Health Equity:

Addressing Rising Rates of STIs and Preventing HIV Infections

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PREFACE

The County of San Diego supports the use of gender-affirming language and believes that creating a safe and inclusive environment is essential when providing healthcare services. Using inclusive terminology is especially important when providing sexual and reproductive health services due to the intimate nature of the care being provided. In writing this paper we have made efforts to use inclusive language, but would also like to acknowledge that the language used to describe the gender of people affected by sexually transmitted infections (STIs) and human immunodeficiency virus (HIV) is based on the source of the information and may not reflect the gender identities of individuals. Not all data currently gathered include information on gender identity, limiting the ability to have a comprehensive view of the health status of transgender, nonbinary, and other gender diverse individuals; much of the data and recommendations use binary language. We hope that in the future, gender identity information will be integrated into health surveillance and encourage all healthcare providers to practice inclusive, person-centered care with patients to help build trust and improve health outcomes.

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Health Equity: Addressing Rising Rates of STIs and Preventing HIV Infections

EXECUTIVE SUMMARY

Introduction

Rates of bacterial sexually transmitted infections (STIs), including chlamydia, gonorrhea, and syphilis, are increasing in San Diego County, in California, and throughout the United States. These STIs are associated with significant disproportionalities. This document, titled "*Health Equity: Addressing Rising Rates of STIs and Preventing HIV Infections*," includes an overview of the following four STIs: chlamydia, gonorrhea, syphilis, and HIV; the most recent data for these infections (in San Diego County, California, and the U.S.); a look at health equity and populations most affected; and a call to action for a regional approach to STI and HIV prevention and control in San Diego County. These recommendations from the HIV, STD, and Hepatitis Branch (HSHB), of the County of San Diego Health and Human Services Agency (HHSA) Department of Public Health Services align with those of the Centers for Disease Control and Prevention (CDC) and other STI and HIV programs throughout California and the U.S.

The focus of this paper is to present national, state, and local data for selected STIs: chlamydia, gonorrhea, syphilis, and HIV. This paper also focuses on health disparities (disease or conditions that affect one population more than the other), that disproportionately impact STI and HIV rates among certain populations. There are national, state, and local initiatives and plans aimed at addressing the syndemics (i.e., two or more concurrent epidemics that interact) of HIV, STIs, and viral hepatitis.

Methods

The State of California requires healthcare providers and/or laboratories to report cases of certain STIs, under Title 17 of the California Code of Regulations. This report includes data derived from demographic, laboratory, clinical, and case investigation data for reported STIs in San Diego County.

Sexually Transmitted Infections

The County of San Diego uses the California Reportable Disease Information Exchange (CalREDIE) system to conduct surveillance of chlamydia, gonorrhea, syphilis, and chancroid. STI cases were counted by calendar year based on the episode date, which is the earliest date of the following (if the date exists): date of onset, date of diagnosis, specimen collection date, date of death, or date received. STI rates were calculated using population estimates prepared by the San Diego Association of Governments (SANDAG). Congenital syphilis counts include confirmed and probable congenital syphilis cases including syphilitic stillbirths. Rates of congenital syphilis were calculated using the number of live births provided by the Office of Vital Records and Statistics of the County of San Diego.

HIV

Laboratories are required to report HIV viral loads (detectable and undetectable), CD4 T-cell counts and percentages, and any test result indicative of HIV infection to local health jurisdictions and to the CDPH

Office of AIDS (OA). In addition, health care providers are required to report all newly diagnosed cases of HIV disease. Health care providers who diagnose HIV cases are also required to report these cases by traceable mail, telephone, or secure fax.

Laboratory results received through ELR are processed by the CDPH OA. During this process, lab results are matched to the enhanced HIV/AIDS Reporting System (eHARS), the HIV disease case database maintained by the CDPH OA and through which the County reports cases. The County of San Diego HIV Epidemiology and Surveillance Program (HESP) analyzes data from quarterly eHARS files to describe the HIV epidemic in San Diego County and respond to data requests internal and external to the County of San Diego. Data are processed to remove extraneous variables and produce calculated variables needed for local analysis.

Results

Young people assigned female sex at birth experience higher rates of chlamydia, whereas gay, bisexual, and other cisgender men who have sex with men are more impacted by syphilis, gonorrhea, and human immunodeficiency virus (HIV). Among persons of color, Hispanic individuals are disproportionately impacted by chlamydia, syphilis, and HIV, and Black/African Americans experience a higher burden of all STIs, including HIV.

In San Diego County, the overall rate for chlamydia has increased over the past two decades, with a 124% increase from 2000 to 2019. San Diego experienced substantial decreases in reported cases of chlamydia in 2020 and 2021 most likely due to reductions in routine screening as a result of the COVID-19 pandemic, consistent with observations also seen at the national and state levels. The highest rate of chlamydia infection in 2021 were seen in young women. Females 20-24 years of age in San Diego County are 2.5 times as likely to be diagnosed with chlamydia compared to males of the same age.

Gonorrhea cases have been steadily increasing in San Diego County over the last 10 years. After a slight decrease in 2020, gonorrhea rates in San Diego County increased by 31.2% between 2020 and 2021. The rate among males (312.8 per 100,000) was almost double the rate among females (161.3 per 100,000) in 2021. In addition, the rate of gonorrhea in Black/African American males was 5.2 times that of White males and 3.7 times that of Hispanic males.

In 2021, the syphilis rate (all stages) in San Diego County increased 20.8% compared to 2020. The rate of primary and secondary syphilis (the most infectious stages) increased by 12.7%. Males were 7.6 times as likely to be diagnosed with syphilis compared to females. Men who have sex with men (MSM) accounted for the majority (63%) of primary and secondary syphilis cases reported. Primary and secondary syphilis rates were 2.4 and 1.8 times higher among Black/African American and Hispanic males, respectively, than among White males. Among MSM with primary and secondary syphilis, 44% were co-infected with HIV. Additionally, the rate of early syphilis (primary, secondary, and early latent stages of infection) among females 15-49 years of age increased by 16%. There were 30 cases of congenital syphilis reported in San Diego County in 2021, a rate increase of 114% compared to 2020.

HIV diagnosis rates in San Diego County have decreased by around 50% from 2000 to 2021, aligning closely with California rates. The five-year average rate of HIV diagnosis from 2017-2021 among Black/African

Americans and Hispanics were 4.4 and 2.4 times, respectively, that observed among non-Hispanic Whites in San Diego County. In 2021, 57% of HIV cases in San Diego County were among MSM.

Discussion

Learning more about the populations disproportionately impacted by STIs and HIV and the factors that contribute to the unequal burden of disease among certain populations and communities are important first steps to reducing STIs and getting to zero HIV infections in San Diego County. The County must work with partners to address the issues that contribute to health disparities and health inequities by becoming more culturally competent, ensuring a variety of innovative and appropriate services are available and accessible, and by providing inclusive sexual health education. Discussions about sexual health must be normalized to reduce the stigma and negative perceptions associated with STIs and HIV. The County of San Diego has dedicated STI clinics that serve many of these vulnerable community members and many community clinics and organizations also work hard to help prevent and treat STIs and HIV, but more can be done, and more people need to be reached. As a community, we must develop interventions, address the social determinants of health that are impacting STI and HIV rates, and make changes that will empower people to improve their sexual health and advance health equity.

Addressing these rising STI rates and preventing complications resulting from these infections requires coordinated efforts of and a "call to action," by many segments of the community. These include public health officials, health care providers, academic institutions, and elected officials, as well as disproportionately impacted communities, including pregnant women; gay, bisexual, and other men who have sex with men; transgender and gender diverse persons; and youth. In addition, decision-makers, community leaders, academic institutions, researchers, and developers also have a role in the call to action. To reverse these trends and overcome the issues of health inequity, data must be used to prioritize intervention activities, implement evidence-based best practices, and ensure necessary services reach the populations that are most affected.

The County of San Diego will continue to focus on the health equity goals of the HIV, STD, and Hepatitis Branch to test for, treat, and prevent STI and HIV infections and engage the community to improve health outcomes through services and activities. Together, as a community, we must prioritize sexual health through innovation, expanded STI and HIV prevention and control efforts, and ensure every person has access to high quality clinical services without stigma.

Call to Action

There are initiatives and plans at the local, state, and national levels to address health disparities associated with sexual health and wellbeing.[28,1,2]

State and Local Public Health Departments

- Continue to monitor STI data to identify trends in case counts and rates of syphilis, gonorrhea, and chlamydia and associated health disparities.

- Continue to investigate syphilis cases, particularly cases among women of childbearing age and men with female sexual partners, to prevent serious health problems, congenital syphilis, and onward transmission.
- Support the expansion of syphilis screening of persons of childbearing potential to clinical and non-clinical settings that serve vulnerable populations who may not access prenatal health care or primary care in brick-and-mortar facilities. Such facilities include, but are not limited to, emergency departments, syringe service programs, correctional facilities, and programs for persons experiencing homelessness and the unsheltered population.
- Educate providers who serve people of childbearing potential, pregnant people, neonates, and infants about current California guidelines for syphilis screening in pregnancy and congenital syphilis prevention and management.
- Ensure that effective biomedical HIV and STI prevention strategies, including HIV PrEP and PEP and STI PEP (i.e., doxy-PEP) are available to all vulnerable populations who would benefit from them. Educate health care providers about these strategies and provide support to ensure incorporation of these interventions into the medical care of people who are vulnerable to STIs and HIV.
- Continue to seek out and use funding to address health disparities associated with chlamydia and gonorrhea among young women and prevent reproductive health complications due to untreated infection. Current programs that facilitate access to testing and treatment for chlamydia and gonorrhea among young women who experience barriers to testing in traditional clinical settings or are at an increased risk for infection include a chlamydia and gonorrhea screening program (ClaSP) for all females (and symptomatic males) in County juvenile detention facilities and a free home testing program (Don't Think, Know) for all females under 25 years of age in San Diego County.
- Continue to collaborate with the California Department of Public Health, San Diego County Office of Education, and local schools and districts to ensure that STI prevention education curricula are comprehensive and medically accurate and meet the standards established by the California Healthy Youth Act.
- Continue to provide training, technical assistance, and expert consultation to clinical and non-clinical providers who serve populations vulnerable to STIs and HIV.
- Ensure providers and populations vulnerable to STIs and HIV stay up to date and aware of critical information and updates related to STIs and HIV through the dissemination of regular reports, health alerts, and media announcements as appropriate.
- Continue to gather information on sexual orientation and gender identity and facilitate updates that allow us to better understand and address STIs and health disparities experienced by transgender communities.
- Establish regular Congenital Syphilis Morbidity and Mortality Reviews (CSMMR) in order to identify missed opportunities for congenital syphilis prevention and to increase the capacity of local healthcare systems and public health programs to prevent future cases.
- Continue to participate in a CDC-led multisite surveillance project that monitors trends in gonococcal drug susceptibility and informs CDC treatment guidelines for gonorrhea.
- Align local strategies and plans with state syndemic approaches to address STIs, HIV, and hepatitis.

Providers

- Provide a safe, inclusive, and welcoming space for all patients to discuss sexual health as a routine part of their healthcare and obtain necessary information to assess vulnerability to STIs and HIV and to determine if patients are experiencing a healthy and pleasurable sex life that is free of coercion.
- Provide prenatal care that includes STI testing for all pregnant women, regardless of age or race/ethnicity, and address barriers to receiving prenatal care among those likely to be at an increased risk for STIs/HIV.
- Screen patients for STIs based on state and national guidelines and recommendations from the United States Preventive Services Task Force (USPSTF)[3], including but not limited to the following:
    - Screen all pregnant women for syphilis at least twice during pregnancy: 1) at the first prenatal care visit or, if the patient cannot be confirmed to be receiving prenatal care, at any point of contact with the healthcare system and 2) during the third trimester (ideally between 28-32 weeks gestation), regardless of whether testing was performed during the first two trimesters.
        - Rescreen pregnant women with increased vulnerability to syphilis at delivery as well as anyone who was not appropriately screened earlier during pregnancy.
        - Before discharging a new mother or infant from the hospital, make sure that the mother has been tested for syphilis at least once during pregnancy or at delivery and, if positive, that the mother and infant are managed appropriately.
    - Screen all sexually active women aged 24 years and younger for chlamydia and gonorrhea.
    - Provide chlamydia and gonorrhea screening to all sexually active women aged 25 years and older with increased vulnerability to these infections.
    - Screen all sexually active gay, bisexual, and other MSM for HIV (unless already known to be living with HIV), syphilis, gonorrhea, and chlamydia at least once per year and more frequently if indicated by risk factors.
        - Screen for gonorrhea and chlamydia at all possible sites of infection (i.e., genitourinary, throat, and rectum) based on sexual practices.
    - Screen all transgender, non-binary, and gender diverse persons based on STI and HIV screening recommendations. Gender-based screening recommendations should be adapted based on anatomy.
        - Maintain awareness of symptoms consistent with common STIs and screen for asymptomatic infections based on the patient's sexual practices and anatomy.[4]
    - Screen all patients aged 13 to 65 years for HIV at least once, regardless of risk factors (this age range was determined based on USPSTF and CDC guidelines for routine HIV testing).
- Ensure prompt treatment of patients who have an STI, particularly pregnant women with syphilis, in accordance with CDC guidelines.
- Provide evidence-based STI and HIV prevention education to sexually active patients.
    - Provide information about HIV PrEP and PEP, as well as doxy-PEP, and link patients who are eligible for and would benefit from these biomedical prevention strategies to them.
- Educate pregnant women about congenital syphilis prevention: obtain early and continuous prenatal care, get tested for syphilis at least twice during pregnancy, and, if syphilis is identified

during pregnancy, follow provider recommendations for treatment and health department recommendations for partner management.

- Promptly report notifiable STIs and HIV to the local health department within the required timeframes.
- Provide routine human papillomavirus (HPV) vaccination to all youth at age 11 or 12 (or catch-up vaccination through age 26 for those not previously vaccinated) or to any patients 9-45 years of age who would benefit from the vaccine based on national guidelines.

Pregnant Women[5]

- If you are pregnant or may be pregnant, see a healthcare provider. If you are pregnant, get prenatal care early during pregnancy, even if you have had successful pregnancies in the past, and follow the recommendations of your healthcare provider.
- Make sure you get tested for syphilis at least twice during pregnancy and that you know the results of your test. Ask your doctor if you need to get repeat testing later in pregnancy or at delivery. If you test positive for syphilis during pregnancy, get treatment right away and encourage your partner(s) to get tested and treated as well.
- If you find out that a partner has syphilis while you are pregnant, let your healthcare provider know immediately.

Gay, Bisexual, and Other Men Who Have Sex with Men[6]

- Talk to your healthcare provider about your sexual health and, if you are sexually active, get tested for STIs at least once a year. If you have multiple or anonymous sex partners, you should get tested more frequently (e.g., every 3-6 months).
- Request gonorrhea and chlamydia testing at all possible sites of exposure.
- Use strategies to lower your chance of getting an STI or HIV if you are sexually active:
    - Get vaccinated against hepatitis A, B, and HPV.
    - Take medicine to prevent or treat HIV.
    - Take medicine to prevent STIs such as syphilis, gonorrhea, and chlamydia.
    - Practice safer sex.
        - Get to know someone before you have sex with them; talk honestly about STIs and get tested before having sex.
        - Reduce or limit the number of sex partners you have.
        - Use a condom to reduce risk of STIs and HIV. To help prevent condoms from breaking, use a water-based or silicone lubricant. Note that oil can damage latex condoms or make them break.
- Contact your healthcare provider right away if you find out a partner has an STI.

Transgender and Gender Diverse Persons[35,37]

- Find a healthcare provider you are comfortable with and talk to your healthcare provider about your sexual health. If you are sexually active, get tested for STIs at least once a year. If you have multiple or anonymous sex partners, you should get tested more frequently (e.g., every 3-6 months).
- Request STI testing for all possible sites of exposure.

- Get tested for HIV at least once and again as needed based on what is going on in your life.
- If you have had any gender-affirming procedures, continue to request STI testing based on anatomy.
    - Transgender men and non-binary persons with a cervix:
        - Get tested at least once a year for chlamydia and gonorrhea.
        - Get screened for cervical cancer based on current guidelines.[32]
- Use strategies to lower your chance of getting an STI or HIV if you are sexually active:
    - Get vaccinated.
    - Take medicine to prevent or treat HIV.
    - Practice safer sex.
        - Get to know someone before you have sex with them; talk honestly about STIs and get tested before having sex.
        - Reduce or limit the number of sex partners you have.
        - Use a condom to reduce risk of STIs and HIV. To help prevent condoms from breaking, use a water-based or silicone lubricant. Note that oil can damage latex condoms or make them break.
- If you are living with HIV and have sex with cisgender men and/or transgender women, get tested every year for syphilis, hepatitis C, chlamydia, and gonorrhea.[32]
- Contact your healthcare provider right away if you find out a partner has an STI.

Youth[7,8]

- Know your rights—Teens in California have legal rights to access confidential and affordable sexual and reproductive health care services, including STI prevention, testing, and treatment.
- Talk to a parent, teacher, or trusted adult about STI prevention to make sure you know how to protect yourself from STIs when you become sexually active.
- If you are sexually active, ask your healthcare provider about STI testing and which tests may be right for you.
    - If you are a sexually active female 24 years old or younger, get tested for chlamydia and gonorrhea every year. Not all infections cause symptoms and untreated infections can cause infertility and other complications.
- Talk to your partner(s) about STI prevention and testing.
- Use strategies to lower your chance of getting an STI or HIV if you are sexually active:
    - Get vaccinated. Vaccines are a safe and effective way to prevent hepatitis B and HPV.
    - Reduce or limit the number of sex partners you have.
    - Practice mutual monogamy (agree to only have sex with one person who agrees to only have sex with you). Make sure both people have recently tested negative for STIs.
    - Use a latex condom correctly and consistently every time you have anal, vaginal, or oral sex. (Synthetic non-latex condoms are also available for people who have a latex allergy; natural membrane/lambskin condoms should not be used as STIs can pass through the tiny pores.)
- If you find out that you have an STI, get treatment right away. If you find out a partner has an STI, let your healthcare provider know immediately.

Decision-Makers and Community Leaders

- Reduce stigma by talking about sexual health and normalizing STI and HIV prevention, testing, and treatment as an important part of overall health. Help people understand that STIs can affect anyone and provide information about STI and HIV trends and prevention.
- Ensure that STI and HIV prevention, testing, and treatment resources are available and are equally accessible to all populations.
- Stay up to date on STI and HIV trends in your communities and what is being done by the local health department and community organizations to address them.
- Ensure that policies are supportive of all populations seeking and accessing primary and prenatal healthcare, and STI and HIV prevention, testing, and treatment services.

Academic Institutions, Researchers, and Developers

- Develop and bring to market novel syphilis tests to directly detect the causative bacteria and to enable rapid diagnosis of adult and congenital syphilis.
- Develop and bring to market new antimicrobial agents to treat gonorrhea.
- Conduct research on effective vaccines for STIs.
- Continue research on antibiotic prophylaxis to prevent STIs.
- Conduct research on new treatment approaches for syphilis.
- Ensure that electronic health records (EHRs) support and facilitate screening and treatment for STIs and capture data regarding a patient's sexual history.
- Continue research and inform the market on vaccines and the best HIV prevention, testing, and treatments options for vulnerable populations.
- Ensure that research study participants are representative of all populations who are affected by STIs and HIV.

CONCLUSION

In general, there has been an increase in sexually transmitted infections, over the last two decades, from 1990 to 2020. Compared to pre-pandemic 2019, cases of chlamydia decreased by 21%, gonorrhea increased by 23%, syphilis (all stages) increased by 12%, and HIV cases remained level in 2021.

The HIV, STD, and Hepatitis Branch works closely with state and federal governments to address sexually transmitted infections. Such initiatives and plans must include a health equity approach, working with the healthcare system, providers, academic institutions, researchers, decision-makers, and community leaders. Populations that are most affected by STIs need to be prioritized. These groups include pregnant women; gay, bisexual, and other MSM; transgender and gender diverse persons, and youth.

The various PHS initiatives and workplans of HSHB support the branch's efforts to decrease sexually transmitted infections. Equally important is to work towards a health equity goal that addresses HIV, as it has the most significant impact on those populations at risk. As such, the HSHB goal is to "prevent HIV infection and address rising STI rates." The specific objective is to reduce the number of new HIV cases in San Diego County by 90% (from 422 in 2017/baseline to 42 by 2030).

Health Equity: Addressing Rising Rates of STIs and Preventing HIV Infections

INTRODUCTION

The HIV, STD, and Hepatitis Branch (HSHB), of the County of San Diego Health and Human Services Agency (HHSA) Division of Public Health Services is dedicated to improving health outcomes in communities and populations disproportionately impacted by HIV and sexually transmitted infections (STIs). In collaboration with community partners, HSHB works to identify people with HIV and STIs so they can be informed and linked to care and treatment services. HSHB also aims to reduce HIV and STI transmission through a variety of community-based programs focused on prevention.

The national End the HIV Epidemic strategy in the U.S (EHE) aims to reduce new HIV infections nationwide by 90% by 2030.[9] The EHE Strategic Plan is a plan for a statewide collaborative, harm reduction approach to preventing and treating HIV, hepatitis C virus, and STIs in California.[10] The County of San Diego's Getting to Zero initiative aims to end the HIV epidemic and eliminate HIV as a threat to public health in the region.[11] In the County of San Diego's Public Health Services Strategic Plan for HSHB, the health equity goals align with these national, state, and local initiatives, which include:

1. **Test:** Identify all persons infected with HIV and STIs so that they can be informed and linked to care.
2. **Treat:** Link all persons living with HIV or STIs to treatment services that follow national guidelines.
3. **Prevent:** Link all persons at risk for HIV infection and STIs to prevention resources.
4. **Engage:** Mobilize community efforts to achieve collective impact in reducing HIV and STI transmission.
5. **Improve:** Continually seek to improve outcomes for all services and activities.[12]

The need to identify and address social determinants of health in service accessibility and availability is paramount to reducing and ending STI and HIV infections. This paper discusses populations that are most impacted by STIs and HIV. Methods, data, and recommendations are presented to address health disparities by race/ethnicity, gender, age, and behavior. Sufficient data on transgender and gender diverse persons are not available currently, but it is worth noting that transgender persons often experience high rates of stigma and barriers to care and are at an increased risk for STIs and HIV. Continued efforts should be made to reach and facilitate care in the transgender community.

The focus of this paper is to present national, state, and local data for selected STIs: chlamydia, gonorrhea, syphilis, and HIV. This paper also focuses on health disparities (disease or conditions that affect one population more than the other), that disproportionately impact STI and HIV rates among certain populations. There are national, state, and local initiatives and plans aimed at addressing the syndemics (i.e., two or more concurrent epidemics that interact) of HIV, STIs, and viral hepatitis.

Sexually Transmitted Infections, Human Immunodeficiency Virus, and Health Equity

Health equity is a public health tenet that all persons have the right to attain the highest level of their health potential. To understand and address the growing and unequal burden of STIs and HIV, we need to support local communities and minority populations to increase access to care, reduce stigma, and focus efforts and interventions on addressing these issues.[13]

Achieving a high level of health at the individual or population level is reliant on a combination of factors, including nonmedical social and economic factors, that influence health outcomes. Factors include the conditions in which people are born, grow, live, work, and age, among others, and are referred to as social determinants of health. These differ for everyone but play an important role in shaping daily life and have a direct impact on health.[14]

Specific communities and populations are disproportionately affected by STIs and HIV. Geography, age, and socioeconomic status are intertwined with social determinants of health and often contribute to health disparities and disproportionate rates of infections. Limited access to services, increases in behaviors that could increase risk for infections, and distrust of the health care system are all associated with high STI and HIV rates. Poverty, lack of insurance, unstable housing, and underemployment are also known to contribute to increased STI and HIV rates.[24]

Understanding and addressing factors that influence health equity in the populations most vulnerable to HIV and STIs is key to overcoming rising STI rates. While the spread of STIs is a complex issue, factors driving STI rate increases include barriers to medical care, lack of sexual health education, increases in number of sexual partners, decreased condom use, stigma, and social norms associated with sex and sexuality.[15] Increases or improvements in testing procedures and reporting protocols also likely contribute to increases in reported STIs, although increased transmission and disease burden are also occurring.

The resurgence and ongoing rise in congenital syphilis cases is of particular concern and may reflect an increase in barriers to accessing prenatal care for those at most risk for acquiring and transmitting STIs during pregnancy. Congenital syphilis is a preventable condition if routine medical care, including recommended testing and treatment, is received during pregnancy.[15]

OVERVIEW OF SEXUALLY TRANSMITTED INFECTIONS

Sexually transmitted infections (STIs), also known as sexually transmitted diseases (STDs), are predominately spread through vaginal, anal, and oral sex. They can also be spread through intimate physical contact, or may be passed from a pregnant person to a fetus or infant during pregnancy or delivery.[16]

Although there is a growing concern for antibiotic resistance, specifically for gonorrhea, bacterial STIs can be treated and cured with antibiotics; timely treatment is important as complications can occur if there are delays in diagnosis and treatment. While bacterial STIs are curable, rates continue to increase at all levels; in San Diego County, more than 28,000 combined cases of chlamydia, gonorrhea, and syphilis were reported in 2021.[17] Similarly, the most recent California data from 2020 showed over 280,000 combined

cases, and the Centers for Disease Control and Prevention (CDC) indicated that in 2021 more than 2.5 million combined cases were reported.[18,19,20]

Human immunodeficiency virus (HIV) is a viral STI transmitted primarily through anal or vaginal sex, or by sharing equipment used to prepare or inject drugs. HIV is treatable and preventable, although there is currently no known cure. However, more tools than ever are available to prevent HIV transmission and prevent negative health outcomes from HIV disease[21]. Those vulnerable to HIV can protect themselves by taking HIV medicines as pre-exposure prophylaxis (PrEP) and post-exposure prophylaxis (PEP). People who are living with HIV can take medications to achieve an undetectable level of virus so they do not suffer from the negative health effects of HIV and they cannot transmit the virus to others. Additional strategies for prevention include never sharing needles, using condoms correctly for every sexual encounter, and abstinence (i.e., not having sex).

In 2020, there were 134,381 people living with HIV in California and more than 1.2 million people living with HIV in the United States.[22,23] As of December 31, 2020, there were 14,061 people in the County of San Diego living with diagnosed HIV and an additional 1,392 persons estimated to be living with an undiagnosed HIV infection. The County estimates that between 10,000 to 15,000 residents are vulnerable to HIV infection.[24]

Chlamydia

Chlamydia, the most common reportable STI in the United States, is caused by an infection from the bacteria *Chlamydia trachomatis*. Chlamydia is spread through sexual contact with the vagina, penis, mouth, or anus.

In people with a vagina and cervix, untreated chlamydia can cause serious, chronic reproductive health issues, including pelvic inflammatory disease (PID), ectopic pregnancy, infertility, and chronic pelvic pain. Like many other STIs, chlamydia poses a threat to newborn babies during childbirth if an untreated or improperly treated chlamydia infection is present during pregnancy.[25]

Chlamydia is considered a “silent” infection as most infected people do not develop symptoms; therefore, screening of vulnerable populations is critical to detect and treat chlamydia and prevent negative health outcomes. CDC estimates that only about 10% of men and 5-30% of women with a confirmed chlamydia infection are symptomatic. While CDC reported more than 1.6 million people were infected with chlamydia in 2021 alone, underreporting is extensive as most people never show symptoms and thus do not seek testing.[2,4] Further, decreases in routine testing due to the Coronavirus Disease 2019 (COVID-19) pandemic resulted in fewer reported chlamydia infections from 2019 to 2020 and 2021. Estimates show that 1 in 20 sexually active young women between 14-24 years of age has chlamydia.[4] Screening remains the most effective tool in identifying new infections and all sexually active women under 25 years of age and those older than 25 with risk factors are encouraged to get screened yearly.[4]

Gonorrhea

Gonorrhea is caused by an infection from the bacterium *Neisseria gonorrhoeae* (commonly called gonococcus). Mucous membranes of the reproductive tract such as the cervix and uterus, as well as the

urethra, are susceptible to infection from this bacterium. Mucous membranes of the rectum, throat, mouth, and eyes are also vulnerable.[7]

Diagnosing gonorrhea in a timely manner is a challenge for health care providers. While symptoms can appear one to fourteen days after infection, a large proportion of people, regardless of gender, who become infected are asymptomatic.[26] When symptoms do appear for people with a vagina and cervix, they are often misdiagnosed as a bladder or vaginal infection.[11]

If gonorrhea is not treated, it can cause serious health problems. Like chlamydia, untreated cervical gonorrhea can cause PID, ectopic pregnancy, infertility, and chronic pelvic pain. If someone has an infection while pregnant and doesn't receive proper treatment, it can be passed to the baby during childbirth. Gonorrhea is considered a serious threat to newborns and can cause vision loss, infection of the joints, or a blood infection which can be life-threatening. Untreated gonorrhea in people with a penis can cause epididymitis, which in rare cases may lead to infertility.[11]

A Troubling Trend – Gonorrhea and Antibiotic Resistance

Over the last few decades, antibiotic resistance has become a major public health concern, and CDC has designated *N. gonorrhoeae* (gonococcus) as one of the bacteria that poses the highest threat of resistance. Historically, gonococcus has developed resistance to most of the major classes of antibiotics used to treat it, and currently only one class of antibiotics reliably cures gonorrhea. Due to the bacteria's increasing ability to resist antibiotics used to treat the infection, CDC has made multiple revisions to gonorrhea treatment recommendations over time.

In 1986, in an effort to monitor trends in gonorrhea antibiotic resistance and ensure recommendation of the most effective antibiotics for treatment, CDC developed a collaborative surveillance system, the Gonococcal Isolate Surveillance Project (GISP). The County of San Diego has been participating in GISP since the inception of the project.[27] Three other counties in California also participate in GISP: Los Angeles, Orange, and San Francisco. Participating STI clinics send gonorrhea bacteria isolates to regional laboratories for antibiotic resistance testing. These data are used to inform CDC's STI Treatment Guidelines and updates to gonorrhea treatment recommendations, the last of which occurred in late 2020 and early 2021.[12]

Gonorrhea has become resistant to different antimicrobial treatments over the years, and developing resistance to currently deployed antibiotics will greatly diminish the ability of medical systems and public health systems to successfully treat it. Continued monitoring of resistance and development of new treatments are critical.[28] While there are new antibiotics that are being studied for gonorrhea treatment, they are not available yet for clinical use, and an injectable antibiotic (ceftriaxone) is the only antibiotic that remains highly effective for treating different types of gonorrhea infections (i.e., urethral, cervical, throat, and rectal infections).

Syphilis

Syphilis is caused by a bacterium called *Treponema pallidum* and is classified as a genital ulcerative disease. Syphilis is transmitted through direct contact with a syphilitic sore (known as a chancre) and wart-

like lesions that occur several weeks after healing of the sore(s).[29] Chancres can be found on or around the penis, vagina, anus, rectum, and lips or mouth.[14] They are also often painless and may go unnoticed if they are located in an area that is not easily visible. While sexual contact remains the primary mode of infection, congenital syphilis, which is when the infection is transmitted to a baby during pregnancy or delivery, is now a public health crisis in the United States, California, and San Diego County.

Symptoms of syphilis usually appear 21 days after exposure, but incubation can range from 10-90 days. If left untreated, it progresses in distinct stages that can last weeks, months, or years: primary, secondary, latent (early or late), and tertiary. Primary and secondary syphilis are associated with symptoms and indicate recent infection.[14] Early latent syphilis is a distinct phase that describes an asymptomatic patient whose infection occurred within the 12 months prior to diagnosis.[14] While the potential to pass syphilis to sexual partners is limited to the first 12 months after infection, without treatment people with syphilis for more than 12 months (late latent syphilis) are at risk for serious complications, over years to decades, affecting the musculoskeletal, cardiovascular, and central nervous systems. At any time during infection, syphilis can involve the central nervous system, including the eyes, and this condition, known as neurosyphilis, can result in permanent visual loss and other problems.

Congenital Syphilis

Congenital syphilis is a serious threat to newborns and is an increasing public health concern. [30] Symptoms or conditions of congenital syphilis include rash, jaundice (yellowing of the eyes indicating liver function decline), skeletal abnormalities, bone deformities, and neurologic impairment. It can also cause miscarriage, prematurity, low birth weight, stillbirth, or death shortly after birth.[15] Unlike transmission of syphilis between adult sex partners, which is limited to the first 12 months of infection, congenital syphilis can occur with any stage of syphilis in pregnancy.

CDC indicates that approximately 40% of babies born to people with untreated syphilis result in stillbirth or death shortly after birth due to the infection.[31] Congenital syphilis rates have gradually increased across the country, including San Diego County, each year since 2013.[2,32] The congenital syphilis rate in the U.S. in 2013 was 9.2 cases per 100,000 live births, compared to 77.9 cases in 2021.[2,17] In San Diego County, rates increased from 6.9 to 76.8 over that same time period.[2] While cases of congenital syphilis are increasing among all populations, Hispanic and Black/African American populations are disproportionately impacted.[33]

Given that congenital syphilis is almost completely preventable through timely detection and treatment, these increases highlight the importance of prenatal care that includes STI testing for all pregnant people, regardless of age or race/ethnicity, as well as the need to address barriers to accessing prenatal care among those likely to be at an increased risk.[15] In 2020, the California Department of Public Health (CDPH) expanded guidelines for syphilis screening during pregnancy and at delivery to address the significant increases in congenital syphilis statewide; all pregnant persons should be tested for syphilis at least twice during pregnancy: 1) at their first prenatal visit, and 2) early in the third trimester (between 28-32 weeks). Additional testing at delivery is recommended for those at increased risk and/or who were not tested during their third trimester.[34]

Men Who Have Sex With Men, STIs, and HIV Co-Infection

People who have an STI are more likely to get HIV as the behavior related to one infection (not using condoms, having multiple or anonymous sex partners) also puts them at risk for other infections. Among cisgender men who have sex with men (MSM) who have an STI, there is a very high risk of getting diagnosed with HIV in the future; the risk is highest for those diagnosed with primary or secondary syphilis, although studies also demonstrate that rectal gonorrhea, chlamydia, and herpes are associated with high risk of HIV infection.[1] In 2021, an estimated 44.0% of MSM with symptomatic syphilis in San Diego County were concurrently infected with HIV.[2] The percentage of MSM co-infected with HIV in San Diego County aligns closely with the national percentage in 2021 of 44.8%.[4] The presence of open chancres on genitalia or the mouth greatly increases the likelihood of transmitting or acquiring HIV if it is present. Screening patients with syphilis or rectal STIs for HIV is vital, especially for MSM, who have been disproportionately affected by the HIV epidemic as described below. An STI diagnosis presents an opportunity to prevent the spread and continued impact of HIV in this population. HIV PrEP is recommended for MSM diagnosed with an STI who are not living with HIV but remain vulnerable to HIV infection. STI PEP with doxycycline (i.e., doxy-PEP) is an emerging STI prevention strategy for chlamydia, gonorrhea, and syphilis that has been shown to be effective for MSM and transgender women. For those living with HIV, an STI diagnosis is an opportunity to confirm receipt of HIV medical care and treatment and viral suppression, which prevents negative health outcomes from HIV and prevents transmission.

Human Immunodeficiency Virus (HIV)

Human Immunodeficiency Virus (HIV) is a life-threatening virus that attacks CD4 T-cells, a type of white blood cell or lymphocyte, once the body becomes infected. T-cells, also called CD4s or T-helpers, are at the top of the cascade of the immune response to any infection. HIV invades these T-cells, destroying them, which in turn prevents the immune response. Without consistent treatment, the T-cell count will decrease until the body can no longer fight against infection. Without adequate levels of these T-cells, infections and infection-related cancers are likely, producing a condition called acquired immunodeficiency syndrome (AIDS), which is life threatening.[16]

The body does not have the ability to rid itself of HIV. Even with proper treatment HIV remains present in the body for life. Therefore, treatment for HIV aims to reduce the virus's ability to replicate (which it does through invading T-cells, hijacking the cells' manufacturing processes forcing the cells to make new HIV particles, and destroying them by bursting out of the cell). Reducing these cycles of replication and the amount of virus in the blood (also known as the viral load) is the primary goal in treatment of HIV, aiming to keep the number of T-cells in the body high to keep the body's ability to fight off infection. Advances in HIV prevention and treatment over the course of the epidemic have allowed people to avoid AIDS and life-threatening infections associated with it and increased not only the life expectancy but also the quality of life of people living with HIV. HIV PrEP and PEP are powerful tools to help protect patients who are vulnerable to HIV; ensuring that these highly effective prevention methods reach everyone who would benefit from them is of utmost importance.

The additional benefit of HIV treatment is that it also reduces the risk of HIV being transmitted to others. Research has demonstrated that people who are living with HIV, are taking HIV medications, and have

had an undetectable viral load for at least 6 months do not transmit HIV to others.[35,36] This concept, known as Undetectable Equals Untransmittable (U=U), or Treatment as Prevention (TasP), is based on multiple large research studies in different populations that included multiple episodes of sex not involving a condom and showed no transmission of HIV from people with undetectable viral loads (for at least 6 months) to their HIV-negative sex partners.[35,36] These studies, (The HIV Prevention Trials Network 052 (HPTN 052), PARTNER, Opposites Attract, and PARTNER2 studies) have shown that treating everyone who is living with HIV is a prevention strategy and can reduce the stigma around HIV that prevents many people living with HIV from accessing the services they need.[35,36]

METHODS

The significant rates of STIs and HIV reported among certain populations highlight health disparities that have persisted over time. Reporting of these infections is required based on California mandates for surveillance and outbreak detection purposes. Monitoring data allows for identification and monitoring of trends in affected populations, increases knowledge of local disease transmission, and provides information that can be used to guide health care service delivery, as well as prevention and education efforts. In the County of San Diego, cases of chlamydia, gonorrhea, and syphilis are reported to the STD Surveillance Unit in the HIV, STD, and Hepatitis Branch (HSHB) of Public Health Services. HIV/AIDS cases are reported to the HIV Epidemiology Unit in the Epidemiology and Immunization Services Branch of Public Health Services.

Sexually Transmitted Infections

In California, certain STIs are reportable to local health departments under Title 17 (17 CCR, §2500, 2502, and 2505) of the California Code of Regulations (CCR). The County of San Diego's STD Surveillance Unit collects, maintains, analyzes, and disseminates data on chlamydia, gonorrhea, syphilis, and chancroid. For most reportable STIs, California has a dual reporting mandate, which means that both laboratories and healthcare providers are required to report positive laboratory results as well as confirmed, probable, and suspected cases of these infections to the local health department. As of October 1, 2019, Title 17 was amended to remove the healthcare provider reporting mandate for chlamydia; laboratories, however, are still required to report *C. trachomatis* infections to local health departments.

The County of San Diego uses the California Reportable Disease Information Exchange (CalREDIE) system to conduct surveillance of chlamydia, gonorrhea, syphilis, and chancroid. CalREDIE is a secure state-wide electronic system implemented and maintained by CDPH. Laboratory reports and Confidential Morbidity Reports (CMRs) are submitted to HSHB via electronic laboratory reporting (ELR), a one-way provider portal within CalREDIE, by fax or by phone. Syphilis, including congenital syphilis, and select gonorrhea cases are investigated by Communicable Disease Investigators (CDIs), also known as Disease Intervention Specialists (DIS). CDIs conduct standardized case interviews, confirm correct case diagnosis and treatment, and ensure that potentially exposed partners receive appropriate testing, treatment, and prevention services (i.e., partner services).

This report includes data derived from demographic, laboratory, clinical, and case investigation data for reported STIs in San Diego County. STI cases were counted by calendar year based on the episode date, which is the earliest date of the following (if the date exists): date of onset, date of diagnosis, specimen

collection date, date of death, or date received. STI rates were calculated using population estimates prepared by the San Diego Association of Governments (SANDAG). Congenital syphilis counts include confirmed and probable congenital syphilis cases including syphilitic stillbirths. Rates of congenital syphilis were calculated using the number of live births provided by the Office of Vital Records and Statistics of the County of San Diego.

In this section of the report, gender represents a person's reported gender and may not coincide with the gender identity of the individual. Transgender, genderqueer, and non-binary individuals were included in the gender categories representing their sex assigned at birth to maintain confidentiality. Cases with missing gender information, or the gender reported as "unknown," "identity not listed," or "declined to answer," and missing sex assigned at birth information were excluded from calculations involving gender.

Race and ethnicity information is limited for chlamydia and gonorrhea. Cases with missing race/ethnicity information were excluded from the calculations involving this variable. Due to enhanced syphilis surveillance, the race/ethnicity data for syphilis cases are more complete and are more likely to represent the true burden of the infection by race/ethnicity.

At the time of this publication, the 2021 STD surveillance data were the latest available national-level data published by the Division of STD Prevention, National Center for HIV, Viral Hepatitis, STD, and TB Prevention of CDC. The latest available state-level data were from the 2020 STD Annual Report published by the CDPH STD Control Branch.

Human Immunodeficiency Virus

California state law requires laboratories (17 CCR §2643.10) to report HIV viral loads (detectable and undetectable), CD4 T-cell counts and percentages, and any test result indicative of HIV infection to local health jurisdictions and to the CDPH Office of AIDS (OA). In addition, health care providers are required to report all newly diagnosed cases of HIV disease. Most HIV disease cases reported from the County of San Diego to the CDPH OA are initially identified from laboratory results. Health care providers who diagnose HIV cases are also required to report these cases (17 CCR §2643.5) by traceable mail, telephone, or secure fax.

Laboratory results received through ELR are processed by the CDPH OA. During this process, lab results are matched to the enhanced HIV/AIDS Reporting System (eHARS), the HIV disease case database maintained by the CDPH OA. Laboratory results from people already in the system are uploaded to eHARS. Laboratory results that do not match a case in eHARS are flagged. All laboratory results are made available to local health jurisdictions, in this case the County of San Diego HIV Epidemiology and Surveillance Program (HESP), through the STD/HIV Local Interventional Surveillance Access Electronic Laboratory Reporting Disposition Interface (LEDI). Laboratory results that have matched to eHARS are included in the LEDI system and those that do not match are flagged in LEDI for evaluation by HESP staff.

Lab results that are determined to be from individuals with other conditions with no indication of HIV disease are dispositioned as "not a case." For example, there are many medical specialties that use CD4 counts to monitor diseases, including neurology, rheumatology, hematology, and oncology. Undetectable viral loads from patients being cared for by transplant providers are also dispositioned as "not a case." Undetectable viral load results from patients known to be taking PrEP for the prevention of HIV infection

are also dispositioned as "not a case." Lab results that are flagged in LEDI but cannot be dispositioned as "not a case" are assigned to HESP staff for investigation.

HESP staff investigate possible HIV disease cases by first confirming that the individual actually has HIV infection. Once the infection is confirmed, demographic, risk, and other data are collected and entered into the Adult Case Report Form (CDPH 8641A) or the Pediatric Case Report Form (CDPH 8641P). Information is gathered from medical records, from the Health Information Exchange (a secure system of shared health information), and through direct communication with health care providers. The Adult Case Report Form goes through a quality assurance process and is then entered into CalREDIE. The HIV reporting section of CalREDIE provides a conduit for importing data on HIV disease cases into eHARS.

CDPH OA provides HESP a data file from eHARS on a quarterly basis. These data files are used for analysis to describe the HIV epidemic in San Diego County and respond to data requests internal and external to the County of San Diego. Data are processed to remove extraneous variables and produce calculated variables needed for local analysis. These calculated variables include Health and Human Services Agency region of residence at diagnosis, time from HIV to AIDS diagnosis in those who experienced disease progression, age group, and more. Analyses made using the eHARS quarterly data sets include descriptive statistics of demographic and risk category variables, calculation of rates, and responses to data requests using SPSS or SAS.

RESULTS

The following is a review of the data through a health equity lens to inform and support activities and interventions to reduce and eliminate the transmission of STIs and HIV in San Diego County. Local San Diego County STI data can be found on the HSHB Reports and Statistics web page and HIV data are available through the HESP Reports and Statistics web page.

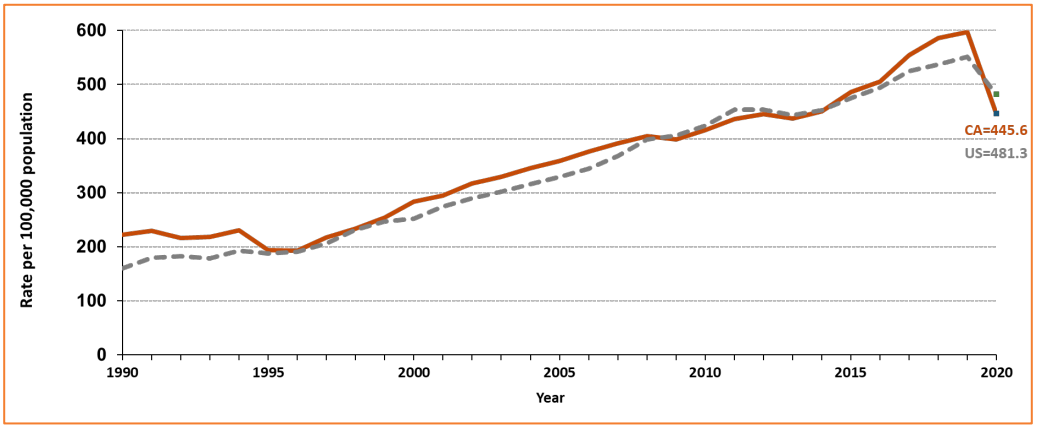
Sexually Transmitted Infections

Chlamydia

Nationally, chlamydia is the most commonly reported STI, with the highest rate of infection reported among women. In 2021, almost 1.1 million of the 1.6 million newly reported infections occurred in women at a rate of 628.8 cases per 100,000 females.[37] The most significant racial disparities were observed among Black/African American men and women, with rates that were 7.3 and 5.1 times those of non-Hispanic White persons of the corresponding gender, respectively.[4] Similar to national trends, chlamydia in San Diego County is the most commonly reported STI. In 2021, the overall rate of chlamydia in San Diego County was 545.2 cases per 100,000.[2]

In California, the overall chlamydia rate has trended closely with the U.S. rate, with a rate increase of 169% from 1990 to 2020 (***Figure 1***). Chlamydia rates decreased nationwide in 2020, likely due to impacts of the COVID-19 pandemic on routine screening.[3,38]

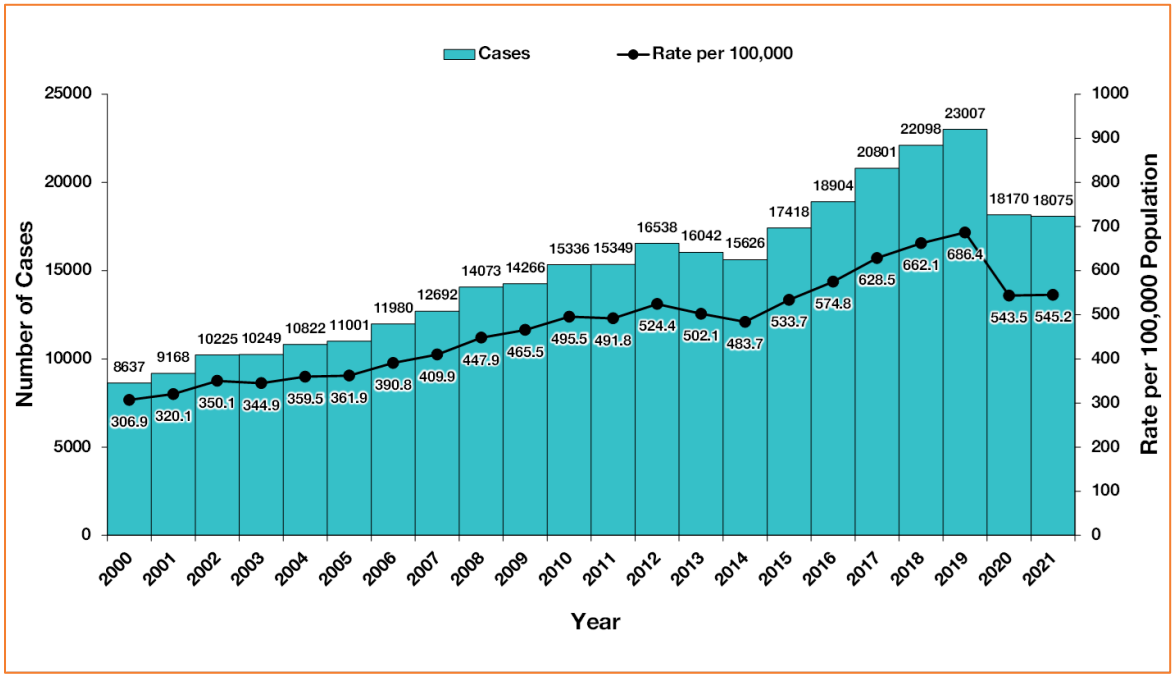
Figure 1: Chlamydia, California versus United States Incidence Rates, 1990–2020.



Source: CDPH 2020 STD Surveillance Report: Sexually Transmitted Diseases Data (ca.gov)

In San Diego County, the overall rate for chlamydia has generally increased over the past two decades, with a 124% increase from 2000 to 2019. After a substantial decrease in 2020 (20.8% from 2019 to 2020), the rate increased by 0.3% from 2020 to 2021 (***Figure 2***).[2] The decrease in reported cases of chlamydia in 2020 and 2021 was most likely due to reductions in routine screening and is consistent with observations at the national and state levels.

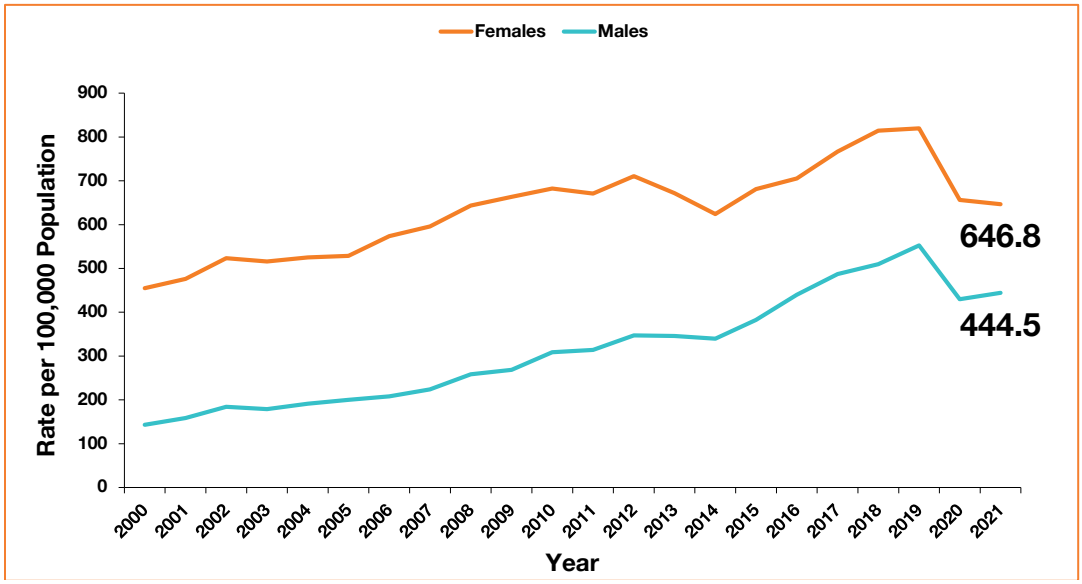
Figure 2: Chlamydia Cases and Rates by Year, San Diego County, 2020-2021.



Source: 2021 Annual STD Data Slides: Reports and Statistics (sandiegocounty.gov)

Chlamydia infections disproportionately affect females. In San Diego County, females are 1.5 times more likely to be diagnosed with chlamydia than males (***Figure 3***).

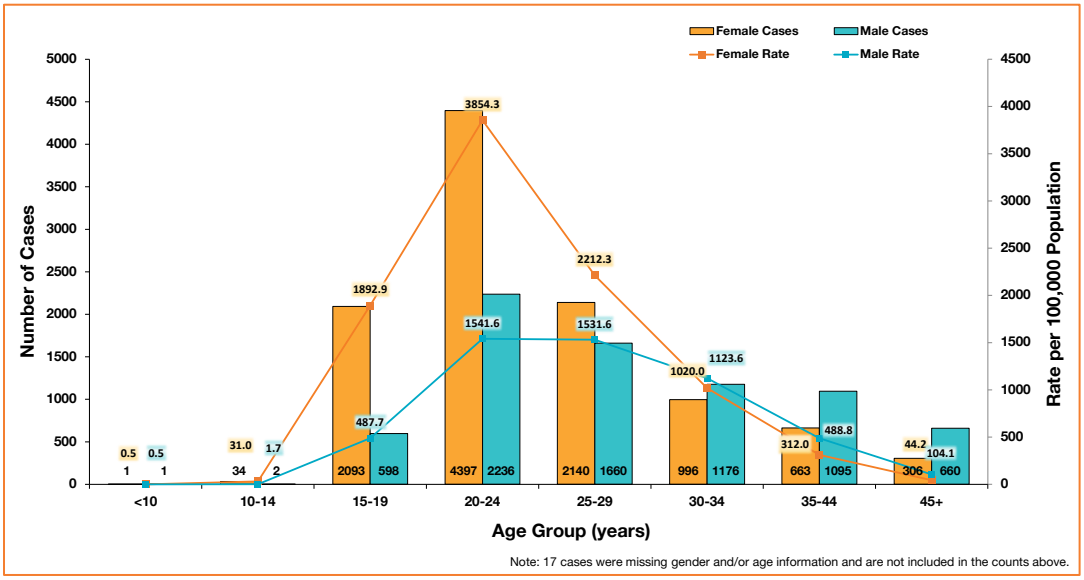
Figure 3: Chlamydia Rates by Gender and Year, San Diego County, 2000-2021.



Source: 2021 Annual STD Data Slides: Reports and Statistics (sandiegocounty.gov)

Young women have the highest rate of infection. Females 20-24 years of age in San Diego County are 2.5 times as likely to be diagnosed with chlamydia compared to males of the same age (***Figure 4***).

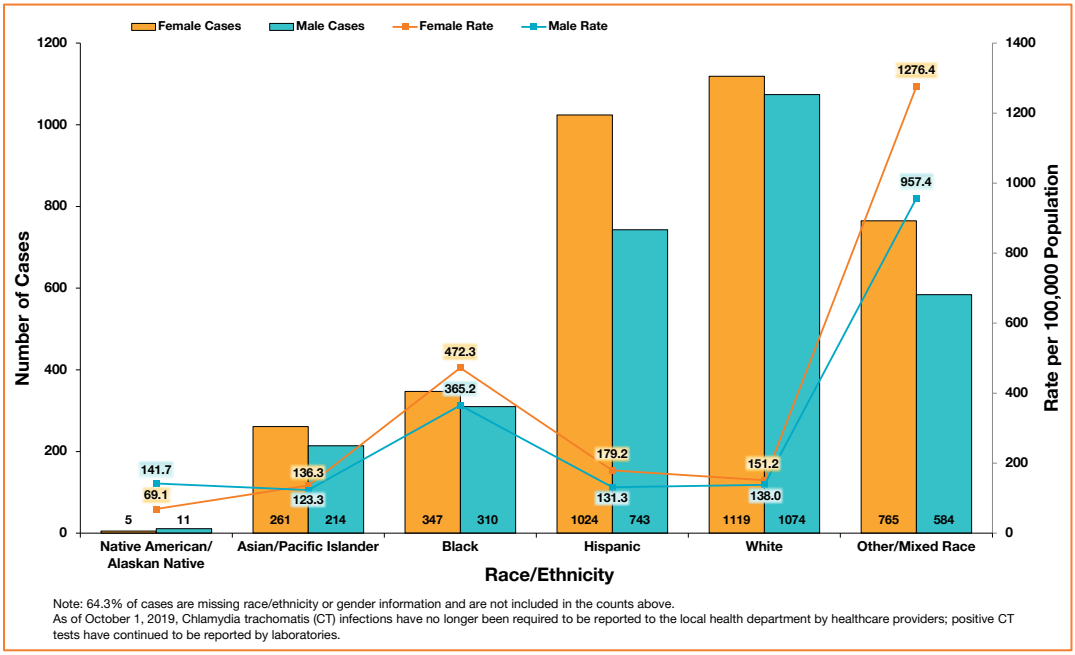
Figure 4: Chlamydia Rates by Gender and Age, San Diego County, 2021.



Source: 2021 Annual STD Data Slides: Reports and Statistics (sandiegocounty.gov)

Based on very limited race/ethnicity data, rates of chlamydia are disproportionally higher among Black/African American and Other/Mixed Race women and men than those of other racial and ethnic groups (***Figure 5***). However, higher rates for Other/Mixed Race may be affected by the nature of reporting and should be interpreted with caution.

Figure 5: Chlamydia Cases and Rates by Gender and Race/Ethnicity, San Diego County, 2021.



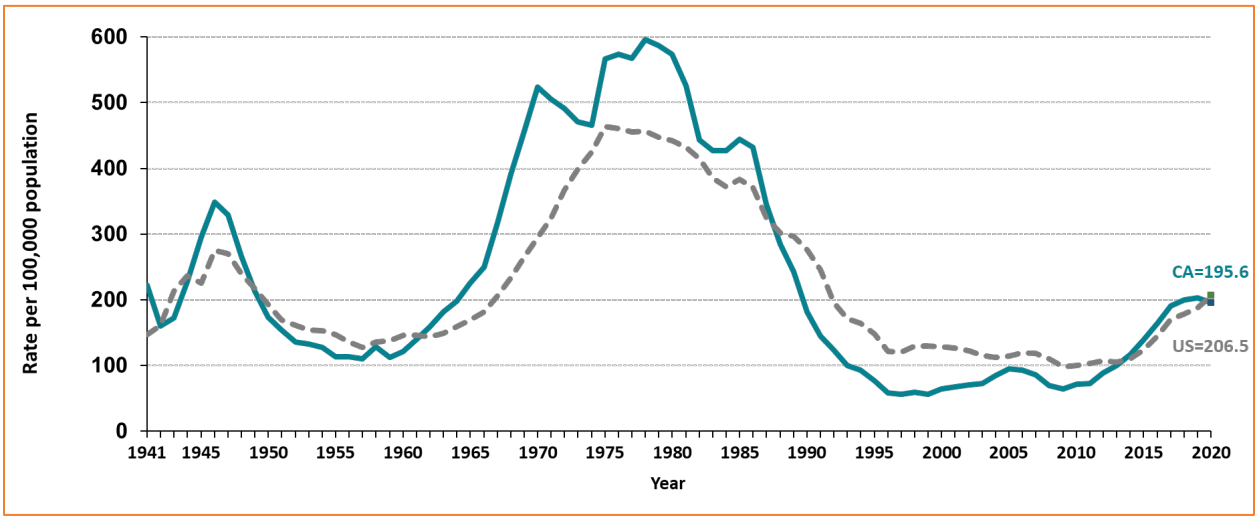
Source: 2021 Annual STD Data Slides: Reports and Statistics (sandiegocounty.gov)

Gonorrhea

In 2021, gonorrhea was the second most common STI in the United States.[12] According to CDC, a total of 710,151 cases of gonorrhea were reported nationwide in 2021, a 28% increase from 2017. In San Diego County, gonorrhea cases have been steadily increasing over the last 10 years. Following a slight decrease in 2020, gonorrhea cases increased by 30.1% from 6,060 cases in 2020 to 7,884 cases in 2021. Gonorrhea disproportionately affects males, particularly Black/African American males. In San Diego County, the rate of gonorrhea in males is 1.9 times the rate in females and increased by 35.6% between 2020 and 2021. The rate of gonorrhea in Black/African American males is 5.2 times that of White males and 3.7 times that of Hispanic males.[2,4]

According to CDPH, the overall rate of gonorrhea in California surpassed the rate for the U.S. in the last several years (prior to the slight decrease in 2020), as depicted in ***Figure 6*** below.[3]

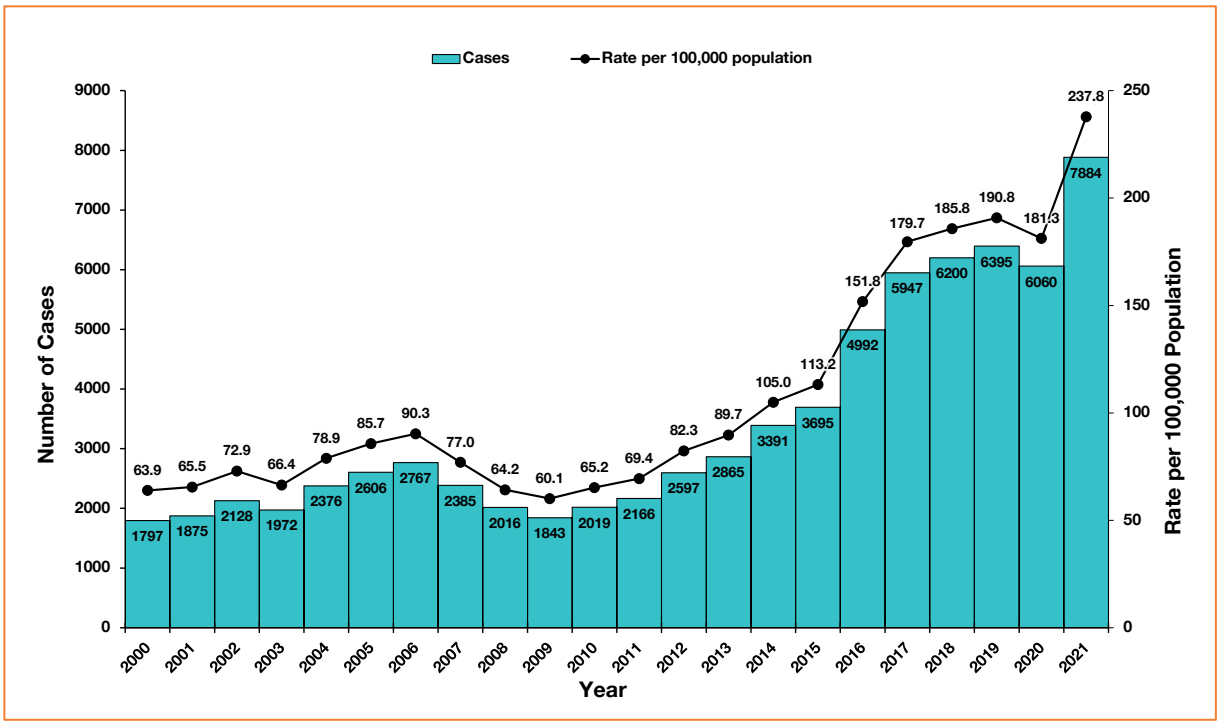
Figure 6: Gonorrhea, California versus United States Incidence Rates, 1941–2020.



Source: CDPH 2020 STD Surveillance Report: Sexually Transmitted Diseases Data (ca.gov)

Figure 7 displays the overall rate of gonorrhea in San Diego County, which increased by 31.2% from 181.3 cases per 100,000 in 2020 to 237.8 cases per 100,000 in 2021.

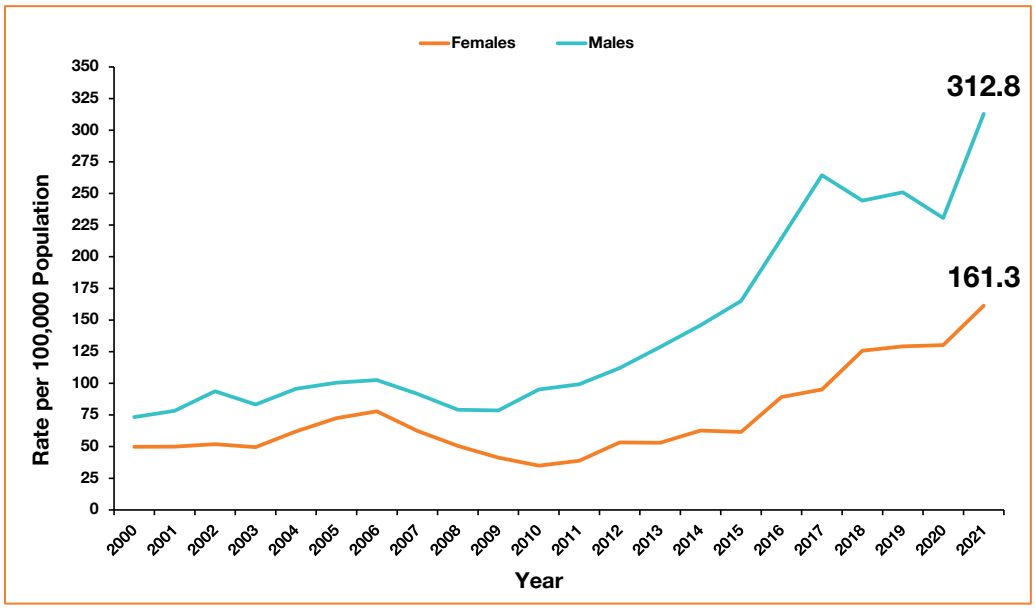
Figure 7: Gonorrhea Cases and Rates by Year, San Diego County, 2000-2021.



Source: 2021 Annual STD Data Slides: Reports and Statistics (sandiegocounty.gov)

Figure 8 displays the rates of gonorrhea among males and females over time, including a rate among males that was almost double that among females in 2021.

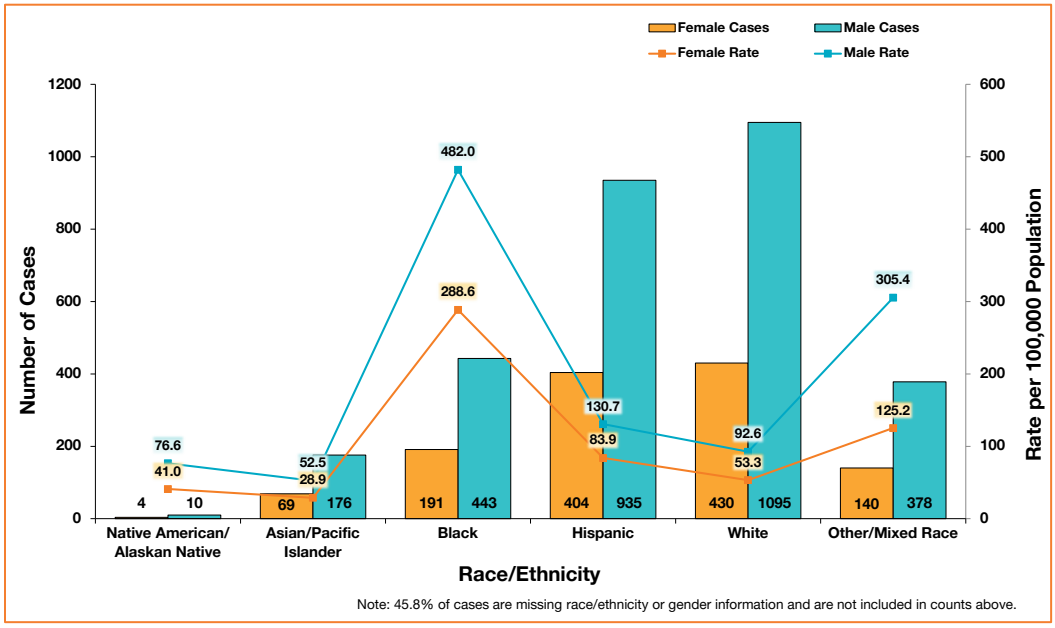
Figure 8: Gonorrhea Rates by Gender and Year, San Diego County, 2000-2021.



Source: 2021 Annual STD Data Slides: Reports and Statistics (sandiegocounty.gov)

Figure 9 displays gonorrhea cases and rates by gender among different racial and ethnic groups, including the disparities described earlier (i.e., significantly higher rate among Black males than White and Hispanic males).

Figure 9: Gonorrhea Cases and Rates by Gender and Race/Ethnicity, San Diego County, 2021.

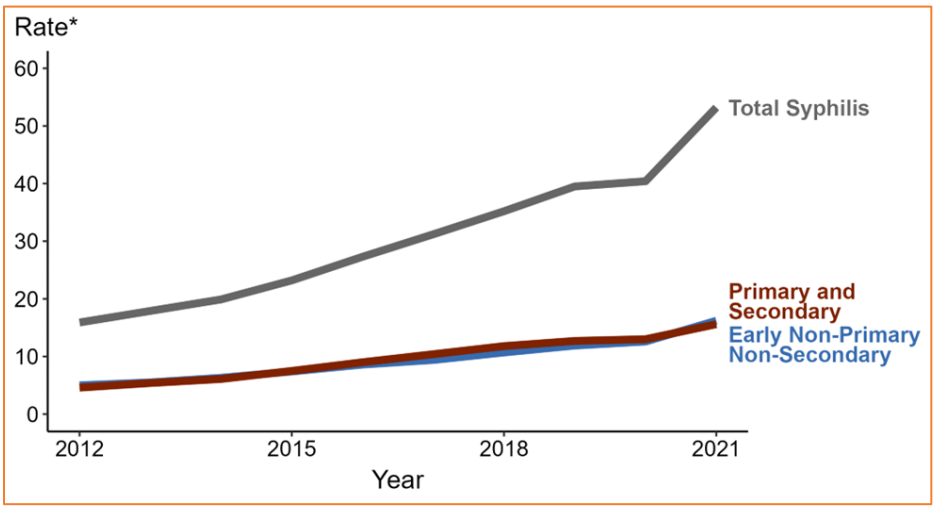


Source: 2021 Annual STD Data Slides: Reports and Statistics (sandiegocounty.gov)

Syphilis

Total syphilis (excluding congenital syphilis) cases and rates are on the rise at both national and local levels. In 2021, a total of 176,713 cases of syphilis were reported in the United States. From 2020 to 2021, the rate of reported syphilis of any stage increased 31.7% (from 40.4 to 53.2 cases per 100,000) (***Figure 10***).

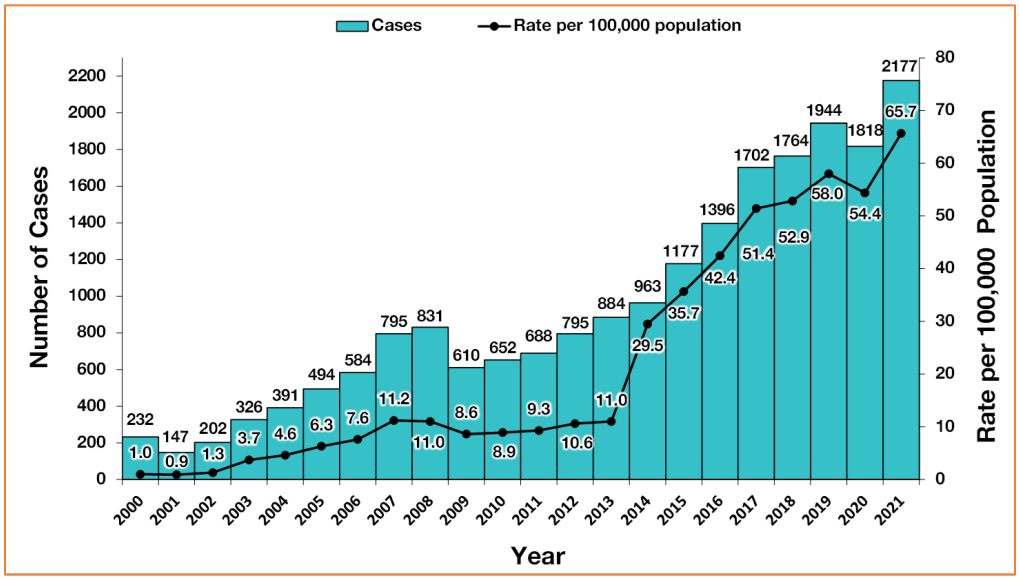
Figure 10: Rates of Reported Cases by Stage of Infection, United States, 2012–2021.



Source: CDC Sexually Transmitted Disease Surveillance 2021: cdc.gov/std/statistics/2021/slides.pptx

In San Diego County, 2,177 cases of syphilis of any stage were reported in 2021. The rate increased 20.8% from 2020 to 2021, from 54.4 cases to 65.7 cases per 100,000 (***Figure 11***).

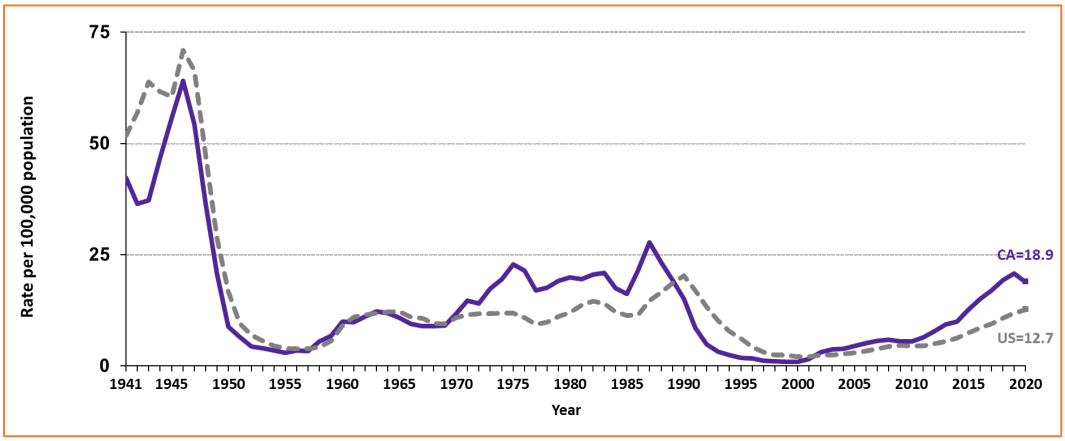
Figure 11: Syphilis (All Stages) Cases and Rates by Year, San Diego County, 2000-2021.



Source: 2021 Annual STD Data Slides: Reports and Statistics (sandiegocounty.gov)

The most infectious stages of syphilis are primary and secondary syphilis. In 2021, 53,767 cases of primary and secondary syphilis were reported in the United States, and the rate increased by 28.6% from 12.6 cases per 100,000 population in 2020 to 16.2 cases per 100,000 in 2021.[4] In California, there has been a surge in syphilis cases over the last several years until 2020. From 2016 to 2019, the rate of primary and secondary syphilis in California increased by 64%, followed by a 9% decrease from 2019 to 2020 (***Figure 12***).[3] In San Diego County, the rate of primary and secondary syphilis increased by 12.7% from 16.5 cases per 100,000 in 2020 to 18.6 cases per 100,000 in 2021. The majority (63%) of primary and secondary syphilis cases in San Diego County are among MSM. Overall, primary and secondary syphilis rates in California have exceeded the national rate since at least 2010.

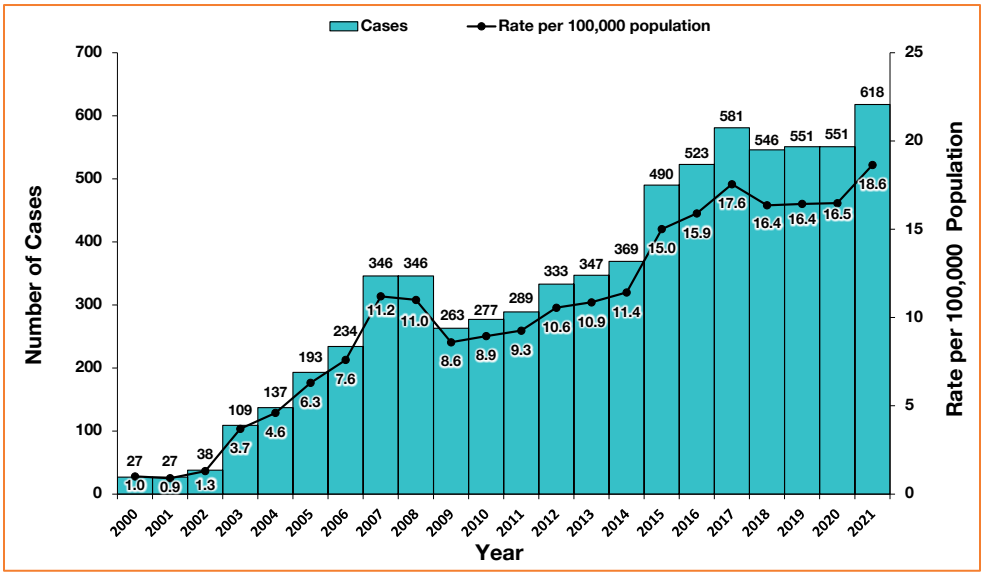
Figure 12: Primary and Secondary Syphilis, California Versus United States Incidence Rates, 1941-2020.



Source: CDPH 2020 STD Surveillance Report: Sexually Transmitted Diseases Data (ca.gov)

In San Diego County there was a 12.7% increase in primary and secondary syphilis rates from 2020 to 2021, and a 1,760% rate increase from 2000 to 2021 (***Figure 13***).

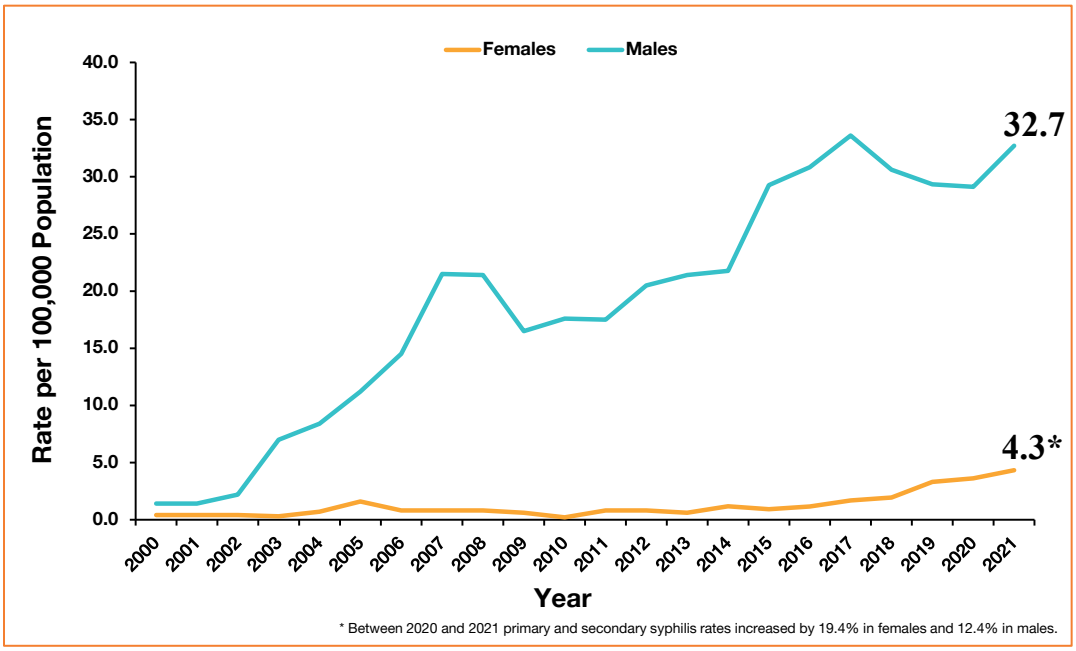
Figure 13: Primary and Secondary Syphilis Cases and Rates by Year, San Diego County, 2000-2021.



Source: 2021 Annual STD Data Slides: Reports and Statistics (sandiegocounty.gov)

Syphilis disproportionately affects males, although syphilis rates among females have been increasing at a higher rate. In 2021, San Diego County males were 7.6 times as likely to become infected, compared to females. However, from 2020 to 2021, the primary and secondary syphilis rate among females increased by 19.4%, compared to an increase of 12.4% among males (***Figure 14***).

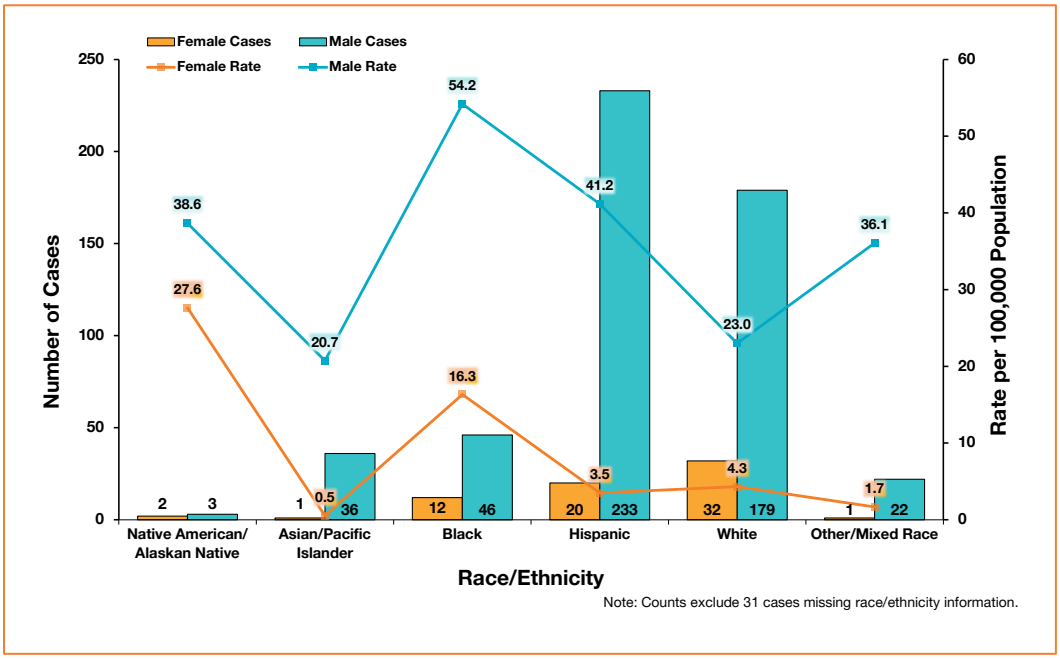
Figure 14: Primary & Secondary Syphilis Cases and Rates by Gender and Year, San Diego County, 2000-2021.



Source: 2021 Annual STD Data Slides: Reports and Statistics (sandiegocounty.gov)

As shown in ***Figure 15*** below, in 2021, primary and secondary syphilis rates were 2.4 and 1.8 times higher among Black/African American and Hispanic males, respectively, than among White males. The rate among Black/African American females was 3.8 times that observed among White females, although these rates were based on low numbers of cases. Caution should be applied when interpreting the rates calculated for cases less than 20.

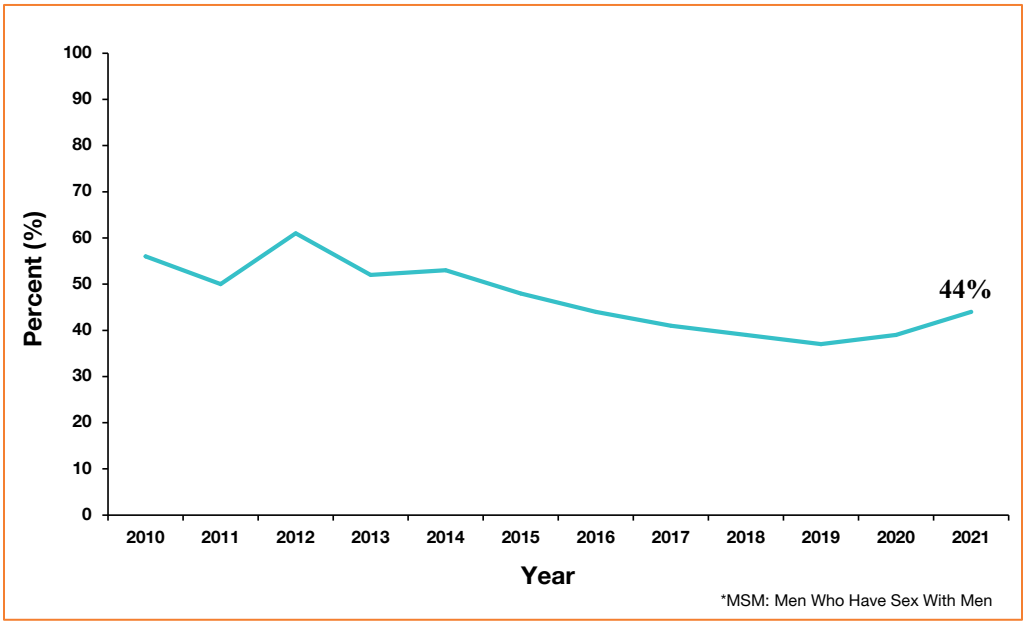
Figure 15: Primary and Secondary Syphilis Cases and Rates by Gender and Race/Ethnicity, San Diego County, 2021.



Source: 2021 Annual STD Data Slides: Reports and Statistics (sandiegocounty.gov)

In 2021, 44% of MSM with primary and secondary syphilis were co-infected with HIV (***Figure 16***). An infection with syphilis is a major risk factor for HIV transmission and remains a focus for STI Prevention Programs.

Figure 16: MSM Primary and Secondary Syphilis Cases Co-infected with HIV by Year, San Diego County, 2010-2021.

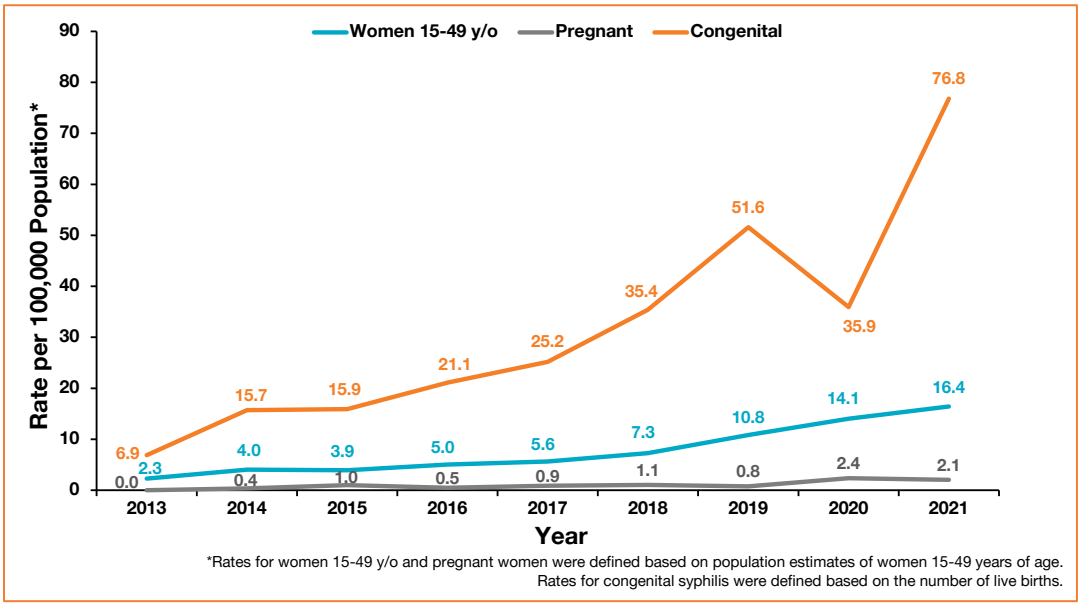


Source: 2021 Annual STD Data Slides: Reports and Statistics (sandiegocounty.gov)

Congenital syphilis rates have steadily increased across the country since 2013, including in San Diego County;[39] the congenital syphilis rate in the U.S. in 2021 was 77.9 cases per 100,000 live births compared to 9.2 cases per 100,000 live births in 2013 (a 747% increase).[17] In San Diego County, rates increased from 6.9 to 76.8 cases per 100,000 live births over that same time period (a 1,013% increase).[2] According to CDC, while cases of congenital syphilis are increasing among all populations, Hispanic and Black/African American populations are disproportionately impacted.[18]

Rates of congenital syphilis in San Diego County steadily increased from 2015-2019. After a decrease in 2020, the congenital syphilis rate increased by 114% in 2021, while the rate of early syphilis (i.e., primary, secondary, and early latent stages of infection) among women 15-49 years of age increased by 16% (***Figure 17***).

Figure 17: Rates – Early Syphilis in Women of Childbearing Age (15-49 years old), Pregnant Women, and Congenital Syphilis in San Diego County, 2013-2021.



Source: 2021 Annual STD Data Slides: Reports and Statistics (sandiegocounty.gov)

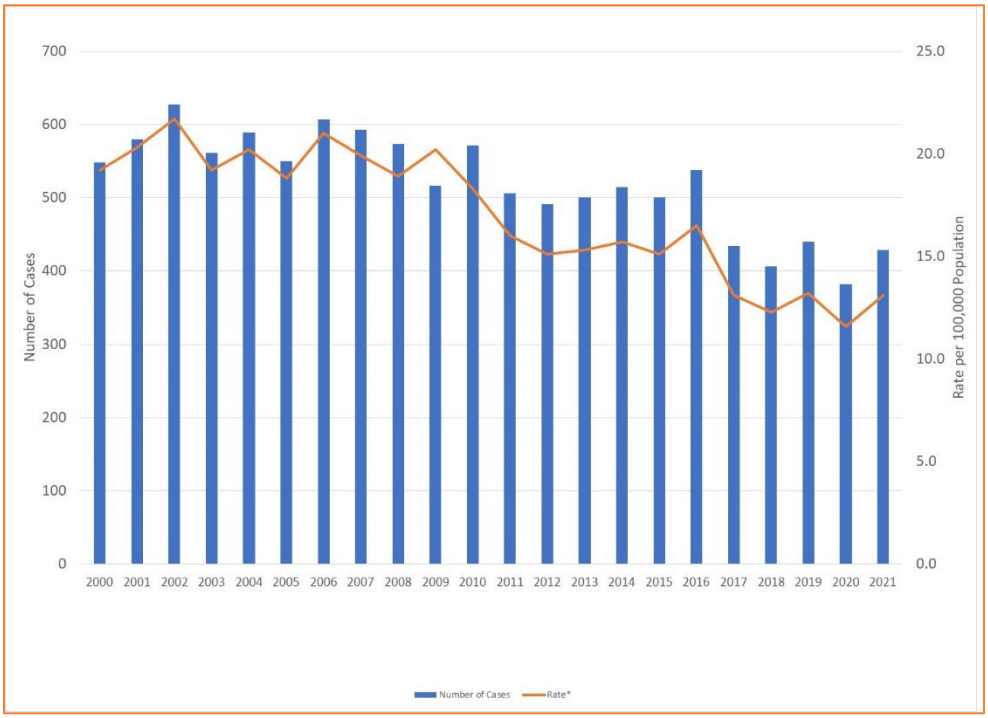
Human Immunodeficiency Virus

In California, both the number of new cases and rate of HIV diagnosis declined from 2016 to 2020. The number of diagnoses declined by 22.9% and the rate of diagnosis per 100,000 population dropped by 24.4%. The case number and rate in California were 3,395 and 9.9 per 100,000 in 2020. In the same time period, the number of persons living with HIV infection increased from 133,126 to 139,000 in California.[5] In California and San Diego County, Black/African Americans and those of Hispanic or Latinx ethnicity continue to be disproportionally affected by HIV disease.[5,6] San Diego County data show that, from 2016 through 2021, Black/African Americans were twice as likely to be diagnosed with HIV compared to

Hispanics, and almost five times as likely as Whites.[6] Locally, male-to-male sexual contact remains the most important risk factor for transmission.[6]

HIV diagnosis rates in San Diego County have decreased by around 50% from 2000 to 2021 (***Figure 18***), tracking closely with overall California rates. In alignment with Healthy People 2030, San Diego County is aiming to reduce HIV cases by 90%; this goal was set in 2017 when the case count was 422. By 2030, the objective is to reduce this count to 42 new HIV cases. Since 2017, the diagnosis of HIV cases in San Diego County has remained relatively stable.

Figure 18. HIV Diagnosis Case Counts and Rate, 2000-2021, San Diego County.



In California and San Diego County, Black/African Americans and Hispanics are disproportionately affected by HIV. In San Diego County, the five-year average rate of HIV diagnosis from 2017-2021, among Black/African Americans and Hispanics, were 4.4 and 2.4 times, respectively, that observed among non-Hispanic Whites (***Figure 19***). Although rates of HIV diagnosis have declined among all racial and ethnic groups over time (***Figure 20***), Black/African Americans continue to have rates about twice that seen in Hispanics (***Figure 21***). In 2020, Californian Black/African Americans were almost 5 times as likely to be diagnosed with HIV, compared to Whites.

Figure 19. HIV Diagnosis Rates by Race, 2017-2021, San Diego County.

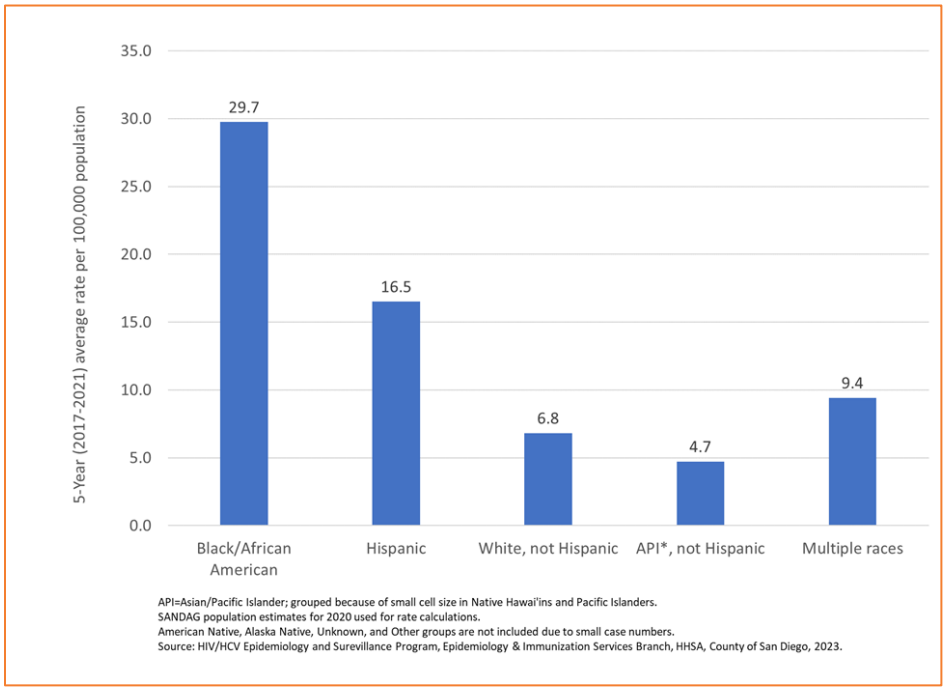


Figure 20. HIV Diagnosis Rates in 2001 - 2021 by Race/Ethnicity, San Diego County.

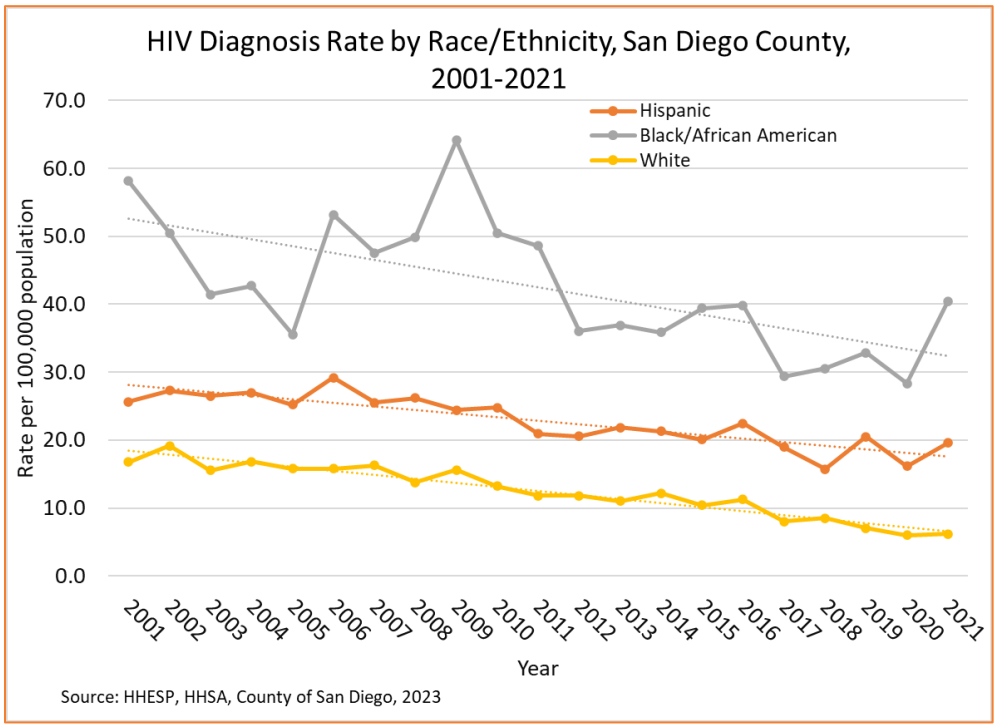
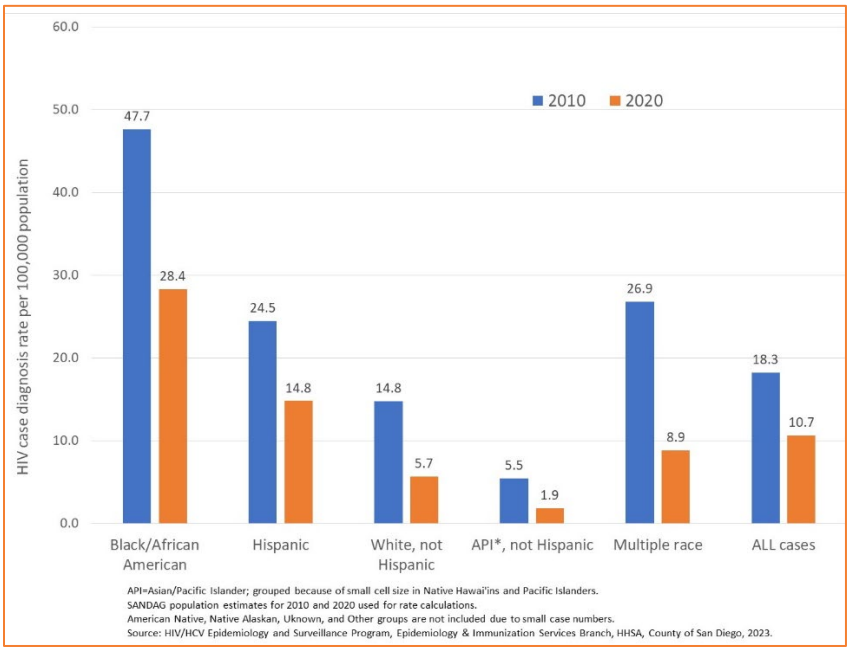
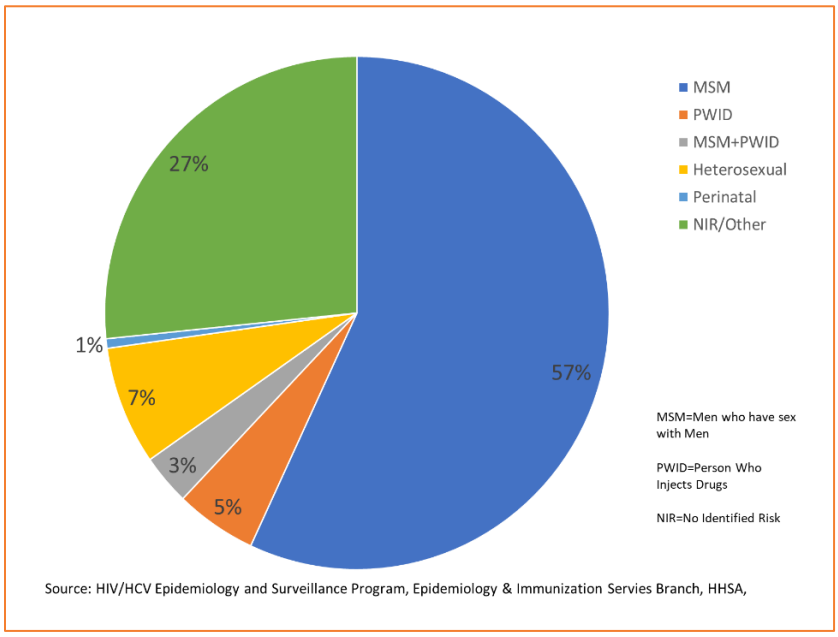


Figure 21. HIV Diagnosis Rates in 2010 and 2020 by Race/Ethnicity, San Diego County.



Male-to-male sexual contact continues to be the most common transmission/risk factor for HIV in both California and San Diego County (***Figure 22***). In 2021, 57% of HIV cases in San Diego County were among MSM.

Figure 22. Transmission/Risk Factor Categories for HIV Cases, 2021, San Diego County.



DISCUSSION

Learning more about the populations disproportionately impacted by STIs and HIV and the factors that contribute to the unequal burden of disease among certain populations and communities are important first steps to reducing STIs and getting to zero HIV infections in San Diego County. The County must work with partners to address the issues that contribute to health disparities and health inequities by becoming more culturally competent, ensuring a variety of innovative and appropriate services are available and accessible, and by providing inclusive sexual health education. Discussions about sexual health must be normalized to reduce the stigma and negative perceptions associated with STIs and HIV. The County of San Diego has dedicated STI clinics that serve many of these vulnerable community members and many community clinics and organizations also work hard to help prevent and treat STIs and HIV, but more can be done, and more people need to be reached. As a community, we must develop interventions, address the social determinants of health that are impacting STI and HIV rates, and make changes that will empower people to improve their sexual health and advance health equity.

The rising rates of STIs and continued transmission of HIV are concerns not only in San Diego County, but also throughout California and the U.S., as a whole. While STIs are increasing across many groups, certain racial and ethnic minority groups, gay, bisexual, and other MSM, and youth (ages 15-24) continue to experience higher rates of infections. HIV rates are also highest among MSM and racial and ethnic minority groups. Ensuring that effective and evidence-based prevention and control efforts reach all populations disproportionately affected by STIs and HIV will achieve the greatest impact. In line with Healthy People 2030, STI prevention efforts should aim to:

- Reduce syphilis rates in MSM;
- Increase the percentage of sexually active female youth and young women, who get screened for chlamydia;
- Reduce gonorrhea rates in male youth and young men;
- Reduce the syphilis rate in females;
- Reduce cases of congenital syphilis;
- Reduce the percentage of youth and young adults with genital herpes;
- Reduce pelvic inflammatory disease in female youth and young women;
- Reduce the number of new HIV infections;
- Increase knowledge of HIV status; and
- Increase linkages to HIV medical care.[22]

Addressing these rising STI rates and preventing complications resulting from these infections requires coordinated efforts of and a “call to action” by many segments of the community. These include public health officials, health care providers, academic institutions, and elected officials, as well as disproportionately impacted communities, including pregnant women; gay, bisexual, and other men who have sex with men; transgender and gender diverse persons; and youth. In addition, decision-makers, community leaders, academic institutions, researchers, and developers also have a role in the call to action. To reverse these trends and overcome the issues of health inequity, data must be used to prioritize intervention activities, implement evidence-based best practices, and ensure necessary services reach the populations that are most affected.

The County of San Diego will continue to focus on the health equity goals of the HIV, STD, and Hepatitis Branch to test for, treat, and prevent STI and HIV infections and engage the community to improve health outcomes through services and activities. Together, as a community, we must prioritize sexual health through innovation, expanded STI and HIV prevention and control efforts, and ensuring every person has access to high quality clinical services without stigma.

CALL TO ACTION

There are initiatives and plans at the local, state, and national levels to address health disparities associated with sexual health and wellbeing.[28,40,41]

State and Local Public Health Departments

- Continue to monitor STI data to identify trends in case counts and rates of syphilis, gonorrhea, and chlamydia and associated health disparities.
- Continue to investigate syphilis cases, particularly cases among women of childbearing age and men with female sexual partners, to prevent serious health problems, congenital syphilis, and onward transmission.
- Support the expansion of syphilis screening of persons of childbearing potential to clinical and non-clinical settings that serve vulnerable populations who may not access prenatal health care or primary care in brick-and-mortar facilities. Such facilities include, but are not limited to, emergency departments, syringe service programs, correctional facilities, and programs for persons experiencing homelessness and the unsheltered population.
- Educate providers who serve people of childbearing potential, pregnant people, neonates, and infants about current California guidelines for syphilis screening in pregnancy and congenital syphilis prevention and management.
- Ensure that effective biomedical HIV and STI prevention strategies, including HIV PrEP and PEP and STI PEP (i.e., doxy-PEP) are available to all vulnerable populations who would benefit from them. Educate health care providers about these strategies and provide support to ensure incorporation of these interventions into the medical care of people who are vulnerable to STIs and HIV.
- Continue to seek out and use funding to address health disparities associated with chlamydia and gonorrhea among young women and prevent reproductive health complications due to untreated infection. Current programs that facilitate access to testing and treatment for chlamydia and gonorrhea among young women who experience barriers to testing in traditional clinical settings or are at an increased risk for infection include a chlamydia and gonorrhea screening program (ClaSP) for all females (and symptomatic males) in County juvenile detention facilities and a free home testing program (Don’t Think, Know) for all females under 25 years of age in San Diego County.
- Continue to collaborate with the California Department of Public Health, San Diego County Office of Education, and local schools and districts to ensure that STI prevention education curricula are comprehensive and medically accurate and meet the standards established by the California Healthy Youth Act.

- Continue to provide training, technical assistance, and expert consultation to clinical and non-clinical providers who serve populations vulnerable to STIs and HIV.
- Ensure providers and populations vulnerable to STIs and HIV stay up to date and aware of critical information and updates related to STIs and HIV through the dissemination of regular reports, health alerts, and media announcements as appropriate.
- Continue to gather information on sexual orientation and gender identity and facilitate updates that allow us to better understand and address STIs and health disparities experienced by transgender communities.
- Establish regular Congenital Syphilis Morbidity and Mortality Reviews (CSMMR) in order to identify missed opportunities for congenital syphilis prevention and to increase the capacity of local healthcare systems and public health programs to prevent future cases.
- Continue to participate in a CDC-led multisite surveillance project that monitors trends in gonococcal drug susceptibility and informs CDC treatment guidelines for gonorrhea.
- Align local strategies and plans with state syndemic approaches to address STIs, HIV, and hepatitis.

Providers

- Provide a safe, inclusive, and welcoming space for all patients to discuss sexual health as a routine part of their healthcare and obtain necessary information to assess vulnerability to STIs and HIV and to determine if patients are experiencing a healthy and pleasurable sex life that is free of coercion.
- Provide prenatal care that includes STI testing for all pregnant women, regardless of age or race/ethnicity, and address barriers to receiving prenatal care among those likely to be at an increased risk for STIs/HIV.
- Screen patients for STIs based on state and national guidelines and recommendations from the United States Preventive Services Task Force (USPSTF)[42], including but not limited to the following:
    - Screen all pregnant women for syphilis at least twice during pregnancy: 1) at the first prenatal care visit or, if the patient cannot be confirmed to be receiving prenatal care, at any point of contact with the healthcare system and 2) during the third trimester (ideally between 28-32 weeks gestation), regardless of whether testing was performed during the first two trimesters.
        - Rescreen pregnant women with increased vulnerability to syphilis at delivery as well as anyone who was not appropriately screened earlier during pregnancy.
        - Before discharging a new mother or infant from the hospital, make sure that the mother has been tested for syphilis at least once during pregnancy or at delivery and, if positive, that the mother and infant are managed appropriately.
    - Screen all sexually active women aged 24 years and younger for chlamydia and gonorrhea.
    - Provide chlamydia and gonorrhea screening to all sexually active women aged 25 years and older with increased vulnerability to these infections.
    - Screen all sexually active gay, bisexual, and other MSM for HIV (unless already known to be living with HIV), syphilis, gonorrhea, and chlamydia at least once per year and more frequently if indicated by risk factors.

        - Screen for gonorrhea and chlamydia at all possible sites of infection (i.e., genitourinary, throat, and rectum) based on sexual practices.
    - Screen all transgender, non-binary, and gender diverse persons based on STI and HIV screening recommendations. Gender-based screening recommendations should be adapted based on anatomy.
        - Maintain awareness of symptoms consistent with common STIs and screen for asymptomatic infections based on the patient's sexual practices and anatomy.[43]
    - Screen all patients aged 13 to 65 years for HIV at least once, regardless of risk factors (this age range was determined based on USPSTF and CDC guidelines for routine HIV testing).
- Ensure prompt treatment of patients who have an STI, particularly pregnant women with syphilis, in accordance with CDC guidelines.
- Provide evidence-based STI and HIV prevention education to sexually active patients.
    - Provide information about HIV PrEP and PEP, as well as doxy-PEP, and link patients who are eligible for and would benefit from these biomedical prevention strategies to them.
- Educate pregnant women about congenital syphilis prevention: obtain early and continuous prenatal care, get tested for syphilis at least twice during pregnancy, and, if syphilis is identified during pregnancy, follow provider recommendations for treatment and health department recommendations for partner management.
- Promptly report notifiable STIs and HIV to the local health department within the required timeframes.
- Provide routine human papillomavirus (HPV) vaccination to all youth at age 11 or 12 (or catch-up vaccination through age 26 for those not previously vaccinated) or to any patients 9-45 years of age who would benefit from the vaccine based on national guidelines.

Pregnant Women[44]

- If you are pregnant or may be pregnant, see a healthcare provider. If you are pregnant, get prenatal care early during pregnancy, even if you have had successful pregnancies in the past, and follow the recommendations of your healthcare provider.
- Make sure you get tested for syphilis at least twice during pregnancy and that you know the results of your test. Ask your doctor if you need to get repeat testing later in pregnancy or at delivery. If you test positive for syphilis during pregnancy, get treatment right away and encourage your partner(s) to get tested and treated as well.
- If you find out that a partner has syphilis while you are pregnant, let your healthcare provider know immediately.

Gay, Bisexual, and Other Men Who Have Sex with Men[45]

- Talk to your healthcare provider about your sexual health and, if you are sexually active, get tested for STIs at least once a year. If you have multiple or anonymous sex partners, you should get tested more frequently (e.g., every 3-6 months).
- Request gonorrhea and chlamydia testing at all possible sites of exposure.
- Use strategies to lower your chance of getting an STI or HIV if you are sexually active:
    - Get vaccinated against hepatitis A, B, and HPV.

    - Take medicine to prevent or treat HIV.
    - Take medicine to prevent STIs such as syphilis, gonorrhea, and chlamydia.
    - Practice safer sex.
        - Get to know someone before you have sex with them; talk honestly about STIs and get tested before having sex.
        - Reduce or limit the number of sex partners you have.
        - Use a condom to reduce risk of STIs and HIV. To help prevent condoms from breaking, use a water-based or silicone lubricant. Note that oil can damage latex condoms or make them break.
- Contact your healthcare provider right away if you find out a partner has an STI.

Transgender and Gender Diverse Persons[35, 37]

- Find a healthcare provider you are comfortable with and talk to your healthcare provider about your sexual health. If you are sexually active, get tested for STIs at least once a year. If you have multiple or anonymous sex partners, you should get tested more frequently (e.g., every 3-6 months).
- Request STI testing for all possible sites of exposure.
- Get tested for HIV at least once and again as needed based on what is going on in your life.
- If you have had any gender-affirming procedures, continue to request STI testing based on anatomy.
    - Transgender men and non-binary persons with a cervix:
        - Get tested at least once a year for chlamydia and gonorrhea.
        - Get screened for cervical cancer based on current guidelines.[32]
- Use strategies to lower your chance of getting an STI or HIV if you are sexually active:
    - Get vaccinated.
    - Take medicine to prevent or treat HIV.
    - Practice safer sex.
        - Get to know someone before you have sex with them; talk honestly about STIs and get tested before having sex.
        - Reduce or limit the number of sex partners you have.
        - Use a condom to reduce risk of STIs and HIV. To help prevent condoms from breaking, use a water-based or silicone lubricant. Note that oil can damage latex condoms or make them break.
- If you are living with HIV and have sex with cisgender men and/or transgender women, get tested every year for syphilis, hepatitis C, chlamydia, and gonorrhea. [32]
- Contact your healthcare provider right away if you find out a partner has an STI.

Youth[46, 47]

- Know your rights—Teens in California have legal rights to access confidential and affordable sexual and reproductive health care services, including STI prevention, testing, and treatment.
- Talk to a parent, teacher, or trusted adult about STI prevention to make sure you know how to protect yourself from STIs when you become sexually active.

- If you are sexually active, ask your healthcare provider about STI testing and which tests may be right for you.
    - If you are a sexually active female 24 years old or younger, get tested for chlamydia and gonorrhea every year. Not all infections cause symptoms and untreated infections can cause infertility and other complications.
- Talk to your partner(s) about STI prevention and testing.
- Use strategies to lower your chance of getting an STI or HIV if you are sexually active:
    - Get vaccinated. Vaccines are a safe and effective way to prevent hepatitis B and HPV.
    - Reduce or limit the number of sex partners you have.
    - Practice mutual monogamy (agree to only have sex with one person who agrees to only have sex with you). Make sure both people have recently tested negative for STIs.
    - Use a latex condom correctly and consistently every time you have anal, vaginal, or oral sex. (Synthetic non-latex condoms are also available for people who have a latex allergy; natural membrane/lambskin condoms should not be used as STIs can pass through the tiny pores.)
- If you find out that you have an STI, get treatment right away. If you find out a partner has an STI, let your healthcare provider know immediately.

Decision-Makers and Community Leaders

- Reduce stigma by talking about sexual health and normalizing STI and HIV prevention, testing, and treatment as an important part of overall health. Help people understand that STIs can affect anyone and provide information about STI and HIV trends and prevention.
- Ensure that STI and HIV prevention, testing, and treatment resources are available and are equally accessible to all populations.
- Stay up to date on STI and HIV trends in your communities and what is being done by the local health department and community organizations to address them.
- Ensure that policies are supportive of all populations seeking and accessing primary and prenatal healthcare, and STI and HIV prevention, testing, and treatment services.

Academic Institutions and Researchers

- Develop and bring to market novel syphilis tests to directly detect the causative bacteria and to enable rapid diagnosis of adult and congenital syphilis.
- Develop and bring to market new antimicrobial agents to treat gonorrhea.
- Conduct research on effective vaccines for STIs.
- Continue research on antibiotic prophylaxis to prevent STIs.
- Conduct research on new treatment approaches for syphilis.
- Ensure that electronic health records (EHRs) support and facilitate screening and treatment for STIs and capture data regarding a patient's sexual history.
- Continue research and inform the market on vaccines and the best HIV prevention, testing, and treatments options for vulnerable populations.
- Ensure that research study participants are representative of all populations who are affected by STIs and HIV.

CONCLUSION

In general, there has been an increase in sexually transmitted infections, over the last two decades, from 1990 to 2020. Compared to pre-pandemic 2019, cases of chlamydia decreased by 21% (***Figure 2***), cases of gonorrhea increased by 23% (***Figure 7***), cases of syphilis (all stages) increased by 12% (***Figure 11***), and HIV cases remained level (***Figure 18***) in 2021.

The HIV, STD, and Hepatitis Branch works closely with state and federal governments to address sexually transmitted infections. Such initiatives and plans must include a health equity approach, working with the healthcare system, providers, academic institutions, researchers, decision-makers, and community leaders. Populations that are most affected by STIs need to be prioritized. These groups include pregnant women; gay, bisexual, and other MSM; transgender and gender diverse persons, and youth.

The various PHS initiatives and workplans of HSHB support the branch's efforts to decrease sexually transmitted infections. Equally important is to work towards a health equity goal that addresses HIV, as it has the most significant impact on those populations at risk. As such, the HSHB goal is to “prevent HIV infection and address rising STI rates.” The specific objective is to reduce the number of new HIV cases in San Diego County by 90% (from 422 in 2017/baseline to 42 by 2030).

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