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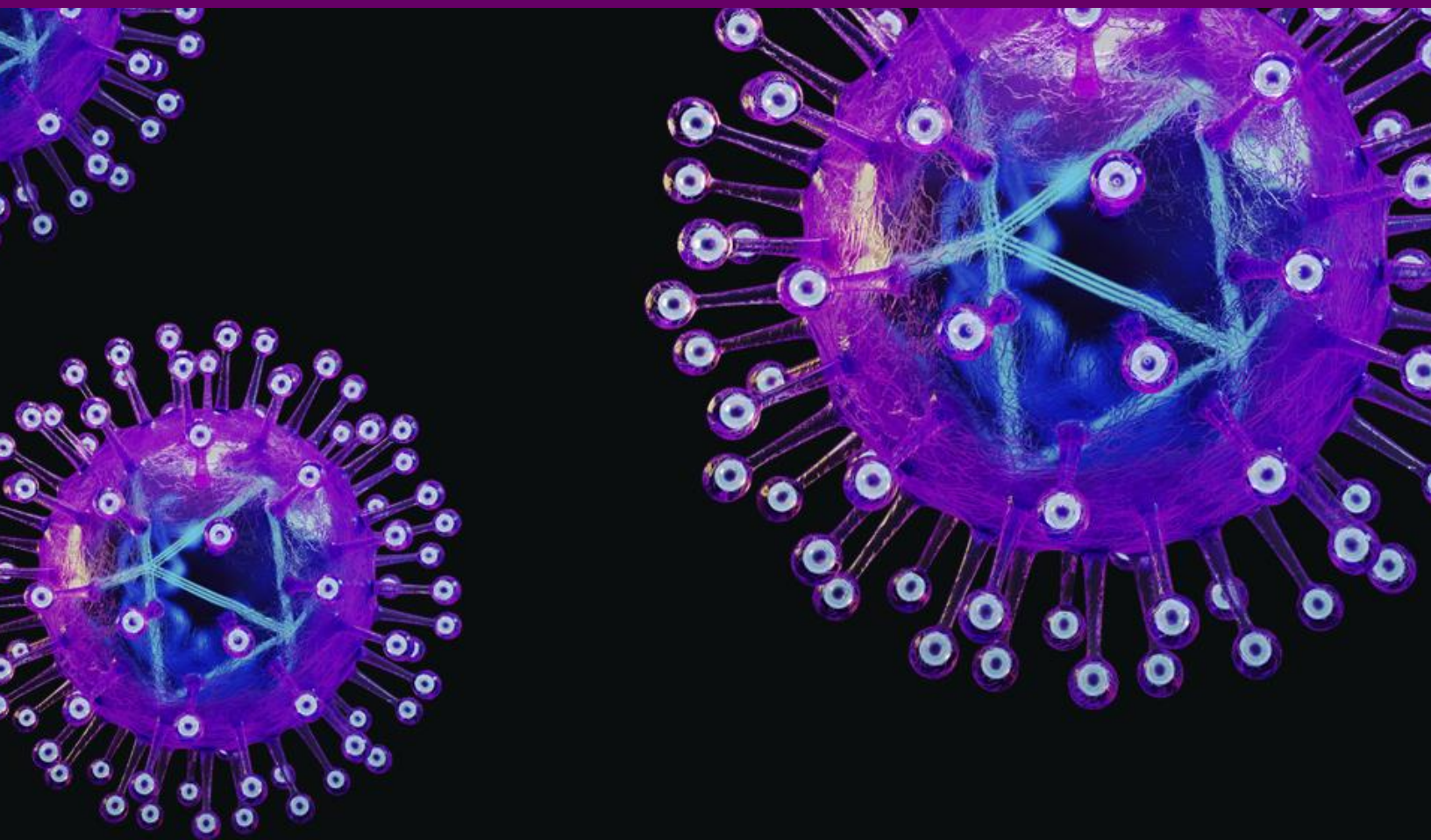


Image: HSV-2

STI & HIV Annual Report

Fresno County | Department of Public Health
Epidemiology Program | Jennifer Walch, MPH



STI & HIV Annual Report

2021

The STI & HIV Annual Report is published by the Epidemiology Program within the Division of Epidemiology, Statistics, & Data Management at the Fresno County Department of Public Health. This report covers STI and HIV data from the previous calendar year. All data analyzed comes from the California communicable disease surveillance reporting systems CaREDIE and eHARS. Data is provisional, and is subject to change.

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STI & HIV Annual Report

2021

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Technical Information

Frequently Used Acronyms

ACS = American Community Survey
AIDS = Acquired Immune Deficiency Disease Syndrome
CDC = Centers for Disease Control and Prevention
CalREDIE = California Reportable Disease Information Exchange
CDPH = California Department of Public Health
CMR = Confidential Morbidity Report
CS = Congenital Syphilis
eHARS = Enhanced HIV/AIDS Reporting System
EPT = Expedited Partner Therapy
FCDPH = Fresno County Department of Public Health
HIV = Human Immunodeficiency Virus
HIV+ = HIV Positive
HIV- = HIV Negative
IDU = Injection Drug Use
MSM = Men Who Have Sex with Men
MSM/W = Men Who Have Sex with Men & Women
PrEP = Pre-Exposure Prophylaxis
STD/STI = Sexually Transmitted Disease/Infection
U.S. = United States
WHO = World Health Organization
P&S = Primary and Secondary Syphilis Stages

Definitions

AIDS: A syndrome caused by an HIV infection, when untreated or ineffectively treated causes a decline in the functioning of the immune system.²⁹

Case: Diagnosis of a disease through either laboratory (tests) and or clinical (signs/symptoms) findings.

Censor: Intentionally removed or withheld data, often because it is under a specified amount, in order to protect the confidentiality of cases.

Congenital Syphilis: An infant that is born with a syphilis infection, acquired from mother during gestation.

Expedited Partner Therapy: Presumptive treatment provided to the sexual partners of gonorrhea and or chlamydia positive individuals.

HIV: The virus that can lead to AIDS. HIV cannot be cured—infections are lifelong.²⁹

Incidence: The number of new cases of a disease that develop in a defined population and specific time period divided by the number of people in the population that are at risk for developing the disease.³³

Pre-Exposure Prophylaxis (PrEP): An HIV prevention medication (brand name Truvada) prescribed to individuals at a high risk for contracting the virus that when taken daily reduces the risk of acquiring HIV when exposed to the virus.³²

Prevalence: The burden (i.e. existing number of cases) of a disease in a defined population during a specific time-period, divided by that area's population at mid-year. Prevalence can change over time. Causes can included: being raised by incident (new) cases or cases moving into the area, lowered through death of "diseased" individuals, the cure of disease/recovery, people leaving, or entering the area.³³

Trend: A pattern change of the data, represented by an upward or downward shift in the data over time over a prolonged period.

Subgroups: The general population broken down into smaller groups based off like characteristics (e.g. men who have sex with men or MSM).

Equations

$$\text{Incidence} = \frac{\# \text{ New Cases in Population at Specified Time}}{\text{Population at Risk}} \times 100,000 \text{ people}$$

$$\text{Prevalence} = \frac{\# \text{ Cases in Population at Specified Time}}{\text{Population at Mid Year}} \times 100,000 \text{ people}$$

Introduction

County Profile

Fresno County, the fifth largest county in California, is a mixture of both rural and metropolitan cities. The county's population had an estimated 1% increase from 2018 to 2020, with a concluded population size of 1,020,292.¹ Fresno city is the largest populated city in the county, with a population of 543,451 persons.¹ Gender in the county is relatively evenly distributed, with 49.97% male and 50.00% female.³ It boasts a younger population base, with an overall median age of 32.7 years.³ When broken down by age categories, 23.6% of the population is age 0-14 years, 7.3% 15-19 years, 6.8% 20-24 years, 15.5% 25-34 years, 12.9% 35-44 years, 10.8% 45-54 years, and 22.9% ≥55 years.³



Image Source:
<https://www.usnews.com/news/healthiest-communities/california/fresno-county>

Fresno County is both ethnically and racially diverse. The racial and ethnic makeup of Fresno County includes those who self-identify as Hispanic or Latino (of any race) (53.8%), White (28.6%), Black or African American (4.4%), American Indian and Alaska Native (0.6%), Asian (10.1%), Native Hawaiian/Pacific Islander (0.2%), and Multiracial (2.1%).³ Just over 78% of the county's residents are US born. Of the remaining non-US born residents (21%) nearly 40% became naturalized US citizens.⁴ Approximately 55% of Fresno County residents are monolingual English speakers. However, a high percentage of residents speak a language other than English, with Spanish (34.6%) and "Asian and Pacific Island languages" (5.9%) being the two most common.⁵ Of those whose first language is not English, 58.3% identify as speaking English "very well".⁵

Fresno County ranks 46th out of the 58 counties in California overall, according to the Robert Wood Johnson Foundation. Fresno County's overall unemployment is nearly two times higher than that of California, at 7.2% and 4.0% respectively.⁶ The median household income in Fresno County is \$56,900. However, when broken down by race, the median household income for Whites is \$69,100, while Hispanics and African Americans are lower at \$44,000 and \$33,400 respectively.⁶ Eighty seven percent of residents have a high school diploma, aligning with California, also at 87%.⁶ In 2017, Fresno County had a 29% childhood poverty rate, 81% higher than that of California at 16%.⁶ When it comes to clinical care rankings, Robert Wood Johnson Foundation ranked Fresno County 46th & 51st out of the 58 counties in California for Health Outcomes and Health Factors.⁶ Nine percent of the county is uninsured, just higher than that of 8% in California.⁶ There are 1,490 residents to every 1 primary care physician, and in 2018, 3,839 preventable hospital stays per 100,000 Medicare enrollees.⁶ With 25% reporting being in fair and or poor health, Fresnans reported an average of 4.7 poor physical health days in a 30 day period (age-adjusted).⁶

Background

In an effort to conduct thorough surveillance of sexually transmitted diseases (STDs) and HIV, many STDs in the United States, along with HIV, are reportable by law to the Centers for Disease Control and Prevention (CDC). In California this is governed by Title 17 in the California Code of Regulations. Good surveillance aids in the understanding of disease trends and impacts of interventions, guides public health policy, and monitors for abnormal levels of disease.⁷

STDs are on the rise in the United States.⁸ Chlamydia is the number one diagnosed reportable STD in the United States with 1.6 million cases reported in 2016 alone.⁸ From 2015 to 2016, syphilis rates in the US

increased by almost 18%.⁸ Men, especially those who identify as men who have sex with men (MSM), have been disproportionately affected by this increase, accounting for most of the reported syphilis cases.⁸ However, nationally an increase in infections amongst women and congenitally acquired disease in infants has also been noted.⁸ Beyond vaginal-penial transmission, many STDs like gonorrhea and chlamydia can be acquired through both rectal and oral sex.^{9,10} Moreover, gonorrhea and chlamydia can be transmitted perinatally during vaginal childbirth.^{9,10} Syphilis is contracted when skin comes into contact with someone's exposed syphilitic chancre (sore).¹¹ Chlamydia, gonorrhea, and syphilis are all treatable by a qualified healthcare provider with an appropriate course of antibiotics.⁹⁻¹¹

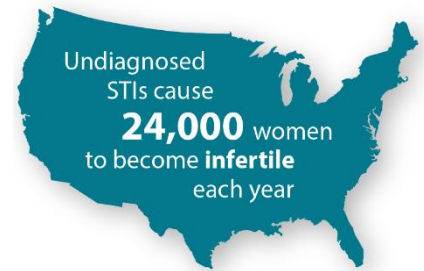


Image Source: CDC

Nationally, human immunodeficiency virus (HIV) infections have been decreasing in incidence continuously the last ten years.¹² While HIV is not curable, it is treatable with the proper antiretroviral therapy (ART).¹³ There are many ways in which one can contract HIV, including pregnancy, breastfeeding, sex, and being stuck or cut with an HIV contaminated object (e.g. needle).¹⁴ Receptive anal sex is the riskiest type of sex for HIV transmission, putting the MSM community at particular risk.¹⁴

Chlamydia

General Overview

Chlamydia is an infection caused by the bacteria *Chlamydia trachomatis*.¹⁰ The most frequently reported STI in the US, chlamydia is transmitted through sexual contact, and can be contracted via the anus, mouth, vagina and penis.¹⁰ In addition, chlamydia can be transmitted from mother to infant during a vaginal birth.¹⁰ Untreated cervical chlamydia in pregnant women can cause conjunctivitis and pneumonia in infants.¹⁰ Because humans do not retain immunity from a chlamydia infection, re-infections are possible after treatment, if re-exposed to the bacteria. Chlamydia can be both asymptomatic (i.e. a silent infection) and symptomatic. Signs and symptoms may include, but are not limited to, genital discharge, sores and rashes, Pelvic Inflammatory Disease (PID), and dysuria (i.e. painful urination). PID and silent infections can lead to damage to the reproductive tract, which can sometimes lead to infertility.¹⁵ A qualified healthcare provider, with the proper course of antibiotics, can cure chlamydia infections. Correct and consistent use of a condom is effective at preventing chlamydia in both men and women.¹⁶

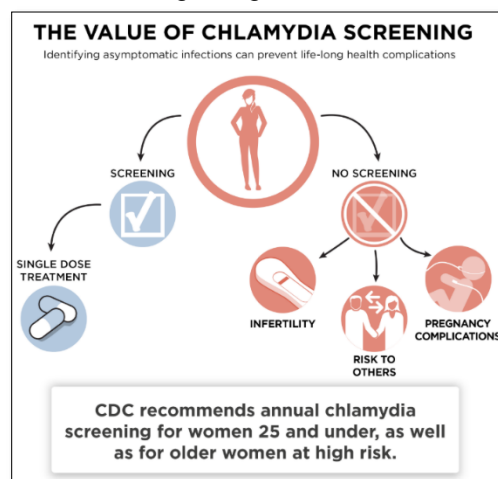


Image Source: CDC

Demographics

Figure 1.1 Chlamydia Cases by Age (2021)

A large proportion of chlamydia cases in Fresno County are occurring in a younger population. Nearly 75% of cases diagnosed in 2021, were in those under the age of 30 years. Ages 20-24 are disproportionately affected by this disease, making up 33% of all reported chlamydia cases in the county.

Note: Cases were defined as individuals who were suspect, probable, or confirmed and were Fresno County residents at the time of diagnosis.

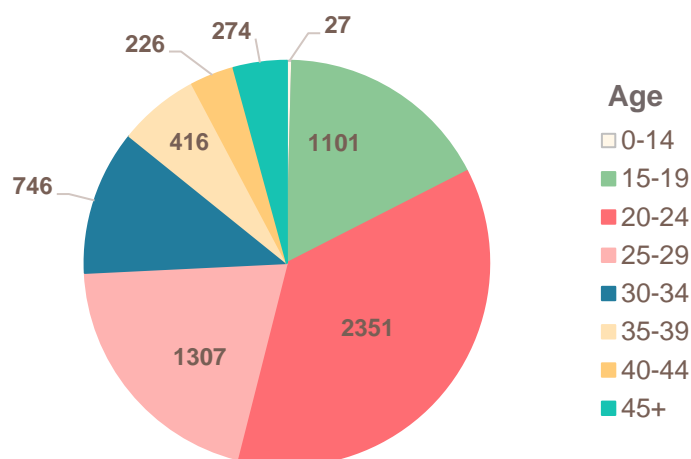


Table 1.1 Chlamydia Incidence by Race/Ethnicity (2021)

While those who self-identified as Hispanic/Latino have the highest amount of reported chlamydia cases in the county, Black/African Americans are the most proportionately affected by chlamydia, with an incidence almost three and a half times that of Hispanics.

Note: Race/Ethnicity was not specified for 32.1% of chlamydia cases. Rates were calculated using 2017 American Community Survey population estimates due to a lack of available 2018 data at time of report. Cases defined as individuals who were suspect, probable, or confirmed and were Fresno County residents at the time of diagnosis.

¹Incidence is per 100,000 persons

²N represents the total cases in that category

³Hispanic or Latino may include people from any race (i.e. American Indian/Alaskan Native, Asian/Pacific Islander, Black/African American, White, and Multi-Racial)

Race/Ethnicity	Incidence ¹ (N) ²
American Indian/ Alaskan Native	242 (16)
Asian/Pacific Islander	146 (144)
Black/African American	802 (400)
Hispanic ³	227 (1,227)
White	194 (594)

Figure 1.2 Chlamydia Case Count and Incidence by Year (2013-2021)

Fresno County experienced an overall increase in chlamydia incidence from 2014 to 2019, going from an incidence of 583 to 714 cases per 100,000 persons. From 2017 – 2019, the rate remained relatively steady, but saw a decrease in reported cases in 2020, followed by another increase in 2021.

Note: Cases defined as individuals who were suspect, probable, or confirmed and were Fresno County residents at the time of diagnosis.

¹Incidence is per 100,000 persons

²Incidence was calculated using CA Department of Finance Population data

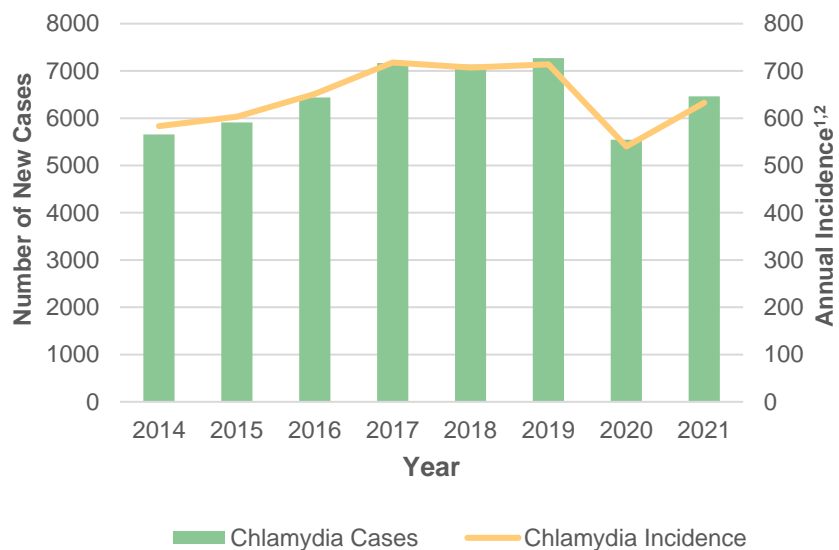


Figure 1.3 Sexual Partner Engagement for Chlamydia Treatment by Provider (2021)

Partner treatment information was produced by the provider 2.4% of the time to the Department of Public Health (DPH)—a required field on the Confidential Morbidity Report (CMR). In only 5% percent of these reported outcomes did a provider report taking advantage of Expedited Partner Therapy (EPT)¹, when the partners of their patients were known, down from 18% in 2019.

Note: Cases defined as individuals who were suspect, probable, or confirmed and were Fresno County residents at the time of diagnosis. Where Treatment Outcomes by Provider were Unknown, they were not included in this figure.

¹The clinical practice of treating the sex partners of patients with laboratory confirmed gonorrhea or chlamydia, without the healthcare provider needing to examine the partner.

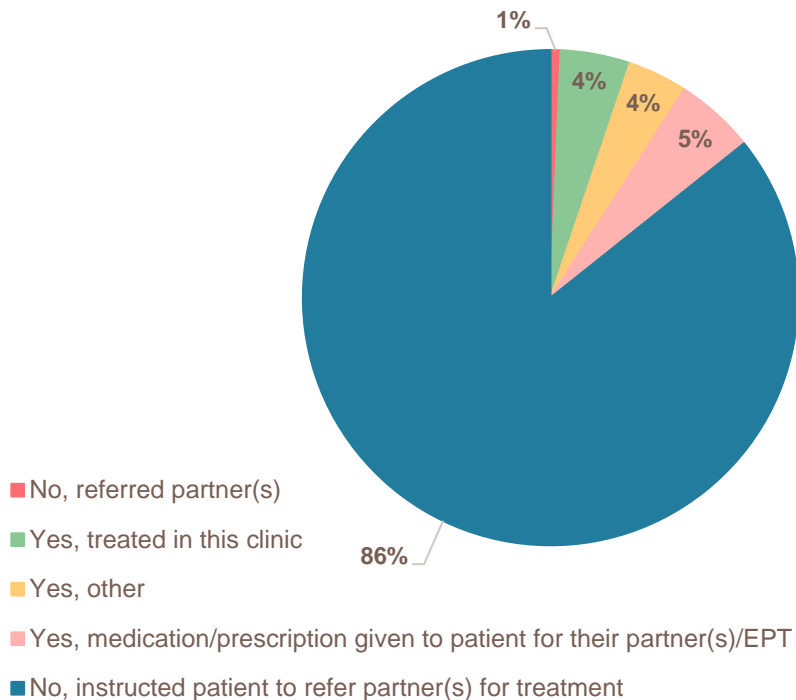
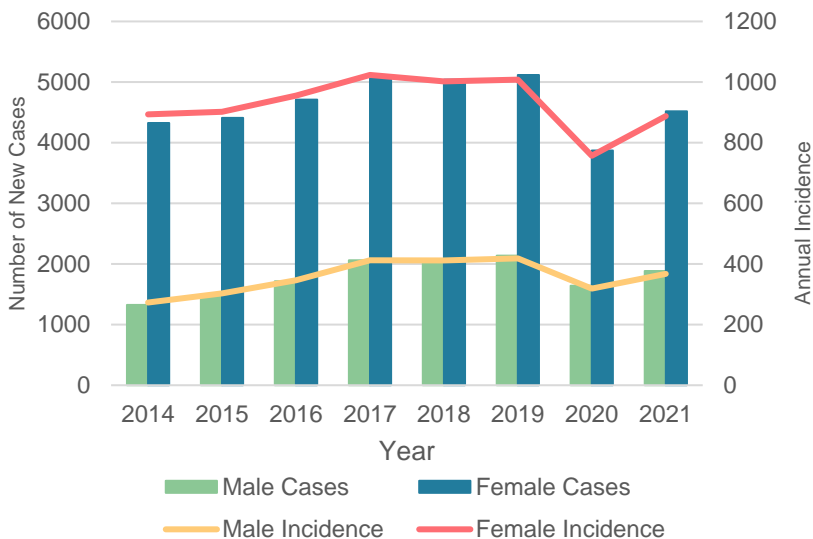


Figure 1.4 Chlamydia Cases and Incidence¹ by Gender (2014-2021)

The incidence of chlamydia in females has consistently been higher than the incidence in males. However, both experienced an increase in reported cases from 2014 through 2017. Even though the reported number of cases in females is much higher than that of males, this may be an artifact of increased testing opportunities in females, like women’s annual wellness exams. Both, males & females had a decrease in reported cases for 2020, followed by an increase in 2021

Note: Cases defined as individuals who were suspect, probable, or confirmed and were Fresno County residents at the time of diagnosis.

¹Incidence is per 100,000 persons



Chlamydia Incidence

- 245.6 - 339.5
- 339.5 - 449.8
- 449.8 - 563.4
- 563.4 - 728.3
- 728.3 - 847.0
- Censored

Fresno Metro Area

The map displays the Fresno Metro Area with ZIP codes color-coded by Chlamydia incidence. The legend indicates the following ranges:

- 245.6 - 339.5 (Red)
- 339.5 - 449.8 (Pink)
- 449.8 - 563.4 (Orange)
- 563.4 - 728.3 (Green)
- 728.3 - 847.0 (Blue)
- Censored (Light Yellow)

ZIP codes shown on the map include: 93622, 93620, 93668, 93660, 93608, 93627, 93624, 93210, 93234, 93626, 93651, 93667, 93634, 93664, 93633, 93628, 93621, 93657, 93611, 93619, 93730, 93720, 93711, 93722, 93606, 93630, 93706, 93701, 93702, 93741, 93745, 93727, 93616, 93625, 93648, 93654, 93646, 93618, 93662, 93631, 93609, 93656, 93242, 93624, 93622, 93620, 93668, 93660, 93608, 93627, 93624, 93210, 93234, 93626, 93651, 93667, 93634, 93664, 93633, 93628, 93621, 93657, 93611, 93619, 93730, 93720, 93711, 93722, 93606, 93630, 93706, 93701, 93702, 93741, 93745, 93727, 93616, 93625, 93648, 93654, 93646, 93618, 93662, 93631, 93609, 93656, 93242, 93624, 93622, 93620, 93668, 93660, 93608, 93627, 93624, 93210, 93234, 93626, 93651, 93667, 93634, 93664, 93633, 93628, 93621, 93657, 93611, 93619, 93730, 93720, 93711, 93722, 93606, 93630, 93706, 93701, 93702, 93741, 93745, 93727, 93616, 93625, 93648, 93654, 93646, 93618, 93662, 93631, 93609, 93656, 93242, 93624, 93622, 93620, 93668, 93660, 93608, 93627, 93624, 93210, 93234, 93626, 93651, 93667, 93634, 93664, 93633, 93628, 93621, 93657, 93611, 93619, 93730, 93720, 93711, 93722, 93606, 93630, 93706, 93701, 93702, 93741, 93745, 93727, 93616, 93625, 93648, 93654, 93646, 93618, 93662, 93631, 93609, 93656, 93242, 93624, 93622, 93620, 93668, 93660, 93608, 93627, 93624, 93210, 93234, 93626, 93651, 93667, 93634, 93664, 93633, 93628, 93621, 93657, 93611, 93619, 93730, 93720, 93711, 93722, 93606, 93630, 93706, 93701, 93702, 93741, 93745, 93727, 93616, 93625, 93648, 93654, 93646, 93618, 93662, 93631, 93609, 93656, 93242, 93624, 93622, 93620, 93668, 93660, 93608, 93627, 93624, 93210, 93234, 93626, 93651, 93667, 93634, 93664, 93633, 93628, 93621, 93657, 93611, 93619, 93730, 93720, 93711, 93722, 93606, 93630, 93706, 93701, 93702, 93741, 93745, 93727, 93616, 93625, 93648, 93654, 93646, 93618, 93662, 93631, 93609, 93656, 93242, 93624, 93622, 93620, 93668, 93660, 93608, 93627, 93624, 93210, 93234, 93626, 93651, 93667, 93634, 93664, 93633, 93628, 93621, 93657, 93611, 93619, 93730, 93720, 93711, 93722, 93606, 93630, 93706, 93701, 93702, 93741, 93745, 93727, 93616, 93625, 93648, 93654, 93646, 93618, 93662, 93631, 93609, 93656, 93242, 93624, 93622, 93620, 93668, 93660, 93608, 93627, 93624, 93210, 93234, 93626, 93651, 93667, 93634, 93664, 93633, 93628, 93621, 93657, 93611, 93619, 93730, 93720, 93711, 93722, 93606, 93630, 93706, 93701, 93702, 93741, 93745, 93727, 93616, 93625, 93648, 93654, 93646, 93618, 93662, 93631, 93609, 93656, 93242, 93624, 93622, 93620, 93668, 93660, 93608, 93627, 93624, 93210, 93234, 93626, 93651, 93667, 93634, 93664, 93633, 93628, 93621, 93657, 93611, 93619, 93730, 93720, 93711, 93722, 93606, 93630, 93706, 93701, 93702, 93741, 93745, 93727, 93616, 93625, 93648, 93654, 93646, 93618, 93662, 93631, 93609, 93656, 93242, 93624, 93622, 93620, 93668, 93660, 93608, 93627, 93624, 93210, 93234, 93626, 93651, 93667, 93634, 93664, 93633, 93628, 93621, 93657, 93611, 93619, 93730, 93720, 93711, 93722, 93606, 93630, 93706, 93701, 93702, 93741, 93745, 93727, 93616, 93625, 93648, 93654, 93646, 93618, 93662, 93631, 93609, 93656, 93242, 93624, 93622, 93620, 93668, 93660, 93608, 93627, 93624, 93210, 93234, 93626, 93651, 93667, 93634, 93664, 93633, 93628, 93621, 93657, 93611, 93619, 93730, 93720, 93711, 93722, 93606, 93630, 93706, 93701, 93702, 93741, 93745, 93727, 93616, 93625, 93648, 93654, 93646, 93618, 93662, 93631, 93609, 93656, 93242, 93624, 93622, 93620, 93668, 93660, 93608, 93627, 93624, 93210, 93234, 93626, 93651, 93667, 93634, 93664, 93633, 93628, 93621, 93657, 93611, 93619, 93730, 93720, 93711, 93722, 93606, 93630, 93706, 93701, 93702, 93741, 93745, 93727, 93616, 93625, 93648, 93654, 93646, 93618, 93662, 93631, 93609, 93656, 93242, 93624, 93622, 93620, 93668, 93660, 93608, 93627, 93624, 93210, 93234,

Note: Cases are mapped using the home zip code of the patient at the time of diagnosis. This does not indicate the location where the infection may have been acquired. This map only represents chlamydia cases that were tested and reported to the health department. Due to chlamydia's ability to cause asymptomatic infections, this may underrepresent the true number of infections in the county. Cases defined as individuals who were suspect, probable, or confirmed and were Fresno County residents at the time of diagnosis.

²Some zip codes have been censored to protect confidentiality.

Gonorrhea

General Overview

Gonorrhea is an infection caused by the bacteria *Neisseria gonorrhoeae*.⁹ In the US alone, an estimated 820,000 gonorrhea infections occur each year, while only about half of these infections are ever diagnosed and or reported to the CDC.⁹ Gonorrhea is a sexually transmitted infection that can be transmitted from an infected partner via anal, oral, or penis-vaginal sexual contact.⁹ All sexually active individuals are at risk gonorrhea infections. Consistent and correct condom usage is an effective and safe way to prevent the transmission of gonorrhea during sex.⁹ When infected, individuals may have signs and symptoms, though gonorrhea is commonly asymptomatic, also known as a “silent infection”.^{15,17,18} Symptoms may include white, yellow, or green genital discharge; dysuria (painful urination); epididymitis; PID; vaginal bleeding; rectal itching, bleeding, and soreness; and sore throat depending on location of infection.^{18–21} Both symptomatic and silent infections can cause irreversible damage to the reproductive system, which can lead to infertility.¹⁵ Gonorrhea is treatable by a qualified healthcare provider, with an appropriate course of antibiotics.²⁰ However, it is important to note that over time, gonorrhea has grown more and more antibiotic resistant. Per the CDC, there only remains one class of antibiotics left (cephalosporins) that will effectively treat the infection.²² As a result of gonorrhea’s growing antibiotic resistance, it was declared an urgent public health threat in 2013.^{22,23} Surveillance for antibiotic resistant gonorrhea (ARG) has increased throughout the United States and world.^{22,24}

Demographics

Figure 2.1 Gonorrhea Cases by Age (2021)

Like chlamydia, most gonorrhea cases in Fresno County are in those under the age of 30 years. However, unlike chlamydia (26%), those 30 years and older make up around 45% of reported gonorrhea cases in Fresno County.

Note: Cases defined as individuals who were suspect, probable, or confirmed and were Fresno County residents at the time of diagnosis.

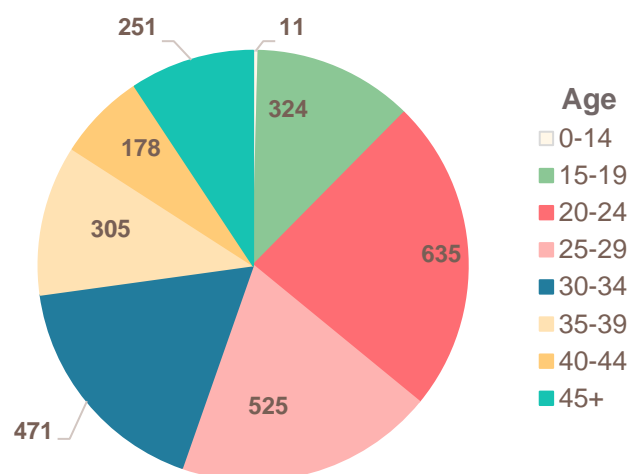


Table 2.1 Gonorrhea Incidence by Race/Ethnicity (2021)

Hispanics have the highest number of cases in the county. However, Black/ African Americans are the most disproportionately affected, with an incidence of almost five times that of Hispanics.

Note: Cases defined as individuals who were suspect, probable, or confirmed and were Fresno County residents at the time of diagnosis.

¹Incidence is calculated per 100,000 persons

²N represents the total cases in that category

³Hispanic or Latino may include people from any race (i.e. American Indian/Alaskan Native, Asian/Pacific Islander, Black/African American, White, and Multi-Racial)

Race/Ethnicity	Incidence ¹ (N) ²
American Indian/ Alaskan Native	333 (22)
Asian/Pacific Islander	56 (55)
Black/African American	748 (373)
Hispanic/Latino ³	144 (776)
White	131 (400)

Figure 2.2 Gonorrhea Case Count and Incidence¹ by Year (2014-2021)

Fresno County had an overall increase in gonorrhea incidence, from 2014 to 2021, with a small non-sustained decrease in 2018. Though incidence remained relatively stable from 2017 to 2018, and again in 2018 to 2021, followed by a large increase in 2021.

Note: Cases defined as individuals who were suspect, probable, or confirmed and were Fresno County residents at the time of diagnosis.

¹Incidence is per 100,000 persons

²Incidence was calculated using CA Department of Finance Population data

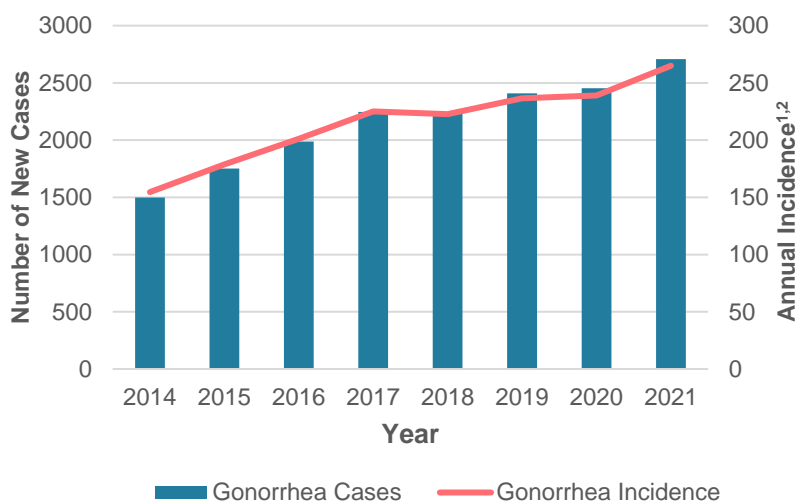


Figure 2.3 Sexual Partner Engagement for Gonorrhea Treatment by Provider (2021)

Partner treatment information was not produced by the provider 26% of the time to DPH—a required field on the Confidential Morbidity Report. In only 2.5% of these reported outcomes did a provider report taking advantage of Expedited Partner Therapy (EPT)¹, when there were known partners of the patient.

Note: Cases defined as individuals who were suspect, probable, or confirmed & were Fresno County residents at the time of diagnosis.
¹The clinical practice of treating the sex partners of patients with laboratory confirmed gonorrhea or chlamydia, without the healthcare provider needing to examine the partner.

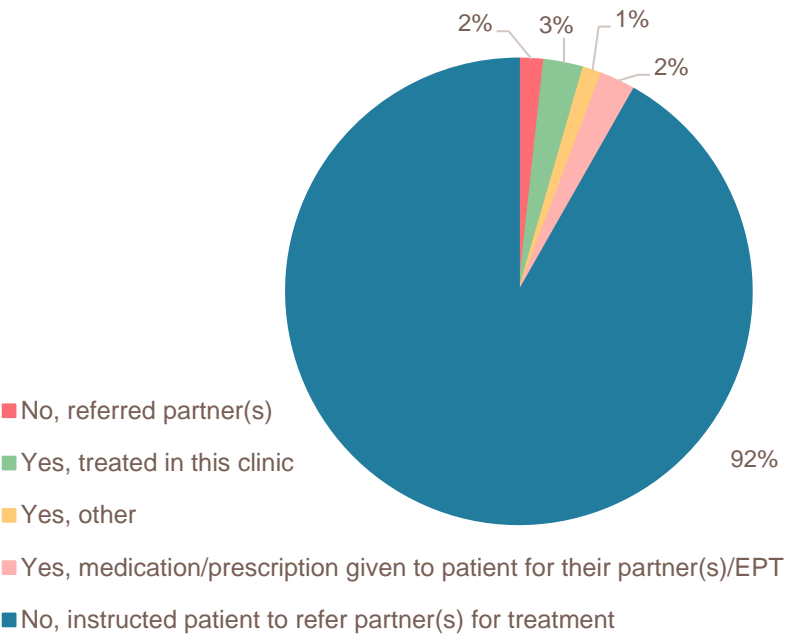
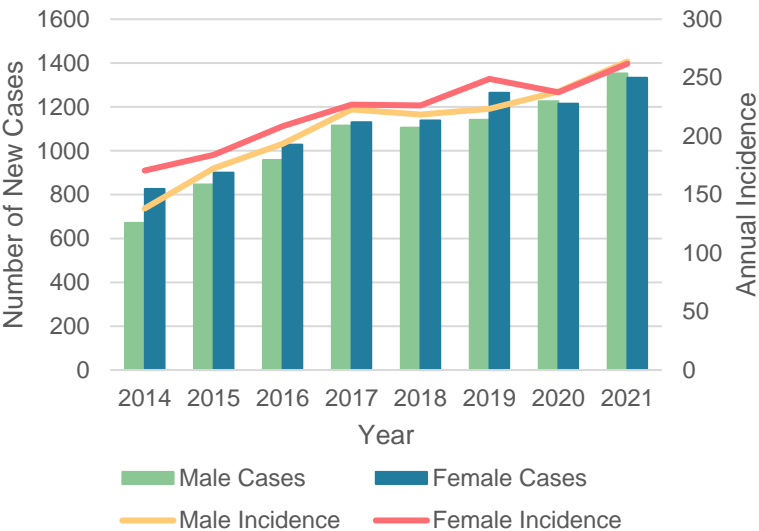


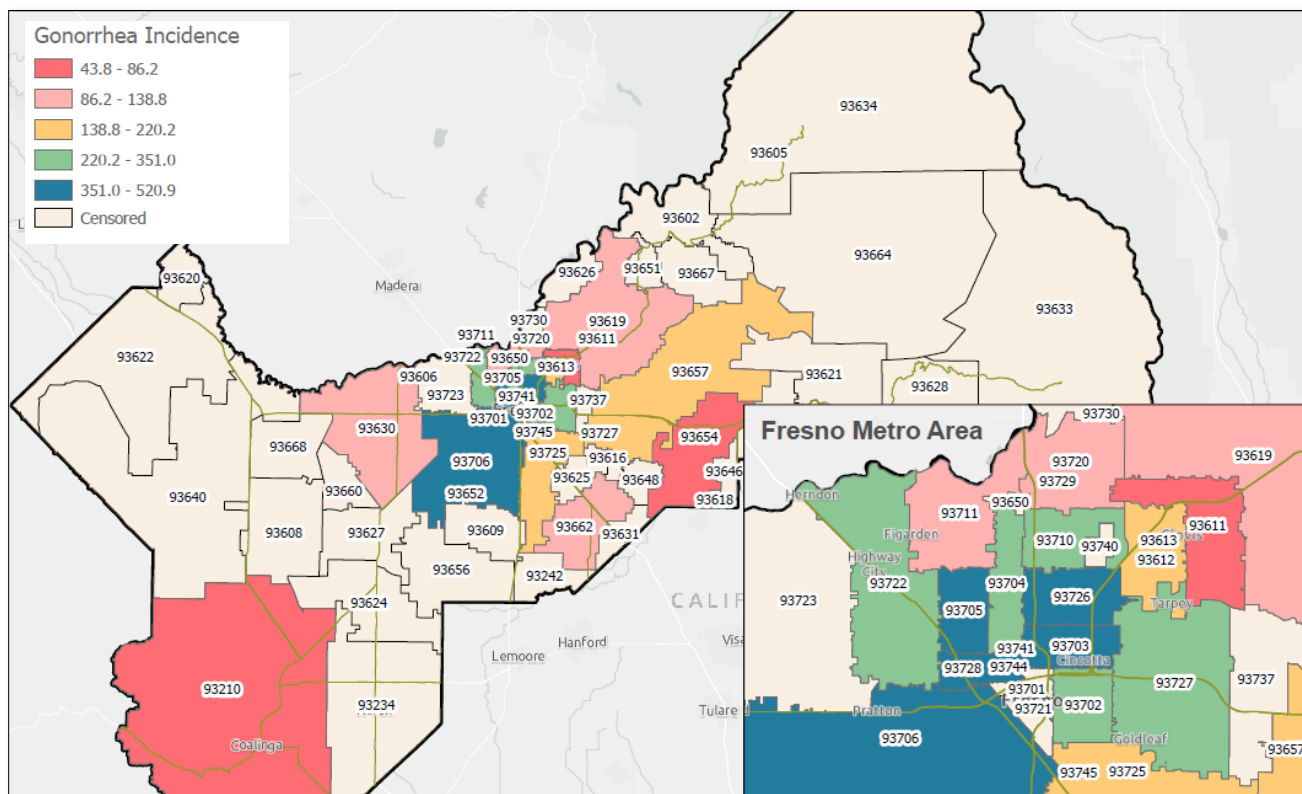
Figure 2.4 Gonorrhea Cases and Incidence¹ by Gender (2014-2021)

Overall, Fresno County has experienced an increase in incidence in both genders from 2014-2021. During this time the county went from an incidence of 138 & 171, in males and females respectively, to an incidence of 264 in males and 262 in females. Additionally, the gap in risk between the two genders narrowed dramatically by 2020, with the most cases reported being overtaken by males in both 2020 & 2021.

Note: Cases defined as individuals who were suspect, probable, or confirmed and were Fresno County residents at the time of diagnosis.
¹Incidence is per 100,000 persons of that gender



Map 2.1 Distribution of Gonorrhea Incidence¹ in Fresno County by Zip Code (2021)



Found throughout the County of Fresno, gonorrhea is highly prominent, though less so than chlamydia. However, it is still higher in incidence than both syphilis and HIV. The zip codes in the Fresno metro area have a higher incidence of gonorrhea cases than the outlying cities & area.

Note: Cases are mapped using the home zip code of the patient at the time of diagnosis. This does not indicate the location where the infection may have been acquired. This map only represents gonorrhea cases that were tested and reported to the health department. Due to gonorrhea's ability to cause asymptomatic infections, this may underrepresent the true number of infections in the county. Some zip codes have been censored to protect confidentiality. Cases defined as individuals who were suspect, probable, or confirmed and were Fresno County residents at the time of diagnosis.

¹Incidence is per 100,000 persons

Syphilis

General Overview

Syphilis is an infection caused by the bacteria *Treponema pallidum*.¹¹ Syphilis is a multi-staged disease with two main stages, Early (≤ 12 months) and Late (>12 months). Early syphilis has three stages: primary, latent, and secondary; primary and secondary syphilis being the most infectious stages.¹¹ A rare complication of a long-term untreated syphilis infection (10-30 years) is the development of tertiary syphilis, causing damage to different organ systems in the body and potentially death.¹¹ A person becomes infected when they come into direct contact with a syphilitic chancre (occurring during the primary stage).¹¹ These chancres are open, often non-painful, ulcers of the skin that contain large amounts of the infectious syphilis bacteria. After being infected, it can take anywhere from 10 to 90 days to develop symptoms.¹¹ The chancre will develop at the initial site of contact occurred with *T. pallidum* bacteria.²⁵ Chancres can appear on or around the mouth, anus, or genitals, as well as inside the vagina and rectum. Other signs and symptoms may include a generalized body rash, palmer-plantar rash, oral mucus patches, condylomata lata, and neurological problems.^{11,25,26} Different symptoms are associated with the different stages of disease, excepting with neurological symptoms, which can develop at any stage of infection.²⁵

Syphilis can also be transmitted in utero (congenital syphilis). This can cause a range of issues to the infant such as: a syphilitic stillbirth; lesions and physical/neurological abnormalities, anemia, low birth weight; premature delivery; and infant death.^{11,27} While syphilis can be treated with the correct course of antibiotics, you do not retain

immunity and can become reinfected.^{11,25} Within the U.S. men who have sex with men (MSM) community, rates of syphilis have been increasing.¹¹ HIV and syphilis have also been shown to be associated as coinfections. In a Florida based study, around half of MSM diagnosed with primary or secondary syphilis were also infected with HIV. Those MSM who are HIV- at the time of their syphilis diagnosis, are at an increased risk of developing HIV at a later time. Current syphilis infections can increase one's risk of acquiring an HIV infection by two to five fold.¹¹ After having been relatively stable since 1996, the US rates of total reported syphilis cases has seen a steady increase since 2013.²⁸



Image Source: CDC

Program Overview

Syphilis Triage's main goal is to identify all untreated and reinfected cases early in the natural history of their syphilis infection, especially in pregnant and childbearing age women. Syphilis Triage conducts both active and passive surveillance, allowing Fresno County Department of Public Health (FCDPH) to capture newly infected persons, monitor prior and active cases for reinfection and treatment, and initiate provider follow-up on persons to ensure adequate treatment. Syphilis Triage monitors all prenatal labs with potentially positive syphilis results, actively working with clinics and providers to surveil for early symptoms of a syphilis infection. In cases where a pregnancy receives no prenatal care, Syphilis Triage monitors labor and delivery perinatal labs from Fresno County area hospitals. This helps to ensure that no potentially infected infants go unnoticed, allowing both the mother and child to be assigned to a FCDPH Disease Investigative Specialists (DIS) within 24 hours.

Syphilis Investigation: In the past seven years, Fresno County has experienced a dramatic increase in reported syphilis and congenital syphilis diagnoses. Fresno County Department of Public Health's (FCDPH) response to this crisis has led to the formation of a team of communicable disease specialists trained to investigate reported cases to ensure patients are adequately treated; provide education; and inform contacts of possible exposure, linking them to screening and treatment. Priority populations include pregnant women, women of childbearing age, and male partners of pregnant women, and men who have sex with men. Additional services offered include rapid HIV and Hepatitis C screening, and referrals to HIV Pre Exposure Prophylaxis (PrEP) navigators.

The Congenital Syphilis Case Management Program (CSCMP) was created in 2018 to respond to the increase in Congenital Syphilis cases in Fresno County. The CSCMP consists of a Public Health Nurse (PHN) and a Social Worker (SW) who contact parents and care providers of infants and children exposed to syphilis to provide syphilis education and ensure that these children receive adequate follow-up and treatment. The PHN and SW contact clients by phone or in person to provide education and referrals to Public Health Nursing, Department of Social Services, and Department of Behavioral Health Programs. This management program assists with access to medical care, and other resources as needed. The PHN can also provide physical and developmental assessments for infants whose status is "probable" or when the SW is concerned with a baby who is "not a case". Follow-up testing with the Rapid Plasma Reagin (RPR) is recommended every 2-3 months until the result returns to negative. The PHN and SW work in conjunction with the Communicable Disease Specialist (CDS).

In addition, the PHN and SW complete provider detailing to area medical providers. The detailing includes providing CDC recommendations for a targeted follow-up approached based on the mother's medical history and the test results and treatment of the baby at delivery.

Staffing and the ability for the team to work with clients in the Congenital Syphilis Case Management Program was dramatically affected in 2020 & 2021 due to the COVID-19 pandemic. The SW and the PHN were pulled to assist with case investigation and contact tracing, vaccine planning and other COVID-19 related activities impacting the ability of the team to continue to provide full case management to the CSCMP clients. The work done by this program continues to be very limited as the SW and PHN positions have become vacant over the last 3-9 months.

Demographics

Figure 3.1 Incidence¹ of All Syphilis Cases², by Year (2014-2021)

In recent years, Fresno County experienced a rapid rise in syphilis cases from 2014-2016. In the following four years, the incidence of new syphilis infections has begun to decrease, going back up drastically in 2021.

Note: Cases defined as individuals who were suspect, probable, or confirmed and were Fresno County residents at the time of diagnosis.

¹Incidence is per 100,000 persons

²Includes contacts to, early, late, & unknown duration syphilis stages

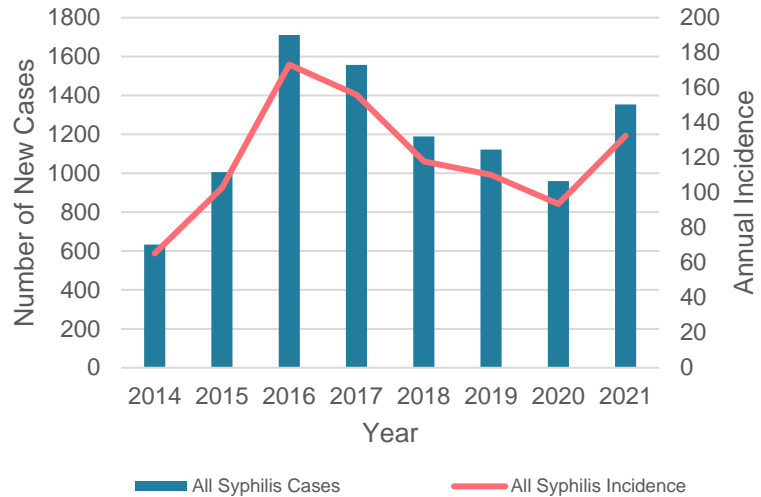


Figure 3.2 Incidence¹ of Primary and Secondary Syphilis Cases, by Year (2014-2021)

Due to their classic symptomology, primary and secondary syphilis (P&S) are the two easiest stages to identify. Conversely, the stages early latent & late latent are more difficult to identify, as they are often asymptomatic. P&S are the most infectious stages, making them of particular importance in identifying & treating. P&S increased in incidence from 2014-2016, decreasing for a four-year period from 2017 to 2020, followed by another increase in 2021.

Note: Cases defined as individuals who were suspect, probable, or confirmed and were Fresno County residents at the time of diagnosis.

¹Incidence is per 100,000 persons

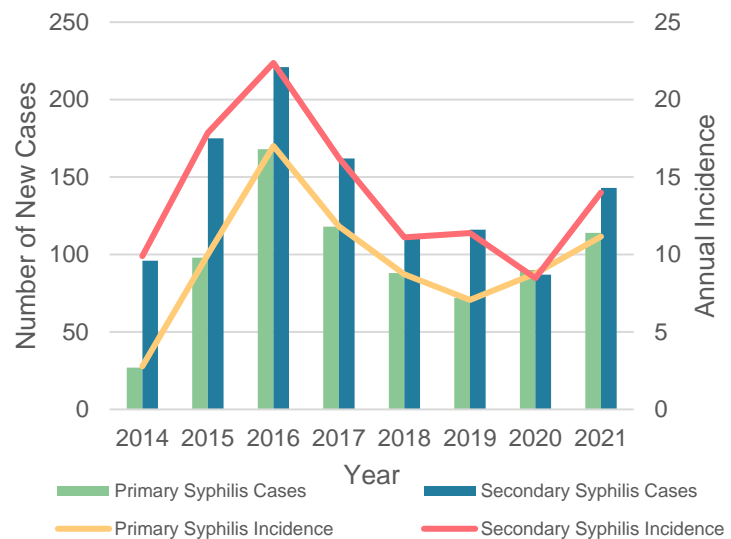


Figure 3.3 Number of Primary Syphilis Cases by Age (2021)

While not in high numbers, Fresno County does have cases of primary syphilis diagnosed in people under the age of 20 years. Per the CDC, due to biological, behavioral, and cultural risk factors, ages 15-24 are at a higher risk of acquiring STIs when compared to older adults.⁴⁰ However, over 75% of Fresno County’s Primary Syphilis cases are being diagnosed in those 25 years of age and older.

Note: Some ages have been censored due to low case counts and to protect confidentiality. Cases defined as individuals who were suspect, probable, or confirmed and were Fresno County residents at the time of diagnosis.

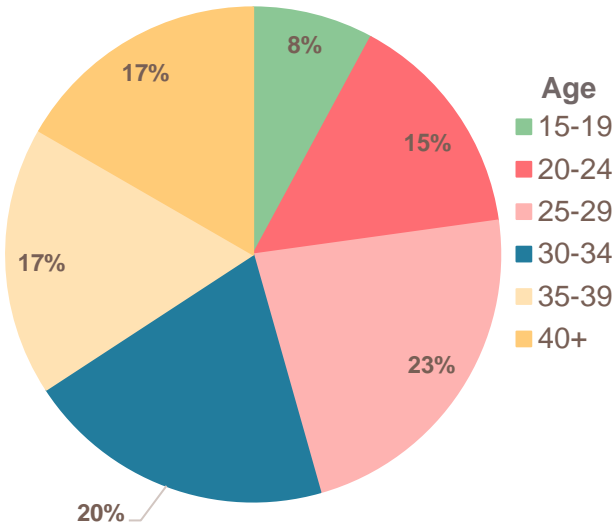


Figure 3.4 Number of Secondary Syphilis Cases by Age (2021)

32% of secondary syphilis cases are in those 40 years of age and older. At a state level, California has seen an increase in secondary syphilis cases, in both males and females. Secondary syphilis can have more apparent symptoms like condylomata lata, palmer plantar & generalized body rashes, making it easier to be recognized and diagnosed.

Note: Some ages have been censored due to low case counts and to protect confidentiality. Cases defined as individuals who were suspect, probable, or confirmed and were Fresno County residents at the time of diagnosis.

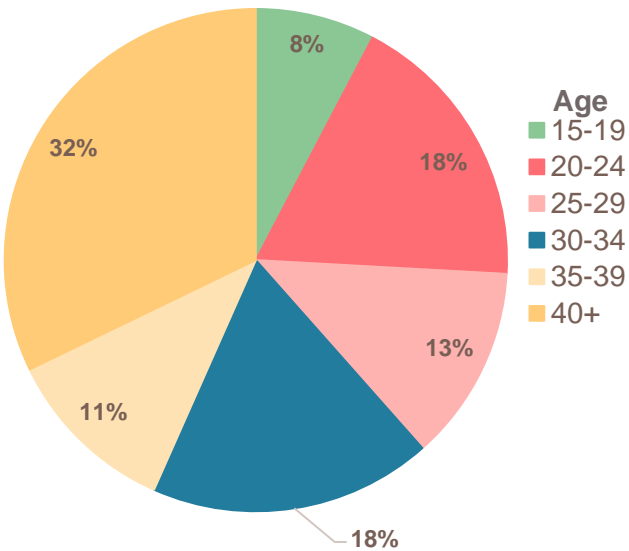
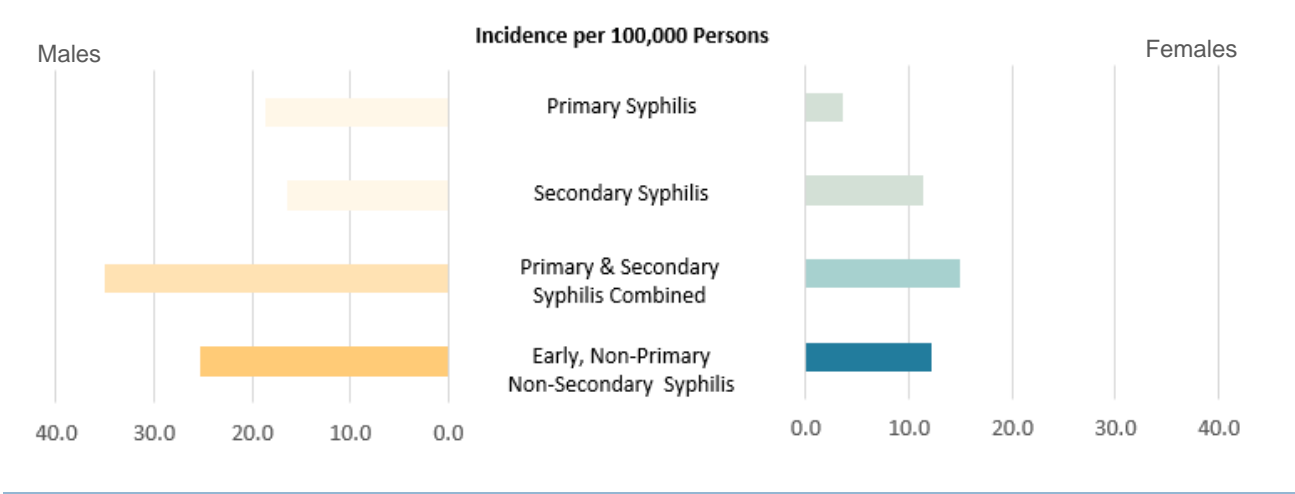


Figure 3.5 Primary & Secondary Syphilis Incidence by Gender¹ (2021)



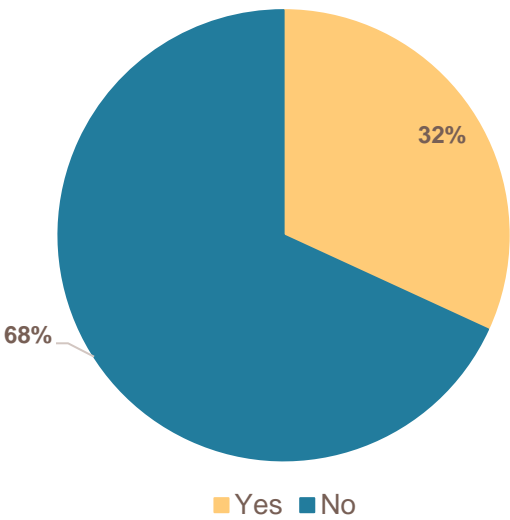
The incidence of primary and secondary syphilis is higher in males than in females. However, California & Fresno County have had an overall increase in females with syphilis. At a state level, California has experienced an increase of over 600% in female early syphilis cases reported from 2012-2017.³⁸ Fresno County went from 53 cases of syphilis in female per 100,000 in 2014 to 93 in 2021. Males have also had an increase going from 77 cases of syphilis per 100,000 persons in 2014 to 170 in 2021.

¹Due to a low case count, those who identified as transgender were collapsed into the gender with which they most identified.

Figure 3.6 Clinician Observed Symptoms at Time of Diagnosis (2014-2021)

Specific signs and symptoms can help a provider determine what stage in the progression of syphilis disease the patient is in. Effective treatment courses are determined by the stage of the syphilis infection. Not receiving the appropriate course of treatment will not cure the disease and can lead to antibiotic resistance.

Note: An absence of symptoms does not indicate a lack of disease. Symptoms along with sexual and testing history help provide the most accurate disease stage. Symptoms at time of diagnosis was unknown in 32% of reported cases



Men Who Have Sex with Men (MSM)

Figure 4.1 Proportional Syphilis Diagnoses in MSM¹ to MSW², by year (2014-2021)

By 2021, the number of MSM diagnosed with syphilis cases in Fresno County has increased by around six times what was reported 2014. In addition, MSM now represent a larger proportion of syphilis diagnoses amongst men in Fresno County, making them a vulnerable population.

¹MSM includes both men who have sex with men, and men who have sex with men and women. MSM and MSM/W numbers were based on a self-reported variable, acquired during an STD Interview conducted by DPH. Not all reported cases agree to participate in the interview; therefore these numbers are likely underreported.

²N represents the total cases in that category

²MSW includes men who only identified as having sex with women, or did not identify the gender of their sex partners

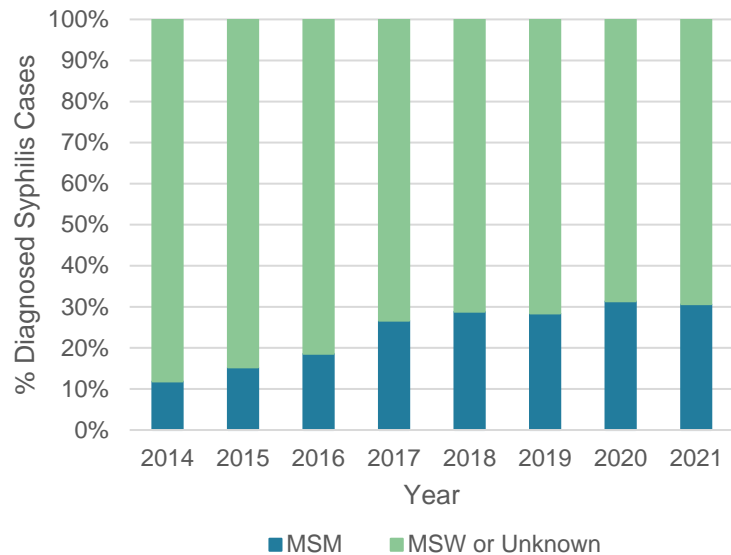


Table 4.1 Syphilis Diagnosed in MSM¹ by Disease Stage (2014-2021)

Many syphilis diagnoses were staged as “Late, or of Unknown Duration.” Catching syphilis cases in the Early stage (≤ 12 months) is helpful in preventing transmission to others, as this is the most infectious period.

¹MSM includes both men who have sex with men, and men who have sex with men and women. MSM and MSM/W numbers were based on a self-reported variable, acquired during an STD Interview conducted by DPH. Not all reported cases agree to participate in the interview; therefore these numbers are likely underreported.

²The total of cases in that category

Stage at Diagnosis	Syphilis ²
Primary	196
Secondary	250
Early Latent	376
Late or Unknown Duration	473
Reactor/Unknown Stage	46
Contact to Syphilis	61

Table 4.2 Syphilis Diagnoses in MSM¹ by Race/Ethnicity (2014-2021)

Those who identified as Hispanic/Latino had the highest reported diagnosis of syphilis in the MSM community. However, this information does not account for the difference in population size between races and ethnicities in Fresno County.

¹MSM includes both men who have sex with men, and men who have sex with men and women. MSM and MSM/W numbers were based on a self-reported variable, acquired during an STD Interview conducted by DPH. Not all reported cases agree to participate in the interview; therefore these numbers are likely underreported.

²Total cases in that category

³Hispanic or Latino may include people from any race (i.e. American Indian/Alaskan Native, Asian/Pacific Islander, Black/African American, White, and Multi-Racial)

Race/Ethnicity	Syphilis ²
American Indian/ Alaskan Native	--
Asian/Pacific Islander	51
Black/ African American	148
Hispanic/Latino ³	784
White	289

Table 4.3 Syphilis Diagnoses in MSM¹ by Age (2014-2021)

Syphilis in the MSM community is being diagnosed rather evenly throughout most age groups, meaning there is risk of infection throughout a person's life. Lower numbers of reported cases in those under 20 years of age does not necessarily represent a lack of risk but could be the result of a lower proportion of sexual activity or STD testing.

¹MSM includes both men who have sex with men, and men who have sex with men and women. MSM and MSM/W numbers were based on a self-reported variable, acquired during an STD Interview conducted by DPH. Not all reported cases agree to participate in the interview; therefore these numbers are likely underreported.

²Total cases in that category

Age	Syphilis ²
15-19 years	73
20-24 years	266
25-29 years	313
30-34 years	225
35-39 years	159
40+ years	350

Table 4.4 Syphilis Diagnoses in MSM¹, as it Relates to HIV/AIDS (2014-2021)

	Yes	No
Patient is Receiving PrEP to Reduce HIV Risk	62	465
Patient Knew HIV Status Prior to Syphilis Diagnosis	416 (HIV+) 142 (HIV-)	147
HIV Diagnosis at Time of Syphilis Diagnosis	127	NA
HIV+ Patients in Care at Time of Syphilis Interview	450	108
Patients Linked to Care, If Not Previously in Care	91	<10

One hundred and twenty-seven individuals, who identified as MSM, were diagnosed with HIV at the time of their syphilis diagnosis. MSM are at high risk for both syphilis and HIV. In addition, each disease increases the risk of acquiring the other as a co-infection. Therefore, testing for HIV should be conducted in conjunction with syphilis testing.

¹MSM includes both men who have sex with men, and men who have sex with men and women. MSM and MSM/W numbers were based on a self-reported variable, acquired during an STD Interview conducted by DPH. Not all reported cases agree to participate in the interview; therefore these numbers are likely underreported.

Congenital Syphilis

Figure 5.1 Incidence¹ of Syphilis Infection in Women of Childbearing Age and Congenital Syphilis, by Year (2014-2021)

Syphilis in California has seen a shift from being found primarily in men to being increasingly diagnosed in women. Of interest are women of childbearing age, as they can transmit syphilis to their infant in utero. Fresno County has seen a drastic increase in syphilis in women of childbearing age (15-44 years). Additionally, Fresno County has noted an increase in reported congenital syphilis cases, 3.5 times the number of reported cases from 2014 to its peak in 2017. From 2017-2020 there was an overall decrease in CS cases noted, followed by an increase in 2021.

Note: Cases defined as individuals who were suspect, probable, or confirmed and were Fresno County residents at the time of diagnosis.
¹Incidence is per 100,000 persons

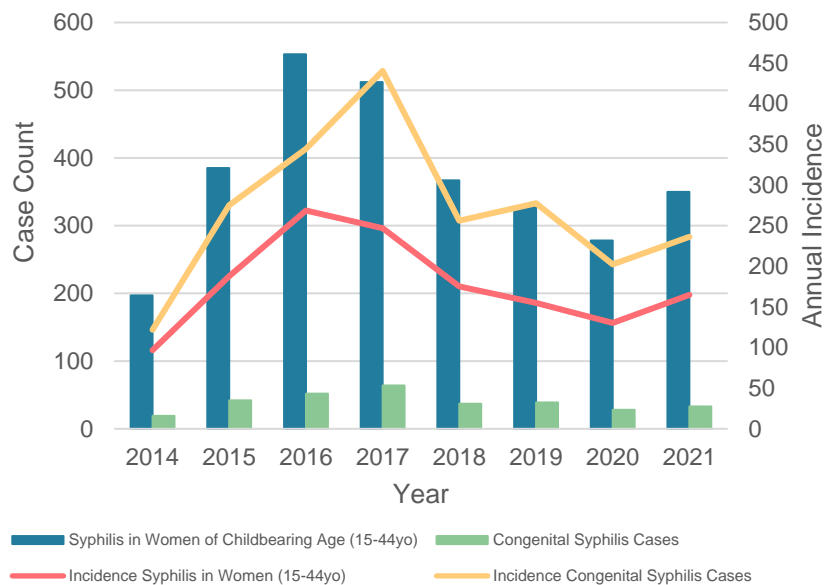


Figure 5.2 Congenital Syphilis Cases by Gestational Age¹ at Birth (2021)

In Fresno County, 30% percent of infants born with congenital syphilis, were born preterm, or less than 37 weeks gestational age. The overall preterm birth proportional incidence for Fresno County in 2021 was 10.5%, that's a three fold increase for infants diagnosed with CS.

¹Preterm: <37 weeks (includes extremely and very preterm deliveries); Early Term: 37-38 weeks; Full Term: ≥39 weeks

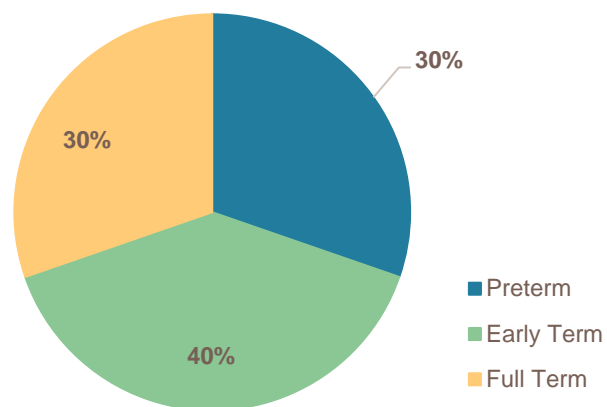


Figure 5.3 Point of Syphilis Treatment for Mothers of Babies Diagnosed with Congenital Syphilis (2021)

52% of mothers to infants diagnosed with congenital syphilis in Fresno County, had no documented treatment for their syphilis infection prior to delivery. The California & Fresno County Departments of Public Health recommend all pregnant women be tested for syphilis during their 1st trimester, beginning of the 3rd trimester, and at delivery. Even with adequate treatment, if sex partner(s) are not also treated, a reinfection can occur.

Note: Cases defined as individuals who were suspect, probable, or confirmed and were Fresno County residents at the time of diagnosis.

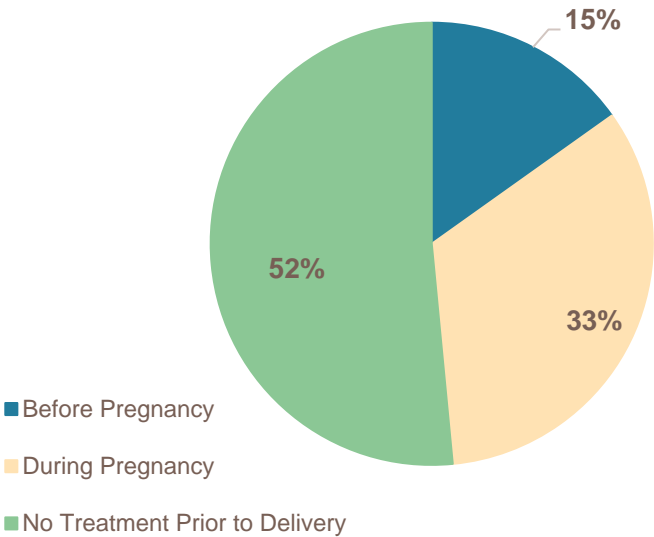


Figure 5.4 Congenital Syphilis Cases by Mother’s Age at Delivery (2014-2021)

All infants born with CS in Fresno County were born to women of childbearing age, with the largest proportion being born to women 20-29 years. Following recommended syphilis screening guidelines and ensuring adequate treatment of syphilis in women of childbearing age is important in preventing future CS infections.

Note: Some age ranges have been censored due to low case counts. Cases defined as individuals who were suspect, probable, or confirmed and were Fresno County residents at the time of diagnosis.

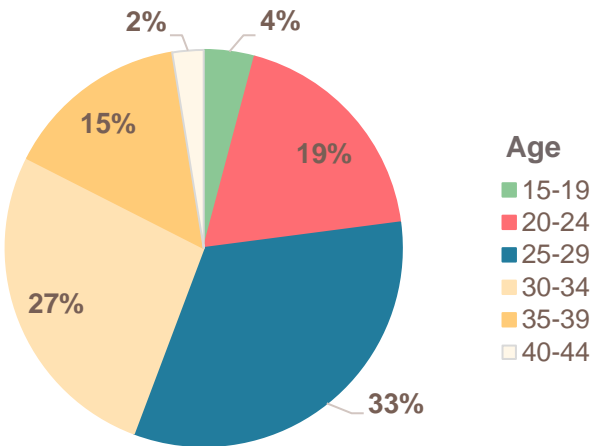


Table 5.1 Aggregated Congenital Syphilis Incidence by Mother's Race (2014-2021)

Disproportionately affected by congenital syphilis, mothers who identified as Black or African American had an incidence higher than that of both Hispanics/Latinos and Whites. In Fresno County, the Black community has the highest rates of poor birth outcomes out of any other race. The Black Infant Health program, through Fresno County Department of Public Health, is working closely with this community to improve infant health outcomes among this high-risk population. In the event of a CS diagnosis, public health nurses are available to provide CS case management, guiding mothers through the treatment and testing process of their infant.

Note: Cases defined as individuals who were suspect, probable, or confirmed and were Fresno County residents at the time of diagnosis. Some categories have been censored due to low case counts.

¹Incidence is per 100,000 persons

²N represents the total cases in that category

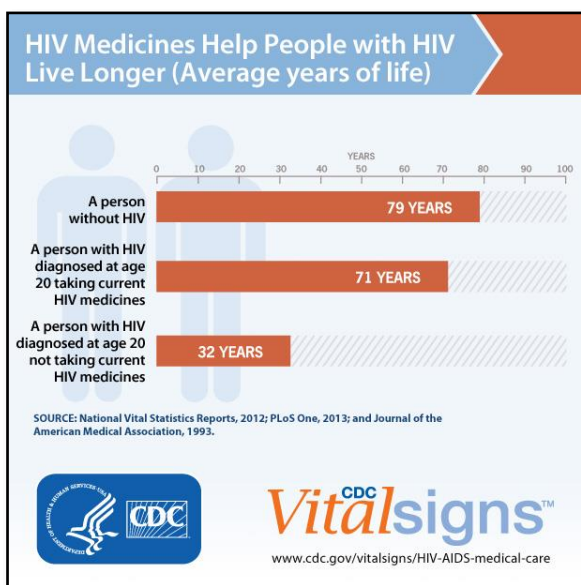
³Hispanic or Latino may include people from any race (i.e. American Indian/Alaskan Native, Asian/Pacific Islander, Black/African American, White, and Multi-Racial)

Race/Ethnicity	Incidence ¹ (N) ²
American Indian/ Alaskan Native	--
Asian/Pacific Islander	--
Black/African American	536 (33)
Hispanic/Latino ³	260 (184)
White	372 (84)

HIV/AIDS

General Overview

Human Immunodeficiency Virus (HIV) is the causative agent of Acquired Immune Deficiency Syndrome (AIDS). HIV uses the body's CD4 (T cells) cells to reproduce, causing a disruption in the body's ability to have a fully



functioning immune system. Over time, the disruption to the immune system becomes so severe, the body becomes more vulnerable to infections and cancer. HIV infections occur in three stages: acute HIV infection, clinical latency, and AIDS. While an HIV infection is treatable with Antiretroviral Therapy (ART), it is not curable and is lifelong, except in very rare circumstances.^{29,30} HIV can be acquired through specific bodily fluids (i.e. blood, semen, pre-seminal rectal and vaginal fluids; and breast milk) introduced to the body via mucus membrane, compromised skin barrier, or a direct injection (i.e. needle).^{14,31} Pre-Exposure Prophylaxis (PrEP) is an HIV prevention medication (brand name Truvada) prescribed to individuals at a high risk for contracting the virus. Approved for this use by the FDA in 2012, when taken daily it reduces the risk of acquiring HIV.^{32,33} When taken correctly, PrEP reduces the risk of getting HIV from sex by >90% and >70% from injection drug use (IDU).³⁴ Those at high risk includes HIV negative

individuals who are not in sexually monogamous relationships, and either identify as MSM or heterosexual with low to no condom use; injection drug users; and those in a sexual relationship with an HIV+ partner.³⁴ According to the CDC, the US experienced a rapid decline of HIV infections for around five years, somewhat stabilizing in 2013.³⁵ However, some subgroups are still experiencing large fluctuations in the form of increases and decreases.³⁵ Nationally, the MSM community is disproportionately affected by HIV, accounting for over half (66%) of HIV diagnoses in 2017.³⁶ Within this US subpopulation, Black MSM are the most affected, with 9,807 new HIV diagnoses in 2017 alone.³⁶ When looked at by age, the country's most affected age group is the 25-34 year olds, with 13,433 new HIV diagnoses in one year.³⁶ When analyzed regionally, the West had an HIV diagnoses incidence of 9.4 per 100,000 persons compared to the Southern United States at 16.1 per 100,000 persons.³⁶ In 2015, there was an estimated 1,122,900 people living in the US with HIV, 15% of which were thought to be undiagnosed.³⁶ Out of the top 10 states in the US, California had the 2nd highest amount of HIV diagnoses in 2017 (N=4,500).³⁷

Program Overview

The Fresno County **HIV Prevention Program** consists of the following services: rapid HIV counseling and testing, linking to care, partner services, and PrEP navigation. The Counseling and Testing program currently uses the OraQuick Rapid test kit to conduct HIV testing, with results available in 20 minutes. Staff assist newly diagnosed HIV positive individuals with linkage to HIV Care services. All confirmed positive clients are helped with notifying sex and needle sharing partners through our Partner Services component. Partners may be notified in one of three ways: self-notification, dual notification, and anonymous third party. Partners are offered

HIV testing through Fresno County Department of Public Health (FCDPH). Testing by their primary care provider and clinics are also recommended options. PrEP navigation services include education on the benefits of PrEP, assisting clients with the completion of PrEP Assistance Program applications, and making referrals to prescribing providers.

Demographics

Figure 6.1 Incidence¹ of HIV & AIDS in Fresno County by Year (2014-2021)

Fresno County had an overall increase in the incidence of both HIV and AIDS, from 2014-2017. Though this was followed by a large decrease in 2018, bringing the incidence to near 2014 levels, levels again increased from 2019-2021 for both HIV and AIDS.

¹Incidence is per 100,000 persons

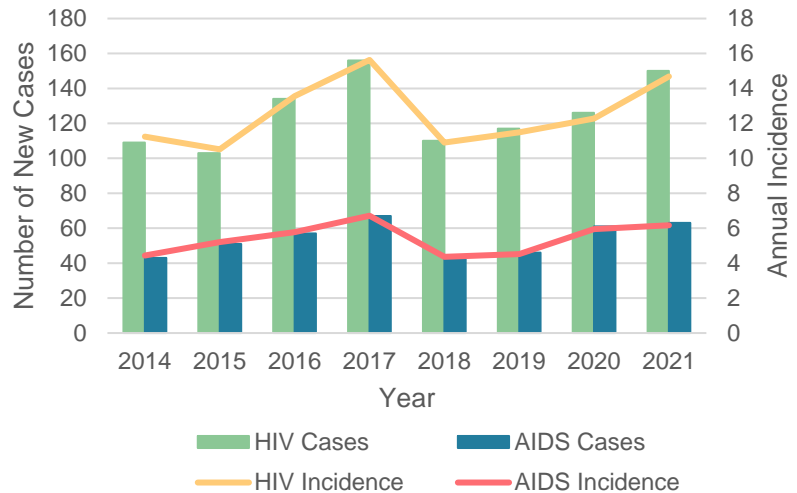


Figure 6.2 New HIV Cases by Year that Classified as Late Testers (2014-2021)

“Late Testers” are qualified as individuals who converted from HIV to AIDS within 12 months of their first HIV positive (HIV+) diagnosis. Fresno County DPH and its community partners have increased efforts in improving testing, linking HIV+ individuals to care, and re-engaging those who have fallen out of care to an HIV provider. Ensuring that HIV+ individuals are in care, helps to ensure viral suppression and decrease community transmission. Fresno County experienced an decrease in Late Tester incidence from 2020-2021.

¹Incidence is per 100,000 persons diagnosed with HIV

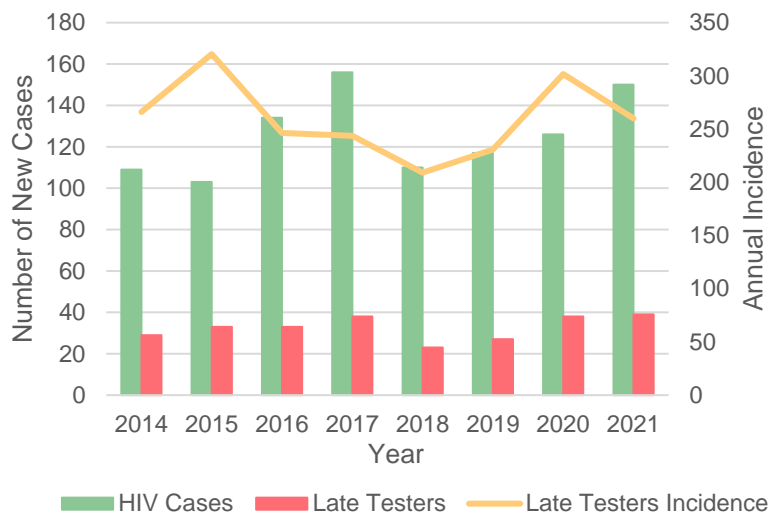


Figure 6.3 HIV Cases by Gender (2014-2021)

In Fresno County, males have a higher incidence risk of HIV when compared to females. California's incidence¹ of 22.4, last reported in 2016, is roughly equivalent to Fresno County's (24.0).⁴¹ It is important to note that at the state level the incidence of HIV in males has remained relatively stable. While, in Fresno County there was an increase in male HIV incidence by about 47% from 2014-2017. In contrast, females have remained relatively stable at the county level from 2014-2017. Both males and females saw an increase from 2018-2021.

¹Incidence is per 100,000 persons

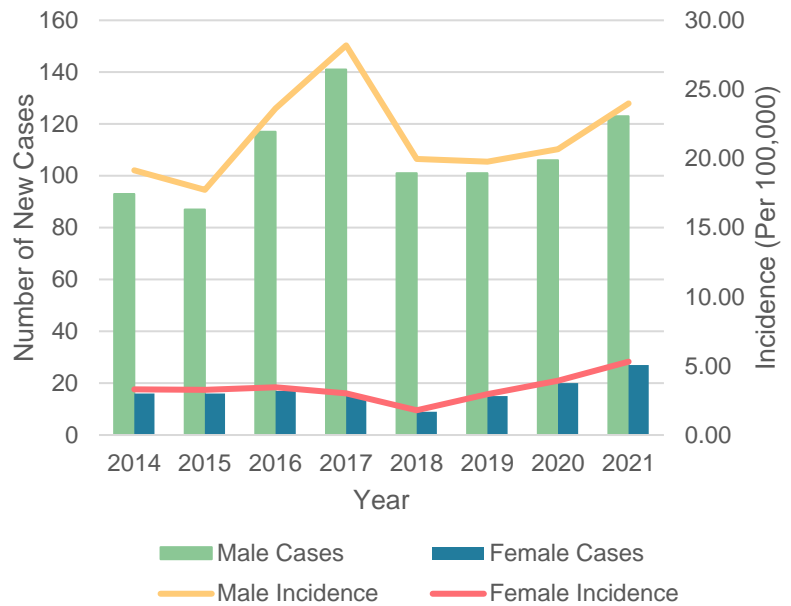


Figure 6.4 New HIV Cases by Race/Ethnicity¹ (2021)

The majority of new HIV diagnosed cases are occurring amongst those who self-identified as Hispanic/Latino. According to the US Census Bureau, Hispanic/Latinos comprise the largest ethnic/racial group in the county, in terms of population size.

Note: Some race/ethnicities have been censored due to low case count and to ensure confidentiality.

¹Hispanic or Latino may include people from any race (i.e. American Indian/Alaskan Native, Asian/Pacific Islander, Black/African American, White, and Multi-Racial)

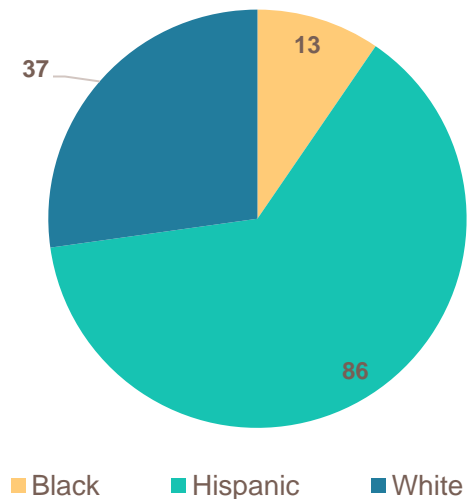


Table 6.1 HIV/AIDS Prevalence by Race/Ethnicity³ (2021)

Those who identified as Hispanic/Latino had the highest case count of people living with HIV/AIDS in 2021. However, the disease is more prevalent amongst the Black/African American community. Once the population size of each race is accounted for, this disease disproportionately affects blacks.

Note: Some categories have been censored due to low case counts.

¹Prevalence is per 100,000 persons

²N represents the total cases in that category

³Hispanic or Latino may include people from any race (i.e. American Indian/Alaskan Native, Asian/Pacific Islander, Black/African American, White, and Multi-Racial)

Race/Ethnicity:	Prevalence ¹ (N) ²	
	HIV	AIDS
American Indian/ Alaskan Native	--	--
Asian/Pacific Islander	46 (46)	45 (45)
Black/African American	307 (153)	357 (178)
Hispanic/Latino ³	115 (623)	117 (634)
White	92 (281)	87 (267)

Figure 6.5 New HIV Cases by Age (2021)

Fresno County has seen an increase in diagnosed HIV cases in those under the age of 20 years. Roughly 40% of Fresno's cases are diagnosed in those under 30 years of age. Per the CDC, youth are the least likely age group to be linked to care within an acceptable timeframe, negatively affecting their ability to have a suppressed viral load. At a National level, the CDC reported that 46% of sexually active high school students reported no condom usage during their last sexual encounter.³⁹

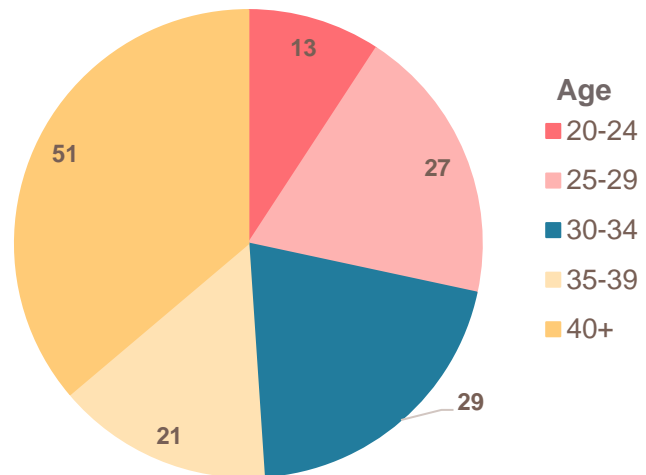
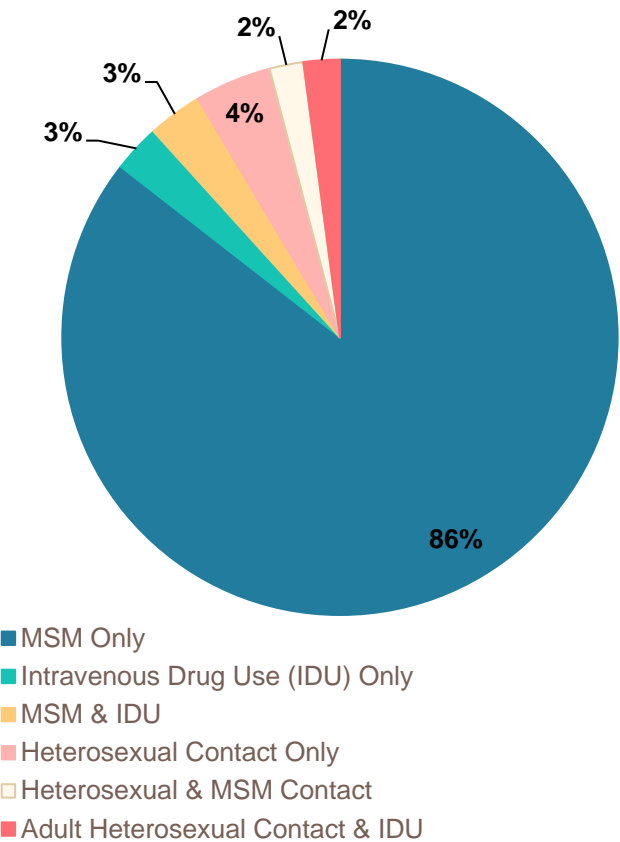


Figure 6.6 Likely Route of Transmission based off Self-Identified Behavioral Risk Factors in those Infected with HIV (2014-2021)

Identifying as MSM is the leading risk factor for HIV infections in Fresno County. However, these are self-identified behaviors and are reliant on the patient’s full disclosure, and accurate knowledge of their behavioral practices & sexual partners, to be accurate. Twenty-four percent of new HIV cases in Fresno County had no risk factors identified as likely transmission routes. When used as prescribed, Pre-exposure Prophylaxis (PrEP) can decrease the chances of becoming infected in those at high risk for acquiring an HIV infection.

Note: Perinatal exposure was censored. Adult heterosexual contact variables (i.e. Adult Heterosexual Contact with Intravenous Drug Use, Heterosexual Contact with MSM partner, and Heterosexual Contact with HIV+ partner) were collapsed into one aggregate category, due to low case counts.



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