National Center for HIV, Viral Hepatitis, STD, and TB Prevention Division of STD Prevention



Congenital Syphilis Surveillance Data

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CDC Division of STD Prevention

NCSD, Congenital Syphilis Series 20 November 2022

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Congenital Syphilis

 In utero infection with Treponema pallidum

• Can result in:

- Stillbirth
- Infant death
- Premature birth







Early Congenital Syphilis

- No signs of infection
- Hepatosplenomegaly
- Rash
- Snuffles
- Condyloma lata
- Jaundice
- Pseudoparalysis
- Anemia
- Edema

Late Congenital Syphilis

- Complications with eyes
- Deafness
- Oral complications
- Skull
 - Saddle nose
 - Frontal bossing
- Skeletal









Other potential complications

- Heart problems (myocarditis)
- Pneumonia
- Sepsis
- Other gastrointestinal complications
- Kidney problems (nephrotic syndrome)
- Central nervous system complications

Congenital Syphilis – 2021 Treatment Guidelines

- Any fetal death after 20 weeks gestation should be tested
- Test 1st trimester/first pregnant healthcare encounter
- Test at 28 weeks and delivery if live in community with high rates or are at high risk for syphilis acquisition during pregnancy
- No mother or neonate should leave the hospital without maternal serologic status documented at least once during pregnancy

Congenital Syphilis – 2021 Treatment Guidelines

- Pregnant women should be treated with the recommended penicillin regimen for their stage of infection
- Missed doses >9 days between doses are not acceptable for pregnant women receiving therapy for late latent syphilis. An optimal interval between doses is 7 days for pregnant women. Pregnant women who miss a dose of therapy should repeat the full course of therapy.
- Inadequate maternal treatment is likely if delivery occurs within 30 days of therapy, clinical signs of infection are present at delivery, or the maternal antibody titer at delivery is fourfold higher than the pretreatment titer.

Congenital Syphilis Surveillance Definition

<u>Confirmed Case</u>: identification of *T. pallidum* in infant

Probable Case:

Maternal Criteria: untreated or inadequately treated syphilis at delivery

OR

Infant Criteria: reactive non-treponemal syphilis test AND one classic sign/symptom

- physical exam
- radiograph of long bones
- reactive CSF non-treponemal test
- $\circ~$ elevated CSF white blood cell or protein count without other cause

Syphilitic Stillbirth Case Definition

Fetal death

After a 20 week gestation OR In a fetus that weighs >500g

AND

The mother had untreated or inadequately treated syphilis at deliver

CS & Syphilis Trends

THE STATE OF STDS IN THE UNITED STATES, 2019

STDs increased for the 6th year, reaching a new all-time high **1.8 million** CASES OF CHLAMYDIA

19% increase since 2015

616,392 CASES OF GONORRHEA

56% increase since 2015

129,813 CASES OF SYPHILIS 74% increase since 2015

1,870 CASES OF SYPHILIS AMONG NEWBORNS

279% increase since 2015

LEARN MORE AT: www.cdc.gov/std,

Over the last decade, congenital syphilis has diffused across the nation. By 2019, 43 states and D.C. reported at least one case.





Congenital Syphilis — Reported Cases by State, United States, 2010–2019

Primary and Secondary Syphilis — Reported Cases by Sex and Sex of Sex Partners, 31 States*, 2015–2019



*31 states were able to classify ≥70% of reported cases of primary and secondary syphilis among males as either MSM or MSW for each year during 2015–2019.

ACRONYMS: MSM = Gay, bisexual, and other men who have sex with men; MSW = Men who have sex with women only



In the last decade, the percentage of counties reporting at least one case of syphilis among a woman of reproductive age nearly doubled from 27% to 50%







Syphilis — Rates of Reported Cases by Stage of Infection, United States, 2010–2019



Primary and Secondary Syphilis — Rates of Reported Cases by Region, United States, 2010–2019



Primary and Secondary Syphilis — Rates of Reported Cases by State, United States and Territories, 2019





Primary and Secondary Syphilis — Rates of Reported Cases by County, United States, 2019





Syphilis increases are not limited to a narrow age group of women

Rate*



Syphilis is diffusing to previously unaffected areas, and rates are increasing in areas with a history of syphilis among women





Total Syphilis — Rates of Reported Cases Among Women Aged 15-44 Years by State, United States, 2010–2019

Congenital Syphilis — Rates of Reported Cases by Year of Birth and State, United States and Territories, 2019



* Per 100,000 live births



Over 2,100 infants born in 2020 have been reported as cases of congenital syphilis*



* Reported and projected 2020 congenital syphilis data are preliminary as of July 29, 2021.

Congenital Syphilis — Reported Cases by Year of Birth, United States, 2010–2020*



Based on preliminary 2020 data,* 32 states and D.C. have already reported increases in congenital syphilis over 2019.



* Reported 2020 congenital syphilis data are preliminary as of July 29, 2021.

Congenital Syphilis — Number of States with Congenital Syphilis Case Increases, United States, 2019–2020*

Congenital syphilis related deaths continue to increase in 2020* consistently representing about 7% of all reported cases.



* Reported 2020 congenital syphilis data are preliminary as of July 29, 2021.

Congenital Syphilis — Reported Stillbirths and Infant Deaths, United States, 2010–2020*



Congenital Syphilis: Global Successes

June 10, 2016 | 3 min read

Four countries eliminate mother-tochild transmission of HIV or syphilis

ADD 1

WHO rec child tra motherhave elir Dominica celebrates elimination of mother-to-child transmission of HIV and syphilis

TheStar

LOHFOONFOR

Malaysia feted for eliminating mother-to-child HIV and syphilis transmission

SAVE



dith Meister Dr. Dzulkelly Almead (right) and Health director general Datuk Dr Noor Hohem hilds holding the certificate of mether-to-child transmission of kill's and syghilis elimination on ning, Oct 8, in Manila, the Philipples.

PRESS RELEASE

a

syphilis

"Elimin

WHO validates elimination of mother-to-child transmission of HIV and syphilis in Cuba

WASHINGTON DC/GENEVA, 30 June 2015—Cuba today became the first country in the world to receive validation from the World Health Organization that it has eliminated mother to child transmission of HIV and

PRESS RELEASE

Thailand is first country in Asia to eliminate mother-to-child transmission of HIV and syphilis

NEW DELHI/BANGKOK, 7 June 2016— Thailand today received validation from WHO for having eliminated

TH PRESS RELEASE

Sri Lanka eliminates vertical transmission of HIV and syphilis

GENEVA/BANGKOK, 13 December 2019—UNAIDS congratulates Sri Lanka for achieving the elimination of vertical transmission of HIV and congenital syphilis. "Sri Lanka's remarkable achievement gives me hope and shows that change is possible. It is clear that when a country ensures that services are accessible and stigma-free for women, including for women living with or affected by HIV, results follow that benefit women's health, their children's health and society as a whole," said Winnie Byanyima, UNAIDS Executive Director.



Elimination of Mother-to-child transmission of Syphilis WHO Requirements

- CS rate <50/100,000 live births
- Antenatal care coverage (at least one visit) ≥ 95%
- Syphilis testing of Pregnant Women ≥ 95%
- Treatment coverage of Pregnant Women w/syphilis ≥ 95%



US rates of congenital syphilis have been increasing dramatically for the last several years



In 2019, the rates of congenital syphilis in 9 states exceeded 50 cases per 100,000 newborns

CS Rate per 100,00 Live Births



Primary and secondary syphilis cases were affected by COVID-19



Reported 2020 P&S syphilis cases as a percentage of 2019 by *MMWR* week—United States (Pagaoa et al, *STD* 2021)

Disparities

Congenital Syphilis — Rates of Reported Cases by Year of Birth, Race, and Hispanic Ethnicity of Mother, United States, 2010–2019



Although 2020 data are preliminary,* racial and ethnic disparities are similar to data seen in previous years.



Congenital Syphilis Rate per 100,000 Live Births

* Reported 2020 congenital syphilis data are preliminary as of July 29, 2021.

Congenital Syphilis — Case Counts and Rates of Reported Cases by Race and Hispanic Ethnicity, United States, 2020*



Primary and Secondary Syphilis — Rates of Reported Cases by Race/Hispanic Ethnicity, United States, 2015–2019



Primary and Secondary Syphilis — Rates of Reported Cases by Race/Hispanic Ethnicity and Sex, United States, 2019





Primary and Secondary Syphilis — Rate Ratios by Sex, Race/Hispanic Ethnicity, and Region, United States, 2019

Male

Female



* For the rate ratios, Whites are the reference population. Y-axis is log scale.

ACRONYMS: AI/AN = American Indians/Alaska Natives; NHOPI = Native Hawaiians/Other Pacific Islanders

Interventions

Congenital Syphilis — Missed Prevention Opportunities among Mothers Delivering Infants with Congenital Syphilis, United States, 2015–2019 Cases 1,600-No adequate maternal treatment despite 1,200 receipt of timely syphilis diagosis 800 No timely prenatal care and no timely syphilis testing 400 Late identification of seroconversion during pregnancy No timely syphilis testing despite receipt of timely prenatal care 0 Clinical evidence of congenital syphilis 2016 2018 2019 2015 2017 despite maternal treatment completion Year

NOTE: Of the 5,269 congenital syphilis cases reported during 2015–2019, 912 (17.3%) were not able to have the primary missed prevention opportunity identified due to insufficient information submitted to CDC related to maternal prenatal care, testing, or treatment.



Missed opportunities to prevent congenital syphilis vary by region



*Data for congenital syphilis cases are from 2018. Percentages within each region do not add to 100% because of missing data. Kimball A, et al. Missed Opportunities for Prevention of Congenital Syphilis — United States, 2018. MMWR, 2020.

National Strategy

- 1. Prevent new STIs
- 2. Improve the health of people by reducing adverse outcomes of STIs
- 3. Accelerate progress in STI research, technology, and innovation
- 4. Reduce STI-related health disparities and inequities
- 5. Achieve integrated, coordinated efforts that address the STI epidemic



American Rescue Plan Act of 2021 DIS Workforce Development Funds

Goals

- 1. Expand & enhance frontline public health staff
- 2. Conduct DIS workforce training and skills building
- 3. Build organizational capacity for outbreak response
- 4. Evaluate and improve recruitment, training, and outbreak response

\$1.13 Billion Funds







Laboratory Activities

STI diagnostic development

- Test for *T. pallidum* in genital ulcers
- Novel Technologies for Rapid RPR Test R&D

NIH development of syphilis specimen repository



Evaluation of dual point-ofcare tests for HIV and syphilis



Enhancing surveillance of *T. pallidum* strains through development of highly sensitive, whole genome sequencing methods

Improved Timeliness of Data

Congenital Syphilis: Preliminary 2020 Data (cdc.gov)

The NEW ENGLAND JOURNAL of MEDICINE

CORRESPONDENCE



High Congenital Syphilis Case Counts among U.S. Infants Born in 2020

life, including rash, copious nasal discharge to rise until the reporting period ends in Octothe United States is increasing.¹

TO THE EDITOR: Congenital syphilis, a life- mentary Appendix, available with the full text of threatening infection caused by the transmis- this letter at NEIM.org). As of July 29, 2021, a sion of Treponema pallidum from a woman to her total of 2022 infants born in 2020 had been refetus during pregnancy, can result in miscar- ported to the Centers for Disease Control and riage, stillbirth, preterm birth, low birth weight, Prevention (CDC) as having congenital syphilis and infant death.1 Whereas many infants with (Fig. 1). This number already surpasses the 1870 congenital syphilis are asymptomatic at birth,² cases reported in 2019, represents the highest classic signs can appear in the first 2 years of case count since 1994, and is likely to continue ("snuffles"), hepatosplenomegaly, jaundice re- ber 2021. Forty-seven states and the District of lated to syphilitic hepatitis, bone deformities, Columbia reported at least 1 case of congenital and neurologic involvement. Although these se- syphilis in 2020, with 32 states and the District quelae can be prevented when maternal syphilis of Columbia already reporting case increases is diagnosed and treated 30 days or more before over 2019. Of the 2022 cases currently reported, delivery,3 the incidence of congenital syphilis in 139 (6.9%) involved death related to congenital syphilis.

Congenital syphilis is a reportable condition The increases in the case counts of congenital in all 50 states and the District of Columbia and syphilis predate the coronavirus disease 2019 is nationally notifiable (surveillance criteria for (Covid-19) pandemic and have persisted during case notification are summarized in the Supple- pandemic-related disruptions of health care and public health systems. Recent increases reflect

HEALTH AFFAIRS BLOG

RELATED TOPICS:

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Babies With Syphilis: A Catastrophic Failure Of The US Health Care System

Leandro Mena

SEPTEMBER 16, 2021



PEDIATRICS OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRIC

10.1377/hblog20210915.79871

Congenital Syphilis Diagnosed Beyond the Neonatal Period in the United States: 2014-2018

Anne Kimball, Virginia B. Bowen, Kathryn Miele, Hillard Weinstock, Phoebe Thorpe, Laura Bachmann, Robert McDonald, Aliza Machefsky and Elizabeth Torrone Pediatrics September 2021, 148 (3) e2020049080; DOI: https://doi.org/10.1542/peds.2020-049080



Congenital Syphilis Surveillance

- Technical assistance
- Webinar series on surveillance definition and application:
 - www.cste.org/members/group.aspx?id=87602
- Case Based Surveillance Team Email:
 - std_surv_inquiry@cdc.gov

Other Congenital Syphilis Activities

- Technical assistance
- CDC Congenital Syphilis Strategic Plan
- Enhancing data and surveillance to identify the impact of emerging health threats to pregnant people and their infants
- Evaluating cost-effectiveness of 28-week syphilis screening
- Partnering with state and local health departments to build a portfolio of possible congenital syphilis interventions (e.g., jail screening, embedded DIS, non-traditional partners and interventions)

Catalyzing Congenital Syphilis Prevention

- Supplemental Congressional Funding
- Funding prevention efforts in 4 states to develop, implement and evaluate interventions to reduce congenital syphilis in the pre-birth stage
- \$1,500,000/year
- Selection criteria included:
 - Local epidemiology
 - Disproportionately impacted communities

CCSP Interventions

- Expand syphilis screening & treatment outside healthcare
 - Corrections, Syringe Service Programs, Housing, etc.
- Automate syphilis screening for pregnant patients presenting to emergency departments
- Develop an open access prenatal care clinic targeting pregnant patients experiencing homelessness and/or substance abuse in a rural setting
- Develop home visit programs and improved referrals to better serve women of reproductive age at risk for syphilis

Prenatal Screening Laws for Syphilis, 2021

- 23 states require screening only at 1st visit
- 7 states and DC require screening at the 1st visit and 3rd trimester
- 11 states require screening at the 1st visit, 3rd trimester, and delivery
- 1 state requires screening at 1st
 visit and delivery
- 8 states have no screening requirements

AK ME VT NH MT NY WA ND MN MI MA WI RI ID WY SD IA 1L IN OH PA NJ CT OR NV CO NE MO KY WV MD VA DE CA UT NM KS AR NC SC DC TN AZ OK LA MS AL GA ТΧ FL HI

*The following states only require third trimester screening if the patient is at increased risk: Alabama, Indiana, Missouri, Pennsylvania, and Tennessee. The following states only require screening at delivery if the patient is at increased risk: Florida, Georgia, Louisiana, Maryland, Michigan, Missouri, and Nevada.

- Disparities
- Access to Care
- Syndemics
 - Substance use, m 80-
- Clinician educatio
- Data modernizati
- Competing priorit



- Disparities
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- Syndemics

- Substance up manifold health, housing more education and timeline

Competing priorities

- Disparities
- Access to Care
- Syndemics
 - Substance use, mental health, housing, incarceration
- Clinician education
- Data modernization and timeliness
- Competing priorities

Self-reported drug-related behaviors are increasing among women with primary and secondary syphilis.





* Proportion reporting injection drug use, methamphetamine use, heroin use, or sex with a PWID within the last 12 months calculated among cases with known data (cases with missing or unknown responses were excluded from the denominator). **Abbreviations:** PWID = person who injects drugs

Among all people reported with primary and secondary syphilis, women self-report more injection drug use than others.





* Proportion reporting injection drug use within the last 12 months calculated among cases with known data (cases with missing or unknown responses were excluded from the denominator).

Abbreviations: MSM = gay, bisexual, or other men who have sex with men; MSW = men who have sex with women only

Reports of injection drug use* differ by U.S. region for women with primary and secondary syphilis.





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* Proportion reporting methamphetamine use within the last 12 months calculated among cases with known data (cases with missing or unknown responses were excluded from the denominator)

- Disparities
- Access to Care
- Syndemics
 - Substance use, mental health, housing, incarceration
- Clinician education
- Data modernization and timeliness
- Competing priorities

- Disparities
- Access to Care
- Syndemics
 - Substance use, mental health,
- Clinician education
- Data modernization and time in 2014 2015 2016 2017
- Competing priorities



2017 STD AAPPS POM Syphilis Partners Services Among Women

References and Resources

- **Case Definition:** ndc.services.cdc.gov/case-definitions/syphilis-2018/
- CS Preliminary 2020 Data:

https://www.cdc.gov/std/statistics/2020/Congenital-SyphilispreliminaryData.htm

- CDC Surveillance Report: <u>https://www.cdc.gov/std/statistics/2019/default.htm</u>
- Syphilis Supplement:

https://www.cdc.gov/std/statistics/2019/syphilis/default.htm

- <u>Babies With Syphilis: A Catastrophic Failure Of The US Health Care System</u>
 <u>Health Affairs</u>
- High Congenital Syphilis Case Counts among U.S. Infants Born in 2020 | NEJM
- STI National Plan: <u>https://www.hhs.gov/programs/topic-sites/sexually-transmitted-infections/plan-overview/index.html</u>

Thank You

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Images courtesy PHIL.CDC, Dr. S. Taylor, Dr. S. Perez-Cavazos, R. McDonald

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

