

■ STD Increases Across the Board



STDs hit record high in US, 2M cases reported in 2016

"Increases in STDs are a clear warning of a growing threat," Jonathan Mermin, director of CDC's National Center for HIV/AIDS, Viral Hepatitis, STD and TB Prevention, said in a news release. "STDs are a persistent enemy, growing in number, and outpacing our ability to respond."



CDC: 3 sexually transmitted diseases hit record highs across U.S.



STD rates hit another record high, with California near the top



C reports rise in STDs in the United States



America faces uncontrollable STD epidemic



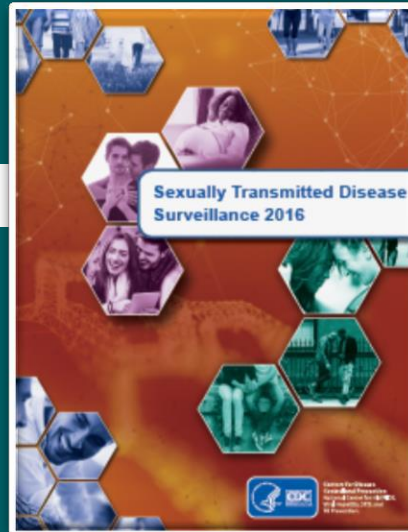
More Americans Have an STD Than Ever Before, Officials Say



5 reasons why 3 STDs are roaring back in America

The CDC found spikes in cases of syphilis, gonorrhea, and chlamydia in 2016.

USA – New STD cases "hit record high in US"



STDs Hit All-Time High in U.S.

Syphilis, Gonorrhea, Chlamydia First Time in US



Sex diseases on the rise with more than 2 million cases of chlamydia, gonorrhea, and syphilis reported in 2016



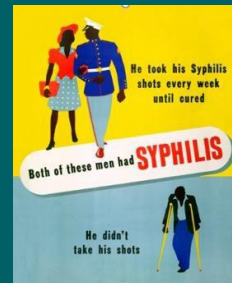
STD rates hit all-time highs for the third year in a row

STD rates reach record high in U.S., government says



New STD cases hit a record high in the US

Annual report shows more than 2 million cases of chlamydia, gonorrhea and syphilis reported in 2016



There is now a gonorrhea superbug and we can't get rid of it



Jim

STDs IN THE UNITED STATES



STDs tighten their grip on the nation's health as rates increase for a fourth year.

Source: U.S. Centers for Disease Control and Prevention



CHLAMYDIA **1,708,569**

TOTAL CASES IN 2017

6.89% INCREASE SINCE 2016



GONORRHEA **555,608**

TOTAL CASES IN 2017

18.58% INCREASE SINCE 2016



SYPHILIS **30,644**

TOTAL CASES IN 2017

10.17% INCREASE SINCE 2016

**CONGENITAL
SYPHILIS** **918**

TOTAL CASES IN 2017

43.66% INCREASE SINCE 2016

■ Congenital Syphilis Resurgence

Syphilis is a Complicated Bacterial Infection

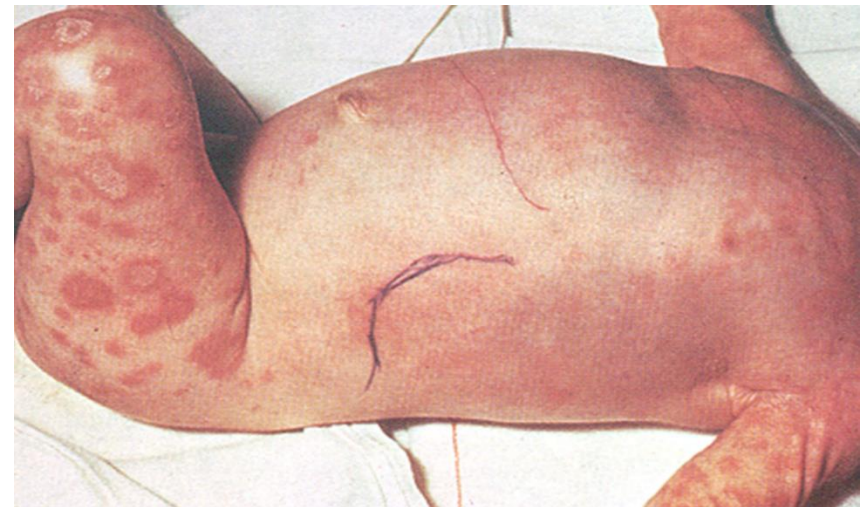
- Syphilis is caused by the bacteria *Treponema pallidum*
- Signs and symptoms of early syphilis can be difficult to detect
- Untreated syphilis then enters a latent phase with no symptoms
- Diagnosis is made by medical history, clinical exam, and two blood tests



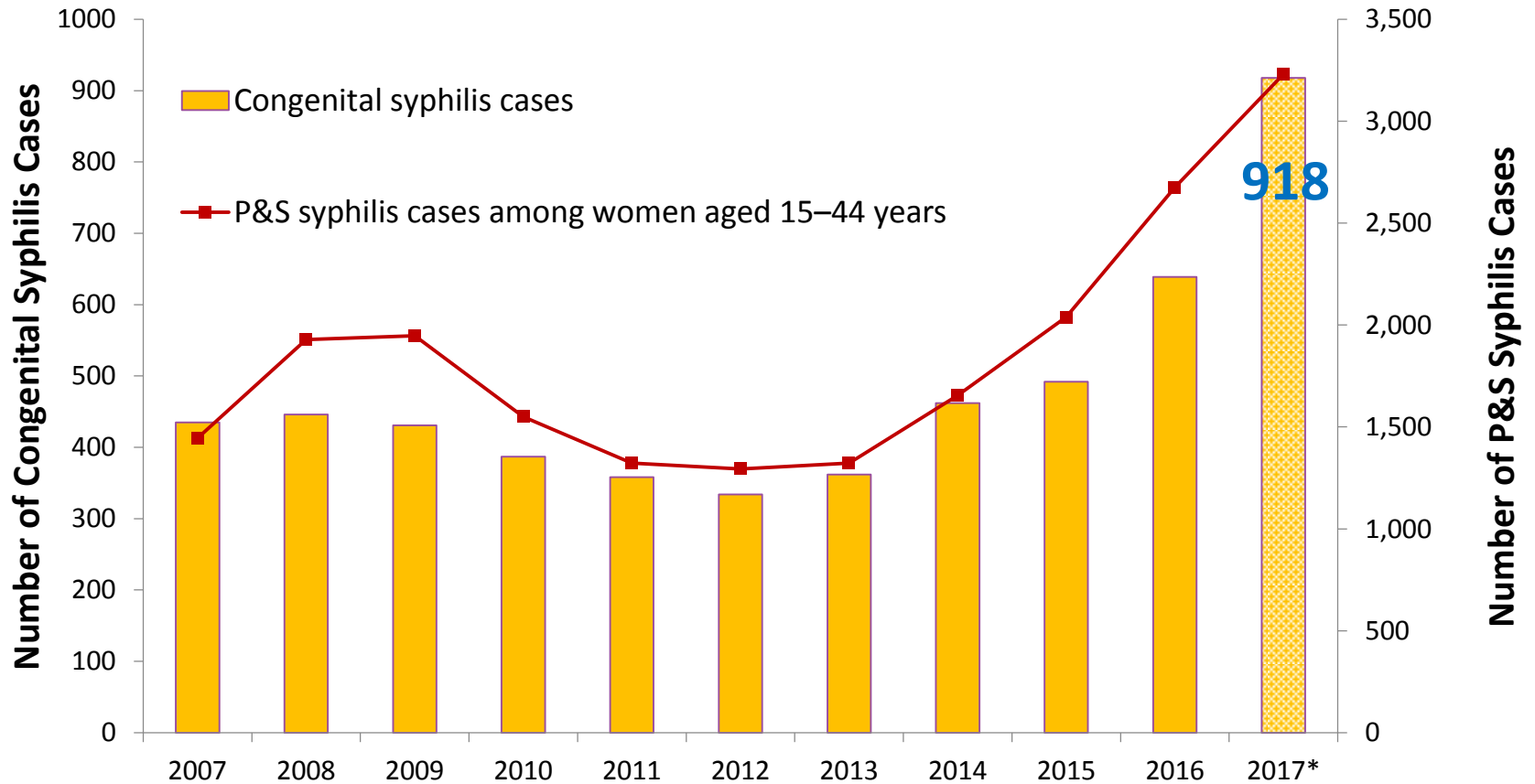
Syphilis Can Be Transmitted *In Utero* if Left Untreated

- **An infected woman can transmit syphilis to her fetus during pregnancy**
 - At any stage of syphilis and any trimester of pregnancy
- **Congenital infection can result in:**
 - Stillbirth and early infant death
 - Infant disorders such as neurologic impairment and bone deformities

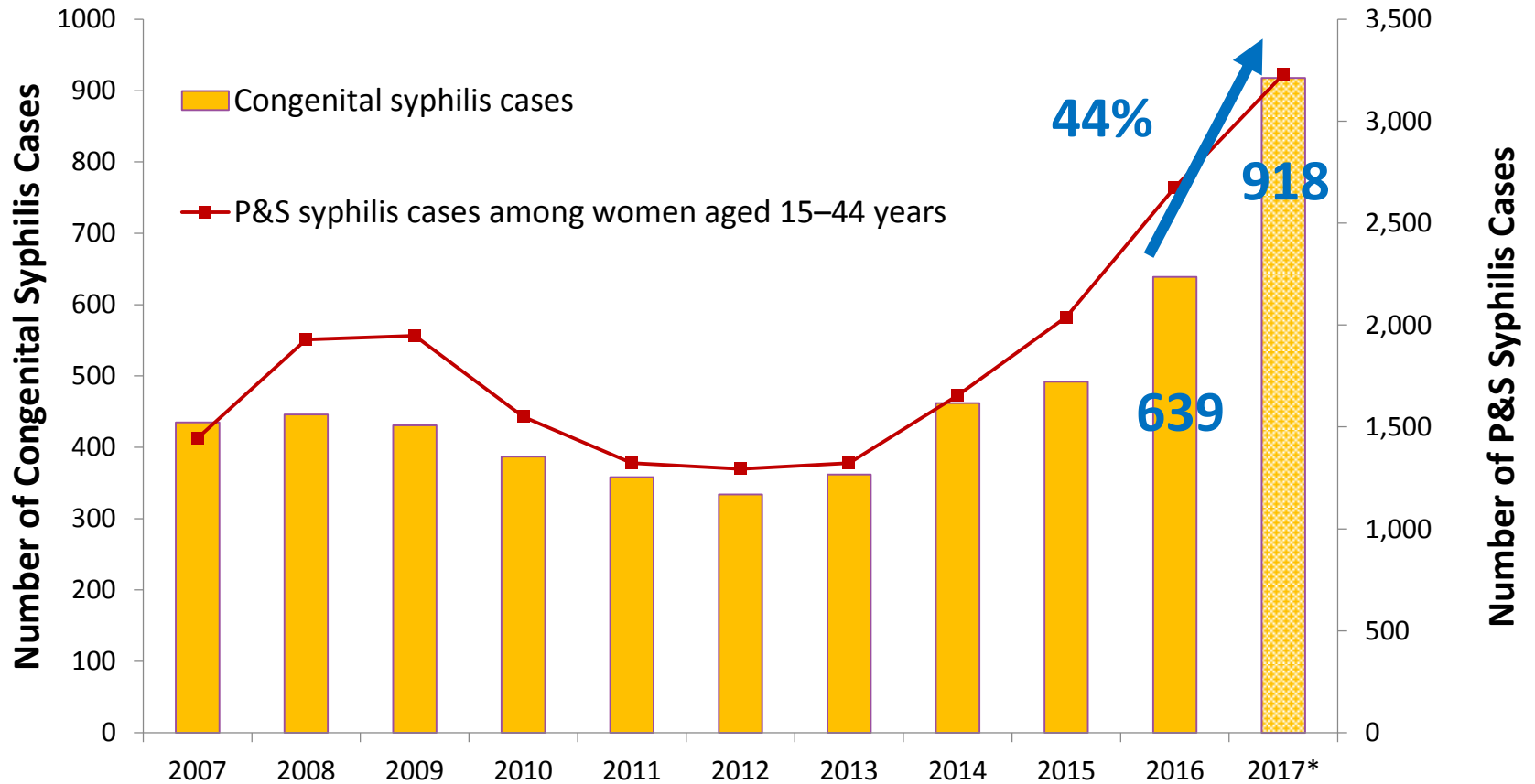
Newborn with congenital syphilis rash and enlarged liver and spleen (marked in black ink)



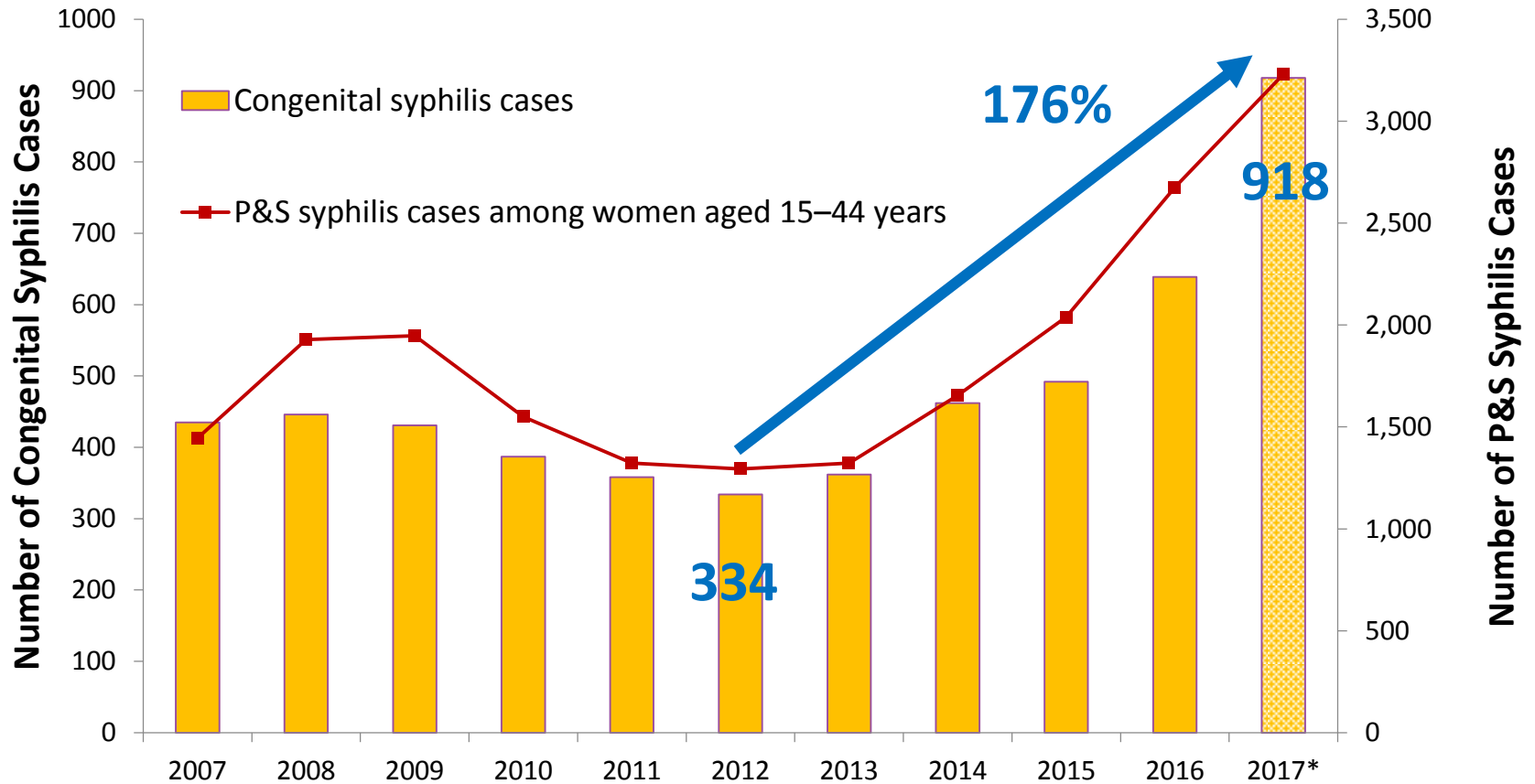
Reported Cases of Congenital Syphilis and Primary and Secondary (P&S) Syphilis Among Women of Reproductive Age, U.S., 2007–2017



Reported Cases of Congenital Syphilis and Primary and Secondary (P&S) Syphilis Among Women of Reproductive Age, U.S., 2007–2017



Reported Cases of Congenital Syphilis and Primary and Secondary (P&S) Syphilis Among Women of Reproductive Age, U.S., 2007–2017





But Why?

Case Study 1

- **26 year old single, Hispanic female**
- **4 pregnancies, 2 births (both children in foster system)**
- **Self-reported meth use, partner currently incarcerated**
- **Feb 27—1st prenatal visit, 28 weeks gestational age**
 - RPR ordered but never performed
- **May 4—2nd prenatal visit, 37 weeks gestational age**
 - Vaginal rash attributed to Herpes by clinician, breech presentation noted, fetal movement detected, RPR 1:512
- **May 7—Offsite ultrasound performed for gender determination**
 - Fetal demise identified by technician
- **May 7—patient sent to hospital for induction of stillbirth**
 - Hospital unaware of positive RPR from May 4; no new RPR performed
 - Patient discharged on May 8 without treatment for syphilis

Case Study 2

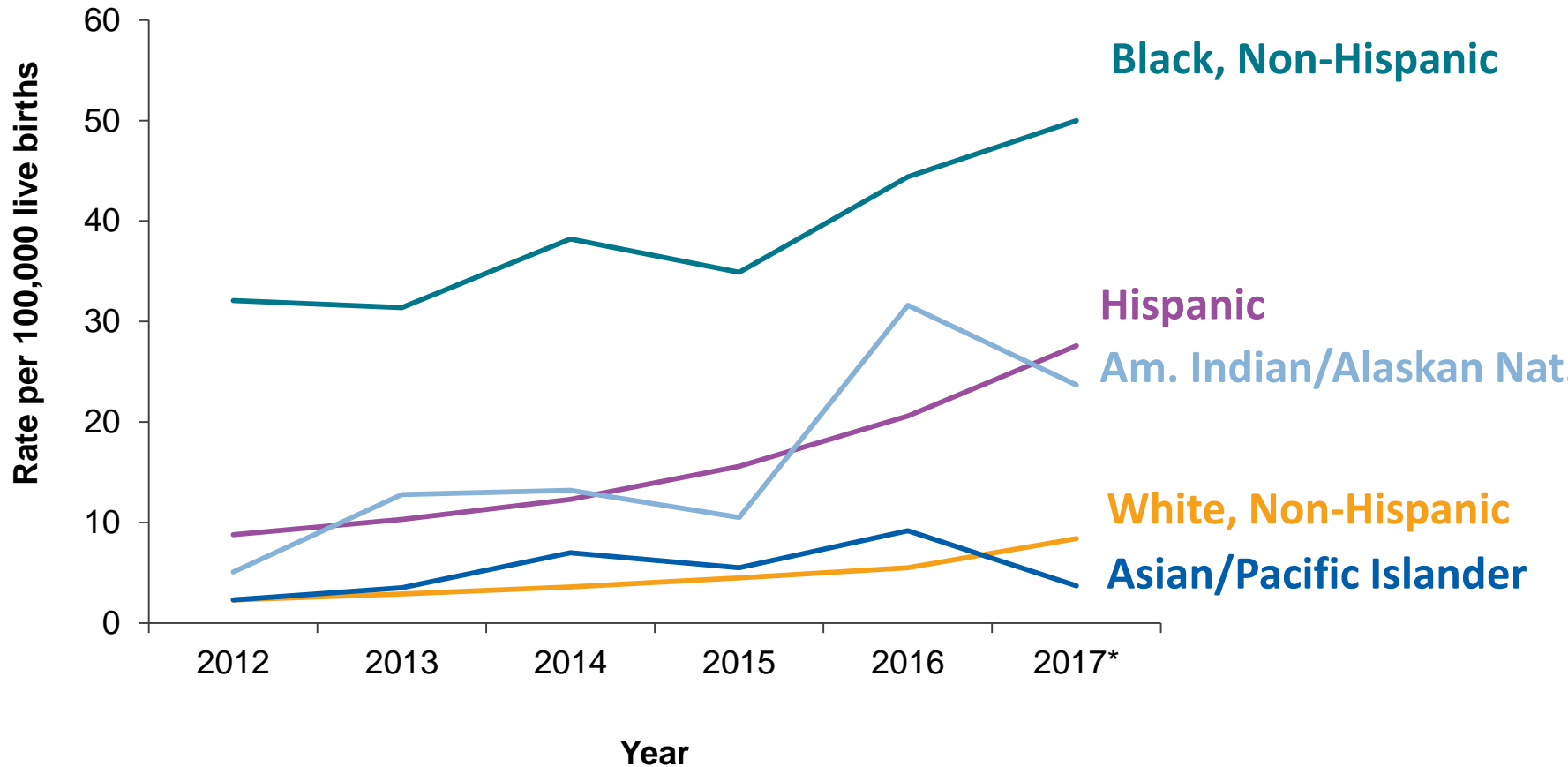
- **38 year old single, NH White female**
- **11 pregnancies, 7 births**
- **Drug use, homelessness, history of incarceration, domestic violence, child protective services involvement**
- **May 31—Mother presents in labor, 37 weeks gestational age**
 - No prior prenatal care
 - RPR 1:8 at delivery, no signs/symptoms; staged as early latent syphilis
 - Mother refused treatment, refused interview attempt by public health
- **June 1—Mother leaves hospital AMA with baby**
 - Infant not yet worked up or treated
- **June 14—Infant found, placed in protective custody**
- **June 17—Infant transferred to father, brought for treatment**
 - No work up performed; TP+/RPR-; treated with aqueous PCN for 10d

Congenital Syphilis is a Health Equity Issue

- **Some risk factors for syphilis include:**
 - Multiple sex partners
 - History of incarceration
 - Substance use disorders
 - History of exchanging sex for drugs/money/housing
 - Having a partner with multiple partners or history of incarceration
- **CS case-moms report high levels of risky behavior* (2017)**
 - 52% in Los Angeles used drugs during pregnancy
 - 23% in California experienced homelessness in the prior 12 months
- **Among pregnant women with syphilis, late or no prenatal care is significantly associated with delivering an infant with CS**

*Unpublished data presented at the STD Prevention Conference

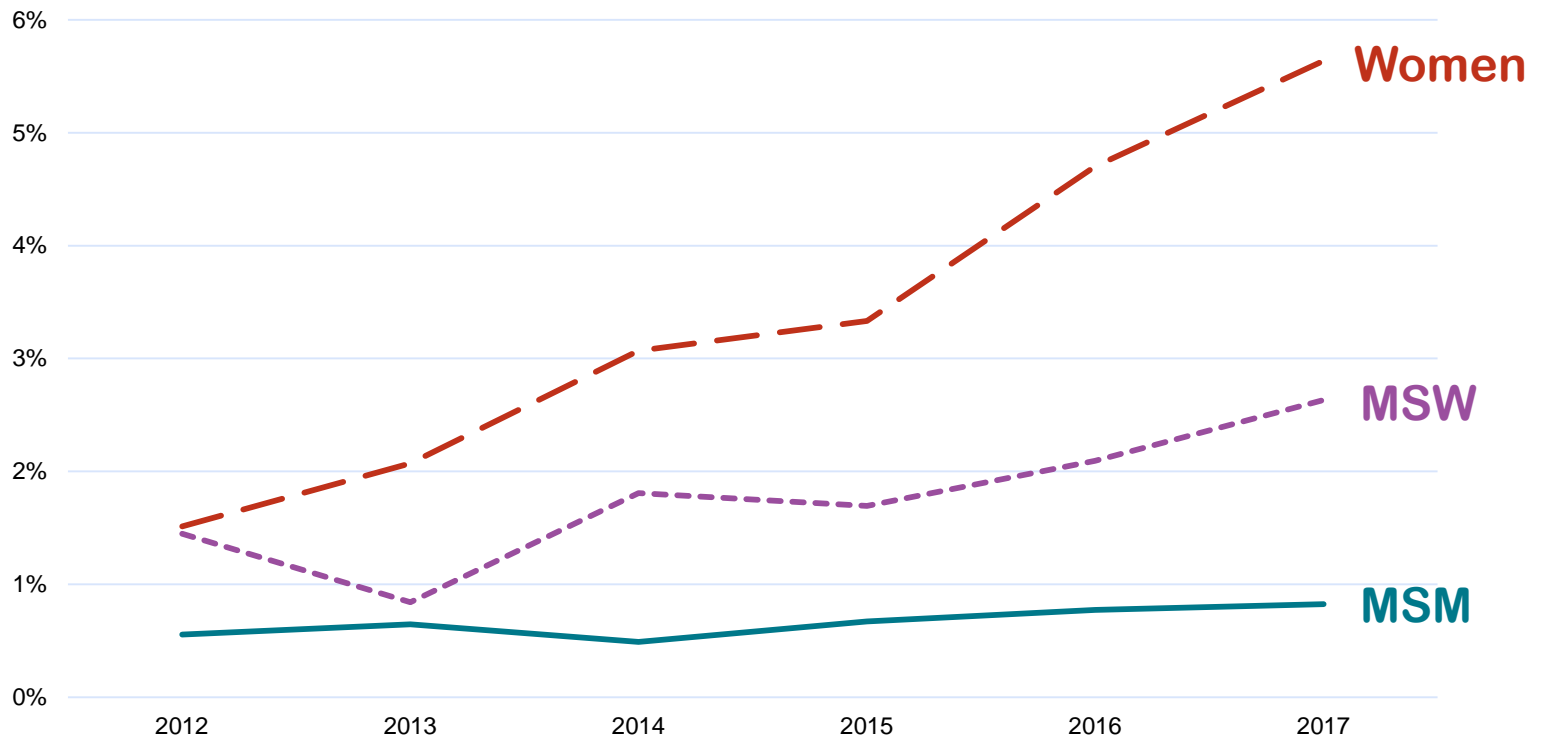
CS Rates by Mother's Race/Ethnicity, 2012–2017*



*Data are preliminary, as of April 13, 2018

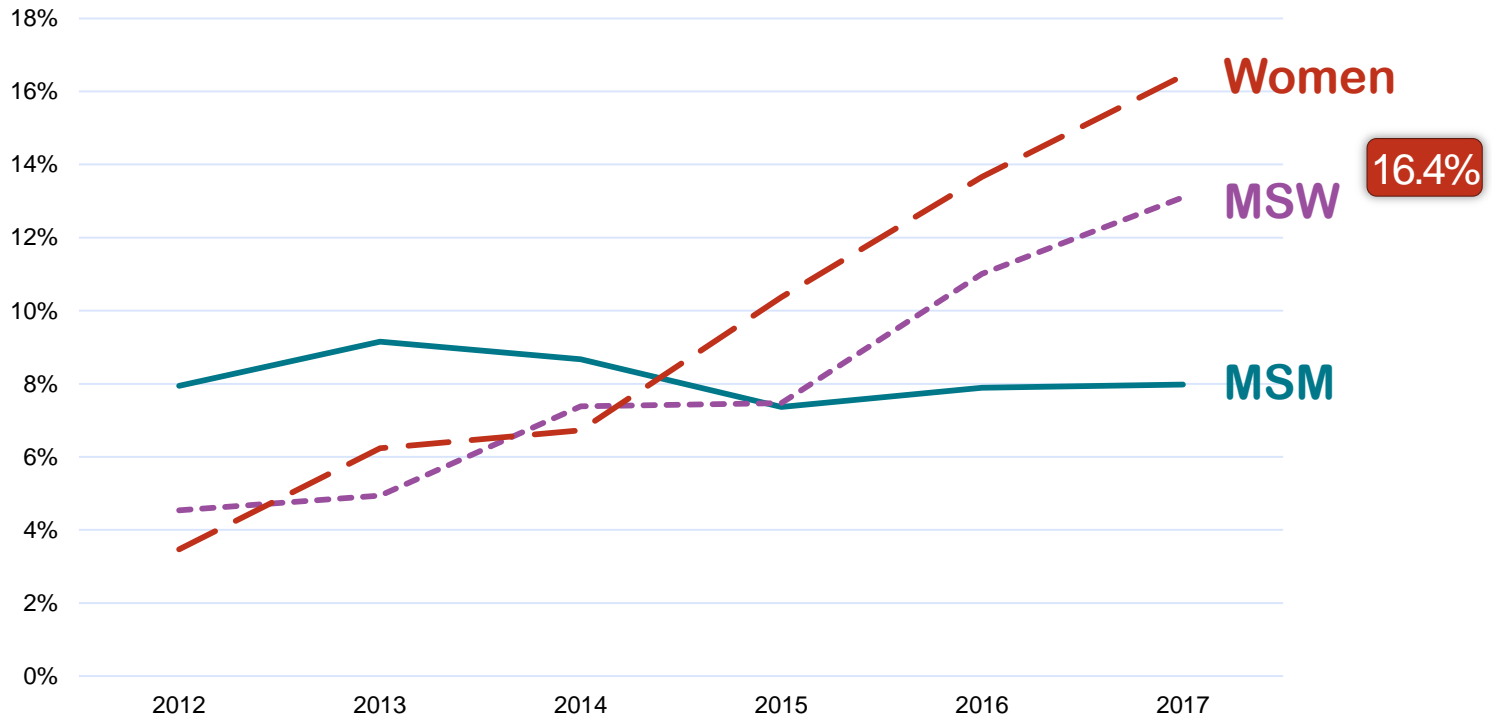


% P&S Syphilis Cases* That Reported Using Heroin (Past 12 Months)





% P&S Syphilis Cases* That Reported Using Methamphetamines (Past 12 Months)



Congenital Syphilis Prevention

- **Upstream Prevention Opportunity #1:**

- Prevent females of reproductive age from getting syphilis

- **Upstream Prevention Opportunity #2:**

- Prevent unintended pregnancies among high-risk women

- **Downstream Prevention Opportunity:**

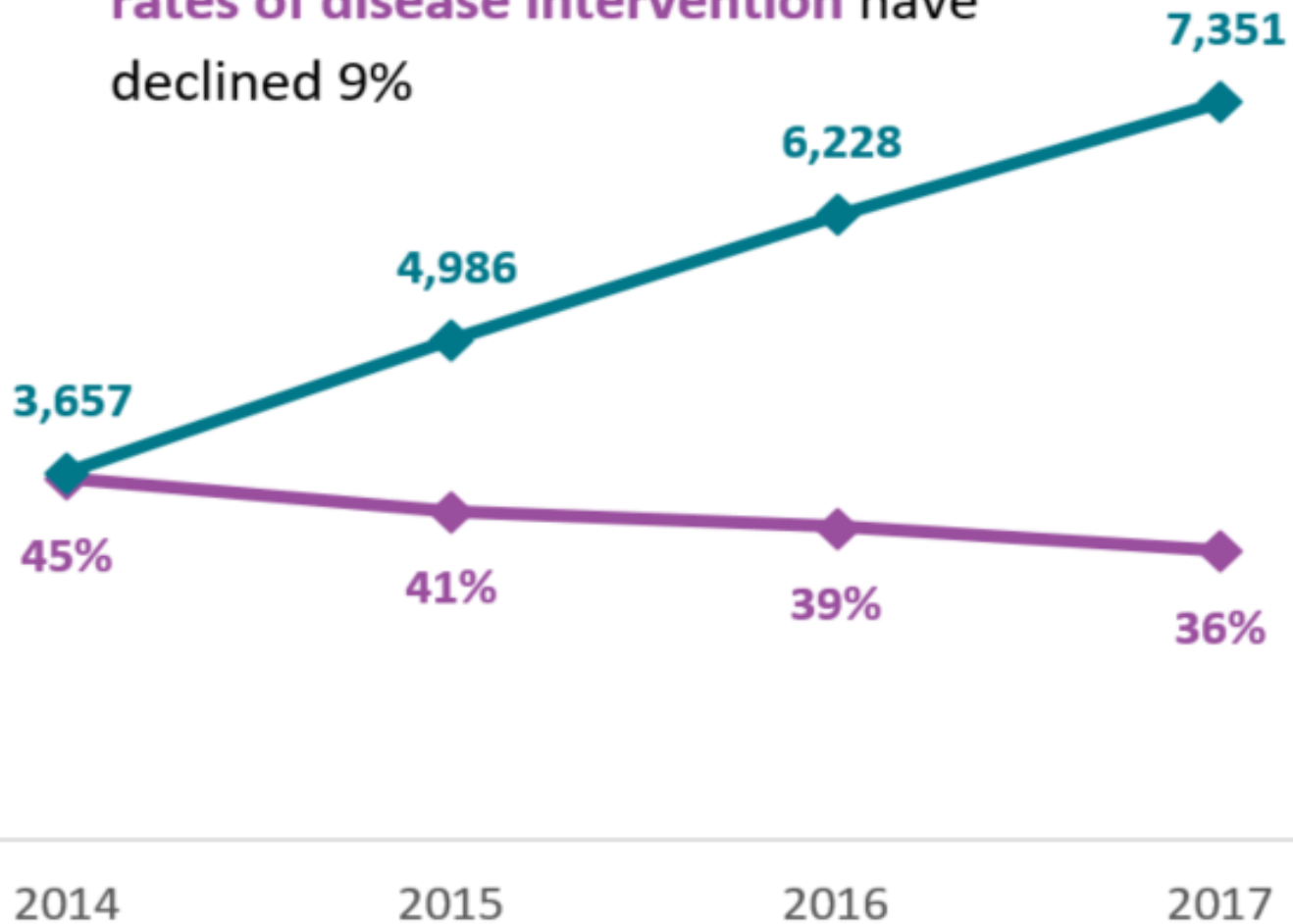
- Prevent infected mothers from transmitting syphilis to their infants during pregnancy

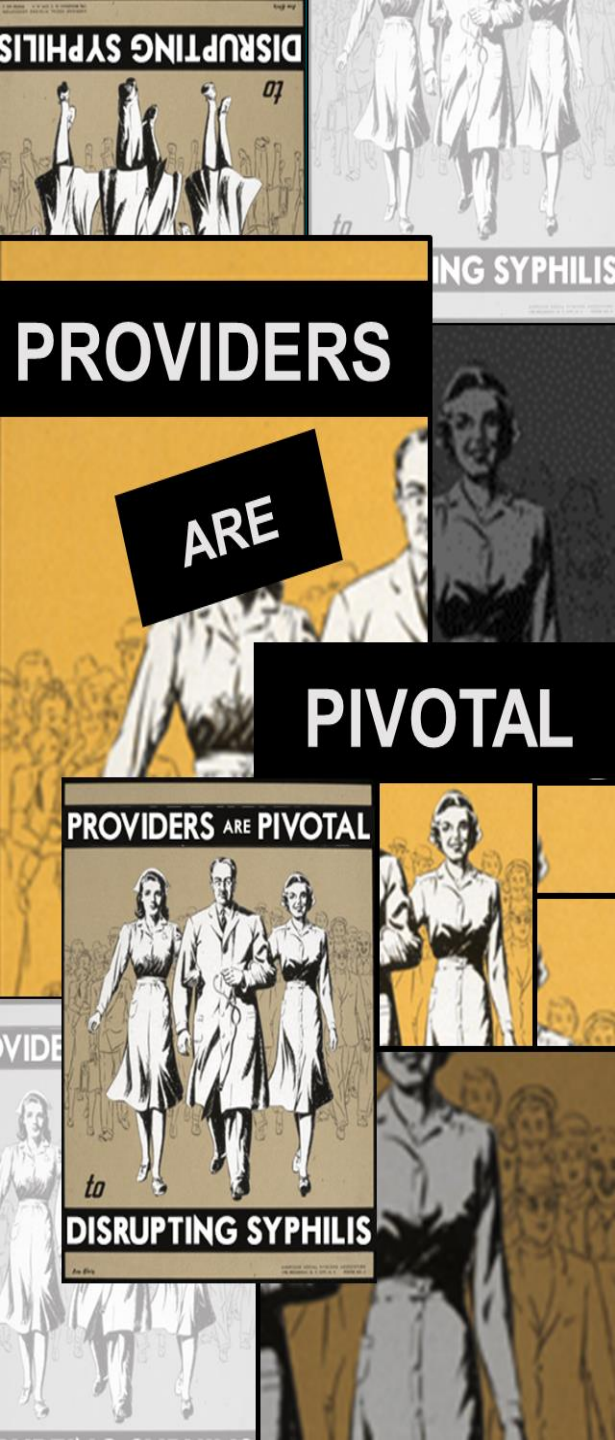
Downstream CS Prevention During Pregnancy Occurs through Four Primary Prevention Opportunities

Factors Associated with Congenital Syphilis (CS) Cases: Mothers of Reported Congenital Syphilis Cases (n=628), US, 2016

Missed Prevention Opportunities	%	N
Prenatal Care: Received late or no prenatal care	34%	215
Screening: Received prenatal care, but not screened in time to treat CS	8%	51
Treatment: Positive initial screening test, but inadequate treatment for CS	18%	111
Re-screening: Negative initial screening test, but later infected and not diagnosed until delivery	16%	101

As **reported cases** of early syphilis in women have more than doubled, **rates of disease intervention** have declined 9%





PROVIDERS

ARE

PIVOTAL

PROVIDERS ARE PIVOTAL

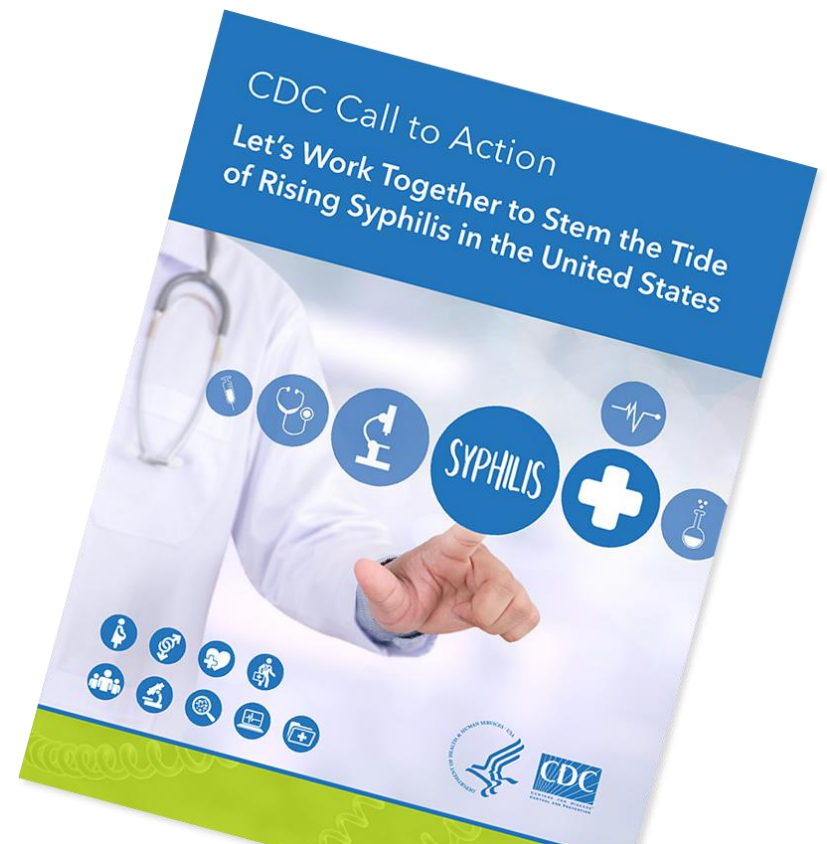
to DISRUPTING SYPHILIS



What is CDC Doing?

CDC issued a Syphilis Call to Action in April 2017

- U.S. syphilis rates are increasing among women, their babies, and men
- Untreated syphilis can cause severe medical issues
- Efforts are needed to:
 - Create new tools
 - Detect and treat syphilis
 - Increase testing
 - Control the further spread of syphilis
 - Improve electronic medical records to improve patient outcomes



Visit: <https://www.cdc.gov/std/syphilis/resources.htm>

CS Supplement Recipients— Number of Cases, 2015–2017

Project Area	2015 Cases	2016 Cases	2017 Cases	Cumulative % of 2017 Total
UNITED STATES TOTAL	492	628	920	-
California (excl LA & SF)	118	172	237	26%
Louisiana	54	48	59	32%
Texas	52	71	176	51%
Florida	38	59	93	61%
Chicago	23	11	10	63%
Los Angeles	21	32	43	67%
Georgia	21	21	23	70%
Maryland & Baltimore	18	16	20	72%
Ohio	17	11	18	74%

**2015 and 2016 counts taken from 2015 & 2016 STD Surveillance reports; 2017 preliminary as of 06/30/2018*

CDC Supplemental Funds for Enhanced CS Response

Award

- \$4 million to 9 project areas receiving STD AAPPS funds

Period

- October 1, 2017–December 31, 2018

Goals

- Sustainable improvements to CS-related activities
- Strengthen CS prevention through *prospective* information-gathering and interventions
- Strengthen CS prevention through *retrospective* activities to identify opportunities for change



Key Activities

1. Improve data collection of maternal and fetal epidemiologic and clinical risk factors
2. Improve ascertainment of pregnancy status among female syphilis cases and use pregnancy information for linkage to appropriate care & services
3. Strengthen CS Morbidity and Mortality Case Review Boards
4. Match syphilis surveillance data with vital statistics data
5. Strengthen partnerships with MCH, healthcare providers, and other CS prevention partners

Early Accomplishments of the CS Supplement

Surveillance	<ul style="list-style-type: none">• 5 jurisdictions have completed at least one match with vital statistics data<ul style="list-style-type: none">• Matches have identified 5-10% more CS cases than previously reported
Disease Investigation & Intervention	<ul style="list-style-type: none">• 4 jurisdictions have established referrals to MCH-funded case management programs for follow-up of pregnant syphilis case-patients<ul style="list-style-type: none">• 1 jurisdiction established an in-house case management program• 7 jurisdictions have strengthened relationships with MCH
Promotion of CDC-Recommended Screening, Diagnosis, & Treatment	<ul style="list-style-type: none">• 7 jurisdictions have reached over 500 providers with information about female syphilis prevention and control
Promotion of Prevention & Policy	<ul style="list-style-type: none">• 4 jurisdictions have launched media campaigns to increase awareness of congenital syphilis and promote testing and screening• 1 jurisdiction has seen state legislation introduced for universal early 3rd trimester syphilis screening
Data Use for Program Improvement	<ul style="list-style-type: none">• 8 jurisdictions have convened at least one case review board (CRB)• 7 jurisdictions have created a sustainable CRB model meeting quarterly



What Do Providers Need to Know?

Prenatal Syphilis Screening is the Cornerstone of Congenital Syphilis Prevention

- Syphilis is curable using injectable, long-acting penicillin
- Timely detection and treatment are essential for preventing congenital syphilis and its complications



Syphilis

Screening Recommendations

- **Prenatal**
 - 1st prenatal visit: All pregnant women
 - Early 3rd trimester (~28 weeks) and at delivery: Pregnant women who are at high risk for syphilis or live in areas of high syphilis morbidity
 - Some states require all women to be screened at 3rd trimester and/or at delivery
- **Neonates:** should *NOT BE* discharged from the hospital unless the syphilis serologic status of the mother has been determined at least one time during pregnancy and preferably again at delivery if at risk
- **Stillborn:** Any woman who delivers a stillborn infant should be tested for syphilis

SYPHILIS TESTING IS ESSENTIAL FOR **ALL** PREGNANT WOMEN

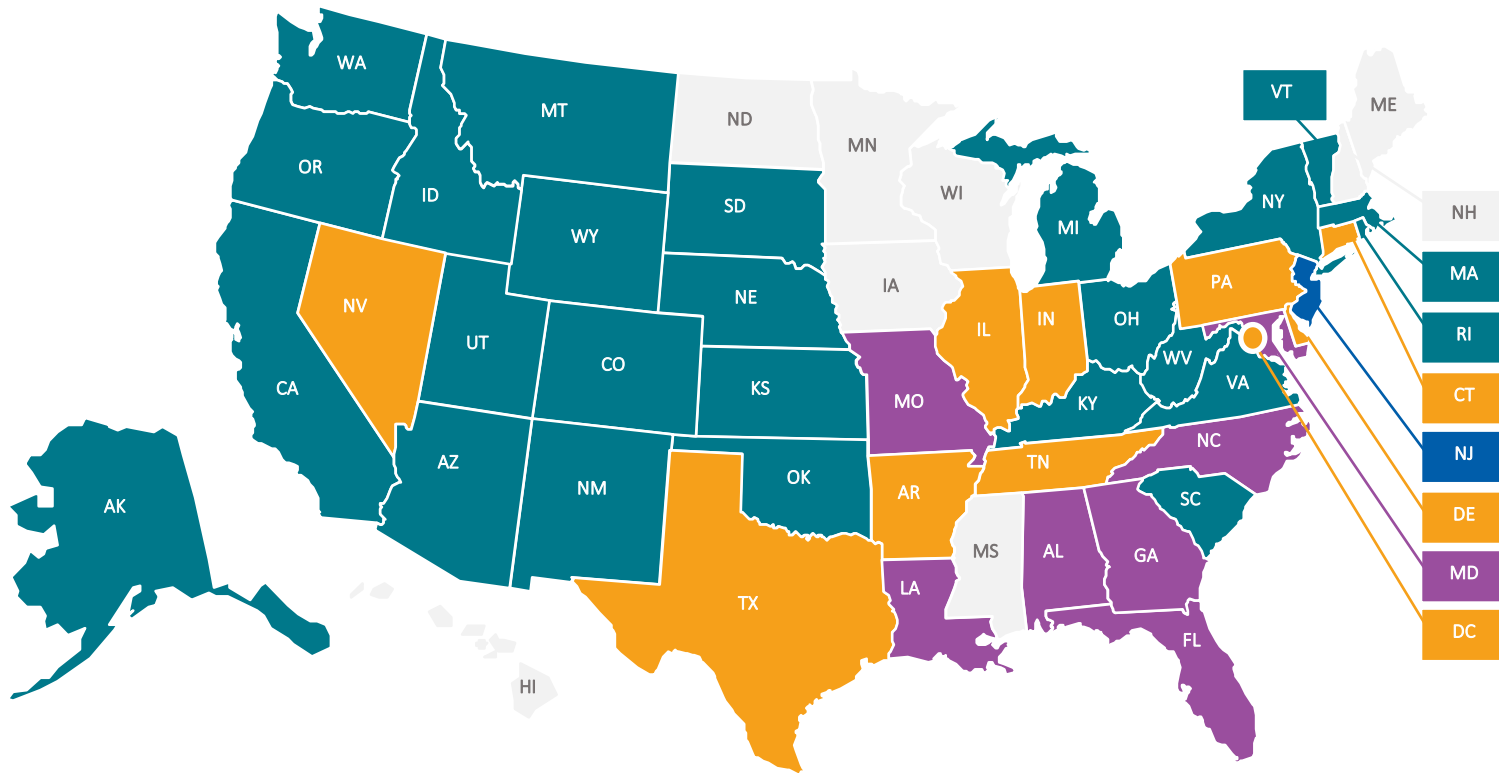


AND



Source: U.S. Centers for Disease Control and Prevention

State Prenatal Syphilis Screening Laws, 2016



- Required - Only First Visit
- Required - Only First Visit and Third Trimester*
- Required – First Visit, Third Trimester, and Delivery*
- Required – First Visit and Delivery
- Not Required

*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, and Missouri.
 Includes state statutes and regulations effective as of 2016

Timely Treatment is Just as Important

- **Don't delay in treating a pregnant woman for syphilis**
 - Don't wait for the next scheduled prenatal visit to treat!
 - Follow up with her and work her in before her next visit
- **Take advantage of Disease Intervention Specialists (DIS) and the knowledge of your local health department**
 - Can help with locating hard-to-reach women
 - May have historical syphilis information, including old titers
- **Benzathine penicillin is the only acceptable treatment for a pregnant woman with syphilis**

Sexually Transmitted Disease Surveillance 2016

Centers for Disease Control and Prevention
National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention

Figure 17. Primary and Secondary Syphilis – Rate of Reported Cases by Age Group and Sex, United States, 2010

Figure 18. Primary and Secondary Syphilis – Rate of Reported Cases by Sex and Age Group, United States, 2010

Figure 19. Primary and Secondary Syphilis – Rate of Reported Cases by Sex and Age Group, United States, 2010

Sexually Transmitted Diseases – Summary of 2015 CDC Prevalence Estimates

STI	Prevalence	Notes
Chlamydia	1.1 million	Estimated from 2014 data
Gonorrhea	1.1 million	Estimated from 2014 data
HPV	1.1 million	Estimated from 2014 data

National Coalition of STD Directors

STD PROGRAM EVALUATION TRAININGS AND TOOLS

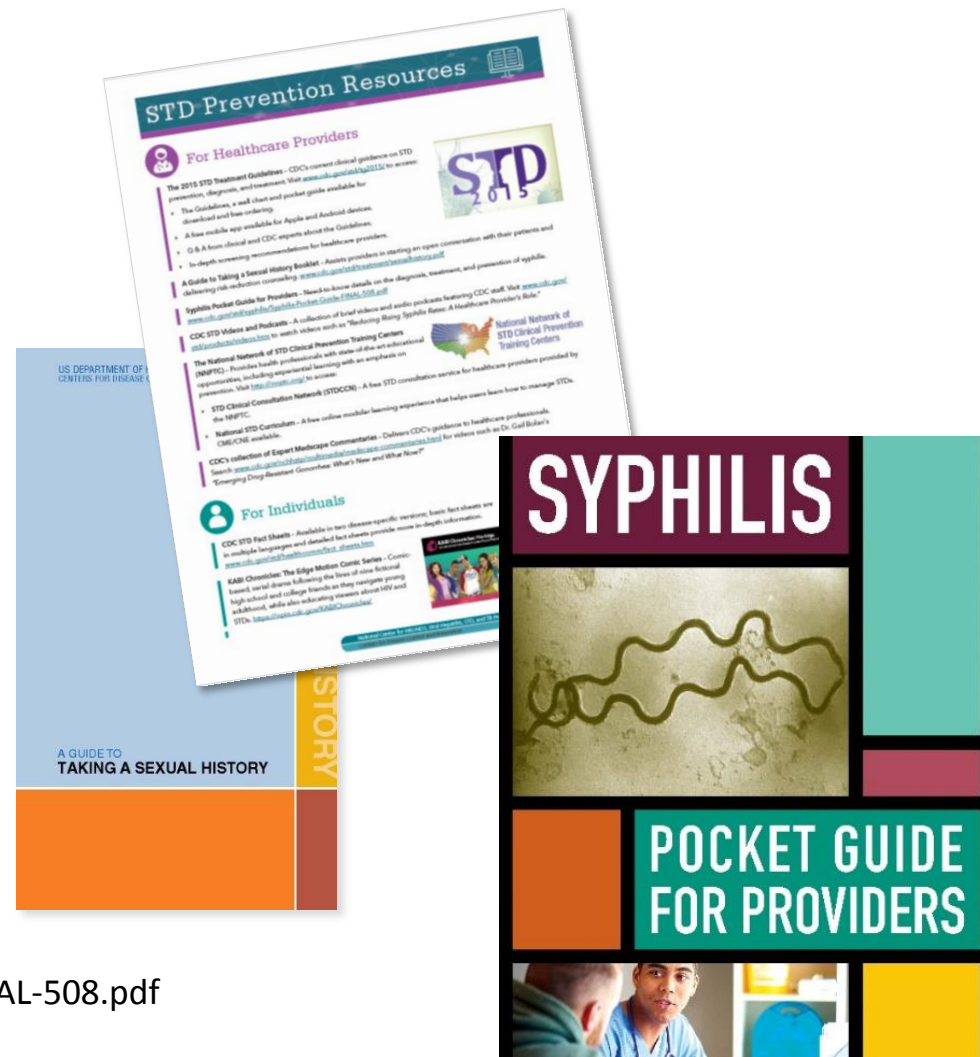
A self-paced, six-step e-learning course to help STD programs build capacity and conduct effective evaluation.

STD Resources

Centers for Disease Control and Prevention

Resources

- STD Prevention Resources Handout
- Syphilis Pocket Guide for Providers
- A Guide to Taking a Sexual History



<https://www.cdc.gov/std/syphilis/Syphilis-Pocket-Guide-FINAL-508.pdf>

<https://www.cdc.gov/std/treatment/sexualhistory.pdf>

Centers for Disease Control and Prevention

Resources

- **2015 STD Treatment Guidelines**
 - Pocket Guide
 - Wall Chart
 - FREE Apple or Android App




<https://www.cdc.gov/std/tg2015/default.htm>

National Network of STD Clinical Prevention Training Centers (NNPTC)



Resources

GOT A TOUGH STD QUESTION?
Get FREE expert STD clinical consultation at your fingertips



Ask your question

National STD experts review

Response within 1-5 business days, depending on urgency

Log on to www.STDCCN.org for medical professionals nationwide

- **Clinical Training and Consultation Network**
- **STD Clinical Toolbox App**

National Network of STD Clinical Prevention Training Centers (NNPTC)



Resources: National STD Curriculum

- 7 Self-Study Modules
- Modular learning in any order with an individual progress tracker
- Free CME and CNE

National STD Curriculum




Sign In

STD Modules Self-Study | STD Modules Quick Reference | Question Bank | Master Bibliography

National STD Curriculum

Funded by a grant from the Centers for Disease Control and Prevention

STD Modules

	Chlamydia Chlamydia Self-Study CNE/CME Track progress and receive CE credit	Quick Reference > Rapidly access info about Chlamydia	Question Bank CNE/CME Interactive board-review style questions with CE credit
	Gonorrhea Gonorrhea Self-Study CNE/CME Track progress and receive CE credit	Quick Reference > Rapidly access info about Gonorrhea	Question Bank CNE/CME Interactive board-review style questions with CE credit
	HSV HSV Self-Study CNE/CME	Quick Reference >	Question Bank CNE/CME

Topic 5. Microbiology and Pathogenesis

Topic Objective

MICROBIOLOGY AND PATHOGENESIS

ORGANISM AND CLASSIFICATION

The etiologic agent in syphilis is *Treponema pallidum* (from the Greek terms *trepo* ("to turn") and *nema* ("thread") and the Latin term *pallida* ("pale").¹¹⁸ *T. pallidum* belongs to the spirochete class and is a corkscrew-shaped, motile microaerophilic bacterium that requires a live rabbit-model system for growth and cannot be viewed by normal light microscopy (Figure 8). This spirochete bacterium is thin (0.1 to 0.18 micrometers in diameter), and 6 to 20 micrometers in length (Figure 9).¹¹⁹ *T. pallidum* has been erroneously described as gram-negative bacteria, but this organism lacks lipopolysaccharide (LPS), a hallmark of gram-negative organisms.

Which one of the following statements is TRUE regarding the biology of *Treponema pallidum*?

- Treponema pallidum* can be cultured in most microbiology labs if special culture media is used.
- Treponema pallidum* can be visualized via standard light microscopy with a modified Gram's stain.
- Treponema pallidum* is a motile spirochete bacterium that is approximately 6 to 20 micrometers in length.

Treponema pallidum-Electron micrograph

<https://www.std.uw.edu/>

Centers for Disease Control and Prevention

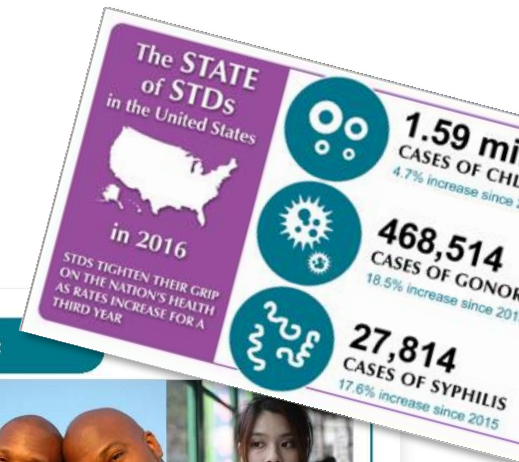
Resources: Syphilis and Congenital Syphilis

■ Fact Sheets

- ‘Basic’ fact sheets for the public
- ‘Detailed’ fact sheets for health care providers
- Spanish, Chinese, Russian, Vietnamese, and Haitian Creole

■ Infographics

- Printable and customizable infographics
- English and Spanish



Syphilis - CDC Fact Sheet

Syphilis is a sexually transmitted disease (STD) that can have very serious complications when left untreated, but it is simple to cure with the right treatment.

What is syphilis?
Syphilis is a sexually transmitted infection that can cause serious health problems if it is not treated. It is divided into stages (primary, secondary, latent, and tertiary). There are different signs and symptoms associated with each stage.

How does syphilis spread?
Syphilis is spread by direct contact with a syphilis sore during vaginal, anal, or oral sex. You can find sores on the penis, vagina, or anus. You can also find them in the rectum, on the lips, or in the mouth. It can spread from an infected mother to her unborn baby.

What do syphilis sores look like?
Syphilis sores occur in stages (primary, secondary, latent, and tertiary), with different signs and symptoms at each stage. A person with **primary syphilis** generally has a sore or sores at the site of infection. These sores usually occur on or around the genitals, around the anus or in the mouth. These sores are usually (but not always) firm, round, and painless. **Secondary syphilis** includes skin rash, swollen lymph nodes, and fever. The signs and symptoms of secondary syphilis can be mild, and they might not be noticed. During the tertiary stage, there are no signs or symptoms. **Tertiary syphilis** is associated with severe medical complications. It can affect any organ of the body.

How can you avoid getting syphilis?
You should not have vaginal, anal, or oral sex with someone who has syphilis. You can do the following things to lower your chances of getting syphilis:
• Use latex condoms correctly every time you have sex.
• Stay in a mutually monogamous relationship with a partner who has been tested for syphilis.

Centers for Disease Control and Prevention
National Hepatitis, STD, and TB Prevention

Protect your baby from syphilis.

Syphilis during pregnancy can cause serious problems for your baby, like being born too soon or too small. It also can cause death for your baby before or after birth.

If your baby is born with syphilis, it can cause lifelong problems with:

- ✗ Eyes and ears (like being blind or deaf)
- ✗ Teeth, bones and joints

The only way your baby can get syphilis is if you pass it to him during pregnancy. Here's what you can do:

Acknowledgments

- › Jennifer Fuld, PhD
- › Lauren Taylor, MPH
- › Sarah Kidd, MD
- › Jeremy Grey, PhD
- › Ryan Cramer, JD
- › CS Supplement Champions, including Dr. Irina Tabidze

