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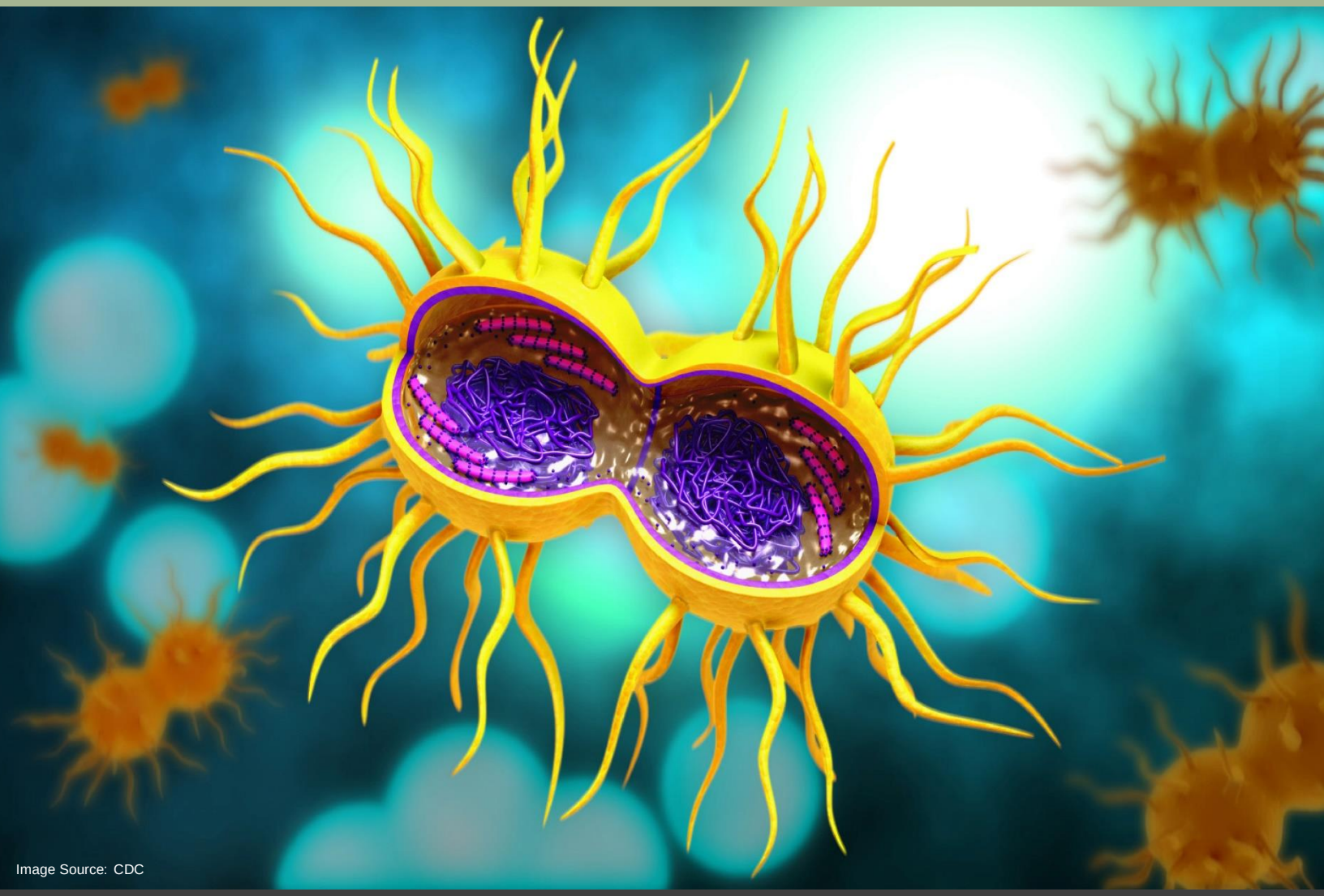

Image Source: CDC

STD & HIV Annual Report

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

STD & HIV Annual Report

2019

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

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STD & HIV Annual Report

2019

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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.[1]

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.[1]

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.[2]

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.[3]

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.[2]

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

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

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

Introduction

County Profile

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

Fresno County, the fifth largest county in California, is a mixture of both rural and metropolitan cities. The county's population had an estimated 0.8% increase from 2018 to 2019, with a concluded population size of 1,015,195.[4] Fresno city is the largest populated city in the county, with a population of 519,037 persons.[5] Gender in the county is relatively evenly distributed, with 49.9% male and 50.2% female.[6] It boasts a younger population base, with an overall median age of 31.8 years.[6] When broken down by age categories, 24.1% of the population is age 0-14 years, 7.5% 15-19 years, 7.8% 20-24 years, 15.0% 25-34 years, 12.2% 35-44 years, 11.6% 45-54 years, and 21.6% ≥55 years.[6]

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) (52.4%), White (30.2%), Black or African American (4.7%), American Indian and Alaska Native (0.4%), Asian (9.9%), Native Hawaiian/Pacific Islander (0.1%), and Multiracial (2.0%).[6] 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.[7] Greater than 50% of Fresno County residents are monolingual English speakers. However, a high percentage of residents speak a language other than English, with Spanish (34.1%) and "Asian and Pacific Island languages" (6.2%) being the two most common.[8] Of those whose first language is not English, 57.3% identify as speaking English "very well".[8]

Fresno County ranks 52nd out of the 58 counties in California for social and economic factors, according to the Robert Wood Johnson Foundation. Fresno County's overall unemployment is nearly two times higher than that of California, at 8.5% and 4.8% respectively.[9] The median household income in Fresno County is $51,500. However, when broken down by race, the median household income for Whites is $64,600, while Hispanics and African Americans are lower at $38,700 and $28,300 respectively.[9] Only 81% of residents have a high school diploma compared to the 83% of Californians.[9] In 2017, Fresno County had a 28% childhood poverty rate, 10% higher than that of California at 18%.[9] When it comes to clinical care rankings, Robert Wood Johnson Foundation ranked Fresno County as number 42 out of 58.[9] Nine percent of the county is uninsured, just higher than that of 8% in California.[9] There are 1,530 residents to every 1 primary care physician, and in 2016 over 4,000 preventable hospital stays per 100,000 Medicare enrollees.[9] With 24% reporting being in fair and or poor health, Fresnans reported an average of 4.2 poor physical health days in a 30 day period.[9]

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.[10]

STDs are on the rise in the United States—2019 was the 6th consecutive year of record-breaking STD case numbers, having 2.6 million reported cases of chlamydia, gonorrhea and syphilis.[11] Chlamydia is the number one diagnosed reportable STD in the United States with 1.8 million cases reported in 2019 alone.[12,13] From

2015 to 2016, syphilis rates in the US increased by almost 18%.[14] 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.[14] However, nationally an increase in infections amongst women and congenitally acquired disease in infants has also been noted.[14] Syphilitic still births rose from 79 to 94, from 2018-2019.[13] Beyond vaginal-penial transmission, many STDs like gonorrhea and chlamydia can be acquired through both rectal and oral sex.[12,15] Moreover, gonorrhea and chlamydia can be transmitted perinatally during vaginal childbirth.[12,15] Syphilis is contracted when skin comes into contact with someone's exposed syphilitic chancre (sore).[16] Chlamydia, gonorrhea, and syphilis are all treatable by a qualified healthcare provider with an appropriate course of antibiotics.[12,15,16]

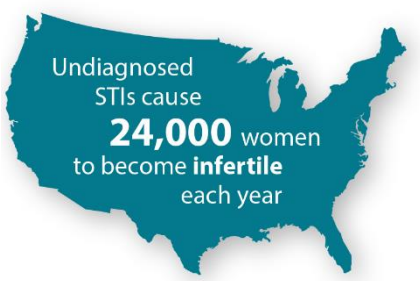


Image Source: CDC

Nationally, human immunodeficiency virus (HIV) infections have been decreasing in incidence continuously the last ten years.[17] While HIV is not curable, it is treatable with the proper antiretroviral therapy (ART).[18] 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).[19] Receptive anal sex is the riskiest type of sex for HIV transmission, putting the MSM community at particular risk.[19]

Chlamydia

General Overview

Chlamydia is an infection caused by the bacteria *Chlamydia trachomatis.*[12] 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.[12] In addition, chlamydia can be transmitted from mother to infant during a vaginal birth.[12] Untreated cervical chlamydia in pregnant women can cause conjunctivitis and pneumonia in infants.[12] 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.[20] 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.[21]

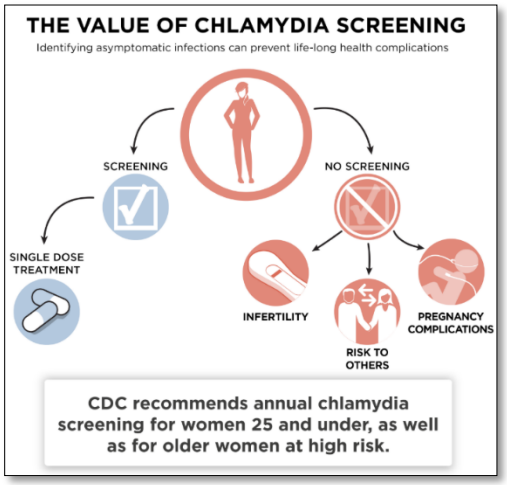


Image Source: CDC

Demographics

Figure 1.1 Chlamydia Cases by Age (2019)

A large proportion of chlamydia cases in Fresno County are occurring in a younger population. Over 75% of cases diagnosed in 2019, was in those under the age of 30 years. Ages 20-24 are disproportionately affected by this disease, making up 36% of all 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.

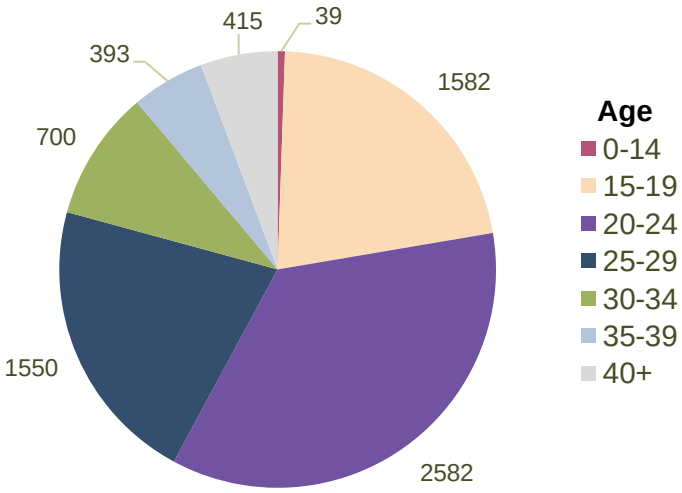


Table 1.1 Chlamydia Incidence by Race/Ethnicity (2019)

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, with an incidence almost two 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.

[1]Incidence is per 100,000 persons

[2]N represents the total cases in that category

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

Race/Ethnicity	Incidence[1] (N)[2]
American Indian/ Alaskan Native	213 (12)
Asian/Pacific Islander	270 (276)
Black/African American	1,814 (764)
Hispanic[3]	756 (2,692)
White	346 (995)

Figure 1.2 Chlamydia Case Count and Incidence by Year (2013-2019)

Though Fresno County did experience a decrease in cases from 2013-2014, overall, it has seen an increase in chlamydia incidence in the last five years, going from an incidence of 589 to 728 cases per 100,000 persons. From 2017 – 2019, the rate has remained relatively steady.

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

[1]Incidence is per 100,000 persons

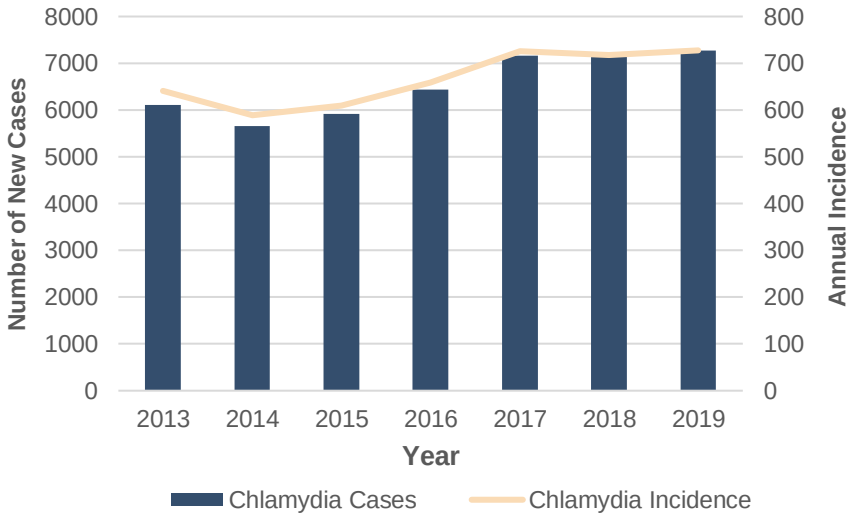


Figure 1.3 Sexual Partner Engagement for Chlamydia Treatment by Provider (2019)

Partner treatment information was produced by the provider 41% of the time to the Department of Public Health (DPH)—a required field on the Confidential Morbidity Report (CMR). A provider reported taking advantage of Expedited Partner Therapy (EPT) for known partners of patients in 18% of reported chlamydia cases, up from 11% in 2018.

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

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

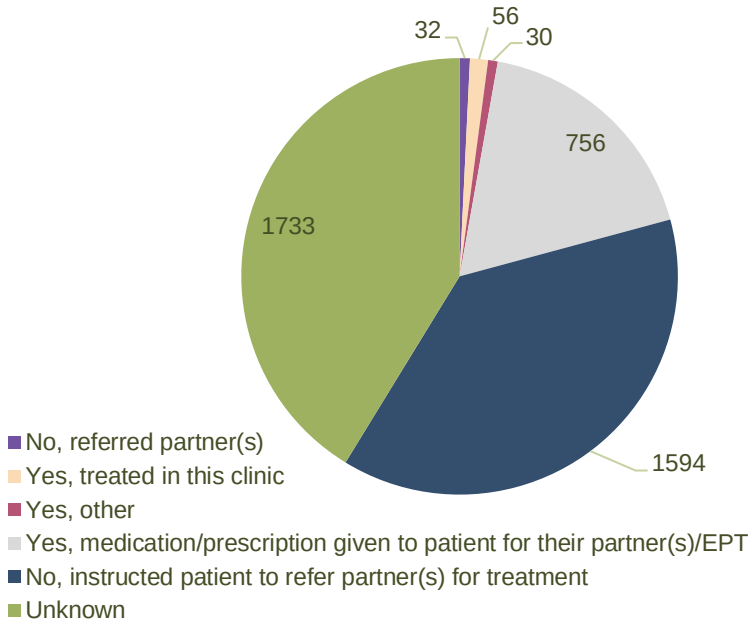
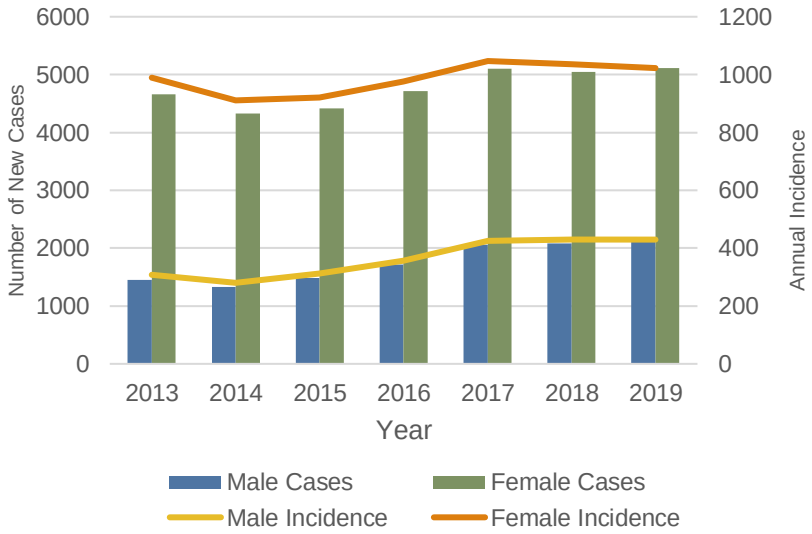


Figure 1.4 Chlamydia Cases and Incidence[1] by Gender (2013-2019)

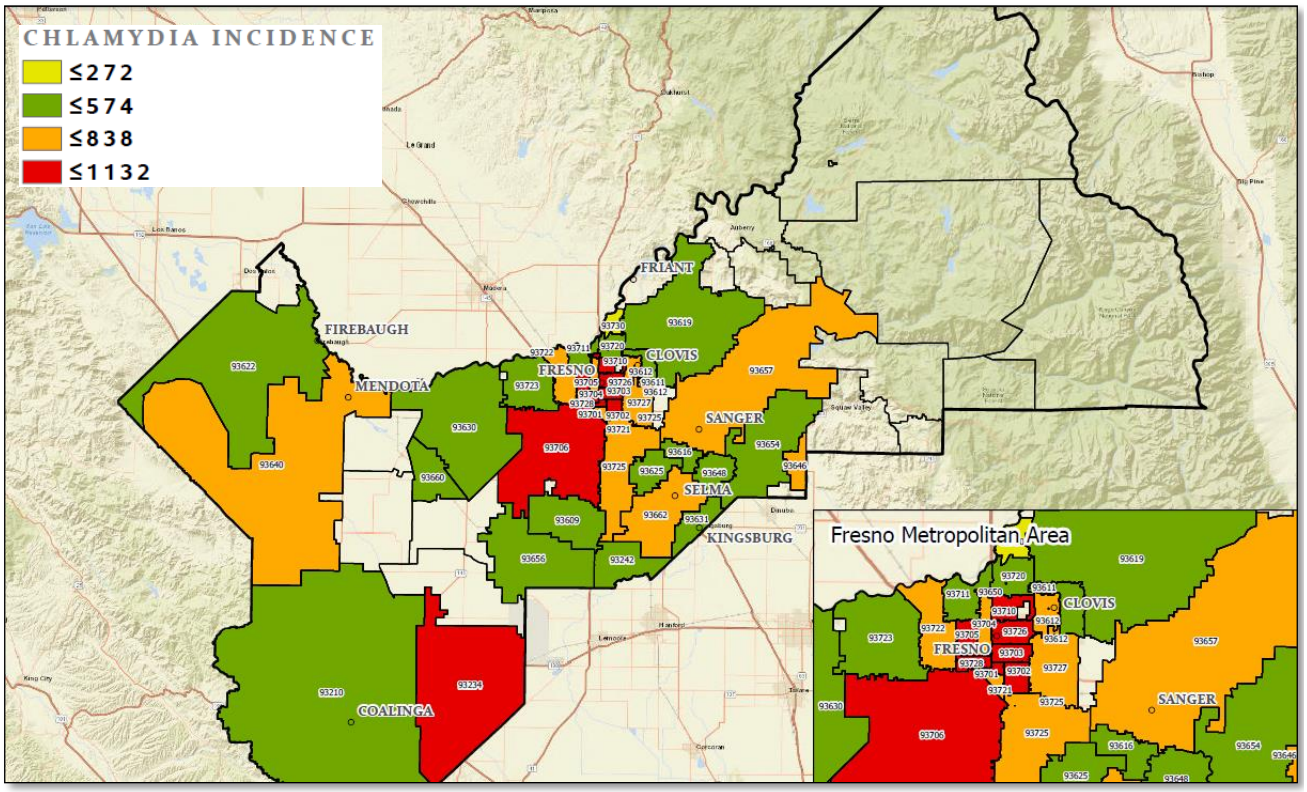
The incidence of chlamydia in females has consistently been higher than the incidence in males. However, both experienced an increase in reported cases from 2014 through 2017. While the reported number of cases in females is much higher than that of males, this may be an artifact of increased testing opportunities in females like women's annual wellness exams.

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

[1]Incidence is per 100,000 persons



Map 1.1 Distribution of Chlamydia Incidence[1] in Fresno County by Zip Code[2] (2019)



Found throughout Fresno County, incidences of chlamydia tend to be higher in more populated areas. This could be the result of many factors. It is important to note that society is geographically mobile. Meaning that we are unable to determine whether infections acquired are from locations beyond the case's home zip code and or Fresno County.

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.

[1]Incidence is per 100,000 persons.

[2]Some zip codes have been censored to protect confidentiality.

Gonorrhea

General Overview

Gonorrhea is an infection caused by the bacteria *Neisseria gonorrhoeae*.[15] 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.[15] Gonorrhea is a sexually transmitted infection that can be transmitted from an infected partner via anal, oral, or penis-vaginal sexual contact.[15] 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.[15] When infected, individuals may have signs and symptoms, though gonorrhea is commonly asymptomatic, also known as a "silent infection".[20,22,23] 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.[23–26] Both symptomatic and silent infections can cause irreversible damage to the reproductive system, which can lead to infertility.[20] Gonorrhea is treatable by a qualified healthcare provider, with an appropriate course of antibiotics.[25] 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.[27] As a result of gonorrhea's growing antibiotic resistance, it was declared an urgent public health threat in 2013.[27,28] Surveillance for antibiotic resistant gonorrhea (ARG) has increased throughout the United States and world.[27,29]

Demographics

Figure 2.1 Gonorrhea Cases by Age (2019)

Like chlamydia, most gonorrhea cases in Fresno County are in those under the age of 30 years. However, unlike chlamydia (21%), those 30 years and older make up around 36% 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.

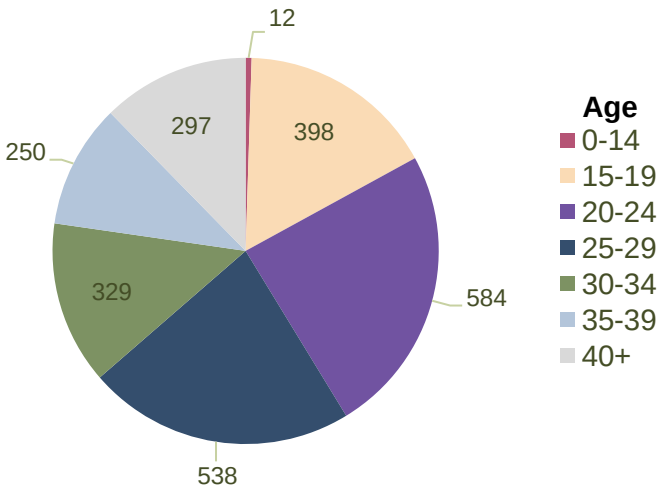


Table 2.1 Gonorrhea Incidence by Race/Ethnicity (2019)

Hispanics have the highest amount 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.

[1]Incidence is calculated per 100,000 persons
[2]N represents the total cases in that category
[3]Hispanic or Latino may include people from any race *(i.e. American Indian/Alaskan Native, Asian/Pacific Islander, Back/African American, White, and Multi-Racial)*

Race/Ethnicity	Incidence[1] (N)[2]
American Indian/ Alaskan Native	--
Asian/Pacific Islander	62 (63)
Black/African American	1026 (432)
Hispanic/Latino[3]	219 (779)
White	189 (544)

Figure 2.2 Gonorrhea Case Count and Incidence[1] by Year (2013-2019)

Fresno County had an overall increase in gonorrhea incidence, from 2013 to 2019, with a small non-sustained decrease in 2014. Though incidence remained relatively stable from 2017 to 2018, cases again increased in 2019.

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

[1]Incidence is per 100,000 persons

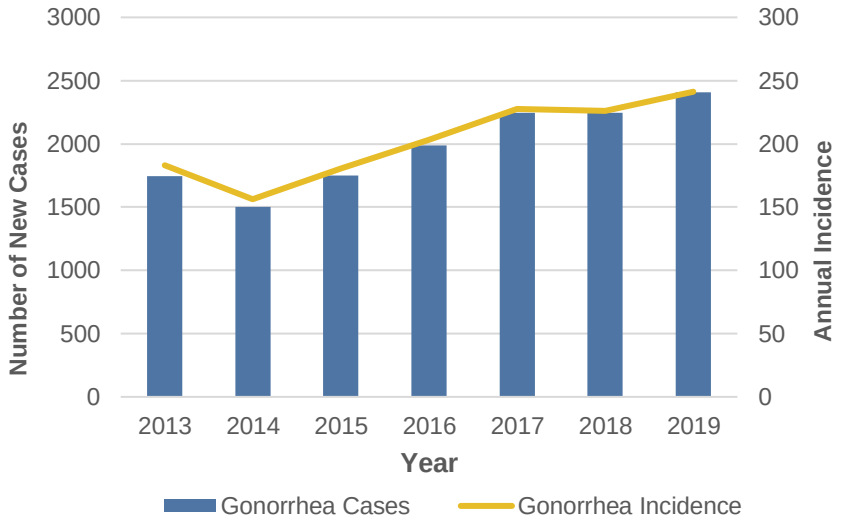


Figure 2.3 Sexual Partner Engagement for Gonorrhea Treatment by Provider (2019)

Partner treatment information was not produced by the provider 49% of the time to DPH—a required field on the Confidential Morbidity Report. In 2% of reported gonorrhea cases a provider reported utilizing Expedited Partner Therapy (EPT)[1] to treat the partners of their positive patients.

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

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

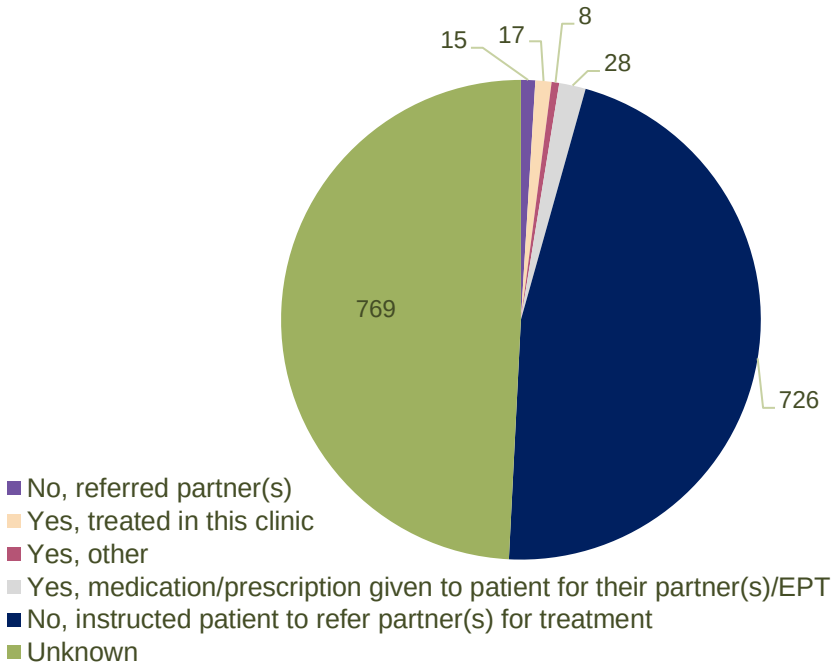
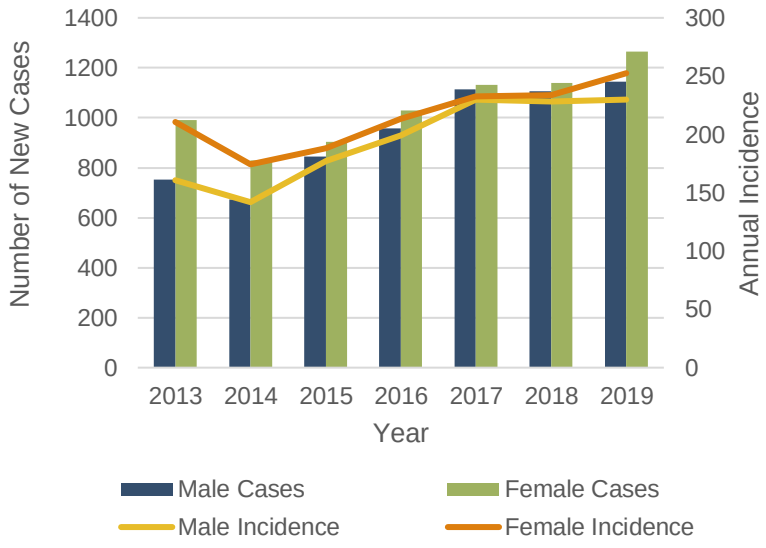


Figure 2.4 Gonorrhea Cases and Incidence[1] by Gender (2013-2019)

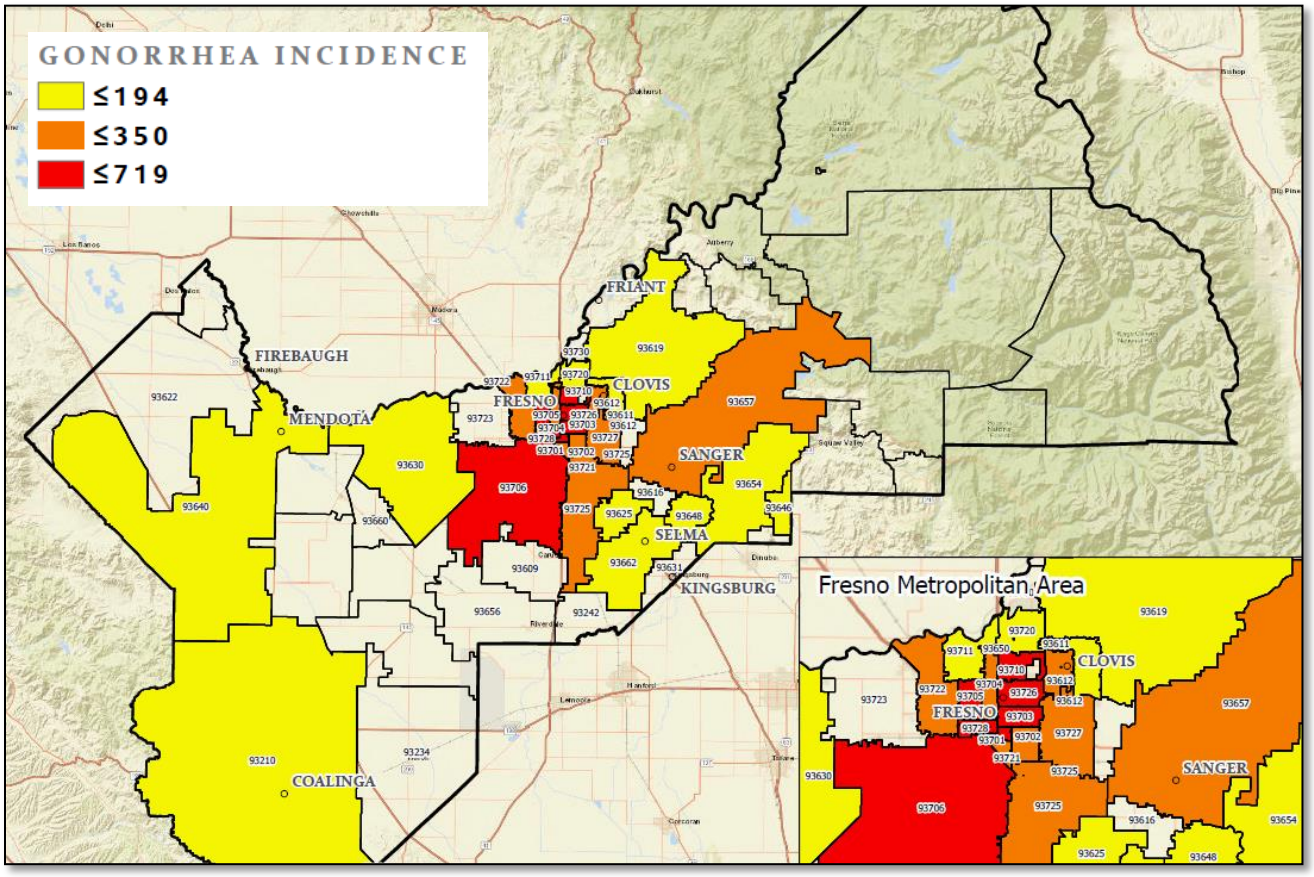
From 2013 to 2014, Fresno County had a slight decrease in both male and female cases. Overall, the county experienced an increase in overall incidence. From 2014-2019, the county went from an incidence of 142 & 174, in males and females respectively, to an incidence of 230 in males and 253 in females.

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

[1]Incidence is per 100,000 persons of that gender



Map 2.1 Distribution of Gonorrhea Incidence[1] in Fresno County by Zip Code (2019)



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.
[1]Incidence is per 100,000 persons

Syphilis

General Overview

Syphilis is an infection caused by the bacteria *Treponema pallidum*.[16] 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.[16] 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.[16] A person becomes infected when they come into direct contact with a syphilitic chancre (occurring during the primary stage).[16] 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.[16] The chancre will develop at the initial site of contact occurred with *T. pallidum* bacteria.[30] Chancre's 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.[16,30,31] Different symptoms are associated with the different stages of disease, excepting with neurological symptoms, which can develop at any stage of infection.[30]

Image Source: CDC

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.[16,32] While syphilis can be treated with the correct course of antibiotics, you do not retain immunity and can become reinfected.[16,30] Within the U.S. men who have sex with men (MSM) community, rates of syphilis have been increasing.[16] 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.[16] After having been relatively stable since 1996, the US rates of total reported syphilis cases has seen a steady increase since 2013.[33]

Program Overview

Syphilis Investigation: In the past four 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.

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 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 hospital. This helps to ensure that no potentially infected infant goes unnoticed, allowing both the mother and child to be assigned to a FCDPH Disease Investigative Specialists (DIS) within 24 hours.

Demographics

Figure 3.1 Incidence[1] of All Syphilis Cases[2], by Year (2013-2019)

In recent years, Fresno County experienced a rapid rise in syphilis cases from 2013-2016. In the last three years, the incidence of new syphilis infections has begun to decrease. It is too early to determine if this will be a continual downward trend.

Note: Cases defined as individuals who were suspect, probable, or confirmed and were Fresno County residents at the time of diagnosis.
[1]Incidence is per 100,000 persons
[2]Includes contacts to, early, late, & unknown duration syphilis stages

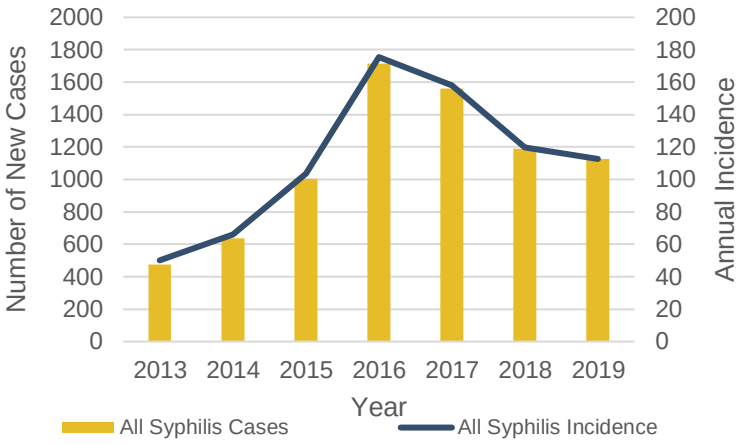


Figure 3.2 Incidence[1] of Primary and Secondary Syphilis Cases, by Year (2013-2019)

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 2013-2016, followed by a three year decrease from 2017 to 2019.

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

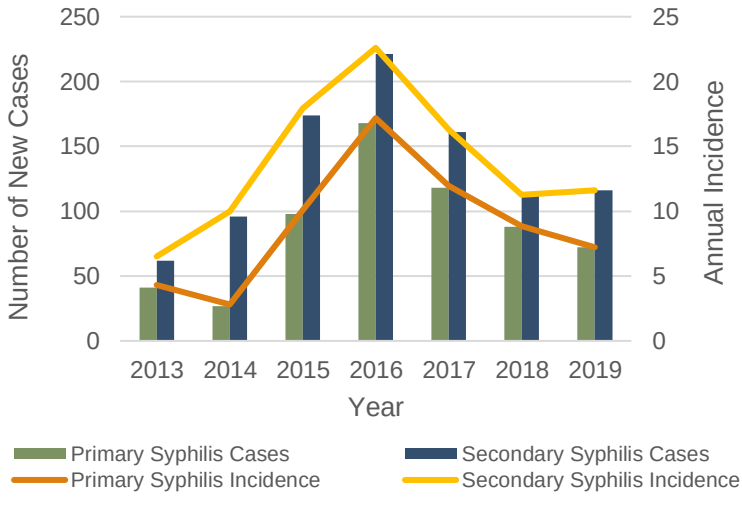


Figure 3.3 Number of Primary Syphilis Cases by Age (2019)

While not in high numbers, Fresno County has cases of primary syphilis diagnosed in people under the age of 20 years old. Per the CDC, due to biological, behavioral and cultural risk factors, ages 15-24 are at a higher risk of acquiring STDs 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.

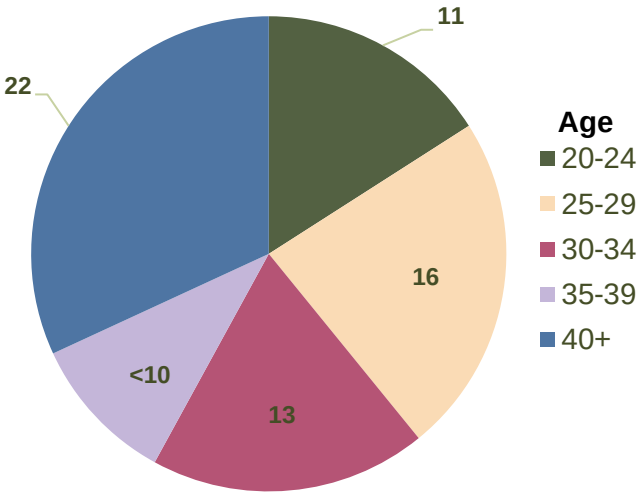


Figure 3.4 Number of Secondary Syphilis Cases by Age (2019)

29% 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.

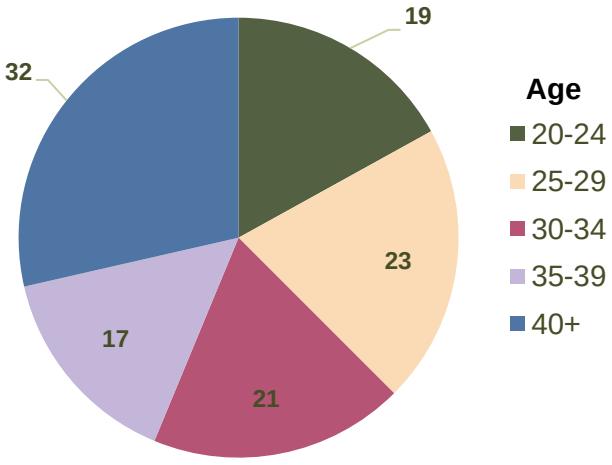
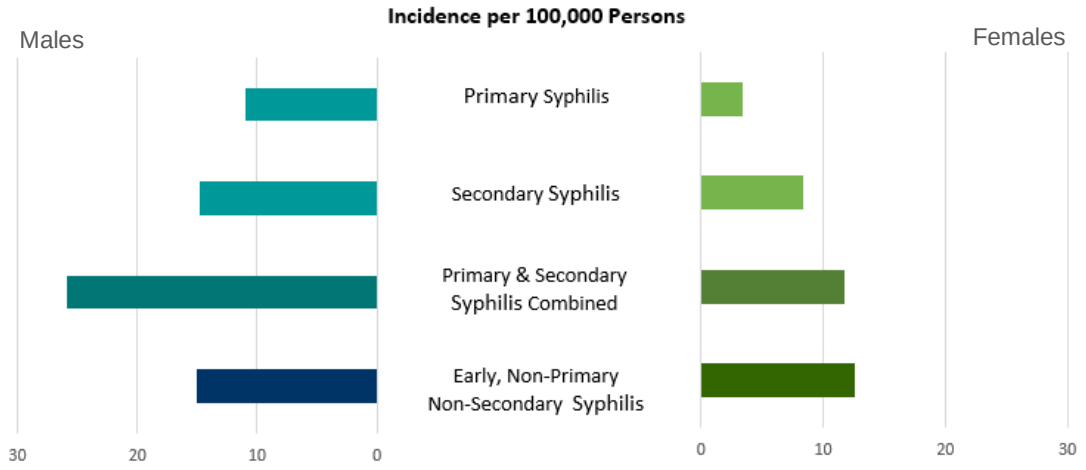


Figure 3.5 Primary & Secondary Syphilis Incidence by Gender[1] (2019)



Though the incidence of males with primary and secondary syphilis is higher than in females, California & Fresno County has seen 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 had a near three times increase in female early syphilis cases from 2013-2019. Conversely, males diagnosed with early syphilis in Fresno County increased by roughly two times during the same time period.

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

Men Who Have Sex with Men (MSM)

Table 4.1 Syphilis Diagnosed in MSM[1] by Disease Stage (2013-2019)

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.

[1]MSM 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; therefor these numbers are likely underreported.
[2]The total of cases in that category

Stage at Diagnosis	Syphilis[2]
Primary	123
Secondary	207
Early Latent	258
Late or Unknown Duration	335
Reactor/Unknown Stage	34
Contact to Syphilis	57

Table 4.2 Syphilis Diagnoses in MSM[1] by Race/Ethnicity (2013-2019)

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 size of the population.

[1]MSM 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; therefor these numbers are likely underreported.
[2]Total cases in that category
[3]Hispanic or Latino may include people from any race *(i.e. American Indian/Alaskan Native, Asian/Pacific Islander, Back/African American, White, and Multi-Racial)*

Race/Ethnicity	Syphilis[2]
American Indian/ Alaskan Native	--
Asian/Pacific Islander	36
Black/ African American	97
Hispanic/Latino[3]	616
White	201

Table 4.3 Syphilis Diagnoses in MSM[1] by Age (2013-2019)

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 infection but could be the result of a lower proportion of sexual activity, or STD testing.

[1]MSM 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; therefor these numbers are likely underreported.
[2]Total cases in that category

Age	Syphilis[2]
15-19 years	57
20-24 years	209
25-29 years	218
30-34 years	166
35-39 years	110
40+ years	240

Figure 4.1 Proportional Syphilis Diagnoses in MSM[1] to MSW[2], by year (2013-2019)

By 2019, the number of MSM diagnosed with syphilis cases in Fresno County has increased by nearly three times of what was reported 2013. In addition, MSM now represent a larger proportion of syphilis diagnosis in Fresno County, making them a vulnerable population.

[1]MSM 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; therefor these numbers are likely underreported.
[2]N represents the total cases in that category
[2]MSW includes men who only identified as having sex with women, or did not identify the gender of their sex partners

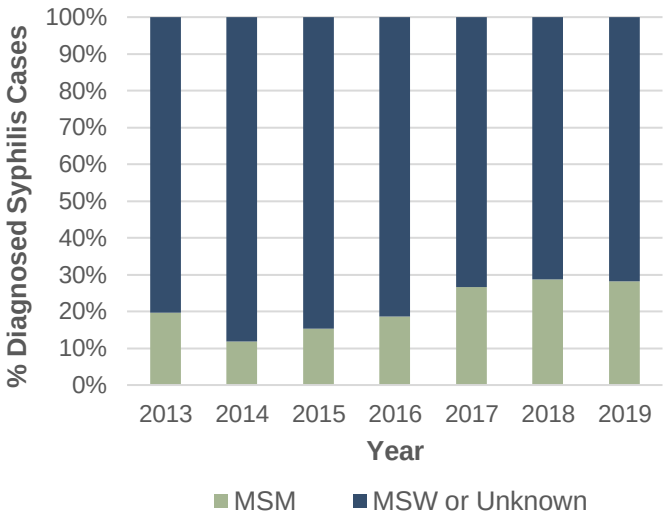


Table 4.4 Syphilis Diagnoses in MSM[1], as it Relates to HIV/AIDS (2013-2019)

	Yes	No
Patient is Receiving PrEP to Reduce HIV Risk	22	245
Patient Knew HIV Status Prior to Syphilis Diagnosis	255 (HIV+) 71 (HIV-)	113
HIV Diagnosis at Time of Syphilis Diagnosis	84	NA
HIV+ Patients in Care at Time of Syphilis Interview	266	62
Patients Linked to Care, If Not Previously in Care	55	<10

Eighty-four 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 coinfection. Therefore, testing for HIV should be conducted in conjunction with syphilis testing.

[1]MSM 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; therefor these numbers are likely underreported.

Congenital Syphilis

Figure 5.1 Incidence[1] of Syphilis Infection in Women of Childbearing Age and Congenital Syphilis, by Year (2013-2019)

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). Fresno County has noted an increase in reported congenital syphilis cases, 4.5 times the number of reported cases from 2013 to its peak in 2017. From 2017-2018 there was a noted decrease in CS cases, with another increase in 2019.

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

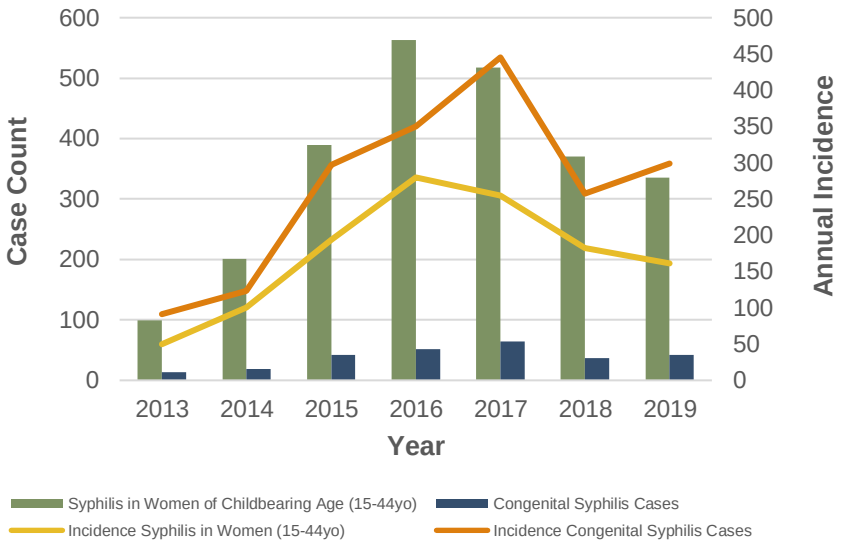


Figure 5.2 Congenital Syphilis Cases by Gestational Age[1] at Birth (2019)

In Fresno County, 34% 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 2018 was 9.9%, that's a nearly 350% increase for infants diagnosed with CS.

[1]Extremely Preterm: <28 weeks; Very Preterm: 28-32 weeks; Preterm: 33-36 weeks; Early Term: 37-38 weeks; Full Term: ≥39 weeks

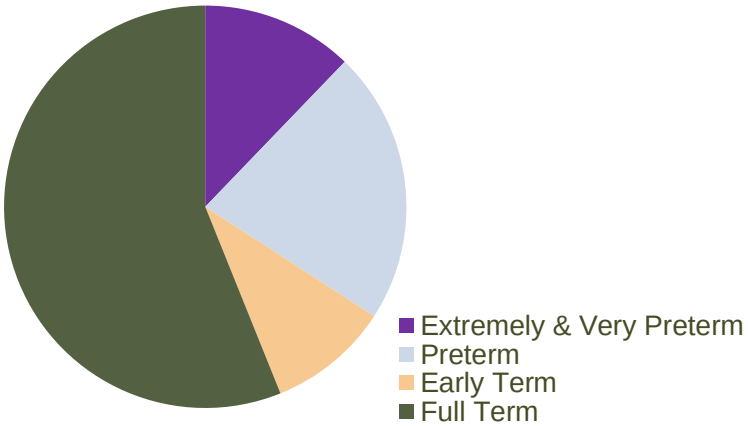


Figure 5.3 Point of Syphilis Treatment for Mothers of Babies Diagnosed with Congenital Syphilis (2019)

Just short of half of mother's to infants diagnosed with congenital syphilis in Fresno County, had no documented treatment for their syphilis 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 treated as well, 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.

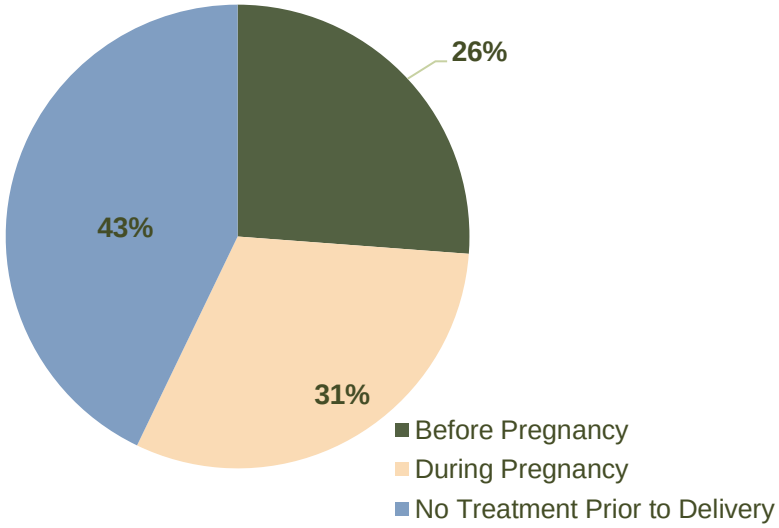


Figure 5.4 Congenital Syphilis Cases by Mother's Age at Delivery (2013-2019)

All infants born with CS in Fresno County were born to women of childbearing age, with the largest proportion being born to women 25-29 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.

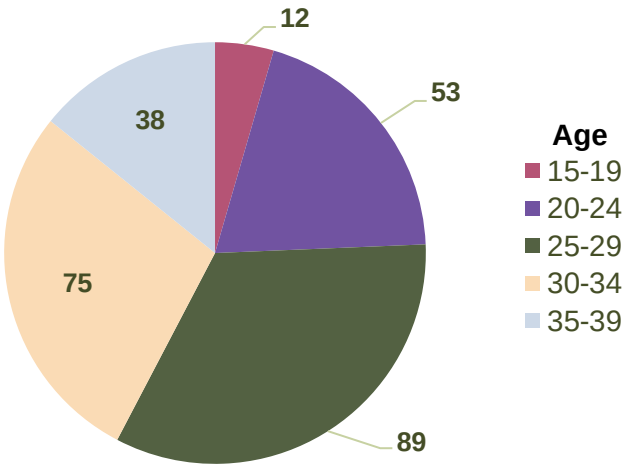


Table 5.1 Aggregated Congenital Syphilis Incidence by Mother's Race (2013-2019)

Disproportionately affected by congenital syphilis are mothers who identified as Black or African American, with an incidence higher than that of 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 amongst 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.

[1]Incidence is per 100,000 persons

[2]N represents the total cases in that category

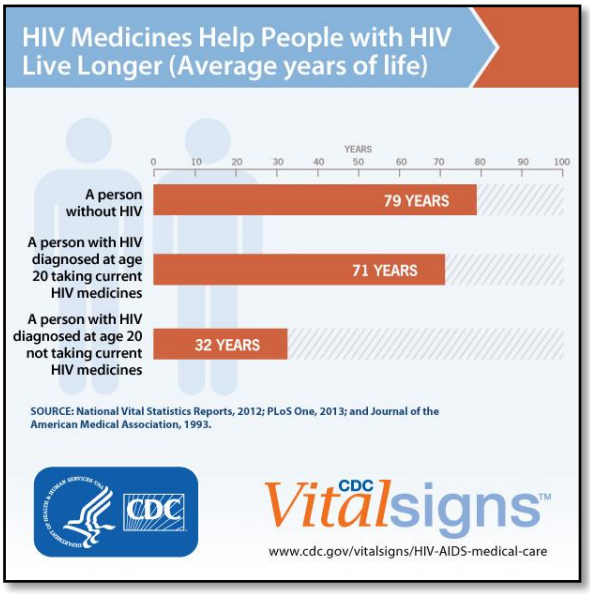
[3]Hispanic or Latino may include people from any race *(i.e. American Indian/Alaskan Native, Asian/Pacific Islander, Back/African American, White, and Multi-Racial)*

Race/Ethnicity	Incidence[1] (N)[2]
American Indian/ Alaskan Native	--
Asian/Pacific Islander	--
Black/African American	533 (29)
Hispanic/Latino[3]	250 (160)
White	344 (7)

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.[1,34] HIV can be acquired though 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).[19,35] 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.[2,3] When taken correctly, PrEP reduces the risk of getting HIV from sex by >90% and >70% from injection drug use (IDU).[36] 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.[36] According to the CDC, the US experienced a rapid decline of HIV infections for around five years, somewhat stabilizing in 2013.[37] However, some subgroups are still experiencing large fluctuations in the form of increases and decreases.[37] Nationally, the MSM community is disproportionately affected by HIV, accounting for over half (66%) of HIV diagnoses in 2017.[38] Within this US subpopulation, Black MSM are the most affected, with 9,807 new HIV diagnoses in 2017 alone.[38] 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.[38] 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.[38] In 2015, there was an estimated 1,122,900 people living in the US with HIV, 15% of which were thought to be undiagnosed.[38] Out of the top 10 states in the US, California had the 2nd highest amount of HIV diagnoses in 2017 (N=4,500).[39]



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 Incidence[1] of HIV & AIDS in Fresno County by Year (2013-2019)

Fresno County had an overall increase in the incidence of both HIV and AIDS, from 2013-2017. Though this was followed by a large decrease in 2018 remaining to 2019, bringing the incidence to near 2014 levels. It is unknown whether this decrease will continue into coming years.

[1]Incidence is per 100,000 persons

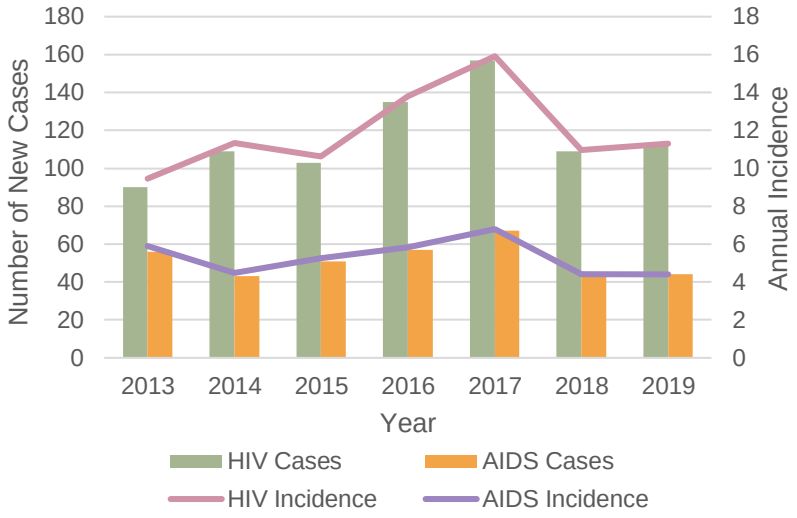


Figure 6.2 New HIV Cases by Year that Classified as Late Testers (2013-2019)

"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 increasing 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. Overall, Fresno County has seen a decrease in the incidence of its "late testers" in recent years.

[1]Incidence is per 100,000 persons diagnosed with HIV

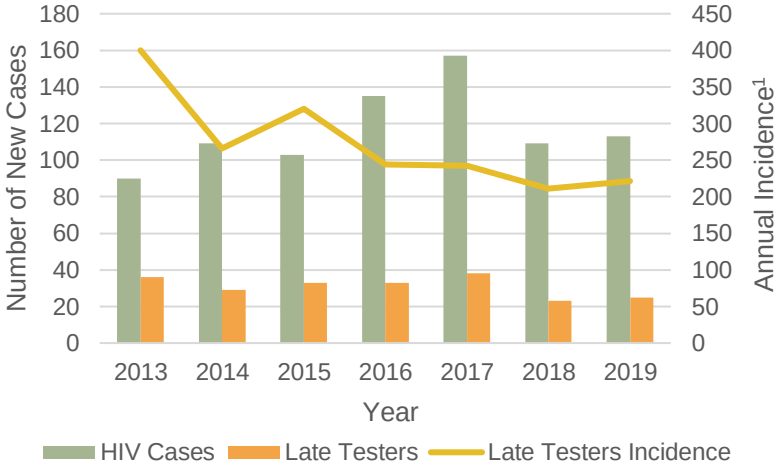


Figure 6.3 HIV Cases by Gender (2013-2019)

In Fresno County, males have a higher incidence risk of HIV than females. California's incidence[1] of 22.4, last reported in 2016, is roughly equivalent to Fresno County's (19.5).[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 nearly 100% from 2013-2017. In contrast, females have remained relatively stable at the county level from 2013-2017. Males saw a decrease in 2018 and 2019.

[1]Incidence is per 100,000 persons

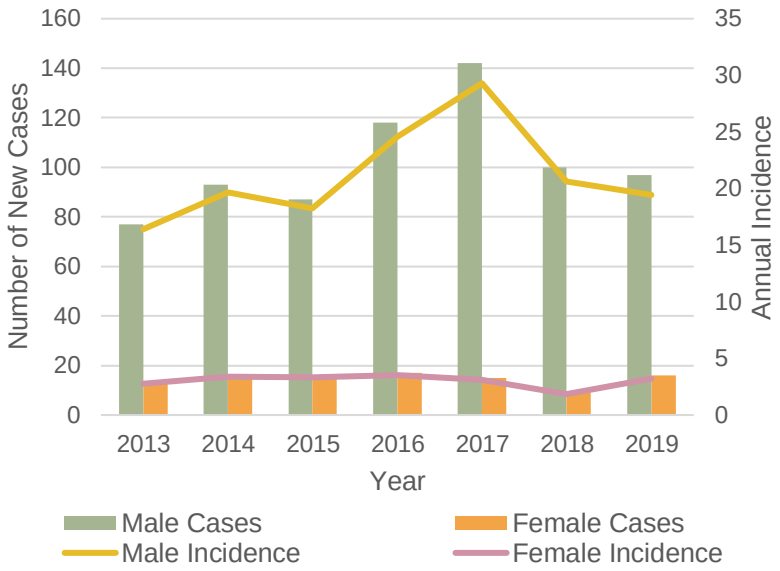


Figure 6.4 New HIV Cases by Race/Ethnicity[1] (2019)

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.

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

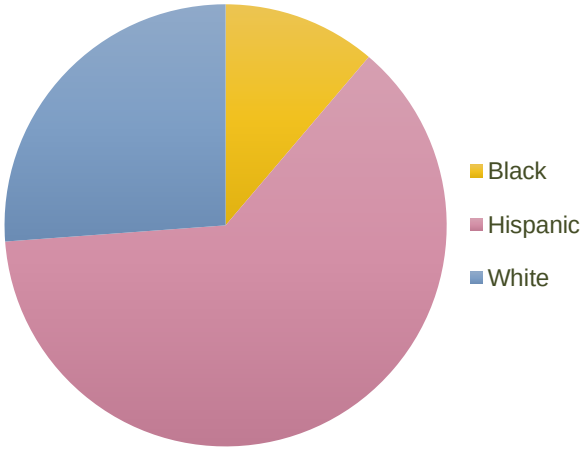


Table 6.1 HIV/AIDS Prevalence by Race/Ethnicity[3] (2019)

Those who identified as Hispanic/Latino had the highest case count of people living with HIV/AIDS in 2019. However, the disease is more prevalent amongst the Black/African American community. Once the population size of each race is accounted for, this disease, when compared to Whites, disproportionately affects Blacks.

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

[1]Prevalence is per 100,000 persons

[2]N represents the total cases in that category

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

	Prevalence[1] (N)[2]	
Race/Ethnicity:	**HIV**	**AIDS**
American Indian/ Alaskan Native	--	--
Asian/Pacific Islander	36.9 (36)	44.1 (43)
Black/African American	318.5 (144)	391.5 (177)
Hispanic/Latino[3]	106.0 (540)	118.2 (602)
White	86.8 (255)	91.9 (270)

Figure 6.5 New HIV Cases by Age (2019)

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]

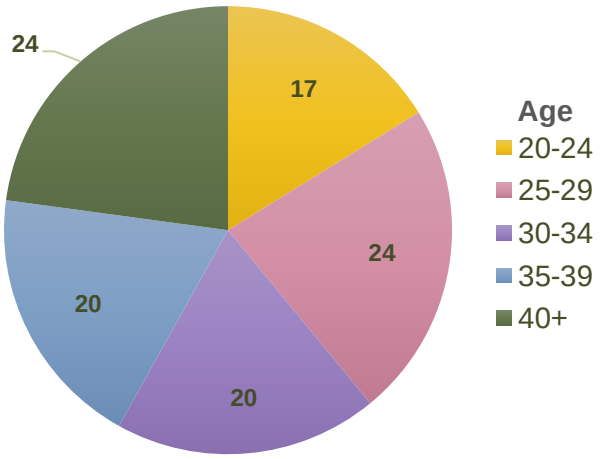
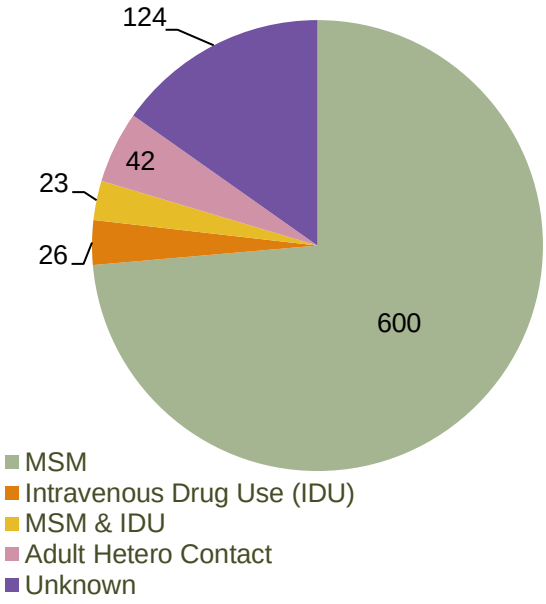


Figure 6.6 Likely Route of Transmission based off Self-Identified Behavioral Risk Factors in those Infected with HIV (2013-2019)

Identifying as MSM is the leading risk factor for most 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. Fifteen percent of new HIV cases in Fresno County had no risk factors identified as likely transmission routes. When used as prescribed, Pre-exposure Prophylaxis, or PrEP, can decrease the chances of becoming infected, in those at high risk for acquiring an HIV.

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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