



**Protect yourself  
and your community  
from syphilis.**

Snag safer. Get tested.



NORTHWEST PORTLAND AREA  
INDIAN HEALTH BOARD  
*Indian Leadership for Indian Health*

# Emergency Medicine's Role in the Syphilis Outbreak Response



Emergency Medicine for Rural and Indigenous  
Communities Conference  
September 27, 2023



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# Introductions



**No Disclosures**

# Learning Objectives

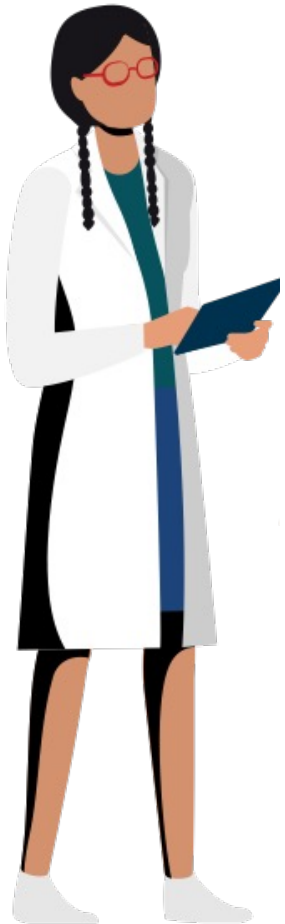


- 1. Describe the epidemiology of syphilis over the last decade**
- 2. Recognize preventable health inequities in syphilis burden faced by racially and ethnically minoritized populations and tribal communities**
- 3. Identify clinical manifestations of acquired and congenital syphilis**
- 4. Apply best practices in syphilis to your emergency department and/or local facility context**



# syphilis definition

# Syphilis



*Treponema pallidum*

Sexual/horizontal and vertical transmission

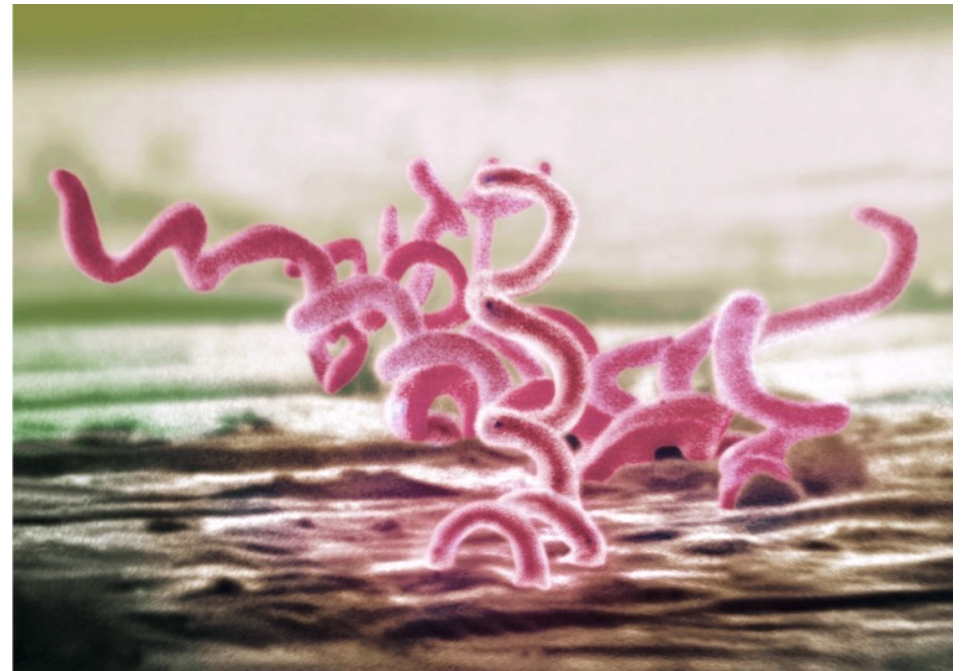
**Curable with penicillin**

**Stages**

1. Primary
2. Secondary
3. Latent
  - Early non-primary, non-secondary
  - Unknown duration or late
4. Tertiary

Early

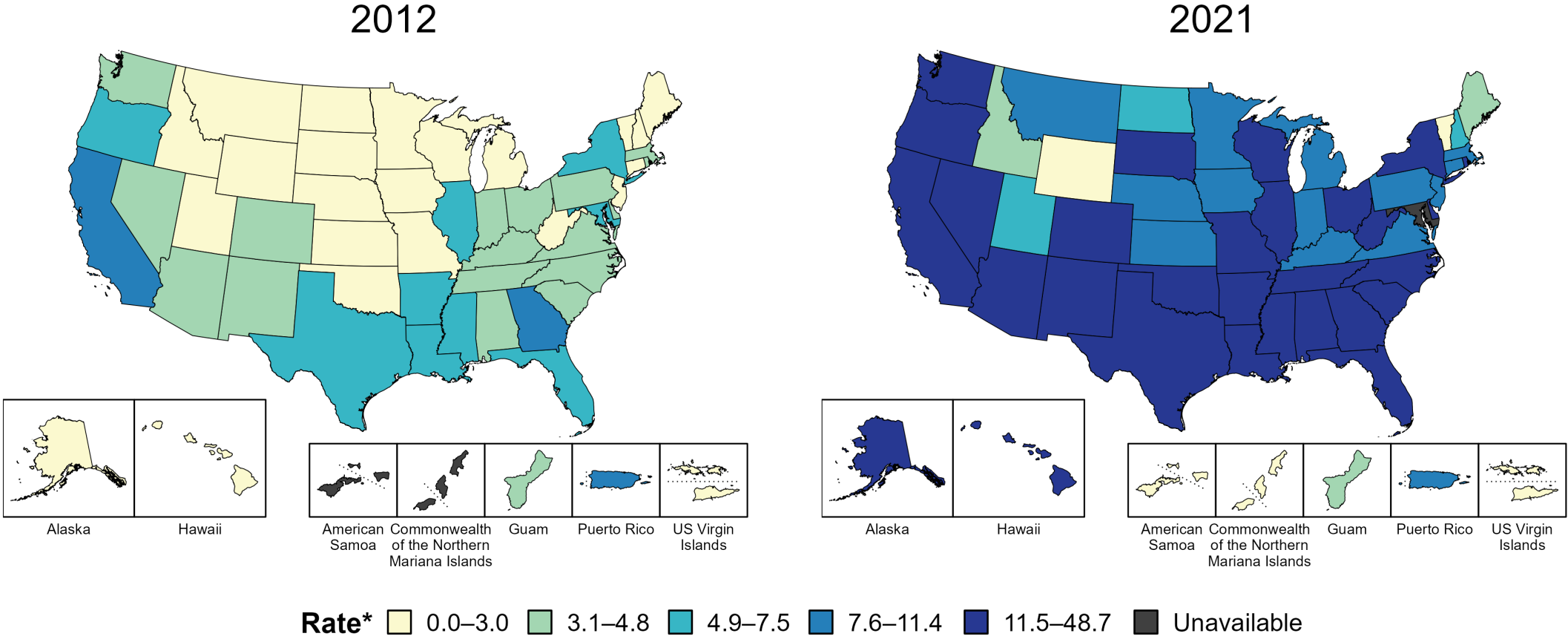
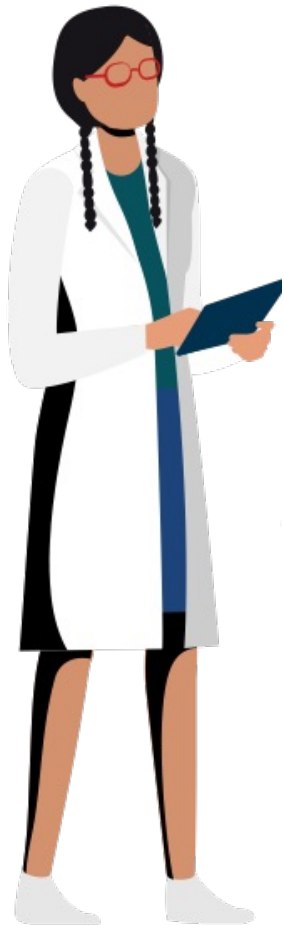
Late





# Epidemiologic & Clinical Overview of Adult and Congenital Syphilis

# Primary and Secondary Syphilis – Rates of Reported Cases by County, United States, 2021



\* Per 100,000

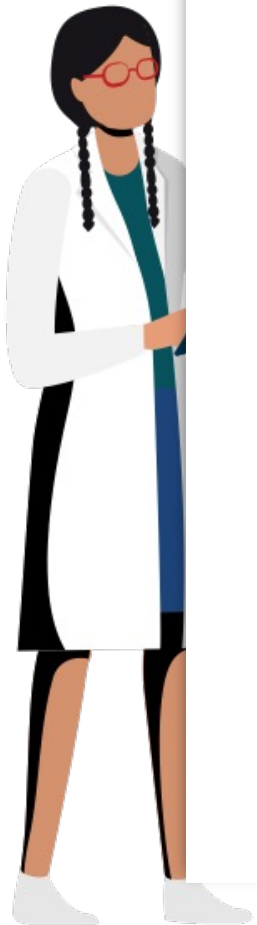
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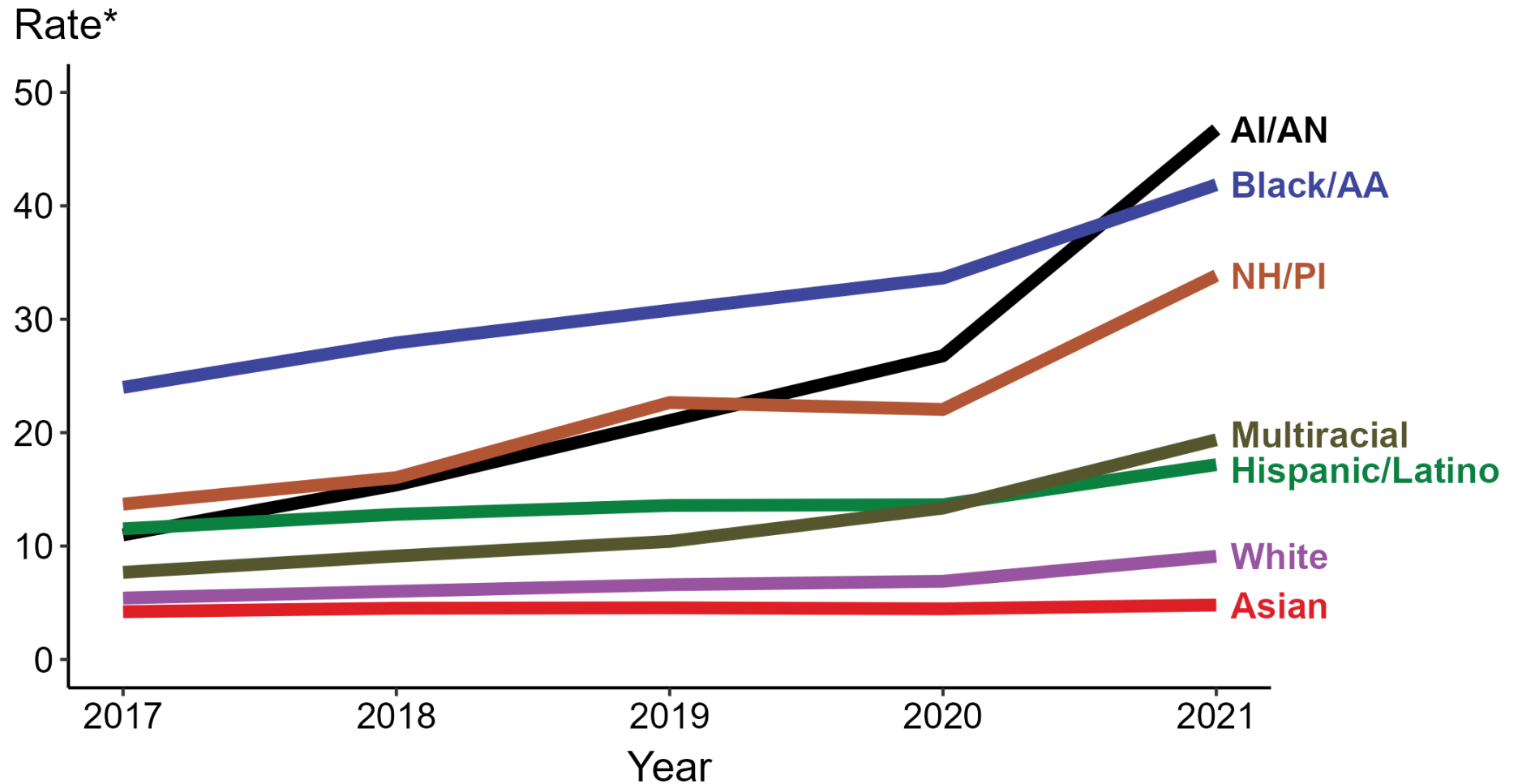
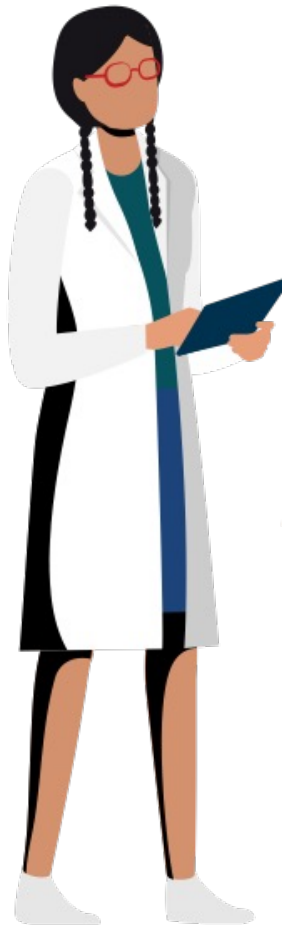
# Primary and Secondary Stages– Reported Cases and Rates of Reported Cases by State, Ranked by Rates, US, 2021

**Table 13. Primary and Secondary Syphilis – Reported Cases and Rates of Reported Cases by State, Ranked by Rates, United States, 2021**

Rank*	State	Cases	Rate per 100,000 Population
1	South Dakota	436	48.7
2	New Mexico	724	34.2
3	Arkansas	990	32.7
4	Oklahoma	1,225	30.7
5	Nevada	939	29.9
6	Mississippi	829	28.1
7	Arizona	1,982	27.2
8	Alaska	194	26.5
9	Oregon	949	22.3
10	California	8,724	22.2
11	Louisiana	995	21.5
12	Missouri	1,316	21.3
13	Florida	4,498	20.7
14	Washington	1,506	19.5
15	Rhode Island	209	19.1
16	Hawaii	259	18.0
17	North Carolina	1,870	17.7
18	New York	3,500	17.6
19	Georgia	1,884	17.4
	<b>US TOTAL<sup>†</sup></b>	<b>53,767</b>	<b>16.2</b>
20	South Carolina	836	16.1
21	Ohio	1,783	15.1



# Primary and Secondary Syphilis – Rates of Reported Cases by Race/Hispanic Ethnicity, United States, 2017-2021

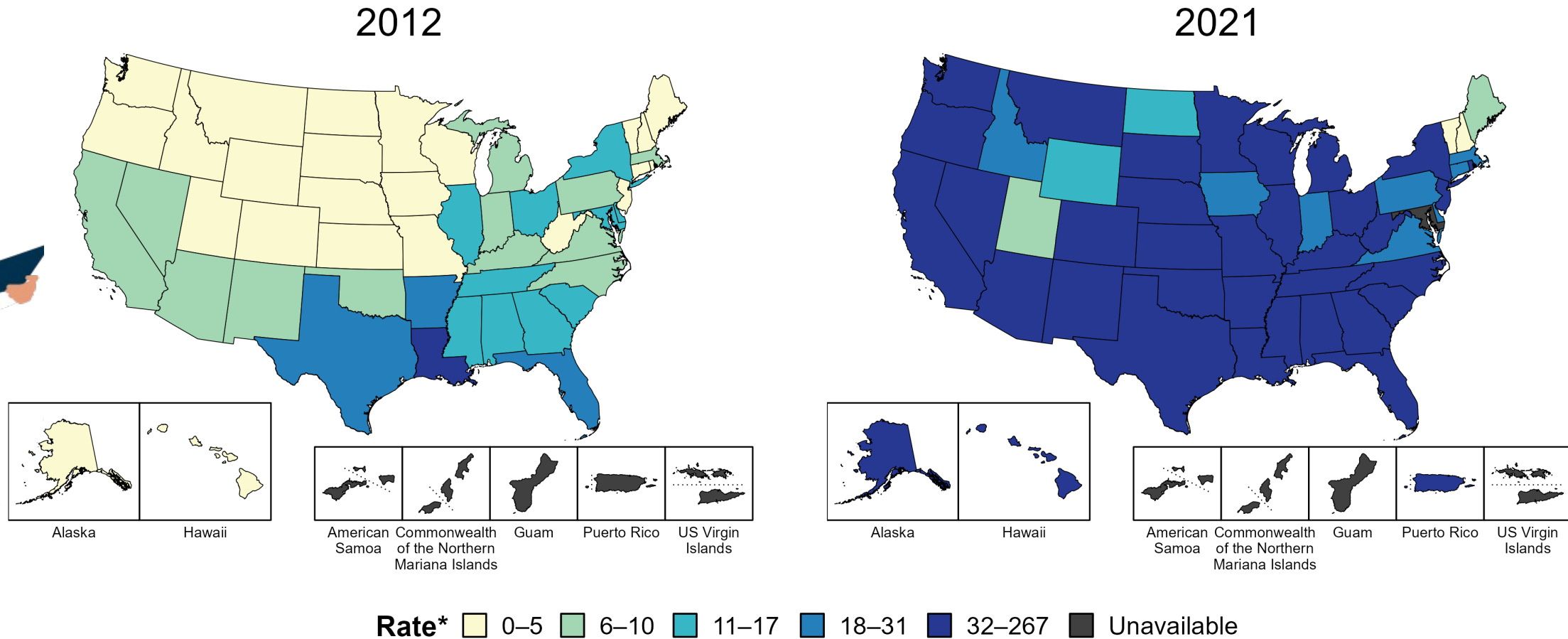
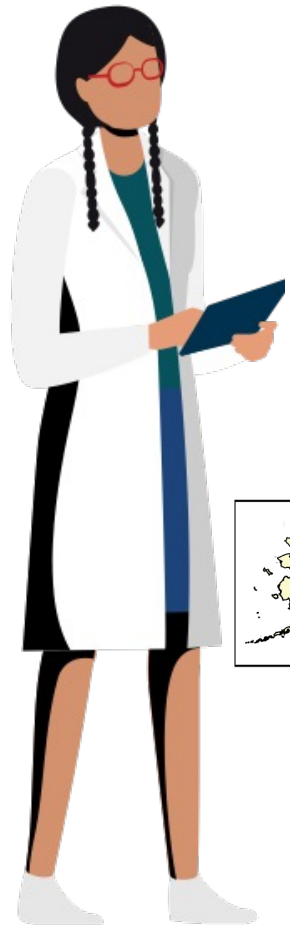


\* Per 100,000

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

<https://www.cdc.gov/std/statistics/2021/figures.htm>

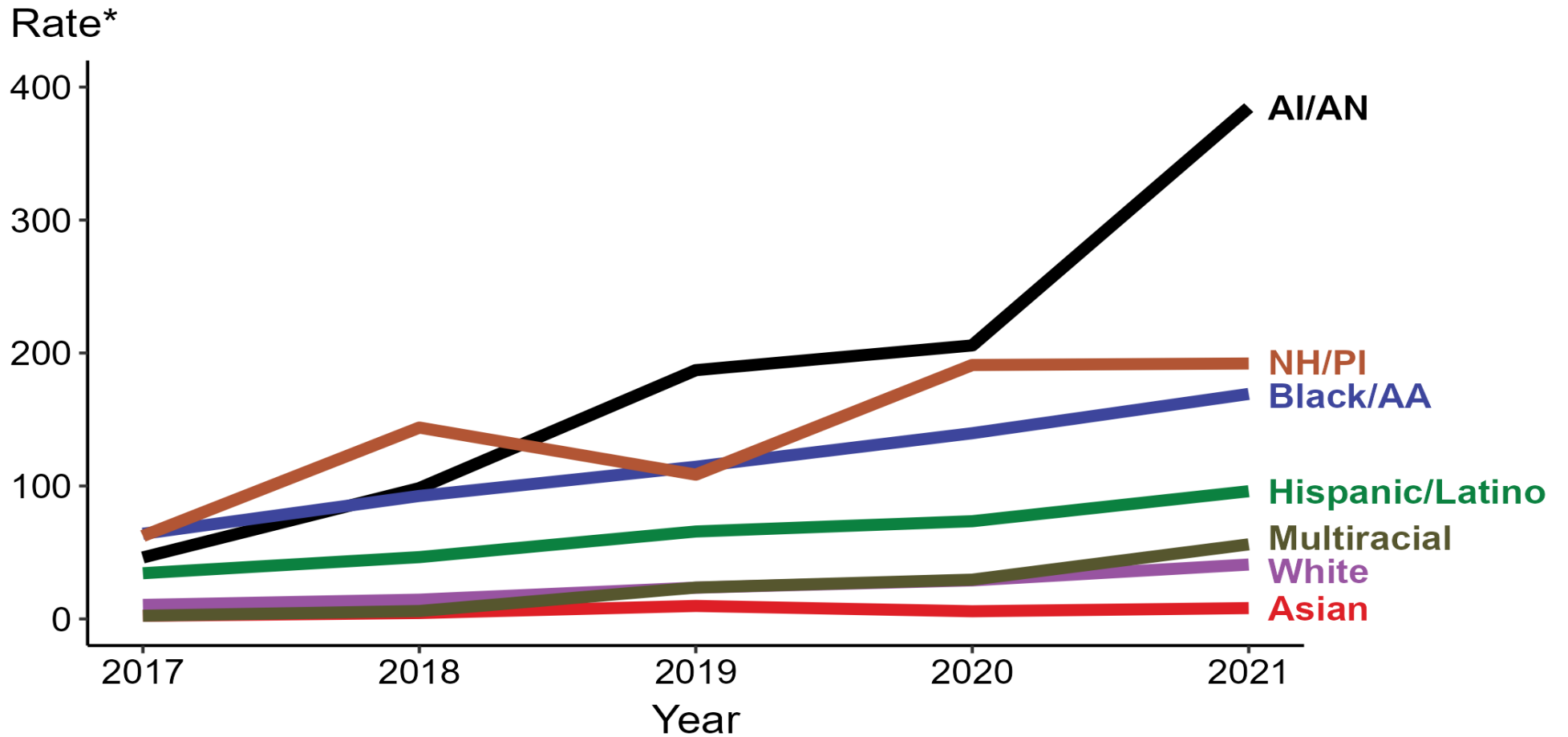
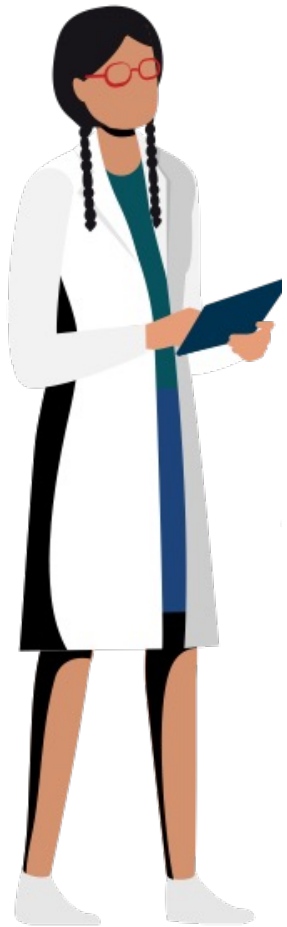
# Syphilis (All Stages) – Rates of Reported Cases Among Women Aged 15-44 Years by State, United States and Territories, 2012 and 2021



\* Per 100,000

<https://www.cdc.gov/std/statistics/2021/figures.htm>

# Congenital Syphilis — Rates of Reported Cases by Year of Birth, Race/Hispanic Ethnicity of Birthing Parent, United States, 2017–2021



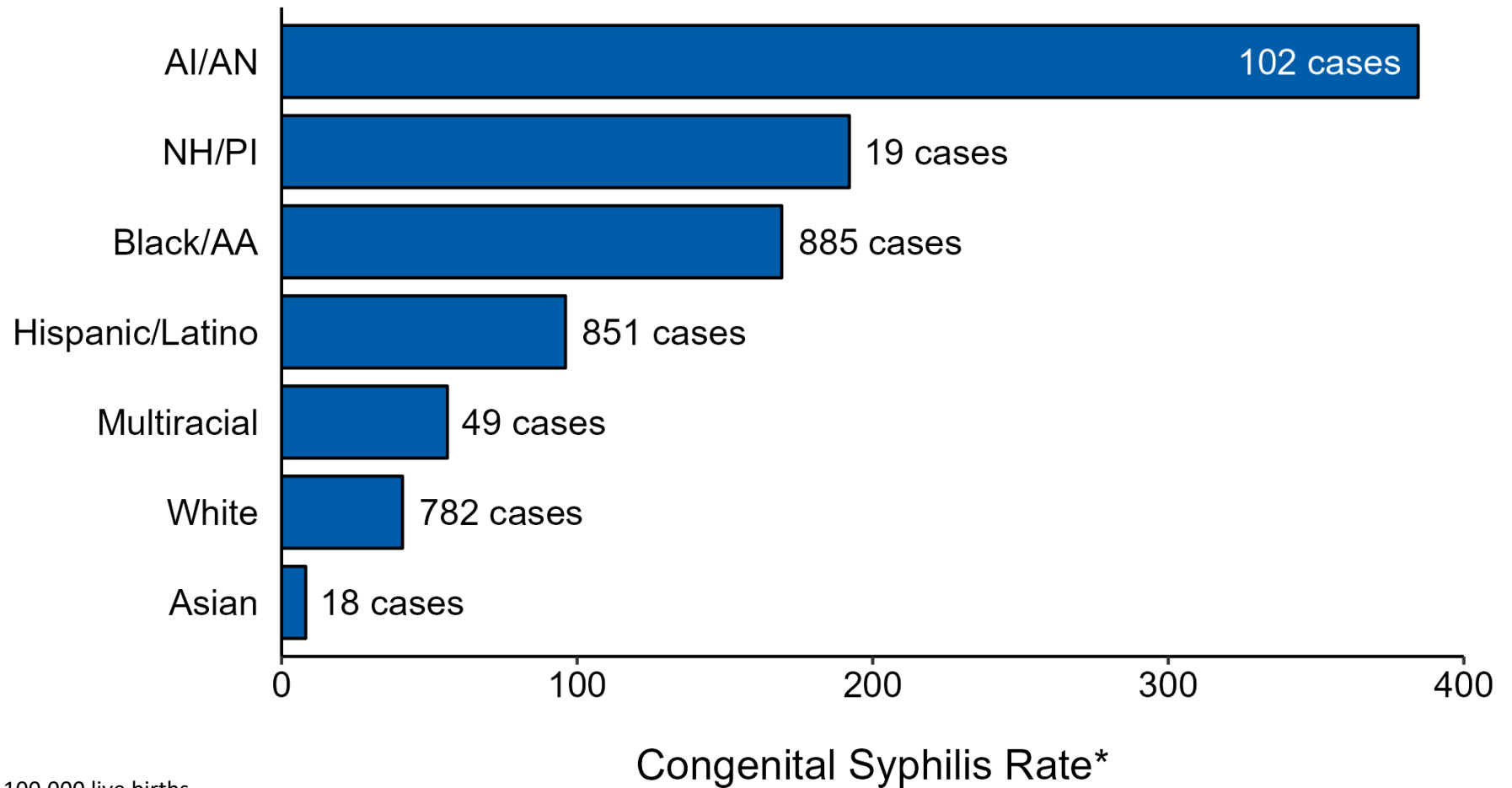
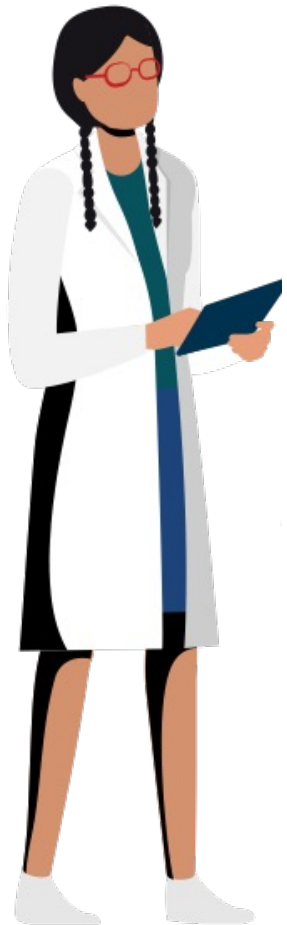
- \* Per 100,000 live births
- **ACRONYMS:** AI/AN = American Indian or Alaska Native; Black/AA = Black or African American; NH/PI = Native Hawaiian or other Pacific Islander
- <https://www.cdc.gov/std/statistics/2021/figures.htm>

# Congenital Syphilis – Reported Cases and Rates of Reported Cases by State, Ranked by Rates, United States, 2021

Rank*	State†	Cases	Rate per 100,000 Live Births
1	Arizona	181	232.3
2	New Mexico	44	205.7
3	Louisiana	110	191.5
4	Mississippi	64	182.0
5	Texas	680	182.0
6	Oklahoma	85	175.6
7	South Dakota	16	140.7
8	Arkansas	50	139.0
9	Nevada	45	133.6
10	Hawaii	20	128.0
11	California	518	123.2
12	Missouri	66	95.0
13	West Virginia	15	87.2
14	Florida	180	83.2
15	Montana	9	80.1
	<b>US TOTAL‡</b>	<b>2,855</b>	<b>77.9</b>

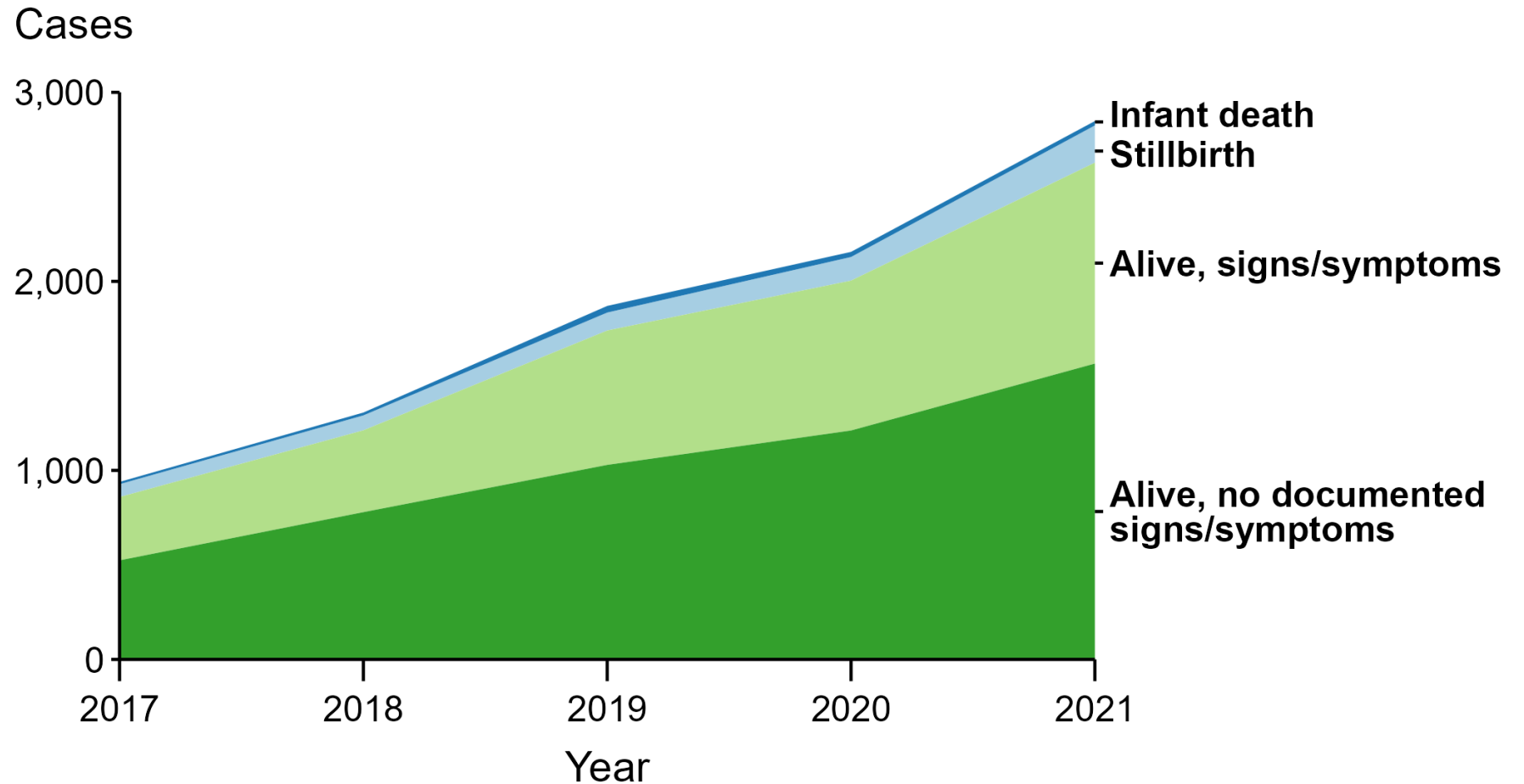
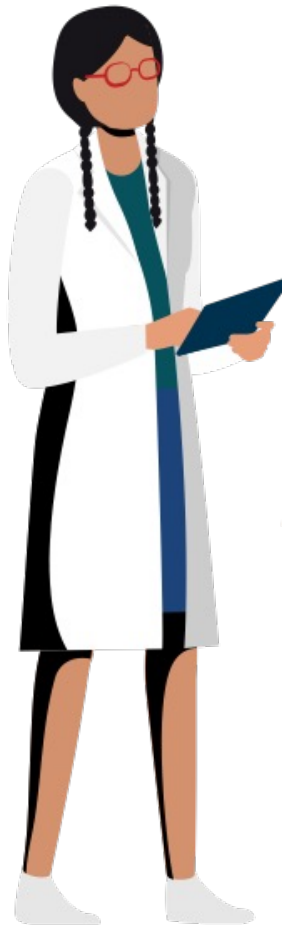
<https://www.cdc.gov/std/statistics/2021/tables/20.htm>

# Congenital Syphilis – Case Counts and Rates of Reported Cases by Race/Ethnicity of Birthing Parent, United States, 2021



- \* Per 100,000 live births
- **NOTE:** In 2021, a total of 149 congenital syphilis cases (5.2%) had missing, unknown, or other race and were not reported to be of Hispanic ethnicity.
- **ACRONYMS:** AI/AN = American Indian or Alaska Native; Black/AA = Black or African American; NH/PI = Native Hawaiian or other Pacific Islander
- <https://www.cdc.gov/std/statistics/2021/figures.htm>

# Congenital Syphilis – Reported Cases by Vital Status and Clinical Signs and Symptoms\* of Infection, United States, 2017-2021



• \* Infants with signs/symptoms of congenital syphilis have documentation of at least one of the following: long bone changes consistent with congenital syphilis, snuffles, condylomata lata, syphilitic skin rash, pseudoparalysis, hepatosplenomegaly, edema, jaundice due to syphilitic hepatitis, reactive CSF-VDRL, elevated CSF WBC or protein values, or evidence of direct detection of *T. pallidum*.

• **NOTE:** Of the 9,141 congenital syphilis cases reported during 2017 to 2021, 22 (0.2%) did not have sufficient information to be categorized.

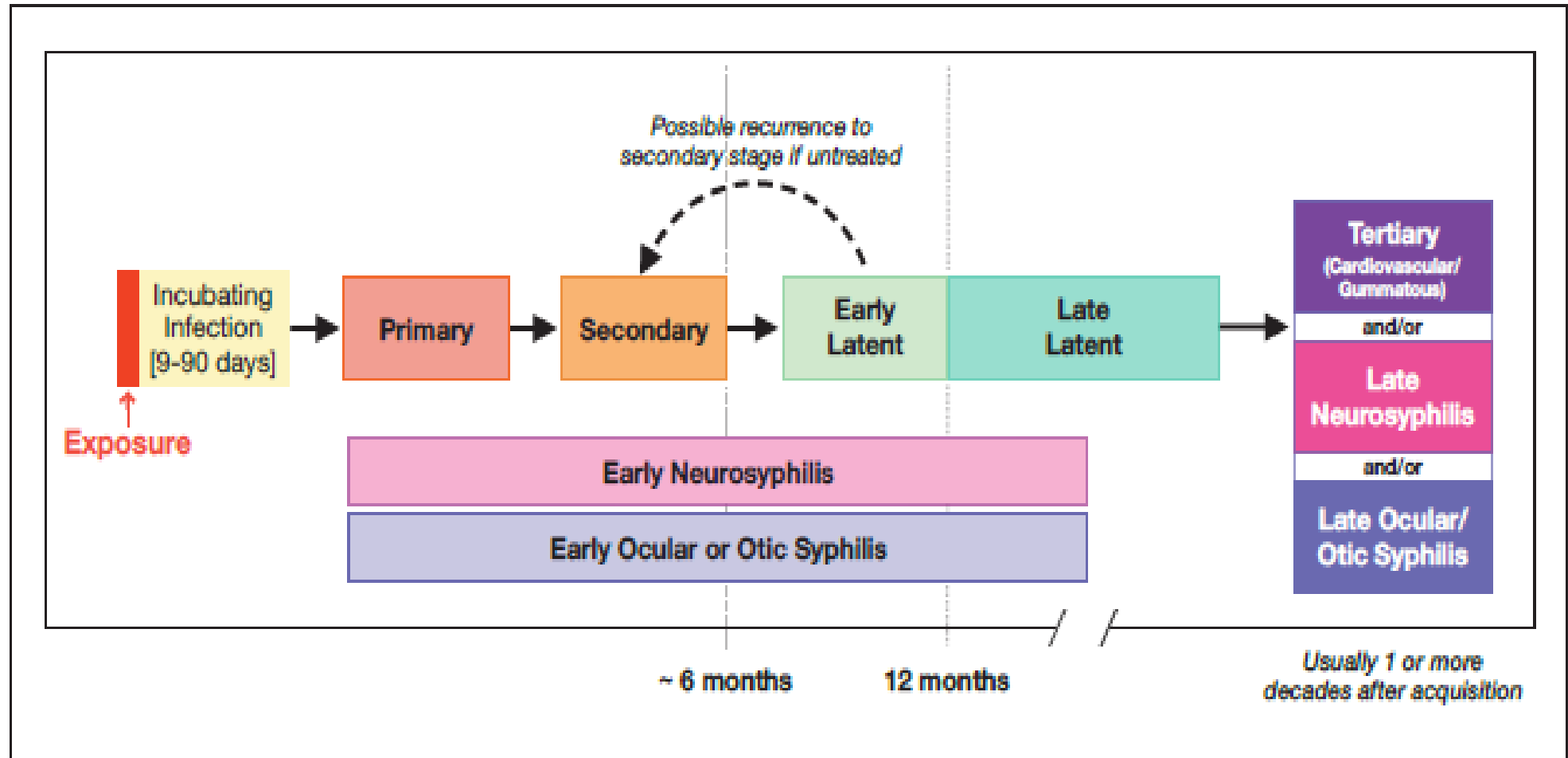
• <https://www.cdc.gov/std/statistics/2021/figures.htm>



# Clinical Overview of Adult and Congenital Syphilis



# Natural History of Untreated Syphilis



# Case Definitions: Primary Syphilis

## Clinical Description

Characterized by one or more ulcerative lesions (e.g. chancre), which might differ in clinical appearance.

### Classic Presentation

Single painless ulcer or chancre at the site of infection

### Atypical Presentation

Multiple, atypical, or painful lesions at the site of infection



Vaginal



Tongue

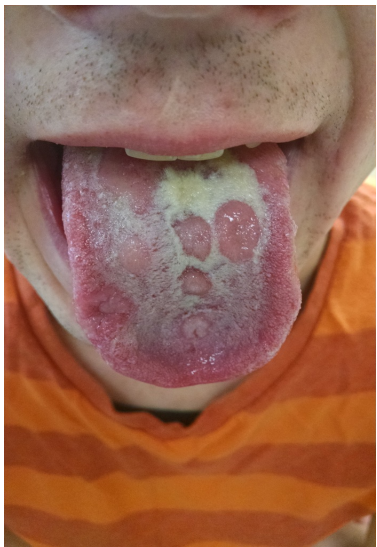


Penile

# Case Definitions: Secondary Syphilis

## Clinical Description

Characterized by localized or diffuse mucocutaneous lesions (e.g., rash – such as non-pruritic macular, maculopapular, papular, or pustular lesions), often with generalized lymphadenopathy. Other signs can include mucous patches, condyloma lata, and alopecia. The primary ulcerative lesion may still be present.



Mucous patches



Palmar/plantar rash



Torso/back rash



Condyloma lata



Alopecia

1. <https://www.cdc.gov/std/syphilis/images.htm>
2. <https://www.cdc.gov/std/statistics/2019/case-definitions.htm>

# Case Definitions: Early (non-primary non-secondary)

## Clinical Description

Stage of infection caused by *T. pallidum* in which initial infection has **occurred within the previous 12 months**, but there are no current signs or symptoms of primary or secondary syphilis.

**Less than 12 months duration** by (1) interval from prior negative syphilis test (or 4-fold titer increase) OR (2) report of symptoms consistent with syphilis within prior 12 months OR (3) sexual contact with a known case (or sexual debut) within prior 12 months



# Case Definitions: Unknown duration or late

## Clinical Description

Stage of infection caused by *T. pallidum* in which initial infection has **occurred > 12 months** previously or in which there is insufficient evidence to conclude that infections was acquired during the previous 12 months.



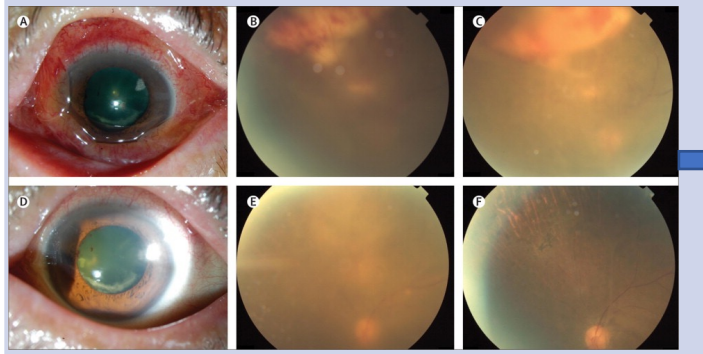
**Unknown or greater than 12 months** duration by: (1) interval from prior negative syphilis test (or 4-fold titer increase) OR (2) report of symptoms consistent with syphilis occurring > 12 months ago OR (3) sexual contact with a known case > 12 months ago (4) Neurologic, ocular, otic signs without evidence of acquiring infection in prior 12 months.

<https://www.cdc.gov/std/statistics/2019/case-definitions.htm>



# Neurologic Manifestations can occur at any stage



Neurosyphilis	Ocular syphilis	Otosyphilis
<p>Infection of the central nervous system with <i>T. pallidum</i>, as evidenced by manifestations including:</p> <ol style="list-style-type: none"> <li>1. Syphilitic meningitis,</li> <li>2. Meningovascular syphilis,</li> <li>3. General paresis,</li> <li>4. Dementia,</li> <li>5. Tabes dorsalis</li> </ol>	<p>Infection of any eye structure with <i>T. pallidum</i>. Manifestations can involve any structure in the anterior and posterior segment of the eye including:</p> <ol style="list-style-type: none"> <li>1. Conjunctivitis</li> <li>2. Anterior uveitis</li> <li>3. Posterior uveitis</li> <li>4. Panuveitis</li> <li>5. Posterior interstitial keratitis</li> <li>6. Optic neuropathy</li> <li>7. Retinal vasculitis</li> </ol>	<p>Infection of the cochleovestibular system with <i>T. pallidum</i>, as evidenced by manifestations including sensorineural hearing loss, tinnitus, and vertigo.</p> <p>Typically presents with cochleo-vestibular symptoms including</p> <ol style="list-style-type: none"> <li>1. Tinnitus</li> <li>2. Vertigo</li> <li>3. Sensorineural hearing loss</li> <li>4. Unilateral/Bilateral</li> <li>5. Have a sudden onset</li> <li>6. Progress Rapidly</li> </ol>
	<p>Ocular syphilis may lead to decreased visual acuity including permanent blindness.</p>	<p>Otic syphilis can result in permanent hearing loss</p>

Otosyphilis/Ocular syphilis can occur at any stage, but is commonly identified during early stages. Can present with or without additional CNS involvement

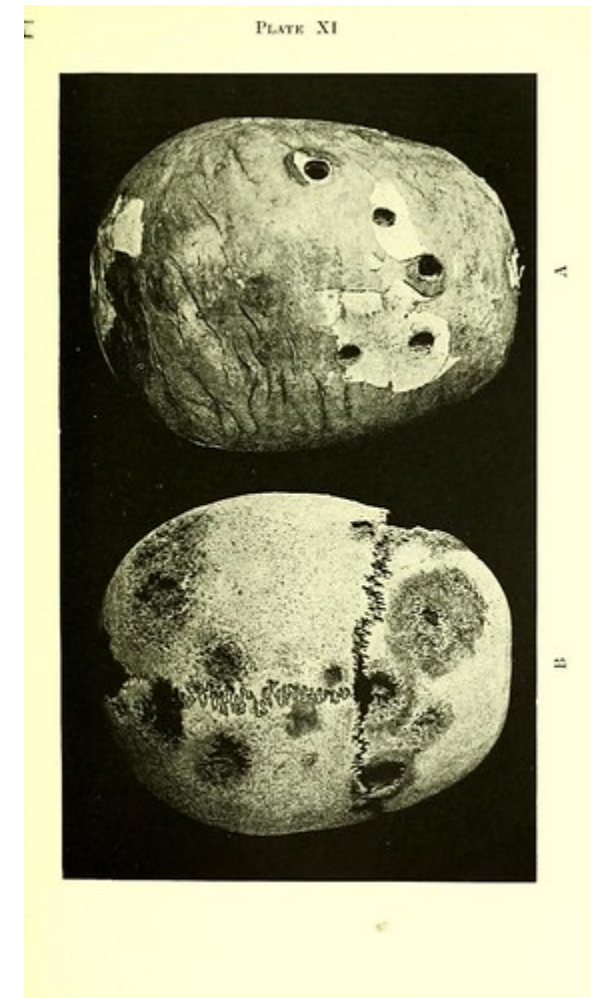
	Ocular syphilis	Otosyphilis
<b>Clinical Features</b>	<ul style="list-style-type: none"> <li>typically presents with blurry vision/visual changes</li> <li>often presents as panuveitis</li> <li>can involve structures in both the anterior and posterior segment of the eye, including conjunctivitis, anterior uveitis, posterior interstitial keratitis, optic neuropathy, and retinal vasculitis</li> <li>can result in permanent vision loss</li> </ul>	<ul style="list-style-type: none"> <li>typically presents with cochleo-vestibular symptoms, e.g. tinnitus, vertigo, sensorineural hearing loss</li> <li>Hearing loss can be unilateral or bilateral, be sudden onset, and progress rapidly</li> <li>can lead to permanent hearing loss</li> </ul>
<b>Diagnosis</b>	<ul style="list-style-type: none"> <li>All with ocular symptoms &amp; reactive syphilis serology need full ocular &amp; cranial nerve evaluation</li> <li>If cranial nerve dysfunction present, CSF evaluation is needed</li> <li>If <i>isolated</i> ocular symptoms (no neuro abnormalities), confirmed ocular abnormalities on exam, and reactive serology, CSF examination unnecessary before treatment (new 2021)</li> <li>CSF analysis can be helpful in ocular symptoms without ocular findings or cranial nerve dysfunction on exam</li> </ul>	<ul style="list-style-type: none"> <li>If <i>isolated</i> auditory abnormalities and reactive syphilis serology, CSF evaluation is likely to be normal and is unnecessary before treatment (new 2021)</li> </ul>
<b>Treatment</b>	<b>Same as neurosyphilis</b> (Note: Systemic steroids are used frequently as adjunctive therapy for otosyphilis and for ocular syphilis, have not been proven to be beneficial)	
<b>Other</b>	See neurosyphilis + Immediate referral to and management in collaboration with ophthalmology	See neurosyphilis + should be managed in collaboration with otolaryngology

# Late Clinical Manifestations/Tertiary Syphilis

## Clinical Description

Late clinical manifestations of syphilis (tertiary syphilis) may include inflammatory lesions of:

1. Cardiovascular system (e.g., aortitis, coronary vessel disease),
2. Skin (e.g., gummatous lesions),
3. Bone (e.g., osteitis),
4. Other structures including the upper and lower respiratory tracts, mouth, eye, abdominal organs, reproductive organs, lymph nodes, and skeletal muscle)
5. Neurologic manifestations (e.g., general paresis and tabes dorsalis)





# Treatment of syphilis with Penicillin

Stage				
<b>Primary</b>	<b>Secondary</b>	<b>Early non-primary, non secondary</b>	<b>Late Latent/ or Unknown Duration</b>	<b>Neurosyphilis, ocular syphilis and otic syphilis</b>
Benzathine penicillin 2.4 million units IM in a single dose	Benzathine penicillin 2.4 million units IM in a single dose	Benzathine penicillin 2.4 million units IM in a single dose	Benzathine penicillin 2.4 million units total administered as 3 doses of 2.4 million units IM each at 1-week intervals	Aqueous crystalline penicillin G 18-24 million units per day, administered as 3-4 million units by IV every 4 hours or continuous infusion for 10-14 days  Alternative: procaine penicillin G 2.4 million units IM 1x/day PLUS probenecid 500 mg orally 4x/day, both for 10-14 days



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

# Penicillin Allergy

- Patients often are incorrectly labeled as allergic to penicillin
  - Evaluate what symptoms were experienced by patients with reported penicillin allergy
- Penicillin allergy causing anaphylaxis is rare
  - In studies that have incorporated penicillin skin testing and graded oral challenge among persons with reported penicillin allergy, the true rates of allergy are low, ranging from 1.5% to 6.1%.
- Allergies wane over time:
  - Approximately 80% of patients with a true IgE-mediated allergic reaction to penicillin have lost the sensitivity after 10 years
- ***Desensitization is recommended for pregnant persons diagnosed with syphilis followed by treatment with penicillin.***

# Clinical Manifestations of Congenital Syphilis (CS)



# Clinical Manifestations of Congenital Syphilis (CS)

Early (onset before 2 years of age)	Late (onset after 2 years of age)
Gestational, perinatal effects (stillbirth, prematurity, LBW, placental and umbilical cord effects)	Facial features (frontal bossing, saddle nose, short maxilla, protuberant mandible)
Systemic (fever, hepatomegaly, generalized lymphadenopathy, failure to thrive, edema)	Ophthalmologic (various)
Mucocutaneous (rhinitis, rash, condyloma lata, jaundice)	Ears (hearing loss)
Hematologic (anemia, thrombocytopenia, leukopenia, leukocytosis)	Oropharynx (dental effects, perforation of hard palate)
Musculoskeletal ('pseudoparalysis of Parrot' — lack of movement of extremity due to pain of periostitis, bone findings)	Cutaneous
Neurologic (CSF findings, acute leptomeningitis, chronic meningovascular syphilis)	Central Nervous System (intellectual disability, seizures, juvenile general paresis, others)
Other (pulmonary, renal, cardiac, GI, ophthalmologic)	Skeletal (various)

# Syphilitic Stillbirth

## ***Clinical case definition***

A fetal death that occurs **after a 20-week gestation** OR in which the fetus weighs **>500g** AND the **birthing parent had *untreated or inadequately treated*\* syphilis at delivery.**

\* Adequate treatment is defined as completion of a penicillin-based regimen, in accordance with CDC treatment guidelines, appropriate for stage of infection, initiated 30 or more days before delivery.

**Comments:** For **reporting** purposes, congenital syphilis includes:

1. cases of congenitally acquired syphilis among infants and children
2. syphilitic stillbirths



# Challenges, opportunities and best practices for the ED and healthcare facilities

**Case:** Devin found out she was pregnant during an ED visit. This was a difficult time as a few weeks prior she lost her young son to gun violence. And two weeks after this ED visit, she was incarcerated; the father of her baby was also incarcerated, leaving her other children in the care of her parents

Devin was first tested for syphilis during a prenatal visit 4 months into her pregnancy, with a positive RPR. She was not informed of the diagnosis until a week later. When she received her diagnosis, she received minimal to no information about what it was or the potential effects on her baby.



While incarcerated, Devin missed some of her appointments because staff at the jail were not able to transport her. When it was time for delivery, she was not taken to a healthcare facility in time and gave birth to her son, Eli, in the car. Eli was stillborn. Devin never received an explanation for the loss of her baby although he was classified as a congenital syphilis case

Devin's striking experiences have been shared by many others, highlighting the multi-level determinants that have contributed to the worsening acquired and congenital syphilis outbreaks among Indigenous people



# IHS CMO Recommendations, Oct 2022

1. **Annual syphilis testing for persons aged 13-64**
2. **Adoption of an STI/HIV/Viral hepatitis testing bundle:**
  1. Syphilis screening test with reflex RPR and TPPA
  2. HIV serology (with documentation of consent if required in the local state jurisdiction)
  3. Screening for gonorrhea and chlamydia at three sites: Urine, Pharynx, Rectum
  4. Screening for hepatitis B and C
  5. Pregnancy test
3. **Adoption of "Express Testing":** On-demand, no-provider/no nurse lab visits for testing.
4. **Screen outside the hospital/clinic in the community**
  1. Field testing at Chapter House, community centers, Health Fairs, community events
  2. Utilization of IWTK ( I want the kit) self-testing
5. **Field treatments for syphilis** by PHNs with Benzathine Penicillin

NNMC GOLDEN TICKET	LABORATORY SLIP	LEARN MORE ABOUT SEXUALLY TRANSMITTED INFECTIONS
Name: _____	Name: _____	<p>STIs are preventable. There are steps you can take to keep yourself and your partner(s) healthy:</p> <ul style="list-style-type: none"> <li>✓ Practice Abstinence</li> <li>✓ Use Condoms</li> <li>✓ Have Fewer Partners</li> <li>✓ Get Vaccinated</li> <li>✓ Talk With Your Partner</li> <li>✓ Get Tested</li> </ul>
Date of Birth: _____	Date of Birth: _____	
IHS Chart Number: _____	IHS Chart Number: _____	<p>CDC estimates there are <b>MILLIONS</b> of new STD infections in the United States each year.</p> <p>Anyone who is sexually active can get an STD.</p> <p>Some groups are more affected by STDs and their outcomes</p> 
<input type="checkbox"/> I want to be tested for Sexually Transmitted Infections today (includes: testing for HIV, Syphilis, Gonorrhea, Chlamydia & Trichomonas)	<p>=====</p> <p>For NNMC Lab Staff:</p> <p>Lab Order Number: _____</p> <p>Lab Account # 30979612</p>	
<p>For those with concerns about a sexually transmitted infection (STI) happening right now as you have symptoms or a recent exposure, it is recommended that you talk with your provider a full evaluation.</p>	<p>Labs:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> HIV- 083935</li> <li><input type="checkbox"/> Syphilis- 012005</li> <li><input type="checkbox"/> Urine Gonorrhea/Chlamydia/Trichomonas- L183160</li> </ul>	
I prefer to be contacted with results by:	EHR/PPMS Location: HPDP STI Testing Order under Leah Spatafore	
<input type="checkbox"/> Phone Number(s): _____		
<input type="checkbox"/> Letter sent to mailing address: _____		
<input type="checkbox"/> I prefer to call in for my results to 505-368-6320		
<p><b>TEAR THIS SECTION OFF AND PLACE IN SECURE BOX IN LAB FOR FOLLOW-UP</b></p>	<p><b>TEAR THIS SECTION OFF AND GIVE TO THE FRONT DESK LAB STAFF OR PLACE ON LAB DESK</b></p>	
<p>LEARN MORE ABOUT HOW TO PROTECT YOURSELF BY VISITING THE FOLLOWING WEBSITES:</p> <ul style="list-style-type: none"> <li>• Center for Disease Control and Prevention: <a href="http://www.cdc.gov/STD/">www.cdc.gov/STD/</a></li> <li>• WE R NATIVE: <a href="http://www.wernative.org/my-relationships/sexual-health">www.wernative.org/my-relationships/sexual-health</a></li> </ul>		
		



# Express STI Testing

## What are express services?

STI express services refer to triage-based STI testing without a full clinical examination. Research shows that STI express services **increase clinic capacity, reduce time to treatment, reduce visit time, and decrease visit cost**. Therefore, express services have the potential to increase access and testing while maximizing available resources.

**There is no one-size-fits-all approach to express services.**

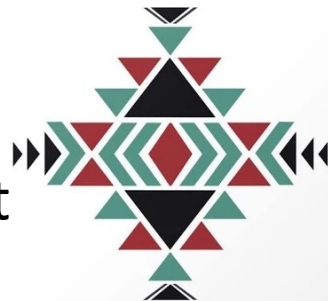
Because express services are driven by limited interactions with clinicians, they are also associated with staffing models that maximize top of license strategies, patient self-collection of swabs, and technology and automation to conserve time and staffing.



# Express STI Treatment

## Provide prompt, stage-based treatment of cases and sexual partners

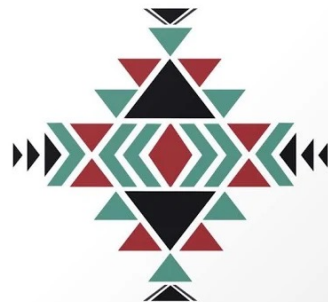
- Link providers and case managers to public health investigative staff for effective disease intervention and community prevention (*case investigation with identification and treatment of sexual partners*)
- Provide **presumptive** treatment of (1) symptomatic persons and (2) sexual partners of cases (3) persons with positive rapid test result
- Ensure access to prompt treatment (either health facility or **field-based**) using designated **case management** pathways
- Endeavor to identify patients as an **early stage of syphilis** which requires *only one injection of benzathine penicillin*.
- Repeat day of treatment RPR if most recent test is  $\geq 6$  days old
- Clinical consultative “rounds” to share and discuss case staging and treatment



# Immediate Treatment in Pregnancy

**Congenital syphilis is preventable – but Penicillin must be given at least 30 days before delivery**

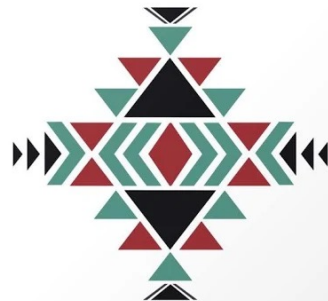
- Use of rapid syphilis tests should be standard in ER/Urgent Care, especially for pregnant people who are not receiving prenatal care
- Rapid tests should only be used in settings where treatment can immediately be given, based on the results



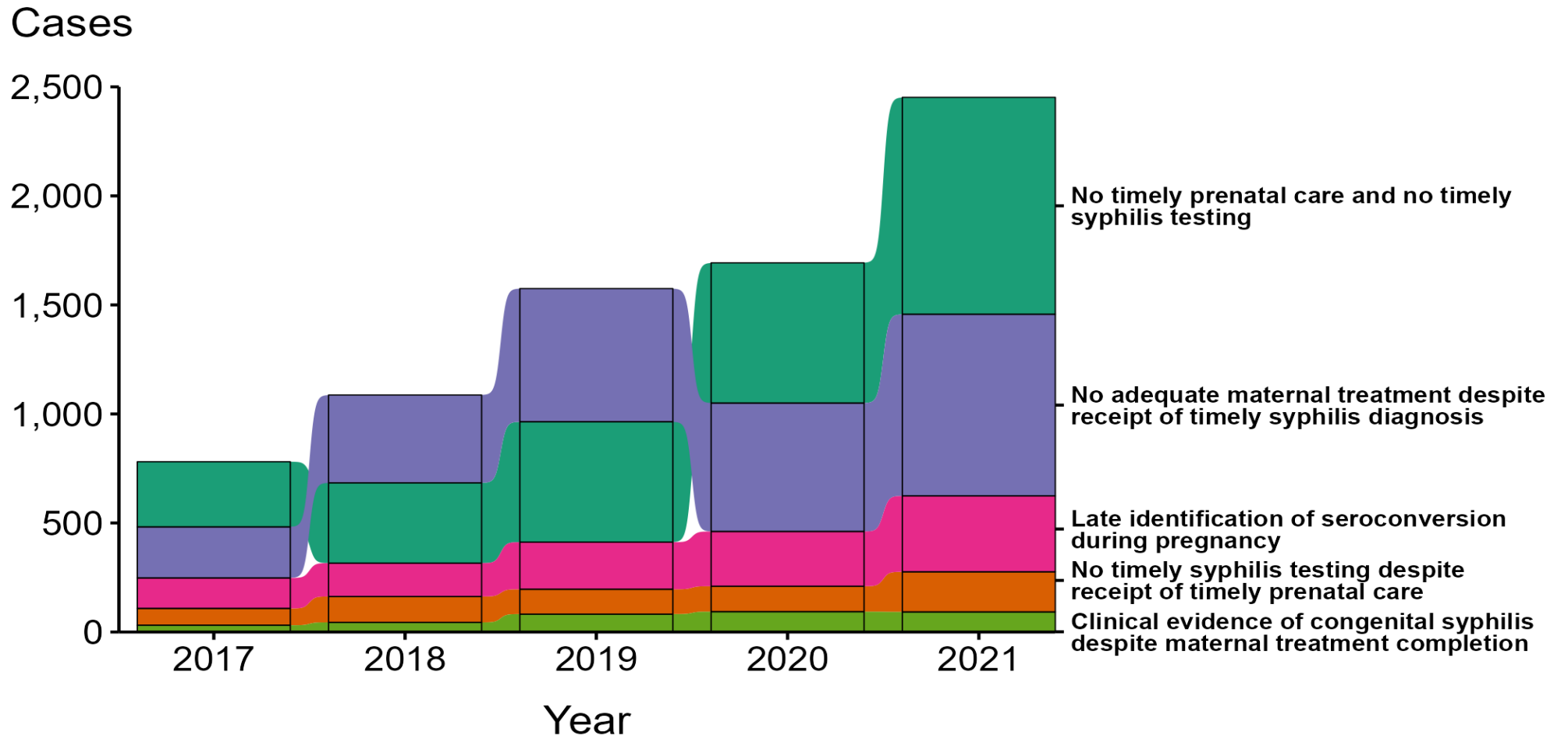
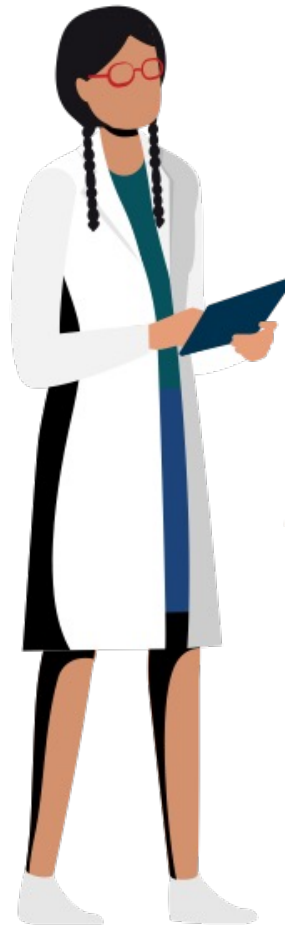
# Always test for pregnancy and syphilis together

## Pregnancy is a sexually transmitted condition

- Any pregnancy test in the ED/Urgent care should be tied to STI testing. If the patient is found to be pregnant, do a rapid syphilis test and treat if positive. Treat the partner presumptively if available
- Similarly, when testing individuals with the capacity for pregnancy for STIs, check a urine HCG (with consent) for pregnancy



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



- **NOTE:** Of the 9,141 congenital syphilis cases reported during 2017 to 2021, 1,553 (17.0%) were not able to have the primary missed prevention opportunity identified due to insufficient information provided to CDC related to maternal prenatal care, testing, or treatment.

• <https://www.cdc.gov/std/statistics/2021/figures.htm>

# Provider Education Resources



- **CDC STD Treatment Guidelines:** <https://www.cdc.gov/std/treatment-guidelines/default.htm>
- **Indian Country Infectious Disease ECHO:** [www.IndianCountryECHO.org](http://www.IndianCountryECHO.org)
- **CDC STD Prevention Training Centers:** <https://www.cdc.gov/std/training/default.htm>
- **University of Washington STD CME sessions:** <https://www.std.uw.edu/>
- **California Prevention Training Center Online:** [https://www.stdhivtraining.org/online\\_courses.html](https://www.stdhivtraining.org/online_courses.html)
- **Johns Hopkins STD Prevention Training:** <https://www.stdpreventiontraining.com/>
- **New York City STD/HIV Prevention Training Center:** <https://www.nycptc.org/>
- **San Francisco City Clinic:** <https://www.sfcityclinic.org/providers>
- **CDC STD Surveillance:** <https://www.cdc.gov/std/statistics/2021/default.htm>
- **CDC STD Hotline:** <https://www.usa.gov/federal-agencies/cdc-national-std-hotline>

# Contact Information

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## Syphilis cases are on the rise.

Know your status,  
especially if you're pregnant.

Syphilis can be hard to spot, often starting with an easily missed sore or rash. While anyone can get syphilis, pregnant people and newborn babies face serious complications if left untreated.

[www.StopSyphilis.org](http://www.StopSyphilis.org)



## HOW CAN CONGENITAL SYPHILIS AFFECT MY BABY?

- > **MISCARRIAGE/STILLBIRTH**
- > **PREMATURITY/LOW BIRTH WEIGHT**
- > **BRAIN AND NERVE PROBLEMS**
- > **BONE DAMAGE**
- > **LOW BLOOD COUNT**

**PROTECT YOUR BABY. GET TESTED.**

