Maternal and Congenital Syphilis in Washington State

Lindley Barbee, MD MPH
UW, Infectious Diseases
PHSKC HIV/STD Program

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Disclaimer

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AETC AIDS Education & Training Center Program Mountain West

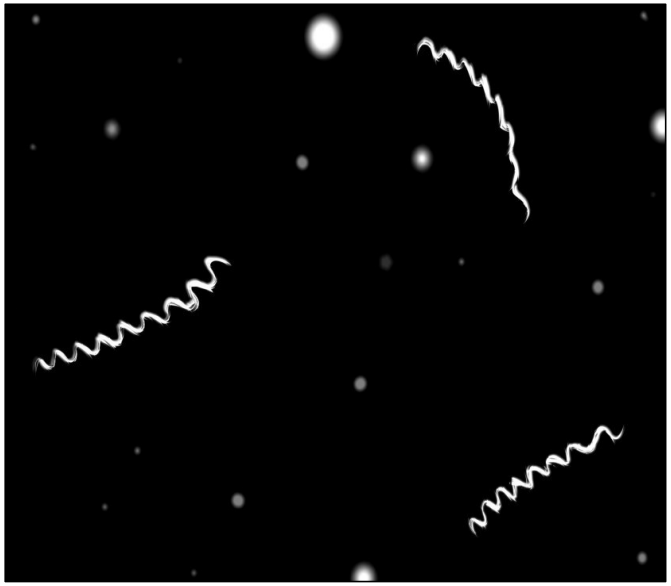
Disclosures

- I have received research support from Hologic, Nabriva and SpeeDx
- I have received consulting fees from Nabriva.

There will be graphic images in this talk.
Please be mindful if watching in public spaces.

Syphilis Overview

- *Treponema pallidum spp. pallidum*
- Transmission:
  - Direct skin-to-skin contact (SEX)
  - Blood (i.e. transplacental & probably needle sharing)
- Presents in three stages
  - Primary (chancre)
  - Secondary (rashes, LAD, malaise, sore throat etc)
  - Latent (asymptomatic)
- Untreated can lead to:
  - Blindness, deafness, and other neurologic issues
  - Cardiac issues (aneurysms)
  - Death



Congenital Syphilis can cause:

- Miscarriage (losing the baby during pregnancy),
- Stillbirth (a baby born dead), or
- Prematurity (a baby born early),.
- Low birth weight, or
- Death shortly after birth.

Up to 40% of babies born to women with untreated syphilis may be stillborn, or die from the infection as a newborn.

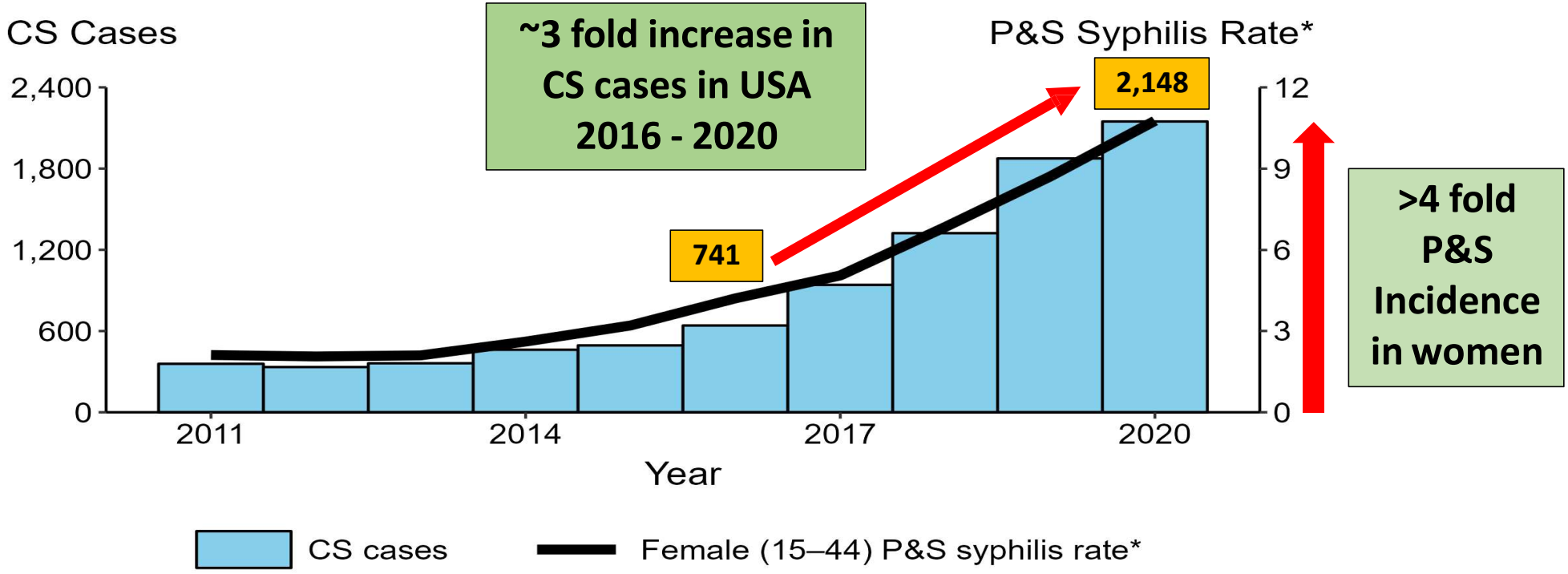
For babies born with CS, CS can cause:

- Deformed bones,
- Severe anemia (low blood count),
- Enlarged liver and spleen,
- Jaundice (yellowing of the skin or eyes),
- Brain and nerve problems, like blindness or deafness,
- Meningitis, and
- Skin rashes.

Congenital syphilis is an entirely preventable disease with appropriate prenatal testing and treatment

BUT….

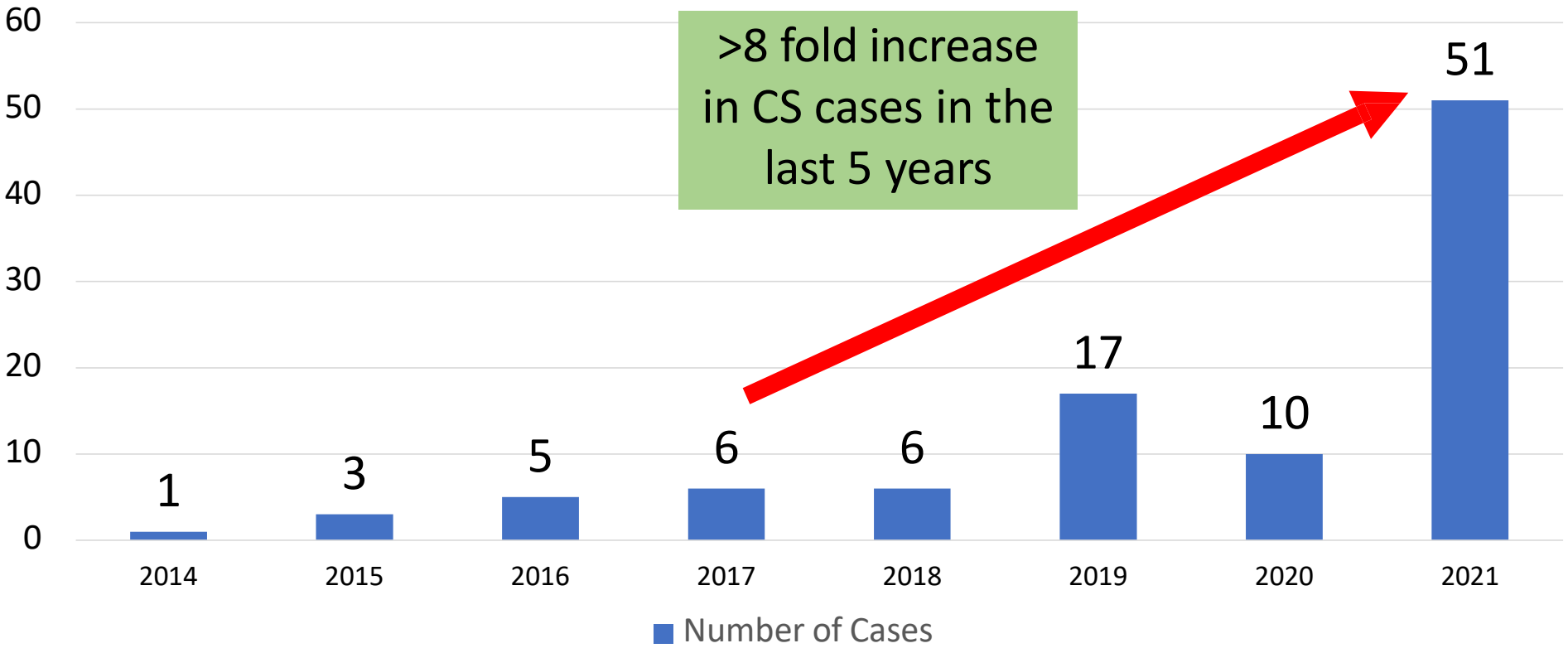
Congenital Syphilis — Reported Cases by Year of Birth and Rates of Reported Cases of Primary and Secondary Syphilis Among Women Aged 15–44 Years, United States, 2011–2020



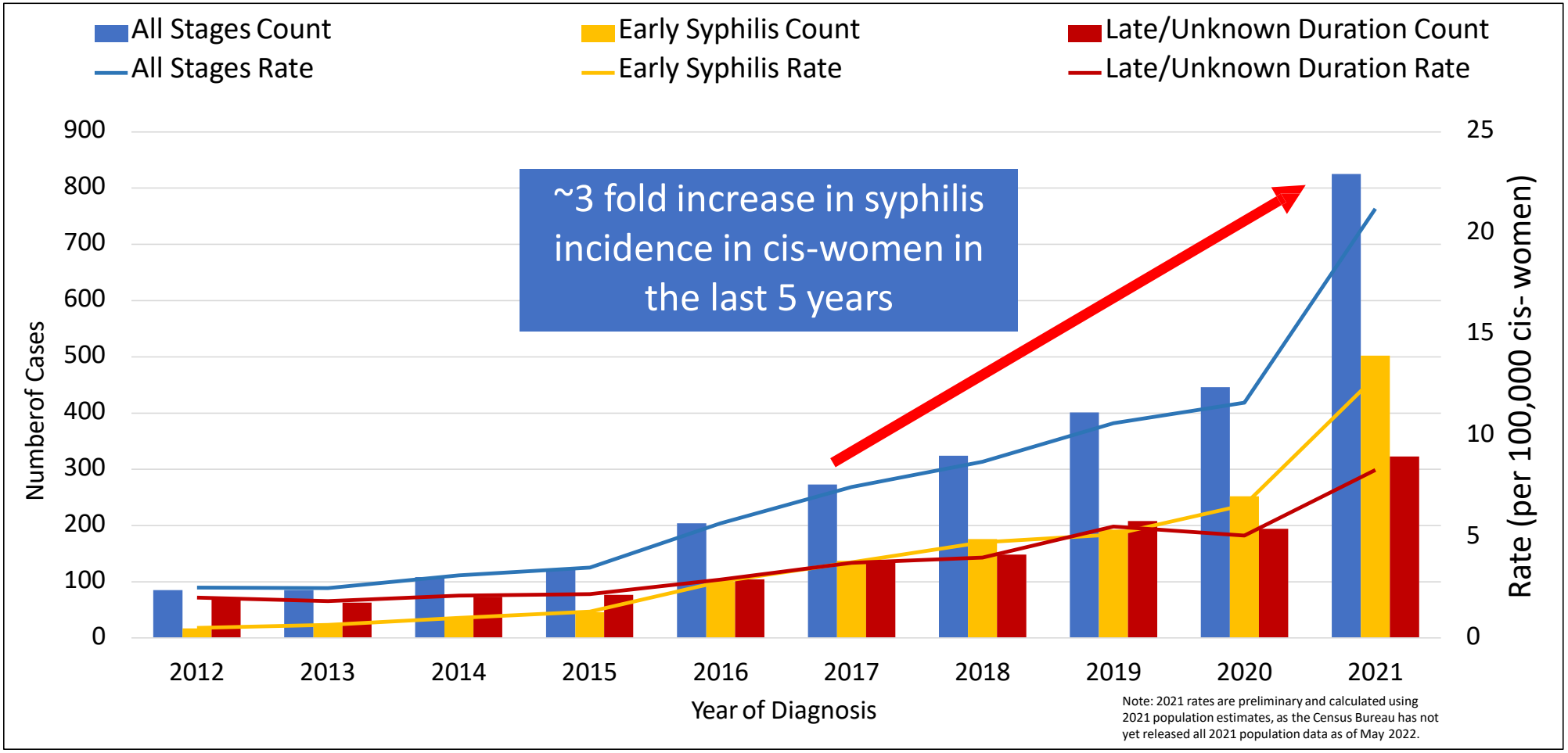
* Per 100,000

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

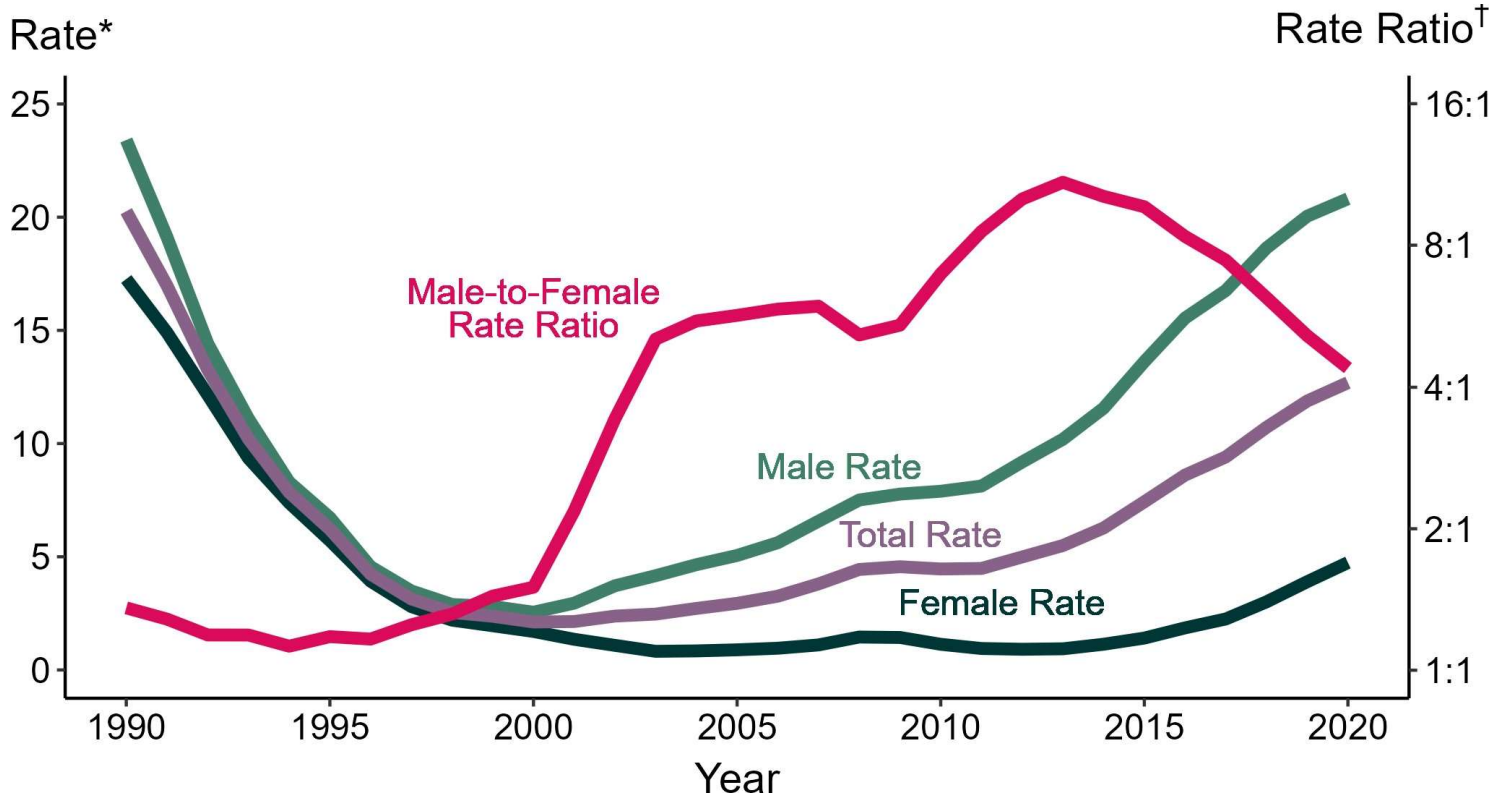
Congenital syphilis cases in Washington State by year, 2014 - 2021



Syphilis Reported Cases & Incidence among Cis-Women by Stage, WA State, 2012-2021



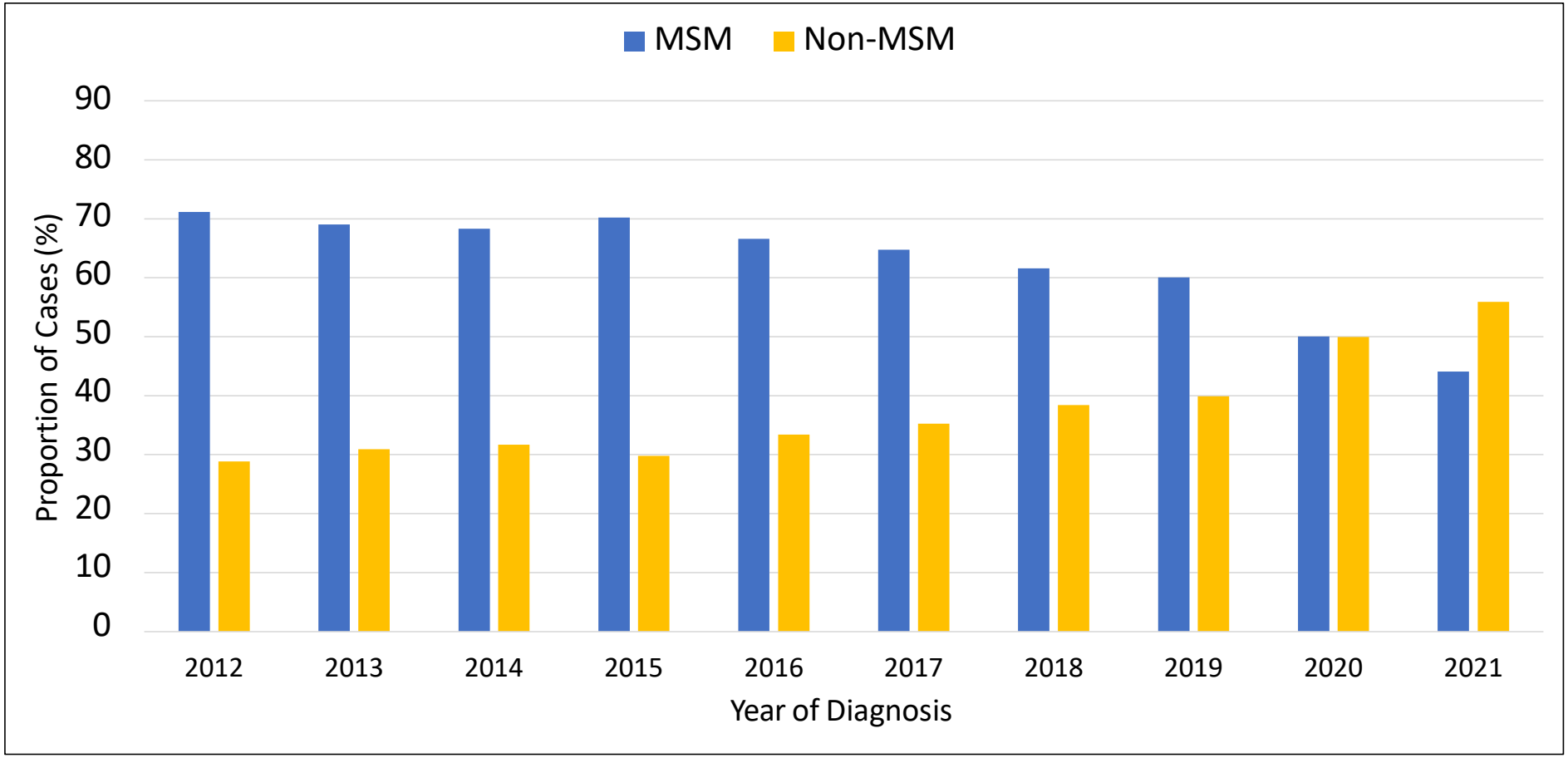
Primary and Secondary Syphilis — Rates of Reported Cases by Sex and Male-to-Female Rate Ratios, United States, 1990–2020



* Per 100,000

† Log scale

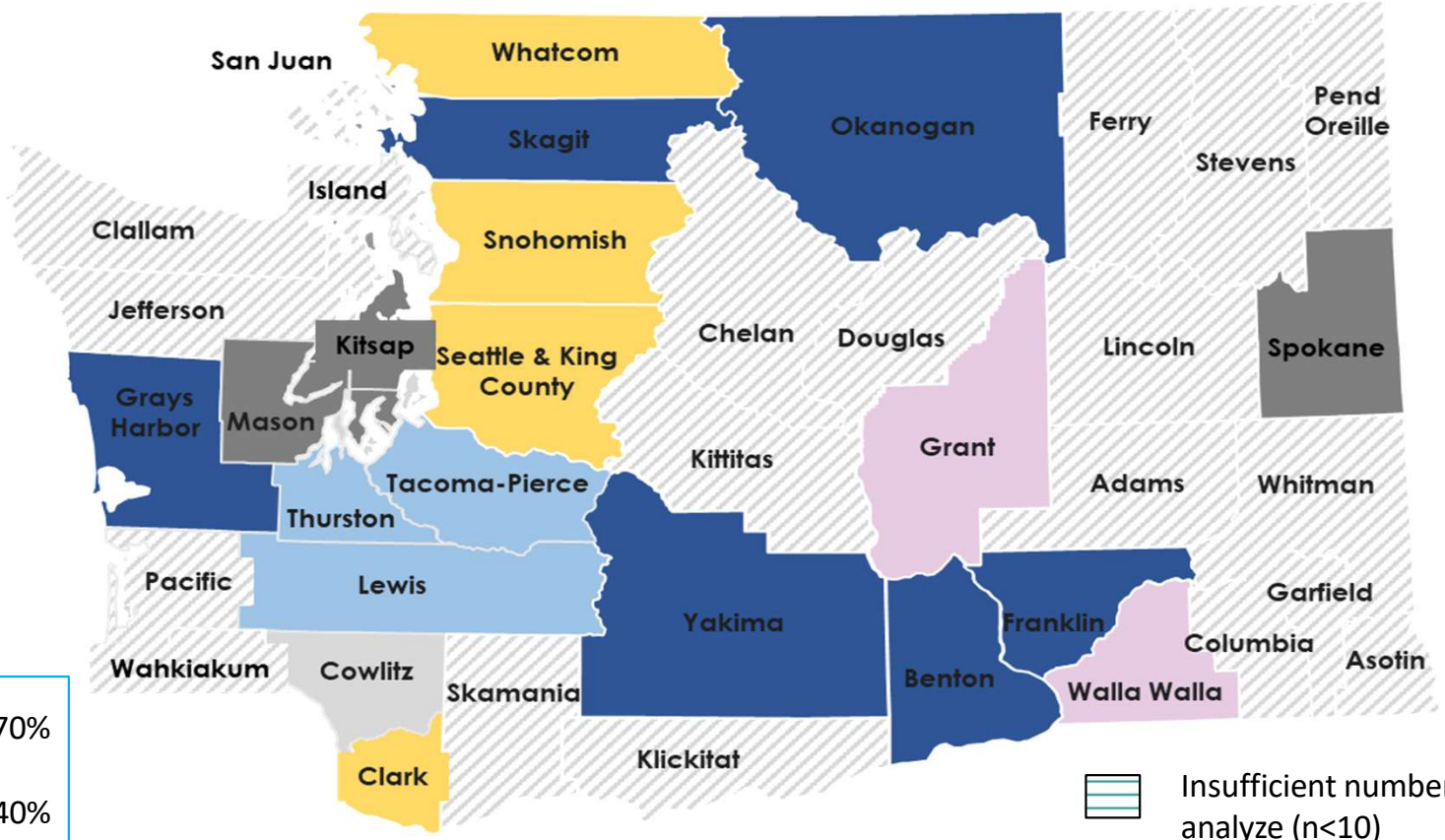
Proportion of Syphilis Cases Among MSM, WA State, 2012-2021



% Statewide Early* Syphilis Burden by County

*Early – Primary, Secondary and Early Latent (<1 year)

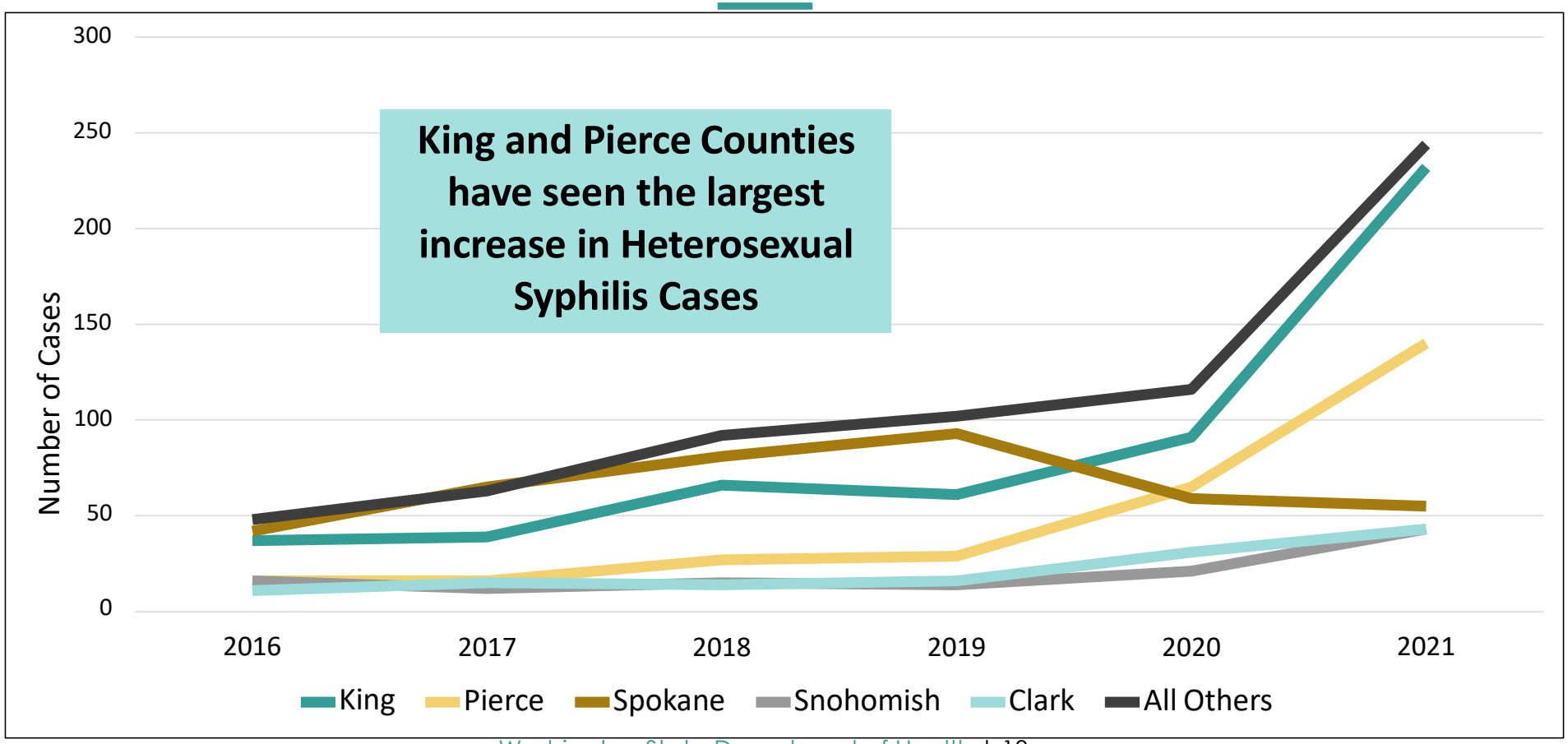
% Increase in Early* Syphilis Cases by County, 2017 to 2021



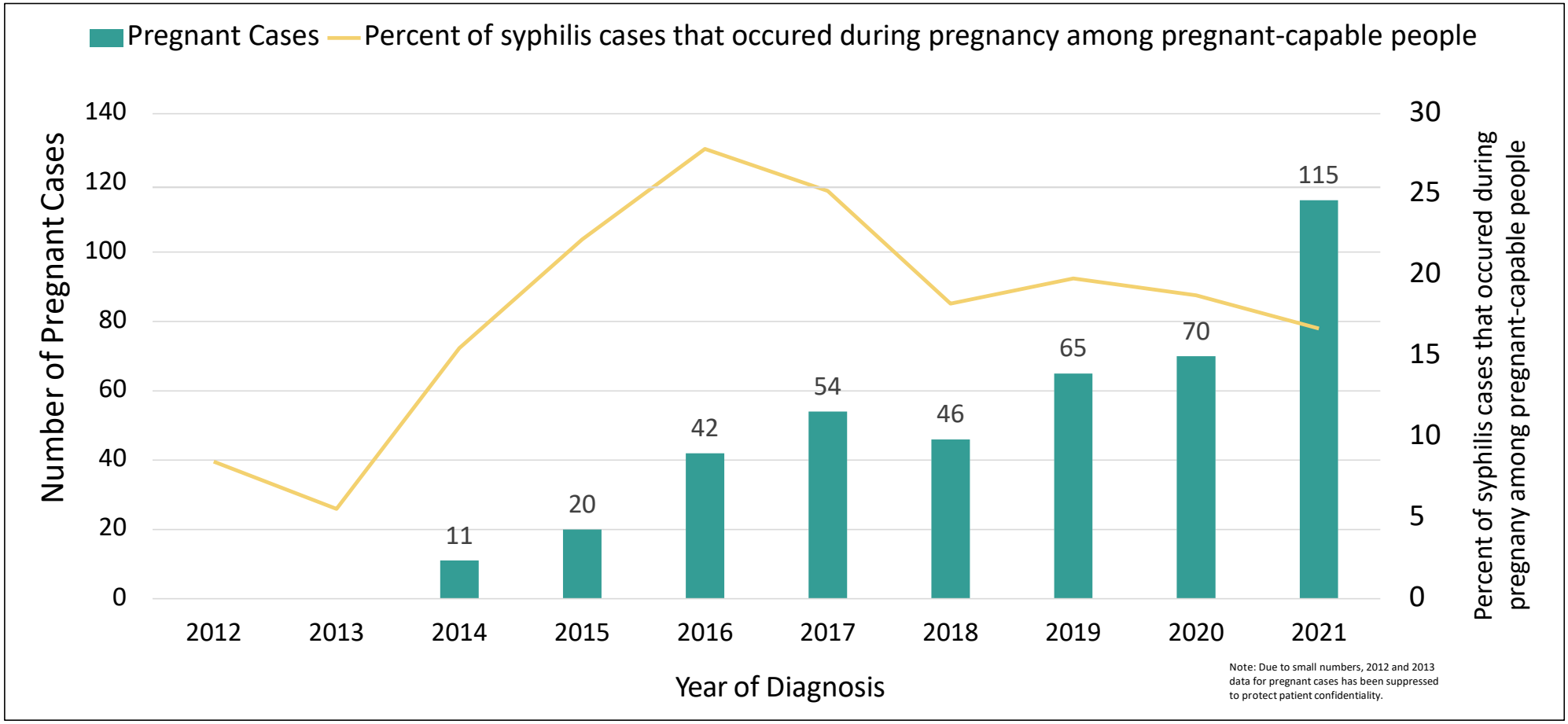
Insufficient numbers to analyze (n<10)

*Early – Primary, Secondary and Early Latent (<1 year)

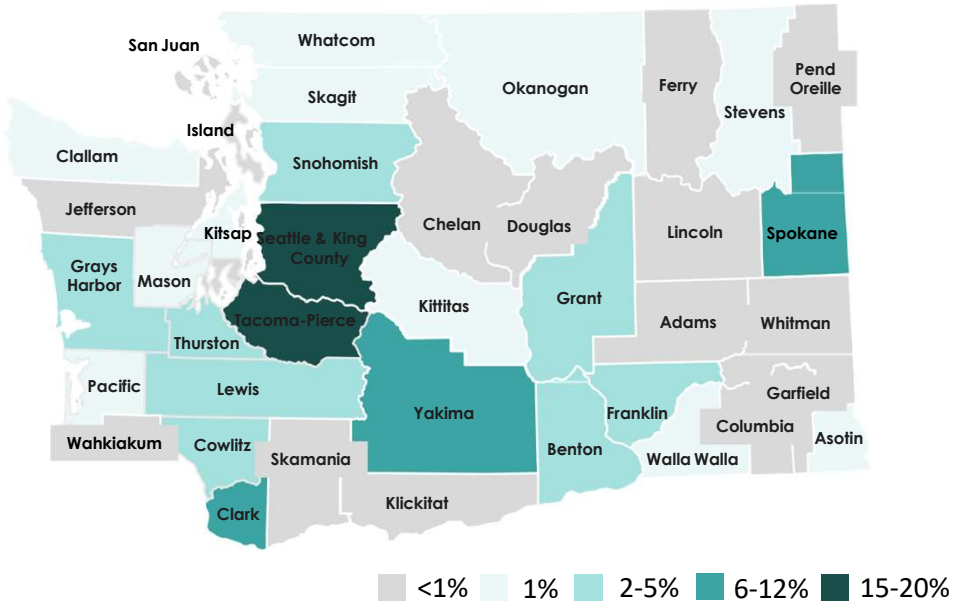
Heterosexual P&S Syphilis Cases by Jurisdiction – Top 5 LHJs, 2017-2021



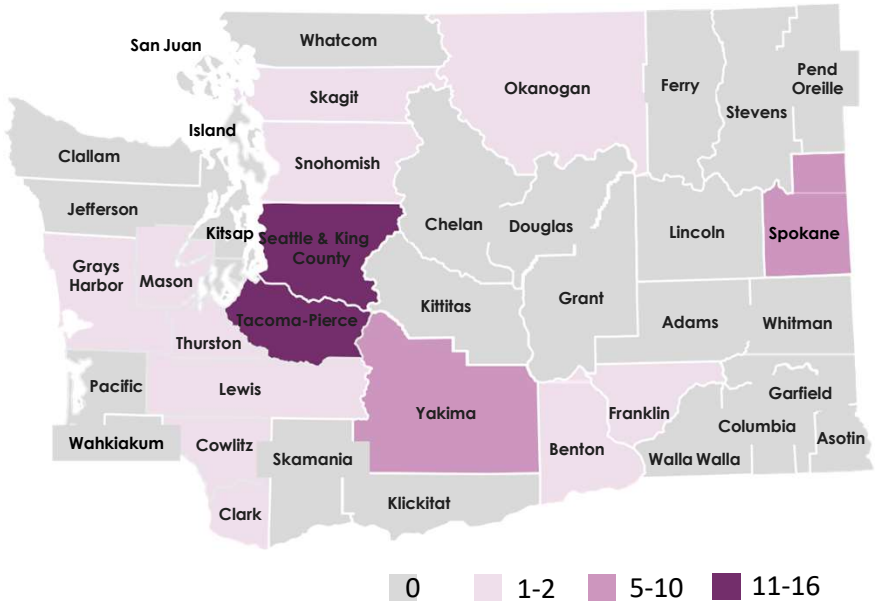
Syphilis Cases Among Pregnant Persons, WA State 2012-2021



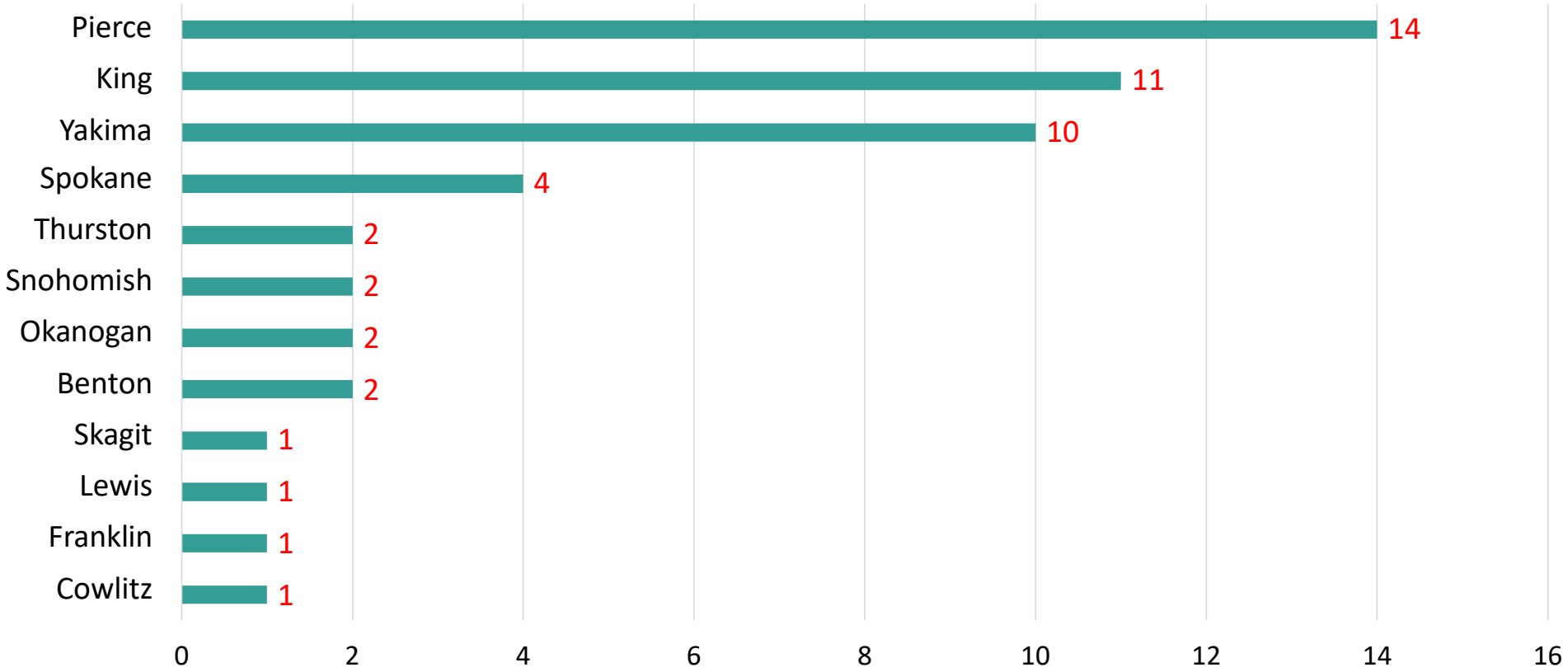
% Burden of Total Pregnant Syphilis Cases (all stages) by Jurisdiction, 2020-2021



Congenital Syphilis Cases by Jurisdiction 2020-2021



51 Congenital Syphilis Cases in 2021: Distribution by County



Characteristics of 114 Maternal Syphilis Cases in Washington State, 2021

	N=114
STAGE	
Primary & Secondary	26 (23%)
Early latent	26 (23%)
Unknown Duration or Late	62 (54%)
AGE	
0-14	0
15-24	39 (34%)
25-34	59 (52%)
35-44	15 (13%)
45+	+

	N=114
RACE/ETHNICITY	
White Non-Hispanic	42 (37%)
Multi, Non-Hispanic	12 (11%)
Hispanic	38 (33%)
Black NH/ or Asian/ or AIAN/ or NHOPI/ or Unknown	22 (19%)
RISK FACTORS	
Exchange Sex	+
Homelessness (last 3 months)†	37 (32%)
STI Coinfection	21 (18%)
Previous History of STI	81 (71%)

	N=114
DRUG USE	
Meth	29 (25%)
Opiates	10 (9%)
Crack or Cocaine	0
IVDU	11 (10%)
Any Drug*	31 (27%)

18% (n=21)
Had No Identifiable Risk Factor

+ Cells with <10 individuals have been suppressed or combined with other small cells to protect identity.

*Does not include marijuana.

Infectious Disease: *Original Research*

National Trends and Reported Risk Factors Among Pregnant Women With Syphilis in the United States, 2012–2016

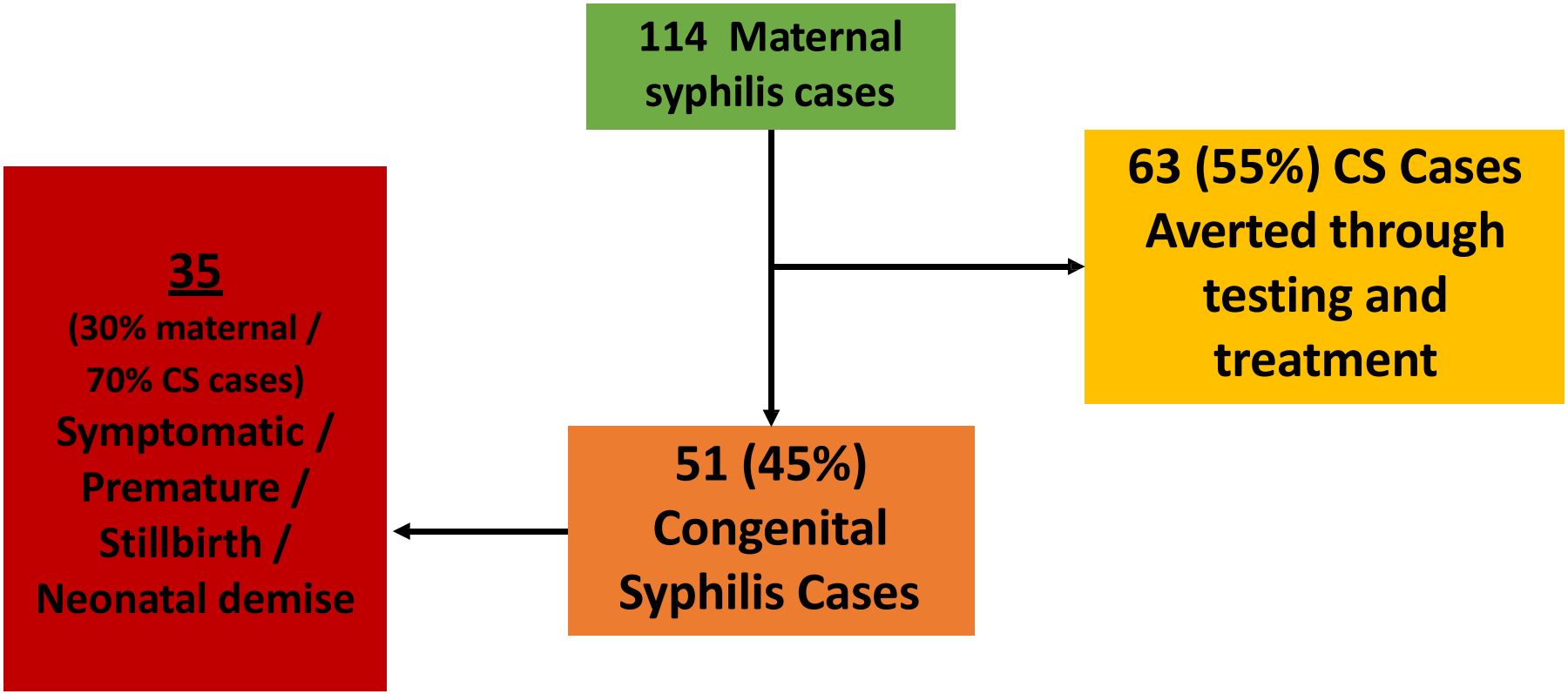
Shivika Trivedi, MD, MSc, Charnetta Williams, MD, Elizabeth Torrone, PhD, and Sarah Kidd, MD, MPH

40% of syphilis cases in pregnancy do not have an identifiable risk factor

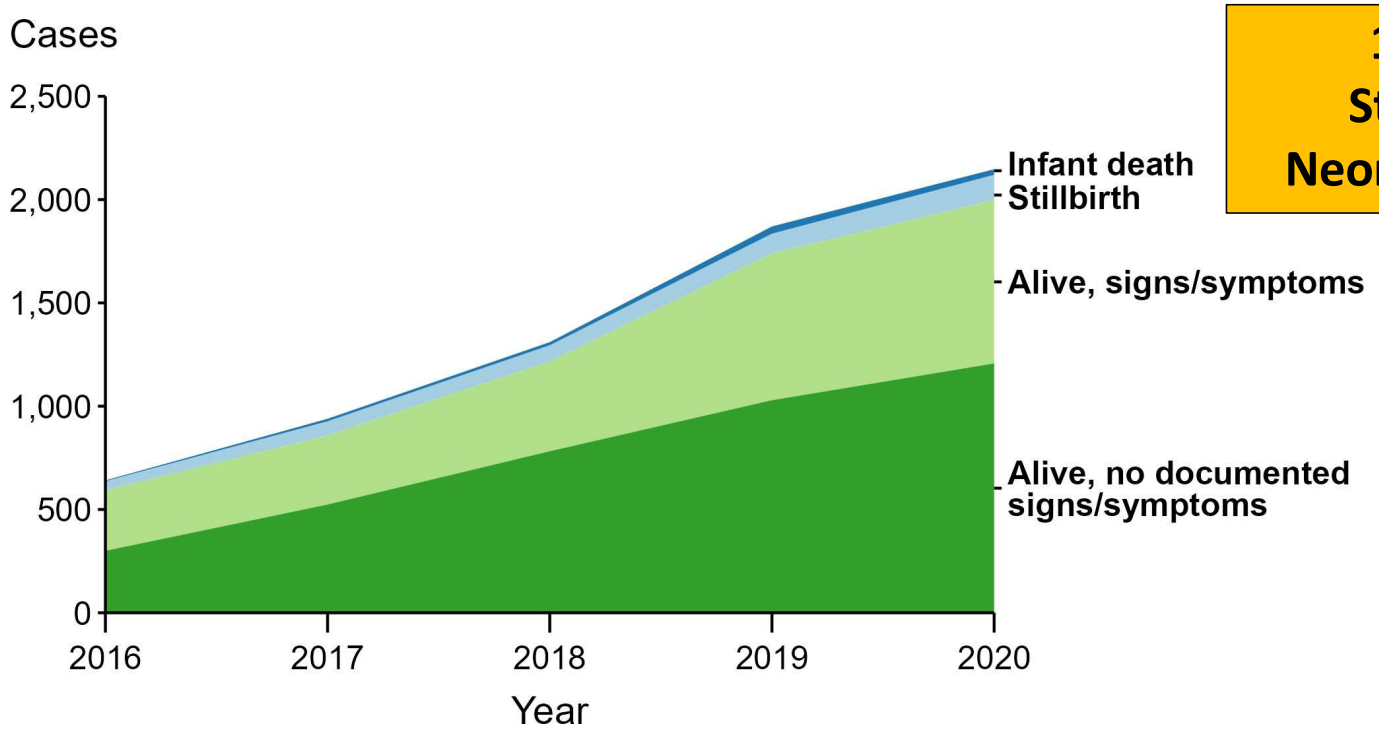
Table 3. Reported Risk Factors Among Pregnant Women With Early Syphilis, 2012–2016 (n=3,850)

Reported Risk Factor*	n/N*† (%)
Prior STD‡	1,524/3,021 (50.4)
Greater than 1 sex partner	1,317/3,436 (38.3)
Sex while intoxicated	628/3,215 (19.5)
Anonymous sex partner	337/3,193 (10.6)
Incarceration	304/3,212 (9.5)
Sex for drugs or money	154/3,245 (4.7)
Sex with persons known to inject drugs	132/3,047 (4.3)
HIV-positive‡	53/2,863 (1.9)
Sex with MSM	61/2,933 (2.1)
Methamphetamine use	192/3,052 (6.3)
Cocaine use	81/3,043 (2.7)
Crack use	47/3,038 (1.5)
Heroin use	63/3,044 (2.1)
Injection drug use	101/3,050 (3.3)
Nitrates or poppers use	13/3,010 (0.4)
Other drug use	481/3,053 (15.8)
Any risk factor§	2,434/3,850 (63.2)

Outcomes of 2021 Washington State Maternal Syphilis Cases



Congenital Syphilis — Reported Cases by Vital Status and Clinical Signs and Symptoms* of Infection, United States, 2016–2020

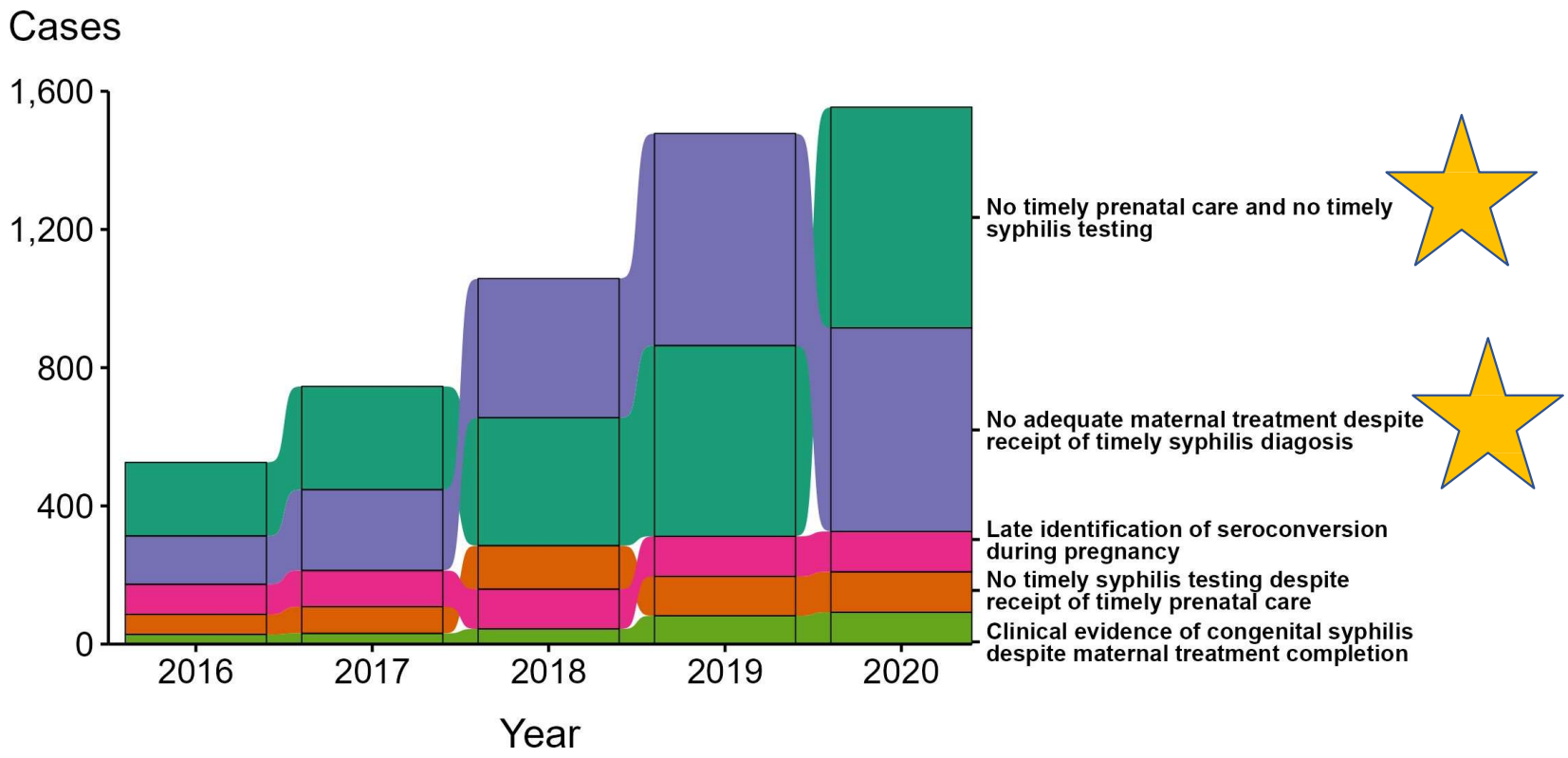


149 (7%) Stillbirths/ Neonatal deaths

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

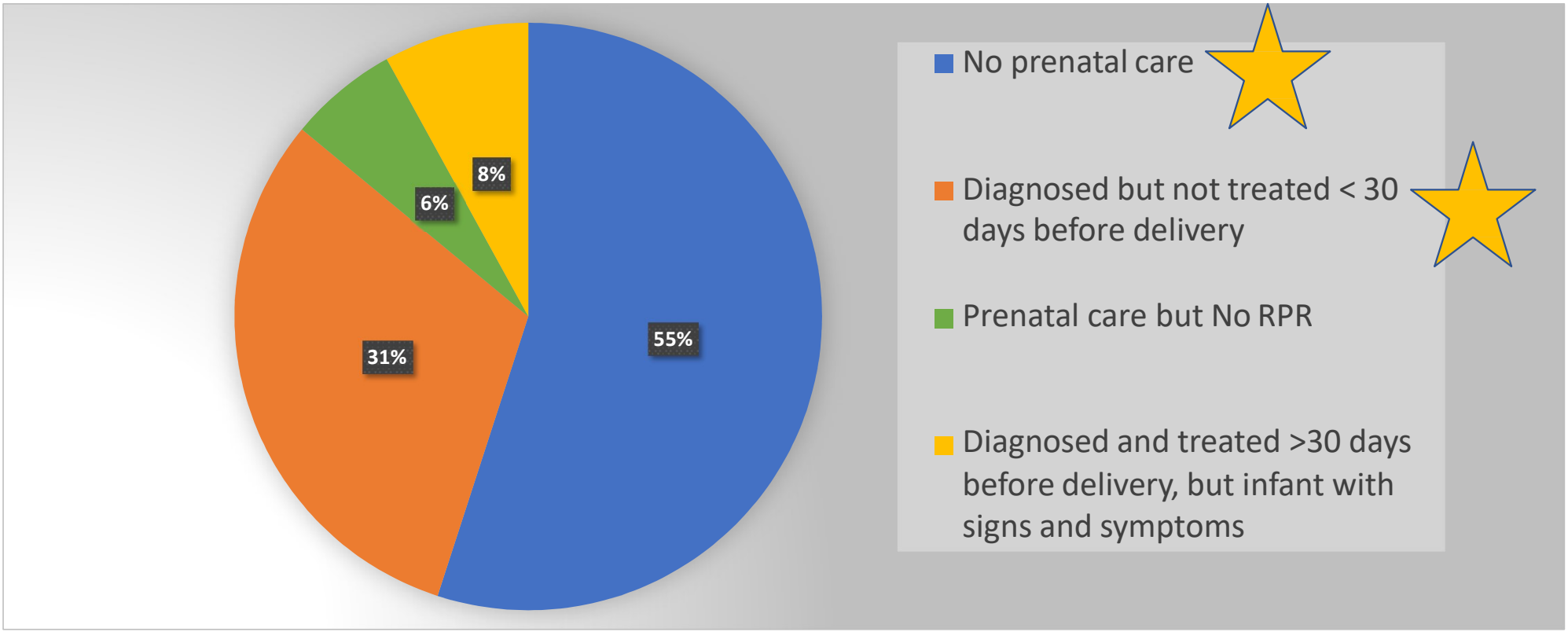
NOTE: Of the 6,928 congenital syphilis cases reported during 2016 to 2020, 21 (0.3%) did not have sufficient information to be categorized.

Congenital Syphilis — Missed Prevention Opportunities among Mothers Delivering Infants with Congenital Syphilis, United States, 2016–2020



NOTE: Of the 6,928 congenital syphilis cases reported during 2016 to 2020, 1,566 (22.6%) 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.

Missed CS Prevention Opportunities among 51 Reported Cases of Maternal Syphilis, WA State 2021



Interventions: Screening

2022 PHSKC & WA DOH Updated Syphilis Screening Guidelines

[+]Medical providers should be especially vigilant in following these guidelines when caring for Black, Latinx and Native/indigenous patients since syphilis in WA State has disproportionately affected these minority communities.

Cis-women and cis-men who have sex with women (including pregnant persons)

Test sexually active* patients with any of the following risk factors at least annually and whenever they present for care up to every 3 months:

- Persons who inject drugs
- Persons who use methamphetamine or nonprescription opioids
- Persons living homeless or who are unstably housed
- Person engaged in transactional sex
- Persons entering correctional facilities or with a history of incarceration in the prior 2 years
- Persons with a history of syphilis in the prior 2 years

Persons with a sex partner with any of the above risks should test for syphilis at least annually

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Pregnant persons should be tested at the following times:

- First prenatal care
- Time of 3rd trimester laboratory testing - typically done at 24-28 weeks gestation
- Time of delivery if any of the above risks are present or the pregnant person was diagnosed with a bacterial STI or first-episode of HSV (genital herpes) during pregnancy[++].

Test pregnant persons not engaged in prenatal care any time that present to a clinical setting (i.e., ERs, jail, substance use treatment facilities, labor and delivery, etc.)

Pregnant persons with fetal demise at ≥20 weeks gestation

Sexually active persons aged 45 and under if they have not tested since January 2021.

Women whose male partners have sex with both men and women should test for syphilis annually

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Sexually active HIV positive persons outside of mutually monogamous relationships should test annually

---

Persons diagnosed with gonorrhea or HIV should be tested for syphilis if not done at the time of their initial gonorrhea/HIV testing

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- Persons who use methamphetamine or nonprescription opioids
- Persons living homeless or who are unstably housed
- Person engaged in transactional sex

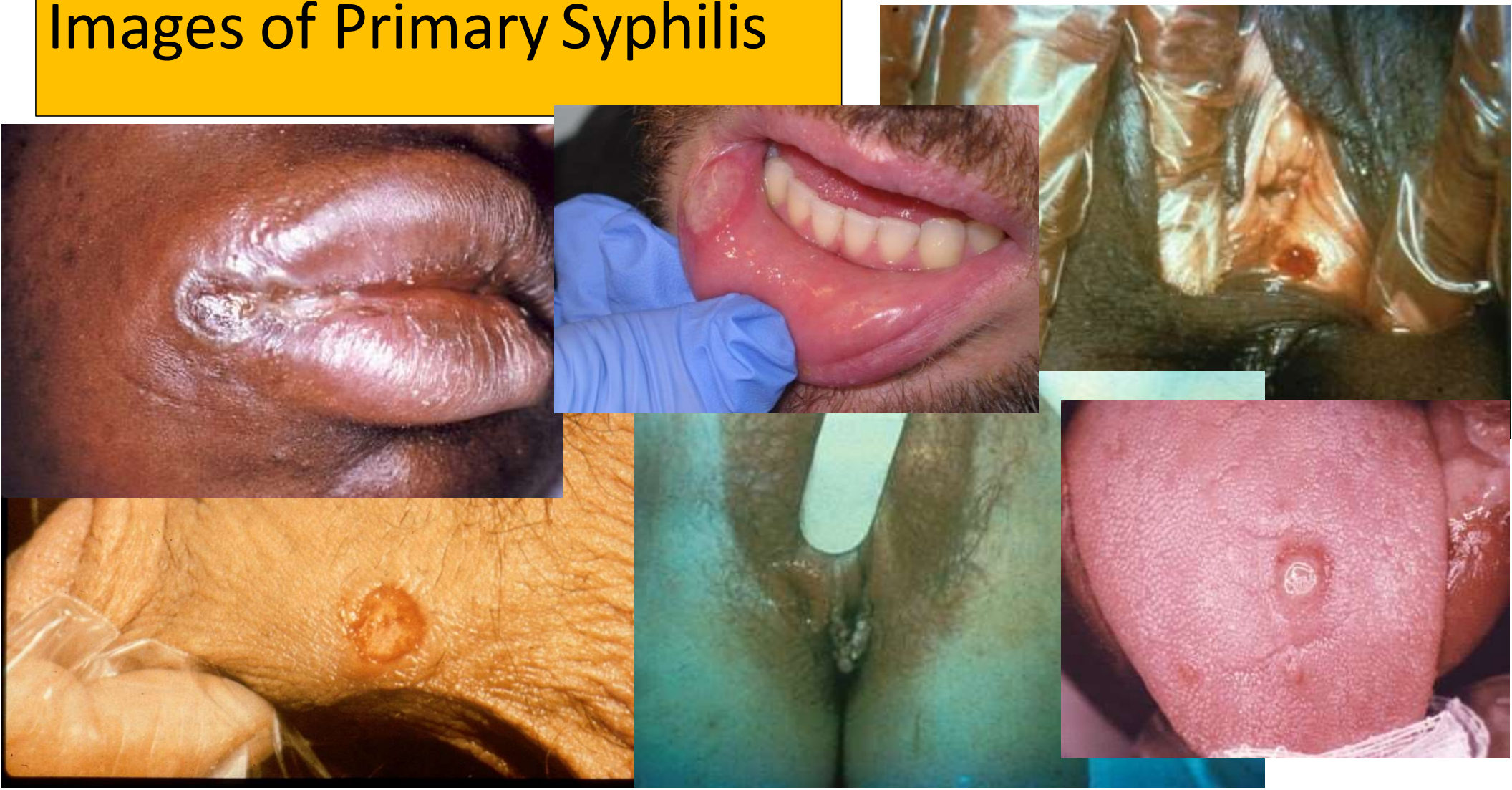
Sexually active cis-MSW and cis-women aged 45 and under if they have not tested since January 2021.

Pregnant persons with fetal demise at ≥20 weeks gestation

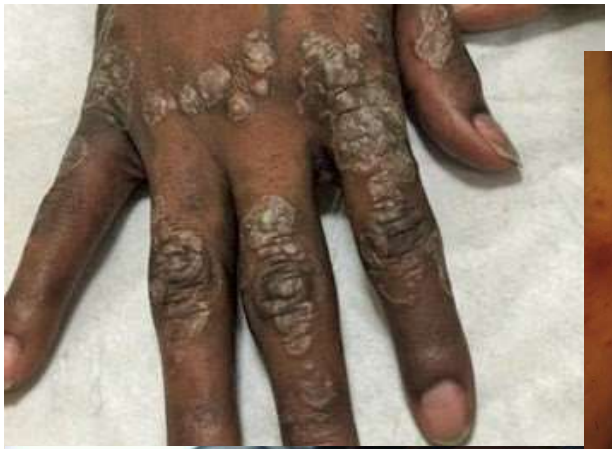
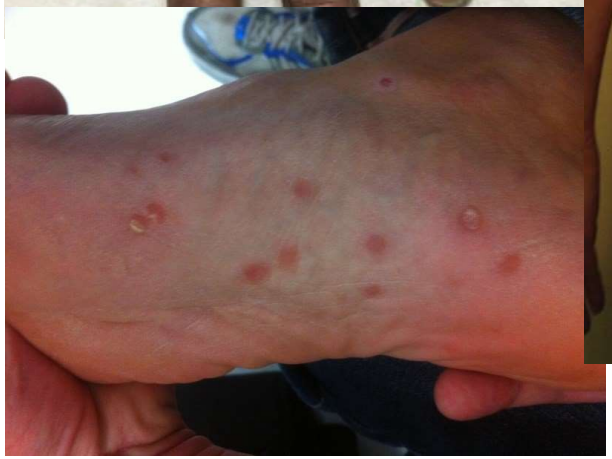
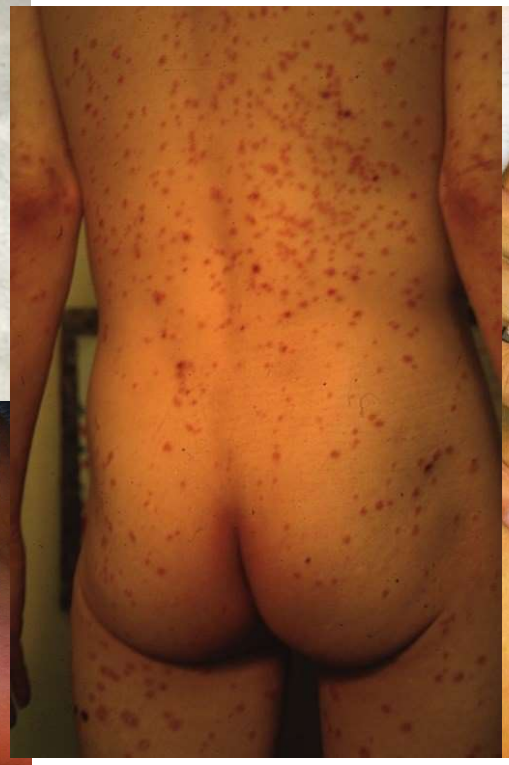
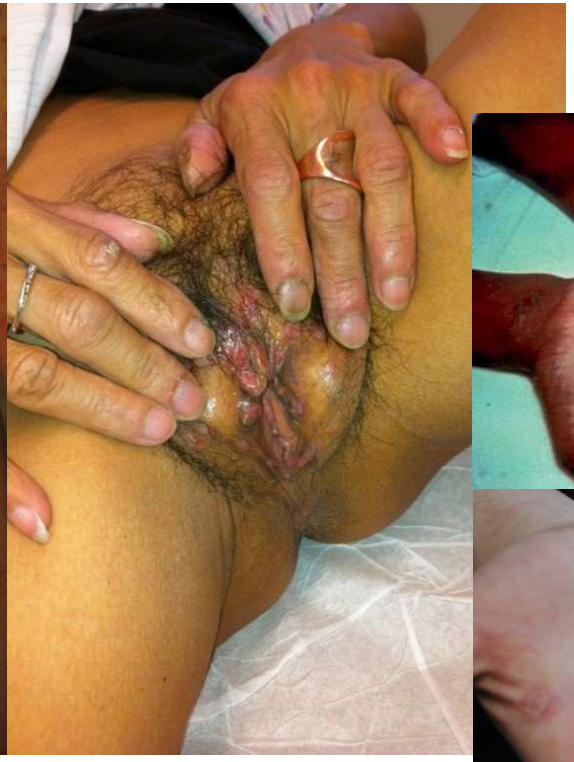
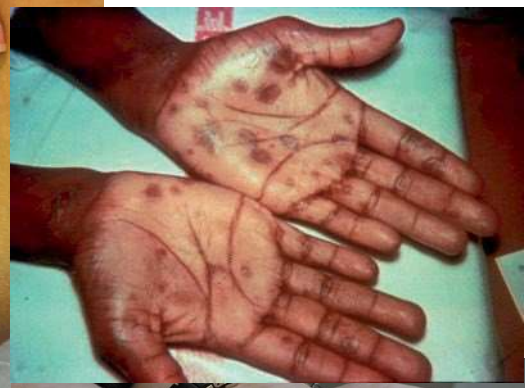
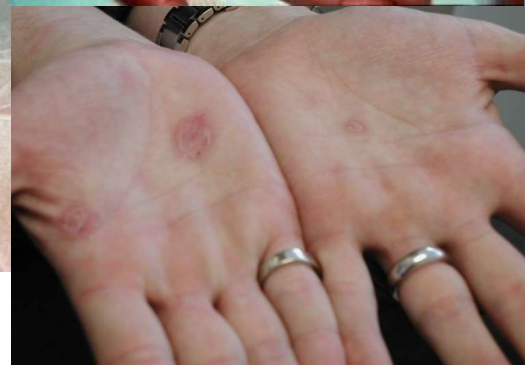
Sexually active persons aged 45 and under if they have not tested since January 2021.
Women whose male partners have sex with both men and women should test for syphilis annually
Sexually active HIV positive persons outside of mutually monogamous relationships should test annually
Persons diagnosed with gonorrhea or HIV should be tested for syphilis if not done at the time of their initial gonorrhea/HIV testing

Diagnosis and Management of Maternal & Congenital Syphilis

Images of Primary Syphilis

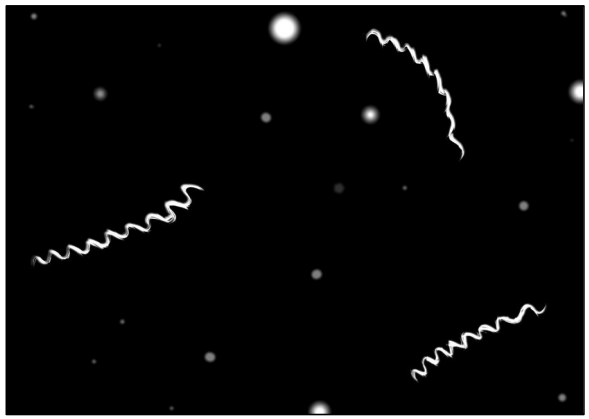


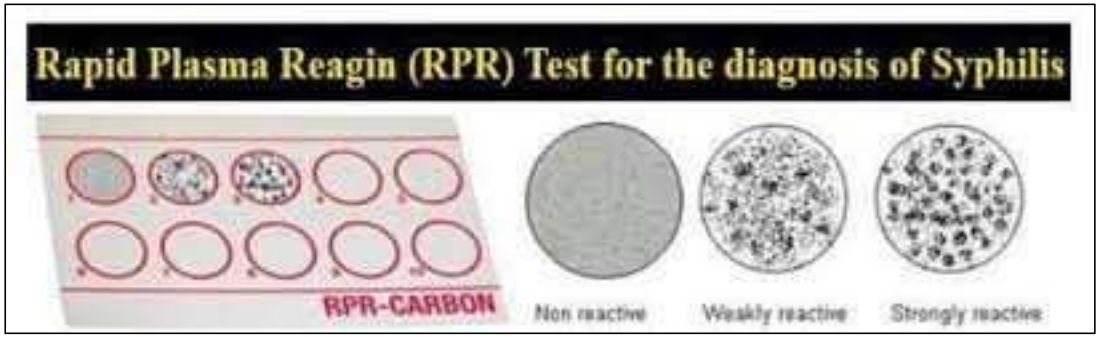
Images of Secondary Syphilis

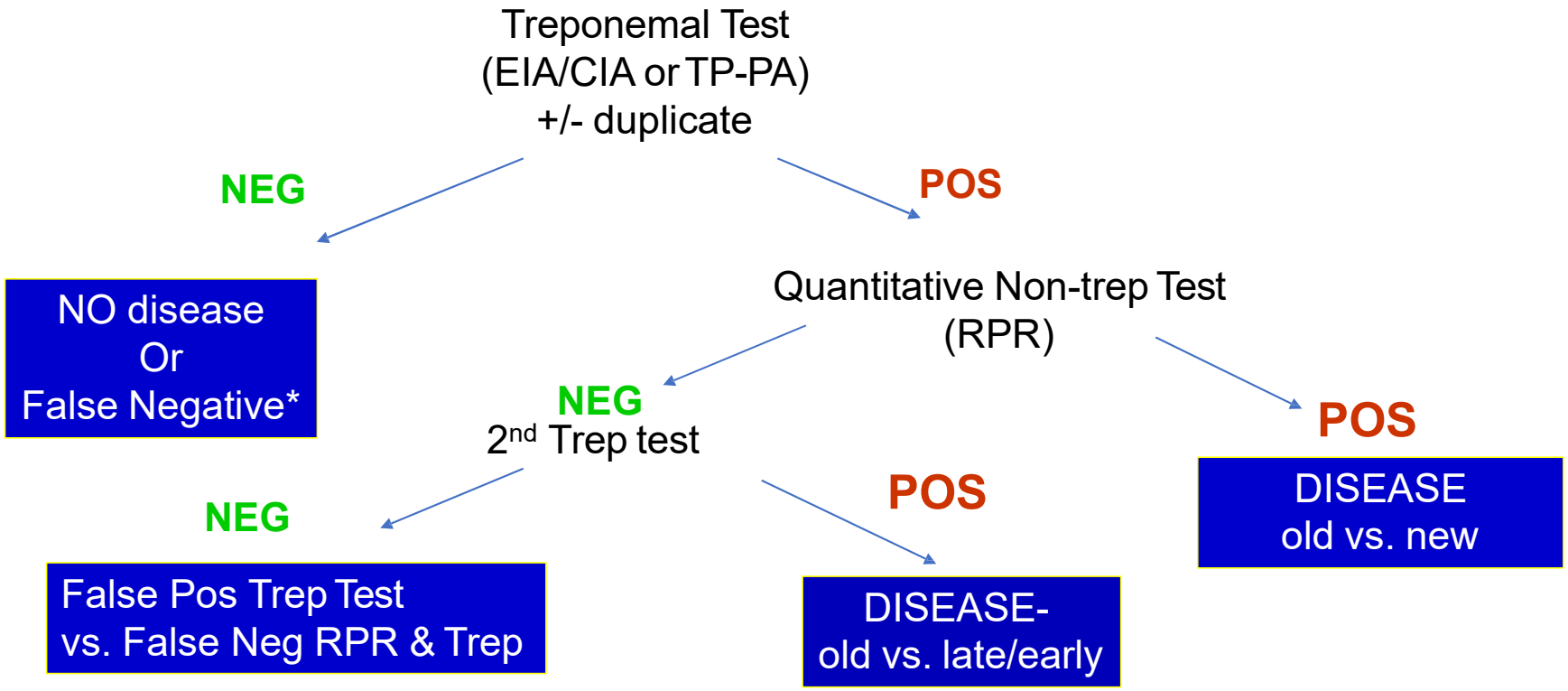
Syphilis Diagnostics by Stage

- Primary
  - Clinical diagnosis
  - Darkfield microscopy
  - Serologies (non-treponemal and treponemal)
    - Tests can be falsely negative
- Secondary
  - Clinical diagnosis
  - Darkfield for wet lesions (e.g. condyloma lata)
  - Serologies
- Latent
  - Screening test using serologies
- Neuro (not discussed today)





Reverse Sequence Syphilis Screening



- Do not use EIA in patients with a history of syphilis and in newborns
- False negatives occur in early disease. If high clinical suspicion, repeat tests.

Syphilis Treatment in Pregnancy

Penicillin is the ONLY effective drug to treat syphilis in pregnancy.

Patients with TRUE penicillin allergies will need desensitization.

Stage (or complicated)	Treatment
Primary	2.4 million units Benzathine PCN IM x 1
Secondary	
Early Latent* (Early nonprimary nonsecondary)	
Late Latent or unknown duration	2.4 million units Benzathine PCN IM q week* for 3 weeks

* >9 days between doses are not acceptable for pregnant persons. Ideal timing is 7 days for pregnant persons.

Jarisch-Herxheimer reaction

- Acute febrile reaction after initiation of antibiotics for the treatment of spirochete infections.
- Death of these bacteria →endotoxins and lipoproteins
- Fever, malaise, nausea, vomiting, chills, exacerbation of rash
- Especially in secondary
- Within 24 hours, resolves in 24 hours
- The intensity of the reaction indicates the severity of inflammation.
- Self-limiting. Supportive care
- May precipitate labor**

Other Management Considerations

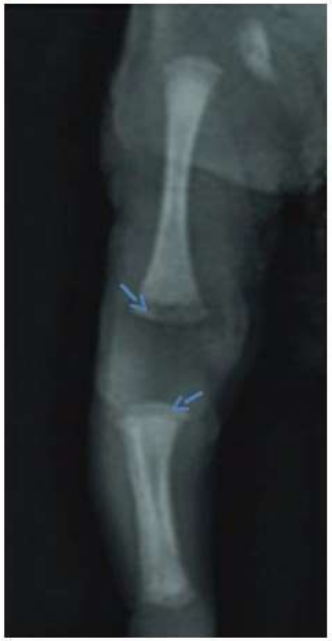
- Some data suggests a second dose of BIC for early syphilis treatment in pregnancy.
- If diagnosed >20 weeks, conduct a fetal ultrasound to evaluate for congenital syphilis.
- Treatment >20 weeks can precipitate premature labor or fetal distress if they have a Jarisch-Herxheimer reaction.
- All pregnant persons who have syphilis should be offered testing for HIV at the time of diagnosis.
- Repeat titers at least at 8 weeks post-treatment and again at delivery. Some recommend q4 weeks until delivery

Partner Management

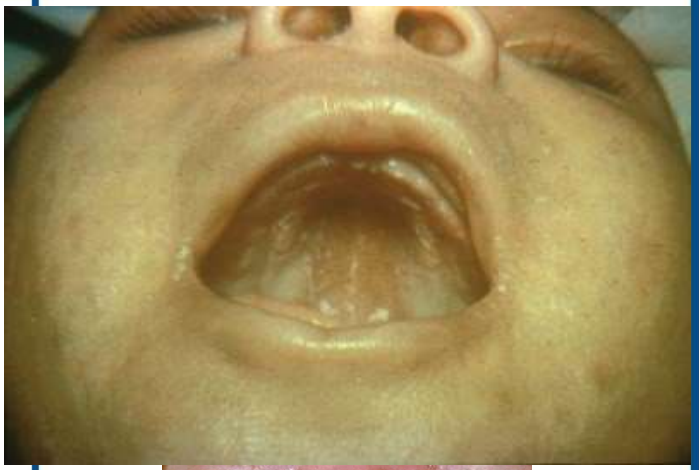
- All sex partners should receive a single dose of benzathine penicillin as empiric treatment
- DO NOT wait for syphilis serology results to decide whether to treat a known contact to syphilis as you may miss incubating syphilis and this allows for reinfection in primary patient
- Cis-male and non-pregnant cis-female partners who refuse to present for care or have a penicillin allergy can be treated with doxycycline 100mg BID x 14 days

Images of Early Congenital Syphilis

FIGURE 4



Congenital syphilis long bone x-ray. Osteochondritis and periostitis resulting in lucent epiphyseal bands.[24] Syphilitic changes of the skeletal system demonstrated on radiographic examination as diaphyseal periostitis, osteochondritis, and lucent epiphyseal bands.



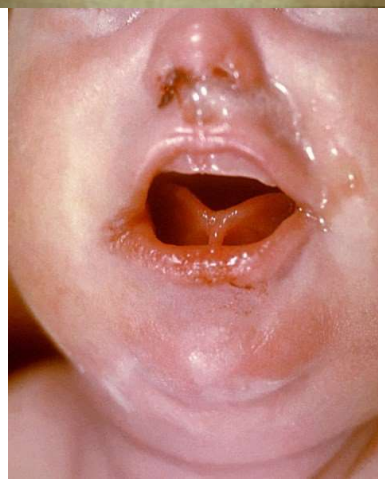
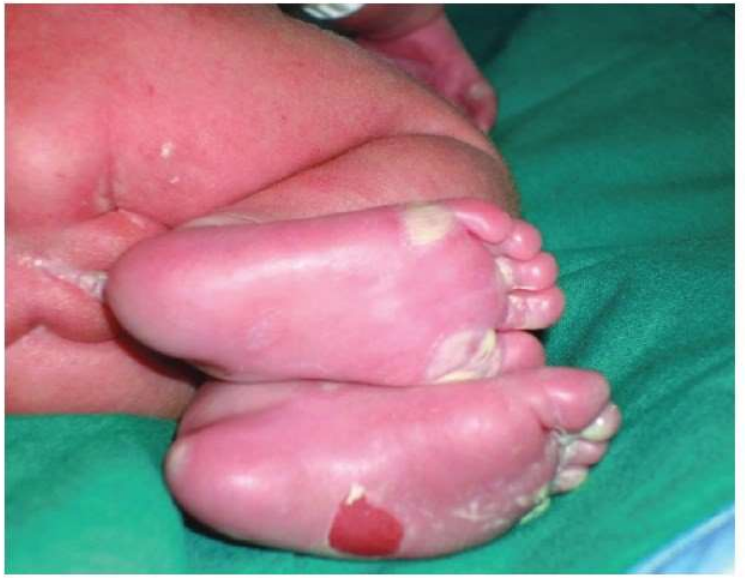


FIGURE 3



Congenital syphilis skin rash/copper-red maculo-papular lesions.[7,9,20,21] Cutaneous findings can appear at birth or within the first few weeks of life as desquamated copper-red maculopapular skin rash mainly on the face, palm, and soles.

Congenital Syphilis Case Definitions

Infant Criteria

- Signs and symptoms of CS on exam
- RPR titer >4 fold higher than mother's
- Positive darkfield microscopy or PCR of lesion/body fluid

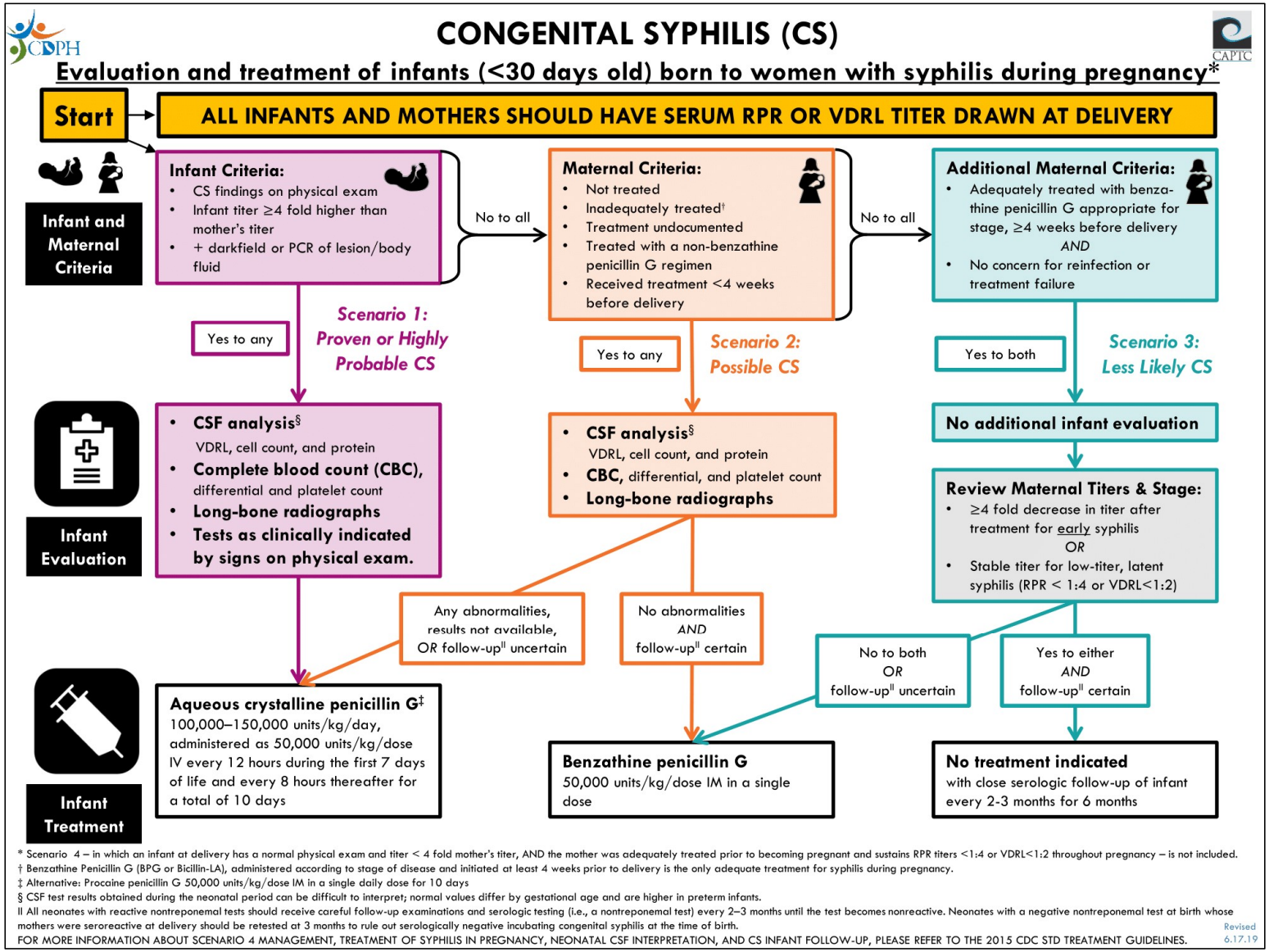
Proven or Highly Probable

Maternal Criteria

- Known syphilis + and not treated
- Inadequate treatment
  - Did not complete all injections or on time
- Treatment completion < 4 weeks before delivery
- Treated with non-benzathine penicillin regimen

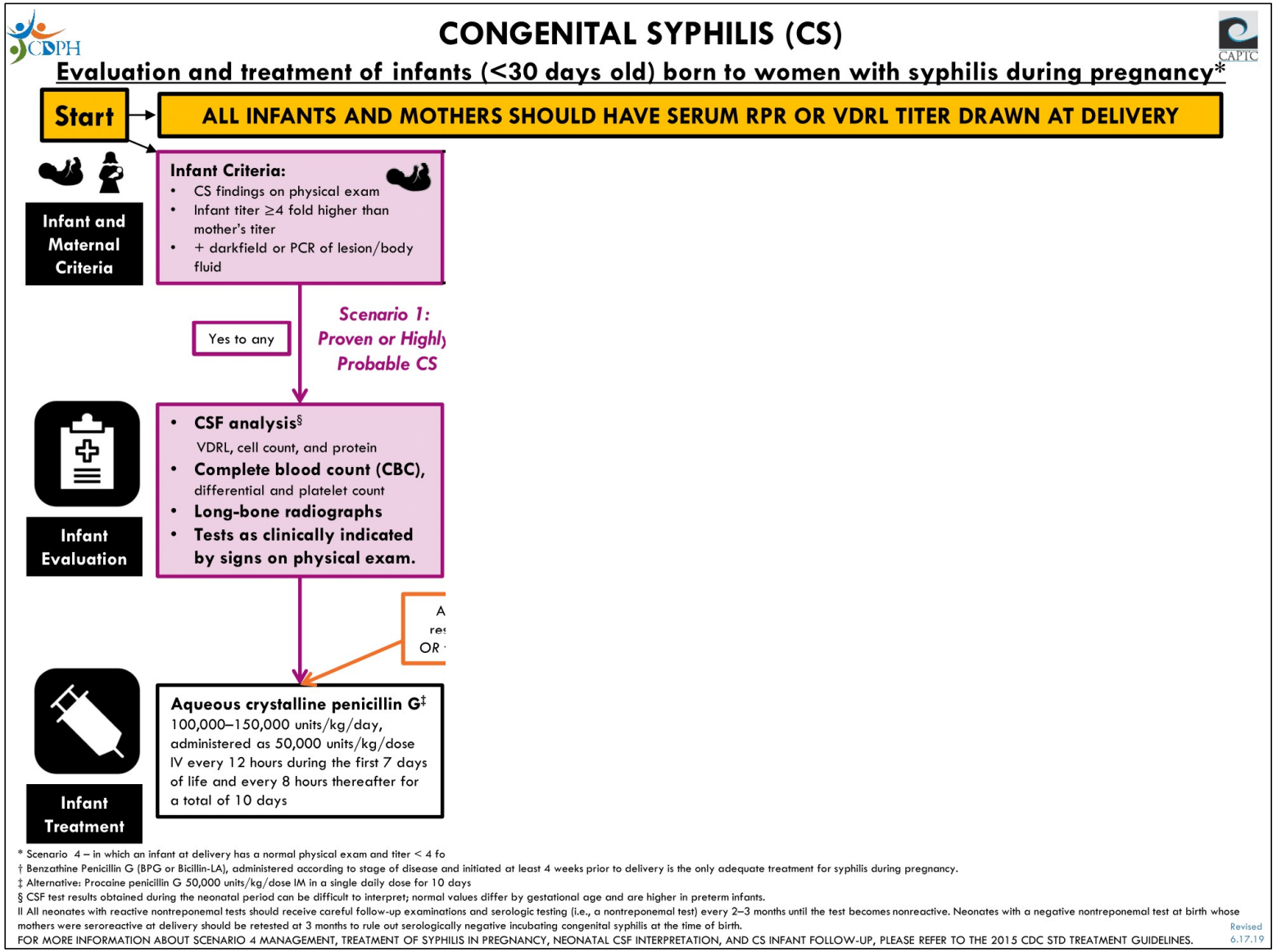
Probable

Congenital Syphilis Work-up & Treatment



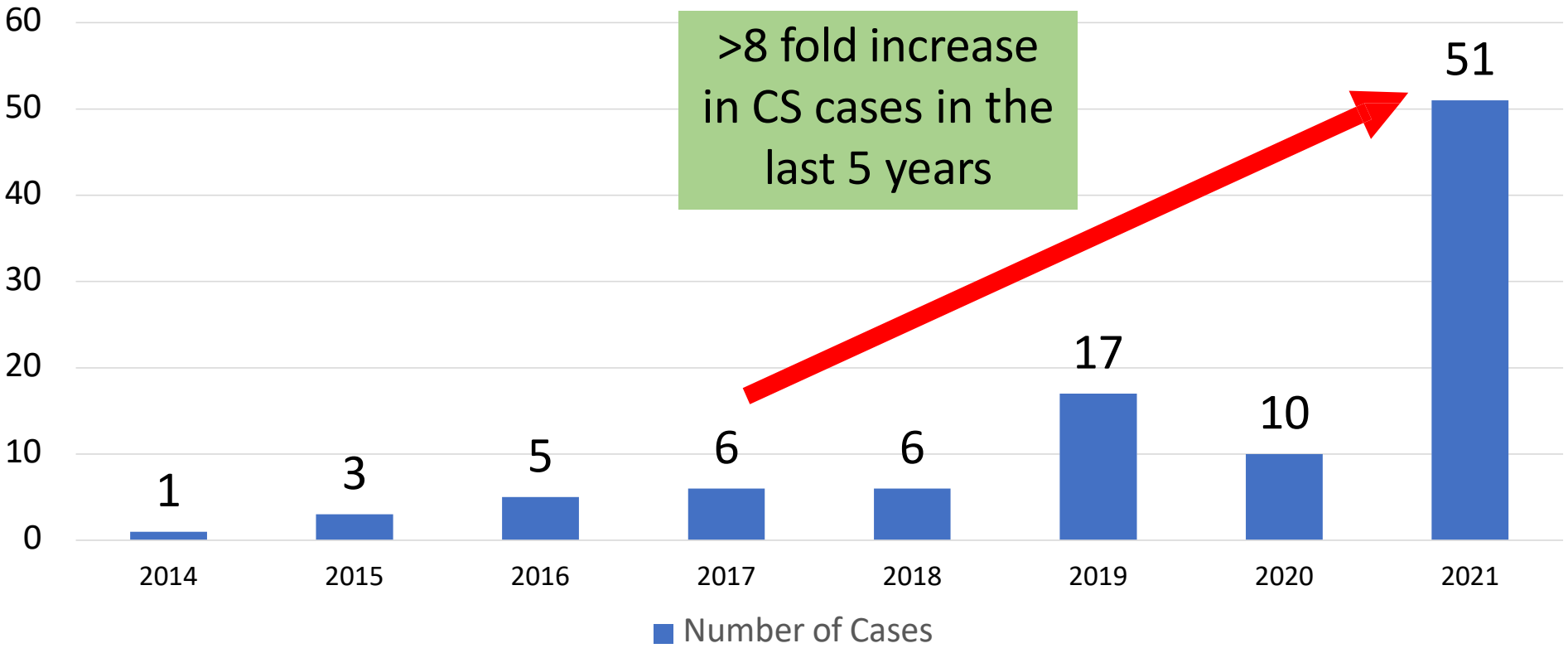
Available at: https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/Congenital_Syphilis_Algorithm.pdf

Congenital Syphilis Work-up & Treatment



Available at: https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/Congenital_Syphilis_Algorithm.pdf

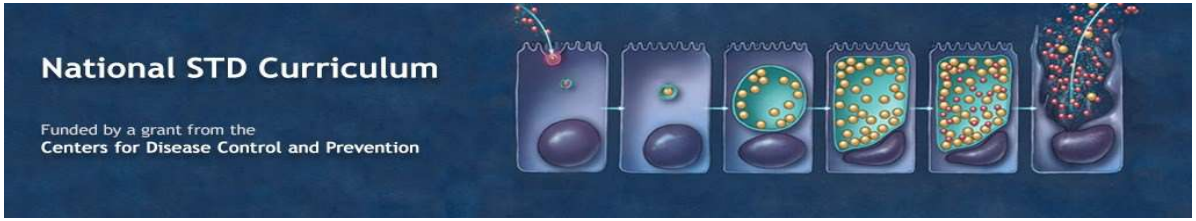
Congenital syphilis cases in Washington State by year, 2014 - 2021



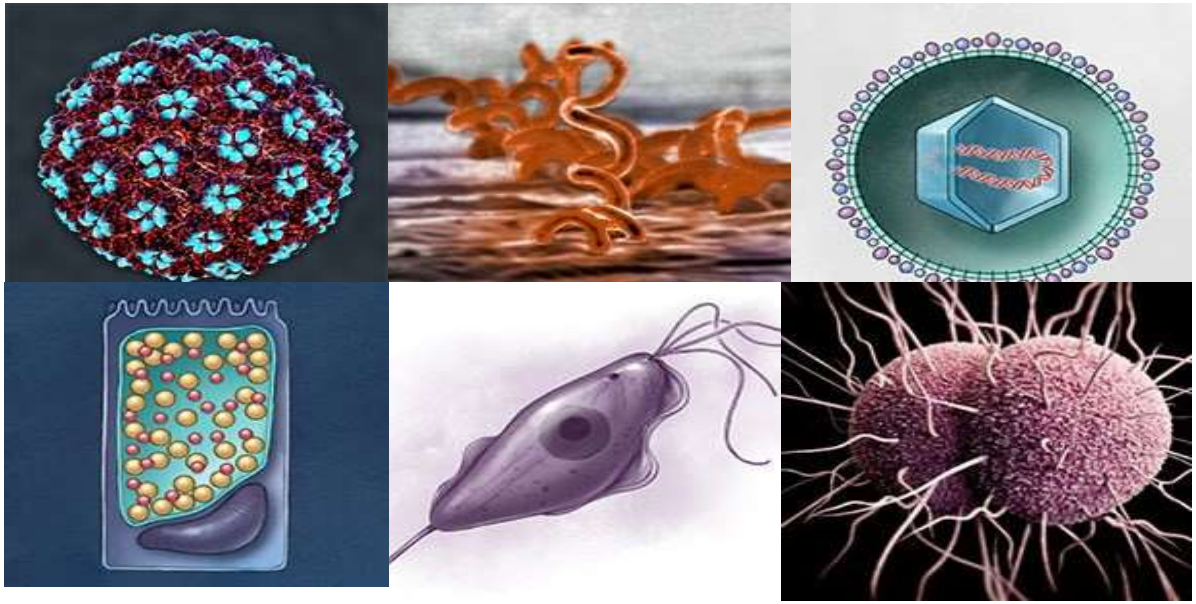
Maternal & Congenital Syphilis Summary

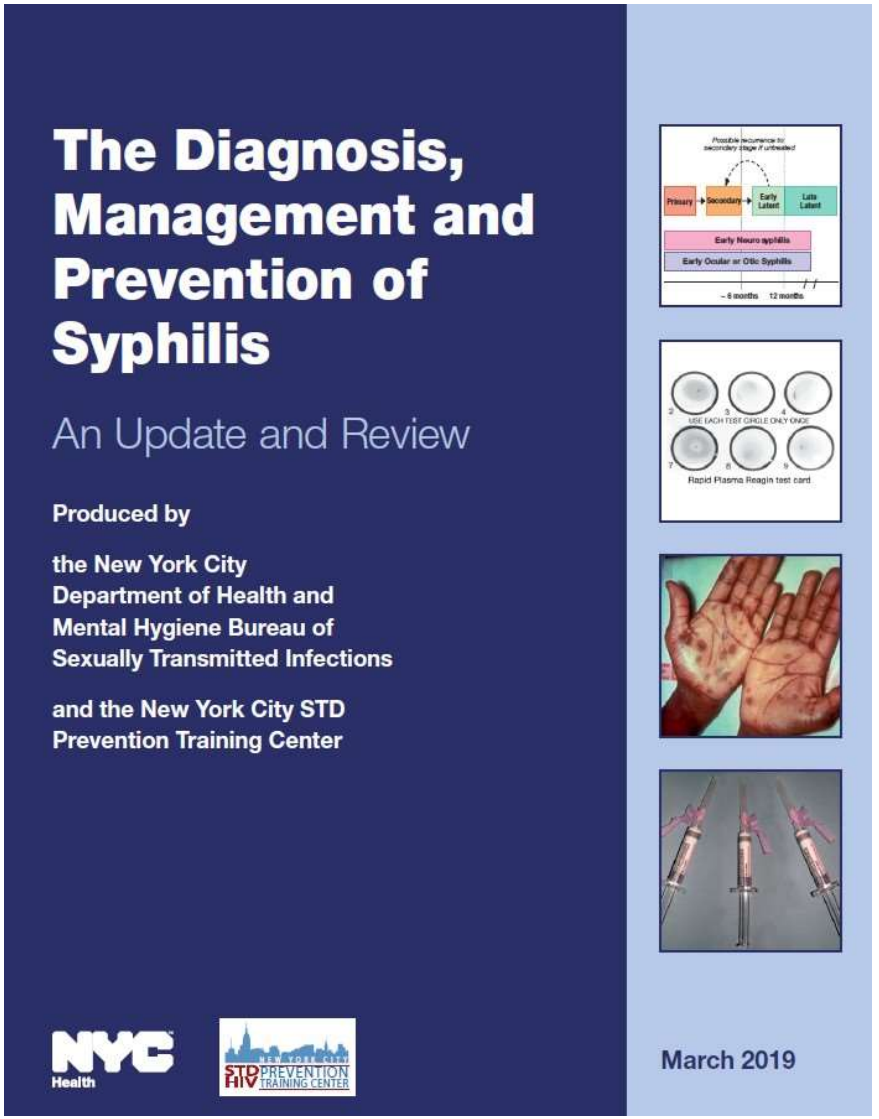
- Syphilis is rising among cis-heterosexuals, including cis-women, and pregnant persons with congenital syphilis cases at an all-time high
- Congenital syphilis can be prevented by timely testing and treatment
- Test all pregnant persons at first and third trimester prenatal visits
  - If they are not engaged in prenatal care, test whenever they present to care – ER, Jail, Labor and Delivery, Addiction Treatment services
  - Screen cis- heterosexuals at elevated risk of syphilis frequently
  - Ensure that all sexually active persons under 45 years of age have been screened at least once since January 2021

Resources



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





https://www.ncsddc.org/wp-content/uploads/2019/04/Syphilis_Monograph_2019-NYC-PTC-NYC-DOHMH.pdf

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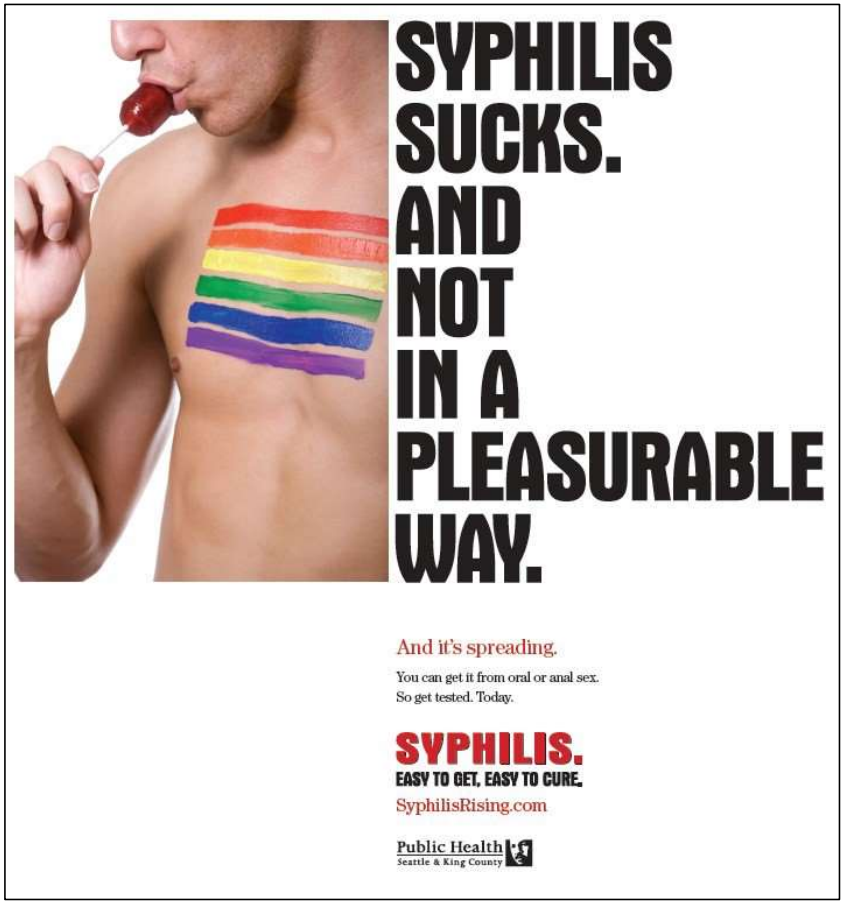

Contact Info:
Lindley Barbee
lbarbee@uw.edu

Syphilis Cases (All Stages) by Population, WA State 2012-2021