ONGOING SYPHILIS EPIDEMIC: EPIDEMIOLOGY, DIAGNOSIS, TREATMENT AND PREVENTION

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Michigan Family Planning Update

September 2026

OBJECTIVES

1. Overview of national and statewide epidemiologic trends in primary secondary syphilis, and congenital syphilis.

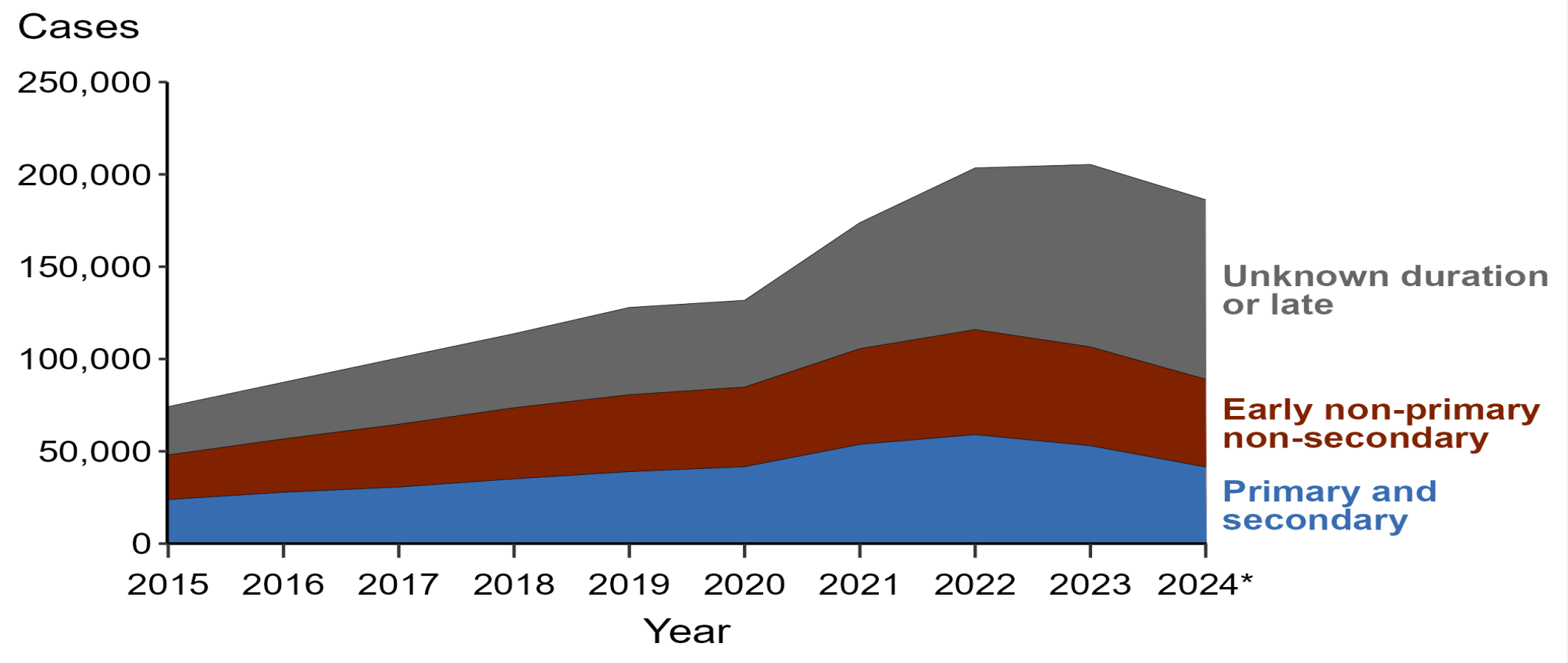
2. Overview of clinical features of primary and secondary syphilis, and diagnostic algorithms and interpretation of testing.

3. Review syphilis treatment recommendations in the context of the ongoing national Bicillin shortage.

4. Review of doxycycline post-exposure prophylaxis (Doxy-PEP) in syphilis prevention: Protocol, Evidence, and Implementation Considerations

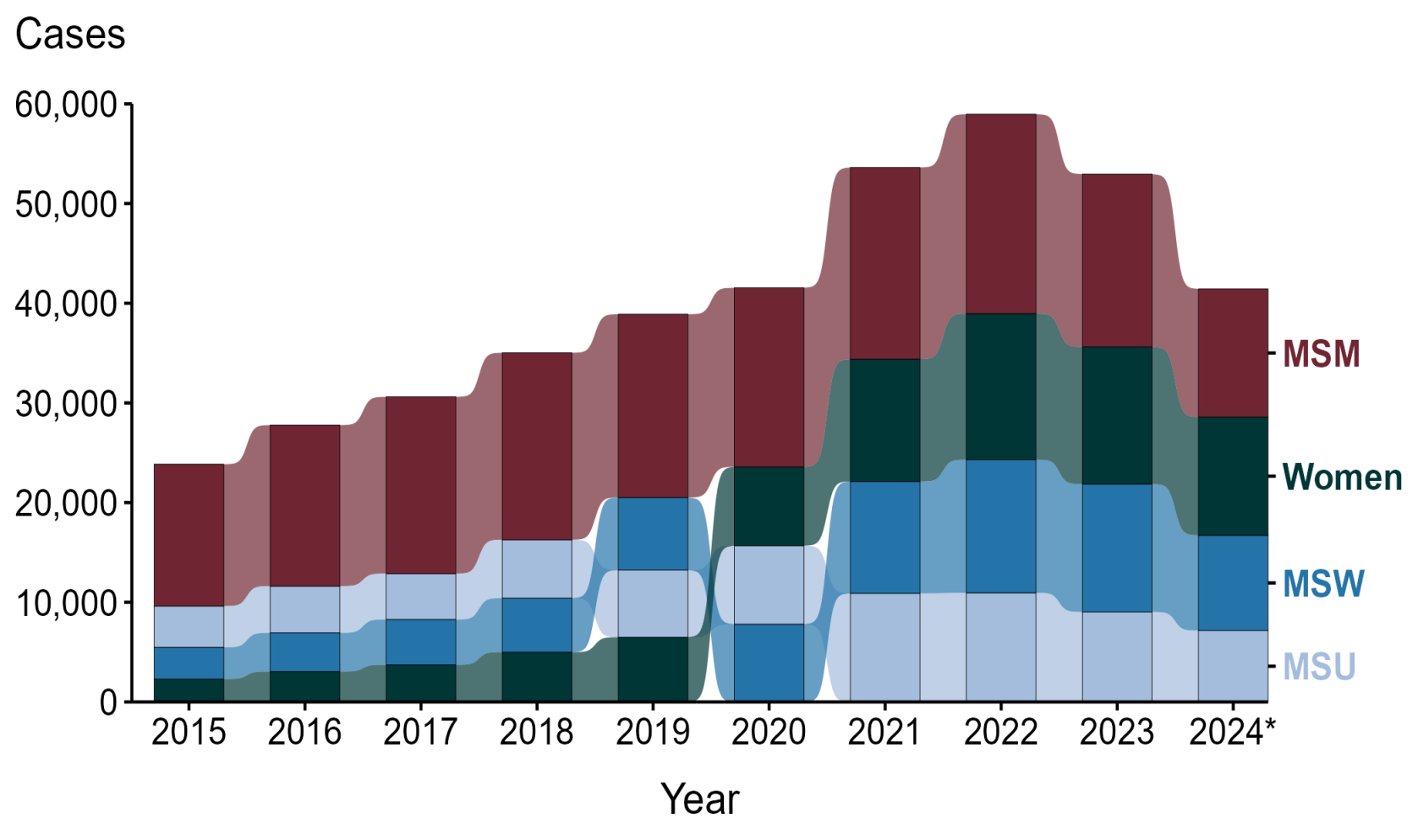
EPIDEMIOLOGY: SYPHILIS IN THE US

SYPHILIS —
REPORTED CASES BY STAGE AND YEAR, UNITED STATES, 2015–2024



CDC: National Center for HIV, Viral Hepatitis, STD, and TB Prevention, Division of STD Prevention: Sexually Transmitted Infections – Surveillance 2024 (Provisional)
* 2024 data are provisional as of August 14, 2025.

PRIMARY AND SECONDARY SYPHILIS —
REPORTED CASES BY SEX AND SEX OF SEX PARTNERS AND YEAR, UNITED STATES, 2015–2024



* **ACRONYMS:**

MSM = Men who have sex with men

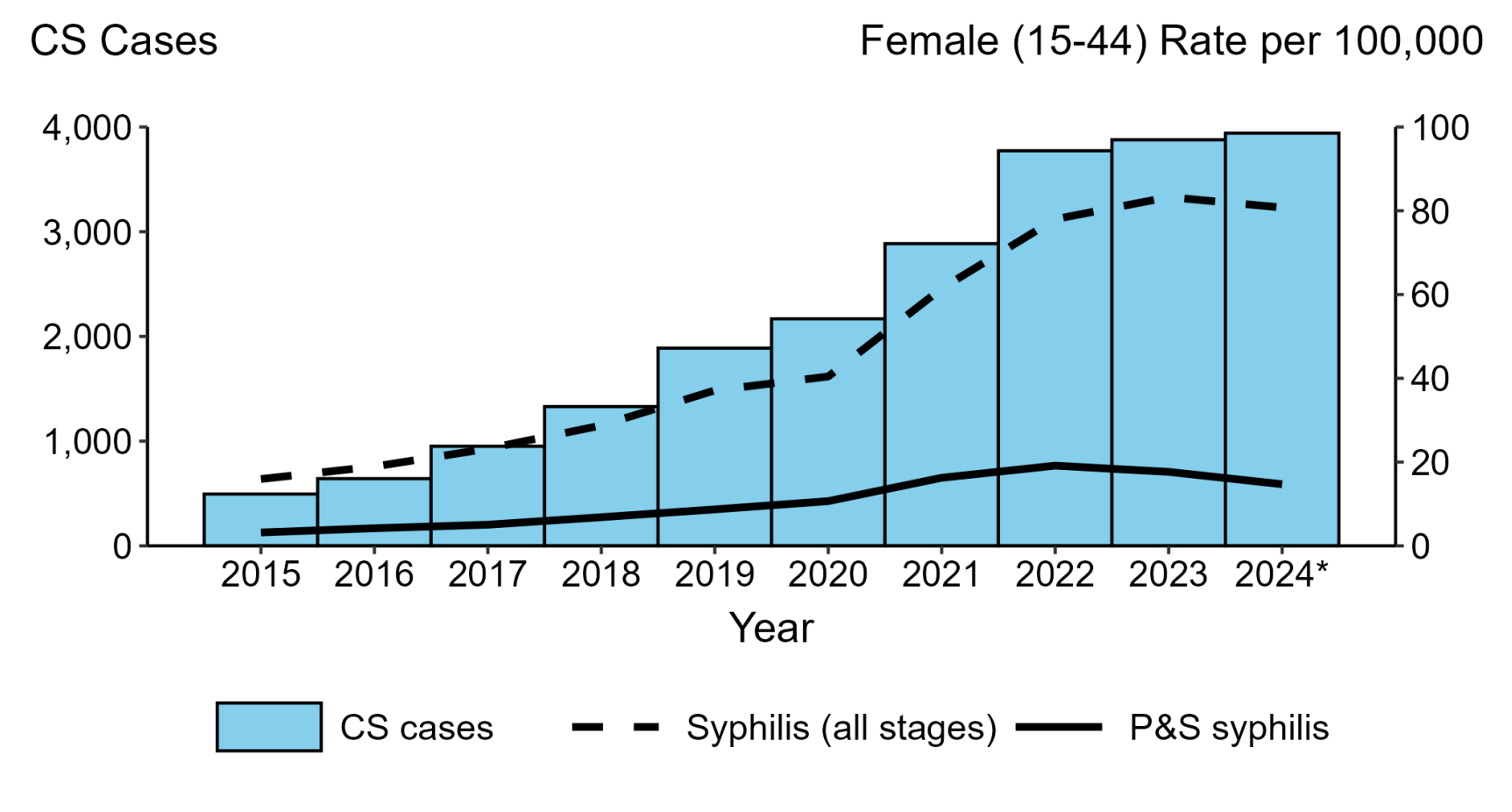
MSU = Men with unknown sex of sex partners

MSW = Men who have sex with women only

CDC: National Center for HIV, Viral Hepatitis, STD, and TB Prevention, Division of STD Prevention: Sexually Transmitted Infections – Surveillance 2024 (Provisional)
* 2024 data are provisional as of August 14, 2025.

CONGENITAL SYPHILIS —

REPORTED CASES BY YEAR OF BIRTH AND RATES OF REPORTED CASES OF PRIMARY AND SECONDARY SYPHILIS AND SYPHILIS (ALL STAGES) AMONG WOMEN AGED 15–44 YEARS, UNITED STATES, 2015–2024



***ACRONYMS:**

CS = Congenital syphilis

P&S Syphilis = Primary and secondary syphilis

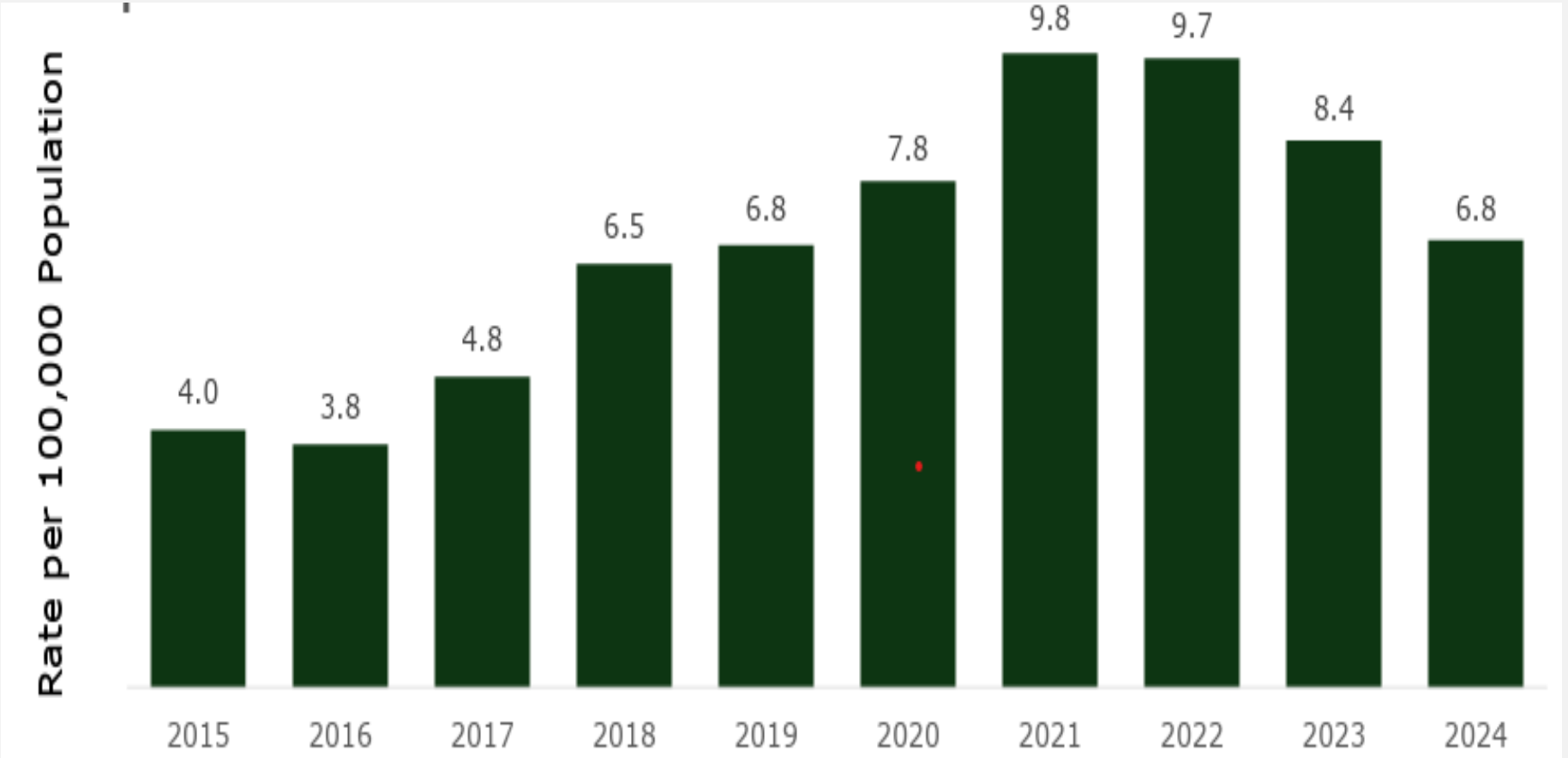
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EPIDEMIOLOGY: SYPHILIS IN MICHIGAN

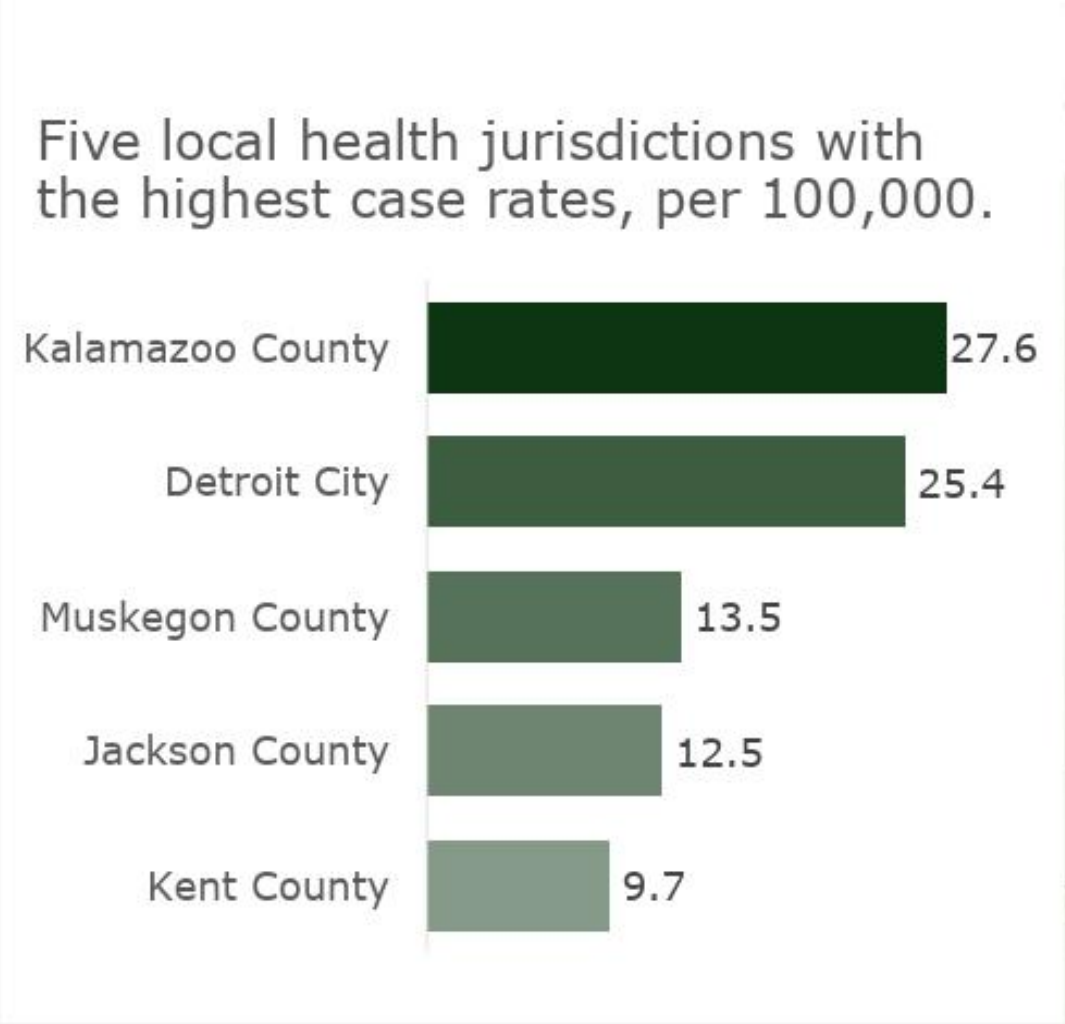
PRIMARY AND SECONDARY SYPHILIS:
TRENDS IN MICHIGAN , 2015-2024

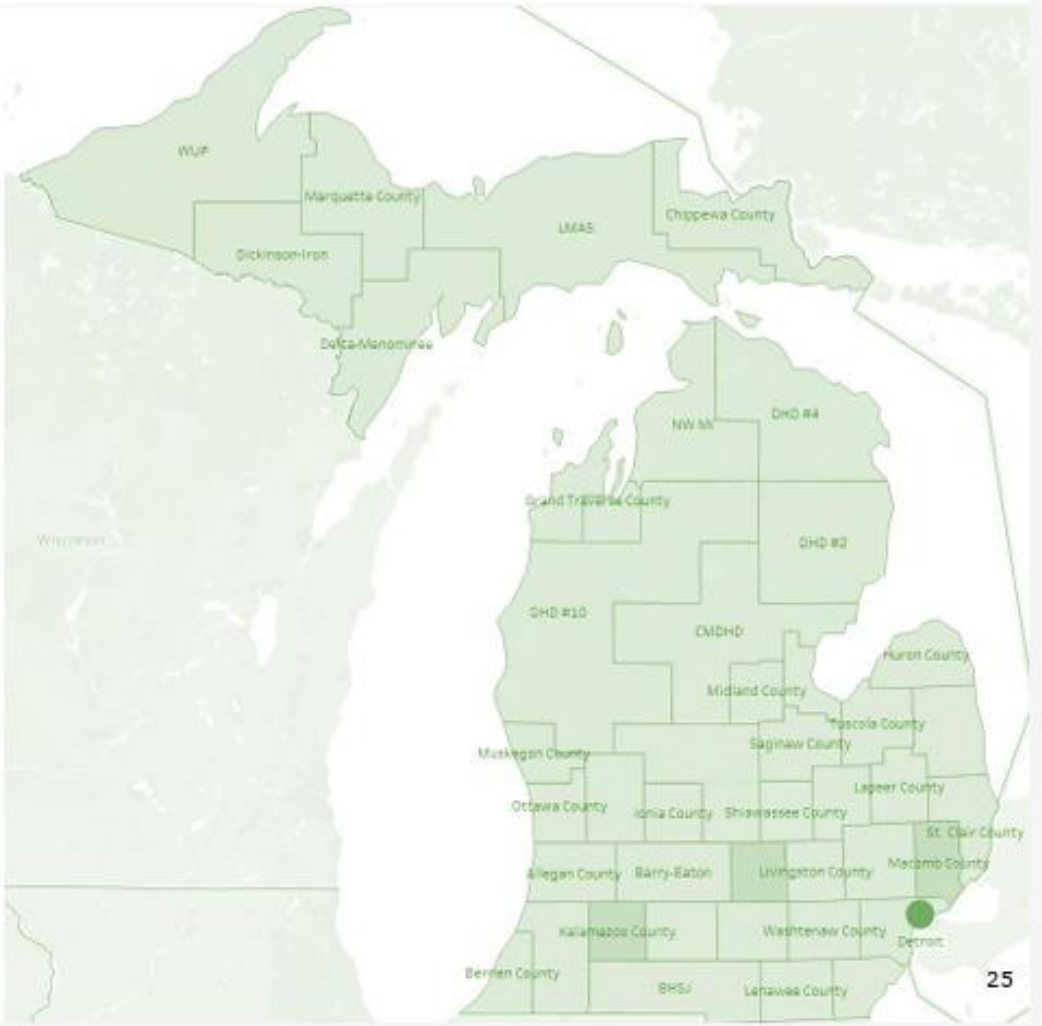
- Since 2015, P&S rates have increased annually by 10% (on average)
- From 2020-2021, syphilis rates increased 26%
- From 2021-2024, there is a **31% decrease**



MDHHS: STI Annual Diagnosis and Trends in Michigan, 2024
*Data as of July 15, 2025

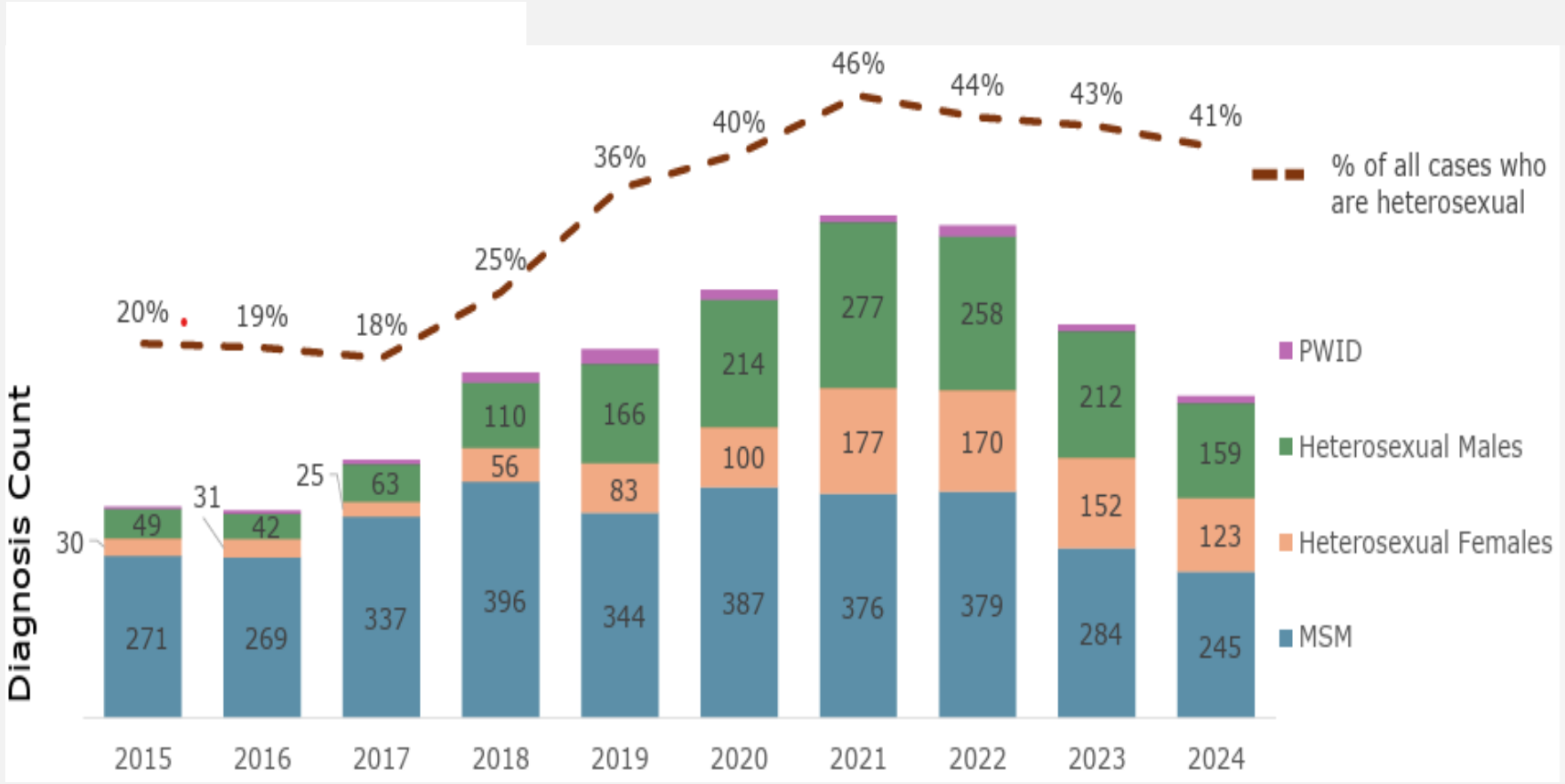
PRIMARY AND SECONDARY SYPHILIS: GEOGRAPHIC DISTRIBUTION, MICHIGAN , 2024





MDHHS: STI Annual Diagnosis and Trends in Michigan, 2024
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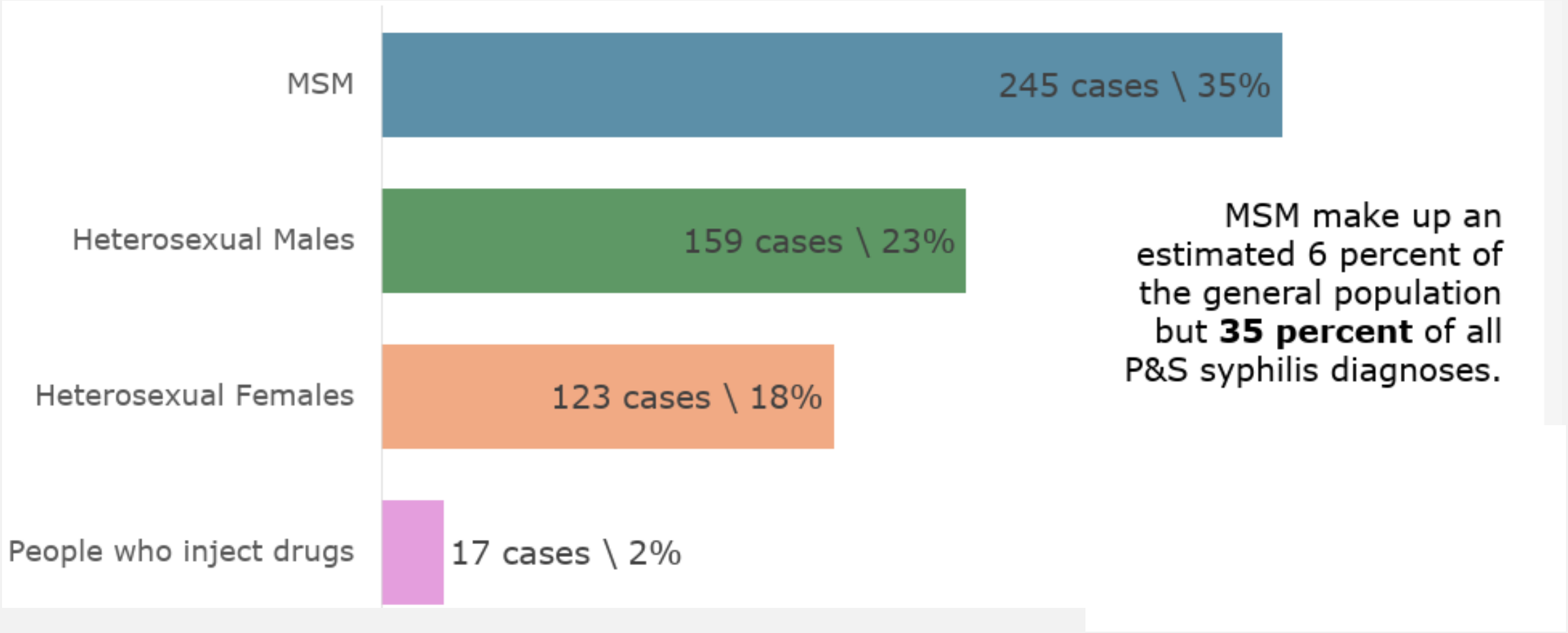
PRIMARY AND SECONDARY SYPHILIS:
TRENDS BY EXPOSURE FACTORS, MICHIGAN, 2015-2024



- Cases have **been increasing most** significantly among people who reports **heterosexual sex**
- **MSM** maintain the **highest # of diagnosis of syphilis,** but difference is shrinking

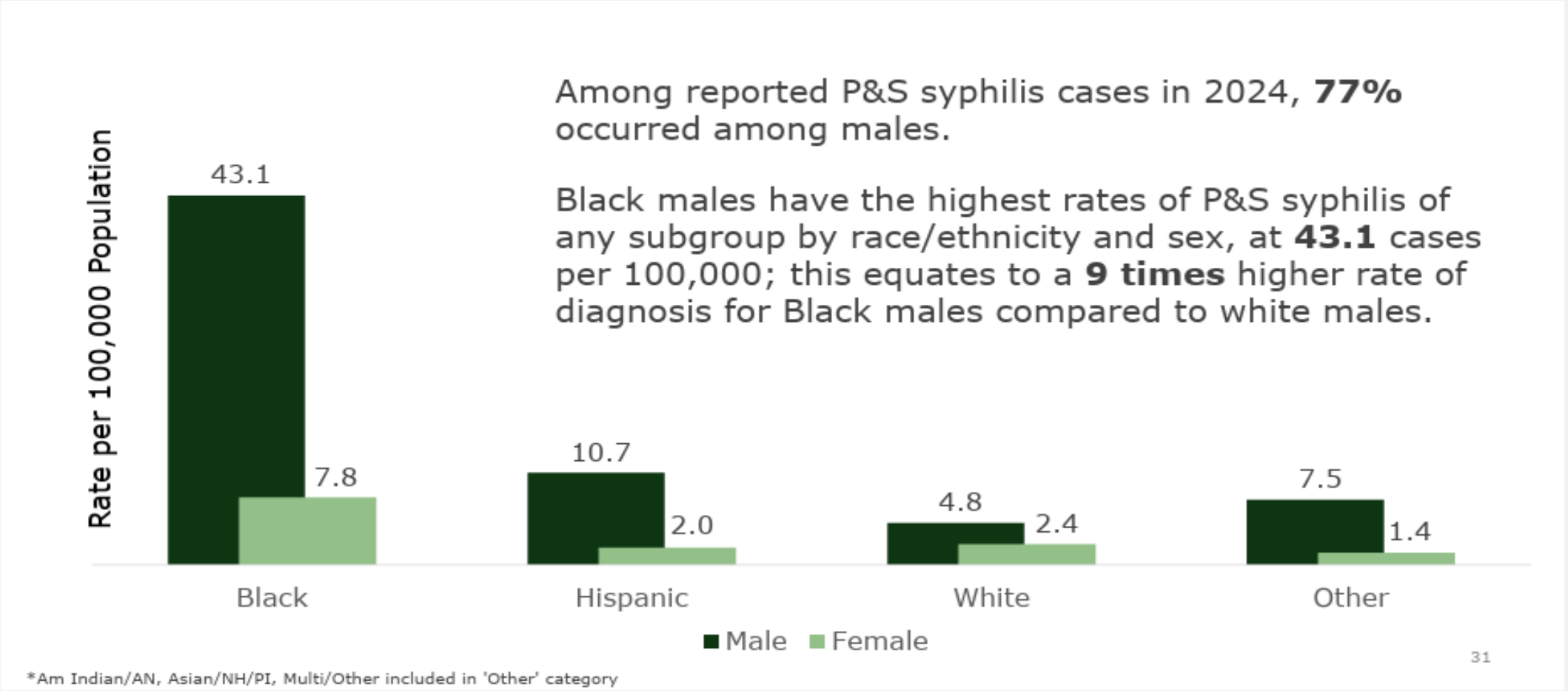
MDHHS: STI Annual Diagnosis and Trends in Michigan, 2024
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PRIMARY AND SECONDARY SYPHILIS:
BY SEX AND SEX OF PARTNERS, MICHIGAN, 2024



MDHHS: STI Annual Diagnosis and Trends in Michigan, 2024
*Data as of July 15, 2025

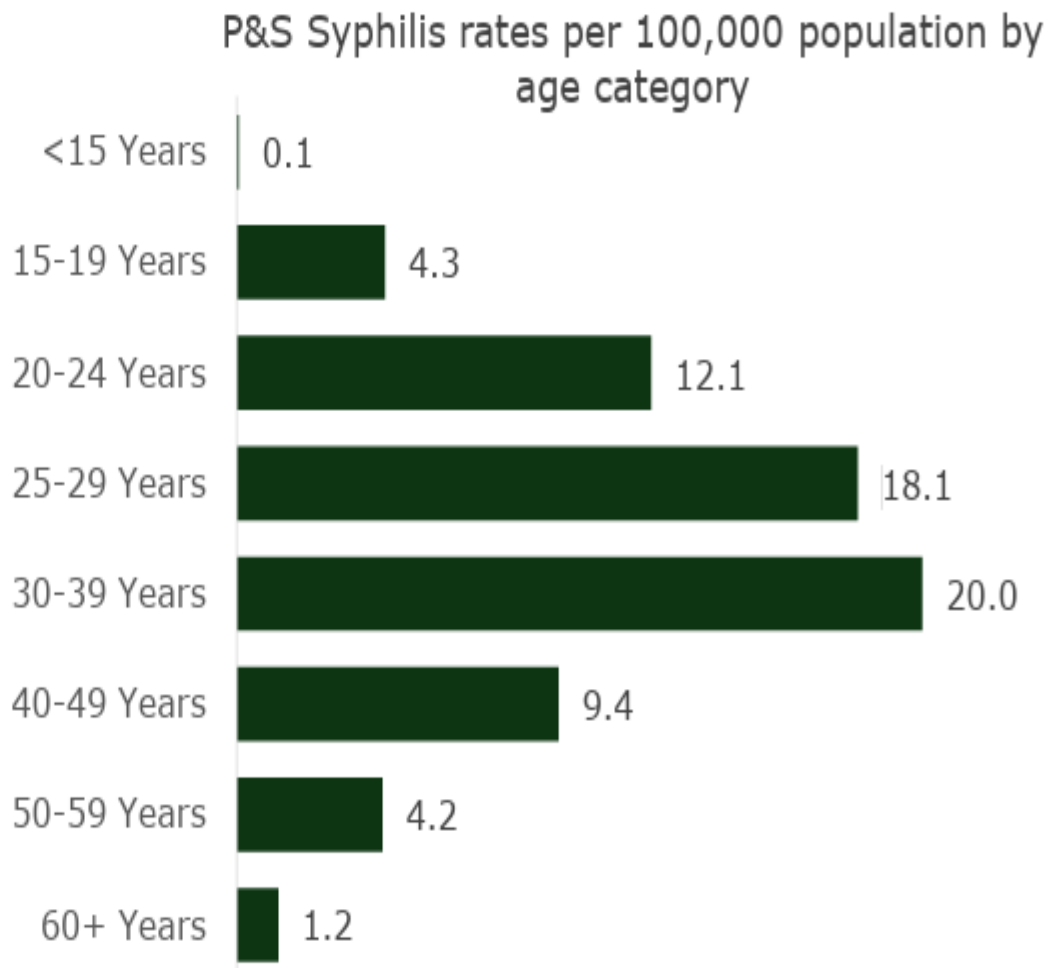
PRIMARY AND SECONDARY SYPHILIS:
BY RACE AND ETHNICITY, MICHIGAN, 2024



MDHHS: STI Annual Diagnosis and Trends in Michigan, 2024
*Data as of July 15, 2025

PRIMARY AND SECONDARY SYPHILIS:
BY AGE, MICHIGAN, 2024

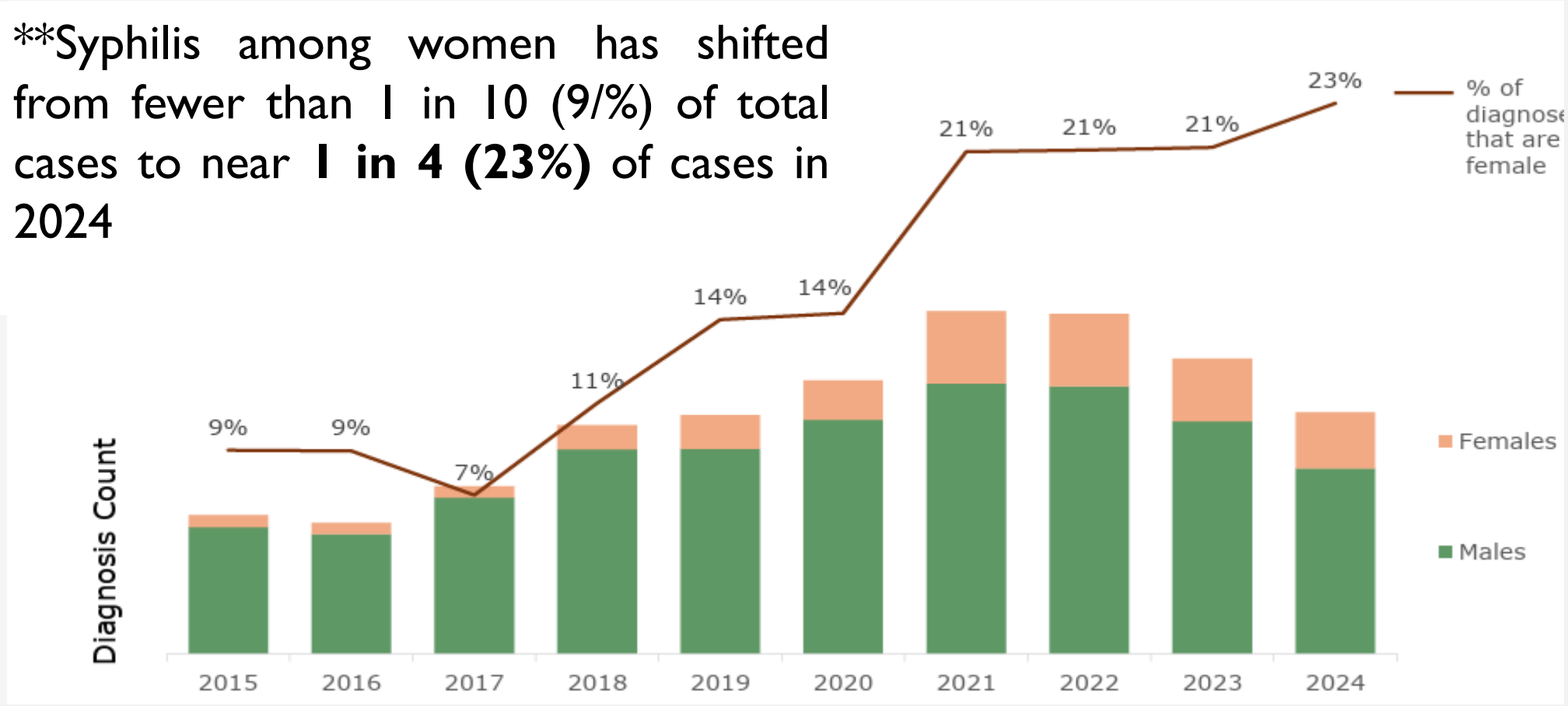
By age, **30-to-39-year-olds** experience the greatest burden of P&S syphilis across all age categories (rate of 20 per 100,000 population), followed by folks in their 20s.



MDHHS: STI Annual Diagnosis and Trends in Michigan, 2024
*Data as of July 15, 2025

PRIMARY AND SECONDARY SYPHILIS:
TRENDS AMONG WOMEN, MICHIGAN, 2015-2024

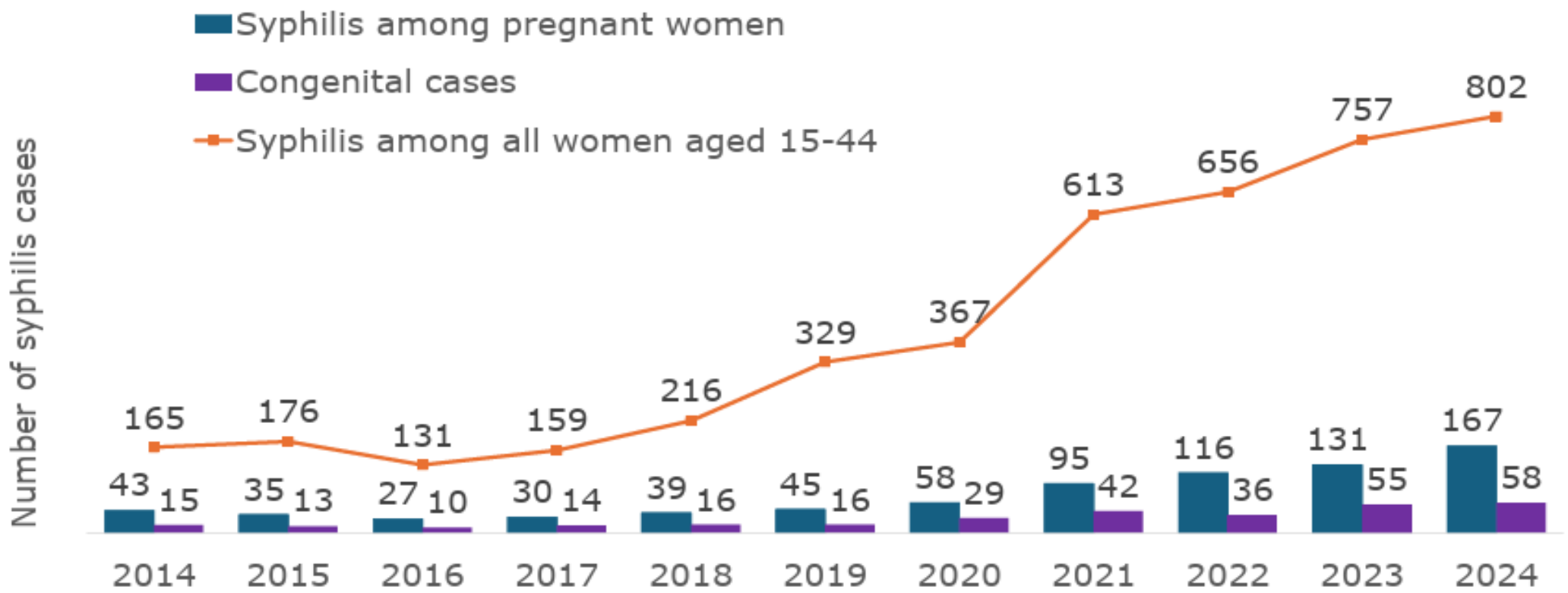
Syphilis among women has shifted from fewer than 1 in 10 (9/%) of total cases to near **1 in 4 (23%) of cases in 2024



MDHHS: STI Annual Diagnosis and Trends in Michigan, 2024
*Data as of July 15, 2025

MATERNAL AND INFANT SYPHILIS TREND MICHIGAN, 2014-2024

Since 2018, syphilis has increased in parallel among all women ages 15 years to 44 years (271%), pregnant women (328%), and for congenital syphilis births (263%).

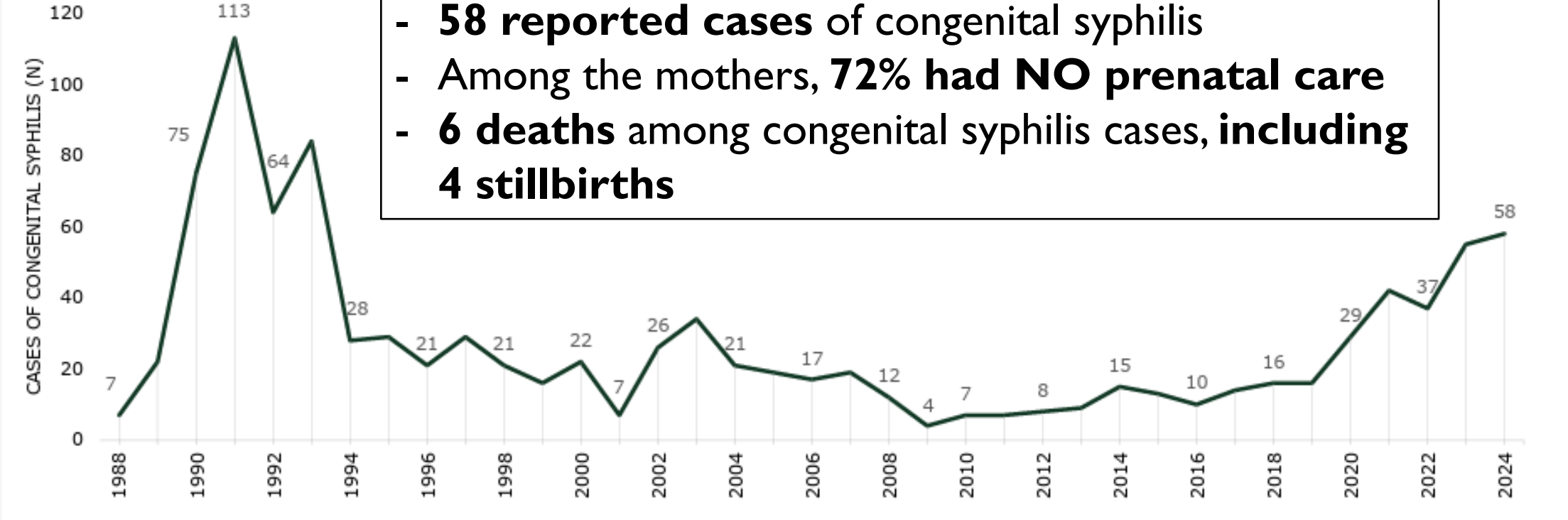


MDHHS: STI Annual Diagnosis and Trends in Michigan, 2024
*Data as of July 15, 2025

CONGENITAL SYPHILIS: TRENDS IN MICHIGAN, 1998-2024

2024:

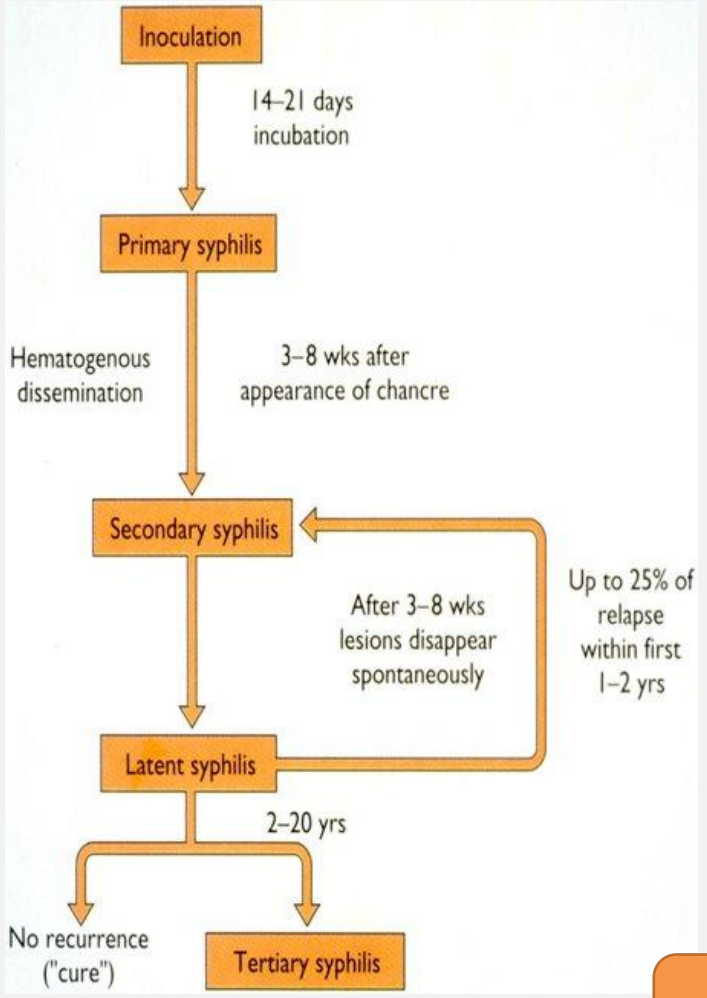
- **58 reported cases** of congenital syphilis
- Among the mothers, **72% had NO prenatal care**
- **6 deaths** among congenital syphilis cases, **including 4 stillbirths**



MDHHS: STI Annual Diagnosis and Trends in Michigan, 2024
*Data as of July 15, 2025

SYPHILIS:
CLINICAL FEATURES AND DIAGNOSTIC ALGORITHMS

STAGES OF SYPHILIS



Congenital		
Acquired	**Incubation/Duration**	**Symptoms**
Primary	10-90 days	Chancre, Regional lymphadenopathy
Secondary	6 weeks – 6 months	Rash, mucocutaneous lesions, alopecia, constitutional symptoms
Latent		
Early	< 1 year	Asymptomatic
Late	> 1 year	Asymptomatic
Tertiary	Months/years	CNS, CVS, Gummas

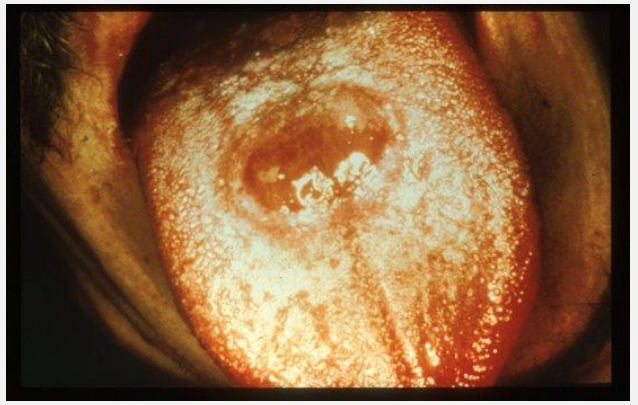
**** Neurosyphilis can occur at any stage****

PRIMARY SYPHILIS

- **Chancre**
  - Appears 10-90 days after infections
  - Single, painless, indurated with rolled edges, clean base
  - Can progress from macule to papule to ulcer
  - Multiple, persistent lesions can also occur
  - Commonly heals within 3-6 weeks
  - Highly infectious
  - Often not noticed by patients

- Regional **lymphadenopathy** (painless)

****Serologic tests may NOT be positive during early primary syphilis ****





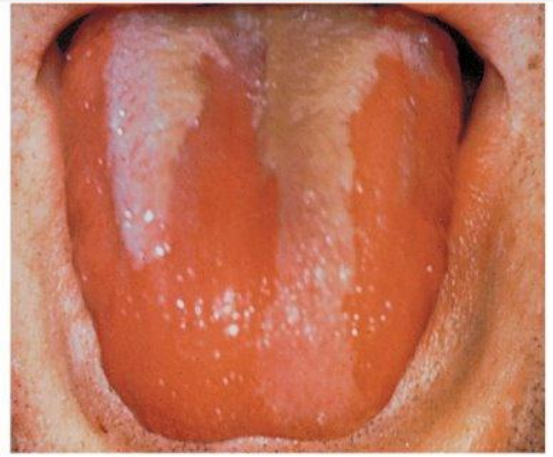


SECONDARY SYPHILIS

- 2-8 weeks after primary infections
- Becomes disseminated Infection
- **Symptoms:**
  - Rash
  - Palms and Soles
  - Generalized Rash
  - Generalized lymphadenopathy
  - Mucous patches
  - Condyloma lata
  - Patchy alopecia
  - Constitutional Symptoms- Fever, malaise, Pharyngitis, Anorexia, Weight loss, Arthralgias
  - Meningitis, Uveitis, hepatitis, Glomerulonephritis, Gi tract bone Disease

Virtually **100% positive RPR** in secondary syphilis





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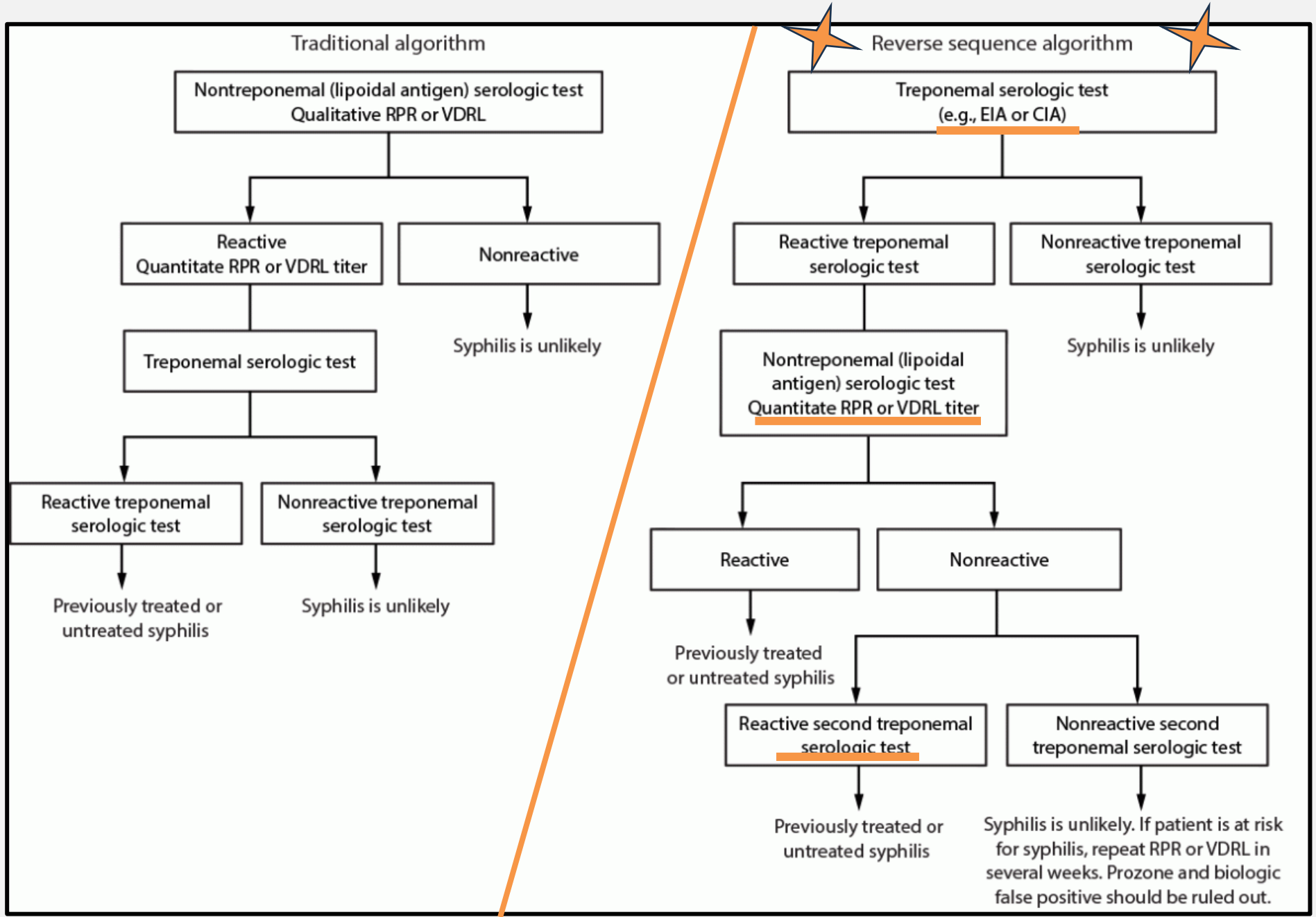




LATENT SYPHILIS

- All latent infections are **asymptomatic**
- Very few organisms present
- Common serologic algorithm findings: Positive syphilis EIA → Negative RPR → Positive TPPA
- **Early Latent Syphilis**
  - Documented seroconversion of **4-fold increase within 1 year of previous titer**
  - Unequivocal symptoms of primary or secondary syphilis reported by the patient
  - Contact to an infectious case of syphilis
  - Only possible exposure occurred within past 12 months
- **Late Latent Syphilis**
  - Patients with latent syphilis of **unknown duration** or seroconversion **of 4-fold increase in over 1 year** since previous titer should be managed clinically as late latent syphilis

SYPHILIS DIAGNOSTIC ALGORITHM



**Need at least 2 out of 3 positive syphilis tests to be considered positive **

SYPHILIS: TREATMENT

NATIONAL BICILLIN L-A SHORTAGE

- **July 2025** –
  - MDHHS issues **prioritization recommendation regarding Bicillin-LA to prioritize pregnant persons** due to recent recall notice and concerns of potential shortage

- **April 2026 –**
  - King Pharmaceuticals extended the next delivery to October 2026 and anticipated recovery date to the 4th quarter of 2027

SYPHILIS: TREATMENT

CDC Treatment Guidelines

Early Latent, Primary and Secondary Syphilis:

- Benzathine PCN 2.4 million units IM x 1
- PCN Allergy - Doxycycline 100 mg BID x 14 days

Late Latent Syphilis:

- Benzathine PCN 2.4 million units IM weekly x 3
- PCN Allergy - Doxycycline 100 mg BID x 28 days

Treatment Recommendations in Current National IM Bicillin Shortage

Early Latent, Primary and Secondary Syphilis:

- Doxycycline 100 mg BID x 14 days (2 weeks)

Late Latent Syphilis:

- Doxycycline 100 mg BID x 28 days (4 weeks)

Treatment Recommendations for Syphilis in Pregnant Women

**Pregnant Women w/ Syphilis who have a severe allergy to PCN, Must undergo desensitization to PCN **

Early Latent, primary, and Secondary Syphilis:
Benzathine PCN 2.4 million units IM x 1

Late latent Syphilis:
Benzathine PCN 2.4 million units IM weekly x 3

Neurosyphilis/Ocular/Otic Syphilis : IV PCN x 10-14 days

DOXYPEP: BACTERIAL STI PREVENTION

OVERVIEW OF DOXYPEP

What Is It?	The use of **Doxycycline AFTER condomless sexual encounter** to **prevent bacterial STIs (mostly syphilis and chlamydia)**
For Whom?	**MSM and TGW**
Protocol?	Take **200 mg of doxycycline within 72 hours AFTER condomless sex** **Continue STI screening every 3-6 months** Take doxy PEP with at least 8 ounces of water and food. This can help reduce side effects like nausea, upset stomach, and esophageal irritation Do not lie down for one hour after taking doxycycline Do not take doxycycline within two hours of having any dairy products, antacids and supplements with iron, calcium, or magnesium

CONCERNS WITH DOXYPEP

Antimicrobial (Tetracycline) Resistance

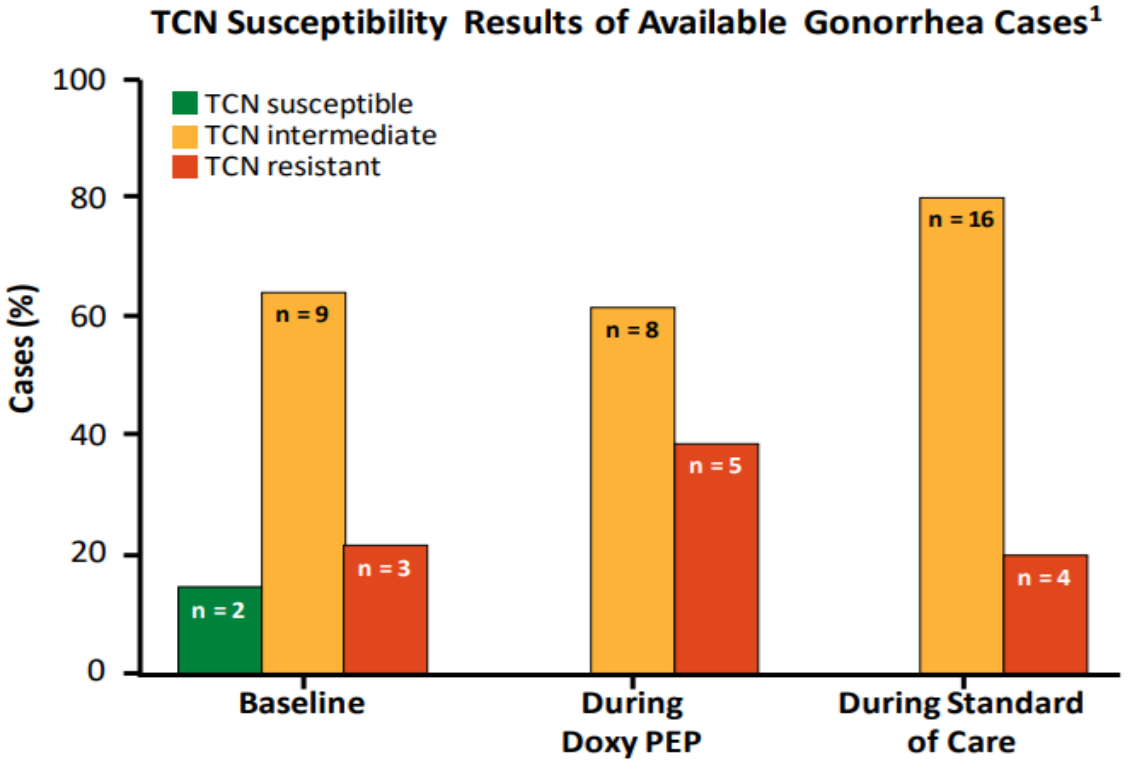
- **Population consumption drives resistance**
- Increase use **could impact susceptibility of doxycycline to other STIs**
  - M.Genitalium
  - Chlamydia
  - Syphilis
- Could **increase doxycycline resistance to other organisms:**
  - Staph Aurerus (MRSA)
  - Strep Pneumonea
  - Klensiella?

Microbiome Effects

- Studies have shown that **antibiotics can disrupt the gut microbiome**
- Studies have also shown that disruption to the gut microbiome **can be linked to chronic diseases such as type 2 DM, obesity, and advanced chronic livers disease, colorectal cancer**, and others
- **Studies are ongoing** to determine if long term doxycycline used in doxy PEP will negatively affect the gut microbiome and increase risk for other diseases

DOXYPEP STUDY: TETRACYCLINE RESISTANCE

- Tetracycline (TCN) susceptibility data available for ~30% of gonorrhea cases[1]
  - ARLN agar dilution method used for susceptibility determination
  - ~20% TCN resistance observed at baseline
- Resistance rates consistent with US GISP gonorrhea data (20%)
  - 56% TCN resistance reported in IPERGAY study[2]



1. Luetkemeyer. AIDS 2022. Abstr OALBX0103. 2. Molina. Lancet Infect Dis. 2018;18:308. Reproduced with permission.

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REVIEW OF EVIDENCE

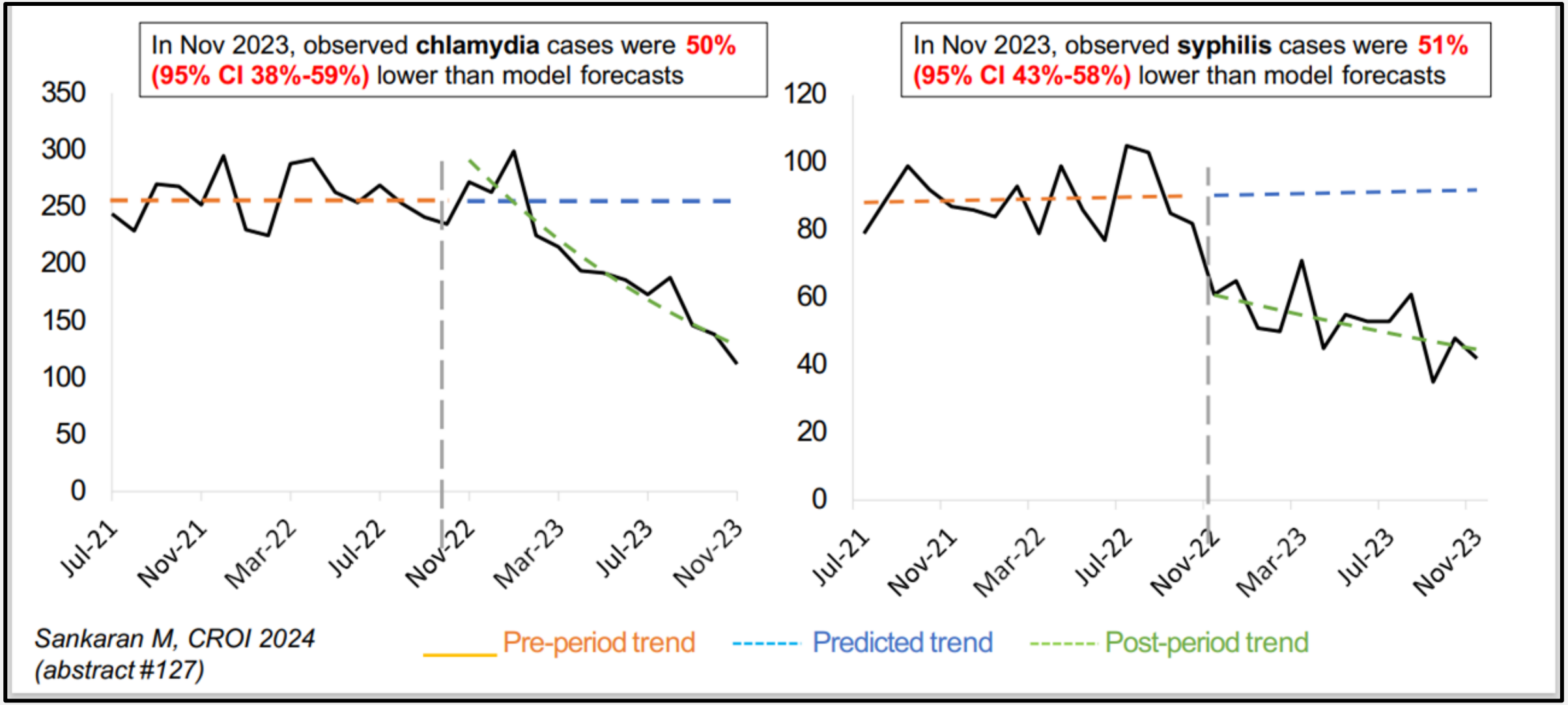
Trial	Population	Chlamydia Reduction	Syphilis Reduction	Gonorrhea Reduction
ANRS IPERGAAY (Franc, 2017)	MSM on on-demand HIV PreP	**70%**	**73%**	No significant reduction
DoxyPeP (U.S, 2023)	MSM & TGW on HIV PrEP or Living w/HIV	**88%** (PrEP arm) **74%** (PLWH arm)	**87%** (PrEP arm) **77%** (PLWH arm)	**55%** (PrEP arm) **57%** (PLWH arm)
DOXYVAC	MSM on HIV PrEP	**83%**	**83%**	**33%**
dPLWH (Japan 2024)	MSM living w/HIV	**85%**	Too few cases to measure	**41%**
dHER (Kenya, 2023)	Cisgender Women	No significant reduction	No significant reduction	No significant reduction

REAL- WORLD EFFECTIVENESS DATA OF DOXY-PEP IMPLEMENTATION

Health System/City	Cohort	Chlamydia Reduction	Syphilis Reduction	Gonorrhea Reduction
Kaiser Permanente North California Network	~2,250 HIV PrEP users prescribed DoxyPeP	**79%**	**80%**	**12%**
Los Angeles LGBT Center	~2,000 patients using DoxyPeP for > months	**89.7%**	**86.4%**	**54.7%**
San Francisco AIDS Foundation	~3,000 active HIV PrEP users	**67%**	**78%**	**11%** (not statistically significant)
Kaiser Permanente Southern California	~2200 DoxyPeP users	**66%**	**49%**	**12.7%**
Philadelphia Public STD Clinic	~400 DoxyPeP users	**72%**	-	**51%**

Real- World Impact of DoxyPeP:

Decline in Citywide Chlamydia and Early Syphilis cases in MSM in SF after Release of doxyPeP Guidelines



THANK YOU!!