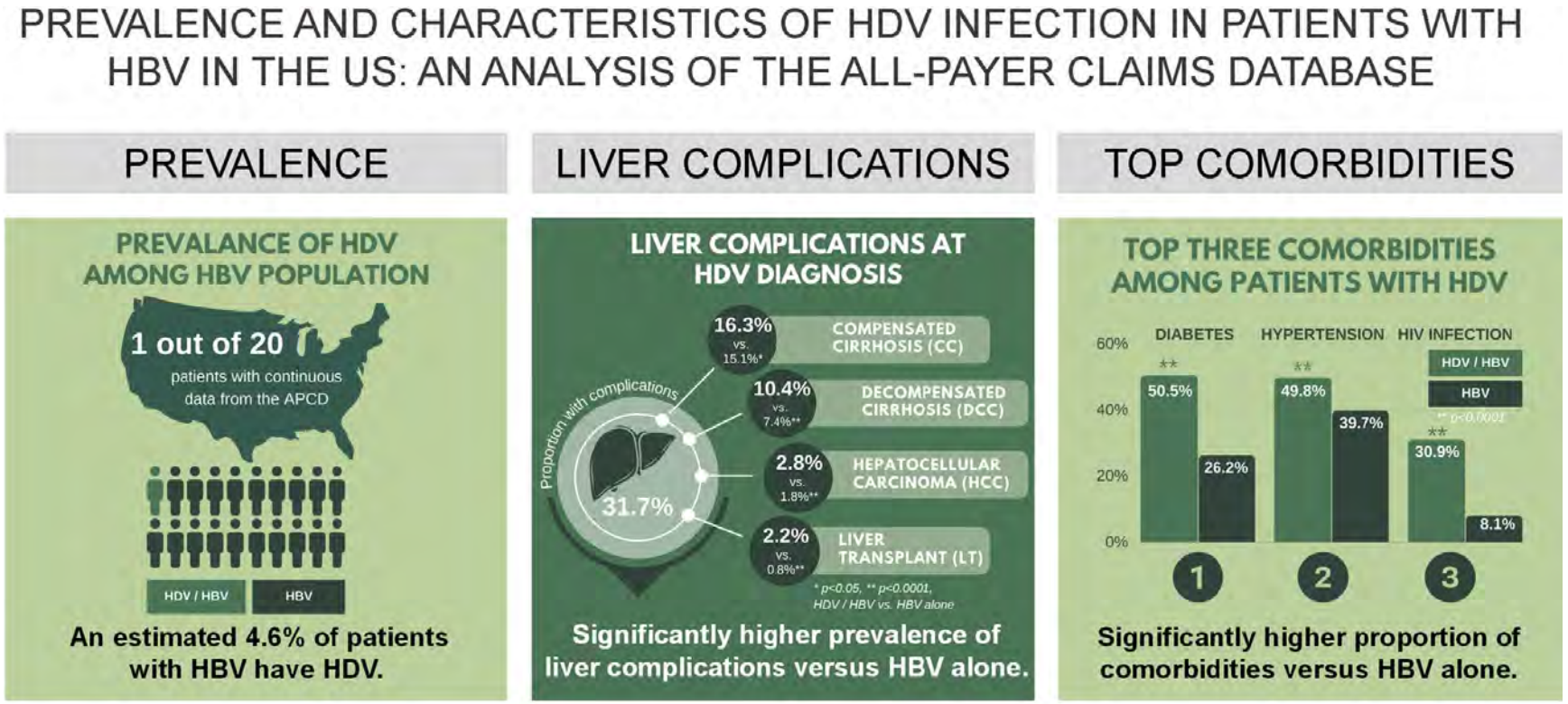
Screening

Pregnant people



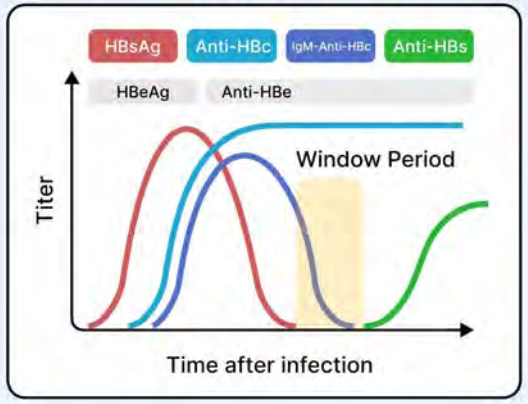
Screening

Screen all patients with chronic HBV (HBsAg) for hepatitis delta with an HDV antibody

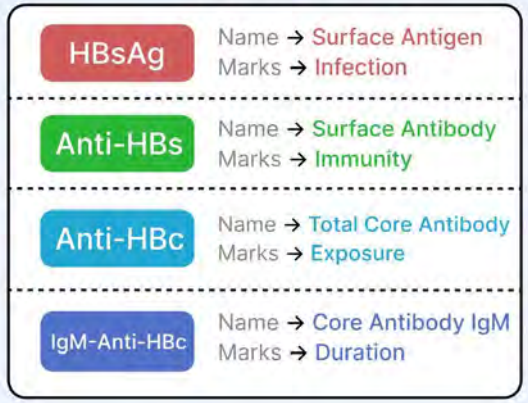


Gish, Robert G et al. Prevalence and characteristics of hepatitis delta virus infection in patients with hepatitis B in the United States: An analysis of the All-Payer Claims Database. Hepatology 79(5):p 1117-1128, May 2024.

COURSE



MARKERS



Interpretation of Hepatitis B Serologic Test Results

HBsAg	Anti-HBc	IgM Anti-HBc	Anti-HBs	Interpretation
–	–	–	–	Susceptible to HBV infection
–	+	–	+	Immune due to natural hepatitis B infection
–	–	–	+	Immune due to hepatitis B vaccination
+	+	+	–	Acute HBV
+	+	–	–	Chronic hepatitis B infection
–	+	–	–	Interpretation unclear; four possibilities: 1. Resolved infection (most common) 2. False-positive anti-HBc, thus susceptible 3. "Low level" chronic infection 4. Resolving acute infection

https://www.hiv.uw.edu/go/co-occurring-conditions/hepb-coinfection/core-concept/all
https://emupdates.com/523-hepatitis-b-pep-exposed-is-known-vaccine-responder-source-is-hbsag-negative-other-combinations-for-unvaccinated-exposed-known-nonresponder-hep-c-pep/

Prevention - vaccines

U.S. Children and Adult Hepatitis B Vaccine Schedules

For children ≥ 1 and adults

Note: the first dose should be given as soon as possible. Additional doses require minimum time intervals required between doses in order for the vaccine to be effective.

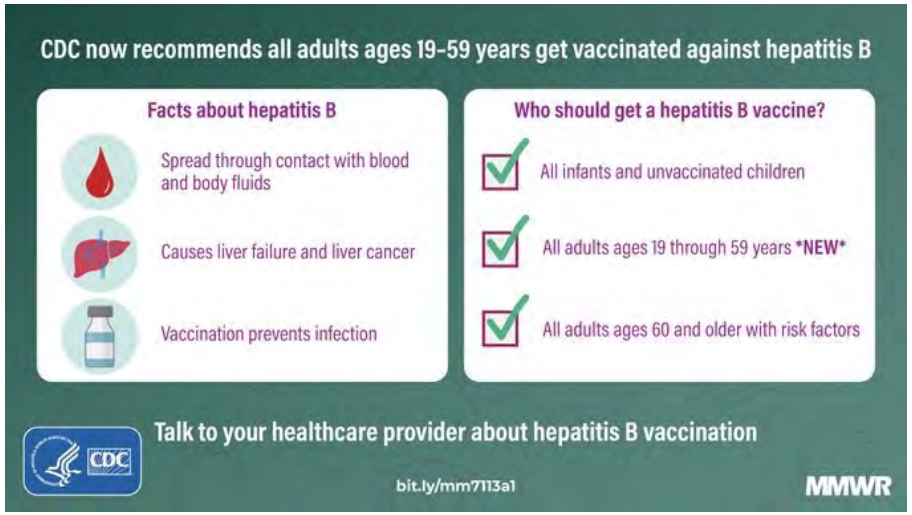
Vaccine	Dose 1	Dose 2	Dose 3
3 dose vaccine series Brand names: Engerix-B, Recombivax HB, Twinrix (hepatitis A and B - Adults ≥ 18 Years)	Now ✓	1 month after dose 1 ✓	6 months after dose 1 ✓
2 dose vaccine series Adults ≥ 18 Years Brand name: Heplisav-B	Now ✓	1 month after dose 1 ✓	

Key

✓ = Monovalent hepatitis B vaccine (protection against hepatitis B only)

= Approved for adults

= Approved for children

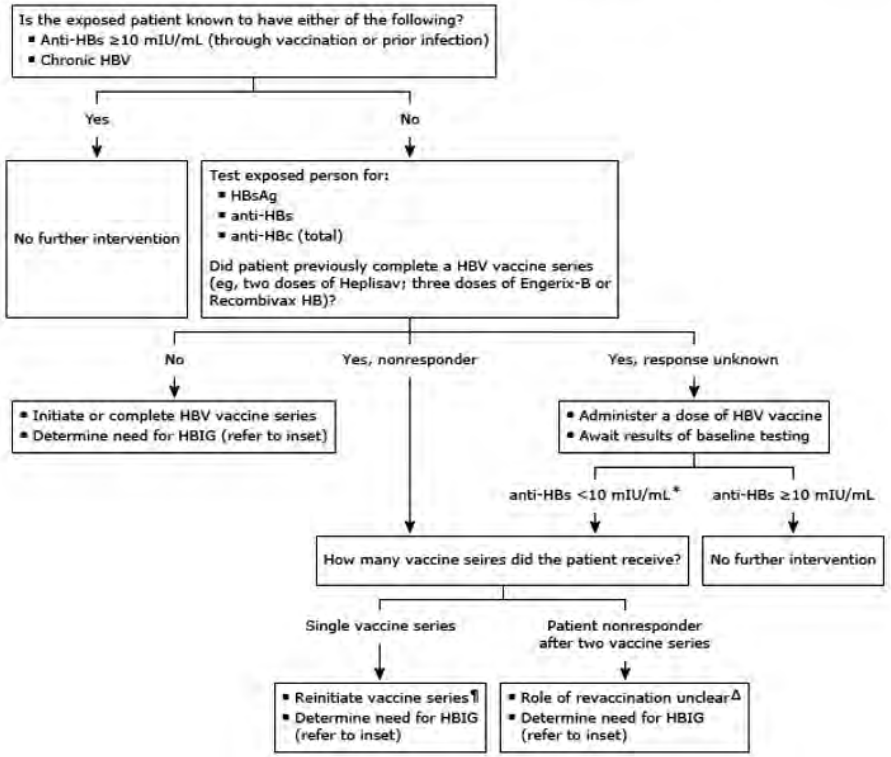


https://www.hepb.org/prevention-and-diagnosis/vaccination/guidelines-2/

Updated Recommendations of the Advisory Committee on Immunization Practices — United States, 2022. MMWR Morb Mortal Wkly Rep 2022;71:477–483.

Prevention – post-exposure prophylaxis

Overview of HBV prophylaxis after a possible nonoccupational exposure for persons 13 years of age and older



HBV status at time of exposure*	Source HBsAg positive	Source HBsAg negative	Source HBsAg unknown
Exposed person: ▪ Known to be immune to HBV **or** ▪ Has chronic HBV	No HBIG	No HBIG	No HBIG
Exposed person: ▪ Is unvaccinated **or** ▪ Has not completed an HBV vaccine series **or** ▪ Has completed an HBV vaccine series but is a nonresponder	HBIG ◇	No HBIG	Source is low risk for HBV: No HBIG Source is high risk for HBV: HBIG ◇ can be considered §

https://www.uptodate.com/contents/management-of-nonoccupational-exposures-to-hiv-and-hepatitis-b-and-c-in-adults

Treatment

TABLE 3

Five Phases of Chronic Hepatitis B

Phase	Old terminology	HBsAg	HBeAg	HBV DNA	ALT	Liver inflammation	Comments
1	Immune tolerant	+++	+	++	Normal	None or minimal	Highly infectious because of high levels of HBV DNA
2	Immune reactive HBeAg positive	++	+	+	Elevated	Moderate to severe	Outcome of this phase is variable
3	Inactive carrier	+	–	Undetectable or +	Normal	None	Low risk of progression to cirrhosis or hepatocellular carcinoma, if the patient remains in this phase
4	HBeAg negative	–	–	++, persistent or fluctuating	Elevated	Moderate to severe	Usually with detectable antibodies to HBeAg; associated with low rates of spontaneous disease remission
5	Occult hepatitis B	–	–	Undetectable	Normal	Variable	Positive for antibodies to HBcAg, with or without detectable antibodies to HBsAg; HBV DNA (covalently closed circular DNA) are often detected in the liver

ALT = alanine transaminase; HBcAg = hepatitis B core antigen; HBeAg = hepatitis B e antigen; HBsAg = hepatitis B surface antigen; HBV = hepatitis B virus; + = positive (low); ++ = positive (moderate); +++ = positive (high); – = negative.

Information from reference 20.

Am Fam Physician. 2019;99(5):314-323.

Treatment

TABLE 5

Treatment Recommendations for Individuals with Chronic Hepatitis B

HBV DNA	Alanine transaminase	Liver assessment	Recommendation
HBeAg negative			
> 2,000 IU per mL	> 2 times ULN	Not required	Treatment indicated
> 2,000 IU per mL	> ULN, < 2 times ULN	Liver biopsy or noninvasive testing before treating	Immediate treatment not required; treat if biopsy shows moderate to severe inflammation or significant fibrosis
> 2,000 IU per mL	Normal	Not required	Monitor every three months
≤ 2,000 IU per mL	Normal	Not required	Monitor every three to six months
HBeAg positive			
> 20,000 IU per mL	> 2 times ULN	Not required	Treatment indicated
> 20,000 IU per mL	> ULN, < 2 times ULN	Consider liver biopsy or noninvasive testing in individuals older than 40 years who have a family history of hepatocellular carcinoma or who have had previous treatment	Monitor every three to six months; treat if biopsy shows moderate to severe necroinflammation and/or moderate fibrosis
> 20,000 IU per mL	Normal	Not required	Monitor every six months; treat selected patients older than 40 years with HBV DNA level > 1,000,000 IU per mL and liver biopsy showing significant necroinflammation or fibrosis

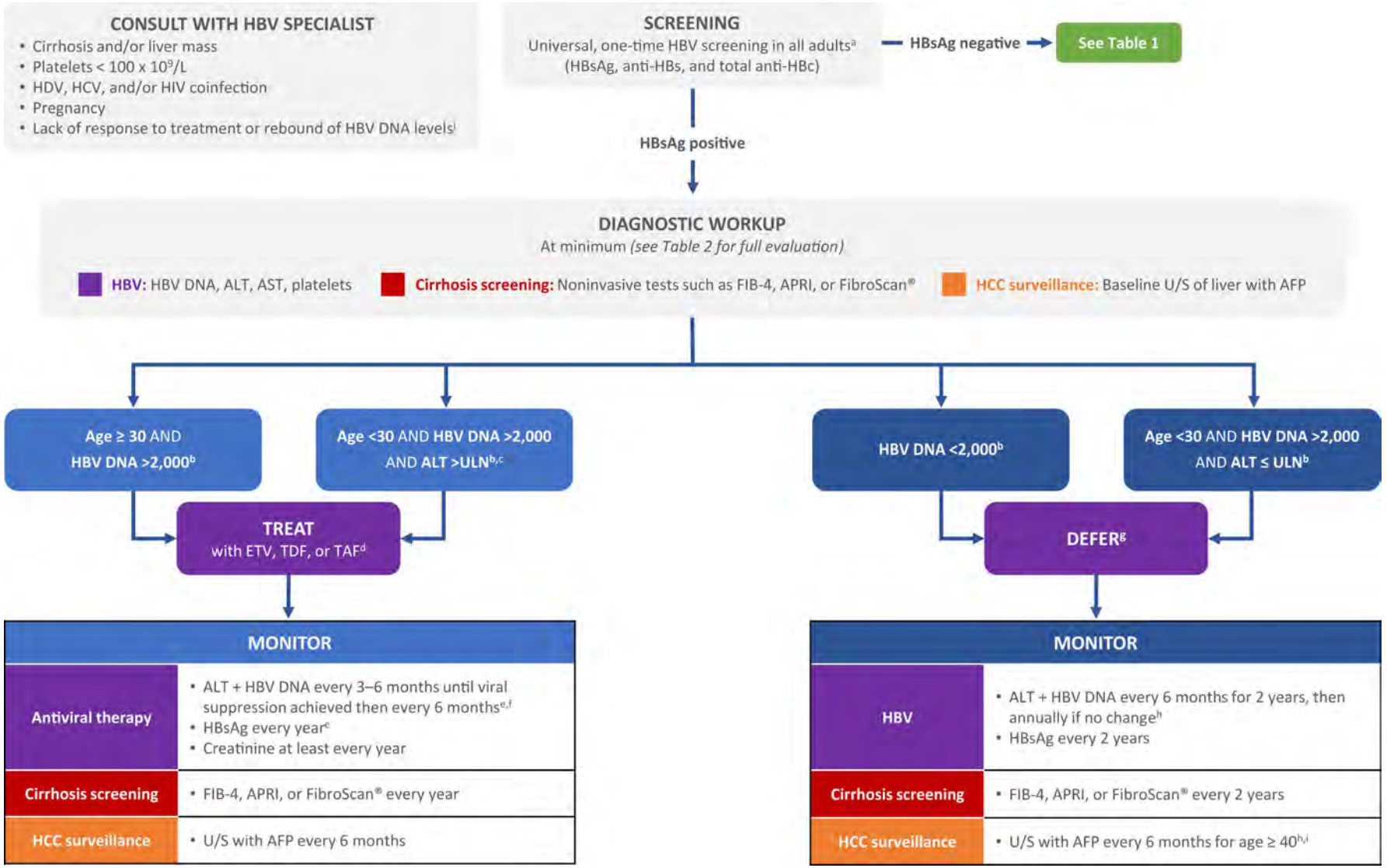
HBeAg = hepatitis B e antigen; HBV = hepatitis B virus; ULN = upper limit of normal.

Information from reference 2.

Am Fam Physician. 2019;99(5):314-323.

Treatment

A simplified approach



It Is Time for a Simplified Approach to Hepatitis B Elimination. Dieterich, Douglas et al. Gastro Hep Advances, Volume 2, Issue 2, 209 - 218

Treatment

Medications

Table 3. First-Line Treatments for Hepatitis B Infection[58,67]

Key considerations	Entecavir (ETV)	Tenofovir disoproxil fumarate (TDF)	Tenofovir alafenamide fumarate (TAF)
Dosage and administration			
No cirrhosis or compensated cirrhosis	0.5 mg tablet once daily	300 mg QD	25 mg QD
Decompensated cirrhosis	1 mg QD	300 mg QD	25 mg QD[58]
Prior treatment failure with lamivudine or telbivudine	Not recommended	300 mg QD	25 mg QD
Use in renal impairment	Dosage adjustment in eGFR < 50 mL/min	Dosage adjustment in eGFR < 50 mL/min	Not recommended in eGFR < 15 mL/min not on hemodialysis
Most common side effects	Headache, fatigue, dizziness, and nausea[a]	Nausea[b]	Headache[c]
Key drug-drug interactions[d]	Drugs that reduce renal function or compete for active tubular secretion N/A	Adefovir, didanosine, protease inhibitors, HCV antivirals	Drugs that strongly affect P-gp and BCRP activity, carbamazepine, phenytoin, rifampin, St. John's wort

It Is Time for a Simplified Approach to Hepatitis B Elimination. Dieterich, Douglas et al. Gastro Hep Advances, Volume 2, Issue 2, 209 - 218

Screening for hepatocellular carcinoma (HCC)

HCC can occur in patients with HBV even without cirrhosis

Though 70-90% HBV-related HCC occurs in folks with cirrhosis

Liver ultrasound in folks with chronic HBV (HBsAg positive)

- Asian men > 40 yrs
- Asian women > 50 yrs
- Africans and North American African Americans > 20 yrs
- Patients with HBV and cirrhosis
- Patients with a family history of HCC
- Caucasians with elevated ALT/DNA, men > 40yrs and women > 50yrs

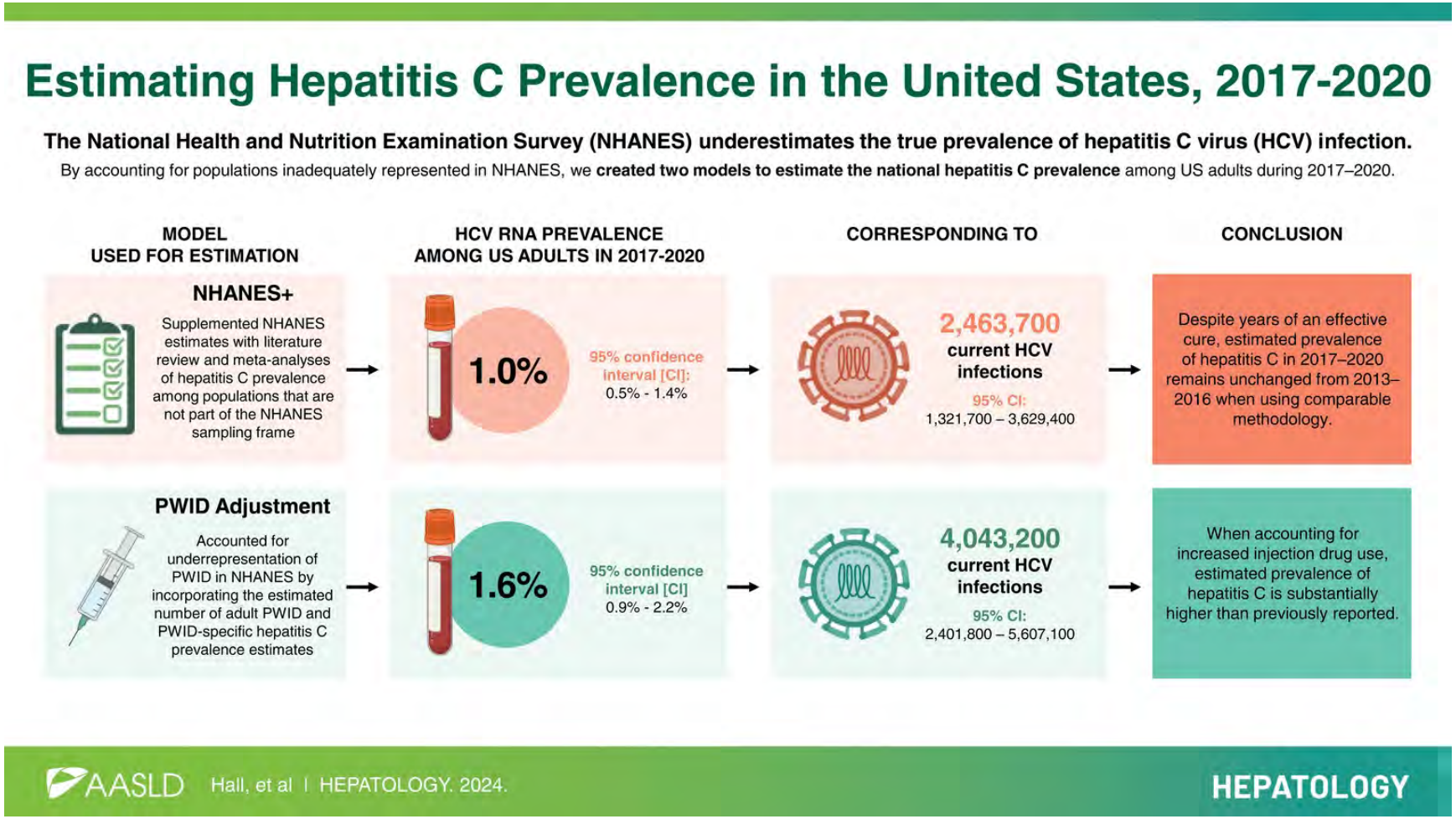
Dartmouth Health

Hepatitis C virus

Epidemiology

Prevalence

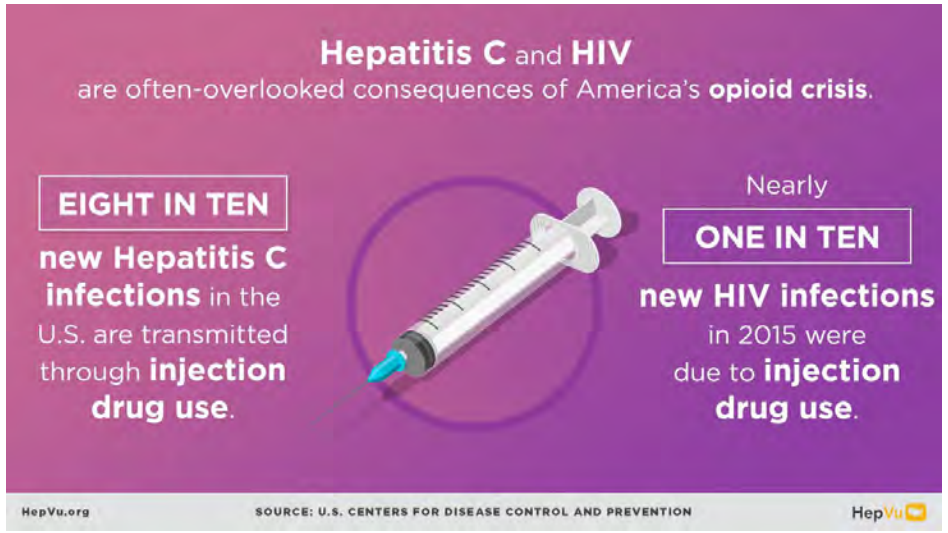
HCV RNA = viremic

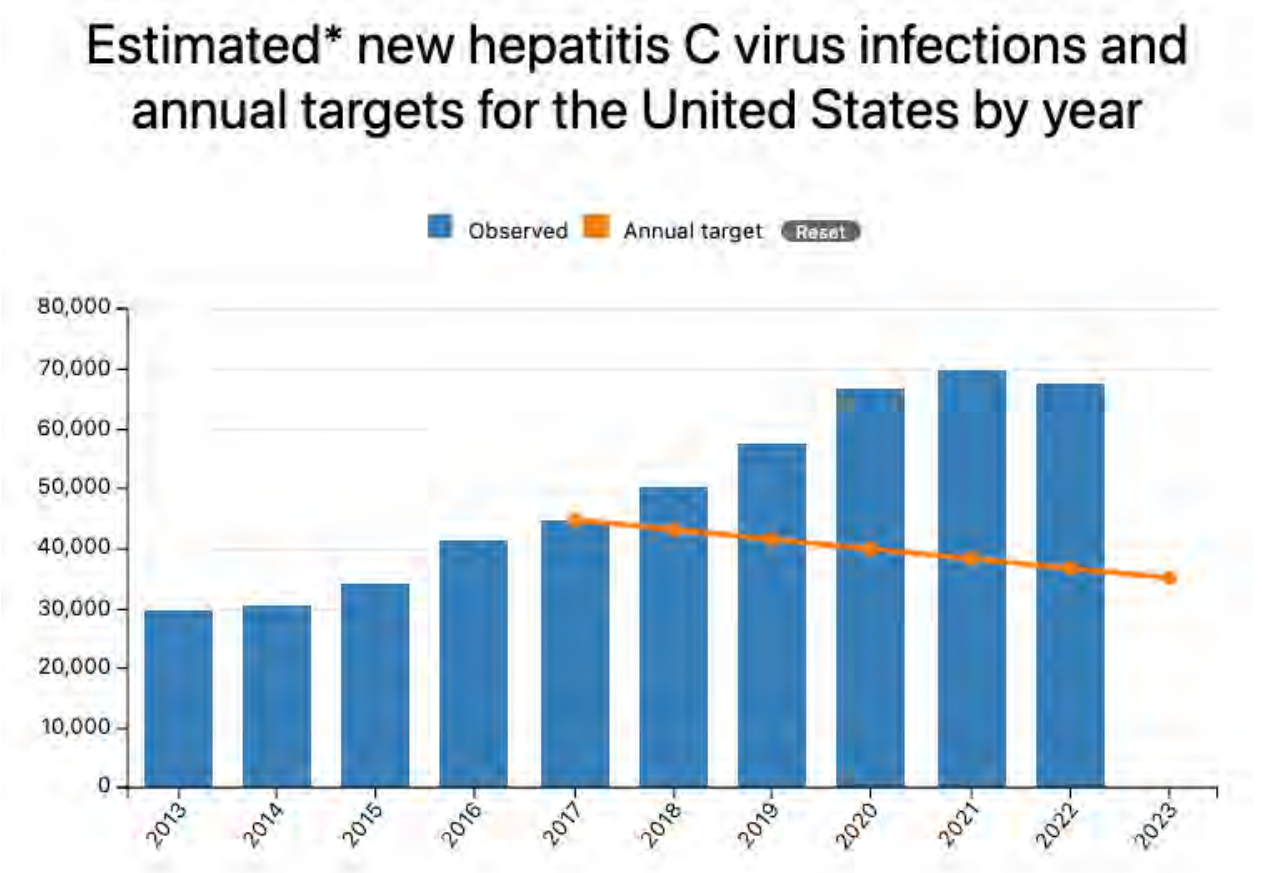


Hall, Eric W et al. Estimating hepatitis C prevalence in the United States, 2017–2020. Hepatology ():10.1097/HEP.0000000000000927, May 13, 2024.

Epidemiology

Incidence and association with injection drug use





https://www.cdc.gov/hepatitis/policy/npr/2024/index.htm
hepvu.org

Epidemiology

Sexual transmission of HCV

Prevalence and incidence of hepatitis C virus infection in men who have sex with men: a systematic review and meta-analysis

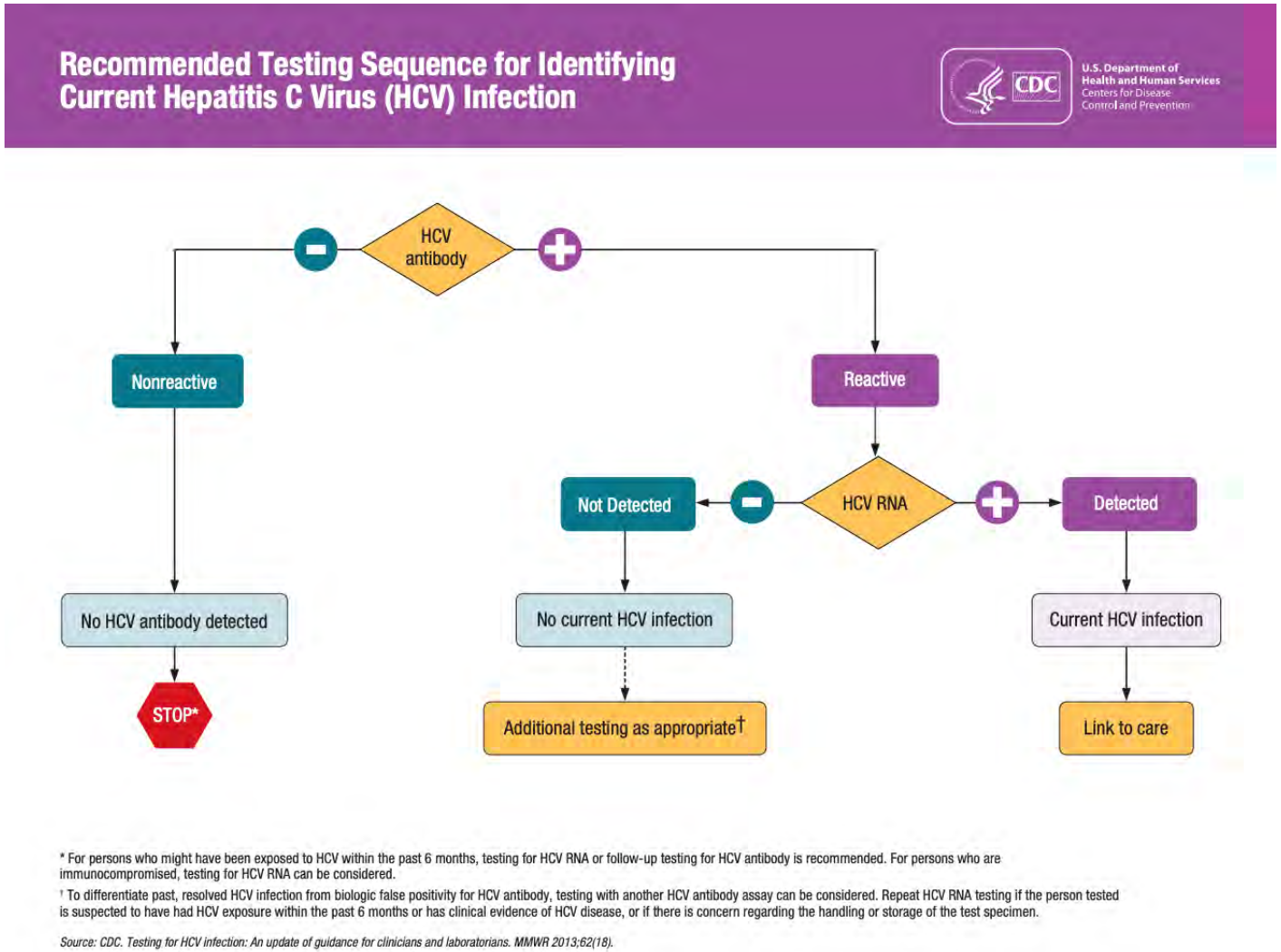
Fengyi Jin, Gregory J Dore, Gail Matthews, Niklas Luhmann, Virginia Macdonald, Sahar Bajis, Rachel Baggaley, Bradley Mathers, Annette Verster, Andrew E Grulich

- HIV-positive MSM are at substantially increased risk of HCV (incidence 8·46 per 1000 person-years).
- HIV-negative MSM had a slightly higher prevalence of HCV than the general population (incidence 0·12 per 1000 person-years)
- High HCV incidence in more recent PrEP studies suggests that as PrEP use increases, greater HCV transmission might occur

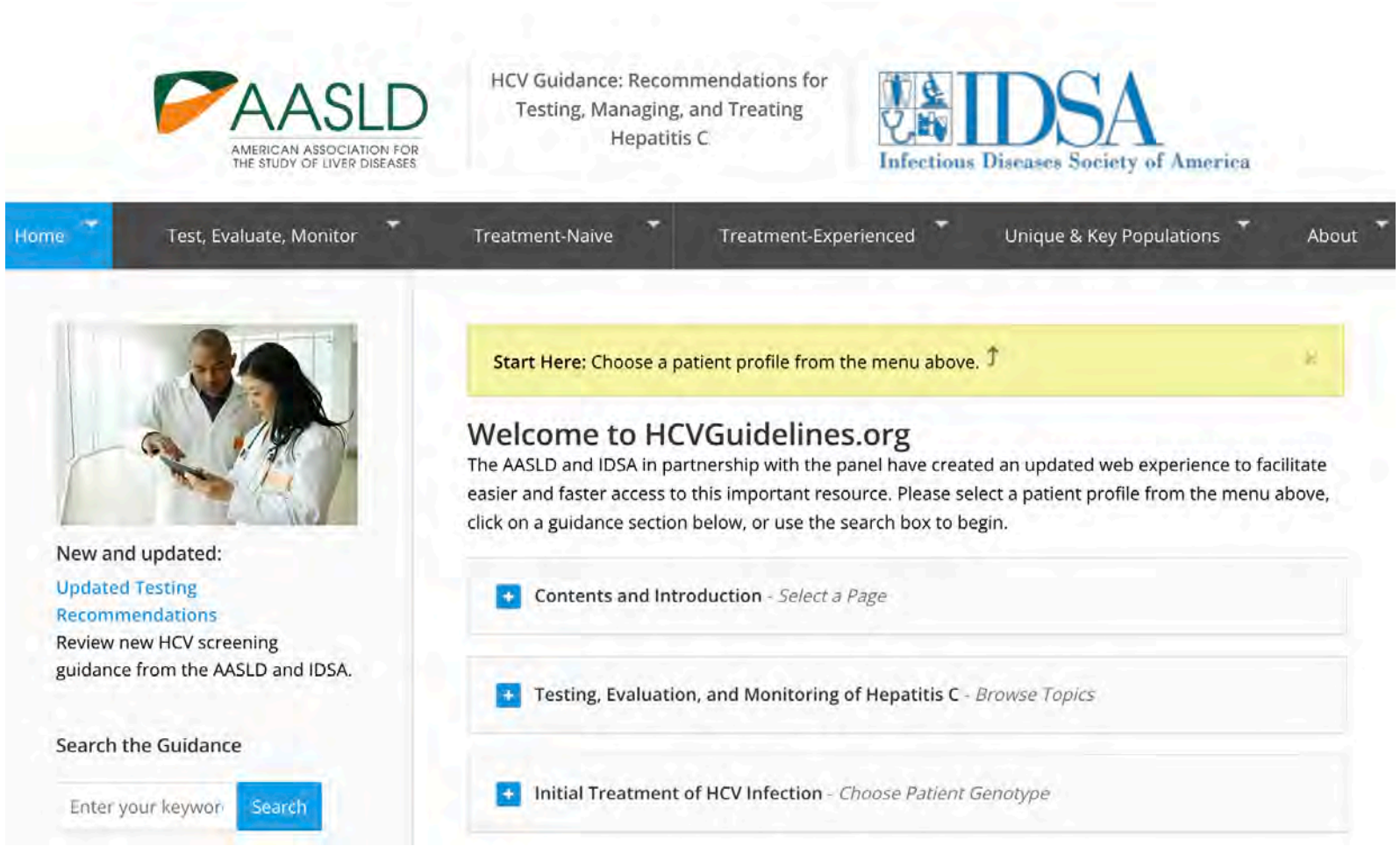
Jin F, Dore GJ, Matthews G, et al. Prevalence and incidence of hepatitis C virus infection in men who have sex with men: a systematic review and meta-analysis. Lancet Gastroenterol Hepatol. 2021;6(1):39-56. doi:10.1016/S2468-1253(20)30303-4

Screening

SOURCES: CDC Recommendations for Hepatitis C Screening, MMWR, April 2020
CDC Vital Signs, April 2020



Treatment



https://www.hcvguidelines.org/

Treatment

Simplified HCV Treatment* for Treatment-Naive Adults Without Cirrhosis

Who Is *NOT* Eligible for Simplified Treatment (Without Cirrhosis)

Patients who have any of the following characteristics:

- Prior hepatitis C treatment
- Cirrhosis (see simplified treatment for treatment-naive adults with compensated cirrhosis)
- HBsAg positive
- Current pregnancy
- Known or suspected hepatocellular carcinoma
- Prior liver transplantation

(see HCV guidance for treatment recommendations for these patients)

Who Is Eligible for Simplified Treatment

Adults with chronic hepatitis C (any genotype) who do not have cirrhosis and have not previously received hepatitis C treatment

Simplified HCV Treatment Algorithm for Treatment-Naive Adults With Compensated Cirrhosis

Who Is *NOT* Eligible for Simplified Treatment (With Cirrhosis)

Patients who have any of the following characteristics:

- Current or prior episode of decompensated cirrhosis, defined as Child-Turcotte-Pugh (CTP) score ≥7 (ascites, hepatic encephalopathy, total bilirubin >2.0 mg/dL, albumin ≤3.5 g/dL, or INR ≥1.7)
- Prior hepatitis C treatment
- End-stage renal disease (ie, eGFR <30 mL/min/m^2) (see Patients with Renal Impairment section)
- HBsAg positive
- Current pregnancy
- Known or suspected hepatocellular carcinoma
- Prior liver transplantation

(see HCV guidance for treatment recommendations for these patients)

Who Is Eligible for Simplified Treatment

Adults with chronic hepatitis C (any genotype) who have compensated cirrhosis (Child-Pugh A) and have not previously received hepatitis C treatment
Liver biopsy is not required. For the purpose of this guidance, a patient is presumed to have cirrhosis if they have a FIB-4 score >3.25 or any of the following findings from a previously performed test.

- Transient elastography indicating cirrhosis (eg, FibroScan stiffness >12.5 kPa)
- Noninvasive serologic tests above proprietary cutoffs indicating cirrhosis (eg, FibroSure, Enhanced Liver Fibrosis Test, etc)
- Clinical evidence of cirrhosis (eg, liver nodularity and/or splenomegaly on imaging, platelet count <150,000/mm^3, etc)
- Prior liver biopsy showing cirrhosis

https://www.hcvguidelines.org/

PRETREATMENT ASSESSMENT*

- **Calculate FIB-4 score.**
- **Cirrhosis assessment**: Liver biopsy is not required. For the purpose of this guidance, a patient is presumed to have cirrhosis if they have a FIB-4 score >3.25 **or** any of the following findings from a previously performed test.
  - Transient elastography indicating cirrhosis. (e.g., Fibro Scan stiffness >12.5 kPa)
  - Noninvasive serologic tests above proprietary cutoffs indicating cirrhosis (e.g., Fibro Sure, Enhanced Liver Fibrosis Test, etc.)
  - Clinical evidence of cirrhosis (e.g., liver nodularity and/or splenomegaly on imaging, platelet count <150,000/mm^3, etc.)
  - Prior liver biopsy showing cirrhosis.
- **Medication reconciliation:** Record current medications, including over-the-counter drugs, and herbal/dietary supplements.
- **Potential drug-drug interaction assessment:** Drug-drug interactions can be assessed using the AASLD/IDSA guidance or the University of Liverpool drug interaction checker.
- **Education:** Educate the patient about proper administration of medications, adherence, and prevention of reinfection.

- **Pretreatment laboratory testing**

Within 6 months of initiating treatment:

- Complete blood count (CBC)
- Hepatic function panel (i.e., albumin, total and direct bilirubin, alanine aminotransferase [ALT], and aspartate aminotransferase [AST])
- Calculated glomerular filtration rate (eGFR)

Any time prior to starting antiviral therapy:

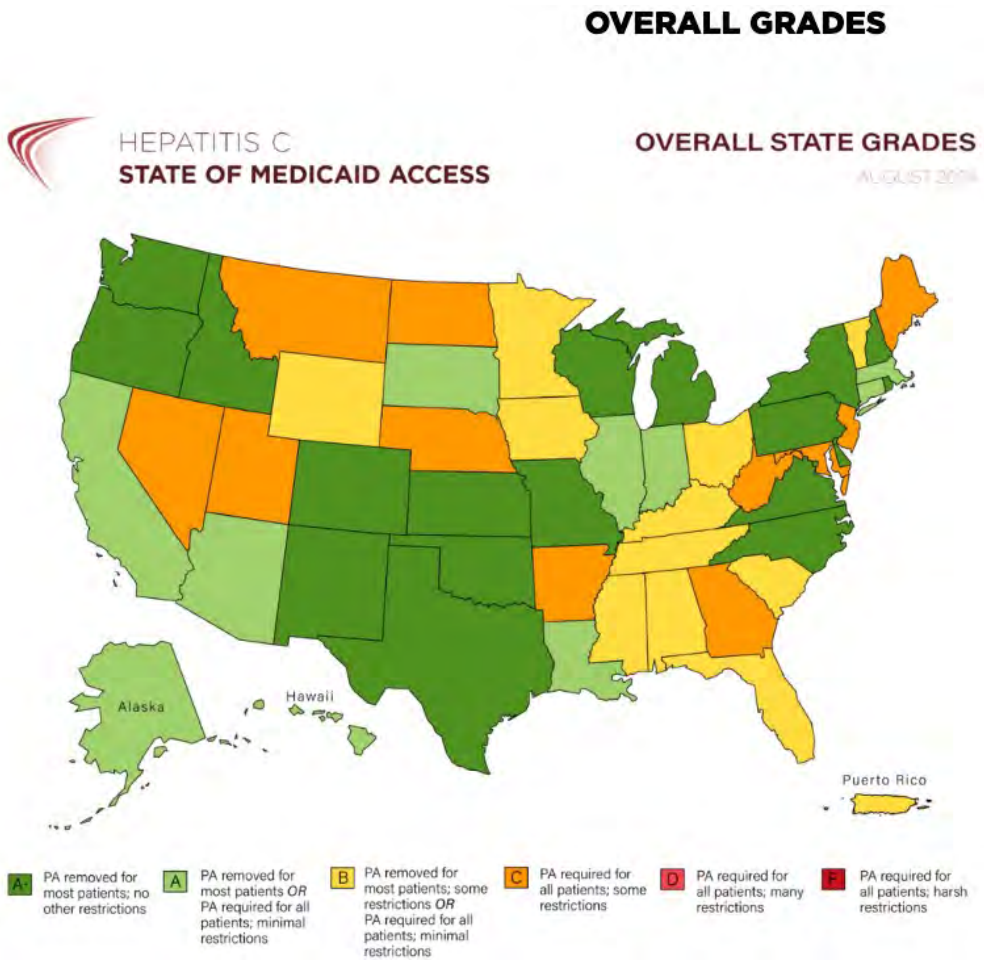
- Quantitative HCV RNA (HCV viral load)
- HIV antigen/antibody test
- Hepatitis B surface antigen

Before initiating antiviral therapy:

- Serum pregnancy testing and counseling about pregnancy risks of HCV medication should be offered to women of childbearing age.

https://www.hcvguidelines.org/

Treatment



RECOMMENDED REGIMENS*

Glecaprevir (300 mg) / pibrentasvir (120 mg)
taken with food for a duration of 8 weeks

Sofosbuvir (400 mg) / velpatasvir (100 mg)
for a duration of 12 weeks

ON-TREATMENT MONITORING

- Inform patients taking diabetes medication of the potential for symptomatic hypoglycemia. Monitoring for hypoglycemia is recommended.
- Inform patients taking warfarin of the potential for changes in their anticoagulation status. Monitoring INR for subtherapeutic anticoagulation is recommended.
- No laboratory monitoring is required for other patients.
- An in-person or telehealth/phone visit may be scheduled, if needed, for patient support, assessment of symptoms, and/or new medications.

POST-TREATMENT ASSESSMENT OF CURE (SVR)

- Assessment of quantitative HCVRNA and a hepatic function panel are recommended 12 weeks or later following completion of therapy to confirm HCV RNA is undetectable (virologic cure) and transaminase normalization.
- Assessment for other causes of liver disease is recommended for patients with elevated transaminase levels after achieving SVR.

FOLLOW-UP AFTER ACHIEVING VIROLOGIC CURE (SVR)

- No liver-related follow-up is recommended for noncirrhotic patients who achieve SVR.
- Patients with ongoing risk for HCV infection (e.g., intravenous drug use or MSM engaging in unprotected sex) should be counseled about risk reduction, and tested for HCV RNA annually and whenever they develop elevated ALT, AST, or bilirubin.
- Advise patients to avoid excess alcohol use.

FOLLOW-UP FOR PATIENTS WHO DO *NOT* ACHIEVE A VIROLOGIC CURE

- Patients in whom initial HCV treatment fails to achieve cure (SVR) should be evaluated for retreatment by a specialist, in accordance with AASLD/IDSA guidance.
- Until retreatment occurs, assessment for disease progression every 6 to 12 months with a hepatic function panel, CBC, and INR is recommended.
- Advise patients to avoid excess alcohol use.

https://www.hcvguidelines.org/
https://stateofhepc.org/2024-national-snapshot-report/

HEPATITIS FREE NORTHERN NEW ENGLAND

> A tri-state initiative providing evidence-based, localized, and actionable strategies that will free NNE (New Hampshire, Maine and Vermont) from hepatitis B and hepatitis C.

Hepatitis Free Northern New England (HFNNE) is a broad, community-based coalition with members and participants from all over the three states, who are living with, affected by, or work in the field of viral hepatitis. This initiative formed in 2021, and we welcome new participants to join the journey toward viral hepatitis B and C elimination at any time.

A primary goal of HFNNE is to bring the widest range of voices to the table as the Northern New England 2025 Viral Hepatitis Elimination Plan is created. The Planning Group meets once every other month, starting in February 2024. The plan will be published in January 2025.

WELCOME to the Getting In Sync with Sexual Health ECHO: STIs – Testing, Treatment, and Prevention

Session 8, HPV, Mpox, Mycoplasma/Ureaplasma, December 10, 2024

Today's Program:

- Brief housekeeping
- Didactic: HPV, Mpox, Mycoplasma/Ureaplasma - Colleen Kershaw
- Case Presentation: Bryan Marsh
- Discussion
- Summary
- Up Next

Notes:

- Raise virtual hand or enter comments in chat at any time. We will call on you when it works. Please mute otherwise.
- To protect individual privacy, please use non-identifying information when discussing cases.
- We will be recording the didactic part of these sessions. *Participating in these session is understood as consent to be recorded. Thank you!*
- Closed Captioning will be enabled during sessions
- Questions to ECHO Tech Support thru personal CHAT

Dartmouth Health

STI ECHO 2024:
HPV, Mpox, and Mycoplasma

Colleen Kershaw, MD

December 10, 2024

Dartmouth Health

HPV

- CDC estimated that 36,500 people developed cancers attributable to HPV infections each year between 2015 to 2019.
  - 94% HPV types 16 and 18
  - The rest types 31, 33, 45, 52, and 58.
  - Types of malignancy: cervical, vulvar, anal, oropharyngeal, penile
  - Oncogenic effects multiplied in the setting of HIV and immune compromise

- HPV types 6 or 11 cause 90% of anogenital warts (condylomata) and most cases of recurrent respiratory papillomatosis.

https://www.immunize.org/ask-experts/topic/hpv/

Dartmouth Health

CDC HPV Vaccination Guidance

- Gardasil 9 (9vHPV, Merck) is the only HPV vaccine being distributed in the United States
  - 9vHPV is an inactivated 9-valent vaccine licensed by the FDA in 2014. It contains 7 oncogenic (cancer-causing) HPV types (16, 18, 31, 33, 45, 52, and 58) and two HPV types that cause most genital warts (6 and 11).
- Recommended for routine vaccination at age 11 or 12 years. (Vaccination can be started at age 9.)
- ACIP also recommends vaccination for everyone through age 26 years if not adequately vaccinated when younger, given as a series of either 2 or 3 doses, depending on age at initial vaccination.
- Vaccination is not routinely recommended for everyone older than age 26 years. Efficacy is less after this timeframe, though approved up to age 45.

https://www.cdc.gov/vaccines/vpd/hpv/hcp/recommendations.html

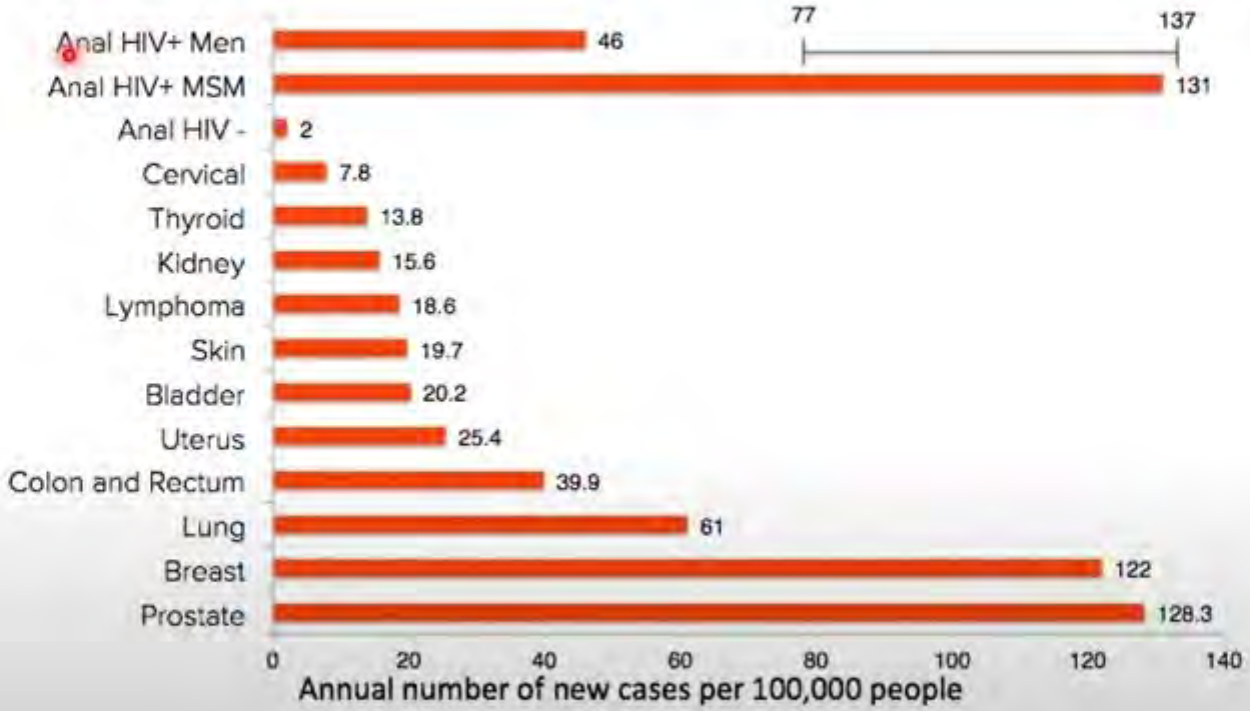
Dartmouth Health

Cervical cancer screening: USPSTF

Population	Recommendation	Grade
Women aged 21 to 65 years	The USPSTF recommends screening for cervical cancer every 3 years with cervical cytology alone in women aged 21 to 29 years. For women aged 30 to 65 years, the USPSTF recommends screening every 3 years with cervical cytology alone, every 5 years with high-risk human papillomavirus (hrHPV) testing alone, or every 5 years with hrHPV testing in combination with cytology (cotesting). See the Clinical Considerations section for the relative benefits and harms of alternative screening strategies for women 21 years or older.	A
Women younger than 21 years	The USPSTF recommends against screening for cervical cancer in women younger than 21 years.	D
Women who have had a hysterectomy	The USPSTF recommends against screening for cervical cancer in women who have had a hysterectomy with removal of the cervix and do not have a history of a high-grade precancerous lesion (ie, cervical intraepithelial neoplasia [CIN] grade 2 or 3) or cervical cancer.	D
Women older than 65 years	The USPSTF recommends against screening for cervical cancer in women older than 65 years who have had adequate prior screening and are not otherwise at high risk for cervical cancer. See the Clinical Considerations section for discussion of adequate prior screening and risk factors that support screening after age 65 years.	D

Recommendation: Cervical Cancer: Screening | United States Preventive Services Taskforce

Anal Cancer Rates in Perspective



Silverberg, Lau et al. Clin Infect Dis. 2012.
Colon-Lopez, Shiels et al. J Clin Oncol. 2017.
www.anchorstudy.org

Slide 18

Slide from Grant Ellsworth, IAS USA Screening and Prevention of Anal, Cervical, and Oral/Oropharyngeal Cancers in People With HIV, Sept 2024.

Anal cancer screening

- Anal cancer rates are highest among people living with HIV (PLWH)
  - Incidence rates[1]:
    - General population: 1-2 cases per 100K person-years (py)
    - HIV-positive MSM: 85 per 100K py
    - HIV-positive non-MSM male: 32 per 100K py
    - HIV-positive female: 22 per 100K py
    - Strong variation by age (eg, from 16.8 < 30 years to 107.5 ≥ 60 years for HIV-positive MSM)
  - Other risk factors: receptive anal intercourse, genital warts, anal fissues or fistula, smoking

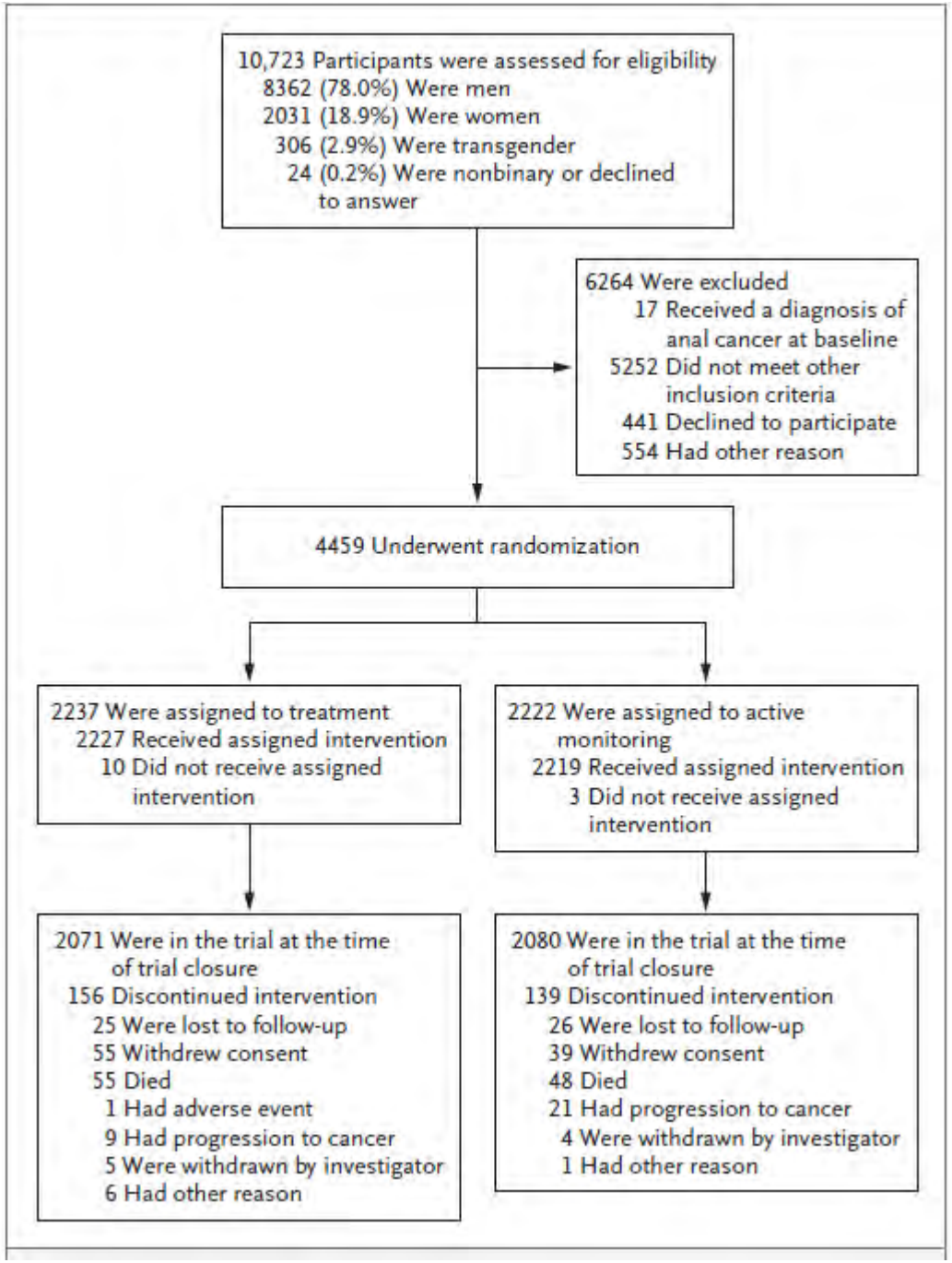
1. Clifford et al. Int J Cancer 2021.

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Treatment of Anal High-Grade Squamous Intraepithelial Lesions to Prevent Anal Cancer

J.M. Palefsky, J.Y. Lee, N. Jay, S.E. Goldstone, T.M. Darragh, H.A. Dunlevy, I. Rosa-Cunha, A. Arons, J.C. Pugliese, D. Vena, J.A. Sparano, T.J. Wilkin, G. Bucher, E.A. Stier, M. Tirado Gomez, L. Flowers, L.F. Barroso, R.T. Mitsuyasu, S.Y. Lensing, J. Logan, D.M. Aboulafia, J.T. Schouten, J. de la Ossa, R. Levine, J.D. Korman, M. Hagensee, T.M. Atkinson, M.H. Einstein, B.M. Cracchiolo, D. Wiley, G.B. Ellsworth, C. Brickman, and J.M. Berry-Lawhorn, for the ANCHOR Investigators Group*



If you look for it, you'll find it:

- >10,000 screened with anal pap
- 7729 men
  - HSIL in 4257 (55%)
- 1822 women
  - HSIL in 860 (47%)
- 280 transgender persons
  - HSIL in 188 (67%)

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Primary Outcome

	TREATMENT (n=2227)	ACTIVE MONITORING (n=2219)
Invasive anal cancer	9 (0.4%)	21 (0.9%)
Rate of progression to cancer	173/100,000 py (95% CI 90-332)	402/100,000 py (95% CI 262-616)
Cumulative incidence cancer @ 48 months	0.9%	1.8%

Relative Risk Reduction in rate of progression to cancer:
57% (95% CI, 6-80%), p=0.03

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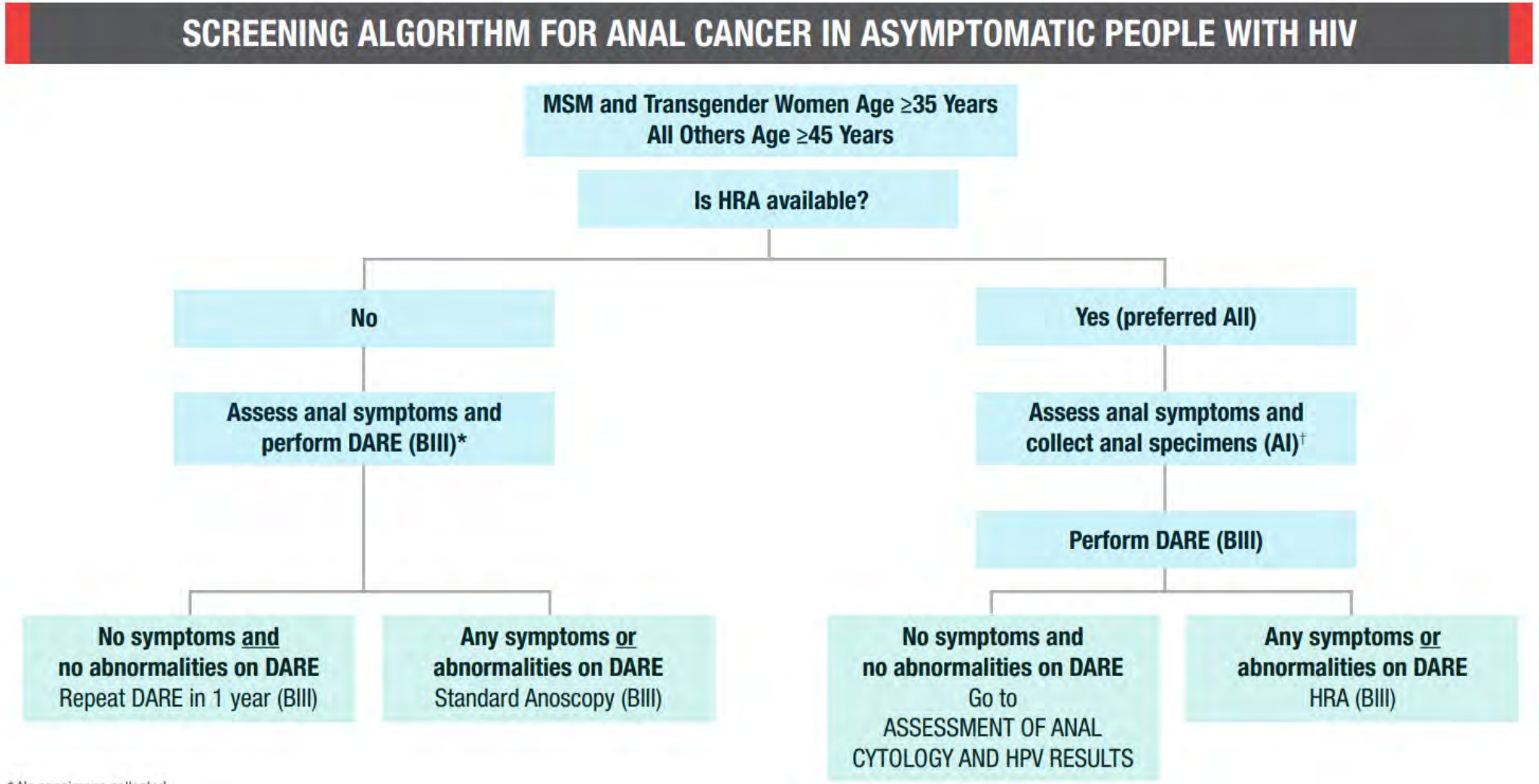
DHHS HIV OI Guidelines for HPV-related screenings:



* No specimens collected

† Collect any specimens either for cytology or for cytology with HPV co-testing prior to DARE. HPV testing without cytology is not recommended (BIII)

Key: DARE = digital anorectal exam; HPV = human papillomavirus; hr-HPV = high-risk HPV; HRA = high-resolution anoscopy; MSM = men who have sex with men

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What about anal cancer screening in patients without HIV?

- There is no guideline-based approach due to lack of data.

Populations at increased risk of anal cancer

People living with HIV
Men who have sex with men
Iatrogenic immunosuppression (eg, solid organ transplant recipients, long-term oral corticosteroids)
Women with a history of cervical, vulvar, or vaginal SIL (also termed intraepithelial neoplasia) or cancer
Women with a history of cervical HPV 16 infection
Individuals with a history of anogenital warts

HIV: human immunodeficiency virus; HPV: human papillomavirus; SIL: squamous intraepithelial lesion.

Graphic 90900 Version 5.0

TABLE 1 Populations for screening.

Population—Risk category	When	Anal cancer incidence[2,5] per 100,000 person-years
Risk Category A (incidence ≥ 10-fold compared to the general population)		
MSM and TW with HIV	Age 35	>70/100,000 age 30–44 >100/100,000 age 45+
Women with HIV	Age 45	>25/100,00 age 45+
MSW with HIV	Age 45	>40/100,000 age 45+
MSM and TW not with HIV	Age 45	>18/100,000 age 45–59 >34/100,000 age 60+
History of vulvar HSIL or cancer	Within 1 year of diagnosis	>40/100,000
Solid organ transplant recipient	10 years post-transplant	>25/100,000
Risk Category B (incidence up to 10-fold higher compared to the general population)		
Cervical/vaginal cancer	Shared decision age 45[a]	9/100,000
Cervical/vaginal HSIL	Shared decision age 45[a]	8/100,000
Perianal warts (male or female)	Shared decision age 45[a]	Unknown
Persistent cervical HPV 16 (>1 year)	Shared decision age 45[a]	Unknown
Other immunosuppression (e.g., Rheumatoid arthritis, Lupus, Crohn's, Ulcerative colitis, on systemic steroid therapy)	Shared decision age 45[a]	6/100,000
Incidence among the general population: 1.7 per 100,000[8]		

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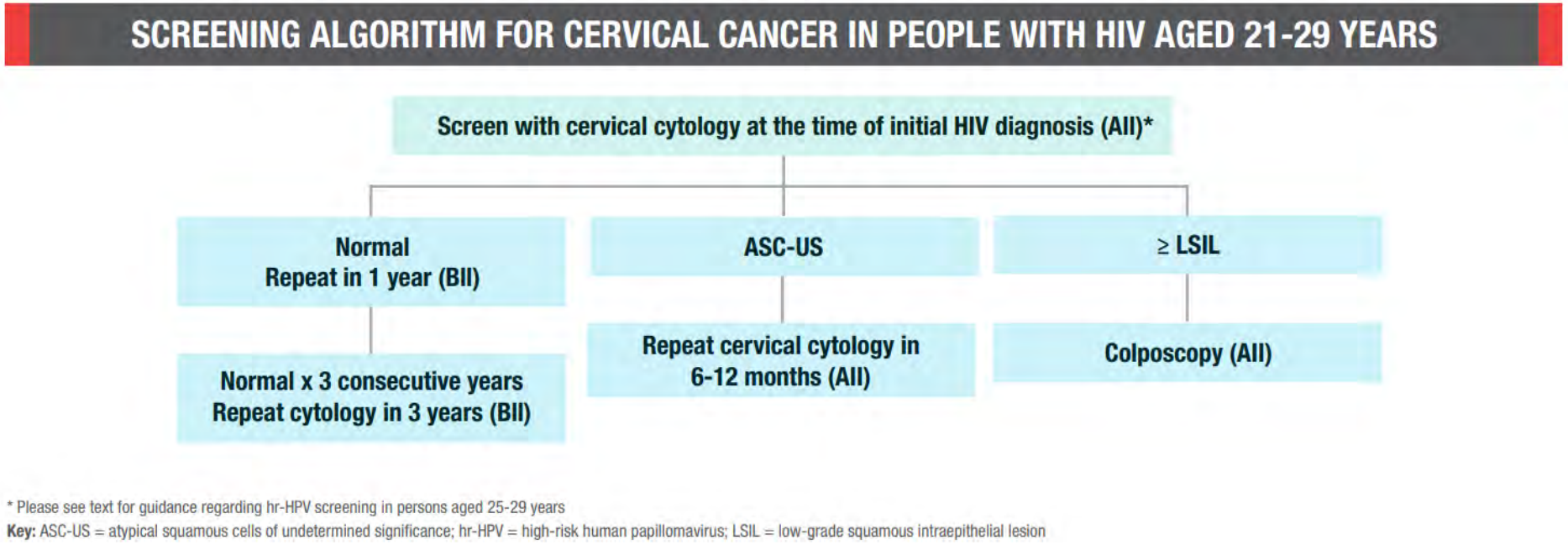
DHHS HIV OI Guidelines for HPV-related screenings



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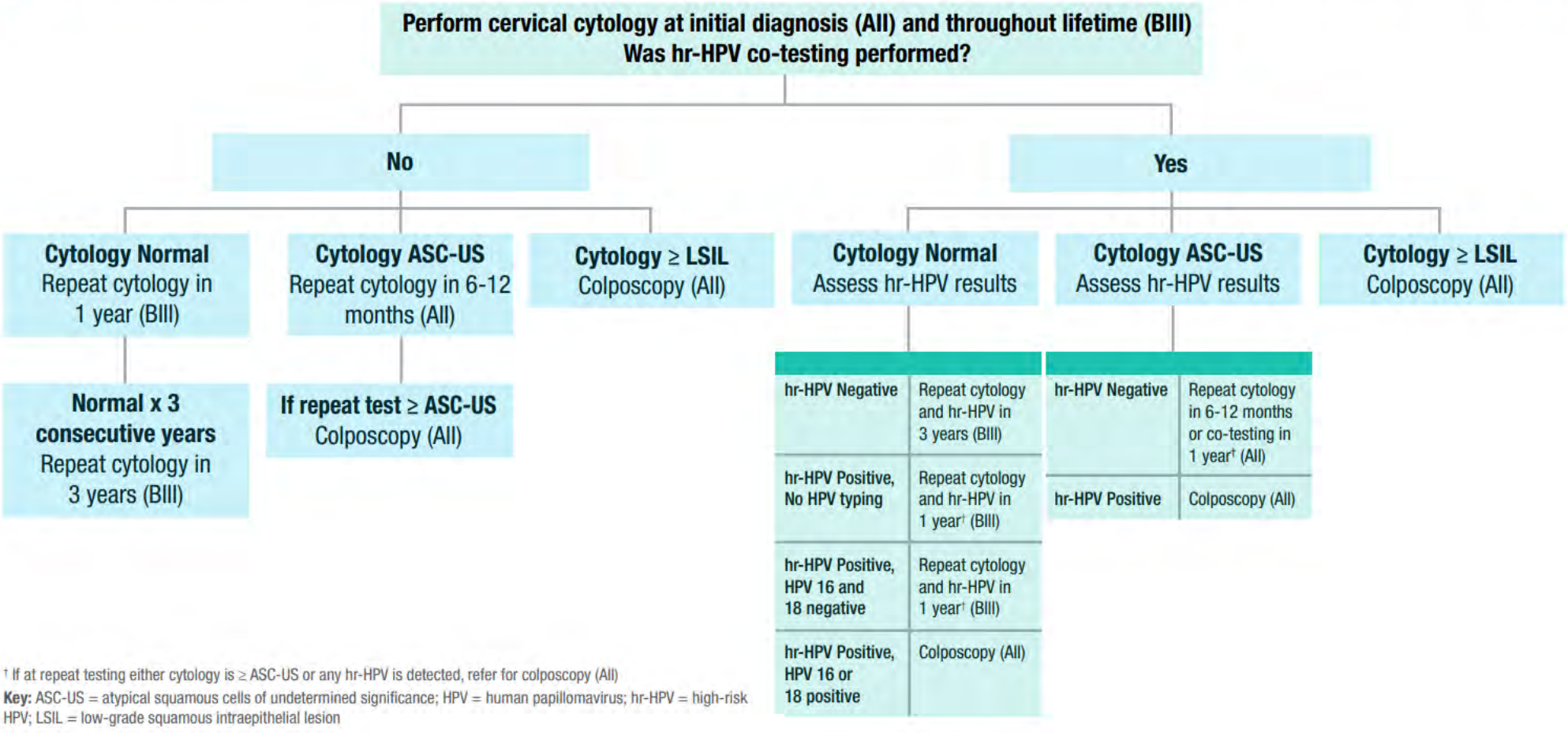
SCREENING ALGORITHM FOR CERVICAL CANCER IN PEOPLE WITH HIV AGED 30 YEARS AND OLDER



† If at repeat testing either cytology is ≥ ASC-US or any hr-HPV is detected, refer for colposcopy (AII)

Key: ASC-US = atypical squamous cells of undetermined significance; HPV = human papillomavirus; hr-HPV = high-risk HPV; LSIL = low-grade squamous intraepithelial lesion

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Mpox

- Clinical features
- Transmission
- Treatment
- Prevention

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Mpox clinical features

- Incubation 3-17 days
- Skin lesions are firm/rubbery, well-circumscribed, deep-seated, often with umbilication
- Usually appear at the same time and evolve together
- Stages: macular → papular → vesicular → pustular→ scab
- Painful, then pruritic
- Lesions often occur in the genital and anorectal areas or in the mouth.
  - May be disseminated, a few or single
  - May involve palms and soles but not always
- Rectal symptoms (e.g., purulent or bloody stools, rectal pain, or rectal bleeding) have been frequently reported in the current outbreak.
- May be accompanied by flu-like illness (timing varies, but often preceding rash)

https://www.cdc.gov/mpox/hcp/clinical-signs/?CDC_AAref_Val=https://www.cdc.gov/poxvirus/mpox/clinicians/clinical-recognition.html

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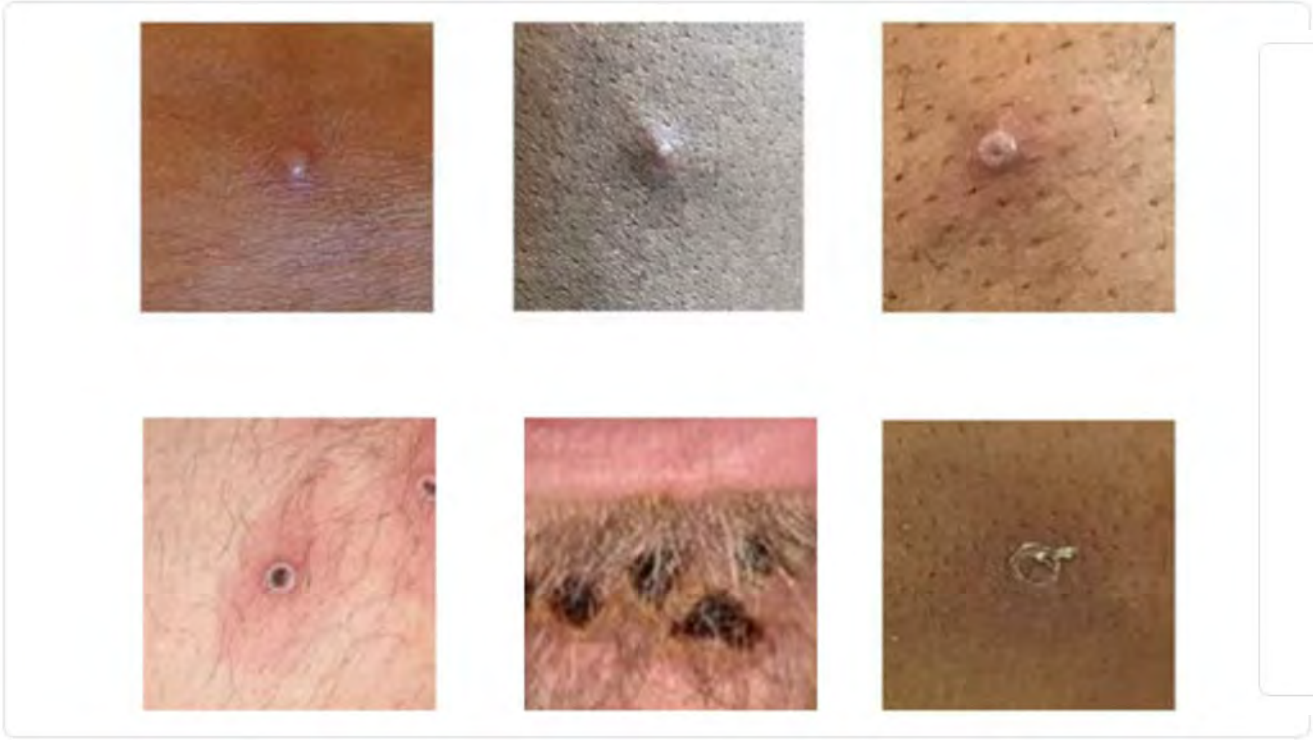
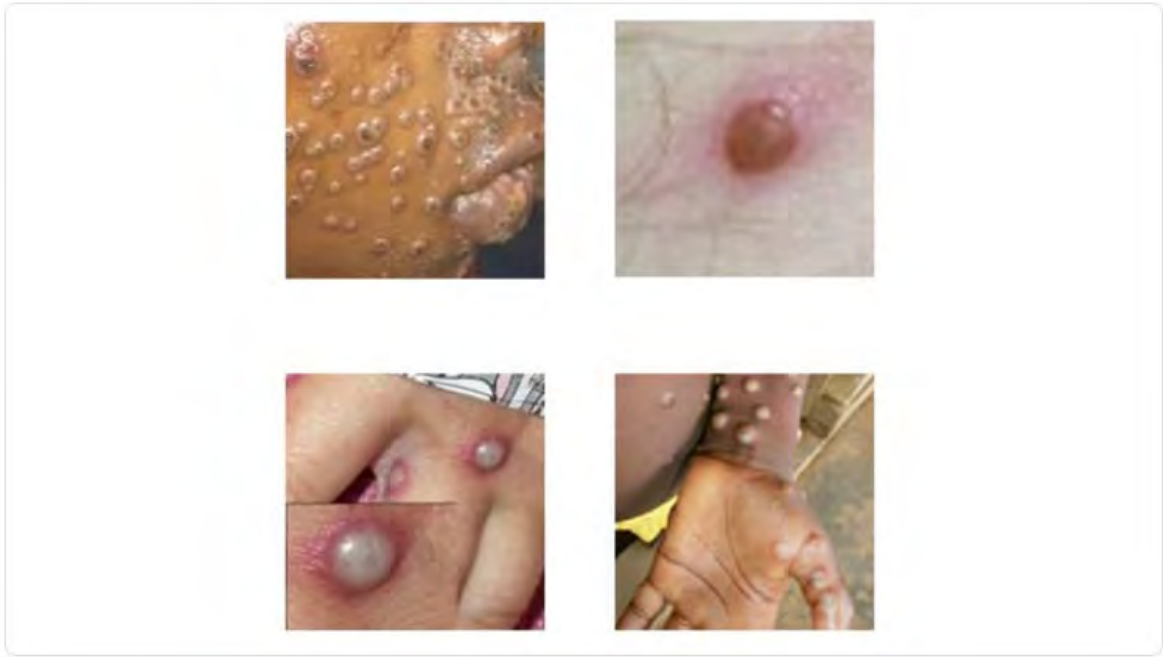
Skin findings

View Larger





Mpox lesions are characteristically firm and often have a dot on top of the lesion (umbilication).

SOURCE: Photo credit: UK Health Security Agency

https://www.cdc.gov/mpox/hcp/clinical-signs/?CDC_AAref_Val=https://www.cdc.gov/poxvirus/mpox/clinicians/clinical-recognition.html

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Current outbreak: clade I and clade II

- Since 2022, US outbreak with clade II with ongoing low-level incidence
- New outbreak in 2024 in Central and Eastern African countries with clade I
  - Nov 2024, first US reported case of clade I in California related to travel to Central Africa
  - Similar presentation, but with some level of increased severity
- Person-to-Person Transmission:
  - Close contact (including intimate, sexual, or household contact) with a person with mpox, or direct contact with infectious respiratory secretions (e.g., snot, mucus) or contaminated objects (e.g., bedding)

https://emergency.cdc.gov/han/2024/han00519.asp

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Mpox

Testing

- Swab lesions (do not unroof or aspirate)
- Collect two swabs per 2-3 lesions to allow for availability for clade-specific testing

Treatment

- Mostly supportive
- For severe manifestations, consider antiviral tecovirimat
  - Hemorrhagic disease, Large number of confluent lesions, Sepsis, Encephalitis; Ocular or periorbital infection; other conditions requiring hospitalization
  - Involvement of anatomic areas which might result in serious sequelae that include scarring or strictures

Clinical Overview of Mpox | Mpox | CDC

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Prevention: Vaccination

- Recommend the JYNNEOS vaccine (2-dose series) to persons ≥18 years of age per ACIP and CDC outbreak recommendations, including to persons who:
  - Are gay, bisexual, and other men who have sex with men (MSM), transgender or nonbinary persons who in the past 6 months have had:
    - A new diagnosis of at least 1 sexually transmitted infection
    - More than 1 sex partner
    - Sex at a commercial sex venue
    - Sex in association with a large public event
  - Are sex partners of persons described above
  - Anticipate experiencing any of the situations described above
  - Are traveling to a country experiencing a clade 1 mpox outbreak, and who anticipate a new sex partner or engaging in higher risk sexual activity (regardless of the person's gender identity or sexual orientation)

www.cdc.gov/mpox

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Post-Exposure Prophylaxis

- Mpox vaccine should be given ASAP after exposure:
  - Within 4 days to prevent disease
  - 4-14 days to reduce symptoms
- This is based on animal studies; human data on efficacy very limited and inconclusive

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Transmission Prevention/Infection Control

Healthcare settings

Private room; if aerosol generating procedure, airborne precautions

PPE used by healthcare personnel who enter the patient's room should include:

- Gown
- Gloves
- Eye protection (i.e., goggles or a face shield that covers the front and sides of the face)
- NIOSH-approved particulate respirator equipped with N95 filters or higher

Home setting

- Isolate at home or at another location for the duration of illness
- Avoid sharing items
- Other household members should wear a respirator or a well-fitting mask when in close contact (e.g., within 6 feet) with the person with mpox for more than a brief encounter.

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Mycoplasma genitalium

- Causes non-chlamydial, non-gonococcal urethritis.
- Can also cause cervicitis and PID.
- People with persistent or recurrent urethritis and cervicitis should be screened.
- Asymptomatic screening not recommended at this time.
- Diagnosis via NAAT (FDA cleared for use with urine and urethral, penile meatal, endocervical, and vaginal swab samples)
- Treatment 2-stage approach due to high rates of macrolide resistance

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Mycoplasma genitalium treatment

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

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

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

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

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