Sexually Transmitted Disease Surveillance 2017

Centers for Disease Control and Prevention
National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention

Sexually Transmitted Disease Surveillance 2017

Division of STD Prevention
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Division of STD Prevention
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Web Site

The online version of this report is available at https://www.cdc.gov/std/stats

Selected STD Surveillance and Prevention References and Web Sites

STD Surveillance Reports 1993–2016
https://www.cdc.gov/std/stats/

STD Data in the NCHHSTP AtlasPlus
https://www.cdc.gov/nchhstp/atlas/

STD Data on Wonder
https://wonder.cdc.gov/std.html

STD Data Management & Information Technology
https://www.cdc.gov/std/Program/data-mgmt.htm

STD Fact Sheets
https://www.cdc.gov/std/healthcomm/fact_sheets.htm

STD Treatment Guidelines
https://www.cdc.gov/STD/treatment/

STD Program Evaluation Guidelines
https://www.cdc.gov/std/program/pupestd.htm

STD Program Operation Guidelines
https://www.cdc.gov/std/program/GL-2001.htm

Recommendations for Public Health Surveillance of Syphilis in the United States
https://www.cdc.gov/std/SyphSurvReco.pdf

Gonococcal Isolate Surveillance Project (GISP)
https://www.cdc.gov/std/gisp/default.htm

STD Surveillance Network (SSuN)
https://www.cdc.gov/std/ssun/default.htm

National Health and Nutrition Examination Survey (NHANES)
https://www.cdc.gov/nchs/nhanes/index.htm

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Foreword

STDs have long been an underestimated opponent in the public health battle. A 1997 Institute of Medicine (IOM) report described STDs as “hidden epidemics of tremendous health and economic consequence in the United States,” and stated that the “scope, impact, and consequences of STDs are under recognized by the public and healthcare professionals.”[1] Since well before this report published, and two decades later, those facts remain unchanged.

Yet not that long ago, gonorrhea rates were at historic lows, syphilis was close to elimination, and we were able to point to advances in STD prevention, such as better chlamydia diagnostic tests and more screening, contributing to increases in detection and treatment of chlamydial infections. That progress has since unraveled. The number of reported syphilis cases is climbing after being largely on the decline since 1941, and gonorrhea rates are now increasing. This is especially concerning given that we are slowly running out of treatment options to cure *Neisseria gonorrhoeae*. Many young women continue to have undiagnosed chlamydial infections, putting them at risk for infertility.

Half of STDs are among young people ages 15 to 24 years.[2] These infections can lead to long-term health consequences, such as infertility; they can facilitate HIV transmission; and they have stigmatized entire subgroups of Americans. Beyond the impact on an individual’s health, STDs are also an economic drain on the US healthcare system, costing billions annually.[3] To complicate the matter, STD public health programs are increasingly facing challenges and barriers in achieving their mission.

It is imperative that federal, state, and local programs employ strategies that maximize long-term population impact by reducing STD incidence and promoting sexual, reproductive, maternal, and infant health. The resurgence of syphilis, and particularly congenital syphilis, is not an arbitrary event, but rather a symptom of a deteriorating public health infrastructure and lack of access to health care. It is exposing hidden, fragile populations in need that are not getting the health care and preventive services they deserve. This points to our need for public health and health care action for each of the cases in this report, as they represent real people, not just numbers.

We also need to modernize surveillance to move beyond counting only those cases in persons who have access to diagnosis and treatment, to develop innovative strategies to understand the burden of disease in those who may not access care, and to improve our surveillance systems to collect the information needed to target prevention activities. Further, it will be important for us to measure and monitor the adverse health consequences of STDs, such as ocular and neurosyphilis, pelvic inflammatory disease, ectopic pregnancy, infertility, HIV, congenital syphilis, and neonatal herpes.

It is my hope that in future years, we will be reporting on progress, instead of more health inequity in our society. This is our challenge and our call to effectively respond to the information shared in this report.

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US Centers for Disease Control and Prevention

References

1. Eng TR, Butler WT, editors; Institute of Medicine (US). Summary: The hidden epidemic: Confronting sexually transmitted diseases. Washington (DC): National Academy Press; 1997. p. 43.
2. Satterwhite CL, Torrone E, Meites E, et al. Sexually transmitted infections among US women and men: Prevalence and incidence estimates, 2008. Sex Transm Dis 2013; 40(3):187–193. DOI: 10.1097/ OLQ.0b013e318286bb53. Review.
3. Owusu-Edusei K Jr, Chesson HW, Gift TL, et al. The estimated direct medical cost of selected sexually transmitted infections in the United States, 2008. Sex Transm Dis 2013; 40(3):197–201. DOI: 10.1097/ OLQ.0b013e318285c6d2.

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Preface

Sexually Transmitted Disease Surveillance 2017 presents statistics and trends for STDs in the United States through 2017. This annual publication is intended as a reference document for policy makers, program managers, health planners, researchers, and others who are concerned with the public health implications of these diseases. The figures and tables in this edition supersede those in earlier publications of these data.

The surveillance information in this report is based on the following sources of data: (1) notifiable disease reporting from state and local STD programs; (2) projects that monitor STD positivity and prevalence in various settings, including the National Job Training Program, the STD Surveillance Network, and the Gonococcal Isolate Surveillance Project; and (3) national surveys and other data collection systems implemented by federal and private organizations.

Four STDs are nationally notifiable, chlamydia, gonorrhea, syphilis, and chancroid, and state and local STD control programs provide CDC with case reports for these conditions. These case reports are the data source for many of the figures and most of the statistical tables in this publication; however, it is important to note that these case reports reflect only a portion of STDs occurring in the US population. First, other common STDs, such as human papillomavirus (HPV) and herpes simplex virus (HSV) are not nationally notifiable diseases. Additionally, STDs are often asymptomatic and may not be diagnosed; therefore, case report data underestimate the number of infections that occurred.

Sexually Transmitted Disease Surveillance 2017 consists of four sections: the National Profile, the Special Focus Profiles, the Tables, and the Appendix. The National Profile section contains figures that provide an overview of STD morbidity in the United States. The accompanying text identifies major findings and trends for selected STDs. The Special Focus Profiles section contains figures and text that describe STDs in selected populations that are a focus of national and state prevention efforts. The Tables section provides statistical information about STDs at county, metropolitan statistical area, regional, state, and national levels. The Appendix includes information on how to interpret the STD surveillance data used to produce this report, as well as information about *Healthy People 2020* STD objectives and progress toward meeting these objectives, Government Performance and Results Act goals and progress toward meeting these goals, and STD surveillance case definitions.

Any comments and suggestions that would improve future publications are appreciated and should be sent to:

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Guide to Acronyms

AI/AN	American Indians/Alaska Natives
ARLN	Antibiotic Resistance Laboratory Network
CDC	Centers for Disease Control and Prevention
CI	confidence interval
CIA	chemiluminescence immunoassay
CIN2+	cervical intraepithelial neoplasia grades 2 and 3
CS	congenital syphilis
CSF	cerebrospinal fluid
CSTE	Council of State and Territorial Epidemiologists
CT	Chlamydia
EIA	enzyme immunoassay
EP	ectopic pregnancy
FTA-ABS	fluorescent treponemal antibody absorbed
GC	Gonorrhea
GISP	Gonococcal Isolate Surveillance Project
GU	Guam
HCUP	Healthcare Cost and Utilization Project
HD	health department
HEDIS	Healthcare Effectiveness Data and Information Set
HMOs	health maintenance organizations
HIV	human immunodeficiency virus
HP2020	*Healthy People 2020*
HPV	human papillomavirus
HSV	herpes simplex virus
IHC	immunohistochemistry
MHA-TP	microhemagglutination assay for antibody to *Treponema pallidum*
MICs	minimum inhibitory concentrations
MPC	mucopurulent cervicitis
MSAs	metropolitan statistical areas
MSM	gay, bisexual, and other men who have sex with men
MSMW	men who have sex with both men and women
MSW	men who have sex with women only
NAATs	nucleic acid amplification tests
NCHHSTP	National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention
NCHS	National Center for Health Statistics
NHOPI	Native Hawaiians/Other Pacific Islanders
NDTI	National Disease and Therapeutic Index
NETSS	National Electronic Telecommunications System for Surveillance
NGU	nongonococcal urethritis
NHANES	National Health and Nutrition Examination Survey
NJTP	National Job Training Program
NNDSS	National Notifiable Diseases Surveillance System
OMB	Office of Management and Budget
P&S	primary and secondary
PCR	polymerase chain reaction
PID	pelvic inflammatory disease
PR	Puerto Rico
RPR	rapid plasma reagin
SSuN	STD Surveillance Network
STD	sexually transmitted disease
STI	sexually transmitted infection
TP-PA	*T. pallidum* particle agglutination
VDRL	Venereal Disease Research Laboratory
VI	Virgin Islands
WBC	white blood cell

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Table of Contents

Figures in the National Profile

Chlamydia

Gonorrhea

Syphilis

Other STDs

Figures in the Special Focus Profiles

STDs in Women and Infants

STDs in Adolescents and Young Adults

STDs in Racial and Ethnic Minorities

STDs in Men Who Have Sex with Men

Tables in the National Profile

National Summary

Chlamydia

Gonorrhea

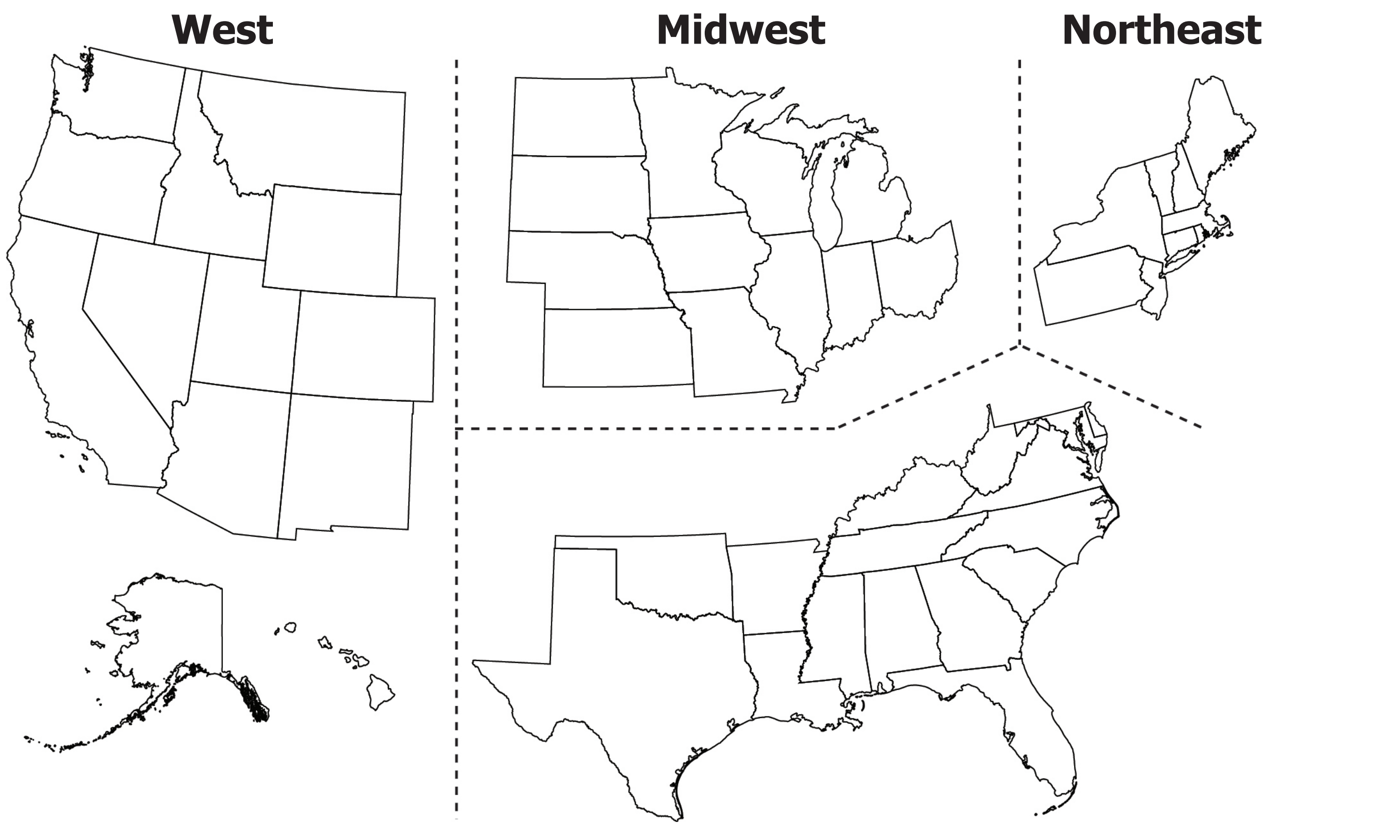
Syphilis

Chancroid

Selected STDs

Appendix

Census Regions of the United States



West

Alaska
Arizona
California
Colorado
Hawaii
Idaho
Montana
Nevada
New Mexico
Oregon
Utah
Washington
Wyoming

Midwest

Illinois
Indiana
Iowa
Kansas
Michigan
Minnesota
Missouri
Nebraska
North Dakota
Ohio
South Dakota
Wisconsin

South

Alabama
Arkansas
Delaware
District of Columbia
Florida
Georgia
Kentucky
Louisiana
Maryland
Mississippi
North Carolina
Oklahoma
South Carolina
Tennessee
Texas
Virginia
West Virginia

Northeast

Connecticut
Maine
Massachusetts
New Hampshire
New Jersey
New York
Pennsylvania
Rhode Island
Vermont

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National Profile

The National Profile section contains figures that show trends and the distribution of nationally reportable STDs (chlamydia, gonorrhea, syphilis, and chancroid) by age, sex, race/Hispanic ethnicity, and location for the United States.

National Overview of STDs, 2017

All Americans should have the opportunity to make choices that lead to health and wellness. Working together, interested, committed public and private organizations, communities, and individuals can take action to prevent STDs and their related health consequences. In addition to federal, state, and local public support for STD prevention activities, local community leaders can promote STD prevention education. Health care providers can assess their patients' risks and talk to them about testing. Parents can better educate their children about STDs and sexual health. Individuals can use condoms consistently and correctly, and openly discuss ways to protect their health with partners and providers. As noted in the Institute of Medicine report, *The Hidden Epidemic: Confronting Sexually Transmitted Diseases*, surveillance is a key component of all our efforts to prevent and control these diseases.[1]

This overview summarizes national surveillance data for 2017 on the three notifiable diseases for which there are federally funded control programs: chlamydia, gonorrhea, and syphilis.

Chlamydia

In 2017, a total of 1,708,569 cases of *Chlamydia trachomatis* infection were reported to the CDC, making it the most common notifiable condition in the United States. This case count corresponds to a rate of 528.8 cases per 100,000 population, an increase of 6.9% compared with the rate in 2016. During 2016–2017, rates of reported chlamydia increased among both males and females, in all regions of the United States, and among all racial and Hispanic ethnicity groups.

Rates of reported chlamydia are highest among adolescent and young adults and have increased in recent years. In 2017, almost two-thirds of all reported chlamydia cases were among persons aged 15–24 years. Among women aged 15–24 years, the population targeted for chlamydia screening, the overall rate of reported cases of chlamydia was 3,635.3 cases per 100,000 females, an increase of 4.9% from 2016 and of 8.8% from 2013.

Although rates of reported cases among men are generally lower than rates among women, reflecting the larger number of women screened for this infection, rates among men increased almost 40% during 2013–2017. Increases in rates among men may reflect an increased number of men, including gay, bisexual, and other men who have sex with men (collectively referred to as MSM) being tested and diagnosed with a chlamydial infection due to increased availability of urine testing and extragenital screening.

Gonorrhea

In 2017, a total of 555,608 cases of gonorrhea were reported to CDC, making it the second most common notifiable condition in the United States. Rates of reported gonorrhea increased 75.2% since the historic low in 2009 and increased 18.6% since 2016. During 2016–2017, rates of reported gonorrhea increased among both males and females, in all regions of the United States, and among all racial and Hispanic ethnicity groups.

During 2016–2017, the rate of reported gonorrhea increased 19.3% among men and 17.8% among women. The magnitude of the increase among men suggests either increased transmission, increased case ascertainment (e.g., through increased extra-genital screening among MSM), or both. The concurrent increase in cases reported among women, suggests parallel increases in heterosexual transmission, increased screening among women, or both.

Antimicrobial resistance remains an important consideration in the treatment of gonorrhea. Therapy with ceftriaxone and azithromycin is now the only CDC recommended treatment for gonorrhea.[2] Since 2008, the percentage of isolates with elevated ceftriaxone minimum inhibitory concentrations (MICs) has remained low and was only 0.2% in 2017. During 2014–2017, the percentage of isolates with elevated azithromycin MICs increased from 2.5% to 4.4%. Continued monitoring of susceptibility patterns to these antibiotics is critical.

Syphilis

In 2017, a total of 30,644 cases of primary and secondary (P&S) syphilis, the most infectious stages of the disease, were reported in the United States, yielding a rate of 9.5 cases per 100,000 population. Since reaching a historic low in 2000 and 2001, the rate of P&S syphilis has increased almost every year, increasing 10.5% during 2016–2017. Rates increased among both males and females, among all racial and Hispanic ethnicity groups, and in 72.0% of states and the District of Columbia.

During 2000–2017, the rise in the P&S syphilis rate was primarily attributable to increased cases among men and, specifically, among MSM. In 2017, men accounted for almost 90% of all cases of P&S syphilis and MSM accounted for 68.2% of reported P&S syphilis cases among women or men with information about sex of sex partners. In states with consistent information on sex of sex partner, the number of P&S syphilis cases increased 8.6% among MSM, 17.8% among MSW, and 24.9% among women during 2016–2017. Among P&S syphilis cases with known HIV-status, 45.5% of MSM, 8.8% of MSW, and 4.5% of women were HIV-positive in 2017.

The 2013 rate of congenital syphilis (9.2 cases per 100,000 live births) marked the first increase in congenital syphilis since 2008. Since 2013, the rate of congenital syphilis has increased each year. In 2017, there were a total of 918 reported cases of congenital syphilis, including 64 syphilitic stillbirths and 13 infant deaths. The national rate of 23.3 cases per 100,000 live births represents a 43.8% increase relative to 2016 and a 153.3% increase relative to 2013. This increase in the congenital syphilis rate has paralleled increases in P&S syphilis among all women and reproductive-aged women during 2013–2017 (155.6% and 142.8% increase, respectively).

References

1. Institute of Medicine. The Hidden Epidemic: Confronting Sexually Transmitted Diseases. Washington DC: The National Academy Press; 1997.
2. Centers for Disease Control and Prevention. Sexually transmitted diseases treatment guidelines, 2015. MMWR Morb Mortal Wkly Rep 2015; 64(No. RR-3): 1–137.

Chlamydia

Background

Chlamydia, caused by infection with *Chlamydia trachomatis*, is the most common notifiable disease in the United States. It is among the most prevalent of all STDs, and since 1994, has comprised the largest proportion of all STDs reported to CDC (Table 1). Studies also demonstrate the high prevalence of chlamydial infections in the general US population, particularly among young women.[1]

Chlamydial infections in women are usually asymptomatic.[2] Untreated infection can result in pelvic inflammatory disease (PID), which is a major cause of infertility, ectopic pregnancy, and chronic pelvic pain. Data from randomized controlled trials of chlamydia screening suggested that screening programs can lead to a reduction in the incidence of PID.[3,4] As with other inflammatory STDs, chlamydial infection could facilitate the transmission of HIV infection.[5] In addition, pregnant women infected with chlamydia can pass the infection to their infants during delivery, potentially resulting in ophthalmia neonatorum, which can lead to blindness, and pneumonia.[6] Because of the large burden of disease and risks associated with infection, CDC recommends annual chlamydia screening for all sexually active women younger than age 25 years and women ≥25 years at increased risk for infection (e.g., women with new or multiple sex partners).[7]

The Healthcare Effectiveness Data and Information Set (HEDIS) contains a measure which assesses chlamydia screening coverage of sexually active young women who receive medical care through commercial or Medicaid managed care organizations. Among sexually-active women aged 16–24 years in commercial health maintenance organization (HMO) plans, chlamydia screening increased from 23.1% in 2001 to 48.3% in 2016. Among sexually-active women aged 16–24 years covered by Medicaid, screening rates increased from 40.4% in 2001 to 57.3% in 2016.[8] Although chlamydia screening has expanded over the past two decades, many women who are at risk are still not being tested—reflecting, in part, the lack of awareness among some health care providers and the limited resources available to support these screenings.

Interpreting Rates of Reported Cases of Chlamydia

Trends in rates of reported cases of chlamydia are influenced by changes in incidence of infection, as well as changes in diagnostic, screening, and reporting practices. As chlamydial infections are usually asymptomatic, the number of infections identified and reported can increase as more people are screened even when incidence is flat or decreasing. During 2000–2011, the expanded use of more sensitive diagnostic tests (e.g., nucleic acid amplification tests [NAATs]) likely increased the number of infections identified and reported independently of increases in incidence. Also, although chlamydia has been a nationally notifiable condition since 1995, it was not until 2000 that all 50 states and the District of Columbia required reporting of chlamydia cases. National case rates prior to 2000 reflect incomplete reporting. The increased use of electronic laboratory reporting over the last decade or so also likely increased the proportion of diagnosed cases reported. Consequently, an increasing chlamydia case rate over time may reflect increases in incidence of infection, screening coverage, and use of more sensitive tests, as well as more complete reporting. Likewise, decreases in chlamydia case rates may suggest decreases in incidence of infection or screening coverage.

Chlamydia — United States

In 2017, a total of 1,708,569 chlamydial infections were reported to CDC in 50 states and the District of Columbia (Table 1). This case count corresponds to a rate of 528.8 cases per 100,000 population. During 2000–2011, the rate of reported chlamydial infection increased from 251.4 to 453.4 cases per 100,000 population (Figure 1, Table 1). During 2011–2013, the rate of reported cases decreased to 443.5 cases per 100,000 population, followed by an increase in the rate of reported cases over each of the next four years. During 2016–2017, the rate increased 6.9%, from 494.7 to 528.8 cases per 100,000 population (Figure 1, Table 1).

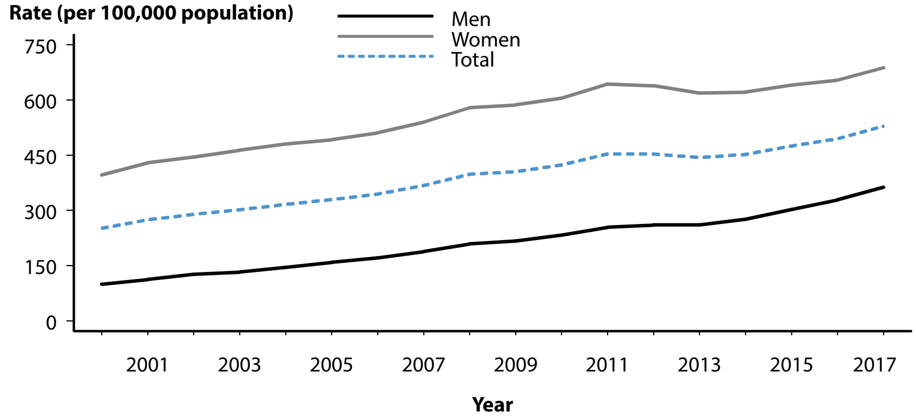
Chlamydia by Region

In 2017, rates of reported cases of chlamydia were highest in the South (560.4 cases per 100,000 population, 6.8% increase from 2016), followed by the West (524.3, 8.8% increase from 2016), Midwest (514.4, 5.6% increase from 2016), and Northeast (483.3, 6.2% increase from 2016) (Table 3). During 2008–2012, rates of reported cases of chlamydia increased in all regions (Figure 2). During 2012–2013, rates decreased in the Northeast, Midwest, and South and remained stable in the West. During 2013–2017, rates increased in all regions, with the largest increase occurring in the West (421.1 to 524.3 cases per 100,000 population, 24.5% increase) (Figure 2, Table 3).

Chlamydia by State

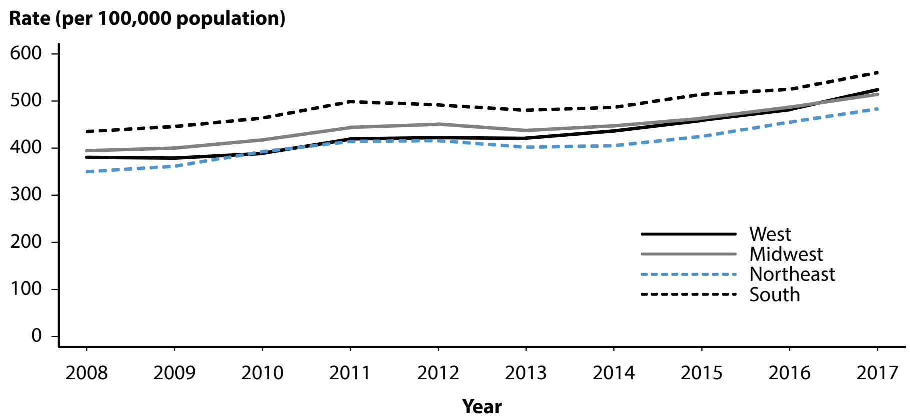
In 2017, rates of reported cases of chlamydia by state ranged from 226.1 cases per 100,000 population in West

Figure 1. Chlamydia — Rates of Reported Cases by Sex, United States, 2000–2017



NOTE: Data collection for chlamydia began in 1984 and chlamydia was made nationally notifiable in 1995; however, chlamydia was not reportable in all 50 states and the District of Columbia until 2000. Refer to the National Notifiable Disease Surveillance System (NNDSS) website for more information: https://wwwn.cdc.gov/nndss/conditions/chlamydia-trachomatis-infection/

Figure 2. Chlamydia — Rates of Reported Cases by Region, United States, 2008–2017



Virginia to 799.8 cases per 100,000 population in Alaska (Figure 3, Table 2); the rate in the District of Columbia was 1,337.0 cases per 100,000 population (Table 3). During 2016–2017, rates of reported chlamydia cases increased in 46 states and the District of Columbia. The rate of reported chlamydia cases in 2017 was above the US total in 19 states (Table 2).

Chlamydia by Metropolitan Statistical Area

The rate of reported cases of chlamydia in the 50 most populous metropolitan statistical areas (MSAs) increased 8.3% during 2016–2017 (518.8 to 561.7 cases per 100,000 population, respectively) (Table 6). In 2017, 58.5% of chlamydia cases were reported by these MSAs. During 2016–2017, the rate of reported cases of chlamydia in these MSAs increased 6.2% among women (663.0 to 704.1 cases per 100,000 females) and 12.1% among men (367.0 to 411.3 cases per 100,000 males) (Tables 7 and 8).

Chlamydia by County

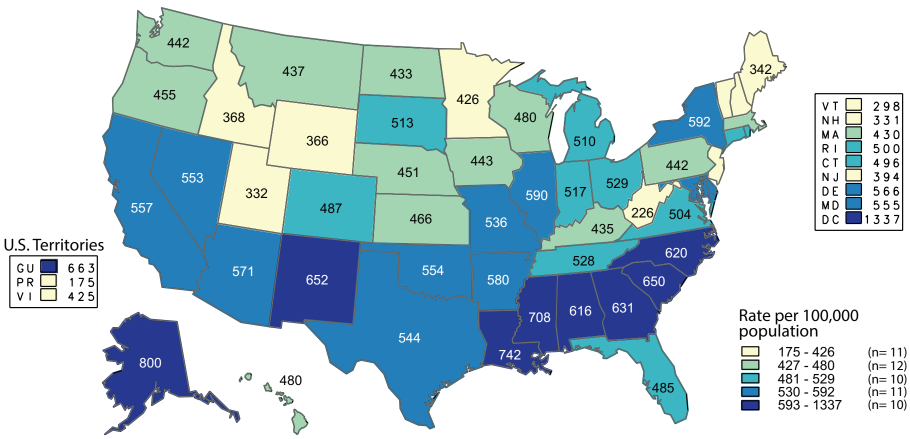
In 2017, 630 (20.1%) of 3,140 counties had rates of reported chlamydia higher than 542 cases per 100,000 population (Figure 4). Seventy counties and independent cities reported 43% of all chlamydia cases in 2017 (Table 9). Of the 70 counties and independent cities reporting the highest number of chlamydia cases, 46 (65.7%) were located in the South and West (Table 9).

Chlamydia by Sex

In 2017, 1,127,651 cases of chlamydia were reported among females for a rate of 687.4 cases per 100,000 females (Table 4). After increasing each year during 2000–2011, the rate of reported chlamydia cases among females decreased during 2011–2013, followed by an increase in the rate of reported cases over each of the next four years (Figure 1). The total rate increase during 2013–2017 among females was 11.1%.

Among males, 577,644 cases of chlamydia were reported in 2017 for a rate of 363.1 cases per 100,000 males (Table 5). The rate of reported cases among males increased each year during 2000–2017, with the exception of 2012–2013, when rates remained stable (Figure 1). During 2016–2017 alone, the rate among men increased 10.5%; however, during 2013–2017, rates of reported cases among men increased 39.3% (compared with an 11.1% increase among women) (Tables 4 and 5). This pronounced increase among men could be attributed to either increased transmission or improved case identification (e.g., through intensified extra-genital screening efforts) among gay, bisexual, and other men who have sex with men (collectively referred to as MSM). This cannot be assessed, however, as most jurisdictions do not routinely report sex of sex partner or anatomic site of infection.

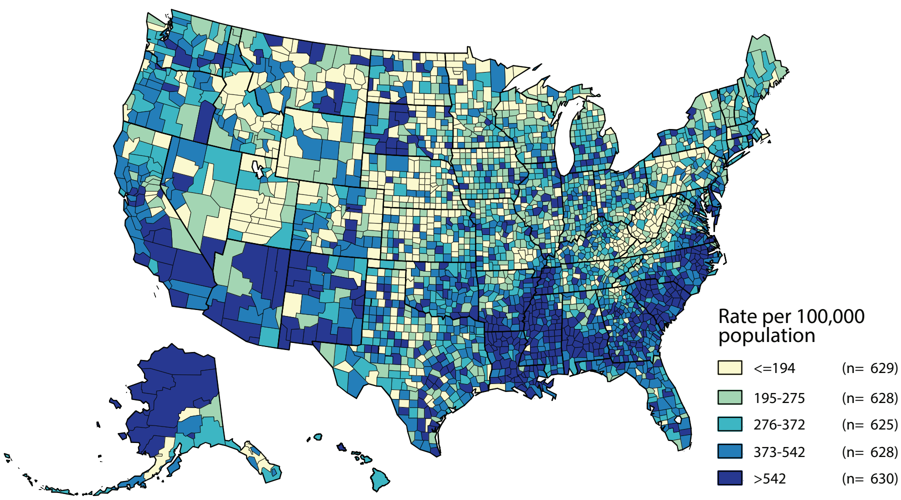
Figure 3. Chlamydia — Rates of Reported Cases by State, United States and Outlying Areas, 2017



NOTE: The total rate of reported cases of chlamydia for the United States and outlying areas (including Guam, Puerto Rico, and the Virgin Islands) was 525.1 per 100,000 population. See Section A1.11 in the Appendix for more information on interpreting reported rates in the outlying areas.

ACRONYMS: GU = Guam; PR = Puerto Rico; VI = Virgin Islands.

Figure 4. Chlamydia — Rates of Reported Cases by County, United States, 2017



NOTE: Refer to the NCHHSTP AtlasPlus for further county-level rate information: https://www.cdc.gov/nchhstp/atlas

Despite this considerable increase in men, the rate of reported chlamydia cases among females was still about two times the rate among males in 2017, likely reflecting a larger number of women screened for this infection (Figure 1, Tables 4 and 5). The lower rate among men also suggests that many of the sex partners of women with chlamydia are not receiving a diagnosis of chlamydia or being reported as having chlamydia.

Chlamydia by Age

The rates of reported cases of chlamydia were highest among adolescents and young adults aged 15–24 years during 2013–2017 (Table 10). In 2017, the age-specific rate of reported cases of chlamydia among 15–19 year olds was 2072.4 cases per 100,000 population and the rate among 20–24 year olds was 2,820.3 cases per 100,000 population (Table 10).

In 2017, 97.4% of all reported chlamydia cases in women were among those aged 15–44 years. The highest age-specific rates of reported cases of chlamydia in 2017 were among those aged 15–19 years (3,265.7 cases per 100,000 females) and 20–24 years (3,985.8 cases per 100,000 females) (Figure 5, Table 10). Within these age groups, rates were highest among women aged 19 years (5,398.6 cases per 100,000 females) and 20 years (5,141.4 cases per 100,000 females) (Table 12).

Increases have been observed in recent years in rates of reported cases of chlamydia among all age groups in females aged 15–44 years (Figure 6). Specifically, the rate of reported cases among women aged 15–19 and 20–24 years increased over the last three and four years, respectively. The rate among 15–19 year olds increased 6.5% during 2016–2017, with a total increase of 10.7% during 2014–2017 (2,949.3 to 3,265.7 cases per 100,000 females) (Table 10). The rate among 20–24 year olds increased 3.7% during 2016–2017, with a total increase of 10.9% during 2013–2017 (3,594.2 to 3,985.8 cases per 100,000 females) (Table 10).

In 2017, 94.2% of all reported chlamydia cases in men were among those aged 15–44 years. The age-specific rates of reported cases of chlamydia among men, although substantially lower than rates among women, were highest in those aged 20–24 years (1,705.4 cases per 100,000 males) (Figure 5, Table 10). Similar to trends in women, increases have been observed in rates of reported cases of chlamydia among all age groups in males aged 15–44 years (Figure 7). Specifically, the rate of reported cases among men aged 15–19 and 20–24 years increased

Figure 5. Chlamydia — Rates of Reported Cases by Age Group and Sex, United States, 2017

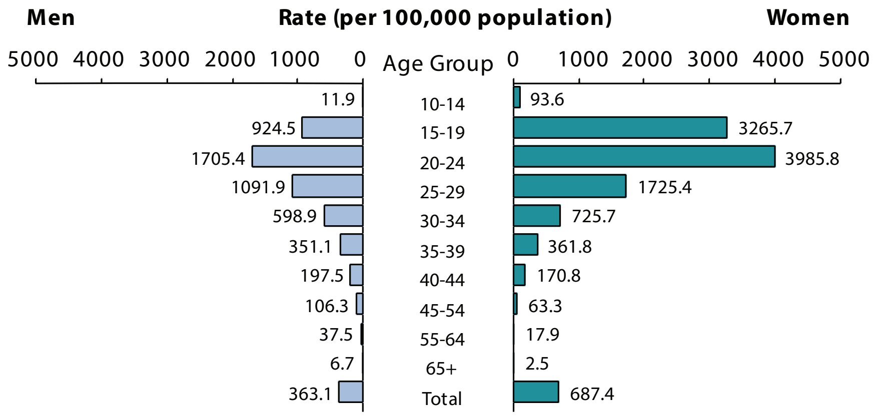
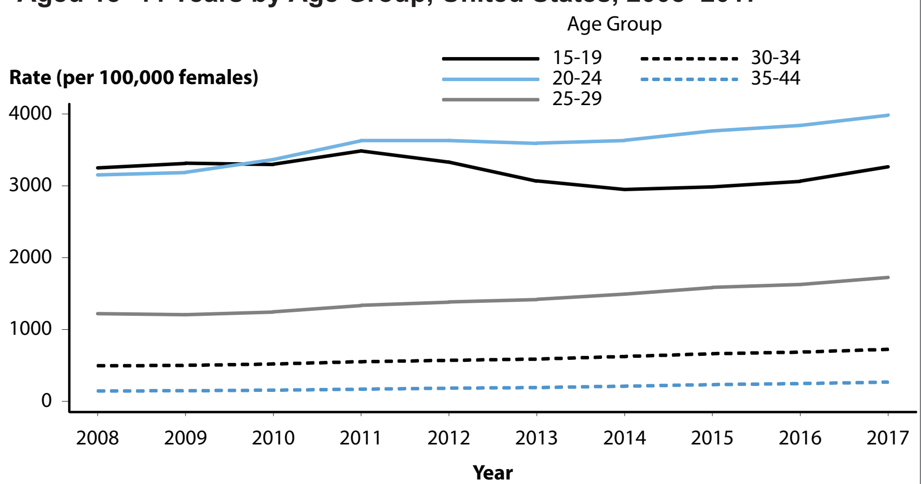


Figure 6. Chlamydia — Rates of Reported Cases Among Women Aged 15–44 Years by Age Group, United States, 2008–2017



over the last three and four years, respectively. The rate among 15–19 year olds increased 11.1% during 2016–2017, with a total increase of 28.0% during 2014–2017 (722.9 to 924.5 cases per 100,000 males). The rate among 20–24 year olds increased 7.8% during 2016–2017, with a total increase of 30.1% during 2013–2017 (1,310.9 to 1,705.4 cases per 100,000 males) (Table 10).

Chlamydia by Race/Hispanic Ethnicity

Rates of reported cases of chlamydia were highest among Black, American Indian/Alaska Native (AI/AN), and Native Hawaiian/Other Pacific Islander (NHOPI) women (Figure S, Table 11B). Overall, the rate of reported cases of chlamydia among Blacks was 5.6 times the rate among Whites (1,175.8 and 211.3 cases per 100,000 population, respectively). The rate among AI/ANs (781.2 cases per 100,000 population) was 3.7 times the rate among Whites. The rate among NHOPIs (715.4 cases per 100,000 population) was 3.4 times the rate among Whites. The rate among Hispanics (404.1 cases per 100,000 population) was 1.9 times the rate among Whites. The rate among Asians (129.6 cases per 100,000 population) was 0.6 times the rate among Whites.

During 2013–2017, rates of reported chlamydia cases increased among all racial and Hispanic ethnicity groups, with AI/ANs increasing 3.7%, Asians 29.6%, Blacks 6.1%, NHOPIs 19.4%, Whites 20.2%, Multirace 59.9%, and Hispanics 10.5% (Figure 8). During 2016–2017, rates increased among all racial and Hispanic ethnicity groups (AI/ANs: 5.0%, Asians: 10.7%, Blacks: 5.2%, NHOPIs: 11.0%, Whites: 5.8%, Multirace: 11.4%, and Hispanics 9.5%) (Figure 8).

More information on chlamydia rates among race/Hispanic ethnicity groups can be found in the Special Focus Profiles.

Chlamydia by Reporting Source

In 2017, 5.8% of chlamydia cases were reported from STD clinics, 78.6% were reported from venues outside of STD clinics, and 15.6% had an unknown reporting source (Table A2). Over time, the proportion of male cases reported from STD clinic sites has decreased substantially, from 30.5% in 2008 to 9.7% in 2017 (Figure 9). In 2017, among women, only 3.8% of chlamydia cases were reported through an STD clinic (Table A2). A large proportion of cases among women (31.6%) were reported from private physicians/HMOs in 2017 (Figure 10). Among men, 24.8% of cases were reported from private physicians/HMOs (Figure 9).

Chlamydia Prevalence in the Population

The National Health and Nutrition Examination Survey (NHANES; see Section A2.4 in the Appendix) is a nationally representative survey of the US civilian, non-institutionalized population that provides an important measure of chlamydia disease burden in respondents aged 14–39 years. During 2013–2016, the overall prevalence of chlamydia

Figure 7. Chlamydia — Rates of Reported Cases Among Men Aged 15–44 Years by Age Group, United States, 2008–2017

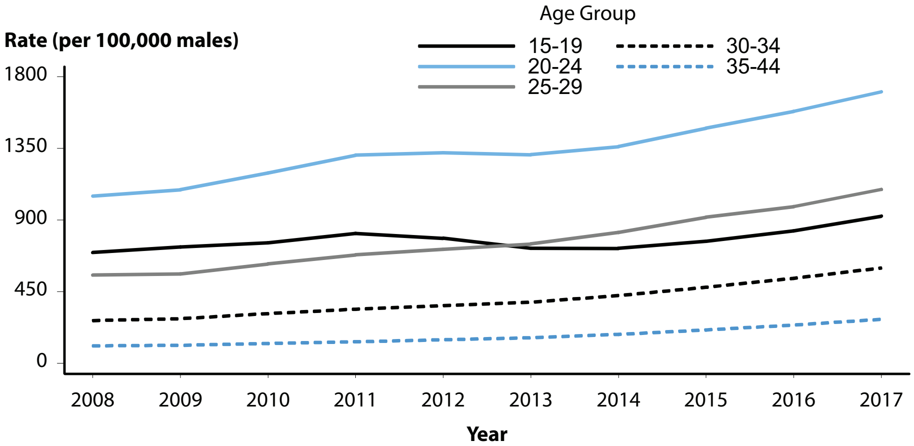
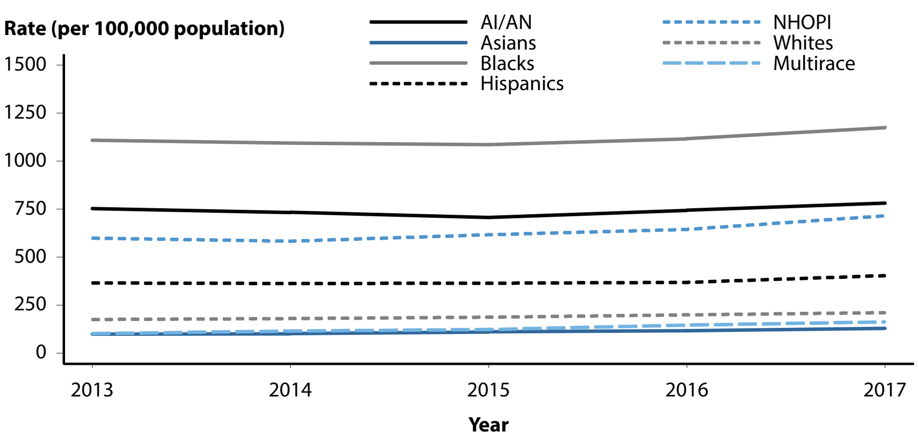


Figure 8. Chlamydia — Rates of Reported Cases by Race and Hispanic Ethnicity, United States, 2013–2017



NOTE: Not all US jurisdictions reported cases in OMB-compliant Race categories in 2017. This may minimally under- or overestimate rates for Asians, NHOPI, or Multirace individuals. For completeness, data in this figure include cases reported from all jurisdictions. See Section A1.5 in the Appendix for information on reporting STD case data for race and Hispanic ethnicity.
ACRONYMS: AI/AN = American Indians/Alaska Natives; NHOPI = Native Hawaiians/Other Pacific Islanders; OMB = Office of Management and Budget.

among persons aged 14–39 years was 1.7% (95% Confidence Interval [CI]: 1.3–2.1) (Figure 11). Among sexually active females aged 14–24 years, the population targeted for screening, prevalence was 4.3% (95% CI: 2.7–5.8), with the highest prevalence among Mexican American females (10.0%, 95% CI: 4.0–15.9) (Figure 12).

Chlamydia Positivity in Selected Populations

The STD Surveillance Network (SSuN) is an ongoing collaboration of 10 state, county, and city health departments collecting enhanced clinical and behavioral information among patients attending 30 STD clinics in the SSuN jurisdictions (See Section A2.2 of the Appendix).

In 2017, the proportion of STD clinic patients testing positive for chlamydia varied by age, sex, and sexual behavior. Adolescent men who have sex with women only (MSW) had the highest positivity (39.2%), either reflecting disproportionate testing of men with urethritis or targeted testing of partners of women diagnosed with chlamydia. Positivity among all those tested decreased with age, though the variation in positivity by age was not as pronounced for MSM (Figure 13). The overall positivity, represented by the average of the mean value by the 10 SSuN jurisdictions, was 17.5% for MSM, 15.0% for MSW, and 11.5% for women.

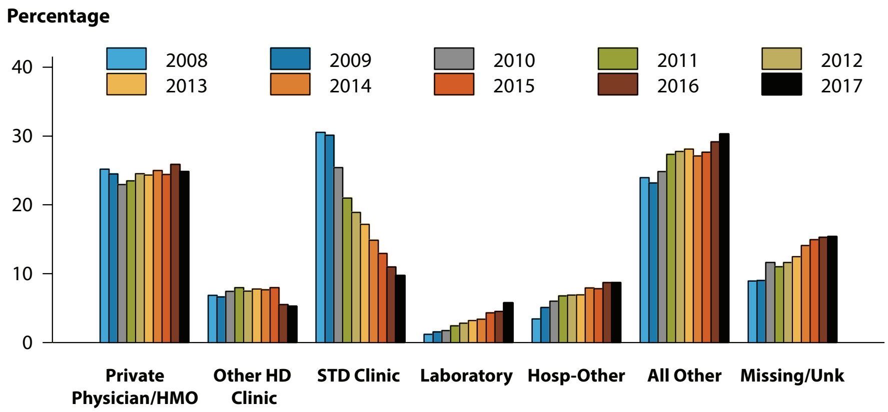
Chlamydia Among Special Populations

More information on chlamydia among women of reproductive age, adolescents and young adults, MSM, and minority populations is presented in the Special Focus Profiles.

Chlamydia Summary

Chlamydia continues to be the most commonly reported nationally notifiable disease, with 1,708,569 cases reported in 2017 and increasing rates of reported cases over each of the last four years. Rates of reported chlamydia cases increased 6.9% during 2016–2017. The Southern region of the US reported the highest rate of chlamydial infection in 2017; the West reported the largest rate increase during 2016–2017. In 2017, the rate of reported cases of chlamydia in women was nearly two times the rate in men. However, during 2013–2017, the rate in men increased 39.3%, whereas the rate in women increased only 11.1%. Potential reasons for this considerable increase in male cases could be due to a true increase in infections or to improved screening coverage in men, especially increased extra-genital screening in MSM.

Figure 9. Chlamydia — Percentage of Reported Cases Among Men by Reporting Source*, United States, 2008–2017

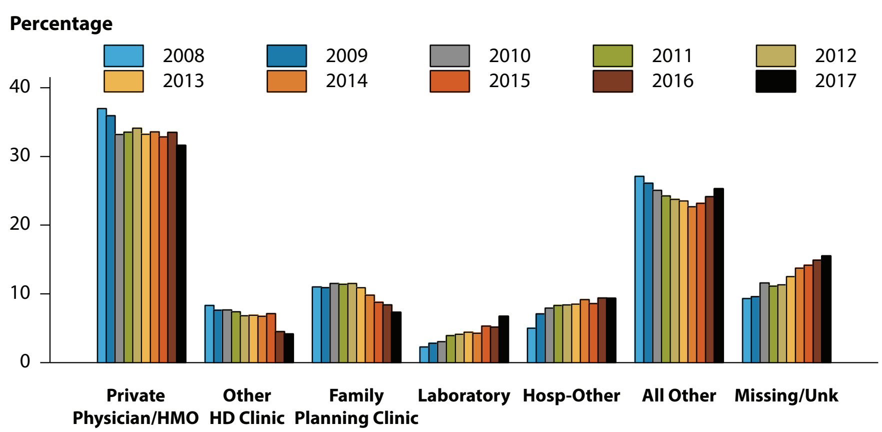


* Includes the top five reporting sources for chlamydia cases reported among men, plus those with reporting sources categorized as "All Other" and "Missing/Unknown".

NOTE: All Other includes: Family Planning, Drug Treatment, Tuberculosis Clinic, Correctional Facility, Blood Bank, Labor and Delivery, Prenatal Care, National Job Training Program, School-based Clinic, Mental Health Provider, Indian Health Service, Military, Emergency Room, HIV Counseling and Testing Site, and Other.

ACRONYMS: HMO = health maintenance organization; HD = health department.

Figure 10. Chlamydia — Percentage of Reported Cases Among Women by Reporting Source*, United States, 2008–2017



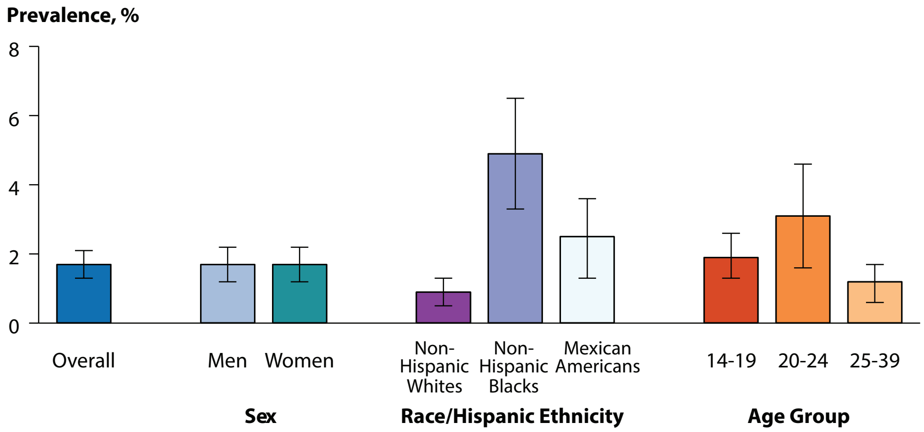
* Includes the top five reporting sources for chlamydia cases reported among women, plus those with reporting sources categorized as "All Other" and "Missing/Unknown".

NOTE: All Other includes: Drug Treatment, Tuberculosis Clinic, Correctional Facility, Blood Bank, Labor and Delivery, Prenatal Care, National Job Training Program, School-based Clinic, Mental Health Provider, Indian Health Service, Military, Emergency Room, STD Clinic, HIV Counseling and Testing Site, and Other.

ACRONYMS: HMO = health maintenance organization; HD = health department.

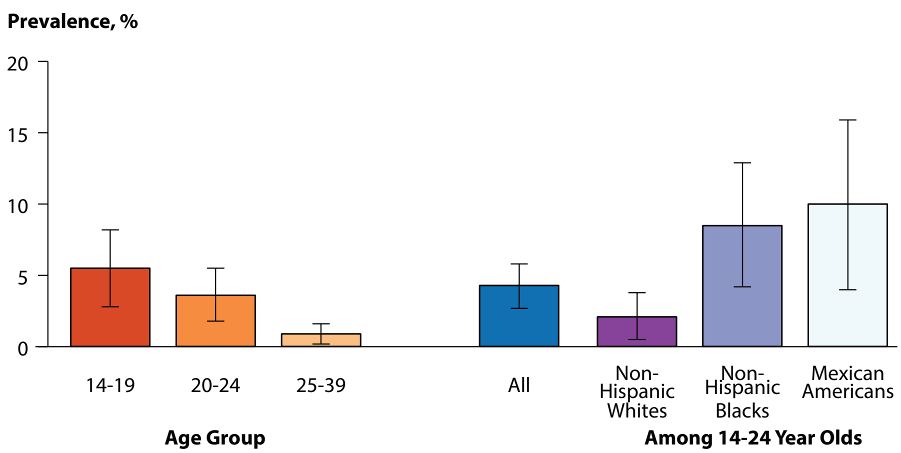
The facilities reporting chlamydial infections have changed over the last 10 years or so, with most (78.6%) chlamydia cases in 2017 reported from venues outside of STD clinics. The proportion of men being diagnosed with chlamydia in STD clinics decreased 68.2% from 30.5% in 2008 to 9.7% in 2017; in 2017 alone, approximately one-third of chlamydia cases among women were reported from private physicians/HMOs. Racial differences also persist; reported case rates among Blacks continue to be substantially higher than among all other racial/Hispanic ethnicity groups. Rates of reported cases of chlamydia were next highest among AI/AN and NHOPI women. Ultimately, both test positivity and the number of reported cases of *C. trachomatis* infections remain high among most age groups, racial/Hispanic ethnicity groups, geographic areas, and both sexes.

Figure 11. Chlamydia — National Estimates of Prevalence Among Persons Aged 14–39 Years by Sex, Race, Hispanic Ethnicity, or Age Group, National Health and Nutrition Examination Survey (NHANES), 2013–2016



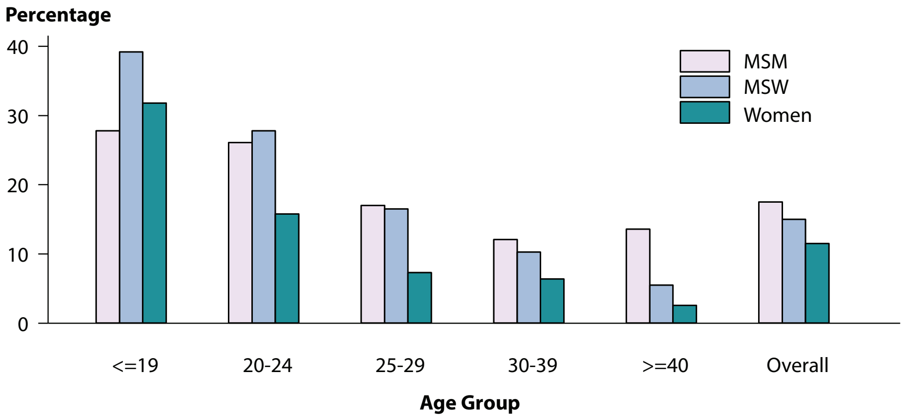
NOTE: Error bars indicate 95% confidence intervals. Overall prevalence estimates include all race and Hispanic ethnicity groups, including those not shown separately.
ADAPTED FROM: Torrone E, Papp J, Weinstock H. Prevalence of *Chlamydia trachomatis* genital infection among persons aged 14–39 years — United States, 2007–2012. MMWR Morb Mortal Wkly Rep 2014; 63(38):834–838.

Figure 12. Chlamydia — National Estimates of Prevalence Among Sexually-Active Women Aged 14–39 Years by Race, Hispanic Ethnicity, and Age Group, National Health and Nutrition Examination Survey (NHANES), 2013–2016



NOTE: Error bars indicate 95% confidence intervals. Overall prevalence estimates include all race and Hispanic ethnicity groups, including those not shown separately.
ADAPTED FROM: Torrone E, Papp J, Weinstock H. Prevalence of *Chlamydia trachomatis* genital infection among persons aged 14–39 years — United States, 2007–2012. MMWR Morb Mortal Wkly Rep 2014; 63(38):834–838.

Figure 13. Chlamydia — Proportion* of STD Clinic Patients Testing Positive† by Age Group, Sex, and Sexual Behavior, STD Surveillance Network (SSuN), 2017



* Proportions represent the overall average of the mean value by jurisdiction.
† Results are based on unique patients with known sexual behavior (n=95,167) attending SSuN STD clinics who were tested ≥1 times for chlamydia in 2017.
NOTE: See Section A2.2 in the Appendix for SSuN methods.
ACRONYMS: MSM = Gay, bisexual, and other men who have sex with men (collectively referred to as MSM); MSW = Men who have sex with women only.

References

1. Torrone E, Papp J, Weinstock H. Prevalence of *Chlamydia trachomatis* genital infection among persons aged 14–39 years — United States, 2007–2012. MMWR 2014; 63(38): 834–838.
2. Stamm WE. *Chlamydia trachomatis* infections in the adult. In: Holmes KK, Sparling PF, Stamm WE, Piot P, Wasserheit JN, Corey L, Cohen MS, Watts DH. Sexually Transmitted Diseases. 4th ed. New York, NY: McGraw-Hill; 2008: 575–606.
3. Scholes D, Stergachis A, Heidrich FE, et al. Prevention of pelvic inflammatory disease by screening for cervical chlamydial infection. N Engl J Med 1996; 334(21): 1362–1366.
4. Oakeshott P, Kerry S, Aghaizu A, et al. Randomised controlled trial of screening for *Chlamydia trachomatis* to prevent pelvic inflammatory disease: The POPI (prevention of pelvic infection) trial. BMJ 2010; 340: c1642.
5. Fleming DT, Wasserheit JN. From epidemiological synergy to public health policy and practice: The contribution of other sexually transmitted diseases to sexual transmission of HIV infection. Sex Transm Infect 1999; 75(1): 3–17.
6. Hammerschlag MR, Chandler JW, Alexander ER, et al. Longitudinal studies of chlamydial infection in the first year of life. Pediatr Infect Dis 1982; 1(6): 395–401.
7. Centers for Disease Control and Prevention. Sexually transmitted diseases treatment guidelines, 2015. MMWR Recomm Rep 2015; 64(RR-3): 1–137. Erratum in: MMWR 2015; 64(33): 924.
8. National Committee for Quality Assurance. The State of Healthcare Quality 2017. Available at: http://www.ncqa.org/report-cards/health-plans/state-of-health-care-quality/2017-table-of-contents/chlamydia-screening. Accessed June 29, 2018.

Gonorrhea

Background

Gonorrhea is the second most commonly reported notifiable disease in the United States. Infections due to *Neisseria gonorrhoeae*, like those resulting from *Chlamydia trachomatis*, are a major cause of pelvic inflammatory disease (PID) in the United States. PID can lead to serious outcomes in women, such as tubal infertility, ectopic pregnancy, and chronic pelvic pain. In addition, epidemiologic and biologic studies provide evidence that gonococcal infections facilitate the transmission of HIV infection.[1] Together, sexual behavior and community prevalence can increase the risk of acquiring gonorrhea. Social determinants of health, such as socioeconomic status, discrimination, and access to quality health care, may contribute to the burden of gonorrhea in a community.[2]

N. gonorrhoeae has progressively developed resistance to each of the antimicrobials used for treatment of gonorrhea. Declining susceptibility to cefixime (an oral cephalosporin antibiotic) resulted in a change to the CDC treatment guidelines in 2015, so that dual therapy with ceftriaxone (an injectable cephalosporin) and azithromycin is now the only CDC-recommended treatment regimen for gonorrhea.[3] The emerging threat of cephalosporin resistance highlights the need for continued surveillance of *N. gonorrhoeae* antimicrobial susceptibility.

The combination of persistently high gonorrhea morbidity in some populations and the threat of cephalosporin-resistant gonorrhea reinforces the need to better understand the epidemiology of gonorrhea.

Interpreting Rates of Reported Cases of Gonorrhea

Although gonorrhea case reporting is useful for monitoring disease trends, the number of gonorrhea cases reported to CDC is affected by many factors in addition to the actual occurrence of the infection within the population. Changes in the burden of gonorrhea may be masked by changes in screening practices (e.g., screening for chlamydia with tests that also detect *N. gonorrhoeae* infections or increased screening at extra-genital anatomic sites), the use of diagnostic tests with different test performance (e.g., the broader use of nucleic acid amplification tests [NAATs]), and changes in reporting practices. As with other STDs, the reporting of gonorrhea cases to CDC is incomplete.[4] For these reasons, supplemental data on gonorrhea prevalence in persons screened in a variety of settings are useful in assessing the burden of disease in selected populations.

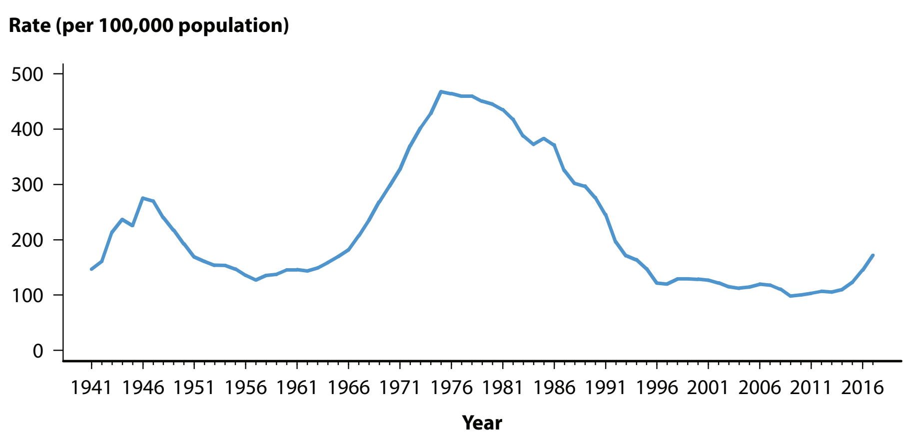
Gonorrhea — United States

In 2017, a total of 555,608 cases of gonorrhea were reported in the United States, yielding a rate of 171.9 cases per 100,000 population (Figure 14, Table 1). During 2016–2017, the rate of reported gonorrhea cases increased 18.6%, and increased 75.2% since the historic low in 2009.

Gonorrhea by Region

The South had the highest rate of reported gonorrhea cases (194.0 cases per 100,000 population) among the four regions of the United States in 2017, followed by the Midwest (170.6 cases per 100,000 population), the West (169.0 cases per 100,000 population), and the Northeast (129.6 cases per 100,000 population) (Figure 15, Table 14). During 2016–2017, the gonorrhea rate increased in all four regions: 19.9% in the West, 19.5% in the Midwest, 19.0% in the Northeast, and 17.4% in the South (Figure 15, Table 14). During 2013–2017, the rate of gonorrhea in the

Figure 14. Gonorrhea — Rates of Reported Cases by Year, United States, 1941–2017



NOTE: Data collection for gonorrhea began in 1941; however, gonorrhea became nationally notifiable in 1944. Refer to the National Notifiable Disease Surveillance System (NNDSS) website for more information: https://wwwn.cdc.gov/nndss/conditions/gonorrhea/

Figure 15. Gonorrhea — Rates of Reported Cases by Region, United States, 2008–2017

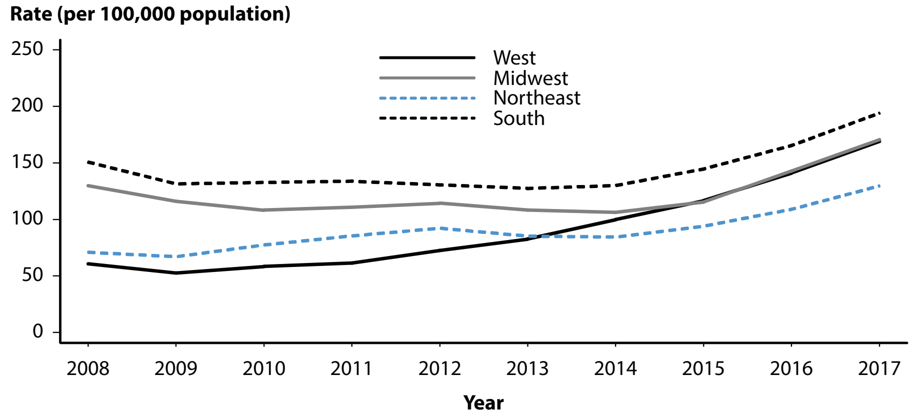
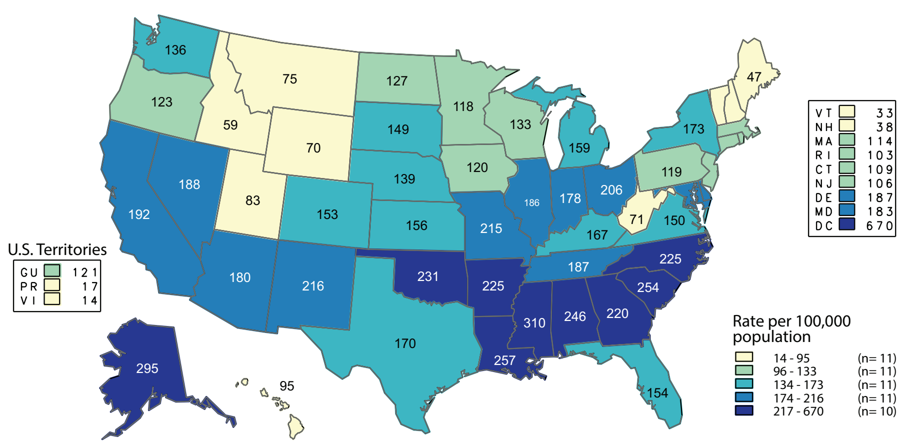


Figure 16. Gonorrhea — Rates of Reported Cases by State, United States and Outlying Areas, 2017



NOTE: The total rate of reported cases of gonorrhea for the United States and outlying areas (including Guam, Puerto Rico, and the Virgin Islands) was 170.3 per 100,000 population. See Section A1.11 in the Appendix for more information on interpreting reported rates in the outlying areas.

ACRONYMS: GU = Guam; PR = Puerto Rico; VI = Virgin Islands.

West increased by 104.4% (82.7 to 169.0 cases per 100,000 population), while other regions had lower overall increases during this time period (i.e., 57.7% in the Midwest, 52.3% in the South, and 52.1% in the Northeast).

Gonorrhea by State

In 2017, rates of reported gonorrhea cases per 100,000 population ranged by state from 32.5 in Vermont to 309.8 in Mississippi; the gonorrhea rate in the District of Columbia was 669.9 cases per 100,000 population (Figure 16, Tables 13 and 14).

During 2016–2017, gonorrhea rates increased in 47 states and the District of Columbia (94.1%) and decreased in 3 states (5.9%) (Table 14).

Gonorrhea by Metropolitan Statistical Area

The overall rate of reported gonorrhea cases in the 50 most populous metropolitan statistical areas (MSAs) was 191.5 cases per 100,000 population in 2017, representing a 18.1% increase compared with the rate in 2016 (162.1 cases per 100,000 population) (Table 17). In 2017, 61.3% of reported gonorrhea cases were reported by these MSAs. Since 2013, the gonorrhea rate among females in the 50 most populous MSAs has been lower than the rate among males (Tables 18 and 19). In 2017, the rate among females in these MSAs was 141.0 cases per 100,000 females, while the rate among males was 243.4 cases per 100,000 males.

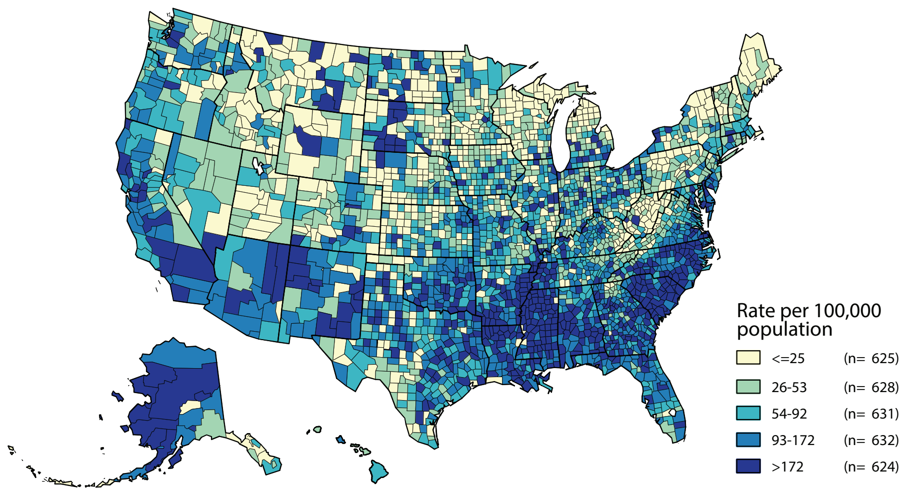
Gonorrhea by County

In 2017, 50.0% of reported gonorrhea cases occurred in just 70 counties or independent cities and 625 counties (19.9%) in the United States had a rate of reported gonorrhea less than or equal to 25 cases per 100,000 population (Figure 17, Table 20). The rate ranged from 26 to 53 cases per 100,000 population in 628 counties (20.0 %), ranged from 54 to 92 cases per 100,000 population in 631 counties (20.0%), ranged from 93 to 172 cases per 100,000 population in 632 counties (20.1%), and was more than 172 cases per 100,000 population in 624 counties (19.9%). As in previous years, counties with the highest gonorrhea rates were concentrated in the South.

Gonorrhea by Sex

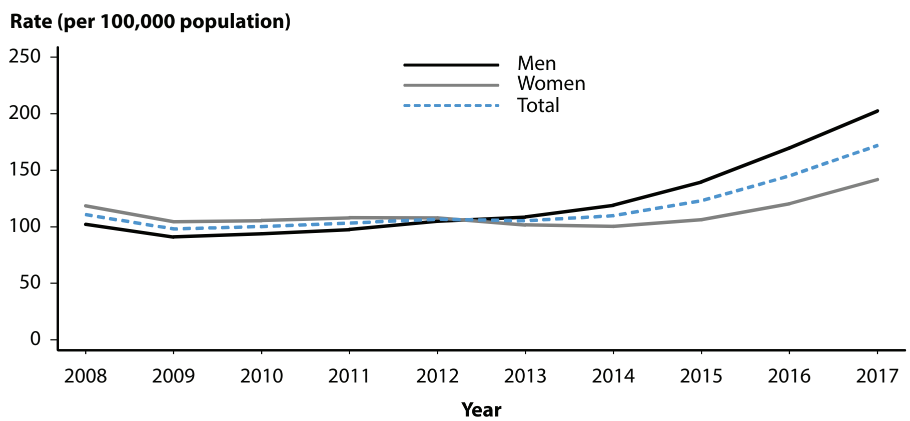
As was observed during 2013–2016, the rate of reported gonorrhea cases among males was higher than the rate among females in 2017 (Figure 18, Tables 15 and 16). During 2016–2017, the gonorrhea rate among males increased 19.3% (169.7 to 202.5

Figure 17. Gonorrhea — Rates of Reported Cases by County, United States, 2017



NOTE: Refer to the NCHHSTP AtlasPlus for further county-level rate information: https://www.cdc.gov/nchhstp/atlas/

Figure 18. Gonorrhea — Rates of Reported Cases by Sex, United States, 2008–2017



cases per 100,000 males) and the rate among females increased 17.8% (120.4 to 141.8 cases per 100,000 females). During 2013–2017, the rate among males increased 86.3% (108.7 to 202.5 cases per 100,000 males) and the rate among females increased 39.4% (101.7 to 141.8 cases per 100,000 females). The magnitude of the increase among males suggest either increased transmission or increased case ascertainment (e.g., through increased extra-genital screening) among gay, bisexual, and other men who have sex with men (collectively referred to as MSM). However, most jurisdictions do not routinely report sex of sex partner or site of infection for gonorrhea cases, so trends in gonorrhea rates among MSM over time cannot be assessed.

Gonorrhea by Region and Sex

In all regions, the rate of gonorrhea increased among both males and females during 2016–2017 and during 2013–2017 (Tables 15 and 16). The rate of reported gonorrhea cases among females increased the most in the West (21.4% during 2016–2017 and 83.4% during 2013–2017) and Midwest (18.2% during 2016–2017 and 37.5% during 2013–2017) (Table 15). However, the rate of reported gonorrhea cases among males increased the most in the Northeast (21.5%) and the Midwest (20.4%) during 2016–2017 and in the West (117.8%) and Northeast (85.7%) during 2013–2017 (Table 16).

Gonorrhea by Age

In 2017, rates of reported gonorrhea cases continued to be highest among adolescents and young adults (Figure 19, Table 21). In 2017, the highest rates among females were observed among those aged 20–24 years (684.8 cases per 100,000 females) and 15–19 years (557.4 cases per 100,000 females). Among males, the rate was highest among those aged 20–24 years (705.2 cases per 100,000 males) and 25–29 years (645.9 cases per 100,000 males).

In 2017, persons aged 15–44 years accounted for 91.8% of reported gonorrhea cases with known age. Among 15–19 year olds, rates increased 15.5% during 2016–2017. The gonorrhea rate also increased among other age groups during 2016–2017: 12.8% among those aged 20–24 years, 20.3% among those aged 25–29 years, 24.2% among those aged 30–34 years, 28.6% among those aged 35–39 years, and 26.2% among those aged 40–44 years (Table 21). Among persons aged 15–44 years, increases were observed in all age groups for both men and women during 2016–2017 (Figures 20 and 21).

Gonorrhea by Race/Hispanic Ethnicity

In 2017, the rate of reported gonorrhea cases remained highest among Blacks (548.1 cases per

Figure 19. Gonorrhea — Rates of Reported Cases by Age Group and Sex, United States, 2017

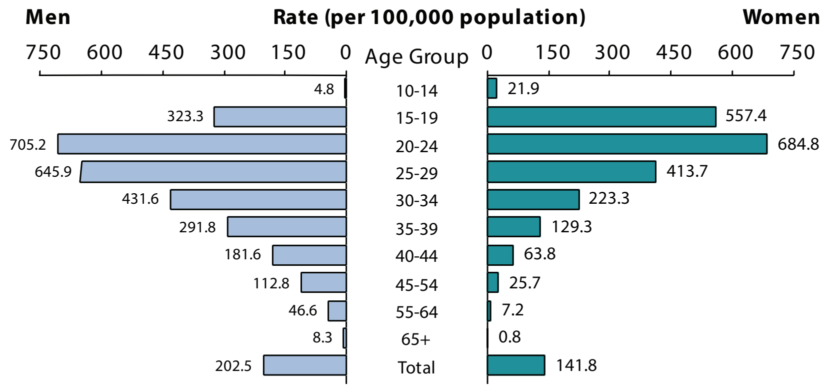


Figure 20. Gonorrhea — Rates of Reported Cases Among Women Aged 15–44 Years by Age Group, United States, 2008–2017

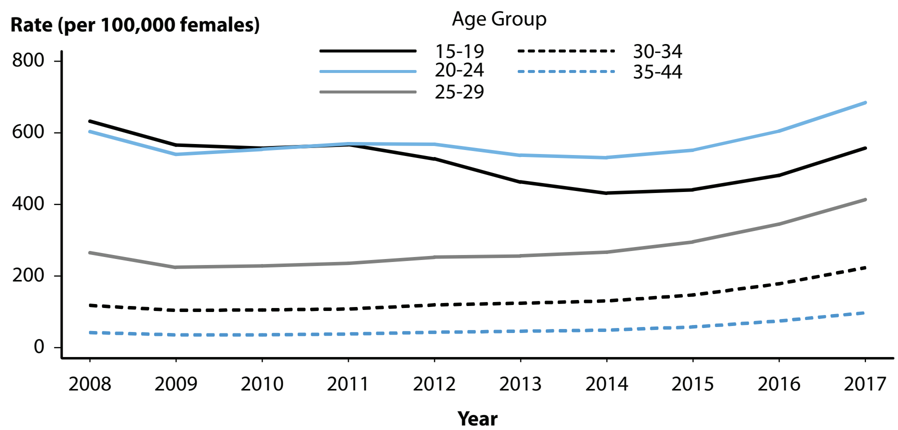
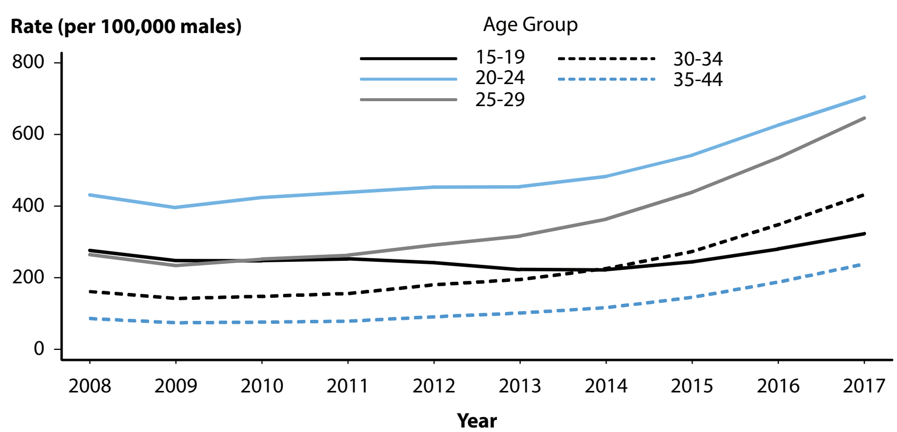


Figure 21. Gonorrhea — Rates of Reported Cases Among Men Aged 15–44 Years by Age Group, United States, 2008–2017



100,000 population) (Table 22B). The rate among Blacks was 8.3 times the rate among Whites (66.4 cases per 100,000 population). The gonorrhea rate among American Indians/Alaska Natives (AI/AN) (301.9 cases per 100,000 population) was 4.5 times that of Whites, the rate among Native Hawaiians/Other Pacific Islanders (NHOPI) (187.8 cases per 100,000 population) was 2.8 times that of Whites, the rate among Hispanics (113.7 cases per 100,000 population) was 1.7 times that of Whites, the rate among Multirace persons (76.9 cases per 100,000 population) was 1.2 times that of Whites, and the rate among Asians (34.7 cases per 100,000 population) was half the rate of Whites (Table 22B).

During 2013–2017, for all five years during that period, the gonorrhea rate increased among all race and Hispanic ethnicity groups: 176.6% among Multirace persons, 122.4% among Asians, 109.1% among NHOPI, 100.6% among Whites, 95.3% among AI/AN, 77.4% among Hispanics, and 36.2% among Blacks (Figure 22).

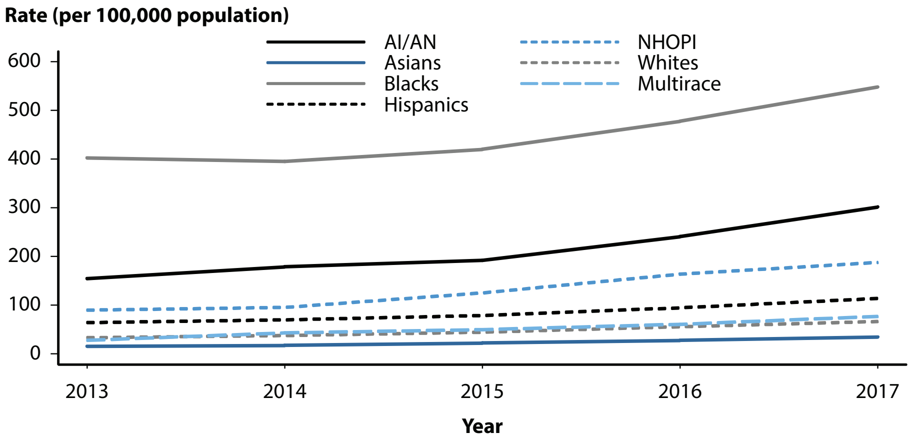
More information on gonorrhea rates among race/Hispanic ethnicity groups can be found in the Special Focus Profiles.

Gonorrhea by Reporting Source

In 2017, 9.3% of gonorrhea cases were reported from STD clinics, 76.7% were reported from venues outside of STD clinics, and 14.0% had an unknown reporting source (Table A2).

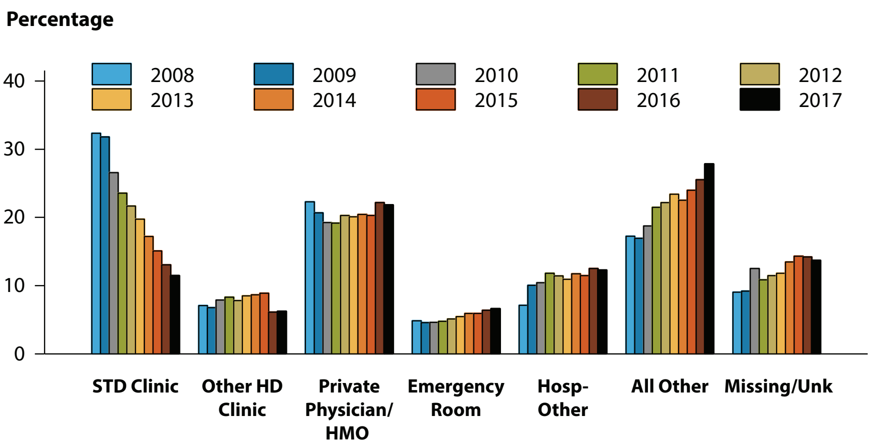
During 2008–2017, the percent of gonorrhea cases reported by STD clinics declined 64.4% among males and 57.9% among females; however, the percent of gonorrhea cases with missing/unknown reporting source increased 50.5% among males and 46.9% among females (Figures 23 and 24). During 2016–2017, the percent

Figure 22. Gonorrhea — Rates of Reported Cases by Race and Hispanic Ethnicity, United States, 2013–2017



NOTE: Not all US jurisdictions reported cases in OMB-compliant Race categories in 2017. This may minimally under- or overestimate rates for Asians, NHOPI, or Multirace individuals. For completeness, data in this figure include cases reported from all jurisdictions. See Section A1.5 in the Appendix for information on reporting STD case data for race and Hispanic ethnicity.
ACRONYMS: AI/AN = American Indians/Alaska Natives; NHOPI = Native Hawaiians/Other Pacific Islanders; OMB = Office of Management and Budget.

Figure 23. Gonorrhea — Percentage of Reported Cases Among Men by Reporting Source*, United States, 2008–2017



* Includes the top five reporting sources for gonorrhea cases reported among men, plus those with reporting sources categorized as "All Other" and "Missing/Unknown".
NOTE: All Other includes: Drug Treatment, Tuberculosis Clinic, Correctional Facility, Laboratory, Blood Bank, Labor and Delivery, Prenatal Care, National Job Training Program, School-based Clinic, Mental Health Provider, Indian Health Service, Military, Family Planning, HIV Counseling and Testing Site, and Other.
ACRONYMS: HMO = health maintenance organization; HD = health department.

of gonorrhea cases reported by STD clinics decreased 12.2% among males and 8.4% among females.

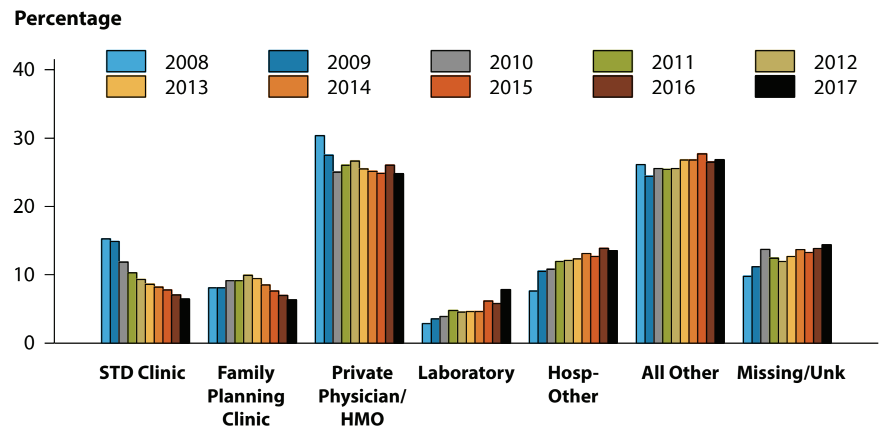
In 2017, the largest proportion of cases among men were reported by private physicians/health maintenance organizations (HMOs) (21.8%), followed by other hospital clinics/ facilities (12.3%), STD clinics (11.5%), emergency rooms (6.6%), and other health department clinics (6.2%) (Figure 23). Among females, private physicians/HMOs (24.8%) were the most common reporting source, followed by other hospital clinics/facilities (13.5%), laboratories (7.8%), STD clinics (6.4%), and family planning clinics (6.3%) (Figure 24).

STD Surveillance Network

The STD Surveillance Network (SSuN) is an ongoing collaboration of states and independently funded cities collecting enhanced information on a representative sample of gonorrhea case reports received from all reporting sources in their jurisdiction. Enhanced gonorrhea case report data for 2017 were obtained from Cycle 3 of SSuN, which includes 10 jurisdictions randomly sampling cases reported in their jurisdictions. In 2017, SSuN collaborators interviewed 6,409 gonorrhea cases, representing 4.1% of all cases reported from participating jurisdictions. The estimated burden of disease represented by men who have sex with men (MSM; including men who have sex with both men and women), men who have sex with women only (MSW), and women varied substantially across collaborating sites based on weighted analysis (Figure 25). San Francisco had the highest proportion of cases estimated to be MSM (86.0%), while Florida had the lowest proportion of MSM cases (20.6%). In total, across all SSuN sites, 41.7% of gonorrhea cases were estimated to be among MSM, 25.5% among MSW, and 32.9% among women.

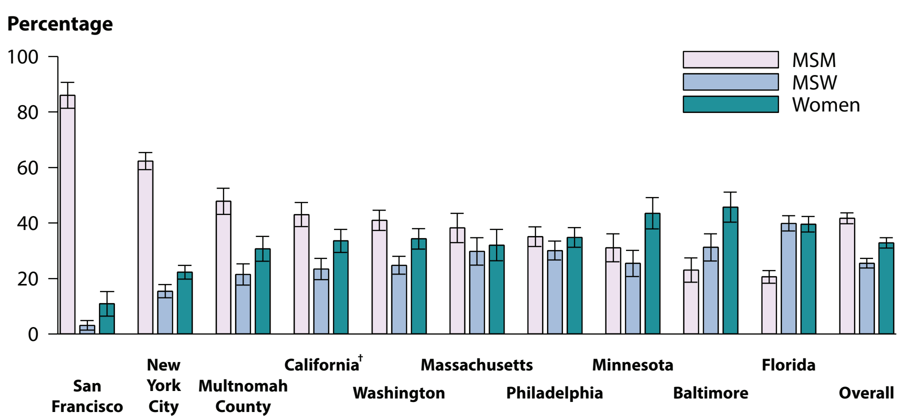
Among six jurisdictions participating in SSuN continuously for the period 2010–2017, estimated rates of gonorrhea among MSM, MSW, and women were calculated by extending published estimates of the MSM population and are presented in Figure 26.[5,6] The estimated gonorrhea case rate among MSM increased 283% during 2010–2017 from 1,368.6 cases per 100,000 MSM in 2010 to 5,241.8 cases per 100,000 MSM in 2017. Over the same time period,

Figure 24. Gonorrhea — Percentage of Reported Cases Among Women by Reporting Source*, United States, 2008–2017



* Includes the top five reporting sources for gonorrhea cases reported among women, plus those with reporting sources categorized as "All Other" and "Missing/Unknown".
NOTE: All Other includes: Drug Treatment, Tuberculosis Clinic, Correctional Facility, Blood Bank, Labor and Delivery, Prenatal Care, National Job Training Program, School-based Clinic, Mental Health Provider, Indian Health Service, Military, Emergency Room, Other Health Department Clinic, HIV Counseling and Testing Site, and Other.
ACRONYMS: HMO = health maintenance organization.

Figure 25. Estimated Proportion* of MSM, MSW, and Women Among Gonorrhea Cases by Jurisdiction, STD Surveillance Network (SSuN), 2017



* Estimate based on weighted analysis of data obtained from interviews (n=6,409) conducted among a random sample of reported gonorrhea cases during January to December 2017.
† California data exclude San Francisco (shown separately).
NOTE: See section A2.2 in the Appendix for SSuN methods.
ACRONYMS: MSM = Gay, bisexual, and other men who have sex with men (collectively referred to as MSM); MSW = Men who have sex with women only.

case rates among MSW and women also increased by 53.9% and 88.3%, respectively.

Collaborating SSuN jurisdictions also conduct sentinel surveillance on all patients seeking care in selected STD clinics. Sentinel facility data for this report include information from patients attending STD clinics during 2017 in 10 funded jurisdictions. In 2017, the proportion of STD clinic patients who tested positive for gonorrhea varied by age group, sex, and sexual behavior (Figure 27). The overall prevalence, represented by the average of the mean value by the 10 SSuN jurisdictions, was 26.5% for MSM, 14.6% for MSW, and 7.4% for women. Among those attending these clinics, MSM disproportionately had higher positivity rates when compared to MSW and women in all age groups. While positivity rates declined with increasing age in women, rates in MSW and MSM showed less consistent declines across age groups.

Additional information about SSuN methodology can be found in Section A2.2 of the Appendix.

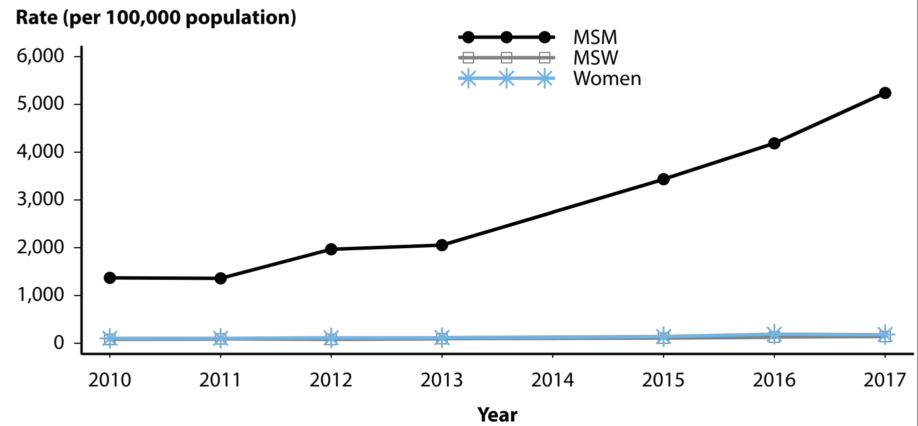
Gonococcal Isolate Surveillance Project

Antimicrobial resistance remains an important consideration in the treatment of gonorrhea.[3,7–9] In 1986, the Gonococcal Isolate Surveillance Project (GISP), a national sentinel surveillance system, was established to monitor trends in antimicrobial susceptibilities of urethral *N. gonorrhoeae* strains in the United States.[7] Data are collected from selected STD clinic sentinel sites and from regional laboratories (Figure 28).

Antimicrobial susceptibility is measured by the minimum inhibitory concentration (MIC), the lowest antimicrobial concentration that inhibits bacterial growth in the laboratory. Increases in MICs demonstrate that the bacteria can survive at higher antimicrobial concentrations in the laboratory. Monitoring of MIC trends is useful because increasing MICs can oftentimes be an early indicator of the emergence of antimicrobial resistance.

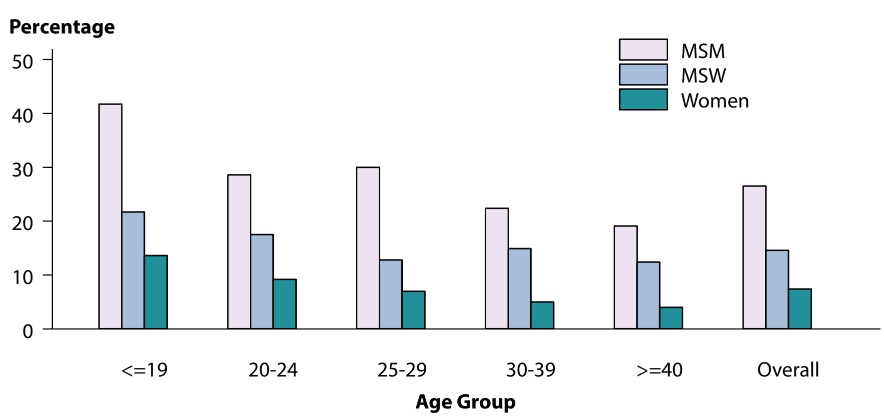
Information on the antimicrobial susceptibility criteria used in GISP can be found in Section A2.3 in the Appendix. More information about GISP and additional data can be found at https://www.cdc.gov/std/GISP.

Figure 26. Gonorrhea — Estimated* Rates of Reported Gonorrhea Cases by MSM, MSW, and Women, STD Surveillance Network (SSuN)†, 2010–2017



* Estimates based on interviews among a random sample of reported cases of gonorrhea (N=17,765); cases weighted for analysis.
† Sites include Baltimore, Philadelphia, New York City, Washington State, San Francisco, and California (excluding San Francisco).
NOTE: Data not available for 2014; 2013–2015 trend interpolated; trend lines overlap for MSW and women in this figure. See section A2.2 in the Appendix for SSuN methods.
ADAPTED FROM: Stenger M, Pathela P, Anschuetz G, et al. Increases in the rate of *Neisseria gonorrhoeae* among gay, bisexual and other men who have sex with men (MSM) — findings from the STD Surveillance Network 2010–2015. Sex Transm Dis 2017; 44(7): 393–397.
ACRONYMS: MSM = Gay, bisexual, and other men who have sex with men (collectively referred to as MSM); MSW = Men who have sex with women only.

Figure 27. Gonorrhea — Proportion* of STD Clinic Patients† Testing Positive by Age Group, Sex, and Sexual Behavior, STD Surveillance Network (SSuN), 2017



* Proportions represent the overall average of the mean value by jurisdiction.
† Results are based on data obtained from unique patients with known sexual behavior (n=94,893) attending SSuN STD clinics who were tested ≥1 times for gonorrhea in 2017.
NOTE: See section A2.2 in the Appendix for SSuN methods.
ACRONYMS: MSM = Gay, bisexual, and other men who have sex with men (collectively referred to as MSM); MSW = Men who have sex with women only.

Ceftriaxone Susceptibility

Susceptibility testing for ceftriaxone began in 1987. During 2008–2017, the percentage of GISP isolates that exhibited elevated ceftriaxone MICs, defined as ≥0.125 µg/ml, fluctuated between 0.05% and 0.4% (Figure 29). In 2017, 0.2% of isolates had elevated ceftriaxone MICs. Five isolates with decreased ceftriaxone susceptibility (MIC = 0.5 µg/ml) have been previously identified in GISP: one from San Diego, California (1987), two from Cincinnati, Ohio (1992 and 1993), one from Philadelphia, Pennsylvania (1997), and one from Oklahoma City, Oklahoma (2012).

Cefixime Susceptibility

Susceptibility testing for cefixime began in 1992, was discontinued in 2007, and was restarted in 2009. The percentage of isolates with elevated cefixime MICs (≥0.25 µg/ ml) declined from 1.4% in 2011 to 0.4% in 2017 (Figure 29).

Azithromycin Susceptibility

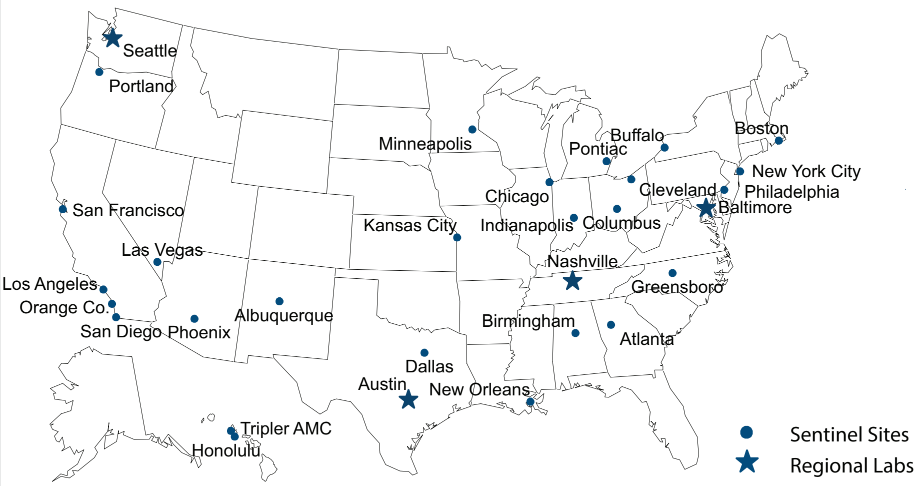
Susceptibility testing for azithromycin began in 1992. Figure 29 displays the distribution of azithromycin MICs among GISP isolates collected during 2008–2017. Most isolates had MICs of 0.125–0.5 µg/ml. During 2012–2014, the percentage of isolates with elevated azithromycin MICs (≥2 µg/ml) ranged from 0.3% to 2.5% with a sharp increase during 2013–2014 (0.6% to 2.5%); during 2014–2017, the percentage increased from 2.5% to 4.4%. No isolates with elevated azithromycin MICs had elevated ceftriaxone MICs in 2017.

Susceptibility to Other Antimicrobials

Susceptibility testing for gentamicin began in 2015. Between 2015 and 2017, 66.7–75.3% of all tested isolates have had an MIC value of 8 µg/mL (Figure 30). None of the isolates tested in GISP have had an MIC above 16 µg/mL.

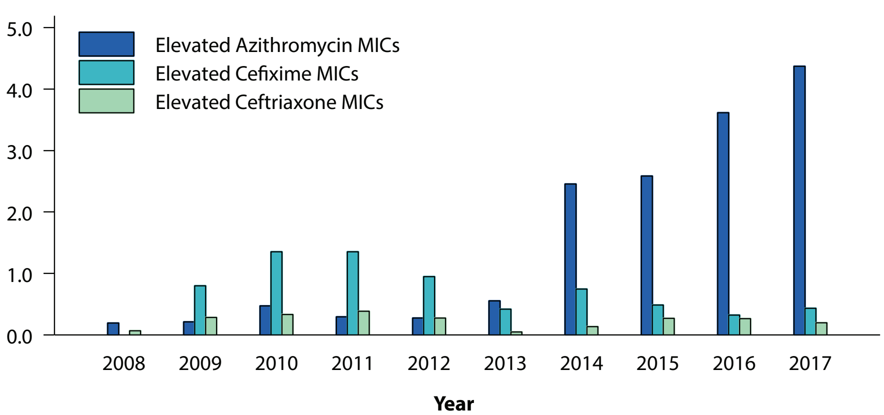
In 2017, 30.1% of isolates collected from GISP sites were resistant to ciprofloxacin, 23.1% to tetracycline, and 15.8% to penicillin (Figure 31). Although these antimicrobials are no

Figure 28. Location of Participating Sentinel Sites and Regional Laboratories, Gonococcal Isolate Surveillance Project (GISP), United States, 2017



NOTE: Seattle is both a sentinel site and a regional laboratory.

Figure 29. ***Neisseria gonorrhoeae*** **— Percentage of Isolates with Elevated Azithromycin Minimum Inhibitory Concentrations (MICs) (≥2.0 µg/ml), Elevated Ceftriaxone MICs (≥0.125 µg/ml), and Elevated Cefixime MICs (≥0.25 µg/ml), Gonococcal Isolate Surveillance Project (GISP), 2008–2017**



NOTE: Isolates not tested for cefixime susceptibility in 2008.

longer recommended for treatment of gonorrhea, the resistance phenotypes remain common. Of all the isolates collected in GISP in 2017, 4.6% demonstrated resistance or elevated MICs to at least 3 antibiotics tested and 51.5% were susceptible to all antibiotics tested (Figure 32).

Antimicrobial Treatments Given for Gonorrhea

The antimicrobial agents given to GISP patients for gonorrhea therapy are shown in Figure 33. The proportion of patients treated with ceftriaxone 250 mg increased from 84.0% in 2011 to 98.1% in 2017. In 2017, 1.1% of patients were treated with gentamicin 240 mg and 0.1% were treated with cefixime 400mg.

In 2017, based on weighted analysis of SSuN jurisdictions with documented treatment information (i.e., antimicrobials and dosages) for ≥90% of cases, 82.4% (95% CI = 80.3–84.4) of reported patients with gonorrhea in SSuN jurisdictions received the recommended treatment for uncomplicated gonorrhea (Figure 34). The proportion of reported patients that received the recommended dual treatment ranged from 77.3% (95% CI = 72.5–82.1) in Massachusetts to 92.0% (95% CI = 88.9–95.2) in Multnomah County, Oregon.

Gonorrhea Among Special Populations

More information about gonorrhea in race/Hispanic ethnicity groups, females of reproductive age, adolescents, and MSM can be found in the Special Focus Profiles.

Gonorrhea Summary

The national rate of reported gonorrhea cases reached a historic low in 2009, but increased each year during 2009–2012. After a temporary decrease in 2013, the gonorrhea rate increased again during 2014–2017. This increase was largely attributable to increases among men. Enhanced surveillance data suggest the largest increases are among MSM. However, high gonorrhea rates persist in certain geographic areas, among adolescents and young adults, and in some racial/Hispanic ethnicity groups. Additionally, continued surveillance for antimicrobial resistant gonorrhea is critical to monitor for the emergence of reduced susceptibility and resistance to cephalosporins and azithromycin.

Figure 30. *Neisseria gonorrhoeae* — Distribution of Gentamicin Minimum Inhibitory Concentrations (MICs) by Year, Gonococcal Isolate Surveillance Project (GISP), 2015–2017

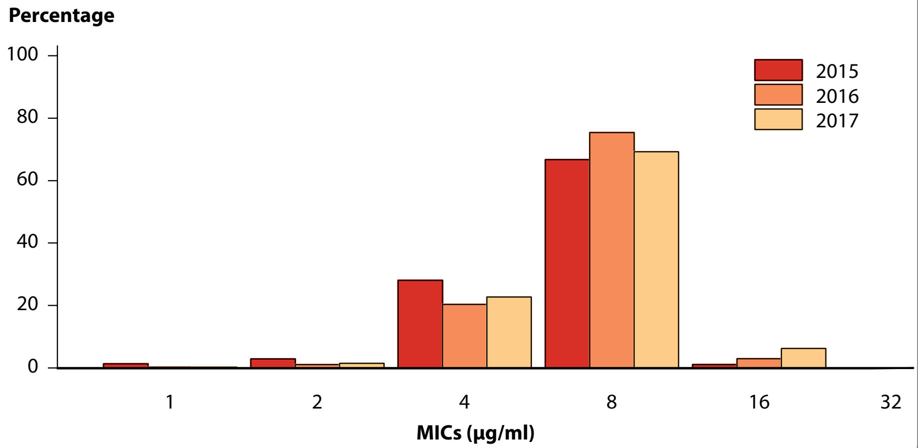
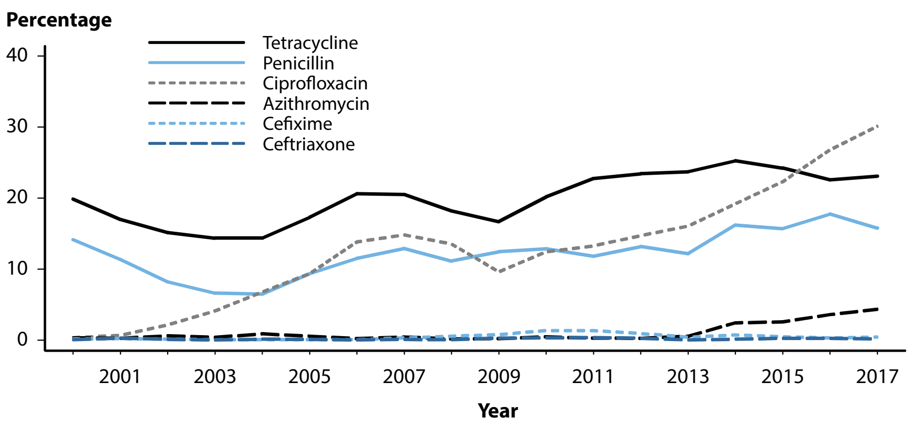


Figure 31. *Neisseria gonorrhoeae* — Prevalence of Tetracycline, Penicillin, or Fluoroquinolone Resistance* or Elevated Cefixime, Ceftriaxone, or Azithromycin Minimum Inhibitory Concentrations (MICs)†, by Year — Gonococcal Isolate Surveillance Project (GISP), 2000–2017



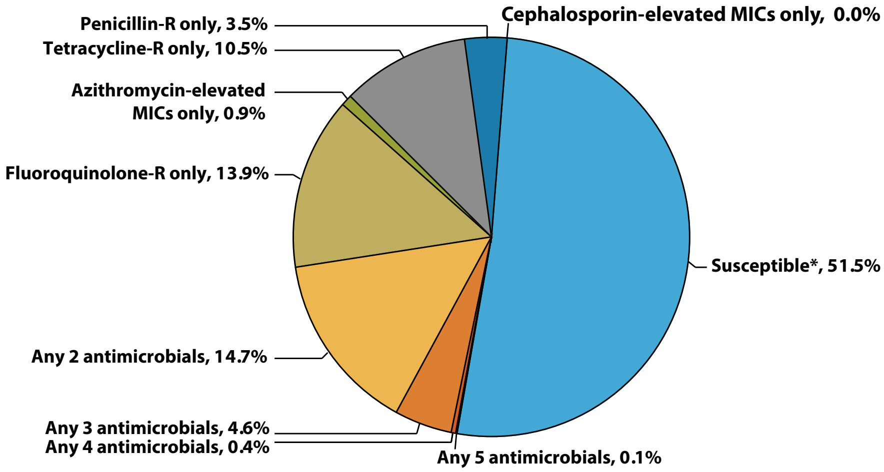
* Resistance: Fluoroquinolone (ciprofloxacin) = MIC≥1.0 µg/mL; Penicillin = MIC≥2.0 µg/mL or B-lactamase positive; Tetracycline = MIC≥2.0 µg/mL.

† Elevated MICs: Azithromycin = MIC≥1.0 µg/mL (2000–2004); ≥2.0 µg/mL (2005–2017); Ceftriaxone = MIC≥0.125 µg/mL; Cefixime = MIC≥0.25 µg/mL.

NOTE: Cefixime susceptibility was not tested in 2007 and 2008.

ADAPTED FROM: Kirkcaldy RD, Harvey A, Papp JR, et al. *Neisseria gonorrhoeae* antimicrobial susceptibility surveillance — The Gonococcal Isolate Surveillance Project, 27 Sites, United States, 2014. MMWR Surveill Summ 2016; 65(7):1–24.

Figure 32. Susceptibility Patterns of *Neisseria gonorrhoeae* Isolates to Antimicrobials, Gonococcal Isolate Surveillance Project (GISP), 2017

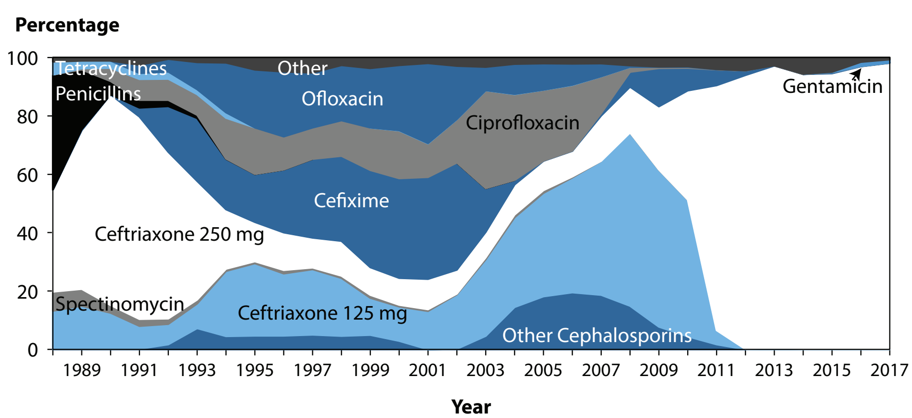


* Susceptible category only includes isolates with penicillin, tetracycline, and fluoroquinolone MIC values that are considered susceptible and isolates with ceftriaxone, cefixime, and azithromycin MIC values that are not considered elevated.

NOTE: Elevated MIC = Ceftriaxone: ≥0.125 µg/ml; Cefixime: ≥0.25 µg/ml; Azithromycin: ≥2.0 µg/ml. Resistant (R) MIC = Tetracycline: ≥2.0 µg/ml; Fluoroquinolone: ≥1.0 µg/ml; Penicillin: ≥2.0 µg/ml or PPNG.

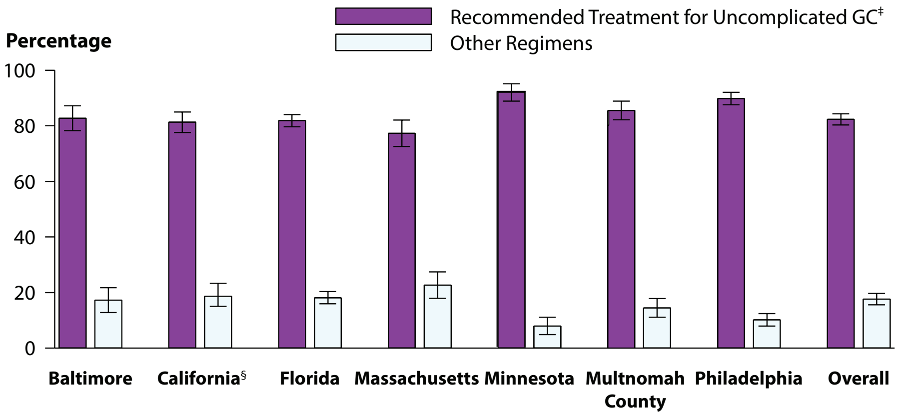
ACRONYMS: R = Resistant; PPNG = Penicillinase-producing *Neisseria gonorrhoeae* and chromosomally-mediated penicillin-resistant *N. gonorrhoeae*; MIC = Minimum Inhibitory Concentration.

Figure 33. Distribution of Primary Antimicrobial Drugs Used to Treat Gonorrhea Among Participants, Gonococcal Isolate Surveillance Project (GISP), 1988–2017



NOTE: For 2017, "Other" includes azithromycin 2g (0.3%), no therapy (0.3%), and other less frequently used drugs (0.1%).

Figure 34. Gonorrhea – Estimated Proportion* of Cases by Treatment Regimen Received and Jurisdiction†, STD Surveillance Network (SSuN), 2017



* Percentage and 95% CI reflect weighted estimates for all reported gonorrhea cases; minor variances cause category estimates to total to slightly more or less than overall case estimate.
† Includes SSuN jurisdictions with documented treatment information (antimicrobials and dosages) for ≥90% of cases with complete investigations.
‡ The recommended treatment for uncomplicated gonorrhea is dual treatment with 250 mg dose of Ceftriaxone [IM] plus 1 g dose of Azithromycin [PO].
§ California data exclude San Francisco.
ADAPTED FROM: Weston EJ, Workowski K, Torrone E, et al. Adherence to CDC recommendations for the treatment of uncompllicated gonorrhea – STD Surveillance Network (SSuN), United States, 2016. MMWR Morb Mort Wkly Rep. 2018; 67:473–76.
ACRONYMS: CI = Confidence interval; GC = Gonorrhea; IM = Intramuscular injection; PO = By mouth.

References

1. Fleming DT, Wasserheit JN. From epidemiological synergy to public health policy and practice: The contribution of other sexually transmitted diseases to sexual transmission of HIV infection. Sex Transm Infect 1999; 75(1): 3–17.
2. Hogben M, Leichliter JS. Social determinants and sexually transmitted disease disparities. Sex Transm Dis 2008; 35(12 Suppl): S13–18.
3. Centers for Disease Control and Prevention. Sexually transmitted diseases treatment guidelines, 2015. MMWR Recomm Rep 2015; 64(No. RR-3): 1–137.
4. Satterwhite CL, Torrone E, Meites E, et al. Sexually transmitted infections among US women and men: Prevalence and incidence estimates, 2008. Sex Transm Dis 2013; 40(3): 187–193. DOI: 10.1097/OLQ.0b013e318286bb53. Review.
5. Grey JA, Bernstein KT, Sullivan PS, et al. Estimating the population sizes of men who have sex with men in US states and counties using data from the American Community Survey. JMIR Public Health Surveill 2016; 2(1):e14.
6. Stenger M, Pathela P, Anschuetz G, et al. Increases in the rate of *Neisseria gonorrhoeae* among gay, bisexual and other men who have sex with men (MSM) — findings from the STD Surveillance Network 2010–2015. Sex Transm Dis 2017; 44(7): 393–397.
7. Centers for Disease Control and Prevention. Update to CDC's sexually transmitted diseases treatment guidelines, 2006: Fluoroquinolones no longer recommended for treatment of gonococcal infections. MMWR Morb Mortal Wkly Rep 2007; 56(14): 332–336.
8. Centers for Disease Control and Prevention. Sexually transmitted diseases treatment guidelines, 2010. MMWR Recomm Rep 2010; 59(No.RR-12): 1–110.
9. Schwarcz S, Zenilman J, Schnell D, et al. National surveillance of antimicrobial resistance in *Neisseria gonorrhoeae*. JAMA 1990; 264(11): 1413–1417.

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Syphilis

Background

Syphilis, a genital ulcerative disease caused by the bacterium *Treponema pallidum*, is associated with significant complications if left untreated and can facilitate the transmission and acquisition of HIV infection.[1–3] Additionally, historical data demonstrate that untreated syphilis in pregnant women, if acquired during the four years before delivery, can lead to infection of the fetus in up to 80% of cases and may result in stillbirth or death of the infant in up to 40% of cases.[4]

In 2000 and 2001, the national rate of reported primary and secondary (P&S) syphilis cases was 2.1 cases per 100,000 population, the lowest rate since reporting began in 1941 (Figure 35, Table 1). However, the P&S syphilis rate has increased almost every year since 2000–2001. Since 2000, the rise in the rate of reported P&S syphilis has been primarily attributable to increased cases among men and, specifically, among gay, bisexual, and other men who have sex with men (collectively referred to as MSM). MSM account for the majority of P&S syphilis cases, and estimated rates are substantially higher among MSM compared with men who have sex with women only (MSW) or women.[5] The number of cases among MSM has continued to increase, but within the last five years, cases among MSW and women have increased substantially as well. The increase in syphilis among women is of particular concern because it has been associated with a striking increase in congenital syphilis. These recent trends highlight the importance of national syphilis surveillance to better understand the current epidemiology of syphilis in the United States and to focus prevention efforts.

Interpreting Rates of Reported Cases of Syphilis

Left untreated, infection with syphilis can span decades. P&S syphilis are the earliest stages of infection, reflect symptomatic disease, and are indicators of incident infection.[6] For these reasons, trend analyses of syphilis focus on reported cases and rates of reported cases of P&S syphilis. When referring to "P&S syphilis", case counts are the sum of both primary and secondary cases, and "rate of P&S syphilis" refers to this sum per unit population.

Changes in reporting and screening practices can complicate interpretation of trends over time. To minimize the effect of changes in reporting over time, trend data in this report are restricted to jurisdictions that consistently report data of interest (e.g., sex of sex partners) for each year of a given time period. Details of these restrictions are provided in the text and footnotes of the pertinent text and figures.

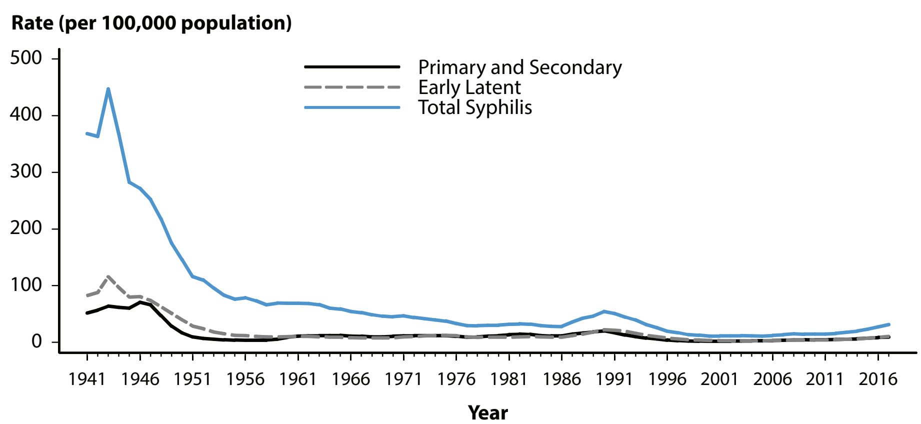
P&S Syphilis — United States

In 2017, a total of 30,644 cases of P&S syphilis were reported in the United States, yielding a rate of 9.5 cases per 100,000 population (Figure 35, Table 1). This rate represents a 10.5% increase compared with 2016 (8.6 cases per 100,000 population), and a 72.7% increase compared with 2013 (5.5 cases per 100,000 population).

P&S Syphilis by Region

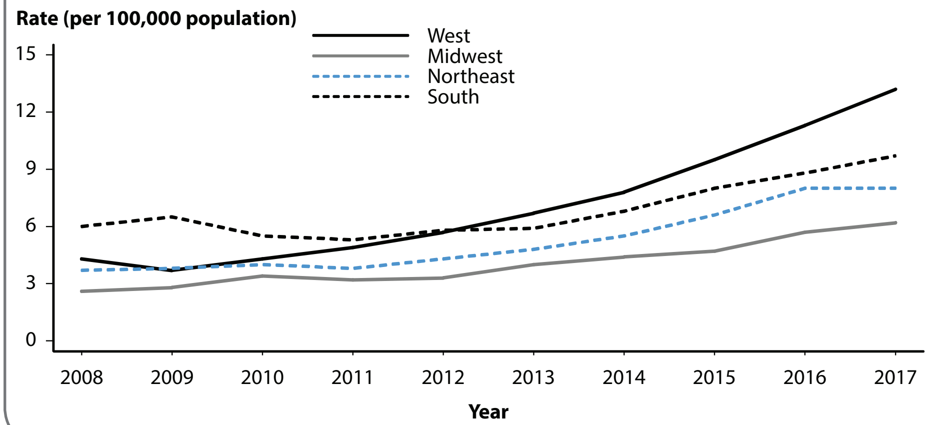
In 2017, the West had the highest rate of reported P&S syphilis cases (13.2 cases per 100,000 population), followed by the South (9.7 cases per 100,000 population), the Northeast (8.0 cases per 100,000 population), and the Midwest (6.2 cases per 100,000 population) (Table 27). During 2016–2017, the P&S syphilis rate increased 16.8% in the West, 10.2% in the South, and 8.8% in the Midwest; the rate did not change in the Northeast (Figure 36, Table 27).

Figure 35. Syphilis — Rates of Reported Cases by Stage of Infection, United States, 1941–2017



NOTE: Data collection for syphilis began in 1941; however, syphilis became nationally notifiable in 1944. Refer to the National Notifiable Disease Surveillance System (NNDSS) website for more information: https://wwwn.cdc.gov/nndss/conditions/syphilis/

Figure 36. Primary and Secondary Syphilis — Rates of Reported Cases by Region, United States, 2008–2017



P&S Syphilis by State

In 2017, rates of reported P&S syphilis cases per 100,000 population ranged by state from 0.7 in Wyoming to 20.0 in Nevada (Figure 37, Table 26). The rate of reported P&S syphilis cases in the District of Columbia was 40.2 cases per 100,000 population. During 2016–2017, P&S syphilis rates increased in 72% (36/50) of states and the District of Columbia, and remained stable or decreased in 28% (14/50) of states (Table 27).

P&S Syphilis by County

In 2017, 63% of reported P&S syphilis cases occurred in 70 counties or independent cities (Table 33). Of 3,140 counties in the United States, 531 (16.9%) had a P&S syphilis rate greater than 7.5 cases per 100,000 population, 522 (16.6%) reported a rate from 3.9 to 7.5 cases per 100,000 population, 525 (16.7%) reported a rate from >0 to 3.8 cases per 100,000 population, and 1,562 (49.7%) counties reported no cases of P&S syphilis in 2017 (Figure 38).

P&S Syphilis by Sex and Sexual Behavior

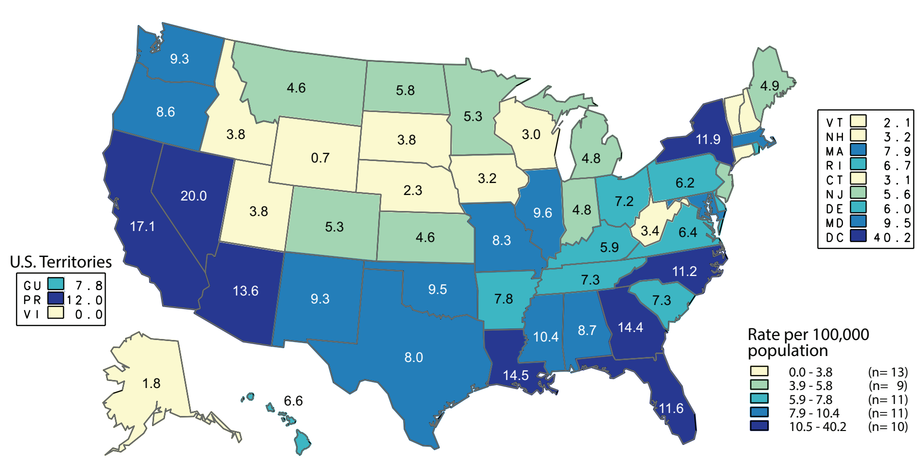
As has been observed in previous years, in 2017 the rate of reported P&S syphilis cases among men (16.9 cases per 100,000 males) was much higher than the rate among women (2.3 cases per 100,000 females), and men accounted for a large majority (87.7%) of P&S syphilis cases (Figure 39, Tables 28 and 29). Among men, the rate of P&S syphilis has increased every year since 2000, and during 2016–2017, the rate among men increased 9.0% (Figure 40, Table 29). In contrast, the P&S syphilis rate among women fluctuated between 0.8 and 1.7 cases per 100,000 females during 2000–2013, but has increased substantially since 2013 (Figure 40, Table 28). During 2013–2017, the P&S syphilis rate among women more than doubled (increased 155.6%). During 2016–2017, the P&S syphilis rate among women increased 21.1%.

These increases in male and female P&S syphilis rates were observed in almost every region of the country during 2016–2017. Among men, the rate increased 14.5% in the

P&S Syphilis by Metropolitan Statistical Area

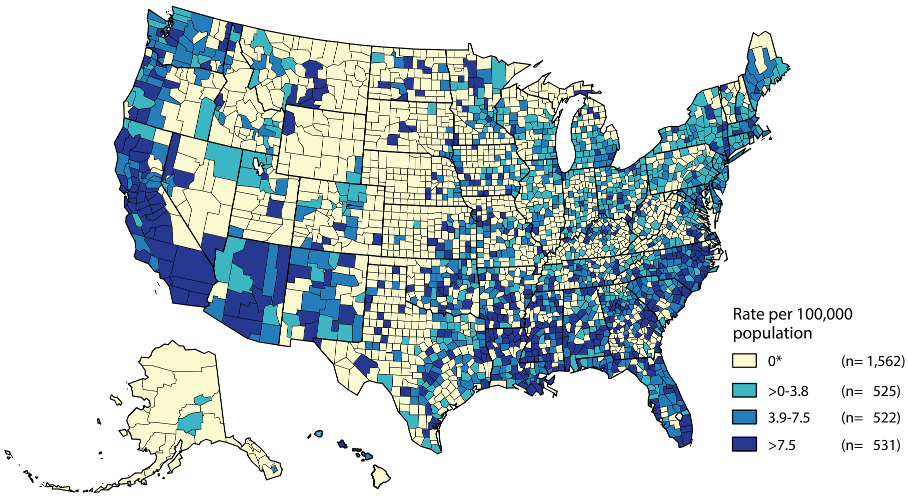
The overall rate of reported P&S syphilis cases in the 50 most populous metropolitan statistical areas (MSAs) was 12.1 cases per 100,000 population in 2017, which represents a 9.0% increase since 2016 (11.1 cases per 100,000 population) (Table 30). Overall, in 2017, 70.4% of reported P&S syphilis cases (72.9% of male cases and 52.0% of female cases) were reported by these 50 MSAs. In 2017, the rate among women in these MSAs was 2.1 cases per 100,000 females, while the rate among men was 22.5 cases per 100,000 males (Tables 31 and 32).

Figure 37. Primary and Secondary Syphilis — Rates of Reported Cases by State, United States and Outlying Areas, 2017



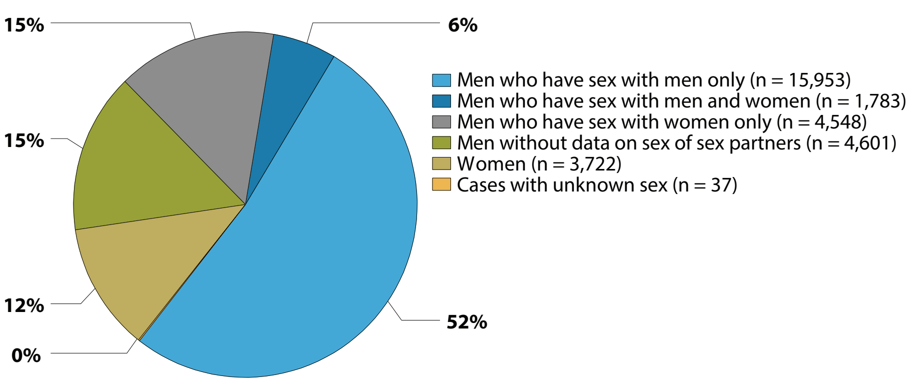
NOTE: The total rate of reported cases of primary and secondary syphilis for the United States and outlying areas (including Guam, Puerto Rico, and the Virgin Islands) was 9.5 per 100,000 population. See Section A1.11 in the Appendix for more information on interpreting reported rates in the outlying areas.
ACRONYMS: GU = Guam; PR = Puerto Rico; VI = Virgin Islands.

Figure 38. Primary and Secondary Syphilis — Rates of Reported Cases by County, United States, 2017



* In 2017, 1,562 (49.7%) of 3,140 counties in the United States reported no cases of primary and secondary syphilis. Refer to the NCHHSTP AtlasPlus for further county-level rate information: https://www.cdc.gov/nchhstp/atlas/

Figure 39. Primary and Secondary Syphilis — Distribution of Cases by Sex and Sexual Behavior, United States, 2017



West, 8.3% in the South, and 7.8% in the Midwest; the rate decreased 0.7% in the Northeast (Table 29). Among women, the largest increases were observed in the West (29.6%), followed by the South (22.7%), the Northeast (11.1%) and the Midwest (8.3%) (Table 28).

MSM continued to account for the majority of P&S syphilis cases in 2017 (Figures 39 and 41). Of 30,644 reported P&S syphilis cases in 2017, 17,736 (57.9%) were among MSM, including 15,953 (52.1%) cases among men who had sex with men only and 1,783 (5.8%) cases among men who had sex with both men and women (Figure 39). Overall, 4,548 (14.8%) cases were among MSW, 3,722 (12.1%) were among women, 4,601 (15.0%) were among men without information about sex of sex partner, and 37 (0.1%) were cases reported with unknown sex. Among the 22,284 male cases with information on sex of sex partner, 79.6% occurred among MSM.

A total of 37 states were able to classify at least 70.0% of reported P&S syphilis cases as MSM, MSW, or women each year during 2013–2017 (Figure 41). In these states, during 2016–2017, the number of cases increased 8.6% among MSM, 17.8% among MSW, and 24.9% among women.

P&S Syphilis by Age

As in previous years, in 2017, rates of reported P&S syphilis cases were highest among persons aged 25–29 years (Figure 42, Table 34). In 2017, the highest rates were observed among men aged 25–29 years (51.9 cases per 100,000 males), 20–24 years (41.1 cases per 100,000 males), and 30–34 years (39.3 cases per 100,000 males). The highest rates among women were among those aged 20–24 years (7.8 cases per 100,000 females) and those aged 25–29 years (7.1 cases per 100,000 females).

During 2016–2017, the overall rate of reported P&S syphilis cases increased in all age groups among those aged 15 years or older (Table 34). Rates increased 9.8% among those aged 15–19 years, 7.8% among those aged 20–24 years, 10.7% among those aged 25–29 years, 14.3% among those aged 30–34 years, 17.8% among those aged 35–39 years, 6.4% among those aged 40–44 years, 4.3% among those aged 45–54 years, 11.8% among those aged 55–64 years, and 16.7% among those aged 65 or older.

In 2017, persons aged 15–44 years accounted for 80.2% of reported P&S syphilis cases with known age. Among men, during 2016–2017, the P&S syphilis rate increased in all age groups among those aged 15–44 years. Among women, the rate decreased slightly among those aged 15–19 years, but increased in all older age groups (Figures 43 and 44, Table 34).

Figure 40. Primary and Secondary Syphilis — Rates of Reported Cases by Sex and Male-to-Female Rate Ratios, United States, 1990–2017

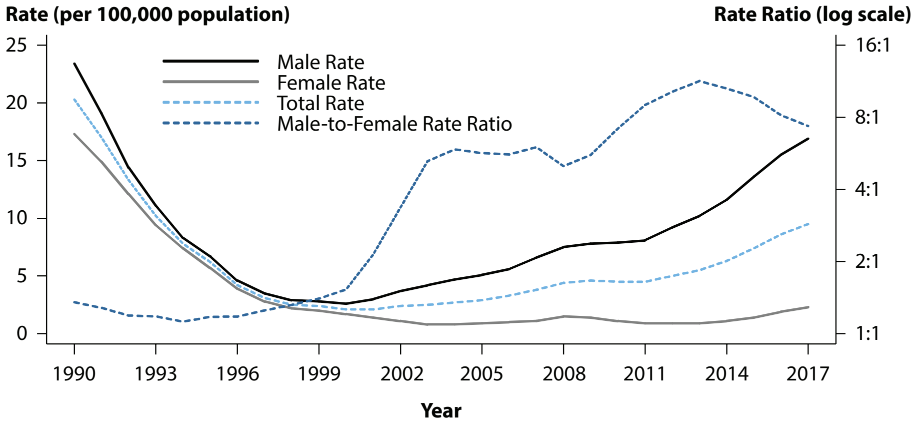
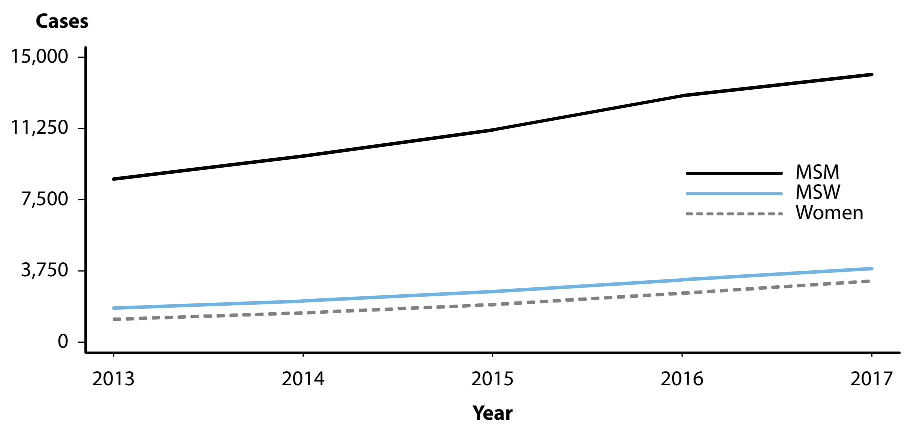


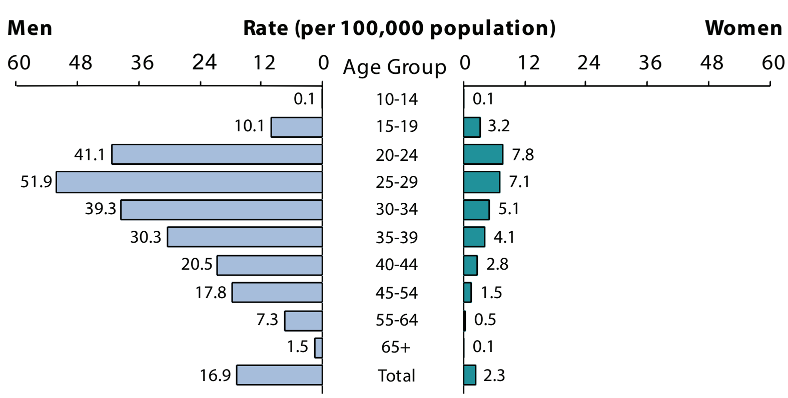
Figure 41. Primary and Secondary Syphilis — Reported Cases by Sex and Sexual Behavior, 37 States*, 2013–2017



* 37 states were able to classify ≥70% of reported cases of primary and secondary syphilis as either MSM, MSW, or women for each year during 2013–2017.

ACRONYMS: MSM = Gay, bisexual, and other men who have sex with men (collectively referred to as MSM); MSW = Men who have sex with women only.

Figure 42. Primary and Secondary Syphilis — Rates of Reported Cases by Age Group and Sex, United States, 2017



P&S Syphilis by Race/Hispanic Ethnicity

In 2017, the rate of reported P&S syphilis cases was highest among Blacks (24.2 cases per 100,000 population) (Table 35B). The P&S syphilis rate among Blacks was 4.5 times the rate among Whites (5.4 cases per 100,000 population), the rate among Native Hawaiians/Other Pacific Islanders (NHOPI) (13.9 cases per 100,000 population) was 2.6 times the rate among Whites, the rate among Hispanics (11.8 cases per 100,000 population) was 2.2 times the rate among Whites, the rate among American Indians/Alaska Natives (AI/AN) (11.1 cases per 100,000 population) was 2.1 times the rate among Whites, and the rate among Asians (4.4 cases per 100,000 population) was 0.8 times the rate among Whites.

During 2013–2017, the P&S syphilis rate increased among all race/Hispanic ethnicity groups (Figure 45). The greatest increases during 2016–2017 were observed among AI/AN (38.8%) and those who identified as Multiracial (31.7%), followed by Asians (15.7%), Whites (10.2%), NHOPI (9.4%), Hispanics (9.3%), and Blacks (5.7%).

More information on P&S syphilis rates among racial/Hispanic ethnicity groups can be found in the Special Focus Profiles.

P&S Syphilis and HIV Co-infection

Reported cases of P&S syphilis continue to be characterized by a high rate of HIV co-infection, particularly among MSM (Figure 46). Among 2017 P&S syphilis cases with known HIV status, 45.5% of cases among MSM were HIV-positive, compared with 8.8% of cases among MSW, and 4.5% of cases among women.

Figure 43. Primary and Secondary Syphilis — Rates of Reported Cases Among Women Aged 15–44 Years by Age Group, United States, 2008–2017

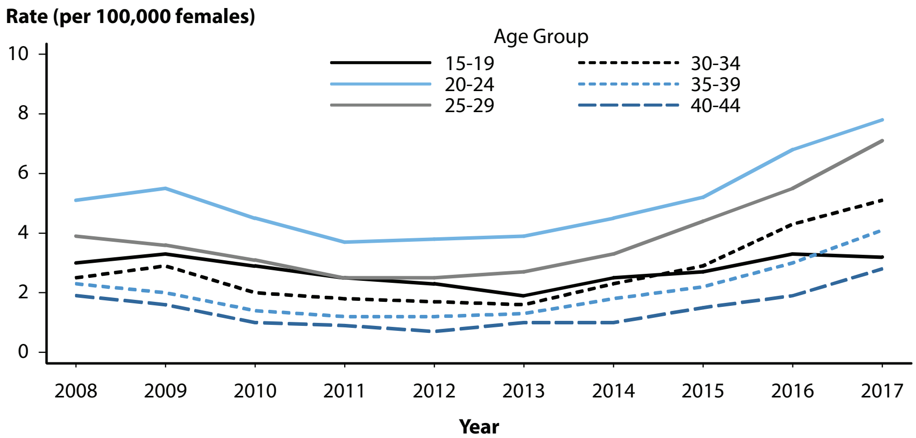
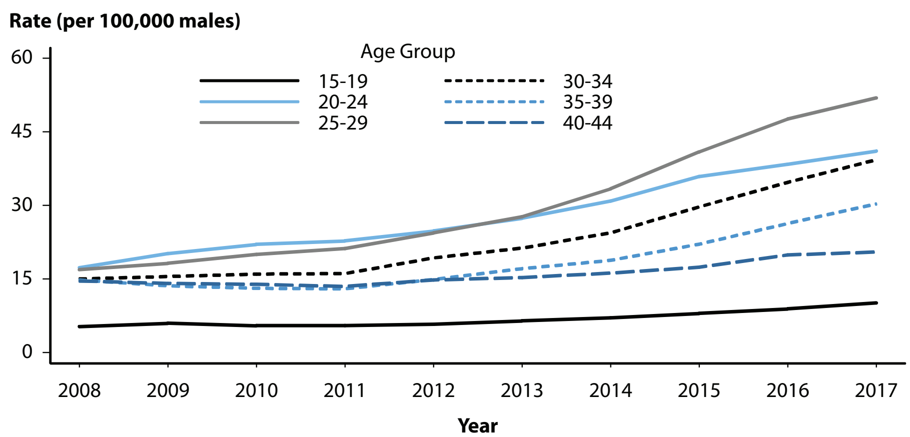


Figure 44. Primary and Secondary Syphilis — Rates of Reported Cases Among Men Aged 15–44 Years by Age Group, United States, 2008–2017



P&S Syphilis by Reporting Source

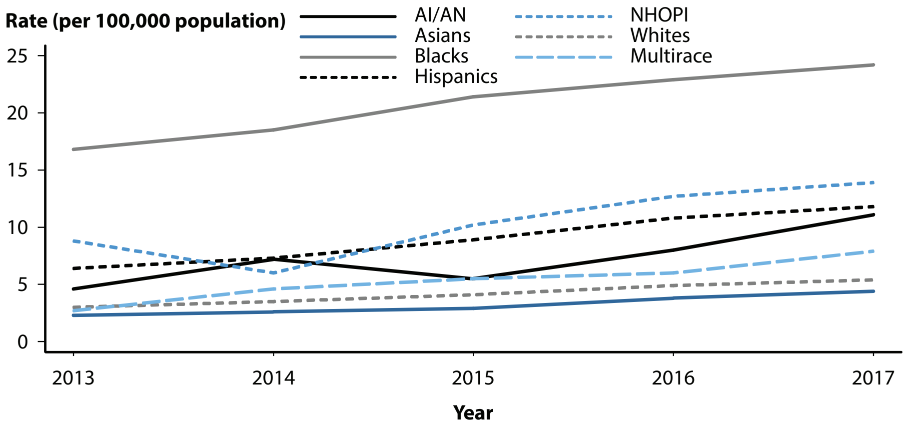
In 2017, 17.0% of P&S syphilis cases were reported from STD clinics, 71.7% were reported from venues outside of STD clinics, and 11.4% of cases had an unknown reporting source (Table A2). During 2016–2017, the number of P&S syphilis cases reported by STD clinics and by non-STD clinic settings increased (Figure 47). However, the proportion of P&S syphilis cases that were reported by STD clinics has declined over the last decade from 31.1% of cases in 2008 to 17.0% of cases in 2017. In 2017, private physicians/health maintenance organizations (HMOs) and STD clinics were the most common reporting sources among MSM (29.8% and 22.4%, respectively), MSW (23.0% and 19.8%, respectively), and women (26.1% and 14.4%, respectively) (Figure 48).

Congenital Syphilis

After decreasing from 10.5 to 8.4 reported congenital syphilis cases per 100,000 live births during 2008–2012, the rate of reported congenital syphilis has subsequently increased each year since 2012 (Table 1). In 2017, there were a total of 918 reported cases of congenital syphilis, including 64 syphilitic stillbirths and 13 infant deaths, and the national rate was 23.3 cases per 100,000 live births. This rate represents a 43.8% increase relative to 2016 (16.2 cases per 100,000 live births) and a 153.3% increase relative to 2013 (9.2 cases per 100,000 live births). As has been observed historically, this increase in the congenital syphilis rate has paralleled increases in P&S syphilis among all women and reproductive-aged women during 2013–2017 (155.6% and 142.8% increases, respectively) (Figure 49, Table 28).

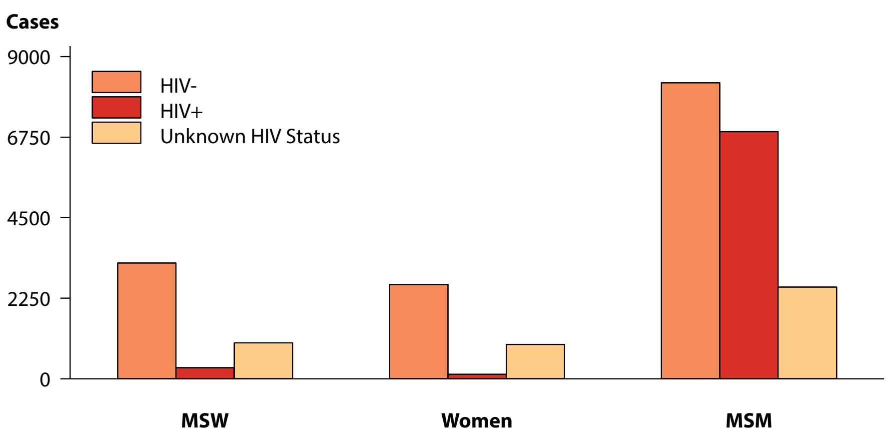
During 2013–2017, the increase in reported congenital syphilis cases was primarily attributable to an increase in the West. During this time period, the congenital syphilis rate increased 362.5% in the West, 107.7% in the South, 93.1% in the Northeast, and 43.8% in the Midwest (Table 41). During 2016–2017, the congenital syphilis rate increased 60.3% in the South, 40.7% in the West, 5.7% in the Northeast, and 5.7% in the Midwest. In 2017, the highest congenital syphilis rates were reported from the West (37.0 cases per 100,000 live births), followed by the South (29.5 cases per 100,000 live births), Midwest (9.2 cases per 100,000 live births), and the Northeast (5.6 cases per 100,000 live births). In addition, rates were highest among Blacks (58.9 cases per 100,000 live births), followed by AI/AN (35.5 cases per 100,000 live births), Hispanics (33.5 cases per 100,000 live births), Whites (9.7 cases per 100,000 live births), and Asians/Pacific Islanders (4.3 cases per 100,000 live births) (Table 42).

Figure 45. Primary and Secondary Syphilis — Rates of Reported Cases by Race and Hispanic Ethnicity, United States, 2013–2017



NOTE: Not all US jurisdictions reported cases in OMB-compliant Race categories in 2017. This may minimally under- or overestimate rates for Asians, NHOPI, or Multirace individuals. For completeness, data in this figure include cases reported from all jurisdictions. See Section A1.5 in the Appendix for information on reporting STD case data for race and Hispanic ethnicity.
ACRONYMS: AI/AN = American Indians/Alaska Natives; NHOPI = Native Hawaiians/Other Pacific Islanders; OMB = Office of Management and Budget.

Figure 46. Primary and Secondary Syphilis — Reported Cases by Sex, Sexual Behavior, and HIV Status, United States, 2017



ACRONYMS: MSM = Gay, bisexual, and other men who have sex with men (collectively referred to as MSM); MSW = Men who have sex with women only.

Syphilis — All Stages (P&S, Early Latent, Late, Late Latent, and Congenital)

In 2017, the total case count of reported syphilis (all stages combined: P&S, early latent, late and late latent, and congenital) was the highest recorded since 1993. The total number of cases of syphilis (all stages) reported to CDC increased 15.3% during 2016–2017 (from 88,053 cases to 101,567 cases) (Table 1). The number of cases of early latent syphilis reported to CDC increased 17.6% (from 28,924 cases to 34,013 cases), and the number of cases of late and late latent syphilis increased 17.3% (from 30,676 cases to 35,992 cases) (Tables 1, 36, and 38).

Syphilis among Special Populations

More information about syphilis and congenital syphilis in racial/Hispanic ethnicity groups, women of reproductive age, adolescents, and MSM can be found in the Special Focus Profiles.

Syphilis Summary

The national rate of reported P&S syphilis cases reached an historic low in 2000 and 2001, but has increased almost every year since then. This increase was largely attributable to an increase among men, and in particular among MSM. However, in the last five years, rates have increased among both men and women, and the P&S syphilis rate among women has more than doubled. Rates of reported congenital syphilis cases also increased substantially during 2013–2017 and during 2016–2017. MSM continued to account for the majority of reported P&S syphilis cases in 2017. Nationally, the highest rates of P&S syphilis in 2017 were observed among men aged 20–34 years, among men in the West, and among Black men.

Figure 47. Primary and Secondary Syphilis — Reported Cases by Reporting Source and Sex, United States, 2008–2017

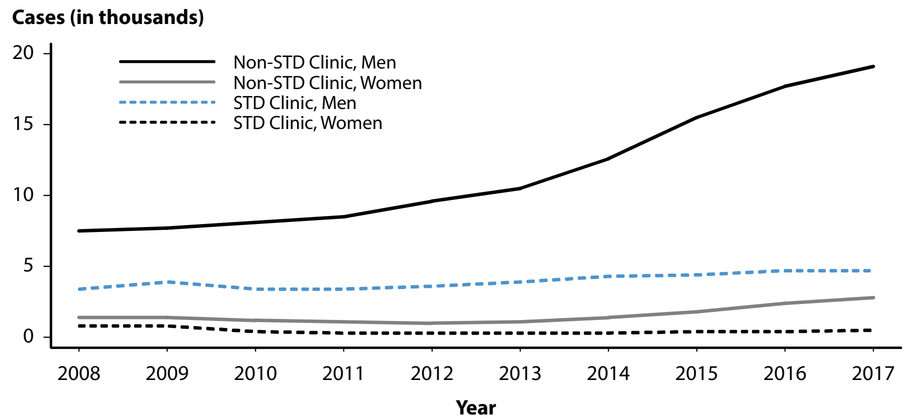
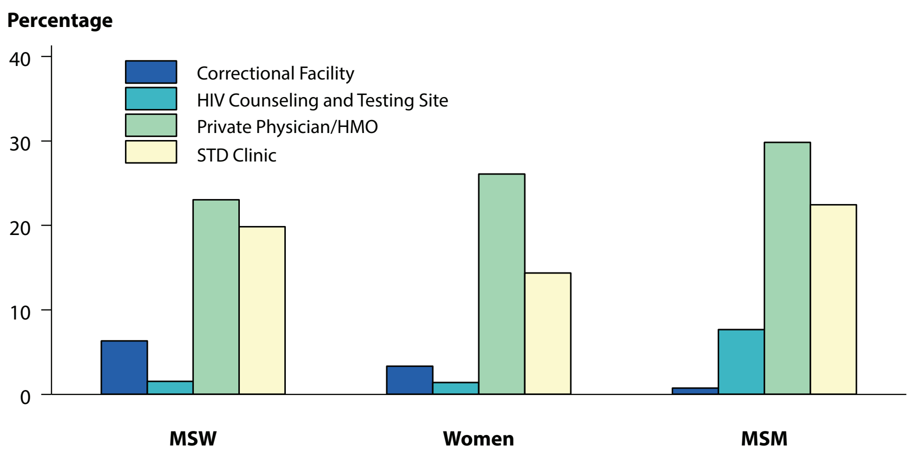


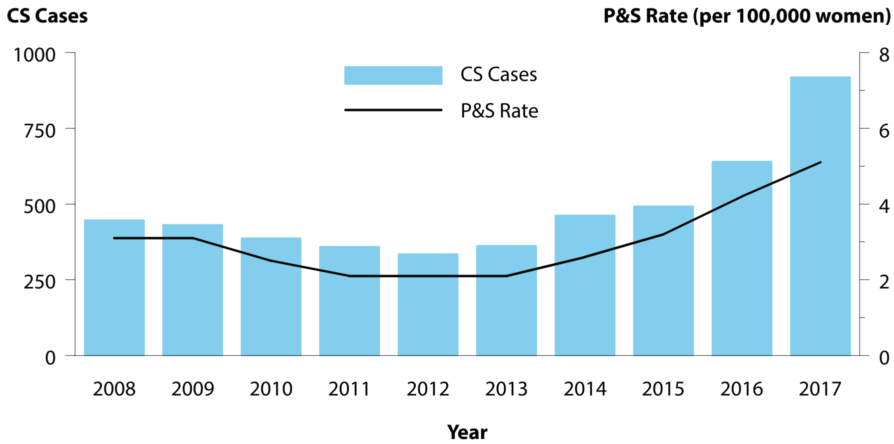
Figure 48. Primary and Secondary Syphilis — Percentage of Reported Cases* by Sex, Sexual Behavior, and Selected Reporting Sources, United States, 2017



* Of all primary and secondary syphilis cases, 11.4% had a missing or unknown reporting source. Among all cases with a known reporting source, the reporting source categories presented represent 56.4% of cases; 43.6% were reported from sources other than those shown.

ACRONYMS: HMO = health maintenance organization; MSM = Gay, bisexual, and other men who have sex with men (collectively referred to as MSM); MSW = Men who have sex with women only.

Figure 49. Congenital Syphilis — Reported Cases by Year of Birth and Rates of Reported Cases of Primary and Secondary Syphilis Among Women Aged 15–44 Years, United States, 2008–2017



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

References

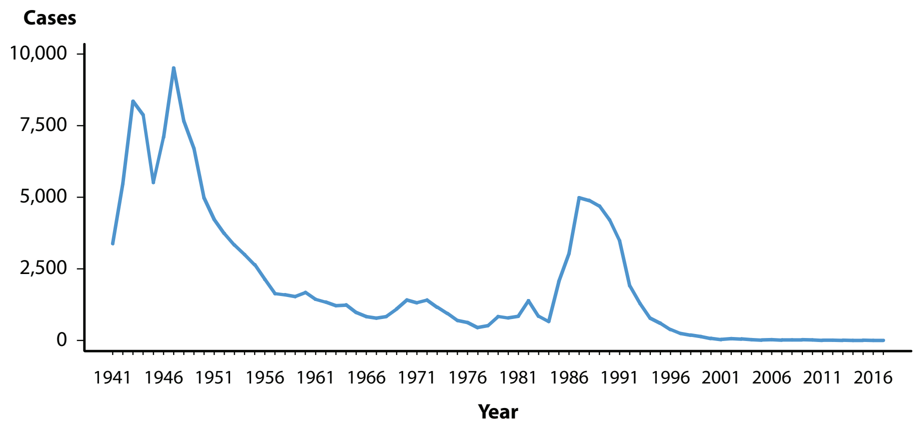
1. Jarzebowski W, Caumes E, Dupin N, et al. Effect of early syphilis infection on plasma viral load and CD4 cell count in human immunodeficiency virus- infected men: Results from the FHDH- ANRS CO4 cohort. Arch Intern Med 2012; 172(16): 1237–1243.
2. Buchacz K, Patel P, Taylor M, et al. Syphilis increases HIV viral load and decreases CD4 cell counts in HIV-infected patients with new syphilis infections. AIDS 2004; 18(15): 2075–2079.
3. Fleming DT, Wasserheit JN. From epidemiological synergy to public health policy and practice: The contribution of other sexually transmitted diseases to sexual transmission of HIV infection. Sex Trans Infect 1999; 75(1): 3–17.
4. Ingraham NR. The value of penicillin alone in the prevention and treatment of congenital syphilis. Acta Derm Venereol 1951; 31(Suppl 24): 60–88.
5. de Voux A, Kidd S, Grey JA, et al. State-specific rates of primary and secondary syphilis among men who have sex with men — United States, 2015. MMWR Morb Mortal Wkly Rep 2017; 66(13):349–354.
6. Peterman TA, Kahn RH, Ciesielski CA, et al. Misclassification of the stages of syphilis: implications for surveillance. Sex Transm Dis 2005; 32(3):144–149.

Other STDs

Chancroid

Chancroid is caused by anogenital infection with the bacterium *Haemophilus ducreyi*. Clinical manifestations of chancroid include anogenital ulcers, and inguinal lymphadenopathy or buboes in up to 50% of cases.[1] Reported cases of chancroid peaked in 1947 and then declined rapidly through 1957, presumably due to the increasing use of antibiotics such as sulfonamides and penicillin, which were introduced in the late 1930s and early 1940s (Figure 50, Table 1).[2,3] Numerous localized outbreaks, some of which were linked to commercial sex work, were identified during 1981–1990.[4,5] Chancroid has declined since 1987, and since 2000, the annual number of reported cases has been less than 100. During 2008–2017, the number of reported cases has fluctuated, ranging from 28 in 2009 to six in 2014. In 2017, a total of seven cases of chancroid were reported in the United States. Five states reported one or more cases of chancroid in 2017 (Table 43).

Figure 50. Chancroid — Reported Cases by Year, United States, 1941–2017



NOTE: Data collection for chancroid began in 1941; however, chancroid became nationally notifiable in 1944. Refer to the National Notifiable Disease Surveillance System (NNDSS) website for more information: https://wwwn.cdc.gov/nndss/conditions/chancroid/

Although the overall decline in reported chancroid cases most likely reflects a decline in the incidence of this disease, these data should be interpreted with caution because *H. ducreyi* is difficult to culture and no molecular assays have been cleared by the Food and Drug Administration (FDA) for use in the United States.[6]

Human Papillomavirus

Human papillomavirus (HPV) is the most common sexually transmitted infection in the United States.[7] Over 40 distinct HPV types can infect the genital tract;[8] although most infections are asymptomatic and appear to resolve spontaneously within a few years.[9] Prevalence of genital infection with any HPV type was 42.5% among United States adults aged 18–59 years during 2013–2014.[10] Persistent infection with some HPV types can cause cancer and genital warts.[11] HPV types 16 and 18 account for approximately 66% of cervical cancers in the United States,[12] and approximately 25% of low-grade and 50% of high-grade cervical intraepithelial lesions, or dysplasia.[13,14] HPV types 6 and 11 are responsible for approximately 90% of genital warts.[15,16]

Quadrivalent HPV vaccine, which targets HPV types 6, 11, 16, and 18,[11] was licensed in the United States in mid-2006 for females[17] and in late 2009 for males.[18] Although a bivalent vaccine was also licensed for females,[19] almost all HPV vaccine administered in the United States through late 2014 was quadrivalent.[20] A 9-valent vaccine, which protects against the quadrivalent and 5 additional oncogenic HPV types (types 31, 33, 45, 52, and 58), was licensed in late 2014 for males and females.[21] All HPV vaccines have been recommended for routine use in United States females aged 11–12 years, with catch-up vaccination through age 26.[17,21] Since late 2011, routine use of the quadrivalent or 9-valent vaccine has been recommended for males aged 11–12, with catch-up vaccination through age 21.[21-23] Vaccination through age 26 is recommended for gay, bisexual, and other men who have sex with men (collectively referred to as MSM) and persons who are immunocompromised (including those infected with HIV).[21-23]

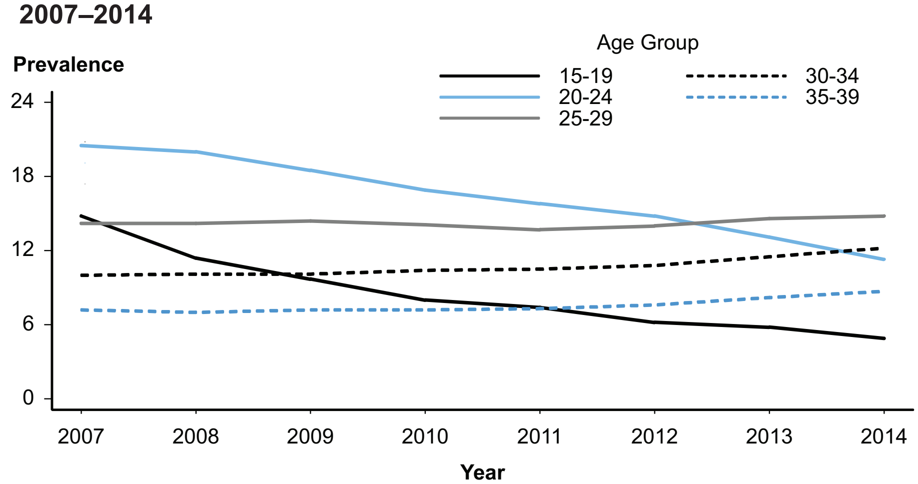
HPV vaccine uptake in the United States remains lower than the Healthy People 2020 goal of 80% coverage.[24] In 2016, a national survey found that 65% of girls aged 13–17 years had received at least one dose of the HPV vaccine, and 50% had received all doses in the series[25] based on recommendations published in late 2016.[23] HPV vaccine uptake is lower among boys; 56% of those aged 13–17 years received at least one dose, but only 38% received all recommended doses.[25]

HPV infection is not a nationally notifiable condition. Cervicovaginal prevalence of any quadrivalent HPV vaccine type was estimated using data for females aged 14–34 years from the National Health and Nutrition Examination Survey (NHANES; see Section A2.4 in the Appendix).[26] Prevalence decreased significantly from 2003–2006 (the pre-vaccine era) to 2011–2014 in specimens from females aged 14–19 years (from 11.5% to 3.3%) and 20–24 years (from 18.5% to 7.2%); these are the age groups most likely to benefit from HPV vaccination. Among women aged 25–34 years, vaccine-type HPV prevalence did not differ significantly between the two time periods. An NHANES analysis of 2013–2014 HPV prevalence from penile swab specimens found low prevalence of quadrivalent HPV vaccine types in young males, which the authors attributed to male vaccination and/or herd protection from female vaccination.[27]

Health-care claims data from adolescents and adults with employer-provided private health insurance in the United States were used to examine the population effectiveness of HPV vaccination on clinical sequelae of HPV infection. Annual prevalence of high-grade histologically-detected cervical intraepithelial neoplasia grades 2 and 3 (CIN2+) during 2007–2014 was estimated using claims from 9 million females aged 15–39 years who received cervical cancer screening in a given calendar year.[28] Prevalence of CIN2+ decreased significantly in females aged 15–19 and 20–24 years (Figure 51). Among those aged 15–19 years, annual percent change (APC) in CIN2+ prevalence was -19.8% during 2007–2009 and -12.1% during 2009–2014. For women aged 20–24 years, APC was -6.7% during 2007–2012, and -12.5% during 2012–2014. No decreases in CIN2+ prevalence were observed among women aged 25–39 years. The observed decreases in high-grade cervical lesions only among young women provide ecologic evidence of population effectiveness of HPV vaccination on clinical sequelae of infection among privately-insured women in the United States.

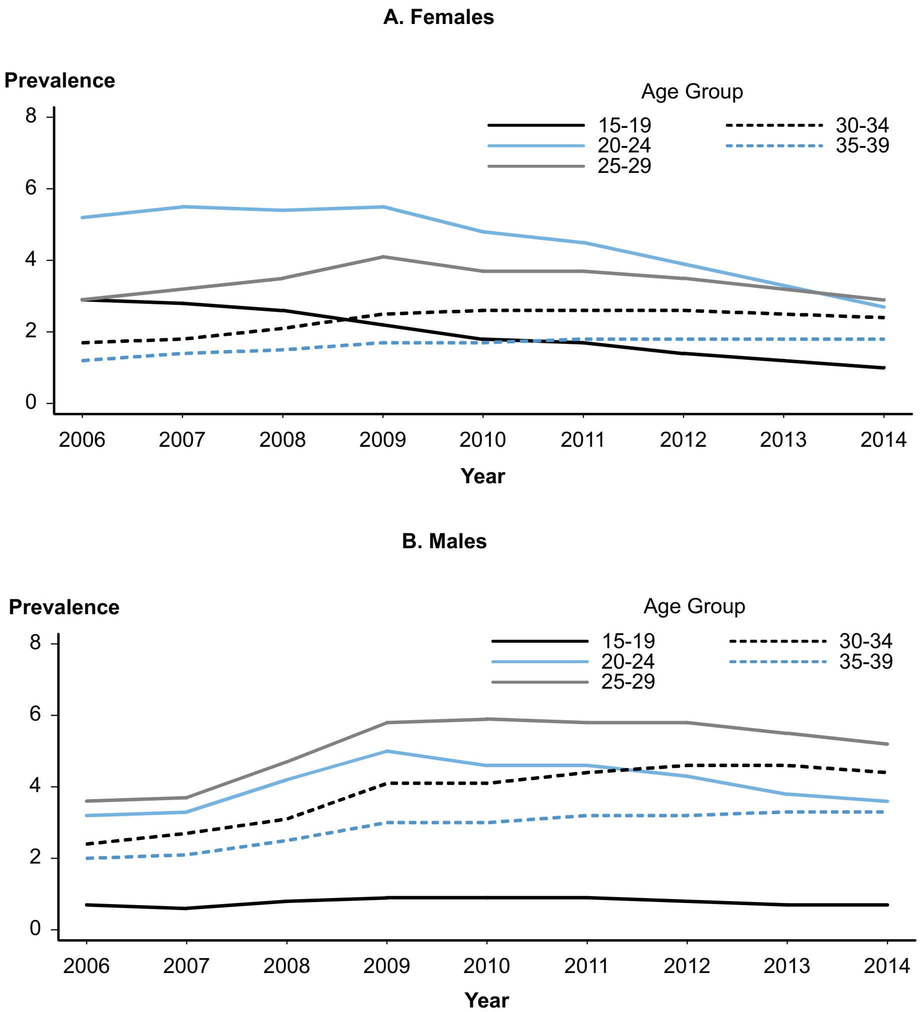
Prevalence of anogenital warts was examined using health-care claims of privately-insured females and males aged 15–39 years during 2006–2014 (Figures 52A and 52B).[29] Prevalence among adolescent females aged 15–19 years declined non-significantly during 2006–2008, and then significantly decreased (APC=-14.1) through 2014. Among women aged 20–24 years, genital wart prevalence was stable during 2006–2009, but declined significantly during 2009–2014 (APC=-12.9). Prevalence among women aged 25–29 years also decreased significantly from 2009–2014 (APC=-6.0). Prevalence increased or was stable during the entire period for women aged 30–39 years. These declines in genital wart prevalence among females aged 15–29 years extend the observations of a previous study using claims from 2003 through 2010, in which decreased prevalence was found only among adolescent females aged 15–19 years.[30] The observed declines in prevalence among increasingly older age groups would be expected from including more years of observation after the initiation of routine HPV vaccination for females in 2006. Among males, anogenital wart prevalence increased significantly during 2006–2009 for all age groups except those aged 15–19 years.[29] From 2009 to 2014, rates decreased somewhat among male adolescents aged 15–19 years (APC=-5.4), but decreased significantly among men aged 20–24 years (APC=-6.5). Among those aged 25–29 years, prevalence declined non-significantly during 2010–2014 (APC=-1.7); prevalence increased or was stable throughout the entire period for men aged 30–39 years. The decreased prevalence observed among men aged 20–24 years is unlikely to be due to male vaccination for several reasons. Almost all men in this age group were aged 19 years or older since 2011, when HPV vaccine was first recommended for routine use in United States males[22] and vaccination coverage in adult males through 2014 was extremely low.[31] Also, the most likely sexual partners for men in this age group were females of a

Figure 51. Cervical Intraepithelial Neoplasia Grades 2 and 3 — Prevalence per 1000 Person-Years Among Female Enrollees in Private Health Plans Aged 15–39 Years, by Age Group and Year, 2007–2014



SOURCE: Flagg EW, Torrone EA, Weinstock H. Ecological association of human papillomavirus vaccination with cervical dysplasia prevalence in the United States, 2007–2014. Am J Public Health 2016; 106(12):2211–2218.

Figure 52. Anogenital Warts — Prevalence per 1000 Person-Years Among Enrollees in Private Health Plans Aged 15–39 Years by Sex, Age Group, and Year, 2006–2014



SOURCE: Flagg EW, Torrone EA. Declines in anogenital warts among age groups most likely to be impacted by human papillomavirus vaccination, United States, 2006–2014. Am J Public Health 2018; 108(1):112–119.

similar age or younger;[32,33] therefore, the observed declines in genital wart prevalence among young men are consistent with herd protection from vaccination among females.

Pelvic Inflammatory Disease

For information on pelvic inflammatory disease, see Special Focus Profiles, STDs in Women and Infants.

Herpes Simplex Virus

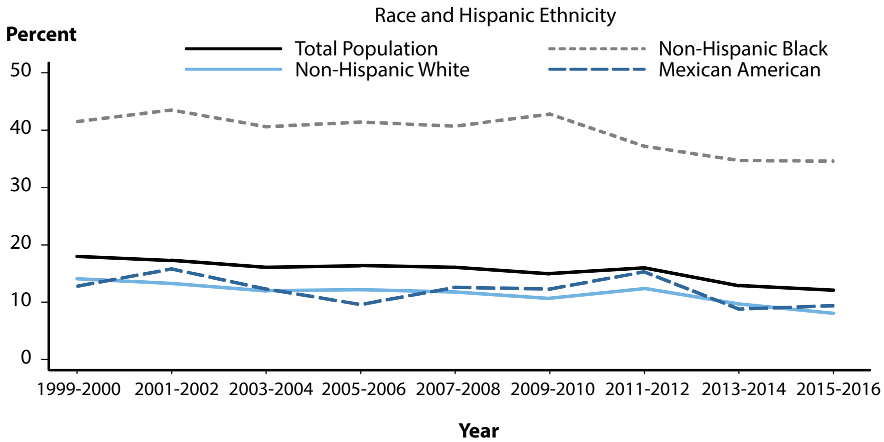
Herpes simplex virus (HSV) is among the most prevalent of sexually transmitted infections.[7,34] Although most infections are subclinical,[35] clinical manifestations are characterized by recurrent, painful genital and/or anal lesions.[36] Most genital HSV infections in the United States are caused by HSV type 2 (HSV-2), while HSV type 1 (HSV-1) infections are typically orolabial and acquired during childhood;[35,37] however, the prevalence of genital HSV-1 infections appears to be increasing among young adults.[38,39]

Genital HSV infection is not a nationally notifiable condition. Most persons with genital HSV infection have not received a diagnosis.[40] The overall percentage of HSV-2 seropositive NHANES participants aged 14–49 years who reported never being told by a doctor or healthcare professional that they had genital herpes did not change significantly between 1988–1994 and 2007–2010, and remained high (90.7% and 87.4%, respectively).[40]

NHANES data indicate the seroprevalence of HSV-2 in the United States has decreased from 1999–2000 to 2015–2016; age-standardized seroprevalence declined from 18.0% in 1999–2000 to 12.1% in 2015–2016 (Figure 53).[41] Although these declines were observed among all race and Hispanic ethnicity groups, HSV-2 seroprevalence was highest among non-Hispanic Blacks throughout the entire time period.

NHANES data also show that among adolescents aged 14–19 years, HSV-1 seroprevalence has significantly decreased by almost 23%, from 39.0% during 1999–2004 to 30.1% during 2005–2010, indicating declining orolabial infection in this age group.[37] HSV-2 seroprevalence in this age group was much lower, less than 2% in both time periods.[37] Other studies have found that genital HSV-1 infections are increasing among young adults.[38,39] This has been attributed, in part, to the decline in orolabial HSV-1 infections, because those who lack HSV-1 antibodies at sexual debut are more susceptible to genital HSV-1 infection.[37,42] Increasingly common oral sex behavior among

Figure 53. Herpes Simplex Virus Type 2 — National Estimates of Trends in Age-Adjusted Seroprevalence Among Persons Aged 14–49 Years by Race and Hispanic Ethnicity, National Health and Nutrition Examination Survey (NHANES), 1999–2000 through 2015–2016



NOTE: Age-adjusted by the direct method to the 2000 US Census population, using age groups 14–19, 20–29, 30–39, and 40–49 years. Total population includes all race and Hispanic ethnicity groups, including those not shown separately.
SOURCE: McQuillan G, Kruszon-Moran D, Flagg EW, et al. Prevalence of herpes simplex virus type 1 and type 2 in persons aged 14–49: United States, 2015–2016. NCHS Data Brief, No 304. Hyattsville, MD: National Center for Health Statistics. 2018.

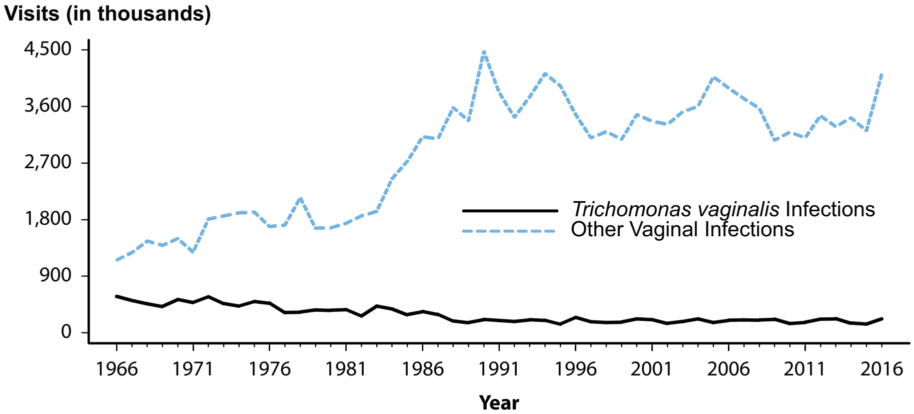
adolescents and young adults also has been suggested as a contributing factor.[37,43] The absence of HSV-1 antibodies also increases the likelihood of developing symptomatic disease from newly-acquired (i.e., primary) genital HSV-2 infection.[44] Young women may therefore be increasingly likely to first acquire HSV-1 infection genitally, or acquire a primary genital HSV-2 infection, during their child-bearing years,[42,45] and first-episode primary genital HSV infection during pregnancy increases the risk of neonatal HSV transmission.[42,46] A recent analysis of NHANES data found that among pregnant women with three or fewer lifetime sex partners, seronegativity for both HSV-1 and HSV-2 increased from 1999–2006 to 2007–2014.[47] This raises the possibility that pregnant women with fewer sex partners may have increased risk of acquiring genital HSV during pregnancy and vertically transmitting HSV to their neonates.

For information on neonatal HSV infections, see Special Focus Profiles, STDs in Women and Infants.

Trichomonas vaginalis

Trichomonas vaginalis is a common sexually transmitted protozoal infection associated with adverse health outcomes such as preterm birth and symptomatic vaginitis.[7,48-50] It is not a nationally notifiable condition, and trend data are limited to estimates of initial physician office visits for this condition from the National Disease and Therapeutic Index (NDTI; see Section A2.5 in the Appendix) (Figure 54, Table 44). Visits appear to be fairly stable since the 1990's; the number of initial visits for *T. vaginalis* infection in 2016 was 222,000. The 2017 NDTI data were not obtained in time to include them in this report. NHANES data during 2013–2014 indicated prevalence of *T. vaginalis* in urine specimens obtained from adult participants aged 18–59 years was 0.5% among males and 1.8% among females; highest prevalences were observed among non-Hispanic Black males (4.2%) and females (8.9%).[49] A separate analysis of NHANES data during 2013–2016 among men aged 18–59 years found higher prevalence among non-Hispanic Blacks.[50] An analysis of NHANES data during 2001–2004 from cervicovaginal swab specimens also found higher *T. vaginalis* prevalence among non-Hispanic Black females.[51]

Figure 54. *Trichomonas vaginalis* and Other Vaginal Infections Among Females — Initial Visits to Physicians' Offices, United States, 1966–2016



NOTE: The relative standard errors for *Trichomonas vaginalis* infection estimates range from 23% to 17% and for other vaginal infection estimates range from 13% to 8%. See Section A2.5 in the Appendix and Table 44.

SOURCE: National Disease and Therapeutic Index, IMS Health, Integrated Promotional Services™, IMS Health Report, 1966–2016. The 2017 data were not obtained in time to include them in this report.

References

1. Lewis DA. Epidemiology, clinical features, diagnosis and treatment of *Haemophilus ducreyi* — a disappearing pathogen? Expert Rev Anti Infect Ther 2014; 12(6):687–696.
2. Steen R. Eradicating chancroid. Bull World Health Organ 2001; 79:818–826.
3. Hall L. "The Cinderella of medicine": Sexually-transmitted diseases in Britain in the nineteenth and twentieth centuries. Genitourin Med 1993; 69:314-319.
4. Schmid GP, Sanders LL, Blount JH, et al. Chancroid in the United States. Reestablishment of an old disease. JAMA 1987; 258(22):3265–3268.
5. Schulte JM, Martich FA, Schmid GP. Chancroid in the United States, 1981–1990: Evidence for underreporting of cases. MMWR Morb Mortal Wkly Rep Surveill Summ 1992; 41(SS-3):57–61.
6. Workowski KA, Bolan GA. Sexually transmitted diseases treatment guidelines, 2015. MMWR Morb Mortal Wkly Rep Recomm Rep 2015; 64(3):25–27.
7. Satterwhite CL, Torrone E, Meites E, et al. Sexually transmitted infections among US women and men: Prevalence and incidence estimates, 2008. Sex Transm Dis 2013; 40(3):187–193.
8. de Villiers E-M, Fauquet C, Broker TR, et al. Classification of papillomaviruses. Virology 2004; 324:17–27.
9. Insinga RP, Perez G, Wheeler CM, et al. Incident cervical HPV infections in young women: Transition probabilities for CIN and infection clearance. Cancer Epidemiol Biomarkers Prev 2011; 20(2):287–296.
10. McQuillan G, Kruszon-Moran D, Markowitz LE, et al. Prevalence of HPV in adults aged 18–69: United States, 2011–2014. NCHS Data Brief, No. 280. Hyattsville, MD: National Center for Health Statistics; 2017.
11. Doorbar J, Quint W, Banks L, et al. The biology and life-cycle of human papillomaviruses. Vaccine 2012; 30(Suppl 5):F55–F70.
12. Saraiya M, Unger ER, Thompson TD, et al. US assessment of HPV types in cancers: Implications for current and 9-valent HPV vaccines. J Natl Cancer Inst 2015; 107(6):djv086.
13. Clifford GM, Rana RK, Franceschi S, et al. Human papillomavirus genotype distribution in low-grade cervical lesions: Comparison by geographic region and with cervical cancer. Cancer Epidemiol Biomarkers Prev 2005; 14(5):1157–1164.
14. Porras C, Rodriguez AC, Hildesheim A, et al. Human papillomavirus types by age in cervical cancer precursors: Predominance of human papillomavirus 16 in young women. Cancer Epidemiol Biomarkers Prev 2009; 18(3):863–865.
15. Garland SM, Steben M, Sings HL, et al. Natural history of genital warts: Analysis of the placebo arm of 2 randomized phase III trials of a quadrivalent human papillomavirus (types 6, 11, 16, and 18) vaccine. J Infect Dis 2009; 199(6):805–814.
16. Gissmann L, Wolnik L, Ikenberg H, et al. Human papillomavirus types 6 and 11 DNA sequences in genital and laryngeal papillomas and in some cervical cancers. Proc Natl Acad Sci USA 1983; 80(2): 560–563.
17. Markowitz LE, Dunne EF, Saraiya M, et al. Quadrivalent human papillomavirus vaccine. Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR Morb Mortal Wkly Rep Recomm Rep 2007; 56(RR-2):1–24.
18. Centers for Disease Control and Prevention. FDA licensure of quadrivalent human papillomavirus vaccine (HPV4, Gardasil) for use in males and guidance from the Advisory Committee on Immunization Practices (ACIP). MMWR Morb Mortal Wkly Rep 2010; 59(20):630–632.
19. Centers for Disease Control and Prevention. FDA licensure of bivalent human papillomavirus vaccine (HPV2, Cervarix) for use in females and updated HPV vaccination recommendations from the Advisory Committee on Immunization Practices (ACIP). MMWR Morb Mortal Wkly Rep 2010; 59(20):626–629.
20. Stokley S, Jeyarajah J, Yankey D, et al. Human papillomavirus vaccination coverage among adolescents, 2007–2013, and postlicensure vaccine safety monitoring, 2006–2014 — United States. MMWR Morb Mortal Wkly Rep 2014; 63(29):620–624.
21. Petrosky E, Bocchini Jr. JA, Hariri S, et al. Use of 9-valent human papillomavirus (HPV) vaccine: Updated HPV vaccination recommendations of the Advisory Committee on Immunization Practices. MMWR Morb Mortal Wkly Rep 2015; 64(11):300–304.
22. Centers for Disease Control and Prevention. Recommendations on the use of quadrivalent human papillomavirus vaccine in males — Advisory Committee on Immunization Practices (ACIP), 2011. MMWR Morb Mortal Wkly Rep 2011; 60(50):1705–1708.
23. Meites E, Kempe A, Markowitz LE. Use of a 2-dose schedule for human papillomavirus vaccination — updated recommendations of the Advisory Committee on Immunization Practices. MMWR Morb Mortal Wkly Rep 2016; 65(49):1405–1408.
24. HealthyPeople.gov. Healthy People 2020 Topics & Objectives. Immunization and Infectious Diseases. Objectives IID-11.4 and IID-11.5. Available at: https://www.healthypeople.gov/2020/topics-objectives/topic/immunization-and-infectious-diseases/objectives. Accessed March 29, 2018.
25. Walker TY, Elam-Evans LD, Singleton JA, et al. National, regional, state, and selected local area vaccination coverage among adolescents aged 13–17 years — United States, 2016. MMWR Morb Mortal Wkly Rep 2017; 66(33):874–882.

26. Oliver SE, Unger ER, Lewis R, et al. Prevalence of human papillomavirus among females after vaccine introduction — National Health and Nutrition Examination Survey, United States, 2003–2014. J Infect Dis 2017; 216(5):594–603.
27. Gargano JW, Unger ER, Liu G, et al. Prevalence of genital human papillomavirus in males, United States, 2013–2014. J Infect Dis 2017; 215(7):1070–1079.
28. Flagg EW, Torrone EA, Weinstock H. Ecological association of human papillomavirus vaccination with cervical dysplasia prevalence in the United States, 2007–2014. Am J Public Health 2016; 106(12):2211–2218.
29. Flagg EW, Torrone EA. Declines in anogenital warts among age groups most likely to be impacted by human papillomavirus vaccination, United States, 2006–2014. Am J Public Health 2018; 108(1):112–119.
30. Flagg EW, Schwartz R, Weinstock H. Prevalence of anogenital warts among participants in private health plans in the United States, 2003–2010: Potential impact of human papillomavirus vaccination. Am J Public Health 2013; 103(8):1428–1435.
31. Williams WW, Lu P-J, O'Halloran A, et al. Surveillance of vaccination coverage among adult populations — United States, 2014. MMWR Morb Mortal Wkly Rep Surveill Summ 2016; 65(1):1–36.
32. Ford K, Sohn W, Lepkowsk J. American adolescents: Sexual mixing patterns, bridge partners, and concurrency. Sex Transm Dis 2002; 29(1):13–19.
33. Aral SO, Hughes JP, Stoner B, et al. Sexual mixing patterns in the spread of gonococcal and chlamydial infections. Am J Public Health 1999;89(6):825–833.
34. Smith JS, Robinson NJ. Age-specific prevalence of infection with herpes simplex virus types 2 and 1: A global review. J Infect Dis 2002; 186(Suppl 1):S3–S28.
35. Corey L, Wald A. Genital Herpes. In: Holmes KK, Sparling FP, Stamm WE, et al., eds. Sexually Transmitted Diseases. 4th ed. New York, NY: McGraw-Hill; 2008:399–437.
36. Kimberlin DW, Rouse DJ. Genital herpes. N Engl J Med 2004; 350(19):1970–1977.
37. Bradley H, Markowitz LE, Gibson T, et al. Seroprevalence of herpes simplex virus types 1 and 2 — United States, 1999–2010. J Infect Dis 2014; 209(3):325–333.
38. Bernstein DI, Bellamy AR, Hook EW III, et. al. Epidemiology, clinical presentation, and antibody response to primary infection with herpes simplex virus type 1 and type 2 in young women. Clin Infect Dis 2013; 56:344–351.
39. Roberts CM, Pfister JR, Spear SJ. Increasing proportion of herpes simplex virus type 1 as a cause of genital herpes infection in college students. Sex Transm Dis 2003; 30(10):797–800.
40. Fanfair RN, Zaidi A, Taylor LD, et al. Trends in seroprevalence of herpes simplex virus type 2 among non-Hispanic Blacks and non-Hispanic Whites aged 14 to 49 years — United States, 1988 to 2010. Sex Transm Dis 2013; 40(11):860–864.
41. McQuillan G, Kruszon-Moran D, Flagg EW, et al. Prevalence of herpes simplex virus type 1 and type 2 in persons aged 14–49: United States, 2015–2016. NCHS Data Brief, No. 304. Hyattsville, MD: National Center for Health Statistics. 2018.
42. Kimberlin DW. The scarlet H. J Infect Dis 2014; 209(3):315–317.
43. Copen CE, Chandra A, Martinez G. Prevalence and timing of oral sex with opposite-sex partners among females and males aged 15–24 years: United States, 2007–2010. National Health Statistics Reports, No. 56. Hyattsville, MD: National Center for Health Statistics; 2012.
44. Langenberg AGM, Corey L, Ashley RL, et al. A prospective study of new infections with herpes simplex virus type 1 and type 2. N Engl J Med 1999; 341:1432–1438.
45. Sampath A, Maduro G, Schillinger JA. Infant deaths due to herpes simplex virus, congenital syphilis, and HIV in New York City. Pediatrics 2016; 137(4):e20152387.
46. Brown ZA, Wald A, Morrow RA, et al. Effect of serologic status and cesarean delivery on transmission rates of herpes simplex virus from mother to infant. JAMA 2003; 289(2):203–209.
47. Patton ME, Bernstein K, Liu G, et al. Seroprevalence of herpes simplex virus types 1 and 2 among pregnant women and sexually active, non-pregnant women in the United States. Clin Infect Dis 2018; https://doi.org/10.1093/cid/ciy318.
48. French JI, McGregor JA, Parker R. Readily treatable reproductive tract infections and preterm birth among Black women. Am J Obstet Gynecol 2006; 194:1717–1727.
49. Patel EU, Gaydos CA, Packman ZR, et al. Prevalence and correlates of *Trichomonas vaginalis* infection among men and women in the United States. Clin Infect Dis 2018;67(2):211–217.
50. Daugherty M, Glynn K, Byler T. The prevalence of *Trichomonas vaginalis* infection among US males, 2013–2016. Clin Infect Dis 2018; https://doi.org/10.1093/cid/ciy499.
51. Sutton M, Sternberg M, Koumans EH, et al. The prevalence of *Trichomonas vaginalis* infection among reproductive-age women in the United States, 2001–2004. Clin Infect Dis 2007; 45(10):1319–1326.

Special Focus Profiles

The Special Focus Profiles highlight trends and distribution of STDs in populations of particular interest to STD and HIV prevention programs in state and local health departments: women and infants, adolescents and young adults, racial and ethnic minority groups, and gay, bisexual, and other men who have sex with men (collectively referred to as MSM).

STDs in Women and Infants

Background

Women and their infants are uniquely vulnerable to the consequences of sexually transmitted infections (STI). While individual-level determinants, including high-risk behaviors, contribute to disease transmission and acquisition risk, it is widely accepted that social barriers to STD prevention and control efforts also contribute to infectious disease prevalence. A woman's relationship status with her male partner, including concurrency of the relationship, may be an important predictor of her sexual health.[1–3] In addition to poverty and lack of access to quality STD services, homelessness or unstable housing may influence a woman's sexual risk.[4] For some women, maintaining the relationship with a partner may take a higher priority than STD risk reduction,[5] affecting her sexual and reproductive health, as well as the health of her unborn baby.[6,7] A woman can also be placed at risk for STIs through her partner's sexual encounter with an infected partner. Consequently, even a woman who has only one partner may be obliged to practice safer sex, such as using condoms.[8]

Chlamydia and gonorrhea disproportionately affect women because early infection may be asymptomatic and, if untreated, infection may ascend to the upper reproductive tract resulting in pelvic inflammatory disease (PID). Data from studies suggest that as much as 10% of untreated chlamydial infections progress to clinically diagnosed PID and the risk with untreated gonococcal infection may be even higher.[9–11] PID is a major concern because it can result in inflammation and damage to the fallopian tubes, elevating the risk of infertility and ectopic pregnancy. Tubal factor infertility ranks among the most common causes of infertility, accounting for 30% of female infertility in the United States,[12] and much of this damage results from previous episodes of PID.[13]

An important public health measure for preventing PID, and ultimately tubal factor infertility, is through the prevention and control of *Chlamydia trachomatis* and *Neisseria gonorrhoeae*. Strategies to improve the early detection and treatment of chlamydia and gonorrhea, as demonstrated in randomized controlled trials,[10,14] has been shown to reduce a woman's risk for PID and ultimately protect the fertility of women.

Human papillomavirus (HPV) infections are highly prevalent in the United States.[15–16] Although most HPV infections in women appear to be transient and may not result in clinically significant sequelae,[17] high-risk HPV-type infections can cause abnormal changes in the uterine cervical epithelium,[17–18] which are detected by cytological examination of Papanicolaou (Pap) smears.[19] Persistent high-risk HPV-type infections may lead to cervical cancer precursors, which, if undetected can result in cancer.[18] Other low-risk HPV-type infections can cause genital warts,[18,20] low-grade Pap smear abnormalities,[18,21] laryngeal papillomas,[22] and, rarely, recurrent respiratory papillomatosis in children born to infected mothers.[23–24] For more information on adolescent and adult HPV infections, see Other STDs.

Impact on Maternal and Fetal Outcomes

Similar to non-pregnant women, a high proportion of pregnant women with chlamydial and gonococcal infections are asymptomatic. Documented sequelae of untreated infections in pregnancy include premature delivery, premature rupture of the membranes, low birth weight, and stillbirth. Maternal infection can also affect the infant, leading to conjunctivitis infections (termed ophthalmia neonatorum in the first four weeks of life), and, in the case of *C. trachomatis*, pneumonia. Although topical prophylaxis of infants at delivery is effective for prevention of gonococcal ophthalmia neonatorum, prevention of neonatal pneumonia requires prenatal detection and treatment. The clinical presentation of conjunctivitis can be variable and these infections are especially important to treat promptly, as they can lead to visual impairment.[25]

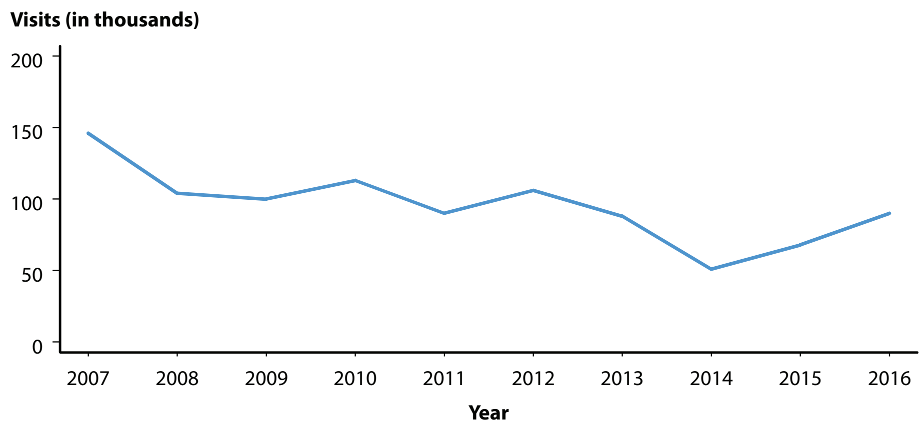
Syphilis has long been known to be an important risk factor for adverse pregnancy outcomes. The consequences of untreated maternal infection include fetal death, preterm birth, and also congenital infection in a proportion of surviving infants resulting in both physical and mental developmental disabilities. Most cases of congenital syphilis are preventable if women are screened for syphilis and treated early during prenatal care.[26]

Genital infections with herpes simplex virus (HSV) are extremely common, can cause painful outbreaks, and can have serious consequences for pregnant women and their infants.[27] Neonatal herpes can be a severe illness presenting with vesicular lesions on the skin, eye, or mouth, seizures, respiratory collapse, and/or liver failure, following contact with infected cervical or vaginal secretions during delivery.[27–28] Risk of transmission to the infant is greatest when the mother has a first-episode primary genital infection during pregnancy, especially if she acquires infection towards the end of her pregnancy.[28–29] For more information on genital HSV infections among pregnant women, see Other STDs.

Pelvic Inflammatory Disease

Accurate estimates of PID and tubal factor infertility resulting from chlamydial and gonococcal infections are difficult to obtain, in part because definitive diagnoses of these conditions can be complex. Published data suggest overall declining rates of women diagnosed with PID in both hospital and ambulatory settings in the United States.[30–32] The National Disease and Therapeutic Index (NDTI; see Section A2.5 in the Appendix) provides estimates of initial visits to office-based, private physicians for PID. NDTI estimated that from 2007–2016 the number of initial visits to such physicians for PID among women aged 15–44 years decreased by 38.3% from 146,000 to 90,000 visits (Figure A). The 2017 NDTI data was not obtained in time to include in this report. Similar declines have been observed in nationally representative data of emergency department (ED) visits from the Healthcare Cost and Utilization Project (HCUP), the largest all-payer publicly available database of ED visits across the US. The percentage

Figure A. Pelvic Inflammatory Disease — Initial Visits to Physicians' Offices Among Women Aged 15–44 Years, United States, 2007–2016



NOTE: The relative standard errors for these estimates are 23%–16%. See section A2.5 in the Appendix and Table 44.
SOURCE: National Disease and Therapeutic Index, IMS Health, Integrated Promotional Services™, IMS Health Report, 1966–2016. The 2017 data were not obtained in time to include them in this report.

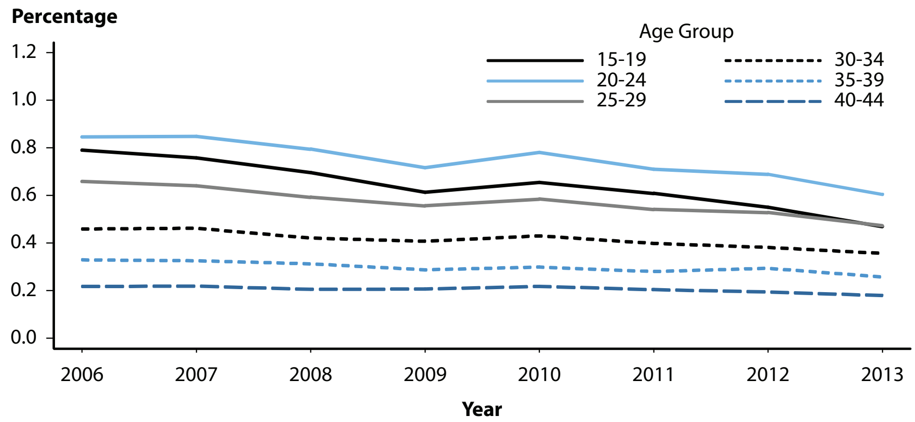
of ED visits with a PID diagnosis decreased during 2006–2013 among females aged 15–44 years, with the largest decreases among females aged 15–19 years (Figure B).[33] It is not entirely clear what may be driving these declines, though several factors have been suggested including earlier identification and treatment of chlamydia and gonorrhea infection, and availability of single-dose therapies that increase adherence to treatment.[31-32,34] While PID is declining nationally, it is still a major cause of morbidity in women.

Differences in self-reported lifetime diagnosis of PID by race/Hispanic ethnicity in reproductive age women have been observed in earlier research.[35] Data from the 2013–2014 cycle of the National Health and Nutrition Examination Survey (NHANES) indicates that non-Hispanic Black and non-Hispanic White women reporting a previous STI diagnosis had nearly equal self-reported lifetime PID prevalence (10.3% vs. 10.0%) (Figure C).[36] However, the lifetime prevalence of PID among non-Hispanic Black women was 2.2 times that among non-Hispanic White women if no previous STI was diagnosed (6.0% vs. 2.7%). These findings suggest that PID is associated with previous STI diagnoses and it is therefore important for physicians to screen female patients for chlamydia and gonorrhea to reduce the incidence of PID. The racial disparities observed in PID diagnoses are consistent with the marked racial disparities observed for chlamydia and gonorrhea. However, because of the subjective methods by which PID is diagnosed, racial disparity data should be interpreted with caution.

Ectopic Pregnancy

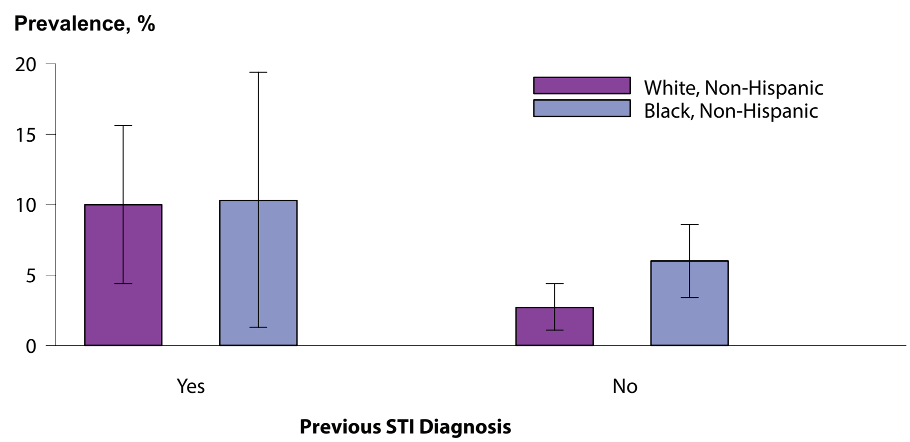
Ectopic pregnancy is a potentially life-threatening condition that requires prompt evaluation and treatment. Up until the early 1990's, a primary data source used to estimate the incidence of ectopic pregnancy was the National

Figure B. Trends in the Percentage of Acute Pelvic Inflammatory Disease (PID) Emergency Department (ED) Visits Among Women Aged 15–44 Years by Age Group, United States, 2006–2013



NOTE: Estimates were weighted using discharge weights representative of the reported total of emergency department visits in the US. Percent is calculated as the percent of visits where any PID was diagnosed where PID was the first diagnosis listed for the patient's ED visit.
SOURCE: Kreisel, K, Flagg, EW, Torrone E. Trends in pelvic inflammatory disease emergency department visits, United States, 2006–2013. Am J Obstet Gynecol 2018; 218(1): 117.e1–117.e10.

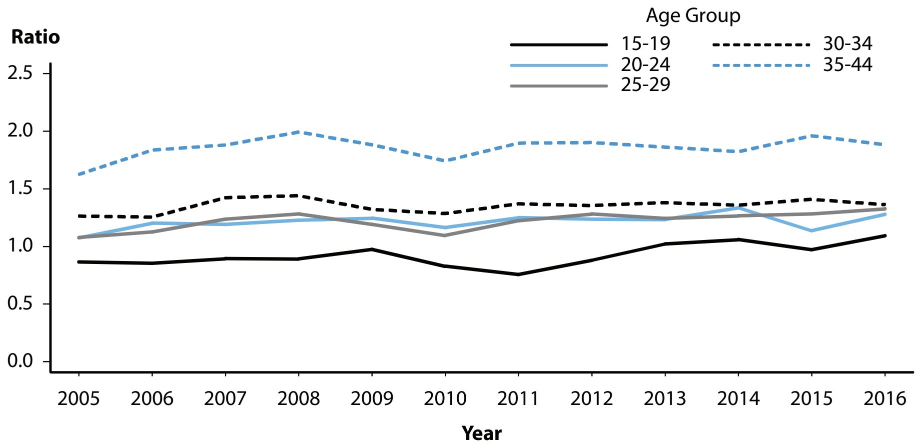
Figure C. Pelvic Inflammatory Disease — National Estimates of Lifetime Prevalence* Among Sexually Experienced Women† Aged 18–44 Years by Race, Hispanic Ethnicity, and Previous STI‡ Diagnosis, National Health and Nutrition Examination Survey (NHANES), 2013–2014



* Prevalence estimates based on response to the question, "Have you ever been treated for an infection in your fallopian tubes, uterus or ovaries, also called a pelvic infection, pelvic inflammatory disease, or PID?". Estimates were weighted to be nationally representative of the US population, accounting for unequal probabilities of selection and nonresponse.
† Based on a response of "Yes" to the question, "Have you ever had vaginal, anal, or oral sex?".
‡ STI = sexually transmitted infection. Participants who have been told by a doctor or other healthcare professional in the last 12 months that they had chlamydia or gonorrhea or have ever been told they have herpes, human papillomavirus, or genital warts.
NOTE: Error bars indicate 95% confidence intervals. Prevalence estimates among non-Hispanic Black women with a previous STI diagnosis have a relative standard error >40% but <50%.
SOURCE: Kreisel, K, Torrone, E, Bernstein, K, et al. Prevalence of pelvic inflammatory disease in sexually experienced women of reproductive age — United States, 2013–2014. MMWR Morb Mortal Wkly Rep 2017; 66(3):80–83.

Hospital Discharge Survey, a sample of inpatient discharge records from select hospitals. However, the ability to ascertain the number of ectopic pregnancies occurring in the United States has been affected by a shift in clinical management from an inpatient to an outpatient event, making inpatient hospital surveillance data sources unreliable. As a result, alternative surveillance methods, including data from large administrative claims,[36–37] have been used to evaluate trends and assess the continued public health burden of this condition. Data from MarketScan Commercial Claims and Encounters Database, a large administrative claims database of United States commercial health plans, indicate that the ratio of ectopic pregnancy diagnoses to all live births among women with live births aged 15–44 years during the period of 2005–2016 have marginally increased across all age groups (Figure D). As in previous years, in 2016, rates of ectopic pregnancy were highest among women in the 35–44 year age groups.

Figure D. Ectopic Pregnancy — Ratio* Among Commercially Insured Women with Live Births Aged 15–44 Years by Age Group, 2005–2016



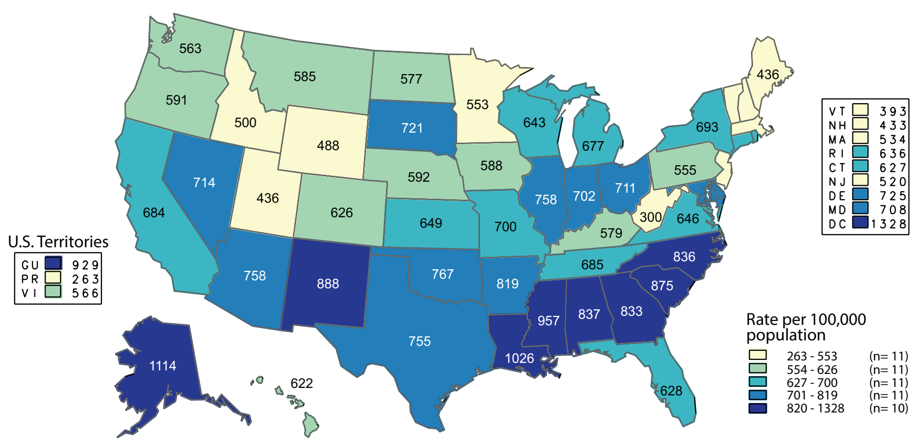
* Ratios represent the number of ectopic pregnancy diagnoses per 100,000 live births.
SOURCE: MarketScan Commercial Claims and Encounters Database, Truven Health Analytics, Ann Arbor, MI, 2005–2016.

Chlamydia

Chlamydial infections in women are usually asymptomatic and screening is necessary to identify most infections. Routine chlamydia screening of sexually-active young women has been recommended by the CDC since 1993.[38] Rates of reported cases of chlamydia among women increased steadily from the early 1990s, likely reflecting expanded screening coverage and use of more sensitive diagnostic tests (Table 1). During 2011–2013, chlamydia case rates decreased from 643.4 to 619.0 cases per 100,000 females and then increased 11.1% over the next 4 years, resulting in a rate of 687.4 cases per 100,000 females in 2017 (Table 4).

Chlamydia rates are highest among young women, the population targeted for screening (Figure 5, Table 10).

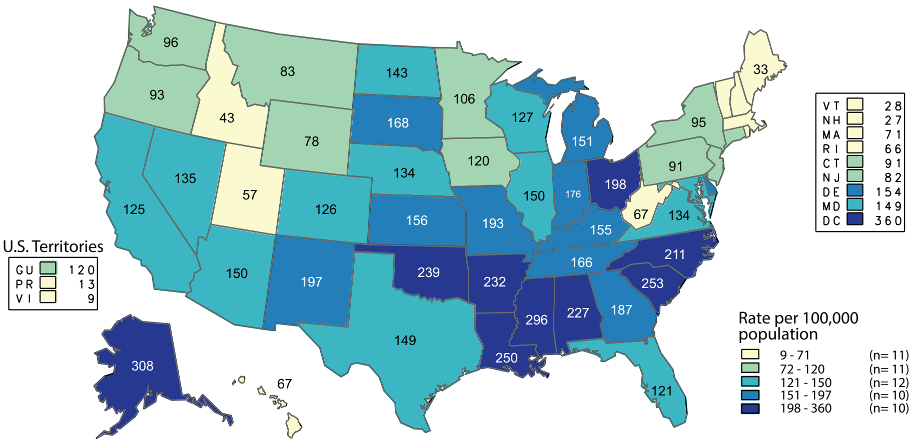
Figure E. Chlamydia — Rates of Reported Cases Among Women by State, United States and Outlying Areas, 2017



NOTE: The total rate of reported cases of chlamydia among women in the United States and outlying areas (including Guam, Puerto Rico, and the Virgin Islands) was 682.9 per 100,000 females. See Section A1.11 in the Appendix for more information on interpreting reported rates in the outlying areas.
ACRONYMS: GU = Guam; PR = Puerto Rico; VI = Virgin Islands.

During 2016–2017, rates of reported chlamydia cases increased 6.5% and 3.7% among females aged 15–19 and 20–24 years, respectively (Figure 6). Regionally, chlamydia case rates were highest among women in the South, with a rate of 748.8 cases per 100,000 females in 2017 (Table 4). Rates of reported chlamydia cases exceeded gonorrhea case rates among women in all regions (Figures E and F, Tables 4 and 15).

Figure F. Gonorrhea — Rates of Reported Cases Among Women by State, United States and Outlying Areas, 2017



NOTE: The total rate of reported cases of gonorrhea among women in the United States and outlying areas (including Guam, Puerto Rico, and the Virgin Islands) was 140.3 per 100,000 females. See Section A1.2 in the Appendix for more information on estimating rates for outlying areas.
ACRONYMS: GU = Guam; PR = Puerto Rico; VI = Virgin Islands.

Chlamydia Positivity in Selected Populations

The STD Surveillance Network (SSuN) is an ongoing collaboration of state, county, and city health departments from 10 participating jurisdictions where demographic, clinical, and laboratory data are collected from women aged 15–44 years attending facilities that provide family planning and reproductive health services (See Section A2.2 of the Appendix). Figure G shows chlamydia testing and positivity reported only among facilities that tested more than 100 women and more than 60% of young women aged 14–24 years. In 2017, the overall positivity of chlamydia among women aged 14–24 years was 9.6%, but for women 14–19 years of age, chlamydia positivity was 10.8%. For women between the ages of 14–24 years, chlamydia positivity among non-Hispanic Blacks was about 1.5 times those of non-Hispanic Whites or Hispanics.

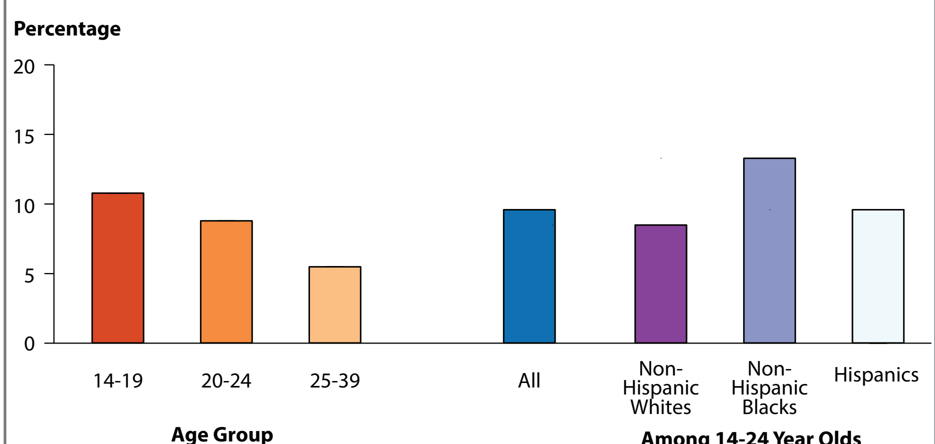
Gonorrhea

Like chlamydia, gonorrhea is often asymptomatic in women. Therefore, gonorrhea screening is an important strategy for the identification of gonorrhea among women. Large-scale screening programs for gonorrhea in women began in the 1970s. After an initial increase in cases detected through screening, rates of reported gonorrhea cases for both women and men declined steadily throughout the 1980s and early 1990s, and then declined more gradually in the late 1990s and the 2000s. However, more recently, there have been increases in overall cases (Figure 14, Table 1).

After reaching a 40-year low in 2009 (104.5 cases per 100,000 females), the rate of reported cases of gonorrhea for women increased slightly each year during 2009–2011, and then decreased during 2012–2014 (Figure 18). During 2015–2017, the gonorrhea rate among women increased 33.4% to 141.8 cases per 100,000 females (Figure 18, Table 15).

The gonorrhea case rate among women was slightly higher than the rate among men during 2008–2012; however, the rate among men was higher than the rate among women during 2013–2017 (Figure 18, Tables 15 and 16). During 2013–2017, gonorrhea rates among women were highest among those aged 15–24 years (Figure 20, Table 21). For women in this age group, rates were highest among 19-year olds in 2017

Figure G. Chlamydia — Positivity* Among Women Aged 14–39 Years by Race, Hispanic Ethnicity, and Age Group in Clinics† Providing Family Planning and Reproductive Health Services, STD Surveillance Network (SSuN), 2017



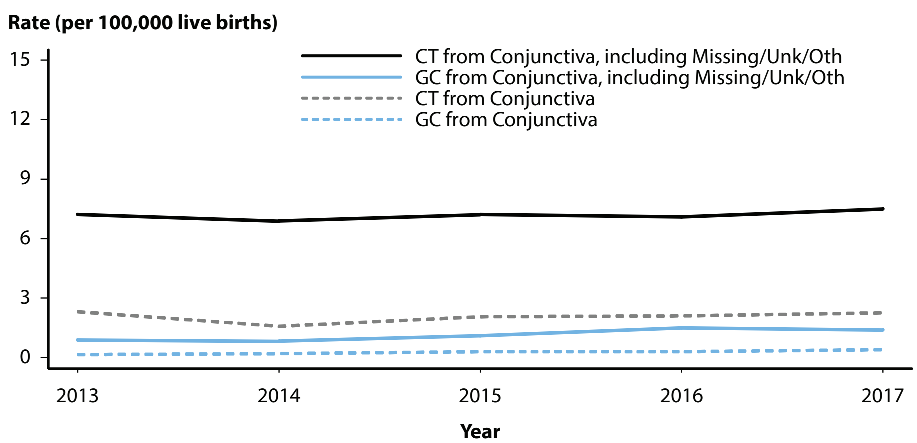
* Positivity represents the overall average of the mean value by jurisdiction.
† Includes clinics (n = 34) that tested >100 women for chlamydia in 2017 and testing coverage was >60%.
NOTE: See section A2.2 in the Appendix for SSuN methods.

(872.2 cases per 100,000 females) (Table 23).

Neonatal Conjunctivitis

During 2013–2017, 461 chlamydia or gonorrhea cases among infants aged <1 year with a specimen source of either ‘eye’ or ‘conjunctiva’ (conjunctivitis infections) were reported to CDC. The overall reported rate of chlamydial conjunctivitis in infants was relatively stable during 2013–2017, ranging from 1.6 to 2.3 cases per 100,000 live births (Figure H). Similarly, the rate of gonococcal conjunctivitis in infants remained relatively constant and low during 2013–2017, at 0.4 cases or less per 100,000 live births each year. The rate of reported cases is heavily influenced by the completeness of reported data on specimen source. Of all cases reported to CDC of chlamydia or gonorrhea in infants aged <1 year during 2013–2017 (n=2,567), nearly 82% did not have a specimen source of either ‘eye’ or ‘conjunctiva’; of those, 56.2% had a specimen source of ‘unknown’ (42.1%), ‘other-not specified’ (9.7%), or was missing (4.4%). When evaluating rates including these cases, the rate of chlamydia and gonorrhea infections follows similar trends but is higher in all years, indicating potential missed cases for surveillance (Figure H).

Figure H. Chlamydia and Gonorrhea — Rates of Reported Cases Among Infants <1 Year of Age by Year and Specimen Source, United States, 2013–2017



ADAPTED FROM: Kreisel K, Weston E, Braxton J, et al. Keeping an eye on chlamydia and gonorrhea conjunctivitis in infants in the United States, 2010–2015. Sex Transm Dis 2017; 44(6): 356–358.
ACRONYMS: CT = Chlamydia; GC = Gonorrhea.

Congenital Syphilis

Trends in congenital syphilis usually follow trends in primary and secondary (P&S) syphilis among reproductive-aged women (Figure 49). After plateauing at a relatively low rate (0.9 cases per 100,000 females) during 2011–2013, the rate of reported P&S syphilis cases among all women increased each year since then. During 2013–2017, the rate among women increased 155.6%, from 0.9 to 2.3 cases per 100,000 females (Table 28). During this same time, the rate among reproductive-aged women (women aged 15–44 years) increased 142.8%, from 2.1 to 5.1 cases per 100,000 females aged 15–44 years (Figure 49).

Similarly, the rate of reported congenital syphilis cases has increased each year since 2012 (Figure 49, Table 1). In 2017, there were 918 reported cases of congenital syphilis and the national congenital syphilis rate was 23.3 cases per 100,000 live births, the highest rate reported since 1997. This increase in 2017 represents a 43.8% increase relative to 2016 and a 153.3% increase relative to 2013 (Table 41).

In 2017, the highest rates of P&S syphilis among women and the highest rates of congenital syphilis were observed in the West and in the South (Figures I and J, Tables 28 and 41). The P&S syphilis rates among women increased in every region during 2016–2017. During 2016–2017, the largest increases in the P&S syphilis rates among women were seen in the West (29.6%), followed by the South (22.7%), Northeast (11.1%), and Midwest (8.3%) (Table 28). The congenital syphilis rate increased 60.3% in the South, 40.7% in the West, 5.7% in the Northeast, and 5.7% in the Midwest during 2016–2017 (Table 41).

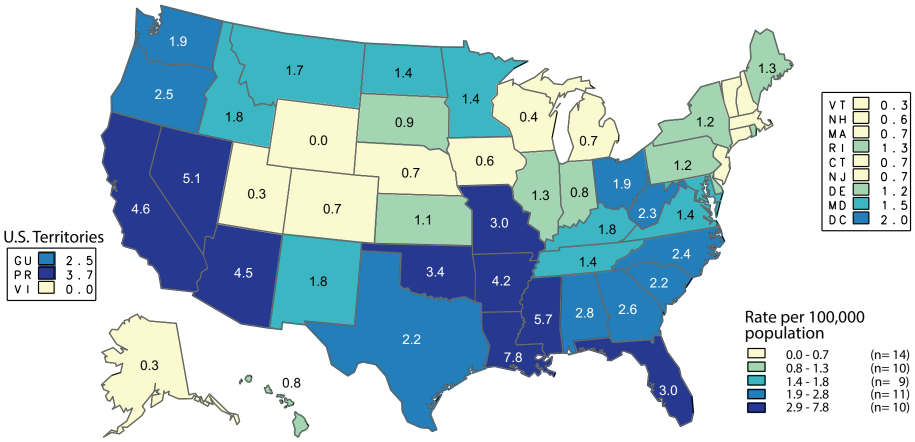
Although most cases of congenital syphilis occur among infants whose mothers have had some prenatal care, late or limited prenatal care has been associated with congenital syphilis. Failure of health care providers to adhere to prenatal syphilis screening recommendations, as well as acquisition of infection during pregnancy after the initial screening test, also contribute to the occurrence of congenital syphilis.[26]

Neonatal Herpes Simplex Virus

Neonatal HSV infections, although relatively rare, cause significant morbidity and mortality.[27] Most neonatal HSV infections result from perinatal transmission from mother to neonate,[28] but postnatal infection can occur.[39] Although reporting of neonatal HSV infection is required in a few jurisdictions,[40–41] it is not a nationally reportable disease.

An examination of inpatient records of infants aged 60 days or younger at admission using the HCUP Kid’s

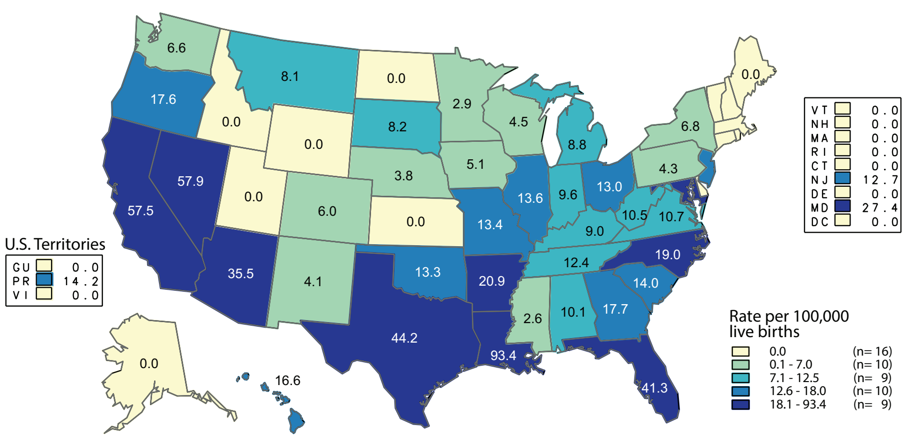
Figure I. Primary and Secondary Syphilis — Rates of Reported Cases Among Women by State, United States and Outlying Areas, 2017



NOTE: The total rate of reported cases of primary and secondary syphilis among women in the United States and outlying areas (including Guam, Puerto Rico, and the Virgin Islands) was 2.3 per 100,000 females. See Section A1.11 in the Appendix for more information on interpreting reported rates in the outlying areas.

ACRONYMS: GU = Guam; PR = Puerto Rico; VI = Virgin Islands.

Figure J. Congenital Syphilis — Rates of Reported Cases Among Infants by Year of Birth and State, United States and Outlying Areas, 2017



NOTE: The total rate of reported cases of congenital syphilis for infants by year of birth for the United States and outlying areas (including Guam, Puerto Rico, and the Virgin Islands) was 23.2 per 100,000 live births. See Section A1.2 in the Appendix for more information on estimating rates for outlying areas.

ACRONYMS: GU = Guam; PR = Puerto Rico; VI = Virgin Islands.

Inpatient Database showed an overall incidence of 9.6 cases per 100,000 live births in 2006.[42] Rates did not vary significantly by region or by race and Hispanic ethnicity; however prevalence was significantly higher among cases for which the expected primary payer was Medicaid (15.1 cases per 100,000 live births) compared with private insurance or managed health care (5.4 cases per 100,000 live births).

In New York City, 76 cases of neonatal HSV infection were identified through population-based surveillance during a 4.5 year period (April 2006–September 2010), for an average annual incidence of 13.3 cases per 100,000 live births.[43] Forty-one percent of the confirmed cases were infected with HSV type 1. A review of certificates of death or stillbirth issued in New York City during 1981–2013 identified 34 deaths due to neonatal HSV infection, or 0.82 deaths per 100,000 live births.[42]

For information on adolescent and adult HSV infections, see Other STDs.

Summary

STDs are an important health priority and what may often be overlooked is the substantial morbidity and mortality related to sequelae of STDs. This is particularly true for women and their infants. The overall rate of reported female chlamydia cases has increased 11.1% over the last four years, much of that attributed to increased screening and more complete national reporting. Gonorrhea infections have also increased 33.4% to 141.8 cases per 100,000 females in recent years. Surveillance data continues to show that numbers and rates of chlamydia and gonorrhea cases are highest in females between the ages of 15 and 24 and certain races are disproportionately impacted. Despite increases in chlamydia and gonorrhea, available data suggest an overall decline in the incidence of PID, largely attributed to an increase in effective screening and treatment of chlamydial and gonococcal infections in adolescents and young women. In contrast to declining PID rates, surveillance data suggests rates of ectopic pregnancy have marginally increased over time.

Mother to child transmission of STDs can result in serious adverse consequences. Potential adverse neonatal outcomes include neonatal ophthalmia, neonatal pneumonia, and prematurity. The rate of congenital syphilis in the United States has increased every year since 2013. In 2017, there were 918 reported cases of congenital syphilis and the national congenital syphilis rate was 23.3 cases per 100,000 live births, the highest rate in two decades. Despite current recommended STD testing during pregnancy, women remain underscreened for STDs during pregnancy, either because of a lack of or limited prenatal care, or infection outside of the testing window.

References

1. Jolly DH, Mueller MP, Chen M, et al. Concurrency and other sexual risk behaviors among black young adults in a southeastern city. AIDS Educ Prev 2016; 28(1):59–76.
2. Dolwick Grieb SM, Davey-Rothwell M, Latkin CA. Concurrent sexual partnerships among urban African American high risk women with main sex partners. AIDS Behav 2012; 16(2):323–333. DOI: 10.1007/s10461-011-9954-6.
3. Hogben M, Leichliter JS. Social determinants and sexually transmitted disease disparities. Sex Transm Dis 2008; 35(12):S13–S18.
4. Kelly J, Cohen J, Grimes B, et al. High rates of herpes simplex virus type 2 infection in homeless women: Informing public health strategies. J Womens Health (Larchmt) 2016; 25(8):840–845. DOI: 10.1089/jwh.2015.5579.
5. Tschann JM, Flores E, de Groat CL, et al. Condom negotiation strategies and actual condom use among Latino youth. J Adolesc Health 2010; 47(3):254–262. DOI: 10.1016/j.jadohealth.2010.01.018.
6. Pulerwitz J, Amaro H, De Jong W, et al. Relationship power, condom use and HIV risk among women in the USA. AIDS Care 2002; 14(6):789–800.
7. McCree DH, Rompalo A. Biological and behavioral risk factors associated with STDs/HIV in women: Implications for behavioral interventions. In: Aral SO, Douglas JM, Lipshutz JA, eds. Behavioral Interventions for Prevention and Control of Sexually Transmitted Diseases. New York, NY: Springer; 2007:310–324.
8. Swartzendruber A, Zenilman JM, Niccolai LM, et al. It takes 2: Partner attributes associated with sexually transmitted infections among adolescents. STD 2013; 40(5):372–378.
9. Haggerty CL, Gottlieb SL, Taylor BD, et al. Risk of sequelae after *Chlamydia trachomatis* genital infection in women. J Infect Dis 2010; 201:S134–S155.
10. Oakeshott, P, Kerry S, Aghaizu A, et al. Randomised controlled trial of screening for *Chlamydia trachomatis* to prevent pelvic inflammatory disease: The POPI (prevention of pelvic infection) trial. BMJ 2010; 340:c1642.
11. Price MJ, Ades AE, De Angelis D, et al. Risk of pelvic inflammatory following *Chlamydia trachomatis* infection: Analysis of prospective studies with a multistate model. Am J Epidemiol 2013; 178(3):484–492.
12. Tsevat DG, Wiesenfeld HC, Parks C, et al. Sexually transmitted diseases and infertility. Am J Obstet Gynecol 2017; 216(1):1–9.
13. Ness RB, Trautmann G, Richter HE, et al. Effectiveness of treatment strategies of some women with pelvic inflammatory disease: A randomized trial. Obste Gyneco 2005; 106(3):573–580.
14. Gottlieb SL, Xu F, Brunham RC. Screening and treating chlamydia genital infections to prevent PID: Interpretation of findings from randomized controlled trials. Sex Transm Dis 2013; 40(2):97–102.
15. Satterwhite CL, Torrone E, Meites E, et al. Sexually transmitted infections among US women and men: Prevalence and incidence estimates, 2008. Sex Transm Dis 2013; 40(3):187–193.
16. McQuillan G, Kruszon-Moran D, Markowitz LE, et al. Prevalence of HPV in adults aged 18–69: United States, 2011–2014. NCHS Data Brief, No. 280. Hyattsville, MD: National Center for Health Statistics; 2017.
17. Insinga RP, Perez G, Wheeler CM, et al. Incident cervical HPV infections in young women: Transition probabilities for CIN and infection clearance. Cancer Epidemiol Biomarkers Prev 2011; 20(2):287–296.
18. Doorbar J, Quint W, Banks L, et al. The biology and life-cycle of human papillomaviruses. Vaccine 2012; 30(Suppl 5):F55–F70.
19. Saslow D, Solomon D, Lawson HW, et al. American Cancer Society, American Society for Colposcopy and Cervical Pathology, and American Society for Clinical Pathology screening guidelines for the prevention and early detection of cervical cancer. J Low Genit Tract Dis 2012; 16(3):175–204.
20. Garland SM, Steben M, Sings HL, et al. Natural history of genital warts: Analysis of the placebo arm of 2 randomized phase III trials of a quadrivalent human papillomavirus (Types 6, 11, 16, and 18) vaccine. J Infect Dis 2009; 199(6):805–814.
21. Clifford GM, Rana RK, Franceschi S, et al. Human papillomavirus genotype distribution in low-grade cervical lesions: Comparison by geographic region and with cervical cancer. Cancer Epidemiol Biomarkers Prev 2005; 14(5):1157–1164.
22. Gissmann L, Wolnik L, Ikenberg H, et al. Human papillomavirus types 6 and 11 DNA sequences in genital and laryngeal papillomas and in some cervical cancers. Proc Natl Acad Sci USA 1983; 80(2): 560–563.
23. Donne AJ, Clarke R. Recurrent respiratory papillomatosis: An uncommon but potentially devastating effect of human papillomavirus in children. Int J STD AIDS 2010; 21(6):381–385.
24. Armstrong LR, Preston EJ, Reichert M, et al. Incidence and prevalence of recurrent respiratory papillomatosis among children in Atlanta and Seattle. Clin Infect Dis 2000; 31:107–109.
25. Kohlhoff, SA, Hammerschlag, MR. Gonococcal and chlamydial infections in infants and children. In: Sexually Transmitted Diseases. 4th ed. New York, NY: McGraw Hill; 2007:1613–1627.
26. Kidd SE, Bowen VB, Torrone EA, et al. Use of national syphilis surveillance data to develop a congenital syphilis prevention cascade and estimate the number of potential congenital syphilis cases averted. Sex Transm Dis 2018; DOI: 10.1097/OLQ.0000000000000838. [Epub ahead of print].
27. Kimberlin DW. Herpes simplex virus infections of the newborn. Semin Perinatol 2007; 31(1):19–25.
28. Corey L, Wald A. Maternal and neonatal herpes simplex virus infections. N Engl J Med 2009; 361(14):1376–1385.
29. Kimberlin DW. The scarlet H. J Infect Dis 2014; 209(3):315–317.
30. Sutton MY, Sternberg M, Zaidi A, et al. Trends in pelvic inflammatory disease hospital discharges and ambulatory visits, United States, 1985–2001. Sex Transm Dis 2005; 32(12):778–784.
31. Bohm MK, Newman L, Satterwhite CL, et al. Pelvic inflammatory disease among privately insured women, United States, 2001–2005. Sex Transm Dis 2010; 37(3):131–136.
32. Whiteman MK, Kuklina E, Jamieson DJ, et al. Inpatient hospitalization for gynecologic disorders in the United States. Am J Obstet Gynecol 2010; 202(6):541.e1–6.
33. Kreisel K, Flagg EW, Torrone E. Trends in pelvic inflammatory disease emergency department visits, United States, 2006–2013. Am J Obstet Gynecol 2018; 218: 117.e1-10.
34. Owusu Edusei K Jr, Bohm MK, Chesson HW, et al. Chlamydia screening and pelvic inflammatory disease: Insights from exploratory time-series analyses. Am J Prev Med 2010; 38(6):652–657.
35. Leichliter JS., Chandra A., Aral SO. Correlates of self-reported pelvic inflammatory disease treatment in sexually experienced reproductive-aged women in the United States, 1995 and 2006–2010. Sex Transm Dis 2013; 40(5):413–418.

36. Trabert B, Holt VL, Yu O, et al. Population-based ectopic pregnancy trends, 1993–2007. Am J Prev Med 2011; 40(5):556–560.

37. Hoover KW, Tao G, Kent CK. Trends in the diagnosis and treatment of ectopic pregnancy in the United States. Obstet Gynecol 2010; 115(3):495–502.

38. Centers for Disease Control and Prevention. Recommendations for the prevention and management of *Chlamydia trachomatis* infections, 1993. MMWR Morb Mortal Wkly Rep 1993; 42(RR-12):1–39.

39. Centers for Disease Control and Prevention. Neonatal herpes simplex virus infection following Jewish ritual circumcisions that included direct orogenital suction — New York City, 2000–2011. MMWR Morb Mortal Wkly Rep 2012; 61(22):405–409.

40. Dinh T-H, Dunne EF, Markowitz LE, et al. Assessing neonatal herpes reporting in the United States, 2000–2005. Sex Transm Dis 2008; 35(1):19–21.

41. Handel S, Klingler EJ, Washburn K, et al. Population-based surveillance for neonatal herpes in New York City, April 2006–September 2010. Sex Transm Dis 2011; 38(8):705–711.

42. Flagg EW, Weinstock H. Incidence of neonatal herpes simplex virus infections in the United States, 2006. Pediatrics 2011; 127(1):e1–8.

43. Sampath A, Maduro G, Schillinger JA. Infant deaths due to herpes simplex virus, congenital syphilis, and HIV in New York City. Pediatrics 2016; 137(4):e20152387.

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STDs in Adolescents and Young Adults

Background

Incidence and prevalence estimates suggest that young people aged 15–24 years acquire half of all new STDs[1] and that one in four sexually active adolescent females has an STD, such as chlamydia or human papillomavirus (HPV).[2] Compared with older adults, sexually active adolescents aged 15–19 years and young adults aged 20–24 years are at higher risk of acquiring STDs for a combination of behavioral, biological, and cultural reasons. For some STDs, such as chlamydia, adolescent females may have increased susceptibility to infection because of increased cervical ectopy. Cervical ectopy refers to columnar cells, which are typically found within the cervical canal, located on the outer surface of the cervix. Although this is a normal finding in adolescent and young women, these cells are more susceptible to infection. The higher prevalence of STDs among adolescents may also reflect multiple barriers to accessing quality STD prevention and management services, including inability to pay, lack of transportation, long waiting times, conflict between clinic hours and work and school schedules, embarrassment attached to seeking STD services, method of specimen collection, and concerns about confidentiality (e.g., Explanation of Benefits for services received mailed to parents or guardians).[3]

Traditionally, intervention efforts have targeted individual level factors associated with STD risk which do not address higher-level factors (e.g., peer norms and media influences) that may also influence behaviors.[4] Interventions for at-risk adolescents and young adults that address underlying aspects of the social and cultural conditions affecting sexual risk-taking behaviors are needed, as are strategies designed to improve the underlying social conditions themselves.[5,6] In addition, in designing STD programs, consideration should be given to the needs of adolescent and young adult populations including extended hours, optimizing privacy in waiting rooms, and urine based specimen collection.[3]

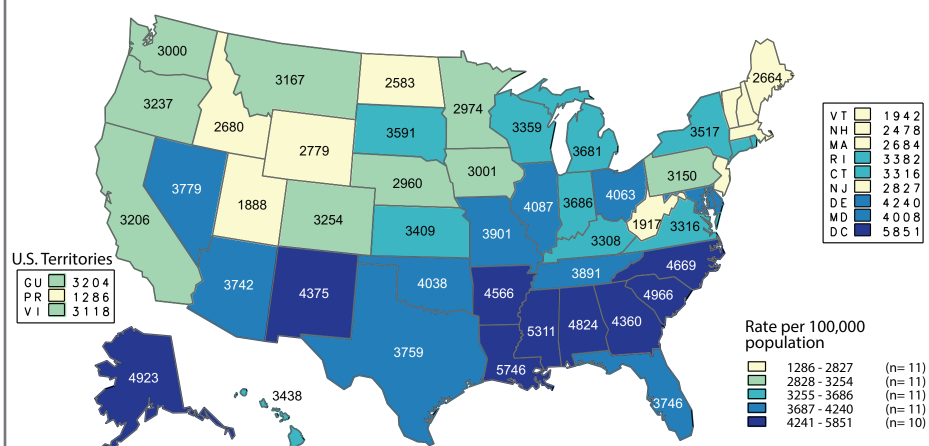
Chlamydia

In 2017, there were 1,069,111 reported cases of chlamydial infection among persons aged 15–24 years, representing 62.6% of all reported chlamydia cases. Among those aged 15–19 years, the rate of reported cases of chlamydia increased 7.5% during 2016–2017 (1,927.3 to 2,072.4 cases per 100,000 population) (Table 10). Among those aged 20–24 years, the rate increased 5.0% during 2016–2017 (2,686.1 to 2,820.3 cases per 100,000 population) (Table 10).

Among women aged 15–24 years, the population targeted for chlamydia screening, the overall rate of reported cases of chlamydia was 3,635.3 cases per 100,000 females (Table 12). This was a 4.9% increase from 2016 (3,464.1 cases per 100,000 females) and an 8.8% increase from 2013 (3,341.1 cases per 100,000 females). Among men aged 15–24 years, the overall rate of reported cases of chlamydia was 1,327.0 cases per 100,000 males. This was an 8.9% increase from 2016 (1,219.0 cases per 100,000 males) and a 29.1% increase from 2013 (1,027.8 cases per 100,000 males). Rates varied by state for both males and females. The majority of states having the highest reported case rates were in the South (Figures K and L).

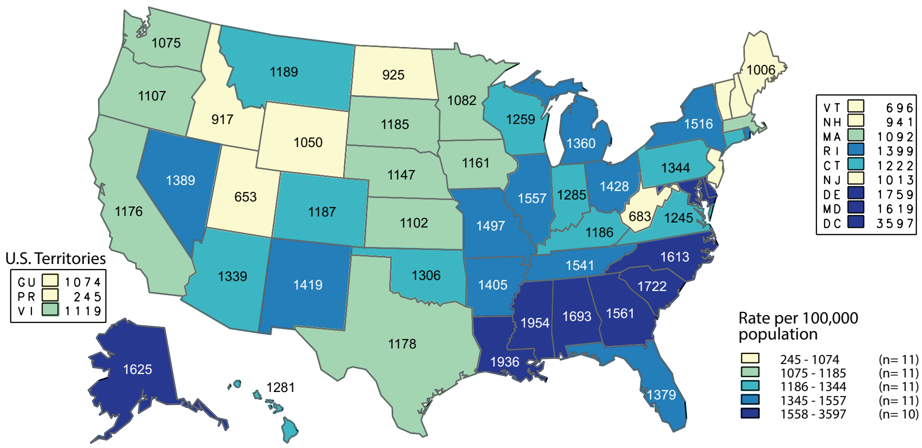
15–19 Year Old Females — In 2017, the rate of reported chlamydia cases among women aged 15–19 years was 3,265.7 cases per 100,000 females, a 6.5% increase from the 2016 rate of 3065.8 cases per 100,000 females (Figures 5 and 6, Table 10). Increases in rates of reported cases of chlamydia during 2016–2017 were largest among 19–year old and 20–year old women (8.4% and 6.8%

Figure K. Chlamydia — Rates of Reported Cases Among Women Aged 15–24 Years by State, United States and Outlying Areas, 2017



NOTE: Rates for Puerto Rico and the Virgin Islands were calculated by using the 2010 population estimates (see Section A1.2 in the Appendix).
ACRONYMS: GU = Guam; PR = Puerto Rico; VI = Virgin Islands.

Figure L. Chlamydia — Rates of Reported Cases Among Men Aged 15–24 Years by State, United States and Outlying Areas, 2017



NOTE: Rates for Puerto Rico and the Virgin Islands were calculated by using the 2010 population estimates (see Section A1.2 in the Appendix).
ACRONYMS: GU = Guam; PR = Puerto Rico; VI = Virgin Islands.

increases, respectively) (Table 12). During 2013–2017, the overall rate of reported cases for women aged 15–19 years increased 6.4% (Table 10).

20–24 Year Old Females — In 2017, women aged 20–24 years had the highest rate of reported chlamydia cases (3,985.8 cases per 100,000 females) compared with any other age group for either sex (Figures 5 and 6, Table 10). The overall increase in the rate of reported chlamydia cases among females aged 20–24 years during 2016–2017 was 3.7%, with the largest increase (4.1%) observed among females aged 20 years. During 2013–2017, the rate of reported chlamydia cases in this population increased 10.9% (Table 10).

15–19 Year Old Males — In 2017, the rate of reported chlamydia cases among men aged 15–19 years was 924.5 cases per 100,000 males, an 11.1% increase from 2016. During 2013–2017, the rate of reported chlamydia cases for men aged 15–19 years increased 27.9% (Figures 5 and 7, Table 10).

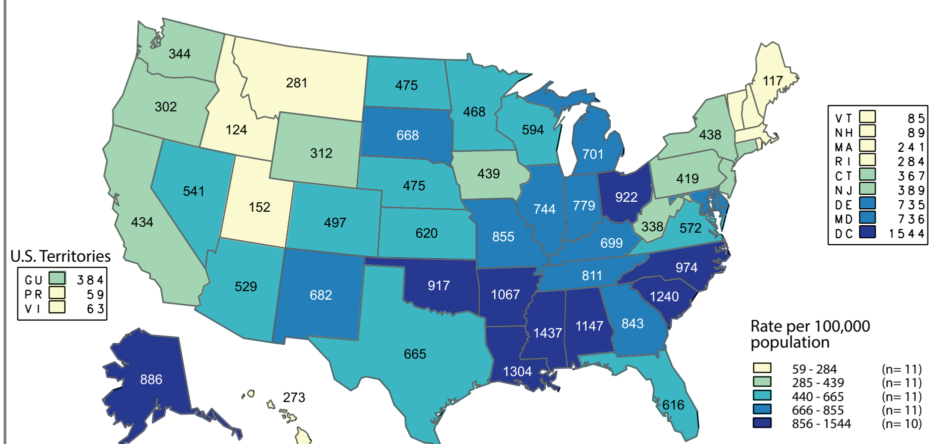
20–24 Year Old Males — In 2017, as in previous years, men aged 20–24 years had the highest rate of reported chlamydia cases among all men (1,705.4 cases per 100,000 males). The rate for men in this age group increased 7.8% during 2016–2017 (Figures 5 and 7, Table 10). Similarly, during 2013–2017, the rate for men aged 20–24 years increased 30.1% (Table 10).

Gonorrhea

During 2016–2017, the rate of reported gonorrhea cases increased 15.5% for persons aged 15–19 years and 12.8% for persons aged 20–24 years (Table 21). In 2017, among women aged 15–24 years, the rate was 622.8 cases per 100,000 females (Table 23). This was a 14.3% increase from 2016 (545.0 cases per 100,000 females) and a 24.1% increase from 2013 (501.7 cases per 100,000 females). Among men aged 15–24 years, the rate was 520.1 cases per 100,000 males. This was a 13.4% increase from 2016 (458.8 cases per 100,000 males) and a 51.6% increase from 2013 (343.0 cases per 100,000 males). For both women and men, rates varied by state. The majority of states with the highest reported case rates were in the South (Figures M and N).

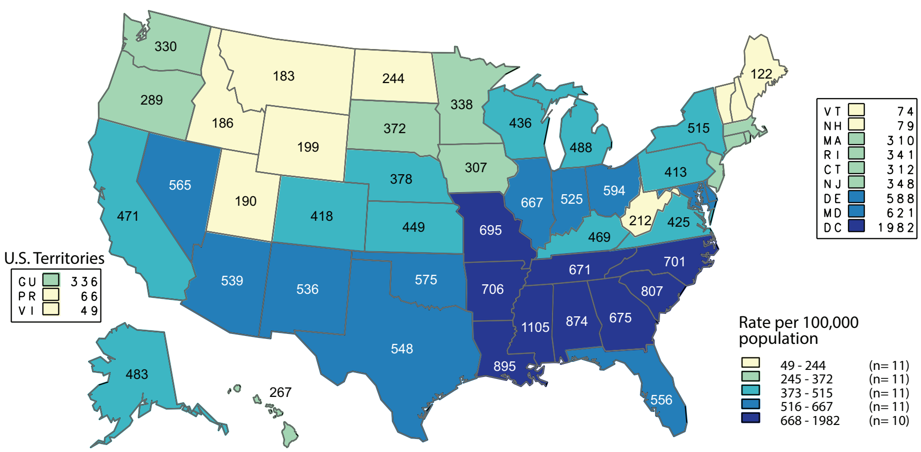
15–19 Year Old Females — In 2017, women aged 15–19 years had the second highest rate of reported gonorrhea cases (557.4 cases per 100,000 females) compared with other age groups among women (Figures 19 and 20, Table 21). During 2016–2017, the rate of reported

Figure M. Gonorrhea — Rates of Reported Cases Among Women Aged 15–24 Years by State, United States and Outlying Areas, 2017



NOTE: Rates for Puerto Rico and the Virgin Islands were calculated by using the 2010 population estimates (see Section A1.2 in the Appendix).
ACRONYMS: GU = Guam; PR = Puerto Rico; VI = Virgin Islands.

Figure N. Gonorrhea — Rates of Reported Cases Among Men Aged 15–24 Years by State, United States and Outlying Areas, 2017



NOTE: Rates for Puerto Rico and the Virgin Islands were calculated by using the 2010 population estimates (see Section A1.2 in the Appendix).
ACRONYMS: GU = Guam; PR = Puerto Rico; VI = Virgin Islands.

gonorrhea cases for women in this age group increased 15.8% and 20.4% during 2013–2017 (Table 21).

20–24 Year Old Females — In 2017, women aged 20–24 years had the highest rate of reported gonorrhea cases (684.8 cases per 100,000 females) compared with other age groups among women (Figures 19 and 20, Table 21). During 2016–2017, the rate of reported gonorrhea for women in this age group increased 13.1% and 27.4% during 2013–2017 (Table 21).

15–19 Year Old Males — In 2017, the rate of reported gonorrhea cases among men aged 15–19 years was 323.3 cases per 100,000 males (Figures 19 and 21, Table 21). During 2016–2017, the rate of reported gonorrhea cases for men in this age group increased 15.2% and 44.8% during 2013–2017 (Table 21).

20–24 Year Old Males — In 2017, as in previous years, men aged 20–24 years had the highest rate of reported gonorrhea cases (705.2 cases per 100,000 males) compared with any other age group for either sex (Figures 19 and 21, Table 21). During 2016–2017, the rate of reported gonorrhea for men in this age group increased 12.6% and 55.2% during 2013–2017 (Table 21).

Primary and Secondary Syphilis

In 2017, among women aged 15–24 years, the rate of reported primary and secondary (P&S) syphilis was 5.5 cases per 100,000 females. This was a 7.8% increase from 2016 (5.1 cases per 100,000 females) and an 83.3% increase from 2013 (3.0 cases per 100,000 females). Among men aged 15–24 years, the rate was 26.1 cases per 100,000 males. This was an 8.3% increase from 2016 (24.1 cases per 100,000 males) and a 50.9% increase from 2013 (17.3 cases per 100,000 males). During 2016–2017, the rate of reported P&S syphilis cases increased 9.8% among persons aged 15–19 years and 7.8% among persons aged 20–24 years (Table 34).

15–19 Year Old Females — The rate of reported P&S syphilis cases among women aged 15–19 years increased each year during 2013–2016 (from 1.9 to 3.3 cases per 100,000 females) (Figure 43, Table 34). However, the rate slightly decreased in 2017. During 2016–2017, the rate decreased 3.0%, from 3.3 to 3.2 cases per 100,000 females (Figure 43, Table 34). Despite this decline during 2016–2017, there was an overall increase in the rate of P&S syphilis of 68.4% during 2013–2017 in women aged 15–19 years.

20–24 Year Old Females — In 2017, women aged 20–24 years had the highest rate of P&S syphilis (7.8 cases per 100,000 females) compared with other age groups among women (Figure 42, Table 34). The P&S syphilis rate among women in this age group has increased each year since 2011 and has doubled since 2013 (Figure 43, Table 34). During 2016–2017, the rate increased 14.7%.

15–19 Year Old Males — In 2017, the rate of reported P&S syphilis cases among men aged 15–19 years was 10.1 cases per 100,000 males (Figure 42, Table 34). The P&S syphilis rate among men in this age group has increased each year since 2011, with an increase of 55.4% during 2013–2017 (Figure 44, Table 34). During 2016–2017, the rate increased 13.5%.

20–24 Year Old Males — In 2017, men aged 20–24 years had the second highest rate of reported P&S syphilis (41.1 cases per 100,000 males) compared with any other age group for either sex (Figure 42, Table 34). The P&S syphilis rate among men in this age group has increased each year since 2006, with a 50.0% increase during 2013–2017 (Figure 44, Table 34). During 2016–2017, the rate increased 7.0%.

Other STDs

Human papillomavirus

HPV is the most common sexually transmitted infection in the United States.[1] Starting in 2006, HPV vaccines have been recommended for routine use in United States females aged 11–12 years, with catch-up vaccination through age 26.[7,8] Since late 2011, routine use of HPV vaccine has been recommended for males aged 11–12 years, with catch-up vaccination through age 21.[8-10] Vaccination through age 26 is recommended for gay, bisexual, and other men who have sex with men (collectively referred to as MSM) and persons who are immunocompromised (including those infected with HIV).[8]

Cervicovaginal prevalence of HPV vaccine types was examined using data from the National Health and Nutrition Examination Survey (NHANES; see Section A2.4 in the Appendix).[11] Prevalence decreased significantly from 2003–2006 (the pre-vaccine era) to 2011–2014 in specimens from females aged 14–19 years and 20–24 years, the age groups most likely to benefit from HPV vaccination.

Health-care claims data from adolescents and adults with employer-provided private health insurance in the United States were used to examine the population effectiveness of HPV vaccination on two clinical sequelae of HPV infection: high-grade histologically-detected cervical intraepithelial neoplasia grades 2 and 3 (CIN2+),[12] and anogenital warts.[13] Prevalence of CIN2+ and of anogenital warts decreased significantly during 2007–2014 among females aged 15–19 and 20–24 years (Figures 51 and 52A); prevalence of anogenital warts also decreased significantly during 2009–2014 among women aged 25–29 years (Figure 52A). These declines provide ecologic evidence of population effectiveness of HPV vaccination in females. Anogenital wart prevalence also decreased significantly during 2009–2014 among men aged 20–24 years (Figure 52B); these declines among young men are consistent with herd protection from vaccination among females.

For more information on HPV infections, see Other STDs.

Herpes simplex virus

Herpes simplex virus (HSV) is among the most prevalent of sexually transmitted infections.[1,14] Most genital HSV infections in the United States are caused by HSV type 2 (HSV-2), while HSV type 1 (HSV-1) infections are typically orolabial and acquired during childhood.[15,16] NHANES data show that among adolescents aged 14–19 years, HSV-1 seroprevalence has significantly decreased by almost 23%, from 39.0% during 1999–2004 to 30.1% during 2005–2010, indicating declining orolabial infection in this age group.[16] HSV-2 seroprevalence in this age group was much lower in both time periods.[16]

Other studies have found that genital HSV-1 infections are increasing among young adults.[17,18] This has been attributed, in part, to the decline in orolabial HSV-1 infections, because those who lack HSV-1 antibodies at sexual debut are more susceptible to genital HSV-1 infection.[16,19] Increasingly common oral sex behavior among adolescents and young adults also has been suggested as a contributing factor.[16,20]

For more information on genital HSV infections, see Other STDs.

National Job Training Program

The National Job Training Program (NJTP) is an educational program for socioeconomically disadvantaged youth aged 16–24 years and is administered at more than 100 sites throughout the country. The NJTP screens participants for chlamydia and gonorrhea within two days of entry to the program. All of NJTP's chlamydia screening tests and the majority of gonorrhea screening tests are conducted by a single national contract laboratory*.

To increase the stability of the 2017 estimates, chlamydia or gonorrhea prevalence data are presented when valid test results for 100 or more students per year are available for the population subgroup and state. Additional information about NJTP can be found in Section A2.1 in the Appendix.

Among women entering the program in 2017 in 44 states and Puerto Rico, the median state-specific chlamydia prevalence was 11.8% (range: 4.8% to 19.6%) (Figure O). Among men entering the program in all 50 states, the District of Columbia, and Puerto Rico, the median state-specific chlamydia prevalence was 6.6% (range: 2.1% to 14.5%) (Figure P).

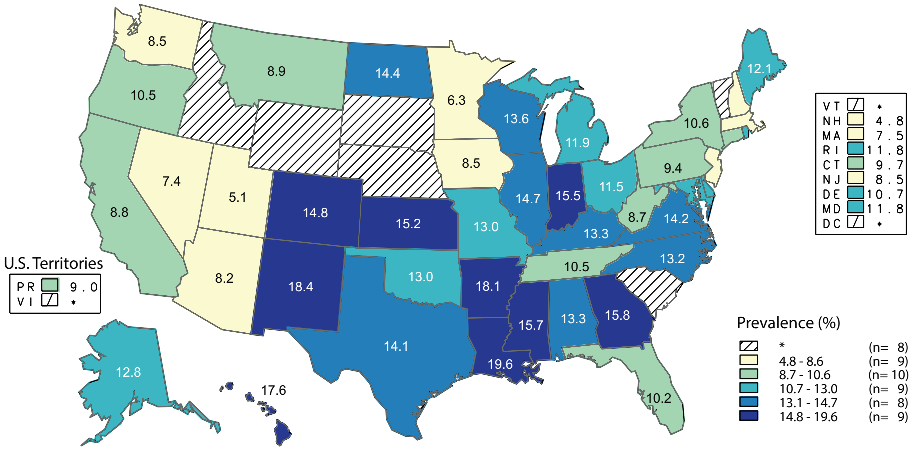
Among women entering the program in 44 states and Puerto Rico, the median state-specific gonorrhea prevalence in 2017 was 2.6% (range: 0.0% to 6.3%) (Figure Q). Among men entering the program in 44 states, the District of Columbia, and Puerto Rico, the median state-specific gonorrhea prevalence was 0.8% (range: 0.0% to 2.2%) (Figure R).

* Laboratory tests are conducted by the Center for Disease Detection, LLC San Antonio, Texas.

Summary

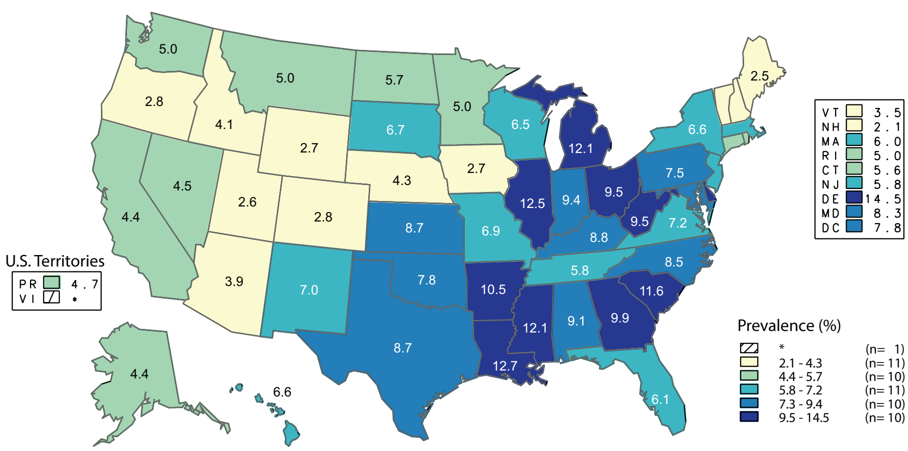
The rate of reported cases of chlamydia, gonorrhea, and P&S syphilis increased for both sexes in 15–24 year olds during 2016–2017. For chlamydia, rates of reported cases are consistently highest among women aged 15–24 years, likely reflecting targeted screening of young women; however, the rate of reported chlamydia in males aged 15–24 years increased 29.1% during 2013–2017, while the rate in females increased 8.8%. Similarly, in 2017, the rate

Figure O. Chlamydia — Prevalence Among Women Aged 16–24 Years Entering the National Job Training Program (NJTP) by State of Residence, United States and Outlying Areas, 2017



* Fewer than 100 women who resided in these states/areas and entered the NJTP were screened for chlamydia in 2017.
NOTE: See Section A2.1 in the Appendix for more information regarding NJTP methods.
ACRONYMS: PR = Puerto Rico; VI = Virgin Islands.

Figure P. Chlamydia — Prevalence Among Men Aged 16–24 Years Entering the National Job Training Program (NJTP) by State of Residence, United States and Outlying Areas, 2017



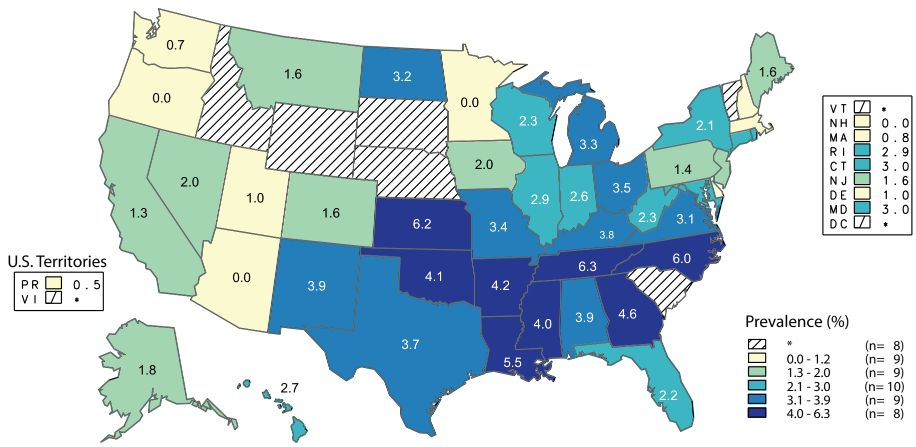
* Fewer than 100 men who resided in these states/areas and entered the NJTP were screened for chlamydia in 2017.
NOTE: See Section A2.1 in the Appendix for more information regarding NJTP methods.
ACRONYMS: PR = Puerto Rico; VI = Virgin Islands.

of reported cases of gonorrhea in females aged 15–24 years was higher than in men of the same age group; however, during 2013–2017, the rate of reported gonorrhea in males aged 15–24 years increased 51.6%, while the rate in females increased 24.1%. Increases in chlamydia and gonorrhea diagnoses among men likely reflect a combination of increased screening among young men, including extra-genital screening, and increased incidence. Conversely, rates of reported cases of P&S syphilis have been consistently higher among adolescent and young adult men compared to women; however, the largest increase in P&S syphilis rates during 2013–2017 was among women of this age group. During 2013–2017, rates of reported P&S syphilis cases increased 83.3% and 50.9% in 15–24 year old females and males, respectively.

References

1. Satterwhite CL, Torrone E, Meites E, et al. Sexually transmitted infections among US women and men: Prevalence and incidence estimates, 2008. Sex Trans Dis 2013; 40(3): 187–193.
2. Forhan SE, Gottlieb SL, Sternberg MR, et al. Prevalence of sexually transmitted infections among female adolescents aged 14 to 19 in the United States. Pediatrics 2009; 124(6):1505–1512.
3. Tilson EC, Sanchez V, Ford CL, et al. Barriers to asymptomatic screening and other STD services for adolescents and young adults: Focus group discussions. BMC Public Health 2004; 4(1):21.
4. DiClemente RJ, Salazar LF, Crosby RA. A review of STD/HIV preventive interventions for adolescents: Sustaining effects using an ecological approach. J Pediatr Psychol 2007; 32(8):888–906.
5. Sieving RE, Bernat DH, Resnick MD, et al. A clinic-based youth development program to reduce sexual risk behaviors among adolescent girls: Prime time pilot study. Health Promot Pract 2012; 13(4):462–471.
6. Upchurch DM, Mason WM, Kusunoki Y, et al. Social and behavioral determinants of self-reported STD among adolescents. Perspect Sex Reprod Health 2004; 36(6):276–287.
7. Markowitz LE, Dunne EF, Saraiya M, et al. Quadrivalent human papillomavirus vaccine. Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR Morb Mortal Wkly Rep Recomm Rep 2007; 56(RR-2):1–24.
8. Petrosky E, Bocchini Jr. JA, Hariri S, et al. Use of 9-valent human papillomavirus (HPV) vaccine: Updated HPV vaccination recommendations of the Advisory Committee on Immunization Practices. MMWR Morb Mortal Wkly Rep 2015; 64(11):300–304.

Figure Q. Gonorrhea — Prevalence Among Women Aged 16–24 Years Entering the National Job Training Program (NJTP) by State of Residence, United States and Outlying Areas, 2017

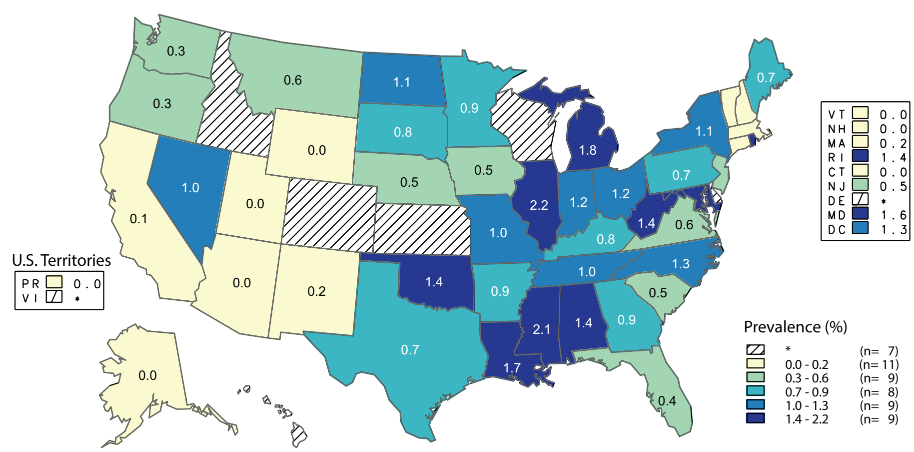


* Fewer than 100 women who resided in these states/areas and entered the NJTP were screened for gonorrhea in 2017.

NOTE: See Section A2.1 in the Appendix for more information regarding NJTP methods.

ACRONYMS: PR = Puerto Rico; VI = Virgin Islands.

Figure R. Gonorrhea — Prevalence Among Men Aged 16–24 Years Entering the National Job Training Program (NJTP) by State of Residence, United States and Outlying Areas, 2017



* Fewer than 100 men who resided in these states/areas and entered the NJTP were screened for gonorrhea in 2017.

NOTE: See Section A2.1 in the Appendix for more information regarding NJTP methods.

ACRONYMS: PR = Puerto Rico; VI = Virgin Islands.

9. Centers for Disease Control and Prevention. Recommendations on the use of quadrivalent human papillomavirus vaccine in males — Advisory Committee on Immunization Practices (ACIP), 2011. MMWR Morb Mortal Wkly Rep 2011; 60(50):1705–1708.

10. Meites E, Kempe A, Markowitz LE. Use of a 2-dose schedule for human papillomavirus vaccination — updated recommendations of the Advisory Committee on Immunization Practices. MMWR Morb Mortal Wkly Rep 2016; 65(49):1405–1408.

11. Oliver SE, Unger ER, Lewis R, et al. Prevalence of human papillomavirus among females after vaccine introduction — National Health and Nutrition Examination Survey, United States, 2003–2014. J Infect Dis 2017; 216(5):594–603.

12. Flagg EW, Torrone EA, Weinstock H. Ecological association of human papillomavirus vaccination with cervical dysplasia prevalence in the United States, 2007–2014. Am J Public Health 2016; 106(12):2211–2218.

13. Flagg EW, Torrone EA. Declines in anogenital warts among age groups most likely to be impacted by human papillomavirus vaccination, United States, 2006–2014. Am J Public Health 2018; 108(1):112–119.

14. Smith JS, Robinson NJ. Age-specific prevalence of infection with herpes simplex virus types 2 and 1: A global review. J Infect Dis 2002; 186(Suppl 1):S3–S28.

15. Corey L, Wald A. Genital Herpes. In: Holmes KK, Sparling FP, Stamm WE, et al., eds. Sexually Transmitted Diseases. 4th ed. New York, NY: McGraw-Hill; 2008:399–437.

16. Bradley H, Markowitz LE, Gibson T, et al. Seroprevalence of herpes simplex virus types 1 and 2 — United States, 1999–2010. J Infect Dis 2014; 209(3):325–333.

17. Bernstein DI, Bellamy AR, Hook EW III, et. al. Epidemiology, clinical presentation, and antibody response to primary infection with herpes simplex virus type 1 and type 2 in young women. Clin Infect Dis 2013; 56:344–351.

18. Roberts CM, Pfister JR, Spear SJ. Increasing proportion of herpes simplex virus type 1 as a cause of genital herpes infection in college students. Sex Transm Dis 2003; 30(10):797–800.

19. Kimberlin DW. The scarlet H. J Infect Dis 2014; 209(3):315–317.

20. Copen CE, Chandra A, Martinez G. Prevalence and timing of oral sex with opposite-sex partners among females and males aged 15–24 years: United States, 2007–2010. National Health Statistics Reports, No. 56. Hyattsville, MD: National Center for Health Statistics; 2012.

STDs in Racial and Ethnic Minorities

Background

Disparities continue to persist in rates of STDs among some racial minority or Hispanic groups when compared with rates among Whites.[1,2] This is also true across a wide variety of other health status indicators, providing evidence that race and Hispanic ethnicity in the United States are population characteristics strongly correlated with other factors affecting overall health status, such as income, employment, insurance coverage, and educational attainment.[3-5] In 2016, the most recent year for which national data on poverty and insurance status are available, the overall proportion of the United States population living in poverty was 12.7% (or 40.6 million), a slight decrease from 2015. Although the overall poverty rate has declined slightly over the last few years, many Americans continue to face challenges overcoming inequalities in economic opportunity; the poverty rate in 2016 for Whites was 8.8% (17.3 million), for Blacks it was 22.0% (or 9.2 million), and for Hispanics it was 19.4% (or 11.1 million). Significant differences by race and Hispanic ethnicity in the proportion of the population living in poverty persisted in 2016 and were even more acute for family households headed by women (28.8% versus 10.7% for all households), regardless of other factors [3]. Those who cannot afford basic necessities often have trouble accessing and affording quality health care, including sexual health services.[6]

Access to, and routine use of, quality health care including STD prevention and treatment is key to reducing STD disparities in the United States. Of the estimated 19 million new cases of sexually transmitted infections (STIs) that occur each year, approximately half of all cases occur among people aged 15–24 years.[7] Although the overall proportion of adults without health insurance decreased from 13.3% in 2013 to 8.8% (or 28.2 million) in 2016, many people in the United States continue to struggle to afford full, routine access to health care.[8] Among all races or ethnic groups in the United States, Hispanics had the lowest rate of health insurance coverage in 2016 at 84.0% (a slight increase from 83.8% in 2015).[8]

Even when health care is readily available to racial and ethnic minority populations, fear and distrust of health care institutions can negatively affect the health care-seeking experience. Social and cultural discrimination, language barriers, provider bias, or the perception that these may exist, likely discourage some people from seeking care.[9,10] Moreover, the quality of care can differ substantially for minority patients.[11] Broader inequities in social and economic conditions for minority communities are reflected in the profound disparities observed in the incidence of STDs by race and Hispanic ethnicity.

In communities where STD prevalence is higher because of these and other factors, people may experience difficulties reducing their risk for STIs. With each sexual encounter, they face a greater chance of encountering an infected partner than those in lower prevalence settings do, regardless of similar sexual behavior patterns.[2] Acknowledging inequities in STD rates by race and Hispanic ethnicity is a critical first step toward empowering affected groups and the public health community to collaborate in addressing systemic inequities in the burden of disease – with the ultimate goal of minimizing the health impacts of STDs on individuals and populations.

STD Reporting Practices

Surveillance data are based on cases of STDs reported to state and local health departments (see Section A.1 in the Appendix). In many state and local health departments, electronic laboratory reporting is increasingly becoming the primary source of initial case notifications. Laboratory reports are often missing race and Hispanic ethnicity of the patient; ascertainment of information on race and Hispanic ethnicity is therefore a function of active follow-up or dependent on previous information available about the patient in existing health department surveillance databases. Prevalence data from population-based surveys, such as the National Health and Nutrition Examination Survey (NHANES) and the National Longitudinal Study of Adolescent Health, confirm the existence of marked disparities in some minority populations (see Other STDs below) for both reportable and non-nationally reportable STDs.[12,13]

Method of Classifying Race and Hispanic Ethnicity

Interpretation of racial and ethnic disparities among persons with STDs is influenced by data collection methods and by the categories by which these data are displayed. Race/Hispanic ethnicity data in this report are presented in Office of Management and Budget (OMB) race and Hispanic ethnicity categories according to the 1997 revised OMB standards.[14] As of 2017, most reporting jurisdictions are locally compliant with OMB standards and report in the standard categories, including the ability to collect more than one race per person. However, a small number of jurisdictions reported race in pre-1997 categories; while other jurisdictions were unable to report more than one race per person in 2017. All race and Hispanic ethnicity data reported by jurisdictions are summarized in tables, charts and interpretative text in this report *regardless of local compliance with the 1997 OMB standards*. No redistribution of cases is done; cases missing race and/or Hispanic ethnicity are not included in the calculation of rates by race and Hispanic ethnicity. See Section A1.5 of the Appendix for additional information on reporting of race and Hispanic ethnicity.

Completeness of Race and Hispanic Ethnicity Data in 2017

Chlamydia — 27.8% of chlamydia case reports were missing race or Hispanic ethnicity data, ranging by jurisdiction from 0.2% to 90.9% (Table A1).

Gonorrhea — 19.0% of gonorrhea case reports were missing information on race or Hispanic ethnicity, ranging by jurisdiction from 0.1% to 88.0% (Table A1).

Syphilis — 4.2% of all primary and secondary (P&S) syphilis case reports were missing information on race or Hispanic ethnicity, ranging by jurisdiction from no missing information to 30.3% (Table A1).

Chlamydia

During 2013–2017, rates of reported chlamydia cases increased among all racial and Hispanic ethnicity groups. Specifically, rates increased 3.7% among American Indians/Alaska Natives (AI/AN), 29.6% among Asians, 6.1% among Blacks, 19.4% among Native Hawaiians/Other Pacific Islanders (NHOPI), 20.2% among Whites, 59.9% among Multirace, and 10.5% among Hispanics (Figure 8).

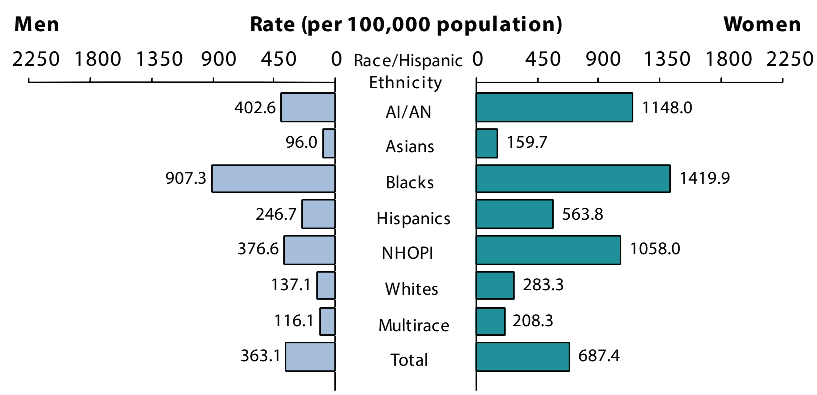
Blacks — In 2017, the overall rate of reported chlamydia cases among Blacks in the United States was 1,175.8 cases per 100,000 population (Table 11B). The rate of reported chlamydia cases among Black women was 5.0 times the rate among White women (1,419.9 and 283.3 cases per 100,000 females, respectively) (Figure S and Table 11B). The rate of reported chlamydia cases among Black men was 6.6 times the rate among White men (907.3 and 137.1 cases per 100,000 males, respectively). Rates of reported cases of chlamydia were highest for Blacks aged 15–19 and 20–24 years in 2017 (Table 11B). The rate of reported chlamydia cases among Black women aged 15–19 years (6,771.6 cases per 100,000 females) was 4.5 times the rate among White women in the same age group (1,518.5 cases per 100,000 females). The rate of reported chlamydia cases among Black women aged 20–24 years was 3.6 times the rate among White women in the same age group (6,971.7 and 1,936.0 cases per 100,000 females, respectively) (Table 11B). Among females aged 15–24 years, the population targeted for screening, rates were highest among Blacks in all US regions (Figure T).

Similar racial disparities in reported chlamydia rates exist among men. Among men aged 15–19 years, the rate of reported chlamydia cases among Blacks was 8.9 times the rate among Whites (2,589.3 and 291.5 cases per 100,000 males, respectively) (Table 11B). The rate of reported chlamydia cases among Black men aged 20–24 years was 5.0 times the rate among White men of the same age group (3,627.4 and 726.8 cases per 100,000 males, respectively).

American Indians/Alaska Natives — In 2017, the rate of reported chlamydia cases among AI/AN was 781.2 cases per 100,000 population (Table 11B). Overall, the rate of reported chlamydia cases among AI/AN in the United States was 3.7 times the rate among Whites.

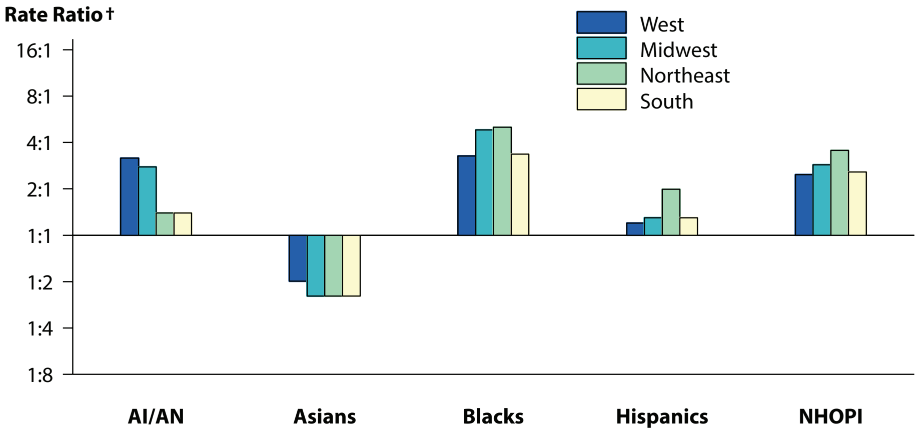
Native Hawaiians/Other Pacific Islanders — In 2017, the rate of reported chlamydia cases among NHOPI was 715.4 cases per 100,000 population (Table 11B). The overall rate of reported chlamydia cases among NHOPI was 3.4 times the rate among Whites and 5.5 times the rate among Asians.

Figure S. Chlamydia — Rates of Reported Cases by Race, Hispanic Ethnicity, and Sex, United States, 2017



NOTE: Not all US jurisdictions reported cases in OMB-compliant race categories in 2017. This may minimally under- or overestimate rates for Asians, NHOPI, or Multirace individuals. For completeness, data in this figure include cases reported from all jurisdictions. See Section A1.5 in the Appendix for information on race and Hispanic ethnicity in STD case reporting.
ACRONYMS: AI/AN = American Indians/Alaska Natives; NHOPI = Native Hawaiians/Other Pacific Islanders; OMB = Office of Management and Budget.

Figure T. Chlamydia — Rate Ratios* Among Women Aged 15–24 Years by Race, Hispanic Ethnicity, and Region, United States, 2017



* Rate ratios are calculated as the rate of reported chlamydia cases per 100,000 population for a given racial or ethnic minority population divided by the rate of reported chlamydia cases per 100,000 population for Whites. Any population with a lower rate of reported cases of chlamydia than the White population will have a rate ratio of less than 1:1.

† Y-axis is log scale.

NOTE: Not all US jurisdictions reported cases in OMB-compliant Race categories in 2017. This may minimally under- or overestimate rates for Asians, NHOPI, or Multirace individuals. For completeness, data in this figure include cases reported from all jurisdictions. See Section A1.5 in the Appendix for information on reporting STD case data for race and Hispanic ethnicity.

ACRONYMS: AI/AN = American Indians/Alaska Natives; NHOPI = Native Hawaiians/Other Pacific Islanders; OMB = Office of Management and Budget.

Hispanics — In 2017, the rate of reported chlamydia cases among Hispanics was 404.1 cases per 100,000 population, which was 1.9 times the rate among Whites (Table 11B).

Asians — In 2017, the rate of reported chlamydia cases among Asians was 129.6 cases per 100,000 population (Table 11B). The overall rate of reported chlamydia cases among Whites was 1.6 times the rate among Asians.

Gonorrhea

During 2013–2017, rates of reported gonorrhea cases increased 176.6% among Multirace persons (27.8 to 76.9 cases per 100,000 population), 122.4% among Asians (15.6 to 34.7 cases per 100,000 population), 109.1% among NHOPI (89.8 to 187.8 cases per 100,000 population), 100.6% among Whites (33.1 to 66.4 cases per 100,00 population), 95.3% among AI/AN (154.6 to 301.9 cases per 100,000 population), 77.4% among Hispanics (64.1 to 113.7 cases per 100,000 population), and 36.2% among Blacks (402.3 to 548.1 cases per 100,000 population) (Figure 22).

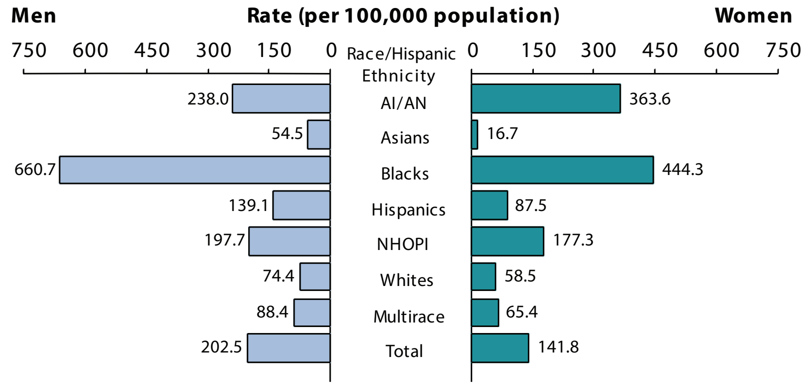
Blacks — In 2017, the overall rate of reported gonorrhea cases among Blacks in the United States was 548.1 cases per 100,000 population (Table 22B). The rate of reported gonorrhea cases among Blacks in 2017 was 8.3 times the rate among Whites (66.4 cases per 100,000 population) (Table 22B). In 2017, this disparity was similar for Black men (8.9 times the rate among White men) and Black women (7.6 times the rate among White women) (Figure U, Table 22B). As in previous years, the disparity in gonorrhea rates for Blacks in 2017 was larger in the Midwest and Northeast than in the South and West (Figure V).

Considering all race, Hispanic ethnicity, and age categories, rates of reported gonorrhea cases were highest for Blacks aged 20–24, 15–19, and 25–29 years in 2017 (Table 22B). The rate of reported gonorrhea cases among Black women aged 20–24 years (2,066.8 cases per 100,000 females) was 7.4 times the rate among White women in the same age group (280.0 cases per 100,000 females). The rate of reported gonorrhea cases among Black women aged 15–19 years (1,843.8 cases per 100,000 females) was 9.3 times the rate among White women in the same age group (197.5 cases per 100,000 females). Among Black men aged 20–24 years, the rate of reported gonorrhea cases (2,154.8 cases per 100,000 males) was 9.3 times the rate among White men in the same age group (231.3 cases per 100,000 males). The rate of reported gonorrhea cases among Black men aged 25–29 years (1,863.1 cases per 100,000 males) was 7.3 times the rate among White men in the same age group (253.5 cases per 100,000 males).

American Indians/Alaska Natives — In 2017, the rate of reported gonorrhea cases among AI/AN (301.9 cases per 100,000 population) was 4.5 times the rate among Whites (Table 22B). The disparity between gonorrhea rates for AI/AN and Whites was larger for AI/AN women (6.2 times the rate among White women) than for AI/AN men (3.2 times the rate among White men) (Figure U, Table 22B). The disparity in gonorrhea rates for AI/AN in 2017 was larger in the Midwest than in the West, Northeast, and South (Figure V).

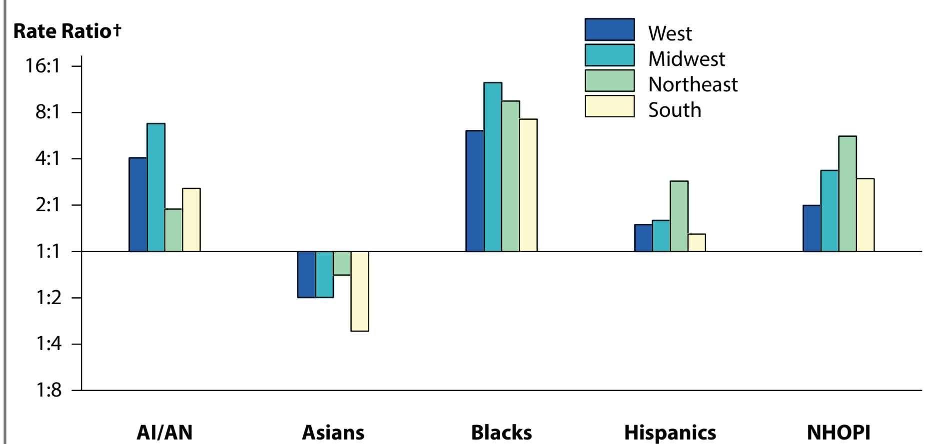
Native Hawaiians/Other Pacific Islanders — In 2017, the rate of reported gonorrhea cases among NHOPI (187.8 cases per 100,000 population) was 2.8 times the rate among Whites (Table 22B). This disparity was similar for NHOPI women (3.0 times the rate among White women) and NHOPI men (2.7

Figure U. Gonorrhea — Rates of Reported Cases by Race, Hispanic Ethnicity and Sex, United States, 2017



NOTE: Not all US jurisdictions reported cases in OMB-compliant race categories in 2017. This may minimally under- or overestimate rates for Asians, NHOPI, or Multirace individuals. For completeness, data in this figure include cases reported from all jurisdictions. See Section A1.5 in the Appendix for information on race and Hispanic ethnicity in STD case reporting.
ACRONYMS: AI/AN = American Indians/Alaska Natives; NHOPI = Native Hawaiians/Other Pacific Islanders; OMB = Office of Management and Budget.

Figure V. Gonorrhea — Rate Ratios* by Race, Hispanic Ethnicity, and Region, United States, 2017



* Rate ratios are calculated as the rate of reported gonorrhea cases per 100,000 population for a given racial or ethnic minority population divided by the rate of reported gonorrhea cases per 100,000 population for Whites. Any population with a lower rate of reported cases of gonorrhea than the White population will have a rate ratio of less than 1:1.
† Y-axis is log scale.
NOTE: Not all US jurisdictions reported cases in OMB-compliant race categories in 2017. This may minimally under- or overestimate rates for Asians, NHOPI, or Multirace individuals. For completeness, data in this figure include cases reported from all jurisdictions. See Section A1.5 in the Appendix for information on race and Hispanic ethnicity in STD case reporting.
ACRONYMS: AI/AN = American Indians/Alaska Natives; NHOPI = Native Hawaiians/Other Pacific Islanders; OMB = Office of Management and Budget.

times the rate among White men) (Figure U, Table 22B). The disparity in gonorrhea rates for NHOPI in 2017 was lower in the West than in the Midwest, Northeast, or South (Figure V).

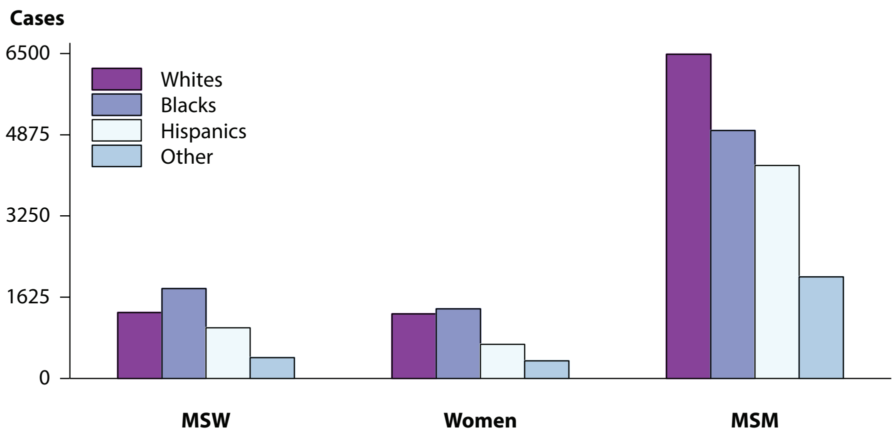
Hispanics — In 2017, the rate of reported gonorrhea cases among Hispanics was 113.7 cases per 100,000 population, which was 1.7 times the rate among Whites (Table 22B). This disparity was similar for Hispanic women (1.5 times the rate among White women) and Hispanic men (1.9 times the rate among White men) (Figure U, Table 22B). The disparity in gonorrhea rates for Hispanics in 2017 was higher in the Northeast than in the Midwest, South, or West (Figure V).

Asians — In 2017, the rate of reported gonorrhea cases among Asians (34.7 cases per 100,000 population) was 0.5 times the rate among Whites (Table 22B). This difference was larger for Asian women than for Asian men (Figure U, Table 22B). In 2017, gonorrhea rates among Asians were lower than rates among Whites in all four regions of the United States (Figure V).

Primary and Secondary Syphilis

During 2013–2017, rates of reported P&S syphilis cases increased 192.6% among those who identified as Multirace (2.7 to 7.9 cases per 100,000 population), 141.3% among AI/AN (4.6 to 11.1 cases per 100,000 population), 91.3% among Asians (2.3 to 4.4 cases per 100,000 population), 84.4% among Hispanics (6.4 to 11.8 cases per 100,000 population), 80.0% among Whites (3.0 to 5.4 cases per 100,000 population), 58.0% among NHOPI (8.8 to 13.9 cases per 100,000 population), and 44.0% among Blacks (16.8 to 24.2 cases per 100,000 population) (Figure 45). Across race and Hispanic ethnicity groups, MSM accounted for the highest proportion of P&S syphilis cases (Figure W).

Figure W. Primary and Secondary Syphilis — Reported Cases* by Sex, Sexual Behavior, Race, and Hispanic Ethnicity, United States, 2017



* Of all reported cases of primary and secondary syphilis, 15.0% were among men without data on sex of sex partner, and 0.1% were cases with unknown sex; 5.7% of all cases had missing or unknown race/Hispanic ethnicity. Cases with missing or unknown race/Hispanic ethnicity are included in the "Other" category.
NOTE: Not all US jurisdictions reported cases in OMB-compliant Race categories in 2017. This may minimally under- or overestimate rates for Asians, NHOPI, or Multirace individuals. For completeness, data in this figure include cases reported from all jurisdictions. See Section A1.5 in the Appendix for information on reporting STD case data for race and Hispanic ethnicity.
ACRONYMS: AI/AN = American Indians/Alaska Natives; NHOPI = Native Hawaiians/Other Pacific Islanders; OMB = Office of Management and Budget.

Blacks — In 2017, 33.7% of reported P&S syphilis cases with known race and Hispanic ethnicity (excluding cases with missing information on race and Hispanic ethnicity, and cases whose reported race was 'Other' and Hispanic ethnicity was 'No' or 'Unknown') occurred among Blacks (Table 35A). The rate of reported P&S syphilis cases among Blacks in 2017 (24.2 cases per 100,000 population) was 4.5 times the rate among Whites (5.4 cases per 100,000 population) (Table 35B). The disparity was greater for Black women (5.2 times the rate among White women) than for Black men (4.5 times the rate among White men) (Figure X, Table 35B). Similar disparities were seen in all regions of the United States (Figure Y).

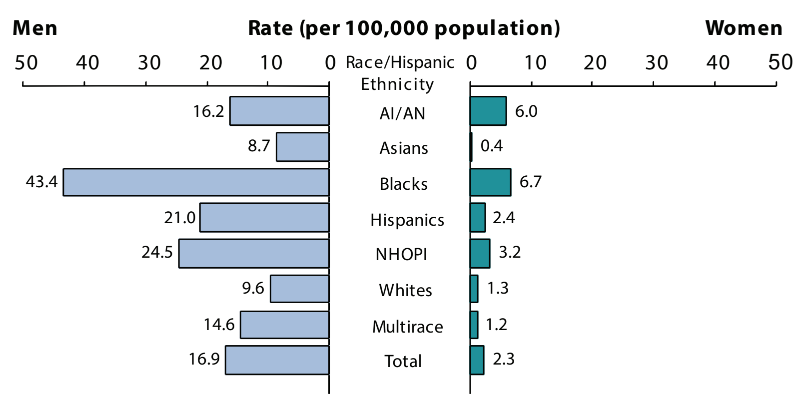
Considering all race, Hispanic ethnicity, sex, and age categories, rates of reported P&S syphilis cases were highest among Black men aged 25–29 years in 2017 (Table 35B). The rate of reported P&S syphilis cases among Black men aged 25–29 years (142.4 cases per 100,000 males) was 5.8 times the rate among White men in the same age group (24.7 cases per 100,000 males).

Native Hawaiians/Other Pacific Islanders — In 2017, the rate of reported P&S syphilis cases among NHOPI was 13.9 cases per 100,000 population, which was 2.6 times the rate among Whites (Table 35B). This disparity was similar for NHOPI women (2.5 times the rate among White women) and NHOPI men (2.6 times the rate among White men).

Hispanics — In 2017, the rate of reported P&S syphilis cases among Hispanics (11.8 cases per 100,000 population) was 2.2 times the rate among Whites (Table 35B). This disparity was similar for Hispanic men (2.2 times the rate among White men) and Hispanic women (1.8 times the rate among White women).

American Indians/Alaska Natives — In 2017, the rate of reported P&S syphilis cases among AI/AN (11.1 cases per 100,000 population) was 2.1 times the rate among Whites (Table 35B). This disparity was greater for AI/AN women (4.6 times the rate among White women) than for AI/AN men (1.7 times the rate among White men).

Figure X. Primary and Secondary Syphilis — Rates of Reported Cases by Race, Hispanic Ethnicity, and Sex, United States, 2017



NOTE: Not all US jurisdictions reported cases in OMB-compliant Race categories in 2017. This may minimally under- or overestimate rates for Asians, NHOPI, or Multirace individuals. For completeness, data in this figure include cases reported from all jurisdictions. See Section A1.5 in the Appendix for information on reporting STD case data for race and Hispanic ethnicity.
ACRONYMS: AI/AN = American Indians/Alaska Natives; NHOPI = Native Hawaiians/Other Pacific Islanders; OMB = Office of Management and Budget.

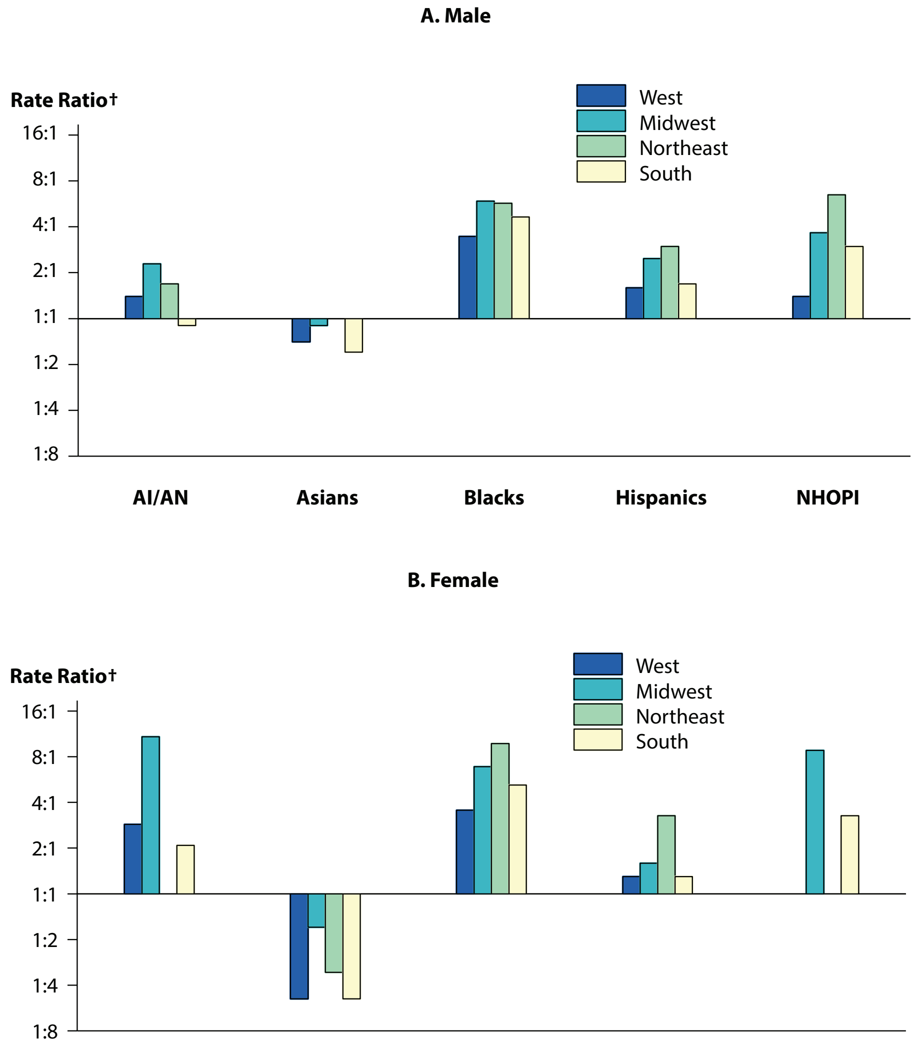
Asians — In 2017, the rate of reported P&S syphilis cases among Asians was 4.4 cases per 100,000 population, which was 0.8 times the rate among Whites (Table 35B). This difference was larger for Asian women (0.3 times the rate among White women) than for Asian men (0.9 times the rate among White men).

Congenital Syphilis

Race and Hispanic ethnicity for cases of congenital syphilis are based on the mother's information. During 2013–2017, rates of reported congenital syphilis cases increased in all population groups. Rates increased 234.5% among Whites, 225.2% among Hispanics, 177.3% among AI/AN, 87.6% among Blacks, and 22.9% among Asians/Pacific Islanders (Figure Z, Table 42).

In 2017, 39.1% of congenital syphilis cases with known race and Hispanic ethnicity (excluding cases with missing information on race and Hispanic ethnicity, and cases whose reported race was 'Other' and Hispanic ethnicity was 'No' or 'Unknown') occurred among Blacks (Table 42). The rate of reported cases of congenital syphilis among Blacks in 2017 (58.9 cases per 100,000 live births) was 6.1 times the rate among Whites (9.7 cases per 100,000 live births). The rate of reported cases of congenital syphilis was 35.5 cases per 100,000 live births among AI/AN (3.7 times the rate among Whites), 33.5 cases per 100,000 live births among Hispanics (3.5 times the rate among Whites), and 4.3 cases per 100,000 live births among Asians/Pacific Islanders (0.4 times the rate among Whites).

Figure Y. Primary and Secondary Syphilis — Rate Ratios* by Sex, Race, Hispanic Ethnicity, and Region, United States, 2017



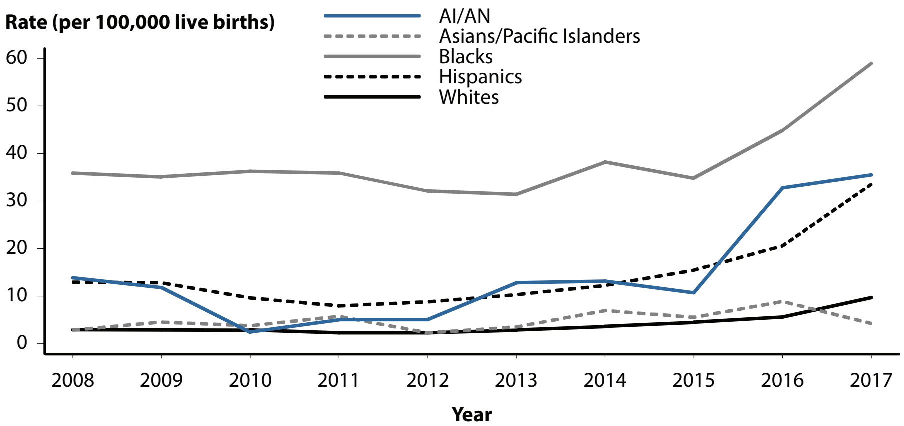
* Rate ratios are calculated as the rate of reported primary and secondary syphilis cases per 100,000 population for a given racial or ethnic minority population divided by the rate of reported primary and secondary syphilis cases per 100,000 population for Whites. Any population with a lower rate of reported cases of primary and secondary syphilis than the White population will have a rate ratio of less than 1:1.
† Y-axis is log scale.
NOTE: Not all US jurisdictions reported cases in OMB-compliant Race categories in 2017. This may minimally under- or overestimate rates for Asians, NHOPI, or Multirace individuals. For completeness, data in this figure include cases reported from all jurisdictions. See Section A1.5 in the Appendix for information on reporting STD case data for race and Hispanic ethnicity.
ACRONYMS: AI/AN = American Indians/Alaska Natives; NHOPI = Native Hawaiians/Other Pacific Islanders; OMB = Office of Management and Budget.

Other STDs

Data from the National Health and Nutrition Examination Survey (NHANES; see Section A2.4 in the Appendix) indicate the seroprevalence of herpes simplex virus type 2 (HSV-2) in the United States has decreased from 1999–2000 to 2015–2016 for all race and Hispanic ethnicity groups (Figure 53);[15] however, HSV-2 seroprevalence was highest among non-Hispanic Blacks throughout the entire time period. See Other STDs for more information on HSV infections.

Trichomonas vaginalis prevalence in urine specimens obtained from adult

Figure Z. Congenital Syphilis — Rates of Reported Cases by Year of Birth, Race, and Hispanic Ethnicity of Mother, United States, 2008–2017



NOTE: National Center for Health Statistics bridged race categories are presented to allow the display of data across several years. Not all US jurisdictions reported cases in OMB-compliant Race categories in 2017. This may minimally under- or overestimate rates for Asians, NHOPI, or Multirace individuals. For completeness, data in this figure include cases reported from all jurisdictions. See Section A1.5 in the Appendix for information on reporting STD case data for race and Hispanic ethnicity.

ACRONYMS: AI/AN = American Indians/Alaska Natives; OMB = Office of Management and Budget.

NHANES participants aged 18–59 years during 2013–2014 indicated a prevalence of 0.5% among males and 1.8% among females; highest rates were observed among non-Hispanic Black males (4.2%) and females (8.9%).[16] A separate analysis of NHANES data during 2013–2016 among men aged 18–59 years also found higher prevalence among non-Hispanic Blacks.[17] An analysis of NHANES data from 2001–2004 from cervicovaginal swab specimens also found higher *T. vaginalis* prevalence among non-Hispanic Black females.[18] See Other STDs for more information on *T. vaginalis* infections.

Summary

Inequities in the burden of disease for chlamydia, gonorrhea, syphilis and other STDs by race and Hispanic ethnicity continue to persist at unacceptable levels in the United States. These disparities are not explained by individual or population-level behavioral differences; rather they result in large measure from stubbornly entrenched systemic, societal, and cultural barriers to STD diagnoses, treatment and preventive services accessible on a routine basis. Some progress has been achieved in recent years in reducing the magnitude of disparities in some STDs, especially for Blacks, but much more needs to be done to address these issues through individual, group, and structural-level health care interventions. Continued monitoring of differences across groups in reported case incidence is also critical to the success of these efforts, including a sharpened focus on ascertainment of race and Hispanic ethnicity for persons diagnosed and reported with STDs.

References

1. Newman LM, Berman SM. Epidemiology of STD Disparities in African American Communities. Sex Transm Dis 2008; 35(12):S4–S12.
2. Hogben M, Leichliter JS. Social determinants and sexually transmitted disease disparities. Sex Transm Dis 2008; 35(12 Suppl):S13–18.
3. Semega JL, Fontenot KR, Kollar MA. U.S. Census Bureau, Current Population Reports, P60-259, *Income and Poverty in the United States: 2016,* U.S. Government Printing Office, Washington, DC, 2017. Available at: https://www.census.gov/content/dam/Census/library/publications/2017/demo/P60-259.pdf. Accessed July19, 2018.
4. Harling G, Subramanian SV, Barnighausen T, et al. Socioeconomic disparities in sexually transmitted infections among young adults in the United States: Examining the interaction between Income and race/ethnicity. Sex Transm Dis 2013; 40(7):575–581.
5. Centers for Disease Control and Prevention. CDC Health Disparities and Inequalities Report — United States 2013. MMWR Morb Mortal Wkly Rep 2013; 62(Suppl 3).
6. Institute of Medicine. The Hidden Epidemic: Confronting Sexually Transmitted Diseases. Washington, DC: National Academy Press; 1997.
7. Satterwhite CL, Torrone E, Meites E, et al. Sexually transmitted infections among US women and men: Prevalence and incidence estimates, 2008. Sex Transm Dis 2013; 40(3):187–193.
8. Barnett JC, Berchick ER. Current Population Reports, P60-260, *Health Insurance Coverage in the United States: 2016,* U.S. Government Printing Office, Washington, DC,2017. Available at: https://www.census.gov/content/dam/Census/library/publications/2017/demo/p60-260.pdf. Accessed July 19, 2018.
9. Pérez-Escamilla R. Health care access among Latinos: Implications for social and health care reform. J Hispanic High Educ 2010: 9(1):43–60.
10. Berk ML, Schur CL. The effect of fear on access to care among undocumented Latino immigrants. J Immigr Health 2001; 3(3):151–156.
11. Institute of Medicine. Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care. Washington, DC: National Academies Press; 2002.
12. Datta SD, Sternberg M, Johnson RE, et al. Gonorrhea and chlamydia in the United States among persons 14 to 39 years of age, 1999 to 2002. Ann Intern Med 2007; 147(2):89–96.
13. Miller WC, Ford CA, Morris M, et al. Prevalence of chlamydial and gonococcal infections among young adults in the United States. JAMA 2004; 291(18):2229–2236.

14. Office of Management and Budget. Provisional guidance on the implementation of the 1997 standards for federal data on race and ethnicity. Available at: https://www.whitehouse.gov/wp-content/uploads/2017/11/Provisional-Guidance-jan16-2001-1.pdf. Accessed July 20, 2018.

15. McQuillan G, Kruszon-Moran D, Flagg EW, et al. Prevalence of herpes simplex virus type 1 and type 2 in persons aged 14–49: United States, 2015–2016. NCHS Data Brief, No. 304. Hyattsville, MD: National Center for Health Statistics. 2018.

16. Patel EU, Gaydos CA, Packman ZR, et al. Prevalence and correlates of *Trichomonas vaginalis* infection among men and women in the United States. Clin Infect Dis 2018; 67(2):211–217.

17. Daugherty M, Glynn K, Byler T. The prevalence of *Trichomonas vaginalis* infection among US males, 2013–2016. Clin Infect Dis 2018; https://doi.org/10.1093/cid/ciy499.

18. Sutton M, Sternberg M, Koumans EH, et al. The prevalence of *Trichomonas vaginalis* infection among reproductive-age women in the United States, 2001–2004. Clin Infect Dis 2007; 45(10):1319–1326.

STDs in Men Who Have Sex with Men

Background

The incidence of many STDs in gay, bisexual, and other men who have sex with men (collectively referred to as MSM) – including primary and secondary (P&S) syphilis and antimicrobial-resistant gonorrhea – is greater than that reported in women and men who have sex with women only (MSW).[1-6] In addition to the negative effects of untreated STDs, elevated STD burden is of concern because it may indicate high risk for subsequent HIV infection. Annual increases in reported STD cases could reflect increased frequency of behaviors that transmit both STDs and HIV (e.g., condomless anal sex), and having an STD increases the risk of acquisition or transmission of HIV.[7-14]

The relatively high incidence of STD infection among MSM may be related to multiple factors, including individual behaviors and sexual network characteristics.[15-17] The number of lifetime or recent sex partners, rate of partner exchange, and frequency of condomless sex each influence an individual's probability of exposure to STDs.[15] However, MSM network characteristics such as high prevalence of STDs, interconnectedness and concurrency of sex partners, and possibly limited access to healthcare also affect the risk of acquiring an STD.[15, 18] Furthermore, experiences of stigma – verbal harassment, discrimination, or physical assault based on attraction to men – are associated with increased sexual risk behavior among MSM.[19]

Disparities among MSM reflect those observed in the general population, with disproportionate incidence of STDs reported among racial minority and Hispanic MSM, MSM of lower socioeconomic status, and young MSM.[20-24] The higher burden of STDs among MSM with these characteristics, relative to the general population of MSM, may suggest distinct mixing patterns in their sexual networks, reduced access to screening and treatment, and differential experiences of stigma and discrimination, rather than greater numbers of sexual partners or frequency of condomless sex.[15, 21-22, 24-26] Furthermore, disparities may be more pronounced for racial minority and Hispanic MSM who are also unemployed, young, and/or of lower socioeconomic status.[26-27]

With the exception of reported syphilis cases, nationally notifiable STD surveillance data do not routinely include information on sexual behaviors, and these data are missing for the majority of gonorrhea and chlamydia cases reported to CDC. Therefore, trends in STDs among MSM in the United States are based on findings from sentinel and enhanced surveillance systems. Testing strategies are also evolving to include more extragenital STD screening, which may increase detection of asymptomatic infections. Until recently, testing for gonorrhea and chlamydia in MSM largely focused on detecting urethral infections, which are more likely to be symptomatic than pharyngeal or rectal infections.[28]

For data reported in this chapter, MSM were defined as men who either reported having one or more male sex partners or who self-reported as gay/homosexual or bisexual. MSW were defined as men who reported having sex with women only or who did not report the sex of their sex partner, but reported that they considered themselves straight/heterosexual. Data presented in this chapter are derived from the National Notifiable Diseases Surveillance System (NNDSS), the Gonococcal Isolate Surveillance Project (GISP), and the STD Surveillance Network (SSuN), a sentinel and enhanced surveillance project established in 2005 to provide supplemental information on STDs.

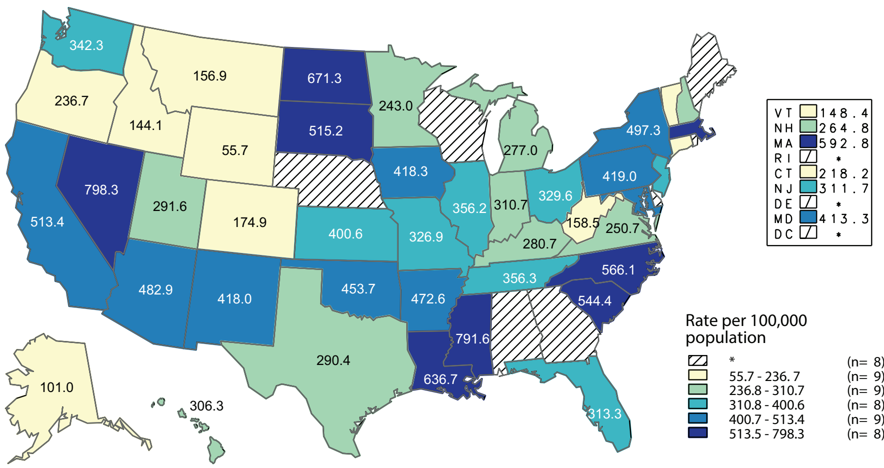
Nationally Notifiable Diseases Surveillance System

MSM accounted for 68.2% of reported P&S syphilis cases among women or men with information about sex of sex partners in 2017 (Figure 39). Among men exclusively, MSM accounted for 79.6% of reported cases with information on sex of sex partners. Of MSM P&S syphilis cases, 36.5% were White, 28.0% were Black, and 24.0% were Hispanic (Figure W). Relative to the percentage of the US population that is White (61.2%), Black (12.5%), and Hispanic (17.9%),[30] this represents a significant inequality in the burden of disease for non-White MSM, which was also evident among MSW and women. In addition, among MSM P&S syphilis cases with known HIV status in 2017, 45.5% were also reported to be HIV-positive (Figure 46).

In 2017, 43 states provided data to classify at least 70% of cases as MSM, MSW, or women. Among these areas, estimated rates of P&S syphilis cases in MSM ranged from 55.7 cases per 100,000 MSM in Wyoming to 798.3 cases per 100,000 MSM in Nevada, with 27 states (63%) estimated to have rates between 200 and 500 cases per 100,000 MSM (Figure AA).

When examining reported P&S syphilis cases over time, 37 states were able to classify at least 70% of reported P&S syphilis cases as MSM, MSW, or women each year during 2013–2017. In these states, cases among MSM increased 8.6% during 2016–2017 and 64.2% during

Figure AA. Primary and Secondary Syphilis — Estimated Rates of Reported Cases Among MSM by State, United States, 2017



* States reporting less than 70% of cases identified as MSM, MSW, or women in 2017 are suppressed.

NOTE: Estimates based on reported P&S syphilis cases among MSM in 2017 (numerator) and a published method of estimating the population size of MSM (denominator) by state. See Section A1.2 in the Appendix for information on estimating MSM population sizes for rate denominators.

ACRONYMS: MSM = Gay, bisexual, and other men who have sex with men (collectively referred to as MSM); MSW = Men who have sex with women only; P&S = Primary and secondary.

2013–2017 (Figure 41). However, the percentage of P&S syphilis cases that were attributed to MSM in those states fell slightly from 74.0% in 2013 to 66.5% in 2017.

A description of the methods for estimating MSM population sizes for syphilis rate denominators can be found in Section A1.2 of the Appendix. More information about syphilis can be found in the Syphilis section of the National Profile.

Gonococcal Isolate Surveillance Project

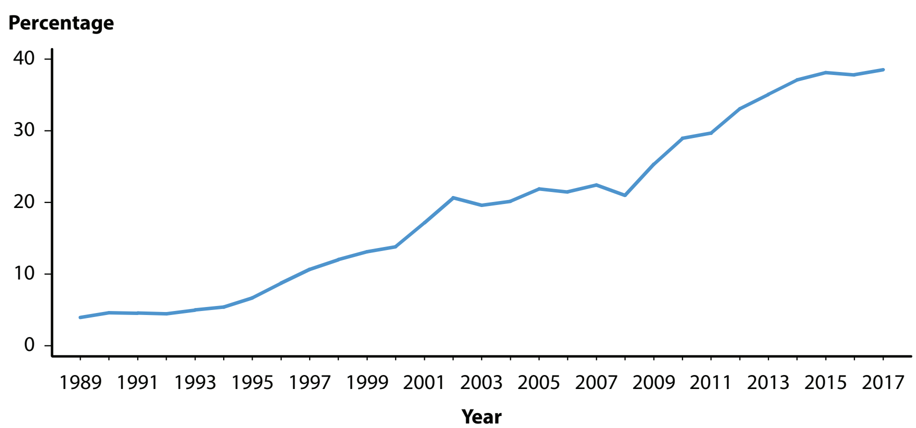
GISP is a national sentinel surveillance system designed to monitor trends in antimicrobial susceptibilities of *Neisseria gonorrhoeae* strains in the United States.[3] Overall, the proportion of isolates collected in selected STD clinics participating in GISP that were from MSM increased steadily, from 3.9% in 1989 to a high of 38.5% in 2017 (Figure BB). The reason for this increase over time is unclear, but might reflect changes in the epidemiology of gonorrhea or in healthcare-seeking behavior of men infected with gonorrhea. GISP has demonstrated that gonococcal isolates from MSM are more likely to exhibit antimicrobial resistance than isolates from MSW.[3,4] During 2011–2016, the proportion of isolates with elevated azithromycin minimum inhibitory concentrations (MICs) (≥2.0 µg/ml) and elevated ceftriaxone MICS (≥0.125 µg/ml) was higher in isolates from MSM than from MSW (Figure CC). The proportion of isolates with elevated azithromycin MICs remained higher among MSM relative to MSW in 2017; however, no cases of elevated ceftriaxone MICs were identified among MSM in 2017.

Information on the antimicrobial susceptibility criteria used in GISP can be found in Section A2.3 of the Appendix. More information about GISP and additional data can be found at https://www.cdc.gov/std/GISP.

STD Surveillance Network

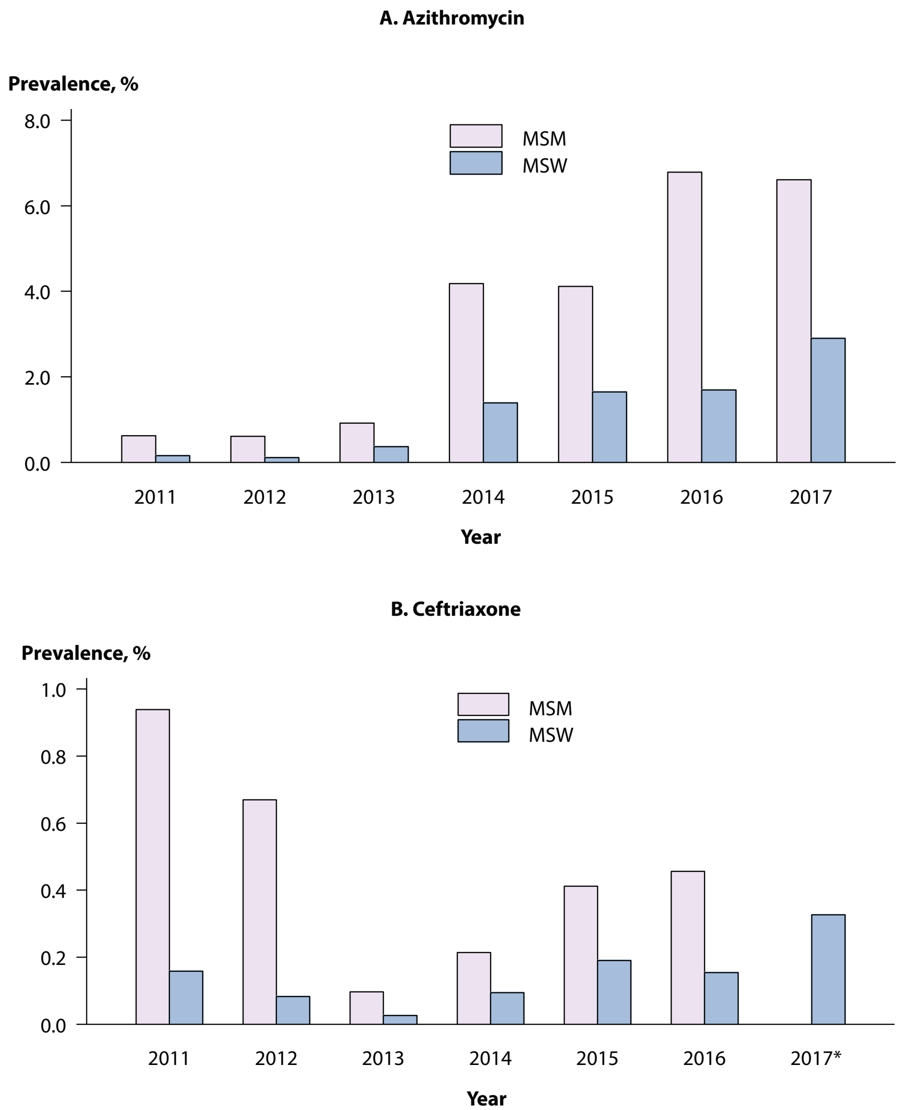
SSuN is an ongoing collaboration of state, county, and city health departments collecting enhanced provider- and patient-based information among a random sample of reported gonorrhea cases, as well as clinical and behavioral information

Figure BB. *Neisseria gonorrhoeae* — Percentage of Urethral Isolates Obtained from MSM Attending STD Clinics, Gonococcal Isolate Surveillance Project (GISP), 1989–2017



ACRONYMS: MSM = Gay, bisexual, and other men who have sex with men (collectively referred to as MSM).

Figure CC. *Neisseria gonorrhoeae* — Percentage of Urethral Isolates with Elevated Azithromycin Minimum Inhibitory Concentrations (MICs) (≥2.0 µg/ml) and Elevated Ceftriaxone MICs (≥0.125 µg/ml) by Reported Sex of Sex Partners, Gonococcal Isolate Surveillance Project (GISP), 2008–2017



* No cases of elevated ceftriaxone MICs were reported among MSM in 2017.

ACRONYMS: MSM = Gay, bisexual, and other men who have sex with men (collectively referred to as MSM); MSW = Men who have sex with women only.

among all patients attending STD clinics in collaborating jurisdictions.[29] Data for 2017 were obtained from 30 STD clinics in 10 SSuN jurisdictions.

Estimated rates of reported gonorrhea among MSM based on SSuN data are provided in the Gonorrhea section of the National Profile (Figure 25).

Additional information about SSuN can be found in Section A2.2 of the Appendix.

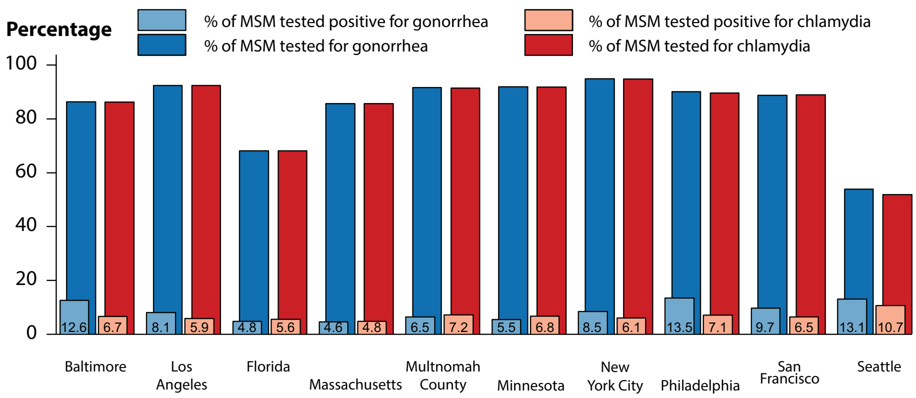
Gonorrhea and Chlamydia in STD Clinics, 2017

In 2017, 31,052 unique MSM presented for care in the 30 STD clinics in 10 SSuN jurisdictions. In total, 27,430 unique MSM were tested for urogenital gonorrhea and/or chlamydia (27,407 for gonorrhea, 27,337 for chlamydia). The proportion of men tested for urogenital infections was similar across SSuN jurisdictions, although the proportion who tested positive (positivity) varied by SSuN jurisdiction (Figure DD). Urogenital gonorrhea positivity was higher than urogenital chlamydia positivity in 6 of the 10 jurisdictions: Baltimore, Los Angeles, New York City, Philadelphia, San Francisco, and Seattle. Urogenital chlamydia positivity was higher than urogenital gonorrhea positivity in Florida; Massachusetts; Multnomah County, OR; and Minnesota. The median urogenital positivity for gonorrhea among MSM was 8.5% (range: 4.6%–13.5%) and for chlamydia was 4.8% (range: 6.6%–10.7%) across the 10 jurisdictions.

A total of 20,883 unique MSM were tested for rectal gonorrhea and/or chlamydia in 2017 (20,861 for gonorrhea, 20,817 for chlamydia) (Figure EE). In most jurisdictions, similar proportions of MSM were tested for rectal gonorrhea and chlamydia, likely reflecting use of dual diagnostic tests. Compared to urogenital testing, a lower proportion of MSM were tested for rectal infection. The median positivity for rectal gonorrhea among MSM was 14.7% (range: 10.0%–24.4%) and for rectal chlamydia was 16.8% (range: 12.8%–21.1%) among the SSuN jurisdictions.

During 2017, 23,301 MSM were tested at the oropharyngeal site for gonorrhea (Figure FF). The median positivity for oropharyngeal gonorrhea among MSM was 13.4% (range: 6.9%–17.2%) across the 10 jurisdictions. Oropharyngeal chlamydia data are not shown as some of the SSuN jurisdictions do not offer routine testing for oropharyngeal chlamydia infections.

Figure DD. Gonorrhea and Chlamydia — Proportion* of MSM Attending STD Clinics Testing Positive for Urogenital† Gonorrhea and Chlamydia by Jurisdiction, STD Surveillance Network (SSuN), 2017



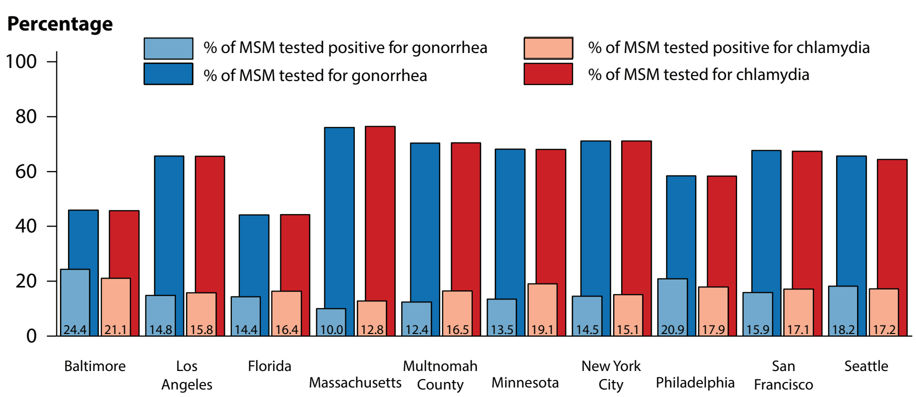
* Results based on data obtained from unique patients with known sexual behavior tested for urogenital gonorrhea (n=27,407) and for urogenital chlamydia (n=27,337) ≥1 times in 2017.

† Includes results from both urethral and urine specimens.

NOTE: See section A2.2 in the Appendix for SSuN methods.

ACRONYMS: MSM = Gay, bisexual, and other men who have sex with men (collectively referred to as MSM).

Figure EE. Gonorrhea and Chlamydia — Proportion* of MSM Attending STD Clinics Testing Positive for Rectal Gonorrhea and Chlamydia by Jurisdiction, STD Surveillance Network (SSuN), 2017



* Results based on data obtained from unique patients with known sexual behavior tested for rectal gonorrhea (n=20,861) and for rectal chlamydia (n=20,817) ≥1 times in 2017.

NOTE: See section A2.2 in the Appendix for SSuN methods.

ACRONYMS: MSM = Gay, bisexual, and other men who have sex with men (collectively referred to as MSM).

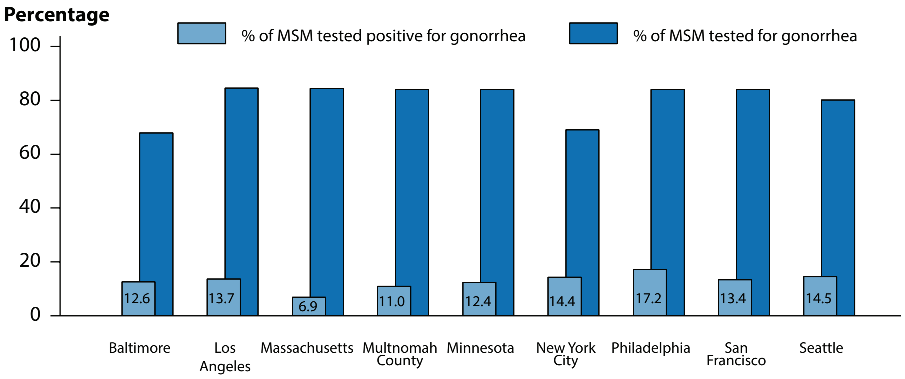
HIV Status and STDs in STD Clinics, 2017

Among HIV-positive MSM visiting SSuN STD clinics in 2017, urogenital chlamydia positivity was 7.1% and urogenital gonorrhea positivity was 12.0% (compared to 6.8% and 8.2%, respectively, among HIV-negative MSM) (Figure GG). Among HIV-positive MSM, 8.5% were diagnosed with P&S syphilis compared to 3.8% of HIV-negative MSM. Percentages represent the overall average of the mean value by jurisdiction.

Summary

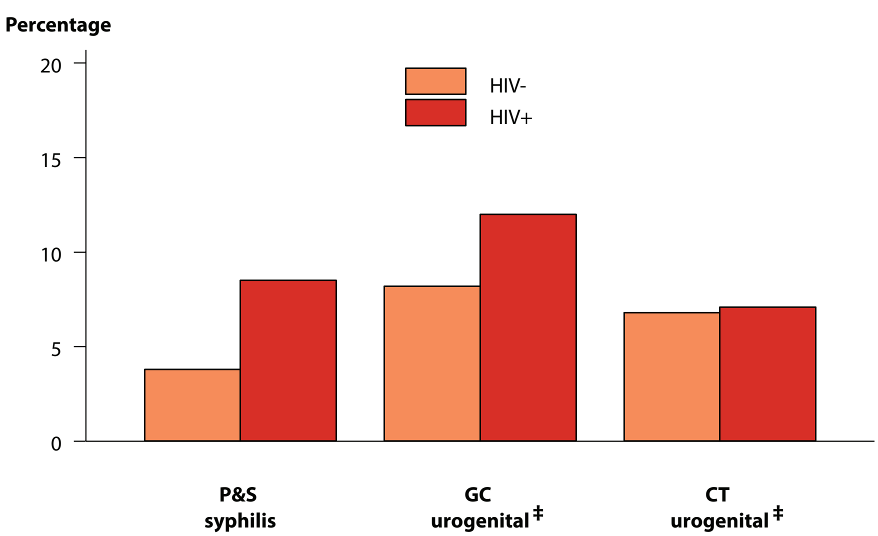
The number of reported P&S syphilis cases among MSM continued to rise in 2017, and the majority of P&S syphilis cases remained among MSM. Furthermore, the proportion of GISP isolates with elevated MICs to antimicrobials currently used to treat gonorrhea was higher among MSM than among MSW. Beyond STD burden in the general MSM population, the data indicated heterogeneity of STD prevalence among MSM according to geography, race, Hispanic ethnicity, and HIV status. State-specific P&S syphilis rate estimates among MSM varied from 55.7 to 798.3 cases per 100,000 MSM, and the prevalence of diagnosed STDs among MSM differed by SSuN jurisdiction. Reported P&S syphilis was disproportionately prevalent among Black and Hispanic MSM, and data from MSM who attended SSuN clinics suggested that P&S syphilis, urogenital gonorrhea, and urogenital chlamydia may be more prevalent among MSM living with diagnosed HIV infection than among HIV-negative MSM.

Figure FF. Gonorrhea — Proportion* of MSM Attending STD Clinics Testing Positive for Oropharyngeal Gonorrhea by Jurisdiction, STD Surveillance Network (SSuN), 2017



* Results based on data obtained from unique patients with known sexual behavior tested for oropharyngeal gonorrhea (n=23,301) ≥1 times in 2017; data from Florida were not available.
NOTE: See section A2.2 in the Appendix for SSuN methods.
ACRONYMS: MSM = Gay, bisexual, and other men who have sex with men (collectively referred to as MSM).

Figure GG. Proportion* of MSM Attending STD Clinics with Primary and Secondary Syphilis†, Urogenital‡ Gonorrhea, or Urogenital‡ Chlamydia by HIV Status§, STD Surveillance Network (SSuN), 2017



* Proportions represent the overall average of the mean proportions by jurisdiction.
† Includes SSuN jurisdictions that reported data on at least 20 patients with a diagnosis of primary and secondary syphilis in 2017.
‡ Includes results from both urethral and urine specimens.
§ Excludes all persons for whom there was no laboratory documentation or self-report of HIV status.
NOTE: See section A2.2 in the Appendix for SSuN methods.
ACRONYMS: MSM = Gay, bisexual, and other men who have sex with men (collectively referred to as MSM); P&S = Primary and secondary; GC = Gonorrhea; CT = Chlamydia.

References

1. An Q, Wejnert C, Bernstein K, et al. Syphilis screening and diagnosis among men who have sex with men, 2008–2014, 20 US cities. JAIDS 2017; 75(Suppl 3):S363–S369.
2. de Voux A, Kidd S, Grey JA, et al. State-specific rates of primary and secondary syphilis among men who have sex with men — United States, 2015. MMWR Morb Mortal Wkly Rep 2017; 66(13):349–354.
3. Kirkcaldy RD, Harvey A, Papp JR, et al. *Neisseria gonorrhoeae* antimicrobial susceptibility surveillance — the Gonococcal Isolate Surveillance Project, 27 sites, United States, 2014. MMWR Surveill Summ 2016; 65(SS-7):1–19.
4. Kirkcaldy RD, Zaidi A, Hook EW 3rd, et al. *Neisseria gonorrhoeae* antimicrobial resistance among men who have sex with men and men who have sex exclusively with women: The Gonococcal Isolate Surveillance Project, 2005–2010. Ann Intern Med 2013; 158(5 Pt 1):321–328.
5. Patton ME, Su JR, Nelson R, et al. Primary and secondary syphilis — United States, 2005–2013. MMWR Morb Mortal Wkly Rep 2014; 63(18):402–406.
6. Peterman TA, Su J, Bernstein KT, et al. Syphilis in the United States: on the rise? Expert Rev Anti Infect Ther 2015; 13(2):161–168.
7. Solomon MM, Mayer KH. Evolution of the syphilis epidemic among men who have sex with men. Sex Health 2014; 12(2):96–102.
8. Buchacz K, Patel P, Taylor M, et al. Syphilis increases HIV viral load and decreases CD4 cell counts in HIV-infected patients with new syphilis infections. AIDS 2004; 18(15):2075–2079.
9. Fleming DT, Wasserheit JN. From epidemiologic synergy to public health policy and practice: the contribution of other sexually transmitted diseases to sexual transmission of HIV infection. Sex Transm Infect 1999; 75(1):3–17.
10. Jarzebowski W, Caumes E, Dupin N, et al. Effect of early syphilis infection on plasma viral load and CD4 cell count in human immunodeficiency virus- infected men: Results from the FHDH-ANRS CO4 cohort. Arch Intern Med 2012; 172(16):1237–1243.
11. Katz DA, Dombrowski JC, Bell TR, et al. HIV incidence among men who have sex with men after diagnosis with sexually transmitted infections. Sex Transm Dis 2016; 43(4):249–254.
12. Kelley CF, Vaughan AS, Luisi N, et al. The effect of high rates of bacterial sexually transmitted infections on HIV incidence in a cohort of black and white men who have sex with men in Atlanta, Georgia. AIDS Res Hum Retroviruses 2015; 31(6):587–592.

13. Pathela P, Braunstein SL, Blank S, et al. HIV incidence among men with and those without sexually transmitted rectal infections: Estimates from matching against and HIV case registry. Clin Infect Dis 2013; 57(8):1203–1209.

14. Solomon MM, Mayer KH, Glidden DV, et al. Syphilis predicts HIV incidence among men and transgender women who have sex with men in a preexposure prophylaxis trial. Clin Infect Dis 2014; 59(7):1020–1026.

15. Glick SN, Morris M, Foxman B, et al. A comparison of sexual behavior patterns among men who have sex with men and heterosexual men and women. J Acquir Immune Defic Syndr 2012; 60(1):83–90.

16. Paz-Bailey G, Mendoza MCB, Finlayson T, et al. Trends in condom use among MSM in the United States: The role of antiretroviral therapy and seroadaptive strategies. AIDS 2016; 30(12):1985–1990.

17. Spicknall IH, Gift TL, Bernstein KT, et al. Sexual networks and infection transmission networks among men who have sex with men as causes of disparity and targets of prevention. Sex Transm Infect 2017; 93(5):307–308.

18. Alvy LM, McKirnan DJ, Du Bois SN, et al. Health care disparities and behavioral health among men who have sex with men. J Gay Lesbian Soc Serv 2011; 23(4):507–522.

19. Balaji AB, Bowles KE, Hess KL, et al. Association between enacted stigma and HIV-related risk behavior among MSM, National HIV Behavioral Surveillance System, 2011. AIDS Behav 2017; 21(1):227–237.

20. Brewer TH, Schillinger J, Lewis FM, et al. Infectious syphilis among adolescent and young adult men: Implications for human immunodeficiency virus transmission and public health interventions. Sex Transm Dis 2011; 38(5):367–371.

21. Jeffries WL, Marks G, Lauby J. Homophobia is associated with sexual behavior that increases risk of acquiring and transmitting HIV infection among black men who have sex with men. AIDS Behav 2013; 17(4):1442–1453.

22. McKirnan DJ, Du Bois SN, Alvy LM, et al. Health care access and health behaviors among men who have sex with men: The cost of health disparities. Health Educ Behav 2013; 40(1):32–41.

23. Su JR, Beltrami JF, Zaidi AA, et al. Primary and secondary syphilis among black and Hispanic men who have sex with men: Case report data from 27 States. Ann Intern Med 2011; 155(3):145–151.

24. Díaz RM, Ayala G, Bein E. Sexual risk as an outcome of social oppression: Data from a probability sample of Latino gay men in three US cities. Cultur Divers Ethnic Minor Psychol 2004; 10(3):255–267.

25. Millett GA, Flores SA, Peterson JL, et al. Explaining disparities in HIV infection among black and white men who have sex with men: A meta-analysis of HIV risk behaviors. AIDS 2007; 21(15):2083–2091.

26. Sullivan PS, Peterson J, Rosenberg ES, et al. Understanding racial HIV/STI disparities in black and white men who have sex with men: A multilevel approach. PLoS One 2014; 9(3):e90514.

27. Mayer KH, Wang L, Koblin B, et al. Concomitant socioeconomic, behavioral, and biological factors associated with the disproportionate HIV infection burden among black men who have sex with men in 6 US cities. PLoS One 2014; 9(1):e87298.

28. Patton ME, Kidd S, Llata E, et al. Extragenital gonorrhea and chlamydia testing and infection among men who have sex with men — STD Surveillance Network, United States, 2010–2012. Clin Infect Dis 2014; 58(11):1564–1570.

29. Rietmeijer K, Donnelly J, Bernstein K, et al. Here comes the SSuN — early experiences with the STD Surveillance Network. Pub Health Rep 2009; 124(Suppl 2):72–77.

30. U.S. Census Bureau; Annual Estimates of the Resident Population by Sex, Race, and Hispanic Origin for the United States, States, and Counties: April 1, 2010 to July 1, 2017, Table PEPSR6H; generated by Jeremy Grey; using American FactFinder. Available at: https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml. Accessed July 24, 2018.

Tables

Table 1. Sexually Transmitted Diseases — Reported Cases and Rates of Reported Cases per 100,000 Population, United States, 1941–2017

	Syphilis															
	All Stages[†]		Primary and Secondary		Early Latent		Late and Late Latent[‡]		Congenital		Chlamydia		Gonorrhea		Chancroid	
Year*	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate[§]	Cases	Rate	Cases	Rate	Cases	Rate
1941	485,560	368.2	68,231	51.7	109,018	82.6	202,984	153.9	17,600	651.1	NR	—	193,468	146.7	3,384	2.5
1942	479,601	363.4	75,312	57.0	116,245	88.0	202,064	153.1	16,918	566.0	NR	—	212,403	160.9	5,477	4.1
1943	575,593	447.0	82,204	63.8	149,390	116.0	251,958	195.7	16,164	520.7	NR	—	275,070	213.6	8,354	6.4
1944	467,755	367.9	78,443	61.6	123,038	96.7	202,848	159.6	13,578	462.0	NR	—	300,676	236.5	7,878	6.1
1945	359,114	282.3	77,007	60.5	101,719	79.9	142,187	111.8	12,339	431.7	NR	—	287,181	225.8	5,515	4.3
1946	363,647	271.7	94,957	70.9	107,924	80.6	125,248	93.6	12,106	354.9	NR	—	368,020	275.0	7,091	5.2
1947	355,592	252.3	93,545	66.4	104,124	73.9	122,089	86.6	12,200	319.6	NR	—	380,666	270.0	9,515	6.7
1948	314,313	218.2	68,174	47.3	90,598	62.9	123,312	85.6	13,931	383.0	NR	—	345,501	239.8	7,661	5.3
1949	256,463	175.3	41,942	28.7	75,045	51.3	116,397	79.5	13,952	382.4	NR	—	317,950	217.3	6,707	4.6
1950	217,558	146.0	23,939	16.7	59,256	39.7	113,569	70.2	13,377	368.3	NR	—	286,746	192.5	4,977	3.3
1951	174,924	116.1	14,485	9.6	43,316	28.7	98,311	65.2	11,094	290.4	NR	—	254,470	168.9	4,233	2.8
1952	167,762	110.2	10,449	6.9	36,454	24.0	105,238	69.1	8,553	218.8	NR	—	244,957	160.8	3,738	2.5
1953	148,573	95.9	8,637	5.6	28,295	18.3	98,870	63.8	7,675	193.9	NR	—	238,340	153.9	3,338	2.2
1954	130,697	82.9	7,147	4.5	23,861	15.1	89,123	56.5	6,676	164.0	NR	—	242,050	153.5	3,003	1.9
1955	122,392	76.2	6,454	4.0	20,054	12.5	86,526	53.8	5,354	130.7	NR	—	236,197	147.0	2,649	1.7
1956	130,201	78.7	6,392	3.9	19,783	12.0	95,097	57.5	5,491	130.4	NR	—	224,346	135.7	2,135	1.3
1957	123,758	73.5	6,576	3.9	17,796	10.6	91,309	54.2	5,288	123.0	NR	—	214,496	127.4	1,637	1.0
1958	113,884	66.4	7,176	4.2	16,556	9.7	83,027	48.4	4,866	114.6	NR	—	232,386	135.6	1,595	0.9
1959	120,824	69.2	9,799	5.6	17,025	9.8	86,740	49.7	5,130	119.7	NR	—	240,254	137.6	1,537	0.9
1960	122,538	68.8	16,145	9.1	18,017	10.1	81,798	45.9	4,416	103.7	NR	—	258,933	145.4	1,680	0.9
1961	124,658	68.8	19,851	11.0	19,486	10.8	79,304	43.8	4,163	97.5	NR	—	264,158	145.8	1,438	0.8
1962	126,245	68.7	21,067	11.5	19,585	10.7	79,533	43.3	4,070	97.7	NR	—	263,714	143.6	1,344	0.7
1963	124,137	66.5	22,251	11.9	18,235	9.8	78,076	41.8	4,031	98.4	NR	—	278,289	149.0	1,220	0.7
1964	114,325	60.4	22,969	12.1	17,781	9.4	68,629	36.3	3,516	87.3	NR	—	300,666	158.9	1,247	0.7
1965	112,842	58.9	23,338	12.2	17,458	9.1	67,317	35.1	3,564	94.8	NR	—	324,925	169.5	982	0.5
1966	105,159	54.2	21,414	11.0	15,950	8.2	63,541	32.7	3,170	87.9	NR	—	351,738	181.2	838	0.4
1967	102,581	52.2	21,053	10.7	15,554	7.9	61,975	31.5	2,894	82.2	NR	—	404,836	205.9	784	0.4
1968	96,271	48.4	19,019	9.6	15,150	7.6	58,564	29.4	2,381	68.0	NR	—	464,543	233.4	845	0.4
1969	92,162	45.7	19,130	9.5	15,402	7.6	54,587	27.1	2,074	57.6	NR	—	534,872	265.4	1,104	0.5
1970	91,382	44.8	21,982	10.8	16,311	8.0	50,348	24.7	1,953	52.3	NR	—	600,072	294.2	1,416	0.7
1971	95,997	46.4	23,783	11.5	19,417	9.4	49,993	24.2	2,052	57.7	NR	—	670,268	324.1	1,320	0.6
1972	91,149	43.6	24,429	11.7	20,784	9.9	43,456	20.8	1,758	54.0	NR	—	767,215	366.6	1,414	0.7
1973	87,469	41.4	24,825	11.7	23,584	11.2	37,054	17.5	1,527	48.7	NR	—	842,621	398.7	1,165	0.6
1974	83,771	39.3	25,385	11.9	25,124	11.8	31,854	14.9	1,138	36.0	NR	—	906,121	424.7	945	0.4
1975	80,356	37.3	25,561	11.9	26,569	12.3	27,096	12.6	916	29.1	NR	—	999,937	464.1	700	0.3
1976	71,761	33.0	23,731	10.9	25,363	11.7	21,905	10.1	626	19.8	NR	—	1,001,994	460.6	628	0.3
1977	64,621	29.4	20,399	9.3	21,329	9.7	22,313	10.2	463	13.9	NR	—	1,002,219	456.0	455	0.2
1978	64,875	29.2	21,656	9.8	19,628	8.8	23,038	10.4	434	13.0	NR	—	1,013,436	456.3	521	0.2
1979	67,049	29.9	24,874	11.1	20,459	9.1	21,301	9.5	332	9.5	NR	—	1,004,058	447.1	840	0.4
1980	68,832	30.3	27,204	12.0	20,297	8.9	20,979	9.2	277	7.7	NR	—	1,004,029	442.1	788	0.3
1981	72,799	31.7	31,266	13.6	21,033	9.2	20,168	8.8	287	7.9	NR	—	990,864	431.8	850	0.4
1982	75,579	32.6	33,613	14.5	21,894	9.5	19,779	8.5	259	7.0	NR	—	960,633	414.7	1,392	0.6

Continued on next page.

Table 1. Sexually Transmitted Diseases — Reported Cases and Rates of Reported Cases per 100,000 Population, United States, 1941–2017 (continued)

	Syphilis															
	All Stages†		Primary and Secondary		Early Latent		Late and Late Latent‡		Congenital		Chlamydia		Gonorrhea		Chancroid	
Year*	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate§	Cases	Rate	Cases	Rate	Cases	Rate
1983	74,637	31.9	32,698	14.0	23,738	10.2	17,896	7.7	239	6.6	NR	—	900,435	385.1	847	0.4
1984	69,872	29.6	28,607	12.1	23,131	9.8	17,829	7.6	305	8.3	7,594	6.5	878,556	372.5	665	0.3
1985	67,563	28.4	27,131	11.4	21,689	9.1	18,414	7.7	329	8.7	25,848	17.4	911,419	383.0	2,067	0.9
1986	67,779	28.2	27,667	11.5	21,656	9.0	18,046	7.5	410	10.9	58,001	35.2	892,229	371.5	3,045	1.3
1987	87,286	36.0	35,585	14.7	28,233	11.7	22,988	9.5	480	12.6	91,913	50.8	787,532	325.0	4,986	2.1
1988	104,546	42.8	40,474	16.6	35,968	14.7	27,363	11.2	741	19.0	157,854	87.1	738,160	301.9	4,891	2.0
1989	115,089	46.6	45,826	18.6	45,394	18.4	22,032	8.9	1,837	45.5	200,904	102.5	733,294	297.1	4,697	1.9
1990	135,590	54.3	50,578	20.3	55,397	22.2	25,750	10.3	3,865	92.9	323,663	160.2	690,042	276.4	4,212	1.7
1991	128,719	50.9	42,950	17.0	53,855	21.3	27,490	10.9	4,424	107.6	381,228	179.7	621,918	245.8	3,476	1.4
1992	114,730	44.7	34,009	13.3	49,929	19.5	26,725	10.4	4,067	100.0	409,694	182.3	502,858	196.0	1,906	0.7
1993	102,612	39.5	26,527	10.2	41,919	16.1	30,746	11.8	3,420	85.5	405,332	178.0	444,649	171.1	1,292	0.5
1994	82,713	31.4	20,641	7.8	32,017	12.2	27,603	10.5	2,452	62.0	451,785	192.5	419,602	163.9	782	0.3
1995	69,359	26.0	16,543	6.2	26,657	10.0	24,296	9.1	1,863	47.8	478,577	187.8	392,651	147.5	607	0.2
1996	53,240	19.8	11,405	4.2	20,187	7.5	20,366	7.6	1,282	32.9	492,631	190.6	328,169	121.8	386	0.1
1997	46,716	17.1	8,556	3.1	16,631	6.1	20,447	7.5	1,082	27.9	537,904	205.5	327,665	120.2	246	0.1
1998	38,289	13.9	7,007	2.5	12,696	4.6	17,743	6.4	843	21.4	614,250	231.8	356,492	129.2	189	0.1
1999	35,386	12.7	6,617	2.4	11,534	4.1	16,655	6.0	580	14.6	662,647	247.2	360,813	129.3	110	0.0
2000	31,618	11.2	5,979	2.1	9,465	3.4	15,594	5.5	580	14.3	709,452	251.4	363,136	128.7	78	0.0
2001	32,286	11.3	6,103	2.1	8,701	3.0	16,976	5.9	506	12.6	783,242	274.5	361,705	126.8	38	0.0
2002	32,919	11.4	6,862	2.4	8,429	2.9	17,168	6.0	460	11.4	834,555	289.4	351,852	122.0	48	0.0
2003	34,289	11.8	7,177	2.5	8,361	2.9	18,319	6.3	432	10.6	877,478	301.7	335,104	115.2	54	0.0
2004	33,423	11.4	7,980	2.7	7,768	2.6	17,300	5.9	375	9.1	929,462	316.5	330,132	112.4	30	0.0
2005	33,288	11.2	8,724	2.9	8,176	2.8	16,049	5.4	339	8.2	976,445	329.4	339,593	114.6	17	0.0
2006	36,958	12.3	9,756	3.3	9,186	3.1	17,644	5.9	372	8.7	1,030,911	344.3	358,366	119.7	19	0.0
2007	40,925	13.6	11,466	3.8	10,768	3.6	18,256	6.1	435	10.1	1,108,374	367.5	355,991	118.0	23	0.0
2008	46,292	15.2	13,500	4.4	12,401	4.1	19,945	6.6	446	10.5	1,210,523	398.1	336,742	110.7	25	0.0
2009	44,832	14.6	13,997	4.6	13,066	4.3	17,338	5.6	431	10.4	1,244,180	405.3	301,174	98.1	28	0.0
2010	45,844	14.8	13,774	4.5	13,604	4.4	18,079	5.9	387	9.7	1,307,893	423.6	309,341	100.2	24	0.0
2011	46,040	14.8	13,970	4.5	13,136	4.2	18,576	6.0	358	9.1	1,412,791	453.4	321,849	103.3	8	0.0
2012	49,915	15.9	15,667	5.0	14,503	4.6	19,411	6.2	334	8.4	1,422,976	453.3	334,826	106.7	15	0.0
2013	56,485	17.9	17,375	5.5	16,929	5.4	21,819	6.9	362	9.2	1,401,906	443.5	333,004	105.3	10	0.0
2014	63,454	19.9	19,999	6.3	19,452	6.1	23,541	7.4	462	11.6	1,441,789	452.2	350,062	109.8	6	0.0
2015	74,707	23.2	23,872	7.4	24,173	7.5	26,170	8.1	492	12.4	1,526,658	475.0	395,216	123.0	11	0.0
2016	88,053	27.3	27,814	8.6	28,924	9.0	30,676	9.5	639	16.2	1,598,354	494.7	468,514	145.0	7	0.0
2017	101,567	31.4	30,644	9.5	34,013	10.5	35,992	11.1	918	23.3	1,708,569	528.8	555,608	171.9	7	0.0

* For 1941–1946, data were reported for the federal fiscal year ending June 30 of the year indicated. From 1947 to the present, data were reported for the calendar year ending December 31. For 1941–1958, data for Alaska and Hawaii were not included.
† Includes stage of syphilis not stated.
‡ Late and late latent syphilis includes late latent syphilis, latent syphilis of unknown duration, neurosyphilis, late syphilis with clinical manifestations other than neurosyphilis, and late syphilis with clinical manifestations (including late benign syphilis and cardiovascular syphilis).
§ Rates include all cases of congenitally acquired syphilis per 100,000 live births. As of 1995, cases of congenital syphilis are obtained in hardcopy and electronic format on the basis of case reporting form CDC 73.126.
NR = No report.
NOTE: Adjustments to the number of cases reported from state health departments were made for hardcopy forms and for electronic data submissions through June 19, 2018. The number of cases and the rates shown here supersede those published in previous reports. See Section A1.1 in the Appendix for more information. Cases and rates shown in this table exclude the outlying areas of Guam, Puerto Rico, and Virgin Islands. Case definitions have changed over time. See Section C.1 in the Appendix for more information.

Table 2. Chlamydia — Reported Cases and Rates of Reported Cases by State, Ranked by Rates, United States, 2017

Rank*	State	Cases	Rate per 100,000 Population
1	Alaska	5,934	799.8
2	Louisiana	34,756	742.4
3	Mississippi	21,149	707.6
4	New Mexico	13,560	651.6
5	South Carolina	32,235	649.8
6	Georgia	65,104	631.4
7	North Carolina	62,876	619.7
8	Alabama	29,935	615.5
9	New York	116,814	591.6
10	Illinois	75,518	589.9
11	Arkansas	17,320	579.6
12	Arizona	39,598	571.3
13	Delaware	5,392	566.3
14	California	218,785	557.4
15	Maryland	33,416	555.4
16	Oklahoma	21,752	554.4
17	Nevada	16,260	553.1
18	Texas	151,533	543.9
19	Missouri	32,683	536.4
	U.S. TOTAL†	**1,708,569**	**528.8**
20	Ohio	61,389	528.6
21	Tennessee	35,087	527.5
22	Indiana	34,278	516.8
23	South Dakota	4,437	512.7
24	Michigan	50,595	509.6
25	Virginia	42,374	503.7
26	Rhode Island	5,282	500.0
27	Connecticut	17,750	496.3
28	Colorado	26,995	487.2
29	Florida	100,018	485.2
30	Wisconsin	27,740	480.0
31	Hawaii	6,850	479.5
32	Kansas	13,554	466.2
33	Oregon	18,634	455.2
34	Nebraska	8,595	450.7
35	Iowa	13,893	443.2
36	Washington	32,231	442.2
37	Pennsylvania	56,447	441.5
38	Montana	4,560	437.4
39	Kentucky	19,320	435.4
40	North Dakota	3,278	432.5
41	Massachusetts	29,315	430.4
42	Minnesota	23,539	426.4
43	New Jersey	35,239	394.0
44	Idaho	6,200	368.4
45	Wyoming	2,142	365.8
46	Maine	4,555	342.1
47	Utah	10,135	332.2
48	New Hampshire	4,412	330.5
49	Vermont	1,858	297.5
50	West Virginia	4,140	226.1

* States were ranked by rate, then by case count, then in alphabetical order, with rates shown rounded to the nearest tenth.
† Total includes cases reported by the District of Columbia with 9,107 cases and a rate of 1337.0, but excludes outlying areas (Guam with 1,107 cases and rate of 663.3, Puerto Rico with 5,961 cases and rate of 174.7, and Virgin Islands with 458 cases and rate of 425.2).

Table 3. Chlamydia — Reported Cases and Rates of Reported Cases by State/Area and Region in Alphabetical Order, United States and Outlying Areas, 2013–2017

State/Area	Cases					Rates per 100,000 Population				
	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Alabama	29,464	29,010	26,359	26,901	29,935	609.6	598.2	542.5	553.1	615.5
Alaska	5,774	5,789	5,660	5,698	5,934	785.4	785.8	766.5	768.0	799.8
Arizona	30,564	32,397	32,387	34,923	39,598	461.2	481.3	474.3	503.9	571.3
Arkansas	15,447	15,605	16,166	16,737	17,320	522.0	526.1	542.8	560.1	579.6
California	167,346	176,308	189,170	198,155	218,785	436.6	454.4	483.3	504.9	557.4
Colorado	20,386	21,863	23,857	25,569	26,995	387.0	408.2	437.2	461.5	487.2
Connecticut	12,775	13,382	13,126	13,911	17,750	355.2	372.1	365.5	389.0	496.3
Delaware	5,213	4,473	4,605	5,365	5,392	563.1	478.1	486.8	563.5	566.3
District of Columbia	6,414	5,293	7,894	7,283	9,107	992.2	803.3	1,174.3	1,069.2	1,337.0
Florida	80,182	84,194	90,468	94,742	100,018	410.1	423.2	446.3	459.6	485.2
Georgia	51,070	51,945	57,639	62,776	65,104	511.1	514.4	564.3	608.9	631.4
Hawaii	6,640	6,419	7,074	6,902	6,850	472.9	452.2	494.1	483.1	479.5
Idaho	5,428	5,442	5,631	5,897	6,200	336.7	333.0	340.3	350.4	368.4
Illinois	63,797	66,536	69,610	72,201	75,518	495.2	516.6	541.3	564.0	589.9
Indiana	28,023	28,519	28,886	30,847	34,278	426.5	432.3	436.4	465.0	516.8
Iowa	10,953	11,804	12,085	12,983	13,893	354.4	379.9	386.9	414.2	443.2
Kansas	11,012	11,116	11,464	12,160	13,554	380.5	382.8	393.7	418.3	466.2
Kentucky	17,134	17,664	17,444	18,286	19,320	389.8	400.2	394.2	412.1	435.4
Louisiana	28,739	28,955	32,325	31,727	34,756	621.3	622.7	692.1	677.7	742.4
Maine	3,438	3,530	3,965	4,156	4,555	258.8	265.4	298.3	312.1	342.1
Maryland	26,723	27,424	27,450	30,658	33,416	450.7	458.9	457.0	509.6	555.4
Massachusetts	23,210	21,271	24,100	26,807	29,315	346.8	315.3	354.7	393.5	430.4
Michigan	44,835	44,256	46,486	45,936	50,595	453.1	446.6	468.5	462.7	509.6
Minnesota	18,742	19,907	21,243	22,685	23,539	345.8	364.8	387.0	411.0	426.4
Mississippi	17,464	19,605	17,371	20,112	21,149	583.8	654.8	580.5	672.9	707.6
Missouri	27,328	27,981	28,948	30,843	32,683	452.1	461.5	475.8	506.2	536.4
Montana	3,818	4,193	4,184	4,416	4,560	376.1	409.6	405.1	423.6	437.4
Nebraska	7,301	7,499	7,956	8,197	8,595	390.7	398.6	419.6	429.8	450.7
Nevada	11,781	11,841	12,925	14,649	16,260	422.2	417.1	447.1	498.3	553.1
New Hampshire	3,119	3,586	3,095	3,467	4,412	235.7	270.3	232.6	259.7	330.5
New Jersey	28,327	29,904	31,337	34,519	35,239	318.3	334.6	349.8	385.9	394.0
New Mexico	12,249	11,558	12,632	13,108	13,560	587.4	554.2	605.8	629.9	651.6
New York	95,803	98,814	103,615	109,433	116,814	487.5	500.4	523.4	554.2	591.6
North Carolina	48,416	47,147	64,376	58,006	62,876	491.6	474.1	641.0	571.7	619.7
North Dakota	2,932	3,451	3,159	3,455	3,278	405.3	466.7	417.3	455.8	432.5
Ohio	53,121	54,858	56,726	60,496	61,389	459.1	473.2	488.5	520.9	528.6
Oklahoma	18,278	20,662	21,025	21,449	21,752	474.7	532.8	537.5	546.7	554.4
Oregon	14,181	15,508	16,305	17,425	18,634	360.8	390.6	404.7	425.7	455.2
Pennsylvania	52,056	50,536	53,460	56,930	56,447	407.5	395.2	417.6	445.3	441.5
Rhode Island	4,312	4,349	4,575	4,936	5,282	410.1	412.2	433.1	467.2	500.0
South Carolina	25,594	28,087	27,538	28,179	32,235	536.0	581.2	562.4	568.0	649.8
South Dakota	3,927	4,166	3,949	4,331	4,437	464.8	488.3	460.0	500.4	512.7
Tennessee	30,370	30,793	31,272	32,304	35,087	467.5	470.2	473.8	485.7	527.5
Texas	129,861	131,219	141,158	142,952	151,533	491.0	486.8	513.9	513.1	543.9
Utah	7,535	8,223	8,633	9,457	10,135	259.7	279.4	288.2	309.9	332.2
Vermont	1,842	2,237	1,901	1,690	1,858	294.0	357.0	303.7	270.6	297.5
Virginia	33,316	36,048	35,349	39,666	42,374	403.3	432.9	421.7	471.6	503.7
Washington	24,950	26,577	28,699	31,254	32,231	357.9	376.4	400.2	428.8	442.2
West Virginia	5,139	4,719	4,958	4,821	4,140	277.1	255.0	268.9	263.3	226.1
Wisconsin	23,572	23,154	24,381	26,894	27,740	410.5	402.1	422.4	465.4	480.0
Wyoming	2,005	1,972	2,037	2,060	2,142	344.1	337.6	347.5	351.8	365.8
U.S. TOTAL	**1,401,906**	**1,441,789**	**1,526,658**	**1,598,354**	**1,708,569**	**443.5**	**452.2**	**475.0**	**494.7**	**528.8**
Northeast	224,882	227,609	239,174	255,849	271,672	402.0	405.3	424.9	455.2	483.3
Midwest	295,543	303,247	314,893	331,028	349,499	437.5	447.6	463.7	487.2	514.4
South	568,824	582,843	623,397	641,964	685,514	480.5	486.6	514.4	524.8	560.4
West	312,657	328,090	349,194	369,513	401,884	421.1	436.4	459.2	482.0	524.3
Guam	937	839	881	934	1,107	584.2	521.1	544.5	559.6	663.3
Puerto Rico	5,969	4,899	5,295	7,198	5,961	165.1	138.1	152.4	211.0	174.7
Virgin Islands	775	791	743	571	458	739.9	759.3	721.7	530.1	425.2
OUTLYING AREAS	**7,681**	**6,529**	**6,919**	**8,703**	**7,526**	**198.0**	**171.2**	**185.1**	**236.1**	**204.2**
TOTAL	**1,409,587**	**1,448,318**	**1,533,577**	**1,607,057**	**1,716,095**	**440.5**	**448.9**	**471.6**	**491.7**	**525.1**

NOTE: See Section A1.11 in the Appendix for more information on interpreting case counts and rates in outlying areas.

Table 4. Chlamydia Among Women — Reported Cases and Rates of Reported Cases by State/Area and Region in Alphabetical Order, United States and Outlying Areas, 2013–2017

State/Area	Cases					Rates per 100,000 Population				
	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Alabama	21,096	20,619	18,674	19,131	20,993	847.8	825.0	745.2	762.9	837.1
Alaska	3,899	3,940	3,786	3,807	3,941	1,115.4	1,127.5	1,083.6	1,076.1	1,114.0
Arizona	21,950	22,747	22,299	23,693	26,453	658.9	671.5	648.9	679.2	758.4
Arkansas	11,334	11,625	12,088	12,216	12,453	752.7	770.4	797.7	803.5	819.1
California	112,460	115,339	121,387	123,906	135,040	583.7	590.5	616.1	627.2	683.5
Colorado	14,336	14,906	16,151	16,945	17,251	546.8	559.4	595.4	615.1	626.2
Connecticut	9,210	9,512	9,089	9,495	11,487	500.0	516.4	494.2	518.6	627.4
Delaware	3,714	3,084	3,118	3,678	3,562	777.3	638.6	638.8	748.5	724.9
District of Columbia	3,992	3,709	4,632	4,018	4,754	1,173.4	1,071.1	1,309.9	1,122.5	1,328.2
Florida	56,688	58,800	62,048	63,415	66,173	567.4	578.2	598.4	601.5	627.7
Georgia	36,559	36,871	40,302	43,377	44,080	715.3	713.1	769.9	820.0	833.3
Hawaii	4,646	4,469	4,720	4,480	4,424	669.0	637.1	668.3	630.1	622.3
Idaho	3,885	3,895	3,963	4,022	4,198	482.6	477.3	479.7	479.0	500.0
Illinois	45,764	46,516	47,268	48,128	49,336	698.1	709.1	722.1	739.3	757.9
Indiana	20,307	20,586	20,385	21,664	23,595	609.0	615.0	607.1	644.1	701.5
Iowa	7,895	8,385	8,372	8,872	9,261	507.1	536.1	532.6	563.1	587.8
Kansas	8,323	8,276	8,325	8,688	9,472	573.2	568.1	571.0	595.3	649.0
Kentucky	12,086	12,404	12,140	12,345	13,035	541.5	553.7	540.5	548.6	579.2
Louisiana	21,258	21,297	23,351	22,942	24,544	900.2	896.4	978.3	959.0	1,026.0
Maine	2,404	2,478	2,735	2,795	2,959	354.5	365.0	403.4	411.7	435.9
Maryland	19,049	19,162	18,612	20,145	21,957	623.7	622.1	601.3	649.4	707.8
Massachusetts	15,851	14,000	15,588	17,299	18,716	459.7	402.9	445.6	493.4	533.8
Michigan	32,056	31,470	32,425	31,497	34,120	636.5	624.2	642.8	624.5	676.5
Minnesota	12,950	13,484	14,112	14,967	15,338	474.9	491.2	511.4	539.9	553.3
Mississippi	12,676	14,008	12,335	14,123	14,740	824.9	909.9	800.7	917.1	957.2
Missouri	19,303	19,549	19,926	20,757	21,701	626.7	632.8	643.1	669.4	699.8
Montana	2,701	2,878	2,846	2,962	3,030	534.5	564.9	554.1	572.1	585.2
Nebraska	4,945	5,110	5,409	5,527	5,660	526.8	540.9	568.8	577.9	591.8
Nevada	8,183	8,039	8,743	9,849	10,473	591.0	569.2	607.0	671.8	714.4
New Hampshire	2,187	2,452	2,089	2,316	2,917	326.5	365.2	310.4	343.7	432.8
New Jersey	20,771	21,556	22,274	24,021	23,811	456.0	471.0	485.7	524.9	520.3
New Mexico	9,033	8,395	9,227	9,306	9,328	858.9	797.5	877.4	886.0	888.1
New York	64,454	65,114	66,164	67,602	70,379	637.2	640.6	649.7	665.5	692.8
North Carolina	37,146	35,494	47,178	41,085	43,580	735.9	696.0	915.9	788.0	835.9
North Dakota	1,923	2,202	2,028	2,187	2,127	544.2	610.9	551.0	592.7	576.5
Ohio	38,293	39,033	39,825	41,797	42,132	647.8	659.4	671.9	705.7	711.4
Oklahoma	13,065	14,855	14,904	14,933	15,183	672.3	758.7	754.9	754.3	767.0
Oregon	9,932	10,545	11,075	11,542	12,203	500.2	525.6	544.0	558.5	590.5
Pennsylvania	35,657	34,170	35,201	37,030	36,201	545.9	523.0	538.4	567.7	555.0
Rhode Island	3,044	3,037	3,064	3,278	3,454	561.5	558.5	562.9	603.3	635.7
South Carolina	19,103	20,581	19,743	19,783	22,343	779.2	828.8	784.3	774.8	875.1
South Dakota	2,793	2,942	2,831	3,072	3,094	664.2	694.1	663.8	715.8	720.9
Tennessee	21,057	21,203	21,112	21,714	23,348	632.6	631.6	624.1	637.0	685.0
Texas	96,923	96,959	102,141	101,618	105,995	728.7	714.3	738.5	724.2	755.4
Utah	5,050	5,414	5,704	6,031	6,606	350.2	370.0	383.1	398.0	435.9
Vermont	1,319	1,613	1,352	1,171	1,242	415.5	507.7	425.8	370.4	392.9
Virginia	23,167	24,754	23,859	26,146	27,606	551.8	585.1	560.3	611.6	645.8
Washington	17,452	18,193	19,047	20,276	20,515	500.2	515.1	531.2	556.0	562.6
West Virginia	3,624	3,356	3,449	3,330	2,775	386.1	358.4	369.6	359.9	299.9
Wisconsin	16,448	16,063	16,660	18,382	18,667	569.0	554.3	573.7	632.7	642.5
Wyoming	1,387	1,352	1,387	1,356	1,399	486.0	472.5	482.9	473.2	488.2
U.S. TOTAL	**993,348**	**1,006,441**	**1,045,143**	**1,072,719**	**1,127,651**	**619.0**	**621.6**	**640.4**	**653.9**	**687.4**
Northeast	154,897	153,932	157,556	165,007	171,166	539.7	534.4	546.0	572.8	594.2
Midwest	211,000	213,616	217,566	225,538	234,503	615.9	621.9	632.2	655.5	681.5
South	412,537	418,781	439,686	443,999	467,121	684.1	685.9	711.7	711.8	748.8
West	214,914	220,112	230,335	238,175	254,861	577.5	583.6	604.0	619.4	662.8
Guam	700	595	618	654	753	885.8	749.6	774.4	806.8	929.0
Puerto Rico	4,766	3,770	3,950	5,551	4,702	252.7	204.4	217.4	310.5	263.0
Virgin Islands	579	590	563	405	318	1,037.1	1,060.7	1,020.6	720.9	566.1
OUTLYING AREAS	**6,045**	**4,955**	**5,131**	**6,610**	**5,773**	**299.1**	**250.4**	**262.9**	**343.4**	**299.9**
TOTAL	**999,393**	**1,011,396**	**1,050,274**	**1,079,329**	**1,133,424**	**615.0**	**617.1**	**636.0**	**650.3**	**682.9**

NOTE: Cases reported with unknown sex are not included in this table. See Section A1.11 in the Appendix for more information on interpreting case counts and rates in outlying areas.

Table 5. Chlamydia Among Men — Reported Cases and Rates of Reported Cases by State/Area and Region in Alphabetical Order, United States and Outlying Areas, 2013–2017

	Cases					Rates per 100,000 Population				
State/Area	**2013**	**2014**	**2015**	**2016**	**2017**	**2013**	**2014**	**2015**	**2016**	**2017**
Alabama	8,201	8,318	7,549	7,585	8,837	349.7	354.0	320.8	322.0	375.2
Alaska	1,875	1,849	1,871	1,891	1,993	486.3	477.4	480.9	487.2	513.5
Arizona	8,610	9,650	10,028	11,217	13,055	261.3	288.6	295.7	325.8	379.2
Arkansas	4,104	3,964	4,078	4,521	4,866	282.3	272.0	278.8	308.0	331.5
California	54,679	60,687	67,475	73,625	83,273	286.8	314.9	347.0	377.7	427.2
Colorado	6,050	6,957	7,706	8,624	9,744	228.6	258.5	280.9	309.6	349.8
Connecticut	3,481	3,757	3,926	4,268	5,618	198.4	214.1	224.1	244.5	321.8
Delaware	1,499	1,389	1,487	1,687	1,830	334.6	306.8	324.8	366.2	397.2
District of Columbia	2,400	1,555	3,108	3,112	4,279	783.7	497.4	975.5	962.8	1,323.8
Florida	23,300	25,239	28,332	31,275	33,811	243.7	259.6	286.1	310.6	335.8
Georgia	14,063	14,736	17,212	19,338	20,837	288.1	299.1	345.6	385.2	415.0
Hawaii	1,994	1,950	2,352	2,421	2,426	281.0	271.6	324.2	337.4	338.1
Idaho	1,528	1,547	1,663	1,869	1,990	189.3	189.0	200.7	221.6	235.9
Illinois	17,943	19,908	21,966	24,008	26,089	283.6	315.0	347.9	381.6	414.7
Indiana	7,708	7,921	8,492	9,174	10,673	238.2	243.8	260.3	280.6	326.4
Iowa	3,058	3,419	3,712	4,111	4,631	199.4	221.6	239.2	263.7	297.0
Kansas	2,689	2,840	3,139	3,472	4,082	186.5	196.2	215.9	239.8	282.0
Kentucky	4,989	5,194	5,273	5,590	6,194	230.6	239.0	242.0	255.7	283.3
Louisiana	7,481	7,655	8,974	8,784	10,212	330.4	336.6	392.9	383.7	446.1
Maine	1,031	1,050	1,230	1,356	1,596	158.6	161.2	188.9	207.8	244.6
Maryland	7,654	8,237	8,780	10,479	11,449	266.2	284.4	301.6	359.6	392.8
Massachusetts	7,341	7,197	8,406	9,433	10,517	226.2	220.0	255.0	285.4	318.2
Michigan	12,683	12,723	14,015	14,417	16,420	261.0	261.3	287.3	295.1	336.1
Minnesota	5,791	6,414	7,122	7,703	8,183	215.0	236.5	260.9	280.4	297.8
Mississippi	4,788	5,588	5,018	5,955	6,363	329.2	384.2	345.6	411.0	439.2
Missouri	8,025	8,432	9,022	10,086	10,982	270.8	283.5	302.2	337.1	367.0
Montana	1,116	1,314	1,338	1,454	1,528	218.9	255.6	257.6	277.1	291.2
Nebraska	2,196	2,357	2,531	2,649	2,927	236.2	251.6	267.8	278.6	307.9
Nevada	3,590	3,786	4,152	4,777	5,741	255.4	265.4	286.2	324.1	389.5
New Hampshire	932	1,130	1,006	1,150	1,494	142.6	172.4	153.0	174.0	226.1
New Jersey	7,476	8,272	9,025	10,435	11,362	172.1	189.6	206.4	238.9	260.1
New Mexico	3,209	3,148	3,400	3,794	4,229	310.5	304.8	329.0	368.1	410.3
New York	31,273	33,634	37,346	41,722	46,349	327.9	351.0	388.6	435.2	483.4
North Carolina	11,254	11,638	17,195	16,918	19,295	234.4	240.2	351.5	343.0	391.1
North Dakota	1,009	1,249	1,131	1,268	1,151	272.7	329.5	290.9	326.0	295.9
Ohio	14,828	15,825	16,901	18,699	19,257	262.0	278.9	297.2	328.5	338.3
Oklahoma	5,213	5,802	6,121	6,516	6,569	273.3	302.2	316.0	335.2	337.9
Oregon	4,243	4,953	5,223	5,876	6,412	218.2	252.2	262.0	289.9	316.3
Pennsylvania	16,360	16,315	18,201	19,840	20,184	262.1	260.9	290.5	316.9	322.4
Rhode Island	1,268	1,312	1,511	1,656	1,825	248.9	256.6	295.1	322.8	355.7
South Carolina	6,432	7,376	7,705	8,286	9,807	276.9	314.0	323.9	344.1	407.3
South Dakota	1,134	1,224	1,118	1,259	1,343	267.2	285.1	258.8	288.6	307.8
Tennessee	9,311	9,587	10,158	10,584	11,736	294.0	300.3	315.7	326.4	361.9
Texas	31,980	34,110	38,539	40,992	45,170	243.2	254.9	282.6	296.4	326.6
Utah	2,485	2,808	2,929	3,424	3,516	170.3	189.8	194.3	222.9	228.9
Vermont	523	622	549	518	611	169.2	201.4	177.9	167.9	198.1
Virginia	10,112	11,244	11,460	13,395	14,311	248.9	274.6	277.8	323.8	345.9
Washington	7,498	8,384	9,651	10,975	11,713	215.3	237.5	269.2	301.4	321.7
West Virginia	1,514	1,363	1,509	1,491	1,365	165.4	149.1	165.6	164.6	150.7
Wisconsin	7,114	7,077	7,703	8,487	9,058	249.4	247.5	268.6	295.4	315.2
Wyoming	617	619	643	704	741	207.5	207.7	215.1	235.5	247.9
U.S. TOTAL	**405,652**	**433,325**	**478,981**	**522,870**	**577,644**	**260.6**	**276.1**	**302.7**	**328.7**	**363.1**
Northeast	69,685	73,289	81,200	90,378	99,556	255.8	268.0	296.1	329.8	363.3
Midwest	84,178	89,389	96,852	105,333	114,796	252.9	267.7	289.2	314.1	342.3
South	154,295	162,995	182,498	196,508	216,931	265.7	277.6	307.2	327.8	361.9
West	97,494	107,652	118,431	130,651	146,361	263.2	287.3	312.4	342.0	383.1
Guam	234	244	263	280	354	287.6	298.9	320.8	326.2	412.4
Puerto Rico	1,203	1,126	1,319	1,647	1,255	69.6	66.1	79.6	101.4	77.3
Virgin Islands	196	201	180	166	140	400.7	414.0	376.7	322.1	271.7
OUTLYING AREAS	**1,633**	**1,571**	**1,762**	**2,093**	**1,749**	**87.8**	**85.6**	**98.6**	**118.8**	**99.3**
TOTAL	**407,285**	**434,896**	**480,743**	**524,963**	**579,393**	**258.6**	**273.9**	**300.4**	**326.4**	**360.2**

NOTE: Cases reported with unknown sex are not included in this table. See Section A1.11 in the Appendix for more information on interpreting case counts and rates in outlying areas.

Table 6. Chlamydia — Reported Cases and Rates of Reported Cases in Selected Metropolitan Statistical Areas (MSAs)* in Alphabetical Order, United States, 2013–2017

MSAs	Cases					Rates per 100,000 Population				
	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Atlanta-Sandy Springs-Roswell, GA	16,429†	25,744	19,106†	33,273	34,189	297.5†	458.5	334.6†	574.7	590.5
Austin-Round Rock, TX	10,138	10,920	11,679	12,299	13,015	538.4	561.9	583.7	598.1	632.9
Baltimore-Columbia-Towson, MD	13,749	14,095	14,016	15,829	16,766	496.2	505.9	501.0	565.5	599.0
Birmingham-Hoover, AL	6,552	6,309	5,839	4,982‡	7,388	574.6	551.6	509.7	434.2‡	643.9
Boston-Cambridge-Newton, MA-NH	16,127	14,264†	14,378†	15,880†	18,232†	344.3	301.4†	301.2†	331.2†	380.3†
Buffalo-Cheektowaga-Niagara Falls, NY	5,724	5,841	5,900	6,252	6,584	504.7	514.0	519.7	551.9	581.2
Charlotte-Concord-Gastonia, NC-SC	11,418	11,766	16,284	14,314	15,901	488.9	494.3	671.1	578.5	642.6
Chicago-Naperville-Elgin, IL-IN-WI	47,837	51,457	54,248	56,478	59,342	501.6	538.6	568.0	593.7	623.8
Cincinnati, OH-KY-IN	10,207	10,516	11,219	11,392	11,205	477.5	489.2	519.9	526.2	517.5
Cleveland-Elyria, OH	12,126	11,363	11,312	12,475	13,773	587.3	550.6	548.9	606.9	670.0
Columbus, OH	9,734	10,258	11,327	12,113	11,921	494.8	514.3	560.3	593.3	583.9
Dallas-Fort Worth-Arlington, TX	30,684	30,549	35,900	32,771	37,263	450.5	439.3	505.4	453.1	515.2
Denver-Aurora-Lakewood, CO	12,131	13,346	13,942	14,282	15,520	449.7	484.6	495.4	500.6	544.0
Detroit-Warren-Dearborn, MI	22,567	21,012	22,238	21,966	24,278	525.4	489.0	516.9	511.1	564.9
Hartford-West Hartford-East Hartford, CT	4,311	4,713	4,689	4,898	6,153†	354.8	388.1	387.1	405.9	509.8†
Houston-The Woodlands-Sugar Land, TX	29,120	30,554	32,823	35,594	35,807	461.3	470.8	493.1	525.6	528.7
Indianapolis-Carmel-Anderson, IN	11,835	11,952	11,544	12,794	13,701	605.7	606.3	580.4	638.3	683.6
Jacksonville, FL	7,138	7,391	8,012	8,434	8,763	511.8	520.8	552.7	570.6	592.8
Kansas City, MO-KS	9,513	9,866	10,240	11,043	11,868	463.0	476.4	490.5	524.7	563.9
Las Vegas-Henderson-Paradise, NV	9,286	9,485	10,049	11,362	11,898	457.9	458.3	475.2	527.1	551.9
Los Angeles-Long Beach-Anaheim, CA	59,386	64,263	68,285	71,943	78,312	452.2	484.6	511.9	540.5	588.3
Louisville-Jefferson County, KY-IN	6,384	6,751	6,735	6,881	7,086	505.8	531.7	526.8	536.1	552.1
Memphis, TN-MS-AR	10,763	10,554	10,342	10,365	11,718	802.2	785.7	769.4	771.9	872.6
Miami-Fort Lauderdale-West Palm Beach, FL	22,821	24,599	26,746	28,070	29,430	391.6	414.8	444.9	462.7	485.1
Milwaukee-Waukesha-West Allis, WI	10,754	10,303	10,645	11,891	12,187	685.1	655.3	675.6	756.2	775.0
Minneapolis-St. Paul-Bloomington, MN-WI	12,227†	13,589†	14,709†	15,584	16,901	353.5†	388.8†	417.3†	438.9	475.9
Nashville-Davidson-Murfreesboro-Franklin, TN	7,356	7,878	8,066	8,196	8,928	418.5	439.5	440.7	439.4	478.6
New Orleans-Metairie, LA	8,134	8,595	9,291	9,626	9,850	655.5	686.6	735.7	758.6	776.3
New York-Newark-Jersey City, NY-NJ-PA	89,211	93,515	97,835	105,463	112,808	447.2	465.4	484.8	523.3	559.7
Oklahoma City, OK	6,190	7,293	7,633	7,693	8,198	469.1	545.6	561.9	560.2	597.0
Orlando-Kissimmee-Sanford, FL	10,230	11,001	12,026	12,492	13,870	451.1	473.9	503.8	511.7	568.1
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	34,741	33,376	34,910	38,182	38,661	575.7	551.6	575.1	629.0	636.9
Phoenix-Mesa-Scottsdale, AZ	20,164	21,576	21,795	23,567	26,939	458.4	480.6	476.4	505.6	577.9
Pittsburgh, PA	8,605	8,059	8,604	8,623	7,801	364.5	342.1	365.7	368.1	333.0
Portland-Vancouver-Hillsboro, OR-WA	8,536	9,283	9,982	11,052	11,461	368.8	395.3	417.8	455.8	472.6
Providence-Warwick, RI-MA	5,828	5,695†	5,907†	6,668†	6,977†	363.3	353.9†	366.2†	412.9†	432.1†
Raleigh, NC	4,966	5,126	6,911	6,493	7,243	408.9	412.4	542.6	498.3	555.9
Richmond, VA	6,817	7,817	7,878	8,592	8,562	547.2	620.4	619.7	670.4	668.0
Riverside-San Bernardino-Ontario, CA	19,819	19,560	20,778	20,081	24,294	452.4	440.4	462.8	443.5	536.5
Sacramento-Roseville-Arden-Arcade, CA	9,771	9,674	10,621	10,892	12,408	441.0	431.0	467.0	474.3	540.3
Salt Lake City, UT	3,947	4,423	4,751	5,264	5,516	346.1	383.5	406.0	443.8	465.0
San Antonio-New Braunfels, TX	13,335	11,573	14,465	15,149	14,580	585.5	497.0	606.7	623.5	600.1
San Diego-Carlsbad, CA	14,706	15,754	17,378	18,937	20,832	458.0	482.7	526.7	570.8	627.9
San Francisco-Oakland-Hayward, CA	18,254	20,377	23,519	24,894	27,850	404.2	443.6	505.1	532.0	595.2
San Jose-Sunnyvale-Santa Clara, CA	6,717	6,278	6,898	7,166	7,877	349.9	321.5	348.9	362.1	398.1
Seattle-Tacoma-Bellevue, WA	12,971	13,861	15,257	16,886	17,832	359.3	377.5	408.6	444.5	469.4
St. Louis, MO-IL	14,783	14,711	14,961	15,512	16,469	527.8	524.2	532.1	552.6	586.7
Tampa-St. Petersburg-Clearwater, FL	12,752	12,952	13,472	13,996	14,512	444.2	444.2	452.8	461.6	478.6
Virginia Beach-Norfolk-Newport News, VA-NC	11,852	12,192	11,281	13,223	13,571	694.2	710.2	654.0	765.7	785.9
Washington-Arlington-Alexandria, DC-VA-MD-WV	23,531	18,342	18,890	21,269	33,134	395.5	304.0	309.8	346.9	540.3
SELECTED MSAs TOTAL	**792,177**	**820,371**	**865,316**	**923,081**	**999,374**	**458.3**	**469.1**	**489.6**	**518.8**	**561.7**

* MSAs were selected on the basis of the largest population in the 2010 U.S. Census.

† The variable used to identify county, which is used to classify cases into MSAs, was complete for ≤95% of cases in a state contributing data to this MSA. See Section A1.4 in the Appendix for more information.

‡ 2016 county data for Alabama have been corrected and may not match previous reports.

Table 7. Chlamydia Among Women — Reported Cases and Rates of Reported Cases in Selected Metropolitan Statistical Areas (MSAs)* in Alphabetical Order, United States, 2013–2017

	Cases					Rates per 100,000 Population				
MSAs	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Atlanta-Sandy Springs-Roswell, GA	11,221†	17,564	12,640†	22,235	22,204	395.0†	607.2	429.0†	743.6	742.5
Austin-Round Rock, TX	6,691	7,513	7,779	7,827	8,216	712.3	773.7	777.8	761.8	799.6
Baltimore-Columbia-Towson, MD	9,848	9,780	9,453	10,359	11,007	686.9	678.0	652.7	714.5	759.2
Birmingham-Hoover, AL	4,486	4,300	3,940	3,386‡	4,985	759.2	724.5	662.3	568.9‡	837.5
Boston-Cambridge-Newton, MA-NH	10,791	9,243†	9,137†	9,987†	11,314†	447.5	379.6†	372.0†	405.1†	458.9†
Buffalo-Cheektowaga-Niagara Falls, NY	4,024	4,077	4,035	4,142	4,383	688.0	696.2	690.1	710.1	751.4
Charlotte-Concord-Gastonia, NC-SC	8,605	8,633	11,672	10,033	10,810	717.0	705.1	935.2	786.8	847.8
Chicago-Naperville-Elgin, IL-IN-WI	34,216	35,696	36,547	37,102	38,191	702.5	730.9	749.1	764.1	786.5
Cincinnati, OH-KY-IN	7,527	7,724	8,050	8,052	7,848	690.0	703.9	731.0	729.4	710.9
Cleveland-Elyria, OH	8,550	7,914	7,815	8,601	9,167	799.4	740.8	732.5	809.0	862.3
Columbus, OH	6,749	6,895	7,704	8,027	7,864	674.7	680.3	750.2	774.2	758.5
Dallas-Fort Worth-Arlington, TX	22,744	22,213	25,902	22,719	25,893	658.7	628.6	717.3	617.7	704.0
Denver-Aurora-Lakewood, CO	8,447	9,020	9,265	9,360	9,652	624.1	652.7	656.7	654.8	675.2
Detroit-Warren-Dearborn, MI	16,152	14,822	15,410	14,957	16,198	730.5	670.3	696.5	677.4	733.6
Hartford-West Hartford-East Hartford, CT	3,109	3,349	3,226	3,307	3,945†	499.0	538.2	520.0	535.5	638.8†
Houston-The Woodlands-Sugar Land, TX	22,027	22,832	23,828	25,470	25,253	695.0	699.6	711.6	747.1	740.8
Indianapolis-Carmel-Anderson, IN	8,149	8,398	7,816	8,604	9,090	816.1	832.9	768.7	839.5	887.0
Jacksonville, FL	5,131	5,238	5,637	5,757	5,905	717.4	719.3	758.6	759.4	778.9
Kansas City, MO-KS	6,795	6,991	7,108	7,544	7,947	649.2	662.4	668.8	703.9	741.5
Las Vegas-Henderson-Paradise, NV	6,571	6,486	6,885	7,697	7,642	650.5	627.4	650.6	712.5	707.4
Los Angeles-Long Beach-Anaheim, CA	38,456	40,401	42,385	43,278	46,649	578.5	600.7	626.6	641.1	691.0
Louisville-Jefferson County, KY-IN	4,574	4,827	4,686	4,735	4,741	708.1	742.6	716.8	721.7	722.6
Memphis, TN-MS-AR	7,717	7,758	7,238	7,324	8,164	1,105.5	1,109.2	1,033.5	1,046.4	1,166.4
Miami-Fort Lauderdale-West Palm Beach, FL	15,645	16,473	17,461	17,881	18,277	521.9	539.6	563.6	572.6	585.2
Milwaukee-Waukesha-West Allis, WI	7,463	7,183	7,242	8,013	8,155	926.6	890.0	895.8	994.2	1,011.8
Minneapolis-St. Paul-Bloomington, MN-WI	8,293†	8,957†	9,497†	9,958	10,694	474.2†	507.0†	533.5†	555.8	596.9
Nashville-Davidson-Murfreesboro-Franklin, TN	5,084	5,278	5,322	5,374	5,846	565.0	574.5	567.4	562.0	611.4
New Orleans-Metairie, LA	6,062	6,301	6,710	6,843	6,665	948.7	975.3	1,028.6	1,044.5	1,017.3
New York-Newark-Jersey City, NY-NJ-PA	60,539	62,097	62,905	65,594	68,082	587.7	598.4	603.9	630.7	654.6
Oklahoma City, OK	4,430	5,255	5,420	5,308	5,669	662.5	775.0	786.4	762.5	814.3
Orlando-Kissimmee-Sanford, FL	7,503	8,021	8,505	8,593	9,252	648.3	675.8	696.6	688.5	741.3
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	23,532	22,317	22,967	24,813	24,713	754.4	713.7	732.2	791.6	788.4
Phoenix-Mesa-Scottsdale, AZ	14,206	14,841	14,607	15,621	17,504	642.4	656.9	634.3	665.8	746.1
Pittsburgh, PA	6,046	5,509	5,681	5,551	4,923	497.4	454.6	469.9	461.8	409.5
Portland-Vancouver-Hillsboro, OR-WA	5,809	6,158	6,559	7,076	7,178	496.1	518.4	542.7	577.2	585.5
Providence-Warwick, RI-MA	4,124	3,945†	3,989†	4,501†	4,622†	498.7	475.6†	479.9†	541.6†	556.2†
Raleigh, NC	3,490	3,502	4,685	4,244	4,721	561.5	550.1	718.3	634.9	706.3
Richmond, VA	4,792	5,311	5,330	5,725	5,653	744.7	815.9	811.1	863.5	852.6
Riverside-San Bernardino-Ontario, CA	14,536	13,988	14,693	13,893	16,830	661.1	626.6	651.4	610.5	739.5
Sacramento-Roseville-Arden-Arcade, CA	6,915	6,686	7,284	7,282	8,123	611.8	583.6	627.3	620.5	692.1
Salt Lake City, UT	2,541	2,873	3,067	3,275	3,520	448.0	500.3	526.4	554.6	596.1
San Antonio-New Braunfels, TX	9,576	8,158	10,005	10,466	9,924	829.5	690.9	828.4	850.9	806.8
San Diego-Carlsbad, CA	9,684	10,211	11,154	11,690	12,791	606.3	628.9	680.1	708.7	775.5
San Francisco-Oakland-Hayward, CA	10,845	11,509	12,508	12,900	13,965	474.3	494.3	530.5	544.7	589.7
San Jose-Sunnyvale-Santa Clara, CA	4,530	4,100	4,328	4,445	4,754	474.6	422.3	440.8	453.4	484.9
Seattle-Tacoma-Bellevue, WA	8,411	8,751	9,306	10,085	10,454	465.4	476.5	498.4	530.8	550.2
St. Louis, MO-IL	10,364	10,271	10,158	10,417	11,016	717.6	709.9	701.1	720.8	762.2
Tampa-St. Petersburg-Clearwater, FL	8,948	9,066	9,269	9,360	9,743	604.2	602.5	603.7	598.4	622.9
Virginia Beach-Norfolk-Newport News, VA-NC	8,259	8,425	7,677	8,791	8,873	952.5	966.9	877.4	1,002.4	1,011.7
Washington-Arlington-Alexandria, DC-VA-MD-WV	15,768	12,501	12,517	13,635	20,072	518.1	405.0	401.3	434.6	639.7
SELECTED MSAs TOTAL	**549,975**	**559,361**	**577,004**	**601,837**	**639,087**	**623.8**	**626.7**	**639.8**	**663.0**	**704.1**

* MSAs were selected on the basis of the largest population in the 2010 U.S. Census.
† The variable used to identify county, which is used to classify cases into MSAs, was complete for ≤95% of cases in a state contributing data to this MSA. See Section A1.4 in the Appendix for more information.
‡ 2016 county data for Alabama have been corrected and may not match previous reports.
NOTE: Cases reported with unknown sex are not included in this table.

Table 8. Chlamydia Among Men — Reported Cases and Rates of Reported Cases in Selected Metropolitan Statistical Areas (MSAs)* in Alphabetical Order, United States, 2013–2017

	Cases					Rates per 100,000 Population				
MSAs	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Atlanta-Sandy Springs-Roswell, GA	5,061†	7,979	6,429†	11,000	11,888	188.7†	293.2	232.6†	392.9	424.7
Austin-Round Rock, TX	2,592	3,372	3,871	4,444	4,775	274.7	346.8	386.8	431.9	464.1
Baltimore-Columbia-Towson, MD	3,889	4,294	4,514	5,446	5,755	290.9	319.6	334.6	403.7	426.6
Birmingham-Hoover, AL	2,031	1,990	1,886	1,573‡	2,377	369.7	361.6	342.4	284.9‡	430.5
Boston-Cambridge-Newton, MA-NH	5,328	4,988†	5,211†	5,861†	6,887†	234.4	217.2†	224.8†	251.7†	295.7†
Buffalo-Cheektowaga-Niagara Falls, NY	1,700	1,764	1,865	2,110	2,201	309.5	320.3	338.8	384.0	400.5
Charlotte-Concord-Gastonia, NC-SC	2,804	3,125	4,607	4,278	5,085	247.0	270.4	391.0	356.7	424.0
Chicago-Naperville-Elgin, IL-IN-WI	13,553	15,679	17,517	19,320	21,071	290.4	335.7	374.9	414.8	452.4
Cincinnati, OH-KY-IN	2,676	2,787	3,168	3,333	3,352	255.7	264.9	299.9	314.1	315.9
Cleveland-Elyria, OH	3,576	3,449	3,497	3,874	4,606	359.4	346.5	351.8	390.3	464.1
Columbus, OH	2,985	3,363	3,623	4,086	4,057	308.7	342.8	364.2	406.7	403.8
Dallas-Fort Worth-Arlington, TX	7,916	8,313	9,941	10,006	11,342	235.7	243.0	284.7	281.4	319.0
Denver-Aurora-Lakewood, CO	3,684	4,326	4,677	4,922	5,868	274.1	315.2	333.3	345.8	412.2
Detroit-Warren-Dearborn, MI	6,350	6,153	6,795	6,992	8,048	304.7	295.0	325.2	334.6	385.2
Hartford-West Hartford-East Hartford, CT	1,181	1,333	1,443	1,541	1,982†	199.4	225.1	244.2	261.5	336.4†
Houston-The Woodlands-Sugar Land, TX	7,078	7,700	8,939	10,004	10,434	225.1	238.6	270.2	297.4	310.2
Indianapolis-Carmel-Anderson, IN	3,681	3,544	3,723	4,185	4,604	385.3	368.0	383.0	427.3	470.1
Jacksonville, FL	1,989	2,138	2,367	2,672	2,854	292.7	309.4	335.1	371.1	396.3
Kansas City, MO-KS	2,718	2,875	3,132	3,499	3,921	269.7	283.1	305.6	338.8	379.7
Las Vegas-Henderson-Paradise, NV	2,708	2,986	3,139	3,646	4,228	266.1	288.3	297.1	339.1	393.2
Los Angeles-Long Beach-Anaheim, CA	20,831	23,766	25,764	28,299	31,501	321.3	363.6	391.8	431.4	480.2
Louisville-Jefferson County, KY-IN	1,781	1,896	2,031	2,131	2,323	289.0	305.9	325.1	339.7	370.3
Memphis, TN-MS-AR	3,046	2,795	3,104	3,035	3,546	473.2	434.1	482.2	472.1	551.5
Miami-Fort Lauderdale-West Palm Beach, FL	7,134	8,086	9,270	10,172	11,141	252.0	281.1	318.1	345.6	378.5
Milwaukee-Waukesha-West Allis, WI	3,284	3,111	3,394	3,860	4,021	429.7	406.6	442.3	503.6	524.6
Minneapolis-St. Paul-Bloomington, MN-WI	3,933†	4,623†	5,206†	5,614	6,192	229.9†	267.5†	298.4†	319.1	351.9
Nashville-Davidson-Murfreesboro-Franklin, TN	2,271	2,598	2,744	2,822	3,081	264.6	297.3	307.5	310.4	338.9
New Orleans-Metairie, LA	2,072	2,294	2,581	2,783	3,185	344.2	378.7	422.7	453.4	518.9
New York-Newark-Jersey City, NY-NJ-PA	28,546	31,310	34,799	39,725	44,597	295.8	322.3	356.3	407.3	457.3
Oklahoma City, OK	1,760	2,036	2,213	2,385	2,529	270.4	309.1	330.7	352.3	373.5
Orlando-Kissimmee-Sanford, FL	2,708	2,964	3,511	3,896	4,616	243.9	261.2	301.0	326.5	386.9
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	11,178	11,010	11,912	13,315	13,889	383.4	376.5	406.1	453.5	473.1
Phoenix-Mesa-Scottsdale, AZ	5,957	6,735	7,173	7,944	9,354	272.3	302.0	315.7	343.1	404.0
Pittsburgh, PA	2,550	2,541	2,909	3,062	2,876	222.6	222.1	254.3	268.5	252.2
Portland-Vancouver-Hillsboro, OR-WA	2,723	3,124	3,416	3,970	4,271	238.1	269.2	289.3	331.1	356.2
Providence-Warwick, RI-MA	1,702	1,744†	1,913†	2,163†	2,350†	218.9	223.6†	244.7†	276.0†	299.9†
Raleigh, NC	1,474	1,622	2,226	2,248	2,522	248.6	267.5	358.3	354.3	397.5
Richmond, VA	2,011	2,503	2,540	2,827	2,797	333.9	410.9	413.5	456.9	452.1
Riverside-San Bernardino-Ontario, CA	5,271	5,542	6,070	6,141	7,415	241.5	250.8	271.8	272.7	329.3
Sacramento-Roseville-Arden-Arcade, CA	2,846	2,976	3,322	3,580	4,255	262.2	270.9	298.5	318.9	379.0
Salt Lake City, UT	1,406	1,550	1,684	1,989	1,991	245.2	267.7	286.6	333.9	334.2
San Antonio-New Braunfels, TX	3,757	3,412	4,459	4,683	4,652	334.5	297.2	379.1	390.4	387.8
San Diego-Carlsbad, CA	5,013	5,508	6,190	7,195	8,017	310.6	335.9	373.0	431.3	480.6
San Francisco-Oakland-Hayward, CA	7,370	8,823	10,961	11,936	13,788	330.5	389.4	476.9	516.5	596.6
San Jose-Sunnyvale-Santa Clara, CA	2,186	2,163	2,565	2,717	3,109	226.5	220.3	257.8	272.1	311.4
Seattle-Tacoma-Bellevue, WA	4,560	5,110	5,951	6,799	7,375	253.0	278.5	318.8	358.0	388.4
St. Louis, MO-IL	4,411	4,429	4,762	5,091	5,450	325.1	325.8	349.4	373.9	400.2
Tampa-St. Petersburg-Clearwater, FL	3,752	3,835	4,195	4,632	4,768	270.0	271.8	291.3	315.5	324.8
Virginia Beach-Norfolk-Newport News, VA-NC	3,584	3,748	3,595	4,406	4,593	426.5	443.4	423.0	518.4	540.4
Washington-Arlington-Alexandria, DC-VA-MD-WV	7,725	5,813	6,359	7,595	12,856	265.8	197.2	213.5	253.6	429.3
SELECTED MSAs TOTAL	**240,342**	**259,825**	**287,163**	**319,807**	**358,395**	**283.8**	**303.4**	**331.8**	**367.0**	**411.3**

* MSAs were selected on the basis of the largest population in the 2010 U.S. Census,

† The variable used to identify county, which is used to classify cases into MSAs, was complete for ≤95% of cases in a state contributing data to this MSA. See Section A1.4 in the Appendix for more information.

‡ 2016 county data for Alabama have been corrected and may not match previous reports.

NOTE: Cases reported with unknown sex are not included in this table.

Table 9. Chlamydia — Reported Cases and Rates of Reported Cases in Counties and Independent Cities* Ranked by Number of Reported Cases, United States, 2017

Rank*	County/Independent City	Cases	Rate per 100,000 Population	Cumulative Percentage
1	Los Angeles County, CA	64,302	634.3	3
2	Cook County, IL	42,422	815.3	6
3	Harris County, TX	27,556	600.4	7
4	Maricopa County, AZ	25,336	597.1	9
5	Kings County, NY	21,137	803.9	10
6	Philadelphia County, PA	21,119	1,347.0	11
7	San Diego County, CA	20,832	627.9	13
8	Dallas County, TX	18,417	715.2	14
9	Bronx County, NY	17,711	1,216.6	15
10	New York County, NY	16,670	1,014.2	16
11	Wayne County, MI	15,636	893.8	17
12	Queens County, NY	14,421	618.1	17
13	Orange County, CA	14,010	441.6	18
14	San Bernardino County, CA	13,144	614.2	19
15	Bexar County, TX	12,986	673.3	20
16	Miami-Dade County, FL	12,264	452.1	20
17	Clark County, NV	11,898	551.9	21
18	Broward County, FL	11,283	590.8	22
19	Riverside County, CA	11,150	467.0	22
20	Cuyahoga County, OH	11,044	884.0	23
21	Milwaukee County, WI	10,928	1,148.6	24
22	Marion County, IN	10,536	1,119.4	24
23	Sacramento County, CA	9,852	650.5	25
24	King County, WA	9,777	454.8	26
25	Orange County, FL	9,523	724.5	26
26	Franklin County, OH	9,409	744.1	27
27	Alameda County, CA	9,200	558.4	27
28	San Francisco County, CA	9,137	1,049.2	28
29	Washington, D.C.	9,107	1,337.0	28
30	Shelby County, TN	9,003	963.3	29
31	Travis County, TX	8,946	745.9	29
32	Mecklenburg County, NC	8,828	836.9	30
33	Tarrant County, TX	8,625	427.6	30
34	Fulton County, GA	8,510	831.6	31
35	Hillsborough County, FL	8,323	604.8	31
36	Hennepin County, MN	8,156	661.8	32
37	Santa Clara County, CA	7,655	398.8	32
38	Baltimore (City), MD	7,636	1,242.3	33
39	Prince George's County, MD	7,364	811.0	33
40	Fresno County, CA	7,198	734.6	34
41	Denver County, CO	6,928	999.6	34
42	Duval County, FL	6,925	747.6	34
43	Kern County, CA	6,866	776.0	35
44	Hamilton County, OH	6,861	848.0	35
45	Pima County, AZ	6,625	651.9	36
46	St. Louis County, MO	6,161	617.0	36
47	Wake County, NC	6,078	580.6	36
48	Essex County, NJ	6,064	760.9	37
49	Jefferson County, AL	6,031	914.5	37
50	Palm Beach County, FL	5,883	407.5	37
51	Jackson County, MO	5,856	846.5	38
52	DeKalb County, GA	5,854	790.7	38
53	Contra Costa County, CA	5,731	504.9	38
54	Oklahoma County, OK	5,693	727.1	39
55	Erie County, NY	5,571	604.9	39
56	Jefferson County, KY	5,445	711.4	39
57	Pierce County, WA	5,421	629.4	40
58	Honolulu County, HI	5,389	542.9	40
59	Salt Lake County, UT	5,322	474.6	40
60	Middlesex County, MA	5,250	330.2	41
61	Hartford County, CT	5,248	588.1	41
62	Allegheny County, PA	5,223	426.2	41
63	Multnomah County, OR	5,198	649.9	41
64	New Haven County, CT	4,993	582.7	42
65	Monroe County, NY	4,988	667.1	42
66	Guilford County, NC	4,985	956.2	42
67	Bernalillo County, NM	4,932	728.6	43
68	Suffolk County, NY	4,917	329.4	43
69	El Paso County, TX	4,880	582.4	43
70	Collin County, TX	4,867	518.0	43

* The top 70 counties and independent cities ranked in descending order by number of cases reported in 2017 then by rate are displayed.

NOTE: Relative rankings of counties may be impacted by completeness of the variable used to identify county. In 2017, the variable used to identify county was complete for ≤95% of cases in Connecticut and Massachusetts. See Section A1.4 in the Appendix for more information.

Table 10. Chlamydia — Reported Cases and Rates of Reported Cases by Age Group and Sex, United States, 2013–2017

Age	Cases				Rates per 100,000 Population*			
Group	Total	Male	Female	Unknown Sex	Total	Male	Female	
0–4	681	266	402	13	3.4	2.6	4.1	2013
5–9	145	20	123	2	0.7	0.2	1.2	
10–14	12,585	1,554	11,001	30	60.9	14.7	108.9	
15–19	395,612	78,404	316,438	770	1,869.7	722.9	3,068.4	
20–24	553,658	153,102	399,545	1,011	2,428.8	1,310.9	3,594.2	
25–29	233,429	82,190	150,733	506	1,081.7	749.9	1,419.3	
30–34	103,675	41,017	62,414	244	487.6	384.0	589.8	
35–39	46,991	20,157	26,720	114	239.7	206.0	272.1	
40–44	24,774	12,200	12,501	73	118.8	117.8	119.2	
45–54	21,511	12,180	9,299	32	49.1	56.5	41.9	
55–64	5,424	3,154	2,259	11	13.8	16.6	11.1	
65+	1,377	750	616	11	3.1	3.8	2.5	
Unknown Age	2,044	658	1,297	89				
TOTAL	**1,401,906**	**405,652**	**993,348**	**2,906**	**443.5**	**260.6**	**619.0**	
0–4	603	200	388	15	3.0	2.0	4.0	2014
5–9	181	26	152	3	0.9	0.2	1.5	
10–14	11,406	1,342	10,041	23	55.2	12.7	99.2	
15–19	381,717	77,908	303,294	515	1,811.9	722.4	2,949.3	
20–24	566,385	159,804	405,876	705	2,472.0	1,361.3	3,632.7	
25–29	253,825	91,729	161,793	303	1,154.4	821.8	1,494.4	
30–34	113,208	45,990	67,060	158	525.9	425.5	625.6	
35–39	52,536	22,894	29,545	97	263.7	230.3	296.0	
40–44	27,426	13,711	13,662	53	133.2	134.2	131.7	
45–54	24,773	14,318	10,424	31	57.0	66.8	47.3	
55–64	6,527	3,911	2,603	13	16.3	20.2	12.5	
65+	1,449	871	570	8	3.1	4.3	2.2	
Unknown Age	1,753	621	1,033	99				
TOTAL	**1,441,789**	**433,325**	**1,006,441**	**2,023**	**452.2**	**276.1**	**621.6**	
0–4	518	196	322	0	2.6	1.9	3.3	2015
5–9	148	18	130	0	0.7	0.2	1.3	
10–14	10,642	1,216	9,394	32	51.6	11.6	93.0	
15–19	391,396	82,775	307,937	684	1,854.2	766.6	2,986.5	
20–24	589,963	172,313	416,772	878	2,594.5	1,476.8	3,764.4	
25–29	280,429	104,679	175,291	459	1,248.5	917.5	1,586.0	
30–34	123,866	52,019	71,653	194	571.5	477.7	664.3	
35–39	59,905	27,180	32,621	104	294.0	267.2	319.8	
40–44	30,379	15,210	15,118	51	150.3	151.6	148.4	
45–54	28,833	17,011	11,764	58	66.8	79.9	53.7	
55–64	7,756	4,901	2,840	15	19.0	24.9	13.4	
65+	1,596	1,043	546	7	3.3	4.9	2.0	
Unknown Age	1,227	420	755	52				
TOTAL	**1,526,658**	**478,981**	**1,045,143**	**2,534**	**475.0**	**302.7**	**640.4**	
0–4	597	225	368	4	3.0	2.2	3.8	2016
5–9	188	25	161	2	0.9	0.2	1.6	
10–14	10,571	1,341	9,206	24	51.3	12.7	91.2	
15–19	407,230	89,899	316,639	692	1,927.3	832.3	3,065.8	
20–24	601,173	181,857	418,388	928	2,686.1	1,582.6	3,842.0	
25–29	298,176	114,484	183,222	470	1,302.6	984.3	1,627.3	
30–34	133,062	58,583	74,226	253	610.8	534.1	686.1	
35–39	66,669	31,671	34,872	126	320.9	305.2	335.4	
40–44	32,548	16,784	15,705	59	165.2	171.7	158.3	
45–54	32,316	19,569	12,683	64	75.5	92.7	58.5	
55–64	9,321	5,942	3,354	25	22.5	29.7	15.6	
65+	1,772	1,161	597	14	3.6	5.3	2.2	
Unknown Age	4,731	1,329	3,298	104				
TOTAL	**1,598,354**	**522,870**	**1,072,719**	**2,765**	**494.7**	**328.7**	**653.9**	
0–4	514	188	323	3	2.6	1.8	3.3	2017
5–9	167	9	158	0	0.8	0.1	1.6	
10–14	10,726	1,252	9,454	20	52.0	11.9	93.6	
15–19	437,904	99,864	337,290	750	2,072.4	924.5	3,265.7	
20–24	631,207	195,971	434,050	1,186	2,820.3	1,705.4	3,985.8	
25–29	321,857	127,007	194,267	583	1,406.0	1,091.9	1,725.4	
30–34	144,451	65,690	78,502	259	663.0	598.9	725.7	
35–39	74,202	36,427	37,621	154	357.2	351.1	361.8	
40–44	36,332	19,310	16,940	82	184.5	197.5	170.8	
45–54	36,229	22,431	13,713	85	84.7	106.3	63.3	
55–64	11,356	7,490	3,840	26	27.4	37.5	17.9	
65+	2,178	1,461	698	19	4.4	6.7	2.5	
Unknown Age	1,446	544	795	107				
TOTAL	**1,708,569**	**577,644**	**1,127,651**	**3,274**	**528.8**	**363.1**	**687.4**	

* No population data are available for unknown sex and age; therefore, rates are not calculated.

NOTE: This table should be used only for age comparisons. Cases in the 0–4 age group may include cases due to perinatal transmission.

Table 11A. Chlamydia — Reported Cases by Race/Hispanic Ethnicity, Age Group, and Sex, United States, 2017

Age Group	American Indians/ Alaska Natives			Asians			Blacks			Native Hawaiians/ Other Pacific Islanders		
	Total*	Male	Female	Total*	Male	Female	Total*	Male	Female	Total*	Male	Female
0–4	4	1	3	1	0	1	134	48	86	3	1	2
5–9	2	0	2	3	0	3	43	4	39	1	0	1
10–14	194	20	174	48	2	46	4,081	617	3,459	20	4	16
15–19	4,387	872	3,515	3,375	503	2,870	138,790	39,191	99,492	809	121	688
20–24	5,944	1,372	4,565	7,832	2,170	5,653	174,035	60,833	113,046	1,518	345	1,170
25–29	3,945	1,117	2,826	5,044	2,098	2,936	88,305	36,656	51,573	836	245	591
30–34	2,108	594	1,513	2,849	1,276	1,568	34,856	17,316	17,514	443	167	276
35–39	1,087	378	708	1,526	761	762	16,171	8,929	7,234	234	96	138
40–44	479	161	318	945	521	423	7,175	4,484	2,687	83	37	45
45–54	376	153	223	978	564	408	6,716	4,583	2,129	77	43	34
55–64	104	57	47	311	157	154	2,154	1,477	672	28	15	13
65+	14	9	5	61	43	18	326	227	98	2	1	1
Unknown Age	7	1	6	24	10	13	246	119	123	4	1	3
TOTAL	**18,651**	**4,735**	**13,905**	**22,997**	**8,105**	**14,855**	**473,032**	**174,484**	**298,152**	**4,058**	**1,076**	**2,978**

Age Group	Whites			Multirace			Hispanics			Other/ Unknown		
	Total*	Male	Female	Total*	Male	Female	Total*	Male	Female	Total*	Male	Female
0–4	86	37	49	2	2	0	61	17	44	223	82	138
5–9	22	2	20	2	0	2	36	1	35	58	2	56
10–14	1,895	95	1,797	100	7	93	1,370	135	1,234	3,018	372	2,635
15–19	101,211	17,027	84,129	3,075	564	2,511	56,164	11,094	45,033	130,093	30,492	99,052
20–24	159,863	45,452	114,290	3,989	1,114	2,873	83,245	22,760	60,423	194,781	61,925	132,030
25–29	77,826	30,193	47,575	1,902	848	1,052	45,461	16,751	28,655	98,538	39,099	59,059
30–34	35,739	16,283	19,437	907	562	345	21,961	9,360	12,577	45,588	20,132	25,272
35–39	18,463	9,331	9,119	475	324	150	11,759	5,207	6,530	24,487	11,401	12,980
40–44	8,768	4,907	3,849	244	174	69	5,996	2,817	3,171	12,642	6,209	6,378
45–54	10,095	7,063	3,026	248	205	43	4,810	2,745	2,053	12,929	7,075	5,797
55–64	3,484	2,750	734	64	60	4	1,011	560	450	4,200	2,414	1,766
65+	711	551	160	10	9	1	148	79	69	906	542	346
Unknown Age	232	99	126	1	0	1	209	68	140	723	246	383
TOTAL	**418,395**	**133,790**	**284,311**	**11,019**	**3,869**	**7,144**	**232,231**	**71,594**	**160,414**	**528,186**	**179,991**	**345,892**

* Total includes cases reported with unknown sex.

NOTE: These tables should be used only for race/Hispanic ethnicity comparisons. See Table 10 for age-specific cases and rates and Tables 3–5 for total and sex-specific cases and rates. Cases in the 0–4 age group may include cases due to perinatal transmission.

Table 11B. Chlamydia — Rates of Reported Cases per 100,000 Population by Race/Hispanic Ethnicity, Age Group, and Sex, United States, 2017

Age Group	American Indians/ Alaska Natives			Asians			Blacks			Native Hawaiians/ Other Pacific Islanders		
	Total*	Male	Female	Total*	Male	Female	Total*	Male	Female	Total*	Male	Female
0–4	2.4	1.2	3.7	0.1	0.0	0.2	4.9	3.4	6.4	7.3	4.8	10.1
5–9	1.1	0.0	2.3	0.3	0.0	0.6	1.5	0.3	2.8	2.4	0.0	5.0
10–14	110.2	22.4	200.7	4.7	0.4	9.0	146.1	43.6	250.8	49.0	19.5	78.8
15–19	2,411.9	943.3	3,929.4	321.8	95.1	552.1	4,653.0	2,589.3	6,771.6	1,998.1	581.5	3,495.9
20–24	3,064.9	1,380.4	4,828.4	620.1	338.5	908.9	5,276.1	3,627.4	6,971.7	3,394.8	1,498.7	5,392.7
25–29	2,071.6	1,148.1	3,034.1	332.1	282.2	378.6	2,711.6	2,264.3	3,149.2	1,604.8	902.7	2,368.5
30–34	1,278.1	719.8	1,836.1	186.0	174.7	195.7	1,245.2	1,280.4	1,210.6	888.6	654.8	1,133.5
35–39	718.1	504.2	926.7	106.4	114.1	99.3	606.3	705.5	516.2	535.5	428.0	648.8
40–44	340.8	232.5	446.0	66.9	78.9	56.3	288.3	383.0	203.8	221.3	194.8	243.1
45–54	123.3	103.2	142.3	40.1	49.7	31.3	127.3	185.2	76.0	109.2	123.3	95.4
55–64	36.6	42.8	31.2	15.9	17.7	14.3	45.7	68.5	26.2	49.5	54.2	45.0
65+	5.4	7.7	3.5	2.9	4.7	1.5	7.4	12.8	3.7	4.1	4.4	3.8
Unknown Age												
TOTAL	**781.2**	**402.6**	**1,148.0**	**129.6**	**96.0**	**159.7**	**1,175.8**	**907.3**	**1,419.9**	**715.4**	**376.6**	**1,058.0**

Age Group	Whites			Multirace			Hispanics		
	Total*	Male	Female	Total*	Male	Female	Total*	Male	Female
0–4	0.9	0.7	1.0	0.2	0.4	0.0	1.2	0.6	1.7
5–9	0.2	0.0	0.4	0.2	0.0	0.4	0.7	0.0	1.4
10–14	17.6	1.7	34.3	12.6	1.7	23.7	27.3	5.3	50.0
15–19	889.3	291.5	1,518.5	437.0	158.2	723.7	1,172.2	453.0	1,922.4
20–24	1,314.9	726.8	1,936.0	642.8	356.2	933.3	1,733.4	916.4	2,605.7
25–29	609.5	465.1	758.0	385.9	355.8	413.3	985.8	693.8	1,304.3
30–34	288.4	260.1	317.0	230.8	302.3	166.6	493.0	401.6	592.2
35–39	155.9	156.3	155.2	140.1	203.5	83.4	273.9	235.0	314.4
40–44	77.0	85.8	68.0	87.0	131.8	46.4	151.6	140.4	162.6
45–54	36.7	51.5	21.9	49.8	87.2	16.4	71.9	81.4	62.0
55–64	11.8	19.0	4.9	15.8	31.2	1.9	22.6	25.9	19.5
65+	1.9	3.2	0.8	2.8	5.6	0.5	3.7	4.6	3.1
Unknown Age									
TOTAL	**211.3**	**137.1**	**283.3**	**162.9**	**116.1**	**208.3**	**404.1**	**246.7**	**563.8**

* Total includes cases reported with unknown sex.

NOTE: These tables should be used only for race/Hispanic ethnicity comparisons. See Table 10 for age-specific cases and rates and Tables 3–5 for total and sex-specific cases and rates. Cases in the 0–4 age group may include cases due to perinatal transmission. No population data exist for unknown sex, unknown age, or unknown race; therefore rates are not calculated.

Table 12. Chlamydia Among Women Aged 15–24 Years — Reported Cases and Rates of Reported Cases by Age, United States, 2013–2017

Year	Age	Cases	Rate per 100,000 Population
2013	15	21,680	1,070.3
	16	40,528	1,994.3
	17	61,666	3,018.5
	18	90,330	4,332.6
	19	102,234	4,806.0
	20	99,556	4,617.4
	21	93,713	4,219.8
	22	81,884	3,600.6
	23	68,600	3,013.5
	24	55,792	2,548.7
	Total	**715,983**	**3,341.1**
2014	15	20,096	987.4
	16	38,507	1,891.0
	17	58,940	2,880.9
	18	87,040	4,224.2
	19	98,711	4,688.0
	20	98,480	4,581.9
	21	94,204	4,323.2
	22	82,581	3,679.3
	23	71,535	3,112.0
	24	59,076	2,567.1
	Total	**709,170**	**3,305.2**
2015	15	19,643	945.9
	16	37,786	1,847.7
	17	60,149	2,935.4
	18	89,481	4,339.6
	19	100,878	4,854.1
	20	99,861	4,703.6
	21	95,927	4,427.2
	22	84,740	3,855.7
	23	73,686	3,254.1
	24	62,558	2,697.2
	Total	**724,709**	**3,389.3**
2016	15	19,704	958.9
	16	39,066	1,874.5
	17	61,406	2,988.7
	18	93,174	4,521.3
	19	103,289	4,980.6
	20	100,524	4,812.4
	21	96,723	4,532.8
	22	84,813	3,892.5
	23	73,054	3,304.7
	24	63,274	2,777.9
	Total	**735,027**	**3,464.1**
2017	15	20,247	985.3
	16	40,681	1,952.0
	17	65,496	3,187.8
	18	98,907	4,799.4
	19	111,959	5,398.6
	20	107,397	5,141.4
	21	100,160	4,693.9
	22	86,678	3,978.1
	23	75,046	3,394.8
	24	64,769	2,843.5
	Total	**771,340**	**3,635.3**

NOTE: This table should be used only for age comparisons. Cases reported with unknown sex are not included in this table.

Table 13. Gonorrhea — Reported Cases and Rates of Reported Cases by State, Ranked by Rates, United States, 2017

Rank*	State	Cases	Rate per 100,000 Population
1	Mississippi	9,258	309.8
2	Alaska	2,189	295.1
3	Louisiana	12,017	256.7
4	South Carolina	12,623	254.4
5	Alabama	11,948	245.7
6	Oklahoma	9,081	231.4
7	North Carolina	22,871	225.4
8	Arkansas	6,710	224.5
9	Georgia	22,667	219.8
10	New Mexico	4,489	215.7
11	Missouri	13,086	214.8
12	Ohio	23,967	206.4
13	California	75,348	192.0
14	Nevada	5,520	187.8
15	Delaware	1,784	187.4
16	Tennessee	12,426	186.8
17	Illinois	23,859	186.4
18	Maryland	10,978	182.5
19	Arizona	12,502	180.4
20	Indiana	11,835	178.4
21	New York	34,099	172.7
	U.S. TOTAL†	**555,608**	**171.9**
22	Texas	47,409	170.2
23	Kentucky	7,417	167.2
24	Michigan	15,742	158.6
25	Kansas	4,545	156.3
26	Florida	31,683	153.7
27	Colorado	8,478	153.0
28	Virginia	12,596	149.7
29	South Dakota	1,290	149.1
30	Nebraska	2,653	139.1
31	Washington	9,915	136.0
32	Wisconsin	7,661	132.6
33	North Dakota	966	127.4
34	Oregon	5,022	122.7
35	Iowa	3,758	119.9
36	Pennsylvania	15,244	119.2
37	Minnesota	6,519	118.1
38	Massachusetts	7,737	113.6
39	Connecticut	3,913	109.4
40	New Jersey	9,439	105.5
41	Rhode Island	1,087	102.9
42	Hawaii	1,358	95.1
43	Utah	2,543	83.3
44	Montana	782	75.0
45	West Virginia	1,296	70.8
46	Wyoming	412	70.4
47	Idaho	987	58.6
48	Maine	620	46.6
49	New Hampshire	513	38.4
50	Vermont	203	32.5

* States were ranked by rate, then by case count, then in alphabetical order, with rates shown rounded to the nearest tenth.
† Total includes cases reported by the District of Columbia with 4,563 cases and a rate of 669.9, but excludes outlying areas (Guam with 202 cases and rate of 121.0, Puerto Rico with 588 cases and rate of 17.2, and Virgin Islands with 15 cases and rate of 13.9).

Table 14. Gonorrhea — Reported Cases and Rates of Reported Cases by State/Area and Region in Alphabetical Order, United States and Outlying Areas, 2013–2017

	Cases					Rates per 100,000 Population				
State/Area	**2013**	**2014**	**2015**	**2016**	**2017**	**2013**	**2014**	**2015**	**2016**	**2017**
Alabama	8,377	7,677	7,196	8,408	11,948	173.3	158.3	148.1	172.9	245.7
Alaska	1,128	1,341	1,113	1,454	2,189	153.4	182.0	150.7	196.0	295.1
Arizona	6,412	7,750	8,245	10,330	12,502	96.8	115.1	120.8	149.0	180.4
Arkansas	4,007	4,539	4,780	5,732	6,710	135.4	153.0	160.5	191.8	224.5
California	38,166	45,408	54,135	64,551	75,348	99.6	117.0	138.3	164.5	192.0
Colorado	2,820	3,170	4,387	5,975	8,478	53.5	59.2	80.4	107.8	153.0
Connecticut	2,860	2,333	2,088	2,731	3,913	79.5	64.9	58.1	76.4	109.4
Delaware	1,390	1,279	1,310	1,702	1,784	150.1	136.7	138.5	178.8	187.4
District of Columbia	2,478	1,883	2,742	3,226	4,563	383.3	285.8	407.9	473.6	669.9
Florida	20,818	20,944	24,125	28,162	31,683	106.5	105.3	119.0	136.6	153.7
Georgia	14,252	13,770	15,982	20,553	22,667	142.6	136.4	156.5	199.3	219.8
Hawaii	718	1,020	1,239	1,467	1,358	51.1	71.9	86.5	102.7	95.1
Idaho	211	443	472	635	987	13.1	27.1	28.5	37.7	58.6
Illinois	16,464	15,970	17,130	21,199	23,859	127.8	124.0	133.2	165.6	186.4
Indiana	7,144	7,289	7,843	9,451	11,835	108.7	110.5	118.5	142.5	178.4
Iowa	1,472	1,641	2,247	2,600	3,758	47.6	52.8	71.9	82.9	119.9
Kansas	2,161	2,568	2,536	3,353	4,545	74.7	88.4	87.1	115.3	156.3
Kentucky	4,315	4,353	4,678	5,812	7,417	98.2	98.6	105.7	131.0	167.2
Louisiana	8,669	9,002	10,282	10,782	12,017	187.4	193.6	220.1	230.3	256.7
Maine	245	237	417	451	620	18.4	17.8	31.4	33.9	46.6
Maryland	5,989	6,108	6,858	9,523	10,978	101.0	102.2	114.2	158.3	182.5
Massachusetts	3,106	3,817	3,817	4,980	7,737	46.4	56.6	56.2	73.1	113.6
Michigan	10,569	9,688	10,330	12,450	15,742	106.8	97.8	104.1	125.4	158.6
Minnesota	3,873	4,073	4,097	5,104	6,519	71.5	74.6	74.6	92.5	118.1
Mississippi	5,096	5,625	5,775	7,157	9,258	170.4	187.9	193.0	239.5	309.8
Missouri	7,546	7,387	8,942	11,479	13,086	124.8	121.8	147.0	188.4	214.8
Montana	224	434	844	867	782	22.1	42.4	81.7	83.2	75.0
Nebraska	1,385	1,459	1,703	2,156	2,653	74.1	77.5	89.8	113.1	139.1
Nevada	2,714	3,188	3,630	4,380	5,520	97.3	112.3	125.6	149.0	187.8
New Hampshire	121	226	245	456	513	9.1	17.0	18.4	34.2	38.4
New Jersey	7,014	6,636	7,228	8,162	9,439	78.8	74.2	80.7	91.3	105.5
New Mexico	1,918	2,246	2,489	3,516	4,489	92.0	107.7	119.4	169.0	215.7
New York	19,919	20,758	25,561	29,000	34,099	101.4	105.1	129.1	146.9	172.7
North Carolina	13,666	14,415	19,809	19,687	22,871	138.8	145.0	197.2	194.0	225.4
North Dakota	492	694	684	1,000	966	68.0	93.8	90.4	131.9	127.4
Ohio	16,619	16,237	16,564	20,487	23,967	143.6	140.0	142.6	176.4	206.4
Oklahoma	5,303	6,137	6,542	7,574	9,081	137.7	158.2	167.3	193.0	231.4
Oregon	1,729	2,320	3,232	4,353	5,022	44.0	58.4	80.2	106.3	122.7
Pennsylvania	13,874	12,710	12,791	14,603	15,244	108.6	99.4	99.9	114.2	119.2
Rhode Island	454	590	580	716	1,087	43.2	55.9	54.9	67.8	102.9
South Carolina	7,194	8,253	8,206	9,194	12,623	150.7	170.8	167.6	185.3	254.4
South Dakota	784	892	1,048	1,269	1,290	92.8	104.6	122.1	146.6	149.1
Tennessee	7,376	7,199	8,386	10,179	12,426	113.5	109.9	127.1	153.0	186.8
Texas	33,835	35,322	39,717	42,472	47,409	127.9	131.0	144.6	152.4	170.2
Utah	951	1,441	1,562	2,100	2,543	32.8	49.0	52.1	68.8	83.3
Vermont	97	84	155	126	203	15.5	13.4	24.8	20.2	32.5
Virginia	6,952	8,250	8,099	11,084	12,596	84.2	99.1	96.6	131.8	149.7
Washington	4,369	6,221	7,171	8,174	9,915	62.7	88.1	100.0	112.2	136.0
West Virginia	1,063	841	769	919	1,296	57.3	45.5	41.7	50.2	70.8
Wisconsin	4,599	4,078	5,260	6,498	7,661	80.1	70.8	91.1	112.4	132.6
Wyoming	66	116	175	275	412	11.3	19.9	29.9	47.0	70.4
U.S. TOTAL	**333,004**	**350,062**	**395,216**	**468,514**	**555,608**	**105.3**	**109.8**	**123.0**	**145.0**	**171.9**
Northeast	47,690	47,391	52,882	61,225	72,855	85.2	84.4	94.0	108.9	129.6
Midwest	73,108	71,976	78,384	97,046	115,881	108.2	106.2	115.4	142.8	170.6
South	150,780	155,597	175,256	202,166	237,327	127.4	129.9	144.6	165.3	194.0
West	61,426	75,098	88,694	108,077	129,545	82.7	99.9	116.6	141.0	169.0
Guam	92	99	147	133	202	57.4	61.5	90.9	79.7	121.0
Puerto Rico	356	454	620	744	588	9.8	12.8	17.8	21.8	17.2
Virgin Islands	58	84	52	35	15	55.4	80.6	50.5	32.5	13.9
OUTLYING AREAS	**506**	**637**	**819**	**912**	**805**	**13.0**	**16.7**	**21.9**	**24.7**	**21.8**
TOTAL	**333,510**	**350,699**	**396,035**	**469,426**	**556,413**	**104.2**	**108.7**	**121.8**	**143.6**	**170.3**

NOTE: See Section A1.11 in the Appendix for more information on interpreting case counts and rates in outlying areas.

Table 15. Gonorrhea Among Women — Reported Cases and Rates of Reported Cases by State/Area and Region in Alphabetical Order, United States and Outlying Areas, 2013–2017

State/Area	Cases					Rates per 100,000 Population				
	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Alabama	4,668	4,090	3,629	4,088	5,693	187.6	163.6	144.8	163.0	227.0
Alaska	589	665	567	738	1,090	168.5	190.3	162.3	208.6	308.1
Arizona	3,102	3,564	3,505	4,315	5,219	93.1	105.2	102.0	123.7	149.6
Arkansas	2,160	2,527	2,510	2,964	3,525	143.4	167.5	165.6	195.0	231.9
California	14,258	16,009	18,404	20,914	24,599	74.0	82.0	93.4	105.9	124.5
Colorado	1,243	1,318	1,832	2,323	3,465	47.4	49.5	67.5	84.3	125.8
Connecticut	1,419	1,108	851	1,165	1,660	77.0	60.1	46.3	63.6	90.7
Delaware	763	693	641	799	757	159.7	143.5	131.3	162.6	154.1
District of Columbia	953	858	874	857	1,287	280.1	247.8	247.2	239.4	359.6
Florida	9,718	9,228	10,078	11,488	12,769	97.3	90.7	97.2	109.0	121.1
Georgia	7,060	6,552	7,322	9,156	9,873	138.1	126.7	139.9	173.1	186.6
Hawaii	264	350	446	551	476	38.0	49.9	63.2	77.5	67.0
Idaho	87	196	197	237	357	10.8	24.0	23.8	28.2	42.5
Illinois	8,574	7,559	7,698	8,920	9,750	130.8	115.2	117.6	137.0	149.8
Indiana	3,796	3,819	3,984	4,811	5,931	113.8	114.1	118.6	143.0	176.3
Iowa	812	862	1,122	1,267	1,887	52.2	55.1	71.4	80.4	119.8
Kansas	1,222	1,464	1,262	1,695	2,269	84.2	100.5	86.6	116.1	155.5
Kentucky	2,331	2,270	2,242	2,716	3,478	104.4	101.3	99.8	120.7	154.5
Louisiana	4,927	5,049	5,535	5,493	5,978	208.6	212.5	231.9	229.6	249.9
Maine	119	98	143	134	225	17.5	14.4	21.1	19.7	33.1
Maryland	2,841	2,793	3,090	3,944	4,629	93.0	90.7	99.8	127.1	149.2
Massachusetts	1,168	1,215	1,027	1,390	2,495	33.9	35.0	29.4	39.6	71.2
Michigan	5,865	5,129	5,191	6,201	7,604	116.5	101.7	102.9	122.9	150.8
Minnesota	2,037	1,802	1,675	2,214	2,939	74.7	65.6	60.7	79.9	106.0
Mississippi	2,726	2,987	3,131	3,665	4,563	177.4	194.0	203.2	238.0	296.3
Missouri	3,944	3,620	4,187	5,228	5,997	128.0	117.2	135.1	168.6	193.4
Montana	127	221	462	493	427	25.1	43.4	89.9	95.2	82.5
Nebraska	694	770	870	1,055	1,285	73.9	81.5	91.5	110.3	134.4
Nevada	1,203	1,294	1,402	1,611	1,972	86.9	91.6	97.3	109.9	134.5
New Hampshire	52	91	65	132	179	7.8	13.6	9.7	19.6	26.6
New Jersey	3,484	3,082	3,110	3,338	3,731	76.5	67.3	67.8	72.9	81.5
New Mexico	823	961	1,087	1,542	2,073	78.3	91.3	103.4	146.8	197.4
New York	8,020	7,077	8,593	8,709	9,649	79.3	69.6	84.4	85.7	95.0
North Carolina	7,547	7,759	10,064	9,527	11,013	149.5	152.2	195.4	182.7	211.2
North Dakota	301	385	375	516	528	85.2	106.8	101.9	139.8	143.1
Ohio	9,176	8,735	8,466	10,130	11,736	155.2	147.6	142.8	171.0	198.2
Oklahoma	3,000	3,451	3,580	4,052	4,721	154.4	176.3	181.3	204.7	238.5
Oregon	566	786	1,158	1,519	1,920	28.5	39.2	56.9	73.5	92.9
Pennsylvania	7,206	6,164	5,889	6,135	5,947	110.3	94.3	90.1	94.1	91.2
Rhode Island	192	218	172	221	357	35.4	40.1	31.6	40.7	65.7
South Carolina	4,050	4,527	4,401	4,709	6,470	165.2	182.3	174.8	184.4	253.4
South Dakota	464	557	621	757	722	110.3	131.4	145.6	176.4	168.2
Tennessee	3,617	3,419	3,809	4,681	5,667	108.7	101.8	112.6	137.3	166.3
Texas	17,206	17,253	17,843	18,620	20,963	129.4	127.1	129.0	132.7	149.4
Utah	373	565	507	717	865	25.9	38.6	34.1	47.3	57.1
Vermont	46	35	85	32	87	14.5	11.0	26.8	10.1	27.5
Virginia	3,678	4,361	4,007	5,056	5,734	87.6	103.1	94.1	118.3	134.1
Washington	1,704	2,504	2,797	2,943	3,488	48.8	70.9	78.0	80.7	95.7
West Virginia	539	461	365	422	618	57.4	49.2	39.1	45.6	66.8
Wisconsin	2,455	2,046	2,557	3,189	3,696	84.9	70.6	88.1	109.8	127.2
Wyoming	39	61	86	120	224	13.7	21.3	29.9	41.9	78.2
U.S. TOTAL	**163,208**	**162,608**	**173,514**	**197,499**	**232,587**	**101.7**	**100.4**	**106.3**	**120.4**	**141.8**
Northeast	21,706	19,088	19,935	21,256	24,330	75.6	66.3	69.1	73.8	84.5
Midwest	39,340	36,748	38,008	45,983	54,344	114.8	107.0	110.4	133.6	157.9
South	77,784	78,278	83,121	92,237	107,738	129.0	128.2	134.5	147.9	172.7
West	24,378	28,494	32,450	38,023	46,175	65.5	75.6	85.1	98.9	120.1
Guam	43	47	67	59	97	54.4	59.2	84.0	72.8	119.7
Puerto Rico	120	161	259	313	230	6.4	8.7	14.3	17.5	12.9
Virgin Islands	41	54	28	14	5	73.4	97.1	50.8	24.9	8.9
OUTLYING AREAS	**204**	**262**	**354**	**386**	**332**	**10.1**	**13.2**	**18.1**	**20.1**	**17.2**
TOTAL	**163,412**	**162,870**	**173,868**	**197,885**	**232,919**	**100.6**	**99.4**	**105.3**	**119.2**	**140.3**

NOTE: Cases reported with unknown sex are not included in this table. See Section A1.11 in the Appendix for more information on interpreting case counts and rates in outlying areas.

Table 16. Gonorrhea Among Men — Reported Cases and Rates of Reported Cases by State/Area and Region in Alphabetical Order, United States and Outlying Areas, 2013–2017

	Cases					Rates per 100,000 Population				
State/Area	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Alabama	3,680	3,563	3,519	4,265	6,214	156.9	151.6	149.5	181.1	263.8
Alaska	539	676	546	716	1,099	139.8	174.5	140.4	184.5	283.2
Arizona	3,310	4,186	4,724	6,011	7,256	100.5	125.2	139.3	174.6	210.8
Arkansas	1,843	2,007	2,270	2,768	3,184	126.8	137.7	155.2	188.6	216.9
California	23,849	29,310	35,644	43,259	50,577	125.1	152.1	183.3	221.9	259.5
Colorado	1,577	1,852	2,555	3,652	5,013	59.6	68.8	93.1	131.1	179.9
Connecticut	1,440	1,219	1,237	1,564	2,246	82.1	69.5	70.6	89.6	128.7
Delaware	627	586	669	903	1,027	140.0	129.4	146.1	196.0	222.9
District of Columbia	1,519	1,011	1,817	2,298	3,254	496.0	323.4	570.3	710.9	1006.7
Florida	11,049	11,686	14,039	16,661	18,904	115.5	120.2	141.8	165.4	187.7
Georgia	7,075	7,137	8,631	11,378	12,741	144.9	144.9	173.3	226.6	253.8
Hawaii	454	669	793	914	882	64.0	93.2	109.3	127.4	122.9
Idaho	124	247	275	396	629	15.4	30.2	33.2	46.9	74.6
Illinois	7,872	8,386	9,335	12,255	14,057	124.4	132.7	147.8	194.8	223.4
Indiana	3,347	3,465	3,854	4,636	5,899	103.4	106.6	118.2	141.8	180.4
Iowa	660	779	1,122	1,332	1,870	43.0	50.5	72.3	85.4	119.9
Kansas	939	1,104	1,274	1,658	2,276	65.1	76.3	87.6	114.5	157.2
Kentucky	1,966	2,068	2,430	3,006	3,906	90.9	95.2	111.5	137.5	178.6
Louisiana	3,742	3,953	4,747	5,289	6,039	165.3	173.8	207.9	231.0	263.8
Maine	126	137	274	316	392	19.4	21.0	42.1	48.4	60.1
Maryland	3,145	3,304	3,755	5,573	6,346	109.4	114.1	129.0	191.2	217.7
Massachusetts	1,932	2,590	2,768	3,575	5,206	59.5	79.2	84.0	108.1	157.5
Michigan	4,694	4,551	5,129	6,245	8,121	96.6	93.5	105.1	127.8	166.3
Minnesota	1,835	2,260	2,420	2,881	3,568	68.1	83.3	88.6	104.9	129.9
Mississippi	2,370	2,637	2,638	3,486	4,681	162.9	181.3	181.7	240.6	323.1
Missouri	3,602	3,767	4,755	6,251	7,088	121.5	126.7	159.3	208.9	236.9
Montana	97	213	381	374	355	19.0	41.4	73.4	71.3	67.6
Nebraska	674	686	833	1,097	1,366	72.5	73.2	88.1	115.4	143.7
Nevada	1,509	1,892	2,218	2,763	3,539	107.4	132.6	152.9	187.4	240.1
New Hampshire	69	135	180	324	334	10.6	20.6	27.4	49.0	50.5
New Jersey	3,514	3,544	4,108	4,810	5,699	80.9	81.2	94.0	110.1	130.5
New Mexico	1,095	1,284	1,401	1,971	2,412	105.9	124.3	135.6	191.2	234.0
New York	11,844	13,624	16,893	20,224	24,383	124.2	142.2	175.8	210.9	254.3
North Carolina	6,113	6,652	9,744	10,160	11,857	127.3	137.3	199.2	206.0	240.4
North Dakota	191	309	309	484	438	51.6	81.5	79.5	124.4	112.6
Ohio	7,443	7,502	8,098	10,357	12,231	131.5	132.2	142.4	182.0	214.9
Oklahoma	2,303	2,685	2,962	3,521	4,360	120.7	139.8	152.9	181.1	224.3
Oregon	1,163	1,532	2,073	2,834	3,095	59.8	78.0	104.0	139.8	152.7
Pennsylvania	6,659	6,543	6,892	8,449	9,285	106.7	104.6	110.0	134.9	148.3
Rhode Island	262	372	408	495	729	51.4	72.7	79.7	96.5	142.1
South Carolina	3,133	3,689	3,781	4,436	6,122	134.9	157.0	158.9	184.2	254.2
South Dakota	320	335	427	512	568	75.4	78.0	98.8	117.4	130.2
Tennessee	3,758	3,778	4,577	5,497	6,758	118.7	118.4	142.3	169.5	208.4
Texas	16,410	18,035	21,792	23,779	26,344	124.8	134.8	159.8	171.9	190.5
Utah	578	876	1,055	1,383	1,672	39.6	59.2	70.0	90.0	108.9
Vermont	51	49	70	94	116	16.5	15.9	22.7	30.5	37.6
Virginia	3,272	3,879	4,085	5,996	6,779	80.5	94.7	99.0	144.9	163.9
Washington	2,665	3,717	4,374	5,231	6,425	76.5	105.3	122.0	143.7	176.4
West Virginia	524	380	404	497	678	57.2	41.6	44.3	54.9	74.8
Wisconsin	2,140	2,027	2,697	3,302	3,961	75.0	70.9	94.1	114.9	137.8
Wyoming	27	55	88	155	188	9.1	18.5	29.4	51.8	62.9
U.S. TOTAL	**169,130**	**186,943**	**221,070**	**270,033**	**322,169**	**108.7**	**119.1**	**139.7**	**169.7**	**202.5**
Northeast	25,897	28,213	32,830	39,851	48,390	95.1	103.2	119.7	145.4	176.6
Midwest	33,717	35,171	40,253	51,010	61,443	101.3	105.3	120.2	152.1	183.2
South	72,529	77,050	91,860	109,513	129,194	124.9	131.2	154.6	182.7	215.5
West	36,987	46,509	56,127	69,659	83,142	99.9	124.1	148.1	182.3	217.6
Guam	49	52	80	74	105	60.2	63.7	97.6	86.2	122.3
Puerto Rico	236	293	359	431	356	13.6	17.2	21.7	26.5	21.9
Virgin Islands	17	30	24	21	10	34.8	61.8	50.2	40.8	19.4
OUTLYING AREAS	**302**	**375**	**463**	**526**	**471**	**16.2**	**20.4**	**25.9**	**29.9**	**26.7**
TOTAL	**169,432**	**187,318**	**221,533**	**270,559**	**322,640**	**107.6**	**118.0**	**138.4**	**168.2**	**200.6**

NOTE: Cases reported with unknown sex are not included in this table. See Section A1.11 in the Appendix for more information on interpreting case counts and rates in outlying areas.

Table 17. Gonorrhea — Reported Cases and Rates of Reported Cases in Selected Metropolitan Statistical Areas (MSAs)* in Alphabetical Order, United States, 2013–2017

	Cases					Rates per 100,000 Population				
MSAs	**2013**	**2014**	**2015**	**2016**	**2017**	**2013**	**2014**	**2015**	**2016**	**2017**
Atlanta-Sandy Springs-Roswell, GA	5,452†	7,256	6,471†	11,670	12,373	98.7†	129.2	113.3†	201.6	213.7
Austin-Round Rock, TX	2,570	2,860	3,199	3,670	4,414	136.5	147.2	159.9	178.5	214.6
Baltimore-Columbia-Towson, MD	3,233	3,459	4,179	5,854	6,892	116.7	124.2	149.4	209.2	246.2
Birmingham-Hoover, AL	2,130	1,957	2,088	2,025‡	3,486	186.8	171.1	182.3	176.5‡	303.8
Boston-Cambridge-Newton, MA-NH	2,372	2,716†	2,487†	3,002†	4,385†	50.6	57.4†	52.1†	62.6†	91.5†
Buffalo-Cheektowaga-Niagara Falls, NY	1,232	1,342	1,982	2,180	2,448	108.6	118.1	174.6	192.4	216.1
Charlotte-Concord-Gastonia, NC-SC	3,058	3,645	4,673	4,749	5,411	130.9	153.1	192.6	191.9	218.7
Chicago-Naperville-Elgin, IL-IN-WI	12,793	12,630	13,529	16,634	18,558	134.1	132.2	141.6	174.9	195.1
Cincinnati, OH-KY-IN	3,229	3,346	3,713	4,096	4,716	151.1	155.7	172.1	189.2	217.8
Cleveland-Elyria, OH	4,155	3,802	3,428	4,205	5,843	201.2	184.2	166.3	204.6	284.2
Columbus, OH	3,220	3,260	3,676	4,821	5,197	163.7	163.4	181.8	236.1	254.6
Dallas-Fort Worth-Arlington, TX	8,354	9,195	11,334	11,092	12,846	122.7	132.2	159.6	153.3	177.6
Denver-Aurora-Lakewood, CO	1,828	2,016	2,838	3,848	5,408	67.8	73.2	100.8	134.9	189.5
Detroit-Warren-Dearborn, MI	6,564	5,311	5,494	6,816	8,668	152.8	123.6	127.7	158.6	201.7
Hartford-West Hartford-East Hartford, CT	1,065	894	726†	963†	1,831	87.6	73.6	59.9†	79.8†	151.7
Houston-The Woodlands-Sugar Land, TX	7,783	8,299	9,290	10,378	10,789	123.3	127.9	139.6	153.2	159.3
Indianapolis-Carmel-Anderson, IN	3,616	3,759	3,716	4,808	5,430	185.1	190.7	186.8	239.9	270.9
Jacksonville, FL	2,321	2,608	2,740	3,168	3,721	166.4	183.8	189.0	214.3	251.7
Kansas City, MO-KS	2,696	2,642	2,943	4,009	5,274	131.2	127.6	141.0	190.5	250.6
Las Vegas-Henderson-Paradise, NV	2,256	2,653	2,975	3,653	4,430	111.2	128.2	140.7	169.5	205.5
Los Angeles-Long Beach-Anaheim, CA	14,449	17,130	19,867	25,438	29,669	110.0	129.2	148.9	191.1	222.9
Louisville-Jefferson County, KY-IN	2,063	1,962	2,187	2,957	3,413	163.4	154.5	171.1	230.4	265.9
Memphis, TN-MS-AR	3,086	2,625	3,143	3,746	4,653	230.0	195.4	233.8	279.0	346.5
Miami-Fort Lauderdale-West Palm Beach, FL	5,801	6,128	6,905	7,984	8,848	99.5	103.3	114.8	131.6	145.9
Milwaukee-Waukesha-West Allis, WI	3,179	2,584	3,719	4,454	4,910	202.5	164.4	236.0	283.2	312.2
Minneapolis-St. Paul-Bloomington, MN-WI	3,188†	3,341	3,289	4,123	5,260	92.2†	95.6	93.3	116.1	148.1
Nashville-Davidson-Murfreesboro-Franklin, TN	1,806	1,922	2,200	2,695	2,706	102.7	107.2	120.2	144.5	145.1
New Orleans-Metairie, LA	2,448	2,667	2,929	3,414	3,638	197.3	213.0	231.9	269.1	286.7
New York-Newark-Jersey City, NY-NJ-PA	19,319	20,054	23,721	26,186	32,018	96.8	99.8	117.5	129.9	158.9
Oklahoma City, OK	2,352	2,366	2,403	2,953	3,418	178.2	177.0	176.9	215.0	248.9
Orlando-Kissimmee-Sanford, FL	2,514	2,571	3,073	3,393	4,290	110.9	110.8	128.7	139.0	175.7
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	10,557	9,618	9,724	11,394	12,096	174.9	158.9	160.2	187.7	199.3
Phoenix-Mesa-Scottsdale, AZ	4,918	5,944	6,495	8,086	9,433	111.8	132.4	142.0	173.5	202.4
Pittsburgh, PA	2,827	2,602	2,422	2,601	2,370	119.7	110.4	102.9	111.0	101.2
Portland-Vancouver-Hillsboro, OR-WA	1,199	1,499	2,386	3,177	3,444	51.8	63.8	99.9	131.0	142.0
Providence-Warwick, RI-MA	593	913†	834†	1,108†	1,561†	37.0	56.7†	51.7†	68.6†	96.7†
Raleigh, NC	1,384	1,408	2,018	1,915	2,491	114.0	113.3	158.5	147.0	191.2
Richmond, VA	1,658	2,173	2,200	3,198	3,200	133.1	172.5	173.0	249.5	249.7
Riverside-San Bernardino-Ontario, CA	3,273	4,292	4,904	5,958	7,329	74.7	96.6	109.2	131.6	161.9
Sacramento-Roseville-Arden-Arcade, CA	2,597	2,616	3,317	3,402	4,057	117.2	116.6	145.9	148.1	176.7
Salt Lake City, UT	690	1,026	1,078	1,462	1,693	60.5	89.0	92.1	123.3	142.7
San Antonio-New Braunfels, TX	3,352	3,155	4,160	4,779	4,891	147.2	135.5	174.5	196.7	201.3
San Diego-Carlsbad, CA	2,825	3,420	3,691	4,989	5,973	88.0	104.8	111.9	150.4	180.0
San Francisco-Oakland-Hayward, CA	5,681	7,110	9,330	10,669	12,169	125.8	154.8	200.4	228.0	260.1
San Jose-Sunnyvale-Santa Clara, CA	1,145	1,552	1,857	1,976	2,528	59.6	79.5	93.9	99.9	127.8
Seattle-Tacoma-Bellevue, WA	2,990	3,931	4,766	5,149	6,667	82.8	107.1	127.7	135.5	175.5
St. Louis, MO-IL	4,492	4,346	5,257	6,558	6,699	160.4	154.9	187.0	233.6	238.7
Tampa-St. Petersburg-Clearwater, FL	3,660	3,455	3,916	4,408	4,661	127.5	118.5	131.6	145.4	153.7
Virginia Beach-Norfolk-Newport News, VA-NC	2,581	3,206	3,300	4,320	4,785	151.2	186.8	191.3	250.2	277.1
Washington-Arlington-Alexandria, DC-VA-MD-WV	5,616	2,974	3,008	4,335	9,682	94.4	49.3	49.3	70.7	157.9
SELECTED MSAs TOTAL	**202,170**	**212,240**	**239,580**	**288,468**	**340,672**	**117.0**	**121.4**	**135.6**	**162.1**	**191.5**

* MSAs were selected on the basis of the largest population in the 2010 U.S. Census.

† The variable used to identify county, which is used to classify cases into MSAs, was complete for ≤95% of cases in a state contributing data to this MSA. See Section A1.4 in the Appendix for more information.

‡ 2016 county data for Alabama have been corrected and may not match previous reports.

Table 18. Gonorrhea Among Women — Reported Cases and Rates of Reported Cases in Selected Metropolitan Statistical Areas (MSAs)* in Alphabetical Order, United States, 2013–2017

MSAs	Cases					Rates per 100,000 Population				
	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Atlanta-Sandy Springs-Roswell, GA	2,458[†]	3,030	2,578[†]	4,696	4,723	86.5[†]	104.7	87.5[†]	157.0	157.9
Austin-Round Rock, TX	1,078	1,213	1,039	1,162	1,522	114.8	124.9	103.9	113.1	148.1
Baltimore-Columbia-Towson, MD	1,542	1,608	1,964	2,492	3,059	107.5	111.5	135.6	171.9	211.0
Birmingham-Hoover, AL	1,099	970	999	943[‡]	1,644	186.0	163.4	167.9	158.4[‡]	276.2
Boston-Cambridge-Newton, MA-NH	828	844[†]	601[†]	720[†]	1,242[†]	34.3	34.7[†]	24.5[†]	29.2[†]	50.4[†]
Buffalo-Cheektowaga-Niagara Falls, NY	594	664	959	985	1,157	101.6	113.4	164.0	168.9	198.4
Charlotte-Concord-Gastonia, NC-SC	1,700	1,962	2,419	2,296	2,554	141.7	160.2	193.8	180.1	200.3
Chicago-Naperville-Elgin, IL-IN-WI	6,374	5,662	5,696	6,481	6,997	130.9	115.9	116.8	133.5	144.1
Cincinnati, OH-KY-IN	1,932	1,913	2,020	2,183	2,481	177.1	174.3	183.4	197.7	224.7
Cleveland-Elyria, OH	2,328	2,021	1,745	2,134	3,043	217.6	189.2	163.6	200.7	286.2
Columbus, OH	1,500	1,473	1,638	2,105	2,165	150.0	145.3	159.5	203.0	208.8
Dallas-Fort Worth-Arlington, TX	3,921	4,153	4,963	4,577	5,504	113.6	117.5	137.4	124.5	149.7
Denver-Aurora-Lakewood, CO	724	780	1,096	1,403	2,083	53.5	56.4	77.7	98.1	145.7
Detroit-Warren-Dearborn, MI	3,614	2,698	2,592	3,190	4,008	163.5	122.0	117.2	144.5	181.5
Hartford-West Hartford-East Hartford, CT	543	425	310[†]	412[†]	796	87.2	68.3	50.0[†]	66.7[†]	128.9
Houston-The Woodlands-Sugar Land, TX	4,033	4,151	4,113	4,422	4,422	127.2	127.2	122.8	129.7	129.7
Indianapolis-Carmel-Anderson, IN	1,761	1,828	1,791	2,264	2,533	176.4	181.3	176.1	220.9	247.2
Jacksonville, FL	1,121	1,288	1,237	1,402	1,643	156.7	176.9	166.5	184.9	216.7
Kansas City, MO-KS	1,424	1,361	1,409	1,875	2,448	136.0	128.9	132.6	174.9	228.4
Las Vegas-Henderson-Paradise, NV	1,015	1,039	1,129	1,341	1,518	100.5	100.5	106.7	124.1	140.5
Los Angeles-Long Beach-Anaheim, CA	4,578	5,029	5,778	7,083	8,808	68.9	74.8	85.4	104.9	130.5
Louisville-Jefferson County, KY-IN	1,079	992	1,012	1,278	1,493	167.0	152.6	154.8	194.8	227.5
Memphis, TN-MS-AR	1,550	1,371	1,469	1,818	2,304	222.0	196.0	209.8	259.7	329.2
Miami-Fort Lauderdale-West Palm Beach, FL	2,225	2,123	2,252	2,606	2,699	74.2	69.5	72.7	83.4	86.4
Milwaukee-Waukesha-West Allis, WI	1,655	1,298	1,850	2,208	2,346	205.5	160.8	228.8	274.0	291.1
Minneapolis-St. Paul-Bloomington, MN-WI	1,641[†]	1,388	1,229	1,676	2,256	93.8[†]	78.6	69.0	93.5	125.9
Nashville-Davidson-Murfreesboro-Franklin, TN	838	790	888	1,129	1,036	93.1	86.0	94.7	118.1	108.3
New Orleans-Metairie, LA	1,317	1,339	1,423	1,527	1,512	206.1	207.2	218.1	233.1	230.8
New York-Newark-Jersey City, NY-NJ-PA	7,615	6,544	7,349	7,134	8,210	73.9	63.1	70.6	68.6	78.9
Oklahoma City, OK	1,305	1,310	1,267	1,558	1,771	195.1	193.2	183.8	223.8	254.4
Orlando-Kissimmee-Sanford, FL	1,114	1,109	1,254	1,326	1,569	96.3	93.4	102.7	106.2	125.7
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	5,052	4,461	4,277	4,640	4,544	162.0	142.7	136.4	148.0	145.0
Phoenix-Mesa-Scottsdale, AZ	2,318	2,658	2,708	3,259	3,807	104.8	117.6	117.6	138.9	162.3
Pittsburgh, PA	1,715	1,415	1,239	1,153	948	141.1	116.8	102.5	95.9	78.9
Portland-Vancouver-Hillsboro, OR-WA	325	382	764	1,005	1,208	27.8	32.2	63.2	82.0	98.5
Providence-Warwick, RI-MA	261	325[†]	260[†]	368[†]	559[†]	31.6	39.2[†]	31.3[†]	44.3[†]	67.3[†]
Raleigh, NC	677	638	857	785	1,101	108.9	100.2	131.4	117.4	164.7
Richmond, VA	957	1,194	1,141	1,473	1,432	148.7	183.4	173.6	222.2	216.0
Riverside-San Bernardino-Ontario, CA	1,576	1,966	2,208	2,515	3,101	71.7	88.1	97.9	110.5	136.3
Sacramento-Roseville-Arden-Arcade, CA	1,323	1,246	1,538	1,463	1,613	117.0	108.8	132.5	124.7	137.4
Salt Lake City, UT	263	376	325	480	549	46.4	65.5	55.8	81.3	93.0
San Antonio-New Braunfels, TX	1,624	1,445	1,785	1,981	2,228	140.7	122.4	147.8	161.1	181.1
San Diego-Carlsbad, CA	827	1,038	1,018	1,479	1,593	51.8	63.9	62.1	89.7	96.6
San Francisco-Oakland-Hayward, CA	1,491	1,836	2,101	2,183	2,646	65.2	78.9	89.1	92.2	111.7
San Jose-Sunnyvale-Santa Clara, CA	446	557	642	614	772	46.7	57.4	65.4	62.6	78.7
Seattle-Tacoma-Bellevue, WA	988	1,412	1,662	1,556	2,011	54.7	76.9	89.0	81.9	105.8
St. Louis, MO-IL	2,313	2,087	2,436	2,911	2,969	160.2	144.3	168.1	201.4	205.4
Tampa-St. Petersburg-Clearwater, FL	1,774	1,619	1,676	1,815	1,955	119.8	107.6	109.2	116.0	125.0
Virginia Beach-Norfolk-Newport News, VA-NC	1,341	1,711	1,701	2,118	2,340	154.7	196.4	194.4	241.5	266.8
Washington-Arlington-Alexandria, DC-VA-MD-WV	2,278	1,163	1,064	1,489	3,031	74.8	37.7	34.1	47.5	96.6
SELECTED MSAs TOTAL	**92,055**	**89,905**	**95,471**	**109,713**	**127,953**	**104.4**	**100.7**	**105.9**	**120.9**	**141.0**

* MSAs were selected on the basis of the largest population in the 2010 U.S. Census.

[†] The variable used to identify county, which is used to classify cases into MSAs, was complete for ≤95% of cases in a state contributing data to this MSA. See Section A1.4 in the Appendix for more information.

[‡] 2016 county data for Alabama have been corrected and may not match previous reports.

NOTE: Cases reported with unknown sex are not included in this table.

Table 19. Gonorrhea Among Men — Reported Cases and Rates of Reported Cases in Selected Metropolitan Statistical Areas (MSAs)* in Alphabetical Order, United States, 2013–2017

MSAs	Cases					Rates per 100,000 Population				
	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Atlanta-Sandy Springs-Roswell, GA	2,952†	4,177	3,885†	6,960	7,622	110.1†	153.5	140.5†	248.6	272.3
Austin-Round Rock, TX	1,295	1,635	2,144	2,499	2,882	137.2	168.2	214.2	242.9	280.1
Baltimore-Columbia-Towson, MD	1,690	1,840	2,202	3,359	3,833	126.4	137.0	163.2	249.0	284.1
Birmingham-Hoover, AL	1,029	979	1,075	1,068‡	1,827	187.3	177.9	195.2	193.4‡	330.9
Boston-Cambridge-Newton, MA-NH	1,541	1,870†	1,881†	2,274†	3,120†	67.8	81.4†	81.1†	97.6†	134.0†
Buffalo-Cheektowaga-Niagara Falls, NY	638	678	1,023	1,195	1,291	116.2	123.1	185.8	217.5	234.9
Charlotte-Concord-Gastonia, NC-SC	1,356	1,683	2,251	2,451	2,856	119.4	145.6	191.0	204.4	238.2
Chicago-Naperville-Elgin, IL-IN-WI	6,407	6,947	7,780	10,133	11,514	137.3	148.7	166.5	217.6	247.2
Cincinnati, OH-KY-IN	1,297	1,431	1,693	1,913	2,233	123.9	136.0	160.2	180.3	210.4
Cleveland-Elyria, OH	1,827	1,781	1,683	2,071	2,800	183.6	178.9	169.3	208.7	282.1
Columbus, OH	1,720	1,787	2,038	2,716	3,032	177.9	182.2	204.9	270.3	301.8
Dallas-Fort Worth-Arlington, TX	4,426	5,033	6,357	6,498	7,331	131.8	147.1	182.0	182.8	206.2
Denver-Aurora-Lakewood, CO	1,104	1,236	1,742	2,445	3,325	82.1	90.1	124.1	171.8	233.6
Detroit-Warren-Dearborn, MI	2,942	2,606	2,894	3,622	4,648	141.2	125.0	138.5	173.3	222.4
Hartford-West Hartford-East Hartford, CT	522	466	416†	551†	1,033	88.1	78.7	70.4†	93.5†	175.3
Houston-The Woodlands-Sugar Land, TX	3,749	4,146	5,167	5,930	6,343	119.3	128.5	156.2	176.3	188.6
Indianapolis-Carmel-Anderson, IN	1,854	1,927	1,920	2,542	2,892	194.0	200.1	197.5	259.5	295.3
Jacksonville, FL	1,198	1,316	1,501	1,764	2,076	176.3	190.5	212.5	245.0	288.3
Kansas City, MO-KS	1,272	1,281	1,534	2,134	2,826	126.2	126.1	149.7	206.6	273.6
Las Vegas-Henderson-Paradise, NV	1,239	1,612	1,837	2,306	2,905	121.8	155.6	173.9	214.4	270.2
Los Angeles-Long Beach-Anaheim, CA	9,849	12,071	14,066	18,060	20,803	151.9	184.7	213.9	275.3	317.1
Louisville-Jefferson County, KY-IN	969	961	1,170	1,670	1,910	157.2	155.1	187.3	266.2	304.5
Memphis, TN-MS-AR	1,536	1,254	1,674	1,926	2,347	238.6	194.8	260.0	299.6	365.0
Miami-Fort Lauderdale-West Palm Beach, FL	3,564	3,999	4,651	5,374	6,146	125.9	139.0	159.6	182.6	208.8
Milwaukee-Waukesha-West Allis, WI	1,521	1,281	1,864	2,241	2,560	199.0	167.4	242.9	292.4	334.0
Minneapolis-St. Paul-Bloomington, MN-WI	1,546†	1,942	2,058	2,439	2,993	90.4†	112.4	118.0	138.6	170.1
Nashville-Davidson-Murfreesboro-Franklin, TN	968	1,130	1,312	1,566	1,670	112.8	129.3	147.0	172.3	183.7
New Orleans-Metairie, LA	1,131	1,328	1,506	1,887	2,126	187.9	219.2	246.7	307.5	346.4
New York-Newark-Jersey City, NY-NJ-PA	11,639	13,448	16,290	18,976	23,737	120.6	138.4	166.8	194.6	243.4
Oklahoma City, OK	1,047	1,056	1,136	1,394	1,647	160.8	160.3	169.7	205.9	243.3
Orlando-Kissimmee-Sanford, FL	1,399	1,461	1,818	2,067	2,720	126.0	128.8	155.9	173.2	228.0
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	5,501	5,152	5,439	6,736	7,540	188.7	176.2	185.4	229.4	256.8
Phoenix-Mesa-Scottsdale, AZ	2,600	3,286	3,780	4,824	5,602	118.9	147.4	166.4	208.3	241.9
Pittsburgh, PA	1,110	1,187	1,182	1,448	1,422	96.9	103.7	103.3	127.0	124.7
Portland-Vancouver-Hillsboro, OR-WA	874	1,116	1,621	2,172	2,236	76.4	96.2	137.3	181.1	186.5
Providence-Warwick, RI-MA	331	587†	572†	740†	1,001†	42.6	75.3†	73.2†	94.4†	127.7†
Raleigh, NC	707	770	1,161	1,130	1,390	119.2	127.0	186.9	178.1	219.1
Richmond, VA	701	978	1,058	1,712	1,743	116.4	160.6	172.3	276.7	281.7
Riverside-San Bernardino-Ontario, CA	1,695	2,321	2,692	3,437	4,207	77.7	105.0	120.5	152.6	186.8
Sacramento-Roseville-Arden-Arcade, CA	1,271	1,362	1,771	1,934	2,433	117.1	124.0	159.1	172.3	216.7
Salt Lake City, UT	427	650	753	982	1,144	74.5	112.3	128.1	164.8	192.0
San Antonio-New Braunfels, TX	1,728	1,710	2,375	2,798	2,663	153.9	149.0	201.9	233.2	222.0
San Diego-Carlsbad, CA	1,995	2,354	2,668	3,498	4,365	123.6	143.5	160.8	209.7	261.6
San Francisco-Oakland-Hayward, CA	4,167	5,261	7,201	8,441	9,482	186.9	232.2	313.3	365.3	410.3
San Jose-Sunnyvale-Santa Clara, CA	699	995	1,212	1,361	1,756	72.4	101.3	121.8	136.3	175.9
Seattle-Tacoma-Bellevue, WA	2,002	2,519	3,104	3,593	4,654	111.1	137.3	166.3	189.2	245.1
St. Louis, MO-IL	2,178	2,256	2,802	3,646	3,726	160.5	166.0	205.6	267.8	273.6
Tampa-St. Petersburg-Clearwater, FL	1,871	1,823	2,240	2,592	2,704	134.6	129.2	155.6	176.6	184.2
Virginia Beach-Norfolk-Newport News, VA-NC	1,239	1,489	1,595	2,195	2,423	147.5	176.2	187.7	258.3	285.1
Washington-Arlington-Alexandria, DC-VA-MD-WV	3,330	1,811	1,943	2,838	6,613	114.6	61.4	65.2	94.8	220.9
SELECTED MSAs TOTAL	**109,653**	**121,989**	**143,737**	**178,108**	**212,152**	**129.5**	**142.5**	**166.1**	**204.4**	**243.4**

* MSAs were selected on the basis of the largest population in the 2010 U.S. Census.
† The variable used to identify county, which is used to classify cases into MSAs, was complete for ≤95% of cases in a state contributing data to this MSA. See Section A1.4 in the Appendix for more information.
‡ 2016 county data for Alabama have been corrected and may not match previous reports.
NOTE: Cases reported with unknown sex are not included in this table.

Table 20. Gonorrhea — Reported Cases and Rates of Reported Cases in Counties and Independent Cities* Ranked by Number of Reported Cases, United States, 2017

Rank*	County/Independent City	Cases	Rate per 100,000 Population	Cumulative Percentage
1	Los Angeles County, CA	26,103	257.5	4
2	Cook County, IL	14,920	286.7	7
3	Maricopa County, AZ	8,907	209.9	8
4	Harris County, TX	8,826	192.3	10
5	New York County, NY	7,845	477.3	11
6	Philadelphia County, PA	7,288	464.8	13
7	Kings County, NY	6,824	259.6	14
8	Dallas County, TX	6,800	264.1	15
9	Wayne County, MI	6,349	362.9	16
10	San Diego County, CA	5,973	180.0	17
11	San Francisco County, CA	5,775	663.1	19
12	Cuyahoga County, OH	5,097	408.0	19
13	Bronx County, NY	4,941	339.4	20
14	Milwaukee County, WI	4,706	494.6	21
15	Marion County, IN	4,691	498.4	22
16	Washington, D.C.	4,563	669.9	23
17	Bexar County, TX	4,496	233.1	24
18	Franklin County, OH	4,444	351.4	24
19	Clark County, NV	4,430	205.5	25
20	Baltimore (City), MD	4,231	688.3	26
21	King County, WA	4,154	193.2	27
22	Fulton County, GA	4,017	392.5	27
23	San Bernardino County, CA	3,978	185.9	28
24	Broward County, FL	3,933	206.0	29
25	Shelby County, TN	3,694	395.2	30
26	Alameda County, CA	3,597	218.3	30
27	Orange County, CA	3,566	112.4	31
28	Miami-Dade County, FL	3,538	130.4	31
29	Queens County, NY	3,513	150.6	32
30	Hamilton County, OH	3,381	417.9	33
31	Riverside County, CA	3,351	140.3	33
32	Sacramento County, CA	3,342	220.7	34
33	Travis County, TX	3,306	275.7	35
34	Duval County, FL	3,239	349.7	35
35	Mecklenburg County, NC	3,181	301.6	36
36	Jackson County, MO	3,146	454.8	36
37	Orange County, FL	3,100	235.9	37
38	Hennepin County, MN	3,028	245.7	37
39	Jefferson County, AL	2,920	442.7	38
40	Tarrant County, TX	2,851	141.4	38
41	Denver County, CO	2,821	407.0	39
42	Jefferson County, KY	2,790	364.5	39
43	Oklahoma County, OK	2,606	332.8	40
44	St. Louis County, MO	2,599	260.3	40
45	DeKalb County, GA	2,550	344.4	41
46	Santa Clara County, CA	2,466	128.5	41
47	Hillsborough County, FL	2,450	178.0	42
48	Kern County, CA	2,264	255.9	42
49	Fresno County, CA	2,261	230.7	42
50	St. Louis (City), MO	2,191	703.6	43
51	Orleans Parish, LA	2,123	542.3	43
52	Tulsa County, OK	2,111	328.3	44
53	Multnomah County, OR	2,086	260.8	44
54	Wake County, NC	2,082	198.9	44
55	Bernalillo County, NM	2,079	307.1	45
56	Erie County, NY	2,039	221.4	45
57	Essex County, NJ	2,015	252.9	45
58	Prince George's County, MD	2,001	220.4	46
59	Guilford County, NC	1,907	365.8	46
60	Monroe County, NY	1,891	252.9	47
61	Allegheny County, PA	1,794	146.4	47
62	Pierce County, WA	1,774	206.0	47
63	Contra Costa County, CA	1,760	155.0	48
64	Lucas County, OH	1,693	391.5	48
65	Richland County, SC	1,669	407.5	48
66	Davidson County, TN	1,656	242.0	48
67	Hartford County, CT	1,656	185.6	49
68	Salt Lake County, UT	1,651	147.2	49
69	Collin County, TX	1,641	174.7	49
70	Pulaski County, AR	1,632	415.0	50

* The top 70 counties and independent cities ranked in descending order by number of cases reported in 2017 then by rate are displayed.

NOTE: Relative rankings of counties may be impacted by completeness of the variable used to identify county. In 2017, the variable used to identify county was complete for ≤95% of cases in Massachusetts. See Section A1.4 in the Appendix for more information.

Table 21. Gonorrhea — Reported Cases and Rates of Reported Cases by Age Group and Sex, United States, 2013–2017

Age Group	Cases: Total	Cases: Male	Cases: Female	Cases: Unknown Sex	Rates per 100,000 Population*: Total	Rates: Male	Rates: Female	
0–4	172	60	111	1	0.9	0.6	1.1	2013
5–9	75	11	64	0	0.4	0.1	0.6	
10–14	2,637	508	2,122	7	12.8	4.8	21.0	
15–19	72,092	24,212	47,749	131	340.7	223.2	463.0	
20–24	113,035	53,055	59,760	220	495.9	454.3	537.6	
25–29	62,102	34,718	27,266	118	287.8	316.8	256.7	
30–34	34,065	20,855	13,143	67	160.2	195.2	124.2	
35–39	18,034	11,850	6,145	39	92.0	121.1	62.6	
40–44	11,817	8,590	3,192	35	56.7	82.9	30.4	
45–54	13,823	11,087	2,714	22	31.6	51.4	12.2	
55–64	3,802	3,176	621	5	9.7	16.8	3.1	
65+	825	696	128	1	1.8	3.6	0.5	
Unknown Age	525	312	193	20				
TOTAL	**333,004**	**169,130**	**163,208**	**666**	**105.3**	**108.7**	**101.7**	
0–4	154	47	105	2	0.8	0.5	1.1	2014
5–9	53	7	46	0	0.3	0.1	0.5	
10–14	2,450	440	2,005	5	11.9	4.2	19.8	
15–19	68,468	23,981	44,399	88	325.0	222.4	431.7	
20–24	116,200	56,714	59,329	157	507.2	483.1	531.0	
25–29	69,587	40,602	28,899	86	316.5	363.8	266.9	
30–34	38,393	24,349	13,988	56	178.3	225.3	130.5	
35–39	20,803	14,129	6,654	20	104.4	142.1	66.7	
40–44	12,687	9,349	3,320	18	61.6	91.5	32.0	
45–54	15,322	12,388	2,917	17	35.3	57.8	13.2	
55–64	4,549	3,859	680	10	11.4	20.0	3.3	
65+	911	790	121	0	2.0	3.9	0.5	
Unknown Age	485	288	145	52				
TOTAL	**350,062**	**186,943**	**162,608**	**511**	**109.8**	**119.1**	**100.4**	
0–4	148	47	98	3	0.7	0.5	1.0	2015
5–9	78	11	66	1	0.4	0.1	0.7	
10–14	2,312	385	1,923	4	11.2	3.7	19.0	
15–19	72,001	26,401	45,477	123	341.1	244.5	441.1	
20–24	124,592	63,289	61,105	198	547.9	542.4	551.9	
25–29	82,867	50,089	32,662	116	368.9	439.0	295.5	
30–34	45,681	29,751	15,867	63	210.7	273.2	147.1	
35–39	26,137	18,198	7,897	42	128.3	178.9	77.4	
40–44	15,042	11,116	3,898	28	74.4	110.8	38.3	
45–54	18,779	15,379	3,375	25	43.5	72.2	15.4	
55–64	6,035	5,175	849	11	14.8	26.2	4.0	
65+	1,191	1,032	158	1	2.5	4.9	0.6	
Unknown Age	353	197	139	17				
TOTAL	**395,216**	**221,070**	**173,514**	**632**	**123.0**	**139.7**	**106.3**	
0–4	187	72	113	2	0.9	0.7	1.2	2016
5–9	98	16	81	1	0.5	0.2	0.8	
10–14	2,436	498	1,929	9	11.8	4.7	19.1	
15–19	80,172	30,316	49,710	146	379.4	280.7	481.3	
20–24	138,130	71,967	65,930	233	617.2	626.3	605.4	
25–29	101,283	62,189	38,881	213	442.5	534.7	345.3	
30–34	57,646	38,193	19,306	147	264.6	348.2	178.5	
35–39	34,058	23,744	10,230	84	163.9	228.8	98.4	
40–44	19,104	14,116	4,935	53	97.0	144.4	49.7	
45–54	24,142	19,762	4,330	50	56.4	93.6	20.0	
55–64	8,138	6,947	1,178	13	19.6	34.7	5.5	
65+	1,599	1,403	191	5	3.2	6.4	0.7	
Unknown Age	1,521	810	685	26				
TOTAL	**468,514**	**270,033**	**197,499**	**982**	**145.0**	**169.7**	**120.4**	
0–4	203	56	144	3	1.0	0.5	1.5	2017
5–9	110	19	90	1	0.5	0.2	0.9	
10–14	2,725	507	2,212	6	13.2	4.8	21.9	
15–19	92,608	34,918	57,573	117	438.3	323.3	557.4	
20–24	155,862	81,036	74,578	248	696.4	705.2	684.8	
25–29	121,880	75,123	46,577	180	532.4	645.9	413.7	
30–34	71,603	47,342	24,157	104	328.7	431.6	223.3	
35–39	43,792	30,277	13,448	67	210.8	291.8	129.3	
40–44	24,108	17,753	6,331	24	122.4	181.6	63.8	
45–54	29,428	23,803	5,580	45	68.8	112.8	25.7	
55–64	10,867	9,311	1,538	18	26.2	46.6	7.2	
65+	2,063	1,818	233	12	4.2	8.3	0.8	
Unknown Age	359	206	126	27				
TOTAL	**555,608**	**322,169**	**232,587**	**852**	**171.9**	**202.5**	**141.8**	

* No population data are available for unknown sex and age; therefore, rates are not calculated.

NOTE: This table should be used only for age comparisons. Cases in the 0–4 age group may include cases due to perinatal transmission.

Table 22A. Gonorrhea — Reported Cases by Race/Hispanic Ethnicity, Age Group, and Sex, United States, 2017

Age Group	American Indians/ Alaska Natives			Asians			Blacks			Native Hawaiians/ Other Pacific Islanders		
	Total*	Male	Female	Total*	Male	Female	Total*	Male	Female	Total*	Male	Female
0–4	3	0	3	1	0	1	71	17	54	4	3	1
5–9	3	1	2	1	0	1	36	8	28	0	0	0
10–14	46	6	40	12	0	12	1,398	302	1,095	5	2	3
15–19	1,022	300	721	460	187	272	45,197	18,077	27,090	151	53	98
20–24	1,797	632	1,165	1,433	986	447	69,695	36,136	33,513	284	117	167
25–29	1,756	671	1,085	1,469	1,175	293	48,288	30,162	18,087	239	140	98
30–34	1,157	482	675	1,067	849	214	23,600	16,494	7,087	153	97	56
35–39	680	336	341	653	513	138	13,171	9,726	3,436	120	72	48
40–44	373	160	213	446	368	78	6,924	5,523	1,398	47	31	16
45–54	266	132	133	462	395	66	8,227	7,093	1,131	46	38	8
55–64	83	60	23	131	105	26	3,297	2,977	318	11	9	2
65+	17	17	0	24	20	4	531	488	42	4	3	1
Unknown Age	5	2	3	4	4	0	71	47	24	1	0	1
TOTAL	**7,208**	**2,799**	**4,404**	**6,163**	**4,602**	**1,552**	**220,506**	**127,050**	**93,303**	**1,065**	**565**	**499**

Age Group	Whites			Multirace			Hispanics			Other/ Unknown		
	Total*	Male	Female	Total*	Male	Female	Total*	Male	Female	Total*	Male	Female
0–4	46	10	36	0	0	0	13	4	9	65	22	40
5–9	30	5	25	0	0	0	9	1	8	31	4	26
10–14	364	29	335	28	2	26	234	32	202	638	134	499
15–19	15,154	4,203	10,941	821	225	595	9,366	3,559	5,801	20,437	8,314	12,055
20–24	31,018	14,464	16,528	1,455	626	826	18,095	10,199	7,874	32,085	17,876	14,058
25–29	29,396	16,460	12,918	1,107	693	411	15,237	10,178	5,031	24,388	15,644	8,654
30–34	20,428	12,159	8,255	788	571	217	9,497	6,691	2,794	14,913	9,999	4,859
35–39	13,244	8,456	4,783	412	326	85	5,863	4,163	1,694	9,649	6,685	2,923
40–44	7,316	5,016	2,296	238	193	45	3,121	2,384	734	5,643	4,078	1,551
45–54	9,886	7,895	1,984	263	231	31	3,057	2,440	607	7,221	5,579	1,620
55–64	3,749	3,228	516	72	65	7	731	610	121	2,793	2,257	525
65+	733	667	66	16	14	2	98	79	19	640	530	99
Unknown Age	56	35	20	0	0	0	46	31	14	176	87	64
TOTAL	**131,420**	**72,627**	**58,703**	**5,200**	**2,946**	**2,245**	**65,367**	**40,371**	**24,908**	**118,679**	**71,209**	**46,973**

* Total includes cases reported with unknown sex.

NOTE: These tables should be used only for race/Hispanic ethnicity comparisons. See Table 21 for age-specific cases and rates and Tables 14–16 for total and sex-specific cases and rates. Cases in the 0–4 age group may include cases due to perinatal transmission.

Table 22B. Gonorrhea — Rates of Reported Cases per 100,000 Population by Race/Hispanic Ethnicity, Age Group, and Sex, United States, 2017

Age Group	American Indians/ Alaska Natives			Asians			Blacks			Native Hawaiians/ Other Pacific Islanders		
	Total*	Male	Female	Total*	Male	Female	Total*	Male	Female	Total*	Male	Female
0–4	1.8	0.0	3.7	0.1	0.0	0.2	2.6	1.2	4.0	9.8	14.3	5.0
5–9	1.7	1.1	2.3	0.1	0.0	0.2	1.3	0.6	2.0	0.0	0.0	0.0
10–14	26.1	6.7	46.1	1.2	0.0	2.3	50.0	21.3	79.4	12.3	9.8	14.8
15–19	561.9	324.5	806.0	43.9	35.4	52.3	1,515.2	1,194.3	1,843.8	373.0	254.7	498.0
20–24	926.6	635.9	1,232.2	113.5	153.8	71.9	2,112.9	2,154.8	2,066.8	635.1	508.3	769.7
25–29	922.1	689.7	1,164.9	96.7	158.1	37.8	1,482.8	1,863.1	1,104.4	458.8	515.8	392.7
30–34	701.5	584.1	819.1	69.7	116.2	26.7	843.1	1,219.6	489.9	306.9	380.3	230.0
35–39	449.2	448.1	446.3	45.5	76.9	18.0	493.8	768.4	245.2	274.6	321.0	225.7
40–44	265.4	231.1	298.7	31.6	55.7	10.4	278.2	471.8	106.0	125.3	163.2	86.4
45–54	87.3	89.1	84.9	18.9	34.8	5.1	156.0	286.6	40.4	65.3	109.0	22.5
55–64	29.2	45.0	15.3	6.7	11.8	2.4	69.9	138.1	12.4	19.4	32.5	6.9
65+	6.6	14.6	0.0	1.1	2.2	0.3	12.1	27.6	1.6	8.1	13.1	3.8
Unknown Age												
TOTAL	**301.9**	**238.0**	**363.6**	**34.7**	**54.5**	**16.7**	**548.1**	**660.7**	**444.3**	**187.8**	**197.7**	**177.3**

Age Group	Whites			Multirace			Hispanics		
	Total*	Male	Female	Total*	Male	Female	Total*	Male	Female
0–4	0.5	0.2	0.7	0.0	0.0	0.0	0.3	0.2	0.4
5–9	0.3	0.1	0.5	0.0	0.0	0.0	0.2	0.0	0.3
10–14	3.4	0.5	6.4	3.5	0.5	6.6	4.7	1.3	8.2
15–19	133.2	72.0	197.5	116.7	63.1	171.5	195.5	145.3	247.6
20–24	255.1	231.3	280.0	234.5	200.2	268.3	376.8	410.7	339.6
25–29	230.2	253.5	205.8	224.6	290.7	161.5	330.4	421.6	229.0
30–34	164.8	194.2	134.6	200.5	307.1	104.8	213.2	287.1	131.5
35–39	111.8	141.6	81.4	121.5	204.8	47.3	136.6	187.9	81.5
40–44	64.3	87.7	40.6	84.8	146.2	30.3	78.9	118.8	37.6
45–54	35.9	57.6	14.4	52.8	98.3	11.8	45.7	72.4	18.3
55–64	12.7	22.4	3.4	17.8	33.8	3.3	16.4	28.2	5.3
65+	1.9	3.9	0.3	4.4	8.7	1.0	2.5	4.6	0.8
Unknown Age									
TOTAL	**66.4**	**74.4**	**58.5**	**76.9**	**88.4**	**65.4**	**113.7**	**139.1**	**87.5**

* Total includes cases reported with unknown sex.

NOTE: These tables should be used only for race/Hispanic ethnicity comparisons. See Table 21 for age-specific cases and rates and Tables 14–16 for total and sex-specific cases and rates. Cases in the 0–4 age group may include cases due to perinatal transmission. No population data exist for unknown sex, unknown age, or unknown race; therefore rates are not calculated.

Table 23. Gonorrhea Among Women Aged 15–24 Years — Reported Cases and Rates of Reported Cases by Age, United States, 2013–2017

	Age	Cases	Rate per 100,000 Population
2013	15	3,776	186.4
	16	6,503	320.0
	17	9,374	458.8
	18	13,393	642.4
	19	14,703	691.2
	20	14,420	668.8
	21	13,394	603.1
	22	12,272	539.6
	23	10,819	475.3
	24	8,855	404.5
	Total	**107,509**	**501.7**
2014	15	3,487	171.3
	16	6,188	303.9
	17	8,830	431.6
	18	12,196	591.9
	19	13,698	650.5
	20	13,801	642.1
	21	13,324	611.5
	22	12,031	536.0
	23	10,746	467.5
	24	9,427	409.6
	Total	**103,728**	**483.4**
2015	15	3,477	167.4
	16	6,090	297.8
	17	9,117	444.9
	18	12,769	619.3
	19	14,024	674.8
	20	13,835	651.7
	21	13,331	615.2
	22	12,597	573.2
	23	11,271	497.7
	24	10,071	434.2
	Total	**106,582**	**498.5**
2016	15	3,678	179.0
	16	6,573	315.4
	17	9,855	479.7
	18	14,304	694.1
	19	15,300	737.8
	20	14,657	701.7
	21	14,149	663.1
	22	13,540	621.4
	23	12,245	553.9
	24	11,339	497.8
	Total	**115,640**	**545.0**
2017	15	3,976	193.5
	16	7,600	364.7
	17	11,479	558.7
	18	16,429	797.2
	19	18,089	872.2
	20	16,950	811.4
	21	15,968	748.3
	22	14,933	685.4
	23	14,046	635.4
	24	12,681	556.7
	Total	**132,151**	**622.8**

NOTE: This table should be used only for age comparisons. Cases reported with unknown sex are not included in this table.

Table 24. All Stages of Syphilis* — Reported Cases and Rates of Reported Cases by State/Area and Region in Alphabetical Order, United States and Outlying Areas, 2013–2017

	Cases					Rates per 100,000 Population				
State/Area	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Alabama	679	475	657	905	1,202	14.0	9.8	13.5	18.6	24.7
Alaska	35	45	24	24	28	4.8	6.1	3.3	3.2	3.8
Arizona	963	1,459	1,496	1,905	2,422	14.5	21.7	21.9	27.5	34.9
Arkansas	527	390	500	567	726	17.8	13.1	16.8	19.0	24.3
California	9,973	11,443	14,449	17,603	21,804	26.0	29.5	36.9	44.8	55.6
Colorado	475	355	553	739	817	9.0	6.6	10.1	13.3	14.7
Connecticut	133	169	220	217	283	3.7	4.7	6.1	6.1	7.9
Delaware	146	110	110	149	194	15.8	11.8	11.6	15.7	20.4
District of Columbia	609	281	322	568	845	94.2	42.6	47.9	83.4	124.1
Florida	5,022	6,103	7,132	8,333	8,951	25.7	30.7	35.2	40.4	43.4
Georgia	2,990	3,384	4,156	4,112	4,310	29.9	33.5	40.7	39.9	41.8
Hawaii	87	106	163	215	165	6.2	7.5	11.4	15.1	11.6
Idaho	42	46	102	127	151	2.6	2.8	6.2	7.5	9.0
Illinois	2,661	2,796	3,290	4,039	3,837	20.7	21.7	25.6	31.6	30.0
Indiana	543	475	699	778	788	8.3	7.2	10.6	11.7	11.9
Iowa	226	239	232	276	290	7.3	7.7	7.4	8.8	9.3
Kansas	196	200	240	303	338	6.8	6.9	8.2	10.4	11.6
Kentucky	395	447	433	572	721	9.0	10.1	9.8	12.9	16.2
Louisiana	2,006	2,173	2,466	2,599	2,856	43.4	46.7	52.8	55.5	61.0
Maine	21	23	38	64	132	1.6	1.7	2.9	4.8	9.9
Maryland	1,361	1,475	1,870	1,842	2,059	23.0	24.7	31.1	30.6	34.2
Massachusetts	990	813	1,263	1,446	1,474	14.8	12.1	18.6	21.2	21.6
Michigan	1,068	1,095	1,089	1,092	1,267	10.8	11.0	11.0	11.0	12.8
Minnesota	541	631	653	853	934	10.0	11.6	11.9	15.5	16.9
Mississippi	293	642	760	925	937	9.8	21.4	25.4	30.9	31.4
Missouri	609	771	778	955	1,337	10.1	12.7	12.8	15.7	21.9
Montana	8	9	20	24	85	0.8	0.9	1.9	2.3	8.2
Nebraska	95	96	81	121	118	5.1	5.1	4.3	6.3	6.2
Nevada	523	893	915	1,313	1,681	18.7	31.5	31.7	44.7	57.2
New Hampshire	79	79	84	100	109	6.0	6.0	6.3	7.5	8.2
New Jersey	968	1,172	1,306	1,620	1,866	10.9	13.1	14.6	18.1	20.9
New Mexico	247	283	332	470	510	11.8	13.6	15.9	22.6	24.5
New York	6,173	7,129	7,795	9,456	9,877	31.4	36.1	39.4	47.9	50.0
North Carolina	1,153	1,998	2,741	2,655	2,947	11.7	20.1	27.3	26.2	29.0
North Dakota	25	51	42	61	78	3.5	6.9	5.5	8.0	10.3
Ohio	1,096	1,229	1,348	1,600	1,900	9.5	10.6	11.6	13.8	16.4
Oklahoma	383	414	521	696	953	9.9	10.7	13.3	17.7	24.3
Oregon	527	582	783	810	848	13.4	14.7	19.4	19.8	20.7
Pennsylvania	1,486	1,523	1,788	2,037	2,234	11.6	11.9	14.0	15.9	17.5
Rhode Island	94	160	163	234	221	8.9	15.2	15.4	22.2	20.9
South Carolina	753	750	834	974	1,096	15.8	15.5	17.0	19.6	22.1
South Dakota	61	95	71	57	73	7.2	11.1	8.3	6.6	8.4
Tennessee	980	977	1,241	1,448	1,453	15.1	14.9	18.8	21.8	21.8
Texas	7,044	7,805	8,250	9,564	12,124	26.6	29.0	30.0	34.3	43.5
Utah	172	149	169	259	299	5.9	5.1	5.6	8.5	9.8
Vermont	10	12	15	37	26	1.6	1.9	2.4	5.9	4.2
Virginia	1,001	702	1,023	1,304	1,757	12.1	8.4	12.2	15.5	20.9
Washington	711	854	1,109	1,414	1,751	10.2	12.1	15.5	19.4	24.0
West Virginia	39	55	109	151	123	2.1	3.0	5.9	8.2	6.7
Wisconsin	257	285	262	423	551	4.5	5.0	4.5	7.3	9.5
Wyoming	9	6	10	17	19	1.5	1.0	1.7	2.9	3.2
U.S. TOTAL	**56,485**	**63,454**	**74,707**	**88,053**	**101,567**	**17.9**	**19.9**	**23.2**	**27.3**	**31.4**
Northeast	9,954	11,080	12,672	15,211	16,222	17.8	19.7	22.5	27.1	28.9
Midwest	7,378	7,963	8,785	10,558	11,511	10.9	11.8	12.9	15.5	16.9
South	25,381	28,181	33,125	37,364	43,254	21.4	23.5	27.3	30.5	35.4
West	13,772	16,230	20,125	24,920	30,580	18.5	21.6	26.5	32.5	39.9
Guam	24	13	22	13	21	15.0	8.1	13.6	7.8	12.6
Puerto Rico	811	960	1,267	1,185	1,052	22.4	27.1	36.5	34.7	30.8
Virgin Islands	9	6	25	2	0	8.6	5.8	24.3	1.9	0.0
OUTLYING AREAS	**844**	**979**	**1,314**	**1,200**	**1,073**	**21.8**	**25.7**	**35.1**	**32.6**	**29.1**
TOTAL	**57,329**	**64,433**	**76,021**	**89,253**	**102,640**	**17.9**	**20.0**	**23.4**	**27.3**	**31.4**

* See Section A1.9 in the Appendix for definition.

NOTE: See Section A1.11 in the Appendix for more information on interpreting case counts and rates in outlying areas.

Table 25. All Stages of Syphilis* — Reported Cases and Rates of Reported Cases in Selected Metropolitan Statistical Areas (MSAs)† in Alphabetical Order, United States, 2013–2017

	Cases					Rates per 100,000 Population				
MSAs	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Atlanta-Sandy Springs-Roswell, GA	2,257	2,669	3,106	3,219	3,281	40.9	47.5	54.4	55.6	56.7
Austin-Round Rock, TX	500	681	623	825	1,012	26.6	35.0	31.1	40.1	49.2
Baltimore-Columbia-Towson, MD	732	816	1,015	1,031	1,084	26.4	29.3	36.3	36.8	38.7
Birmingham-Hoover, AL	236	157	197	248§	314	20.7	13.7	17.2	21.6§	27.4
Boston-Cambridge-Newton, MA-NH	758	597	827‡	1,000‡	1,068	16.2	12.6	17.3‡	20.9‡	22.3
Buffalo-Cheektowaga-Niagara Falls, NY	115	135	182	146	176	10.1	11.9	16.0	12.9	15.5
Charlotte-Concord-Gastonia, NC-SC	360	533	732	851	876	15.4	22.4	30.2	34.4	35.4
Chicago-Naperville-Elgin, IL-IN-WI	2,499	2,559	3,060	3,805	3,536	26.2	26.8	32.0	40.0	37.2
Cincinnati, OH-KY-IN	437	381	319	269	326	20.4	17.7	14.8	12.4	15.1
Cleveland-Elyria, OH	111	199	229	378	430	5.4	9.6	11.1	18.4	20.9
Columbus, OH	342	441	518	578	700	17.4	22.1	25.6	28.3	34.3
Dallas-Fort Worth-Arlington, TX	2,093	2,231	2,261	2,661	3,848	30.7	32.1	31.8	36.8	53.2
Denver-Aurora-Lakewood, CO	382	298	426	552	618	14.2	10.8	15.1	19.3	21.7
Detroit-Warren-Dearborn, MI	830	804	790	751	802	19.3	18.7	18.4	17.5	18.7
Hartford-West Hartford-East Hartford, CT	43	52	84	55	66	3.5	4.3	6.9	4.6	5.5
Houston-The Woodlands-Sugar Land, TX	1,891	2,316	2,568	2,817	3,242	30.0	35.7	38.6	41.6	47.9
Indianapolis-Carmel-Anderson, IN	340	285	408	415	457	17.4	14.5	20.5	20.7	22.8
Jacksonville, FL	189	270	435	445	644	13.6	19.0	30.0	30.1	43.6
Kansas City, MO-KS	320	406	365	434	470	15.6	19.6	17.5	20.6	22.3
Las Vegas-Henderson-Paradise, NV	438	830	826	1,194	1,501	21.6	40.1	39.1	55.4	69.6
Los Angeles-Long Beach-Anaheim, CA	4,537	4,739	5,813	7,098	8,705	34.6	35.7	43.6	53.3	65.4
Louisville-Jefferson County, KY-IN	210	239	270	381	421	16.6	18.8	21.1	29.7	32.8
Memphis, TN-MS-AR	578	475	575	762	661	43.1	35.4	42.8	56.7	49.2
Miami-Fort Lauderdale-West Palm Beach, FL	2,740	3,314	3,640	4,102	4,279	47.0	55.9	60.5	67.6	70.5
Milwaukee-Waukesha-West Allis, WI	153	184	148	228	295	9.7	11.7	9.4	14.5	18.8
Minneapolis-St. Paul-Bloomington, MN-WI	487	585	592	742	791	14.1	16.7	16.8	20.9	22.3
Nashville-Davidson-Murfreesboro-Franklin, TN	239	305	359	383	363	13.6	17.0	19.6	20.5	19.5
New Orleans-Metairie, LA	634	736	765	849	855	51.1	58.8	60.6	66.9	67.4
New York-Newark-Jersey City, NY-NJ-PA	6,506	7,481	8,172	10,116	10,576	32.6	37.2	40.5	50.2	52.5
Oklahoma City, OK	213	231	264	406	534	16.1	17.3	19.4	29.6	38.9
Orlando-Kissimmee-Sanford, FL	631	784	916	1,183	1,196	27.8	33.8	38.4	48.5	49.0
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	1,333	1,273	1,393	1,647	1,820	22.1	21.0	22.9	27.1	30.0
Phoenix-Mesa-Scottsdale, AZ	714	1,065	1,126	1,501	1,881	16.2	23.7	24.6	32.2	40.4
Pittsburgh, PA	95	154	273	236	192	4.0	6.5	11.6	10.1	8.2
Portland-Vancouver-Hillsboro, OR-WA	475	473	604	665	654	20.5	20.1	25.3	27.4	27.0
Providence-Warwick, RI-MA	138	205	233‡	288‡	295	8.6	12.7	14.4‡	17.8‡	18.3
Raleigh, NC	179	317	410	384	438	14.7	25.5	32.2	29.5	33.6
Richmond, VA	204	145	207	305	394	16.4	11.5	16.3	23.8	30.7
Riverside-San Bernardino-Ontario, CA	803	950	1,165	1,554	1,960	18.3	21.4	26.0	34.3	43.3
Sacramento-Roseville-Arden-Arcade, CA	289	371	609	611	807	13.0	16.5	26.8	26.6	35.1
Salt Lake City, UT	136	109	122	188	203	11.9	9.5	10.4	15.8	17.1
San Antonio-New Braunfels, TX	1,167	1,017	988	1,126	1,444	51.2	43.7	41.4	46.3	59.4
San Diego-Carlsbad, CA	792	987	1,209	1,419	1,722	24.7	30.2	36.6	42.8	51.9
San Francisco-Oakland-Hayward, CA	1,892	2,111	2,355	2,427	2,947	41.9	46.0	50.6	51.9	63.0
San Jose-Sunnyvale-Santa Clara, CA	276	304	360	504	661	14.4	15.6	18.2	25.5	33.4
Seattle-Tacoma-Bellevue, WA	539	590	759	968	1,185	14.9	16.1	20.3	25.5	31.2
St. Louis, MO-IL	338	412	417	528	782	12.1	14.7	14.8	18.8	27.9
Tampa-St. Petersburg-Clearwater, FL	632	807	958	1,129	1,061	22.0	27.7	32.2	37.2	35.0
Virginia Beach-Norfolk-Newport News, VA-NC	302	220	375	516	565	17.7	12.8	21.7	29.9	32.7
Washington-Arlington-Alexandria, DC-VA-MD-WV	1,543	811	1,058	1,107	2,295	25.9	13.4	17.4	18.1	37.4
SELECTED MSAs TOTAL	**43,648**	**48,054**	**55,106**	**65,027**	**74,433**	**25.3**	**27.5**	**31.2**	**36.5**	**41.8**

* See Section A1.9 in the Appendix for definition.
† MSAs were selected on the basis of the largest population in the 2010 U.S. Census.
‡ The variable used to identify county, which is used to classify cases into MSAs, was complete for ≤95% of cases in a state contributing data to this MSA. See Section A1.4 in the Appendix for more information.
§ 2016 county data for Alabama have been corrected and may not match previous reports.

Table 26. Primary and Secondary Syphilis — Reported Cases and Rates of Reported Cases by State, Ranked by Rates, United States, 2017

Rank*	State	Cases	Rate per 100,000 Population
1	Nevada	587	20.0
2	California	6,708	17.1
3	Louisiana	679	14.5
4	Georgia	1,489	14.4
5	Arizona	943	13.6
6	New York	2,355	11.9
7	Florida	2,390	11.6
8	North Carolina	1,138	11.2
9	Mississippi	310	10.4
10	Illinois	1,225	9.6
11	Maryland	573	9.5
12	Oklahoma	373	9.5
	U.S. TOTAL†	**30,644**	**9.5**
13	Washington	677	9.3
14	New Mexico	193	9.3
15	Alabama	424	8.7
16	Oregon	352	8.6
17	Missouri	507	8.3
18	Texas	2,233	8.0
19	Massachusetts	538	7.9
20	Arkansas	234	7.8
21	Tennessee	488	7.3
22	South Carolina	361	7.3
23	Ohio	832	7.2
24	Rhode Island	71	6.7
25	Hawaii	94	6.6
26	Virginia	536	6.4
27	Pennsylvania	793	6.2
28	Delaware	57	6.0
29	Kentucky	262	5.9
30	North Dakota	44	5.8
31	New Jersey	499	5.6
32	Minnesota	292	5.3
33	Colorado	292	5.3
34	Maine	65	4.9
35	Michigan	480	4.8
36	Indiana	319	4.8
37	Montana	48	4.6
38	Kansas	133	4.6
39	Utah	117	3.8
40	South Dakota	33	3.8
41	Idaho	64	3.8
42	West Virginia	62	3.4
43	Iowa	101	3.2
44	New Hampshire	43	3.2
45	Connecticut	110	3.1
46	Wisconsin	173	3.0
47	Nebraska	43	2.3
48	Vermont	13	2.1
49	Alaska	13	1.8
50	Wyoming	4	0.7

* States were ranked by rate, then by case count, then in alphabetical order, with rates shown rounded to the nearest tenth.

† Total includes cases reported by the District of Columbia with 274 cases and a rate of 40.2, but excludes outlying areas (Guam with 13 cases and rate of 7.8, Puerto Rico with 411 cases and rate of 12.0, and Virgin Islands with 0 cases and rate of 0.0).

Table 27. Primary and Secondary Syphilis — Reported Cases and Rates of Reported Cases by State/Area and Region in Alphabetical Order, United States and Outlying Areas, 2013–2017

	Cases					Rates per 100,000 Population				
State/Area	**2013**	**2014**	**2015**	**2016**	**2017**	**2013**	**2014**	**2015**	**2016**	**2017**
Alabama	183	161	280	376	424	3.8	3.3	5.8	7.7	8.7
Alaska	23	15	8	8	13	3.1	2.0	1.1	1.1	1.8
Arizona	287	577	589	721	943	4.3	8.6	8.6	10.4	13.6
Arkansas	177	121	134	150	234	6.0	4.1	4.5	5.0	7.8
California	3,532	3,835	4,908	5,891	6,708	9.2	9.9	12.5	15.0	17.1
Colorado	163	186	245	250	292	3.1	3.5	4.5	4.5	5.3
Connecticut	56	86	92	110	110	1.6	2.4	2.6	3.1	3.1
Delaware	52	47	41	58	57	5.6	5.0	4.3	6.1	6.0
District of Columbia	168	116	95	161	274	26.0	17.6	14.1	23.6	40.2
Florida	1,513	1,740	2,083	2,406	2,390	7.7	8.7	10.3	11.7	11.6
Georgia	1,017	1,234	1,413	1,350	1,489	10.2	12.2	13.8	13.1	14.4
Hawaii	46	68	91	112	94	3.3	4.8	6.4	7.8	6.6
Idaho	15	12	57	50	64	0.9	0.7	3.4	3.0	3.8
Illinois	798	863	1,085	1,260	1,225	6.2	6.7	8.4	9.8	9.6
Indiana	215	168	285	326	319	3.3	2.5	4.3	4.9	4.8
Iowa	106	72	75	89	101	3.4	2.3	2.4	2.8	3.2
Kansas	51	60	87	124	133	1.8	2.1	3.0	4.3	4.6
Kentucky	122	158	145	219	262	2.8	3.6	3.3	4.9	5.9
Louisiana	423	575	696	750	679	9.1	12.4	14.9	16.0	14.5
Maine	10	16	28	42	65	0.8	1.2	2.1	3.2	4.9
Maryland	456	449	509	509	573	7.7	7.5	8.5	8.5	9.5
Massachusetts	360	301	418	489	538	5.4	4.5	6.2	7.2	7.9
Michigan	487	421	403	365	480	4.9	4.2	4.1	3.7	4.8
Minnesota	193	257	246	306	292	3.6	4.7	4.5	5.5	5.3
Mississippi	78	189	219	326	310	2.6	6.3	7.3	10.9	10.4
Missouri	251	352	307	400	507	4.2	5.8	5.0	6.6	8.3
Montana	5	8	13	14	48	0.5	0.8	1.3	1.3	4.6
Nebraska	41	50	45	67	43	2.2	2.7	2.4	3.5	2.3
Nevada	205	357	335	444	587	7.3	12.6	11.6	15.1	20.0
New Hampshire	28	36	40	40	43	2.1	2.7	3.0	3.0	3.2
New Jersey	233	297	372	472	499	2.6	3.3	4.2	5.3	5.6
New Mexico	78	126	118	189	193	3.7	6.0	5.7	9.1	9.3
New York	1,459	1,727	2,006	2,455	2,355	7.4	8.7	10.1	12.4	11.9
North Carolina	404	733	1,196	1,082	1,138	4.1	7.4	11.9	10.7	11.2
North Dakota	12	13	11	33	44	1.7	1.8	1.5	4.4	5.8
Ohio	436	568	560	716	832	3.8	4.9	4.8	6.2	7.2
Oklahoma	118	151	209	264	373	3.1	3.9	5.3	6.7	9.5
Oregon	267	272	345	327	352	6.8	6.9	8.6	8.0	8.6
Pennsylvania	471	532	655	755	793	3.7	4.2	5.1	5.9	6.2
Rhode Island	45	71	77	90	71	4.3	6.7	7.3	8.5	6.7
South Carolina	271	250	294	316	361	5.7	5.2	6.0	6.4	7.3
South Dakota	44	53	39	26	33	5.2	6.2	4.5	3.0	3.8
Tennessee	214	237	349	390	488	3.3	3.6	5.3	5.9	7.3
Texas	1,475	1,636	1,680	1,955	2,233	5.6	6.1	6.1	7.0	8.0
Utah	74	47	65	92	117	2.6	1.6	2.2	3.0	3.8
Vermont	3	5	9	23	13	0.5	0.8	1.4	3.7	2.1
Virginia	315	289	334	459	536	3.8	3.5	4.0	5.5	6.4
Washington	284	344	445	565	677	4.1	4.9	6.2	7.8	9.3
West Virginia	15	28	52	53	62	0.8	1.5	2.8	2.9	3.4
Wisconsin	95	86	79	132	173	1.7	1.5	1.4	2.3	3.0
Wyoming	1	4	5	7	4	0.2	0.7	0.9	1.2	0.7
U.S. TOTAL	**17,375**	**19,999**	**23,872**	**27,814**	**30,644**	**5.5**	**6.3**	**7.4**	**8.6**	**9.5**
Northeast	2,665	3,071	3,697	4,476	4,487	4.8	5.5	6.6	8.0	8.0
Midwest	2,729	2,963	3,222	3,844	4,182	4.0	4.4	4.7	5.7	6.2
South	7,001	8,114	9,729	10,824	11,883	5.9	6.8	8.0	8.8	9.7
West	4,980	5,851	7,224	8,670	10,092	6.7	7.8	9.5	11.3	13.2
Guam	6	7	2	2	13	3.7	4.3	1.2	1.2	7.8
Puerto Rico	385	484	531	493	411	10.6	13.6	15.3	14.5	12.0
Virgin Islands	2	2	8	0	0	1.9	1.9	7.8	0.0	0.0
OUTLYING AREAS	**393**	**493**	**541**	**495**	**424**	**10.1**	**12.9**	**14.5**	**13.4**	**11.5**
TOTAL	**17,768**	**20,492**	**24,413**	**28,309**	**31,068**	**5.6**	**6.4**	**7.5**	**8.7**	**9.5**

NOTE: See Section A1.11 in the Appendix for more information on interpreting case counts and rates in outlying areas.

Table 28. Primary and Secondary Syphilis Among Women — Reported Cases and Rates of Reported Cases by State/Area and Region in Alphabetical Order, United States and Outlying Areas, 2013–2017

	Cases					Rates per 100,000 Population				
State/Area	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Alabama	22	17	37	80	70	0.9	0.7	1.5	3.2	2.8
Alaska	2	1	1	0	1	0.6	0.3	0.3	0.0	0.3
Arizona	27	50	47	80	158	0.8	1.5	1.4	2.3	4.5
Arkansas	44	23	26	37	64	2.9	1.5	1.7	2.4	4.2
California	210	318	476	744	902	1.1	1.6	2.4	3.8	4.6
Colorado	4	6	6	16	18	0.2	0.2	0.2	0.6	0.7
Connecticut	8	7	15	12	13	0.4	0.4	0.8	0.7	0.7
Delaware	3	2	2	3	6	0.6	0.4	0.4	0.6	1.2
District of Columbia	19	5	6	5	7	5.6	1.4	1.7	1.4	2.0
Florida	137	137	210	266	321	1.4	1.3	2.0	2.5	3.0
Georgia	87	96	94	113	139	1.7	1.9	1.8	2.1	2.6
Hawaii	0	2	1	10	6	0.0	0.3	0.1	1.4	0.8
Idaho	0	0	9	6	15	0.0	0.0	1.1	0.7	1.8
Illinois	66	81	84	95	85	1.0	1.2	1.3	1.5	1.3
Indiana	18	11	28	36	27	0.5	0.3	0.8	1.1	0.8
Iowa	10	6	5	6	9	0.6	0.4	0.3	0.4	0.6
Kansas	4	14	17	12	16	0.3	1.0	1.2	0.8	1.1
Kentucky	17	22	23	21	41	0.8	1.0	1.0	0.9	1.8
Louisiana	115	132	189	192	186	4.9	5.6	7.9	8.0	7.8
Maine	1	3	6	3	9	0.1	0.4	0.9	0.4	1.3
Maryland	61	49	58	54	47	2.0	1.6	1.9	1.7	1.5
Massachusetts	17	23	25	24	26	0.5	0.7	0.7	0.7	0.7
Michigan	29	31	34	31	34	0.6	0.6	0.7	0.6	0.7
Minnesota	12	21	39	37	38	0.4	0.8	1.4	1.3	1.4
Mississippi	19	17	32	58	88	1.2	1.1	2.1	3.8	5.7
Missouri	19	34	54	66	93	0.6	1.1	1.7	2.1	3.0
Montana	1	2	1	1	9	0.2	0.4	0.2	0.2	1.7
Nebraska	4	4	3	5	7	0.4	0.4	0.3	0.5	0.7
Nevada	14	23	23	50	75	1.0	1.6	1.6	3.4	5.1
New Hampshire	1	4	3	4	4	0.1	0.6	0.4	0.6	0.6
New Jersey	13	16	26	24	34	0.3	0.3	0.6	0.5	0.7
New Mexico	20	14	11	27	19	1.9	1.3	1.0	2.6	1.8
New York	44	49	59	115	121	0.4	0.5	0.6	1.1	1.2
North Carolina	36	68	112	109	127	0.7	1.3	2.2	2.1	2.4
North Dakota	1	5	0	3	5	0.3	1.4	0.0	0.8	1.4
Ohio	63	76	68	94	112	1.1	1.3	1.1	1.6	1.9
Oklahoma	13	15	21	41	67	0.7	0.8	1.1	2.1	3.4
Oregon	12	22	35	35	52	0.6	1.1	1.7	1.7	2.5
Pennsylvania	26	47	52	62	76	0.4	0.7	0.8	1.0	1.2
Rhode Island	1	5	4	3	7	0.2	0.9	0.7	0.6	1.3
South Carolina	39	23	37	52	56	1.6	0.9	1.5	2.0	2.2
South Dakota	15	34	7	6	4	3.6	8.0	1.6	1.4	0.9
Tennessee	22	34	23	56	47	0.7	1.0	0.7	1.6	1.4
Texas	179	242	230	230	313	1.3	1.8	1.7	1.6	2.2
Utah	2	1	2	6	4	0.1	0.1	0.1	0.4	0.3
Vermont	0	0	0	3	1	0.0	0.0	0.0	0.9	0.3
Virginia	17	17	17	47	60	0.4	0.4	0.4	1.1	1.4
Washington	13	18	30	51	70	0.4	0.5	0.8	1.4	1.9
West Virginia	4	6	9	10	21	0.4	0.6	1.0	1.1	2.3
Wisconsin	9	7	0	7	12	0.3	0.2	0.0	0.2	0.4
Wyoming	0	0	1	1	0	0.0	0.0	0.3	0.3	0.0
U.S. TOTAL	**1,500**	**1,840**	**2,298**	**3,049**	**3,722**	**0.9**	**1.1**	**1.4**	**1.9**	**2.3**
Northeast	111	154	190	250	291	0.4	0.5	0.7	0.9	1.0
Midwest	250	324	339	398	442	0.7	0.9	1.0	1.2	1.3
South	834	905	1,126	1,374	1,660	1.4	1.5	1.8	2.2	2.7
West	305	457	643	1,027	1,329	0.8	1.2	1.7	2.7	3.5
Guam	5	2	0	0	2	6.3	2.5	0.0	0.0	2.5
Puerto Rico	35	30	70	86	66	1.9	1.6	3.9	4.8	3.7
Virgin Islands	1	1	4	0	0	1.8	1.8	7.3	0.0	0.0
OUTLYING AREAS	**41**	**33**	**74**	**86**	**68**	**2.0**	**1.7**	**3.8**	**4.5**	**3.5**
TOTAL	**1,541**	**1,873**	**2,372**	**3,135**	**3,790**	**0.9**	**1.1**	**1.4**	**1.9**	**2.3**

NOTE: Cases reported with unknown sex are not included in this table. See Section A1.11 in the Appendix for more information on interpreting case counts and rates in outlying areas.

Table 29. Primary and Secondary Syphilis Among Men — Reported Cases and Rates of Reported Cases by State/Area and Region in Alphabetical Order, United States and Outlying Areas, 2013–2017

	Cases					Rates per 100,000 Population				
State/Area	**2013**	**2014**	**2015**	**2016**	**2017**	**2013**	**2014**	**2015**	**2016**	**2017**
Alabama	161	144	243	296	354	6.9	6.1	10.3	12.6	15.0
Alaska	21	14	7	8	12	5.4	3.6	1.8	2.1	3.1
Arizona	260	527	542	641	785	7.9	15.8	16.0	18.6	22.8
Arkansas	133	98	108	113	170	9.1	6.7	7.4	7.7	11.6
California	3,319	3,515	4,430	5,143	5,804	17.4	18.2	22.8	26.4	29.8
Colorado	159	180	239	234	274	6.0	6.7	8.7	8.4	9.8
Connecticut	48	79	77	98	97	2.7	4.5	4.4	5.6	5.6
Delaware	49	45	39	55	51	10.9	9.9	8.5	11.9	11.1
District of Columbia	149	106	83	152	264	48.7	33.9	26.1	47.0	81.7
Florida	1,376	1,602	1,873	2,140	2,069	14.4	16.5	18.9	21.3	20.5
Georgia	930	1,138	1,319	1,237	1,350	19.1	23.1	26.5	24.6	26.9
Hawaii	46	66	90	102	88	6.5	9.2	12.4	14.2	12.3
Idaho	15	12	48	44	49	1.9	1.5	5.8	5.2	5.8
Illinois	731	782	1,001	1,165	1,140	11.6	12.4	15.9	18.5	18.1
Indiana	197	157	257	290	292	6.1	4.8	7.9	8.9	8.9
Iowa	96	66	70	83	92	6.3	4.3	4.5	5.3	5.9
Kansas	47	46	70	112	117	3.3	3.2	4.8	7.7	8.1
Kentucky	105	136	122	198	221	4.9	6.3	5.6	9.1	10.1
Louisiana	308	443	507	558	493	13.6	19.5	22.2	24.4	21.5
Maine	9	13	22	39	54	1.4	2.0	3.4	6.0	8.3
Maryland	395	400	451	455	526	13.7	13.8	15.5	15.6	18.0
Massachusetts	343	277	391	464	512	10.6	8.5	11.9	14.0	15.5
Michigan	458	390	369	334	446	9.4	8.0	7.6	6.8	9.1
Minnesota	178	235	207	267	252	6.6	8.7	7.6	9.7	9.2
Mississippi	59	172	187	268	222	4.1	11.8	12.9	18.5	15.3
Missouri	232	318	253	334	414	7.8	10.7	8.5	11.2	13.8
Montana	4	6	12	13	39	0.8	1.2	2.3	2.5	7.4
Nebraska	37	46	42	62	36	4.0	4.9	4.4	6.5	3.8
Nevada	191	334	312	394	512	13.6	23.4	21.5	26.7	34.7
New Hampshire	27	32	37	36	39	4.1	4.9	5.6	5.4	5.9
New Jersey	220	281	346	448	465	5.1	6.4	7.9	10.3	10.6
New Mexico	58	112	107	162	174	5.6	10.8	10.4	15.7	16.9
New York	1,408	1,675	1,933	2,319	2,214	14.8	17.5	20.1	24.2	23.1
North Carolina	368	665	1,084	973	1,011	7.7	13.7	22.2	19.7	20.5
North Dakota	11	8	11	30	39	3.0	2.1	2.8	7.7	10.0
Ohio	373	492	492	622	720	6.6	8.7	8.7	10.9	12.7
Oklahoma	105	136	188	223	306	5.5	7.1	9.7	11.5	15.7
Oregon	255	250	310	292	298	13.1	12.7	15.6	14.4	14.7
Pennsylvania	445	485	602	693	717	7.1	7.8	9.6	11.1	11.5
Rhode Island	44	66	73	87	64	8.6	12.9	14.3	17.0	12.5
South Carolina	232	227	257	264	305	10.0	9.7	10.8	11.0	12.7
South Dakota	29	19	32	20	29	6.8	4.4	7.4	4.6	6.6
Tennessee	192	203	326	334	441	6.1	6.4	10.1	10.3	13.6
Texas	1,296	1,394	1,450	1,725	1,920	9.9	10.4	10.6	12.5	13.9
Utah	72	46	63	86	113	4.9	3.1	4.2	5.6	7.4
Vermont	3	5	9	20	12	1.0	1.6	2.9	6.5	3.9
Virginia	298	272	316	403	471	7.3	6.6	7.7	9.7	11.4
Washington	271	326	414	514	606	7.8	9.2	11.5	14.1	16.6
West Virginia	11	22	43	43	41	1.2	2.4	4.7	4.7	4.5
Wisconsin	86	79	79	125	161	3.0	2.8	2.8	4.4	5.6
Wyoming	1	4	4	6	4	0.3	1.3	1.3	2.0	1.3
U.S. TOTAL	**15,861**	**18,146**	**21,547**	**24,724**	**26,885**	**10.2**	**11.6**	**13.6**	**15.5**	**16.9**
Northeast	2,547	2,913	3,490	4,204	4,174	9.3	10.7	12.7	15.3	15.2
Midwest	2,475	2,638	2,883	3,444	3,738	7.4	7.9	8.6	10.3	11.1
South	6,167	7,203	8,596	9,437	10,215	10.6	12.3	14.5	15.7	17.0
West	4,672	5,392	6,578	7,639	8,758	12.6	14.4	17.4	20.0	22.9
Guam	1	5	2	2	11	1.2	6.1	2.4	2.3	12.8
Puerto Rico	350	454	461	407	345	20.2	26.6	27.8	25.1	21.2
Virgin Islands	1	1	4	0	0	2.0	2.1	8.4	0.0	0.0
OUTLYING AREAS	**352**	**460**	**467**	**409**	**356**	**18.9**	**25.1**	**26.1**	**23.2**	**20.2**
TOTAL	**16,213**	**18,606**	**22,014**	**25,133**	**27,241**	**10.3**	**11.7**	**13.8**	**15.6**	**16.9**

NOTE: Cases reported with unknown sex are not included in this table. See Section A1.11 in the Appendix for more information on interpreting case counts and rates in outlying areas.

Table 30. Primary and Secondary Syphilis — Reported Cases and Rates of Reported Cases in Selected Metropolitan Statistical Areas (MSAs)* in Alphabetical Order, United States, 2013–2017

	Cases					Rates per 100,000 Population				
MSAs	**2013**	**2014**	**2015**	**2016**	**2017**	**2013**	**2014**	**2015**	**2016**	**2017**
Atlanta-Sandy Springs-Roswell, GA	789	996	1,097	1,018	1,095	14.3	17.7	19.2	17.6	18.9
Austin-Round Rock, TX	145	227	203	317	359	7.7	11.7	10.1	15.4	17.5
Baltimore-Columbia-Towson, MD	288	282	343	332	342	10.4	10.1	12.3	11.9	12.2
Birmingham-Hoover, AL	69	58	74	109[‡]	122	6.1	5.1	6.5	9.5[‡]	10.6
Boston-Cambridge-Newton, MA-NH	268	227	271[†]	320[†]	373	5.7	4.8	5.7[†]	6.7[†]	7.8
Buffalo-Cheektowaga-Niagara Falls, NY	38	49	92	63	60	3.4	4.3	8.1	5.6	5.3
Charlotte-Concord-Gastonia, NC-SC	134	220	333	378	355	5.7	9.2	13.7	15.3	14.3
Chicago-Naperville-Elgin, IL-IN-WI	763	811	1,047	1,202	1,140	8.0	8.5	11.0	12.6	12.0
Cincinnati, OH-KY-IN	166	153	93	81	103	7.8	7.1	4.3	3.7	4.8
Cleveland-Elyria, OH	32	80	72	156	180	1.5	3.9	3.5	7.6	8.8
Columbus, OH	167	250	274	316	353	8.5	12.5	13.6	15.5	17.3
Dallas-Fort Worth-Arlington, TX	445	508	476	542	699	6.5	7.3	6.7	7.5	9.7
Denver-Aurora-Lakewood, CO	135	153	192	187	216	5.0	5.6	6.8	6.6	7.6
Detroit-Warren-Dearborn, MI	394	317	284	253	291	9.2	7.4	6.6	5.9	6.8
Hartford-West Hartford-East Hartford, CT	14	26	44	32	32	1.2	2.1	3.6	2.7	2.7
Houston-The Woodlands-Sugar Land, TX	363	414	439	411	386	5.7	6.4	6.6	6.1	5.7
Indianapolis-Carmel-Anderson, IN	146	109	172	158	186	7.5	5.5	8.6	7.9	9.3
Jacksonville, FL	40	69	91	118	194	2.9	4.9	6.3	8.0	13.1
Kansas City, MO-KS	155	220	191	201	214	7.5	10.6	9.1	9.6	10.2
Las Vegas-Henderson-Paradise, NV	164	318	305	398	519	8.1	15.4	14.4	18.5	24.1
Los Angeles-Long Beach-Anaheim, CA	1,299	1,407	1,832	2,123	2,365	9.9	10.6	13.7	15.9	17.8
Louisville-Jefferson County, KY-IN	71	83	87	149	150	5.6	6.5	6.8	11.6	11.7
Memphis, TN-MS-AR	105	94	121	173	153	7.8	7.0	9.0	12.9	11.4
Miami-Fort Lauderdale-West Palm Beach, FL	762	821	884	925	919	13.1	13.8	14.7	15.2	15.1
Milwaukee-Waukesha-West Allis, WI	54	52	39	50	79	3.4	3.3	2.5	3.2	5.0
Minneapolis-St. Paul-Bloomington, MN-WI	181	243	228	261	248	5.2	7.0	6.5	7.3	7.0
Nashville-Davidson-Murfreesboro-Franklin, TN	57	74	116	115	160	3.2	4.1	6.3	6.2	8.6
New Orleans-Metairie, LA	103	221	218	235	210	8.3	17.7	17.3	18.5	16.5
New York-Newark-Jersey City, NY-NJ-PA	1,491	1,721	2,037	2,551	2,461	7.5	8.6	10.1	12.7	12.2
Oklahoma City, OK	78	91	113	162	219	5.9	6.8	8.3	11.8	15.9
Orlando-Kissimmee-Sanford, FL	201	239	299	384	318	8.9	10.3	12.5	15.7	13.0
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	396	446	458	639	636	6.6	7.4	7.5	10.5	10.5
Phoenix-Mesa-Scottsdale, AZ	219	416	452	574	775	5.0	9.3	9.9	12.3	16.6
Pittsburgh, PA	39	78	150	100	71	1.7	3.3	6.4	4.3	3.0
Portland-Vancouver-Hillsboro, OR-WA	240	206	261	263	255	10.4	8.8	10.9	10.8	10.5
Providence-Warwick, RI-MA	65	93	111[†]	115[†]	98	4.1	5.8	6.9[†]	7.1[†]	6.1
Raleigh, NC	70	129	168	137	136	5.8	10.4	13.2	10.5	10.4
Richmond, VA	70	68	73	104	124	5.6	5.4	5.7	8.1	9.7
Riverside-San Bernardino-Ontario, CA	203	288	341	445	495	4.6	6.5	7.6	9.8	10.9
Sacramento-Roseville-Arden-Arcade, CA	147	162	265	272	343	6.6	7.2	11.7	11.8	14.9
Salt Lake City, UT	65	39	49	69	87	5.7	3.4	4.2	5.8	7.3
San Antonio-New Braunfels, TX	310	247	237	243	329	13.6	10.6	9.9	10.0	13.5
San Diego-Carlsbad, CA	333	371	493	524	585	10.4	11.4	14.9	15.8	17.6
San Francisco-Oakland-Hayward, CA	814	767	830	872	1,030	18.0	16.7	17.8	18.6	22.0
San Jose-Sunnyvale-Santa Clara, CA	146	120	134	222	217	7.6	6.1	6.8	11.2	11.0
Seattle-Tacoma-Bellevue, WA	211	235	311	397	440	5.8	6.4	8.3	10.5	11.6
St. Louis, MO-IL	108	153	112	215	278	3.9	5.5	4.0	7.7	9.9
Tampa-St. Petersburg-Clearwater, FL	226	320	393	436	364	7.9	11.0	13.2	14.4	12.0
Virginia Beach-Norfolk-Newport News, VA-NC	102	85	117	206	170	6.0	5.0	6.8	11.9	9.8
Washington-Arlington-Alexandria, DC-VA-MD-WV	418	226	230	273	640	7.0	3.7	3.8	4.5	10.4
SELECTED MSAs TOTAL	**13,299**	**14,982**	**17,252**	**19,826**	**21,574**	**7.7**	**8.6**	**9.8**	**11.1**	**12.1**

* MSAs were selected on the basis of the largest population in the 2010 U.S. Census.

† The variable used to identify county, which is used to classify cases into MSAs, was complete for ≤95% of cases in a state contributing data to this MSA. See Section A1.4 in the Appendix for more information.

‡ 2016 county data for Alabama have been corrected and may not match previous reports.

Table 31. Primary and Secondary Syphilis Among Women — Reported Cases and Rates of Reported Cases in Selected Metropolitan Statistical Areas (MSAs)* in Alphabetical Order, United States, 2013–2017

	Cases					Rates per 100,000 Population				
MSAs	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Atlanta-Sandy Springs-Roswell, GA	52	58	61	61	78	1.8	2.0	2.1	2.0	2.6
Austin-Round Rock, TX	6	14	16	17	29	0.6	1.4	1.6	1.7	2.8
Baltimore-Columbia-Towson, MD	46	42	49	46	39	3.2	2.9	3.4	3.2	2.7
Birmingham-Hoover, AL	5	5	8	25‡	21	0.8	0.8	1.3	4.2‡	3.5
Boston-Cambridge-Newton, MA-NH	10	14	13†	9†	13	0.4	0.6	0.5†	0.4†	0.5
Buffalo-Cheektowaga-Niagara Falls, NY	2	1	0	1	6	0.3	0.2	0.0	0.2	1.0
Charlotte-Concord-Gastonia, NC-SC	6	6	16	25	31	0.5	0.5	1.3	2.0	2.4
Chicago-Naperville-Elgin, IL-IN-WI	65	76	86	88	79	1.3	1.6	1.8	1.8	1.6
Cincinnati, OH-KY-IN	31	33	21	11	11	2.8	3.0	1.9	1.0	1.0
Cleveland-Elyria, OH	2	5	1	12	23	0.2	0.5	0.1	1.1	2.2
Columbus, OH	18	34	27	48	45	1.8	3.4	2.6	4.6	4.3
Dallas-Fort Worth-Arlington, TX	41	63	56	62	75	1.2	1.8	1.6	1.7	2.0
Denver-Aurora-Lakewood, CO	3	4	6	11	15	0.2	0.3	0.4	0.8	1.0
Detroit-Warren-Dearborn, MI	25	23	26	26	20	1.1	1.0	1.2	1.2	0.9
Hartford-West Hartford-East Hartford, CT	0	2	9	2	8	0.0	0.3	1.5	0.3	1.3
Houston-The Woodlands-Sugar Land, TX	59	64	58	49	63	1.9	2.0	1.7	1.4	1.8
Indianapolis-Carmel-Anderson, IN	9	5	12	15	12	0.9	0.5	1.2	1.5	1.2
Jacksonville, FL	5	9	8	26	50	0.7	1.2	1.1	3.4	6.6
Kansas City, MO-KS	9	23	41	39	43	0.9	2.2	3.9	3.6	4.0
Las Vegas-Henderson-Paradise, NV	6	17	17	40	55	0.6	1.6	1.6	3.7	5.1
Los Angeles-Long Beach-Anaheim, CA	50	67	108	144	177	0.8	1.0	1.6	2.1	2.6
Louisville-Jefferson County, KY-IN	11	14	10	12	16	1.7	2.2	1.5	1.8	2.4
Memphis, TN-MS-AR	17	22	13	25	21	2.4	3.1	1.9	3.6	3.0
Miami-Fort Lauderdale-West Palm Beach, FL	65	44	75	66	71	2.2	1.4	2.4	2.1	2.3
Milwaukee-Waukesha-West Allis, WI	5	6	0	1	5	0.6	0.7	0.0	0.1	0.6
Minneapolis-St. Paul-Bloomington, MN-WI	9	19	37	31	24	0.5	1.1	2.1	1.7	1.3
Nashville-Davidson-Murfreesboro-Franklin, TN	4	5	4	12	10	0.4	0.5	0.4	1.3	1.0
New Orleans-Metairie, LA	10	18	29	25	36	1.6	2.8	4.4	3.8	5.5
New York-Newark-Jersey City, NY-NJ-PA	46	52	69	123	119	0.4	0.5	0.7	1.2	1.1
Oklahoma City, OK	5	7	14	27	39	0.7	1.0	2.0	3.9	5.6
Orlando-Kissimmee-Sanford, FL	9	8	14	21	24	0.8	0.7	1.1	1.7	1.9
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	24	39	43	49	63	0.8	1.2	1.4	1.6	2.0
Phoenix-Mesa-Scottsdale, AZ	22	42	39	56	128	1.0	1.9	1.7	2.4	5.5
Pittsburgh, PA	2	6	11	11	6	0.2	0.5	0.9	0.9	0.5
Portland-Vancouver-Hillsboro, OR-WA	9	9	19	20	31	0.8	0.8	1.6	1.6	2.5
Providence-Warwick, RI-MA	3	8	8†	6†	8	0.4	1.0	1.0†	0.7†	1.0
Raleigh, NC	9	6	13	10	17	1.4	0.9	2.0	1.5	2.5
Richmond, VA	4	2	4	15	18	0.6	0.3	0.6	2.3	2.7
Riverside-San Bernardino-Ontario, CA	7	15	17	47	67	0.3	0.7	0.8	2.1	2.9
Sacramento-Roseville-Arden-Arcade, CA	10	11	26	34	43	0.9	1.0	2.2	2.9	3.7
Salt Lake City, UT	1	1	1	5	0	0.2	0.2	0.2	0.8	0.0
San Antonio-New Braunfels, TX	44	47	43	43	54	3.8	4.0	3.6	3.5	4.4
San Diego-Carlsbad, CA	10	20	17	20	31	0.6	1.2	1.0	1.2	1.9
San Francisco-Oakland-Hayward, CA	40	34	46	50	58	1.7	1.5	2.0	2.1	2.4
San Jose-Sunnyvale-Santa Clara, CA	9	12	10	32	29	0.9	1.2	1.0	3.3	3.0
Seattle-Tacoma-Bellevue, WA	10	10	6	15	5	0.6	0.5	0.3	0.8	0.3
St. Louis, MO-IL	6	17	14	24	34	0.4	1.2	1.0	1.7	2.4
Tampa-St. Petersburg-Clearwater, FL	31	41	44	48	42	2.1	2.7	2.9	3.1	2.7
Virginia Beach-Norfolk-Newport News, VA-NC	5	8	5	22	24	0.6	0.9	0.6	2.5	2.7
Washington-Arlington-Alexandria, DC-VA-MD-WV	35	7	10	8	19	1.2	0.2	0.3	0.3	0.6
SELECTED MSAs TOTAL	**912**	**1,095**	**1,280**	**1,615**	**1,935**	**1.0**	**1.2**	**1.4**	**1.8**	**2.1**

* MSAs were selected on the basis of the largest population in the 2010 U.S. Census.

† The variable used to identify county, which is used to classify cases into MSAs, was complete for ≤95% of cases in a state contributing data to this MSA. See Section A1.4 in the Appendix for more information.

‡ 2016 county data for Alabama have been corrected and may not match previous reports.

NOTE: Cases reported with unknown sex are not included in this table.

Table 32. Primary and Secondary Syphilis Among Men — Reported Cases and Rates of Reported Cases in Selected Metropolitan Statistical Areas (MSAs)* in Alphabetical Order, United States, 2013–2017

	Cases					Rates per 100,000 Population				
MSAs	**2013**	**2014**	**2015**	**2016**	**2017**	**2013**	**2014**	**2015**	**2016**	**2017**
Atlanta-Sandy Springs-Roswell, GA	737	938	1,036	957	1,017	27.5	34.5	37.5	34.2	36.3
Austin-Round Rock, TX	139	213	187	300	330	14.7	21.9	18.7	29.2	32.1
Baltimore-Columbia-Towson, MD	242	240	294	286	303	18.1	17.9	21.8	21.2	22.5
Birmingham-Hoover, AL	64	53	66	84‡	101	11.6	9.6	12.0	15.2‡	18.3
Boston-Cambridge-Newton, MA-NH	258	213	257†	311†	360	11.4	9.3	11.1†	13.4†	15.5
Buffalo-Cheektowaga-Niagara Falls, NY	36	48	92	62	54	6.6	8.7	16.7	11.3	9.8
Charlotte-Concord-Gastonia, NC-SC	128	214	317	353	324	11.3	18.5	26.9	29.4	27.0
Chicago-Naperville-Elgin, IL-IN-WI	697	735	961	1,114	1,061	14.9	15.7	20.6	23.9	22.8
Cincinnati, OH-KY-IN	135	120	72	70	92	12.9	11.4	6.8	6.6	8.7
Cleveland-Elyria, OH	30	75	71	144	157	3.0	7.5	7.1	14.5	15.8
Columbus, OH	149	216	247	268	308	15.4	22.0	24.8	26.7	30.7
Dallas-Fort Worth-Arlington, TX	404	445	420	480	624	12.0	13.0	12.0	13.5	17.6
Denver-Aurora-Lakewood, CO	132	149	186	176	201	9.8	10.9	13.3	12.4	14.1
Detroit-Warren-Dearborn, MI	369	294	258	227	271	17.7	14.1	12.3	10.9	13.0
Hartford-West Hartford-East Hartford, CT	14	24	35	30	24	2.4	4.1	5.9	5.1	4.1
Houston-The Woodlands-Sugar Land, TX	304	350	381	362	323	9.7	10.8	11.5	10.8	9.6
Indianapolis-Carmel-Anderson, IN	137	104	160	143	174	14.3	10.8	16.5	14.6	17.8
Jacksonville, FL	35	60	83	92	144	5.2	8.7	11.7	12.8	20.0
Kansas City, MO-KS	146	197	150	162	171	14.5	19.4	14.6	15.7	16.6
Las Vegas-Henderson-Paradise, NV	158	301	288	358	464	15.5	29.1	27.3	33.3	43.2
Los Angeles-Long Beach-Anaheim, CA	1,248	1,340	1,724	1,978	2,188	19.2	20.5	26.2	30.2	33.4
Louisville-Jefferson County, KY-IN	60	69	77	137	134	9.7	11.1	12.3	21.8	21.4
Memphis, TN-MS-AR	88	72	108	148	132	13.7	11.2	16.8	23.0	20.5
Miami-Fort Lauderdale-West Palm Beach, FL	697	777	809	859	848	24.6	27.0	27.8	29.2	28.8
Milwaukee-Waukesha-West Allis, WI	49	46	39	49	74	6.4	6.0	5.1	6.4	9.7
Minneapolis-St. Paul-Bloomington, MN-WI	169	223	191	228	222	9.9	12.9	10.9	13.0	12.6
Nashville-Davidson-Murfreesboro-Franklin, TN	53	69	112	103	150	6.2	7.9	12.5	11.3	16.5
New Orleans-Metairie, LA	93	203	189	210	174	15.4	33.5	31.0	34.2	28.4
New York-Newark-Jersey City, NY-NJ-PA	1,438	1,666	1,954	2,407	2,322	14.9	17.1	20.0	24.7	23.8
Oklahoma City, OK	73	84	99	135	180	11.2	12.8	14.8	19.9	26.6
Orlando-Kissimmee-Sanford, FL	192	231	285	363	294	17.3	20.4	24.4	30.4	24.6
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	372	407	415	590	573	12.8	13.9	14.1	20.1	19.5
Phoenix-Mesa-Scottsdale, AZ	197	374	413	518	647	9.0	16.8	18.2	22.4	27.9
Pittsburgh, PA	37	72	139	89	65	3.2	6.3	12.1	7.8	5.7
Portland-Vancouver-Hillsboro, OR-WA	231	197	242	243	224	20.2	17.0	20.5	20.3	18.7
Providence-Warwick, RI-MA	62	84	103†	109†	90	8.0	10.8	13.2†	13.9†	11.5
Raleigh, NC	61	123	155	127	119	10.3	20.3	24.9	20.0	18.8
Richmond, VA	66	66	69	87	103	11.0	10.8	11.2	14.1	16.6
Riverside-San Bernardino-Ontario, CA	196	273	324	398	428	9.0	12.4	14.5	17.7	19.0
Sacramento-Roseville-Arden-Arcade, CA	137	151	239	238	300	12.6	13.7	21.5	21.2	26.7
Salt Lake City, UT	64	38	48	64	87	11.2	6.6	8.2	10.7	14.6
San Antonio-New Braunfels, TX	266	200	194	200	275	23.7	17.4	16.5	16.7	22.9
San Diego-Carlsbad, CA	323	351	476	504	554	20.0	21.4	28.7	30.2	33.2
San Francisco-Oakland-Hayward, CA	773	731	783	820	970	34.7	32.3	34.1	35.5	42.0
San Jose-Sunnyvale-Santa Clara, CA	137	108	124	190	188	14.2	11.0	12.5	19.0	18.8
Seattle-Tacoma-Bellevue, WA	201	225	305	382	434	11.2	12.3	16.3	20.1	22.9
St. Louis, MO-IL	102	136	98	191	244	7.5	10.0	7.2	14.0	17.9
Tampa-St. Petersburg-Clearwater, FL	195	278	349	388	322	14.0	19.7	24.2	26.4	21.9
Virginia Beach-Norfolk-Newport News, VA-NC	97	77	112	178	144	11.5	9.1	13.2	20.9	16.9
Washington-Arlington-Alexandria, DC-VA-MD-WV	383	219	219	264	618	13.2	7.4	7.4	8.8	20.6
SELECTED MSAs TOTAL	**12,374**	**13,879**	**15,955**	**18,176**	**19,606**	**14.6**	**16.2**	**18.4**	**20.9**	**22.5**

* MSAs were selected on the basis of the largest population in the 2010 U.S. Census.

† The variable used to identify county, which is used to classify cases into MSAs, was complete for ≤95% of cases in a state contributing data to this MSA. See Section A1.4 in the Appendix for more information.

‡ 2016 county data for Alabama have been corrected and may not match previous reports.

NOTE: Cases reported with unknown sex are not included in this table.

Table 33. Primary and Secondary Syphilis — Reported Cases and Rates of Reported Cases in Counties and Independent Cities* Ranked by Number of Reported Cases, United States, 2017

Rank*	County/Independent City	Cases	Rate per 100,000 Population	Cumulative Percentage
1	Los Angeles County, CA	1,996	19.7	6
2	Cook County, IL	980	18.8	9
3	Maricopa County, AZ	730	17.2	12
4	New York County, NY	596	36.3	14
5	San Diego County, CA	585	17.6	15
6	San Francisco County, CA	584	67.1	17
7	Clark County, NV	519	24.1	19
8	Kings County, NY	519	19.7	21
9	Miami-Dade County, FL	481	17.7	22
10	Philadelphia County, PA	459	29.3	24
11	Fulton County, GA	424	41.4	25
12	Dallas County, TX	417	16.2	27
13	Bronx County, NY	388	26.7	28
14	San Joaquin County, CA	379	51.7	29
15	Orange County, CA	369	11.6	30
16	Broward County, FL	328	17.2	31
17	Harris County, TX	328	7.1	32
18	Franklin County, OH	321	25.4	33
19	King County, WA	321	14.9	34
20	Bexar County, TX	314	16.3	36
21	Travis County, TX	310	25.8	37
22	Sacramento County, CA	287	19.0	37
23	DeKalb County, GA	281	38.0	38
24	Fresno County, CA	279	28.5	39
25	Washington, D.C.	274	40.2	40
26	Queens County, NY	267	11.4	41
27	Mecklenburg County, NC	265	25.1	42
28	Riverside County, CA	253	10.6	43
29	Kern County, CA	251	28.4	44
30	Orange County, FL	243	18.5	44
31	San Bernardino County, CA	242	11.3	45
32	Alameda County, CA	230	14.0	46
33	Santa Clara County, CA	215	11.2	47
34	Baltimore (City), MD	210	34.2	47
35	Tarrant County, TX	197	9.8	48
36	Hillsborough County, FL	185	13.4	49
37	Wayne County, MI	179	10.2	49
38	Oklahoma County, OK	176	22.5	50
39	Duval County, FL	170	18.4	50
40	Marion County, IN	168	17.8	51
41	Pinellas County, FL	160	16.7	51
42	Multnomah County, OR	159	19.9	52
43	Cuyahoga County, OH	158	12.6	52
44	Suffolk County, MA	152	19.4	53
45	Hennepin County, MN	152	12.3	53
46	Jackson County, MO	146	21.1	54
47	Prince George's County, MD	143	15.7	54
48	Shelby County, TN	135	14.4	55
49	Orleans Parish, LA	133	34.0	55
50	Denver County, CO	133	19.2	56
51	Contra Costa County, CA	133	11.7	56
52	Jefferson County, KY	129	16.9	56
53	Wake County, NC	126	12.0	57
54	Middlesex County, MA	121	7.6	57
55	Stanislaus County, CA	119	22.0	58
56	Gwinnett County, GA	116	12.8	58
57	St. Louis County, MO	114	11.4	58
58	Guilford County, NC	113	21.7	59
59	Palm Beach County, FL	110	7.6	59
60	Davidson County, TN	109	15.9	59
61	Bernalillo County, NM	107	15.8	60
62	El Paso County, TX	106	12.7	60
63	St. Louis (City), MO	101	32.4	61
64	Hudson County, NJ	101	14.9	61
65	Pima County, AZ	100	9.8	61
66	Essex County, NJ	98	12.3	61
67	Manatee County, FL	97	25.8	62
68	Jefferson County, AL	97	14.7	62
69	Cobb County, GA	97	13.0	62
70	Salt Lake County, UT	86	7.7	63

* The top 70 counties and independent cities ranked in descending order by number of cases reported in 2017 then by rate are displayed.
NOTE: Relative rankings of counties may be impacted by completeness of the variable used to identify county. See Section A1.4 in the Appendix for more information.

Table 34. Primary and Secondary Syphilis — Reported Cases and Rates of Reported Cases by Age Group and Sex, United States, 2013–2017

Age Group	Cases Total	Cases Male	Cases Female	Cases Unknown Sex	Rates per 100,000 Population* Total	Rates Male	Rates Female	Year
0–4	5	2	3	0	0.0	0.0	0.0	2013
5–9	0	0	0	0	0.0	0.0	0.0	
10–14	23	14	9	0	0.1	0.1	0.1	
15–19	900	700	200	0	4.3	6.5	1.9	
20–24	3,642	3,204	435	3	16.0	27.4	3.9	
25–29	3,329	3,037	286	6	15.4	27.7	2.7	
30–34	2,447	2,272	172	3	11.5	21.3	1.6	
35–39	1,800	1,674	125	1	9.2	17.1	1.3	
40–44	1,693	1,587	105	1	8.1	15.3	1.0	
45–54	2,614	2,495	119	0	6.0	11.6	0.5	
55–64	750	716	34	0	1.9	3.8	0.2	
65+	162	152	10	0	0.4	0.8	0.0	
Unknown Age	10	8	2	0				
TOTAL	**17,375**	**15,861**	**1,500**	**14**	**5.5**	**10.2**	**0.9**	
0–4	0	0	0	0	0.0	0.0	0.0	2014
5–9	0	0	0	0	0.0	0.0	0.0	
10–14	12	4	8	0	0.1	0.0	0.1	
15–19	1,023	761	262	0	4.9	7.1	2.5	
20–24	4,137	3,632	503	2	18.1	30.9	4.5	
25–29	4,092	3,727	361	4	18.6	33.4	3.3	
30–34	2,887	2,635	248	4	13.4	24.4	2.3	
35–39	2,045	1,868	177	0	10.3	18.8	1.8	
40–44	1,758	1,654	103	1	8.5	16.2	1.0	
45–54	2,966	2,830	135	1	6.8	13.2	0.6	
55–64	897	860	36	1	2.2	4.5	0.2	
65+	176	169	7	0	0.4	0.8	0.0	
Unknown Age	6	6	0	0				
TOTAL	**19,999**	**18,146**	**1,840**	**13**	**6.3**	**11.6**	**1.1**	
0–4	2	0	1	1	0.0	0.0	0.0	2015
5–9	1	0	1	0	0.0	0.0	0.0	
10–14	9	1	8	0	0.0	0.0	0.1	
15–19	1,148	865	283	0	5.4	8.0	2.7	
20–24	4,766	4,186	573	7	21.0	35.9	5.2	
25–29	5,168	4,671	491	6	23.0	40.9	4.4	
30–34	3,549	3,234	311	4	16.4	29.7	2.9	
35–39	2,482	2,249	229	4	12.2	22.1	2.2	
40–44	1,897	1,744	152	1	9.4	17.4	1.5	
45–54	3,488	3,294	190	4	8.1	15.5	0.9	
55–64	1,153	1,099	54	0	2.8	5.6	0.3	
65+	207	202	5	0	0.4	1.0	0.0	
Unknown Age	2	2	0	0				
TOTAL	**23,872**	**21,547**	**2,298**	**27**	**7.4**	**13.6**	**1.4**	
0–4	2	0	2	0	0.0	0.0	0.0	2016
5–9	2	1	1	0	0.0	0.0	0.0	
10–14	15	6	9	0	0.1	0.1	0.1	
15–19	1,298	957	340	1	6.1	8.9	3.3	
20–24	5,172	4,418	744	10	23.1	38.4	6.8	
25–29	6,177	5,538	624	15	27.0	47.6	5.5	
30–34	4,278	3,806	464	8	19.6	34.7	4.3	
35–39	3,043	2,729	311	3	14.6	26.3	3.0	
40–44	2,140	1,944	193	3	10.9	19.9	1.9	
45–54	3,953	3,691	261	1	9.2	17.5	1.2	
55–64	1,418	1,338	80	0	3.4	6.7	0.4	
65+	279	269	10	0	0.6	1.2	0.0	
Unknown Age	37	27	10	0				
TOTAL	**27,814**	**24,724**	**3,049**	**41**	**8.6**	**15.5**	**1.9**	
0–4	5	0	5	0	0.0	0.0	0.1	2017
5–9	1	0	1	0	0.0	0.0	0.0	
10–14	20	6	14	0	0.1	0.1	0.1	
15–19	1,421	1,092	327	2	6.7	10.1	3.2	
20–24	5,580	4,728	848	4	24.9	41.1	7.8	
25–29	6,838	6,033	795	10	29.9	51.9	7.1	
30–34	4,870	4,313	549	8	22.4	39.3	5.1	
35–39	3,580	3,145	431	4	17.2	30.3	4.1	
40–44	2,290	2,005	282	3	11.6	20.5	2.8	
45–54	4,091	3,753	334	4	9.6	17.8	1.5	
55–64	1,586	1,468	117	1	3.8	7.3	0.5	
65+	349	329	19	1	0.7	1.5	0.1	
Unknown Age	13	13	0	0				
TOTAL	**30,644**	**26,885**	**3,722**	**37**	**9.5**	**16.9**	**2.3**	

* No population data are available for unknown sex and age; therefore, rates are not calculated.
NOTE: This table should be used only for age comparisons.

Table 35A. Primary and Secondary Syphilis — Reported Cases by Race/Hispanic Ethnicity, Age Group, and Sex, United States, 2017

Age Group	American Indians/ Alaska Natives			Asians			Blacks			Native Hawaiians/ Other Pacific Islanders		
	Total*	Male	Female	Total*	Male	Female	Total*	Male	Female	Total*	Male	Female
0–4	0	0	0	0	0	0	2	0	2	0	0	0
5–9	1	0	1	0	0	0	0	0	0	0	0	0
10–14	0	0	0	1	1	0	13	3	10	0	0	0
15–19	17	12	5	20	17	3	626	465	160	2	1	1
20–24	60	42	18	148	141	7	2,194	1,791	402	14	12	2
25–29	66	49	17	181	173	8	2,621	2,306	311	11	11	0
30–34	44	30	14	124	116	8	1,541	1,378	160	21	19	2
35–39	27	19	8	95	91	4	973	845	126	13	9	4
40–44	23	19	4	71	69	1	601	515	86	7	7	0
45–54	20	15	5	99	94	5	812	716	96	7	7	0
55–64	5	4	1	27	25	2	320	280	40	3	3	0
65+	1	1	0	8	8	0	46	40	6	1	1	0
Unknown Age	0	0	0	1	1	0	5	5	0	0	0	0
TOTAL	**264**	**191**	**73**	**775**	**736**	**38**	**9,754**	**8,344**	**1,399**	**79**	**70**	**9**

Age Group	Whites			Multirace			Hispanics			Other/ Unknown		
	Total*	Male	Female	Total*	Male	Female	Total*	Male	Female	Total*	Male	Female
0–4	2	0	2	1	0	1	0	0	0	0	0	0
5–9	0	0	0	0	0	0	0	0	0	0	0	0
10–14	2	0	2	0	0	0	3	2	1	1	0	1
15–19	333	247	86	18	16	2	333	278	55	72	56	15
20–24	1,408	1,167	239	81	68	12	1,359	1,226	133	316	281	35
25–29	1,884	1,601	281	138	123	12	1,593	1,455	137	344	315	29
30–34	1,590	1,359	230	121	115	5	1,152	1,046	103	277	250	27
35–39	1,353	1,194	158	65	60	5	851	747	103	203	180	23
40–44	869	766	103	33	31	2	555	481	73	131	117	13
45–54	2,125	1,975	149	59	57	2	704	644	58	265	245	19
55–64	922	871	50	13	12	1	204	184	20	92	89	3
65+	219	211	8	4	4	0	36	33	2	34	31	3
Unknown Age	6	6	0	0	0	0	0	0	0	1	1	0
TOTAL	**10,713**	**9,397**	**1,308**	**533**	**486**	**42**	**6,790**	**6,096**	**685**	**1,736**	**1,565**	**168**

* Total includes cases reported with unknown sex.

NOTE: These tables should be used only for race/Hispanic ethnicity comparisons. See Table 34 for age-specific cases and rates and Tables 27–29 for total and sex-specific cases and rates.

Table 35B. Primary and Secondary Syphilis — Rates of Reported Cases per 100,000 Population by Race/Hispanic Ethnicity, Age Group, and Sex, United States, 2017

Age Group	American Indians/ Alaska Natives			Asians			Blacks			Native Hawaiians/ Other Pacific Islanders		
	Total*	Male	Female	Total*	Male	Female	Total*	Male	Female	Total*	Male	Female
0–4	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0
5–9	0.6	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10–14	0.0	0.0	0.0	0.1	0.2	0.0	0.5	0.2	0.7	0.0	0.0	0.0
15–19	9.3	13.0	5.6	1.9	3.2	0.6	21.0	30.7	10.9	4.9	4.8	5.1
20–24	30.9	42.3	19.0	11.7	22.0	1.1	66.5	106.8	24.8	31.3	52.1	9.2
25–29	34.7	50.4	18.3	11.9	23.3	1.0	80.5	142.4	19.0	21.1	40.5	0.0
30–34	26.7	36.4	17.0	8.1	15.9	1.0	55.1	101.9	11.1	42.1	74.5	8.2
35–39	17.8	25.3	10.5	6.6	13.6	0.5	36.5	66.8	9.0	29.7	40.1	18.8
40–44	16.4	27.4	5.6	5.0	10.4	0.1	24.1	44.0	6.5	18.7	36.9	0.0
45–54	6.6	10.1	3.2	4.1	8.3	0.4	15.4	28.9	3.4	9.9	20.1	0.0
55–64	1.8	3.0	0.7	1.4	2.8	0.2	6.8	13.0	1.6	5.3	10.8	0.0
65+	0.4	0.9	0.0	0.4	0.9	0.0	1.0	2.3	0.2	2.0	4.4	0.0
Unknown Age												
TOTAL	**11.1**	**16.2**	**6.0**	**4.4**	**8.7**	**0.4**	**24.2**	**43.4**	**6.7**	**13.9**	**24.5**	**3.2**

Age Group	Whites			Multirace			Hispanics		
	Total*	Male	Female	Total*	Male	Female	Total*	Male	Female
0–4	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10–14	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0
15–19	2.9	4.2	1.6	2.6	4.5	0.6	6.9	11.4	2.3
20–24	11.6	18.7	4.0	13.1	21.7	3.9	28.3	49.4	5.7
25–29	14.8	24.7	4.5	28.0	51.6	4.7	34.5	60.3	6.2
30–34	12.8	21.7	3.8	30.8	61.9	2.4	25.9	44.9	4.8
35–39	11.4	20.0	2.7	19.2	37.7	2.8	19.8	33.7	5.0
40–44	7.6	13.4	1.8	11.8	23.5	1.3	14.0	24.0	3.7
45–54	7.7	14.4	1.1	11.9	24.3	0.8	10.5	19.1	1.8
55–64	3.1	6.0	0.3	3.2	6.2	0.5	4.6	8.5	0.9
65+	0.6	1.2	0.0	1.1	2.5	0.0	0.9	1.9	0.1
Unknown Age									
TOTAL	**5.4**	**9.6**	**1.3**	**7.9**	**14.6**	**1.2**	**11.8**	**21.0**	**2.4**

* Total includes cases reported with unknown sex.

NOTE: These tables should be used only for race/Hispanic ethnicity comparisons. See Table 34 for age-specific cases and rates and Tables 27–29 for total and sex-specific cases and rates. No population data exist for unknown sex, unknown age, or unknown race; therefore rates are not calculated.

Table 36. Early Latent Syphilis — Reported Cases and Rates of Reported Cases by State/Area and Region in Alphabetical Order, United States and Outlying Areas, 2013–2017

	Cases					Rates per 100,000 Population				
State/Area	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Alabama	202	144	177	293	425	4.2	3.0	3.6	6.0	8.7
Alaska	8	25	13	13	9	1.1	3.4	1.8	1.8	1.2
Arizona	207	311	361	488	620	3.1	4.6	5.3	7.0	8.9
Arkansas	163	152	216	280	328	5.5	5.1	7.3	9.4	11.0
California	2,844	3,396	4,435	5,289	7,028	7.4	8.8	11.3	13.5	17.9
Colorado	195	164	212	274	281	3.7	3.1	3.9	4.9	5.1
Connecticut	55	62	97	84	145	1.5	1.7	2.7	2.3	4.1
Delaware	30	33	47	57	49	3.2	3.5	5.0	6.0	5.1
District of Columbia	243	142	200	355	341	37.6	21.6	29.8	52.1	50.1
Florida	1,540	1,886	2,288	2,634	3,033	7.9	9.5	11.3	12.8	14.7
Georgia	863	1,078	1,477	1,263	1,218	8.6	10.7	14.5	12.2	11.8
Hawaii	22	25	56	89	58	1.6	1.8	3.9	6.2	4.1
Idaho	6	12	24	33	41	0.4	0.7	1.5	2.0	2.4
Illinois	809	819	889	1,138	1,192	6.3	6.4	6.9	8.9	9.3
Indiana	157	129	220	247	250	2.4	2.0	3.3	3.7	3.8
Iowa	63	82	69	59	91	2.0	2.6	2.2	1.9	2.9
Kansas	84	92	153	178	202	2.9	3.2	5.3	6.1	6.9
Kentucky	167	169	164	189	236	3.8	3.8	3.7	4.3	5.3
Louisiana	276	372	439	568	623	6.0	8.0	9.4	12.1	13.3
Maine	6	7	10	6	36	0.5	0.5	0.8	0.5	2.7
Maryland	387	529	594	598	683	6.5	8.9	9.9	9.9	11.4
Massachusetts	350	282	355	538	549	5.2	4.2	5.2	7.9	8.1
Michigan	204	243	282	290	330	2.1	2.5	2.8	2.9	3.3
Minnesota	139	159	185	251	313	2.6	2.9	3.4	4.5	5.7
Mississippi	184	336	405	490	555	6.2	11.2	13.5	16.4	18.6
Missouri	220	240	247	276	423	3.6	4.0	4.1	4.5	6.9
Montana	2	1	5	6	23	0.2	0.1	0.5	0.6	2.2
Nebraska	14	19	5	19	26	0.7	1.0	0.3	1.0	1.4
Nevada	232	389	439	510	498	8.3	13.7	15.2	17.3	16.9
New Hampshire	21	22	16	33	37	1.6	1.7	1.2	2.5	2.8
New Jersey	539	612	714	755	865	6.1	6.8	8.0	8.4	9.7
New Mexico	67	76	71	118	120	3.2	3.6	3.4	5.7	5.8
New York	1,945	2,307	2,802	3,504	3,914	9.9	11.7	14.2	17.7	19.8
North Carolina	236	468	753	799	771	2.4	4.7	7.5	7.9	7.6
North Dakota	2	22	17	12	12	0.3	3.0	2.2	1.6	1.6
Ohio	211	265	326	389	454	1.8	2.3	2.8	3.3	3.9
Oklahoma	237	198	222	339	478	6.2	5.1	5.7	8.6	12.2
Oregon	127	149	214	250	205	3.2	3.8	5.3	6.1	5.0
Pennsylvania	581	641	770	982	1,100	4.5	5.0	6.0	7.7	8.6
Rhode Island	22	49	38	63	71	2.1	4.6	3.6	6.0	6.7
South Carolina	415	467	496	613	687	8.7	9.7	10.1	12.4	13.8
South Dakota	5	23	11	14	19	0.6	2.7	1.3	1.6	2.2
Tennessee	267	236	312	337	412	4.1	3.6	4.7	5.1	6.2
Texas	1,902	1,984	2,471	2,872	3,680	7.2	7.4	9.0	10.3	13.2
Utah	47	41	31	61	85	1.6	1.4	1.0	2.0	2.8
Vermont	2	7	6	14	13	0.3	1.1	1.0	2.2	2.1
Virginia	354	274	410	602	659	4.3	3.3	4.9	7.2	7.8
Washington	204	198	293	446	588	2.9	2.8	4.1	6.1	8.1
West Virginia	10	23	40	51	34	0.5	1.2	2.2	2.8	1.9
Wisconsin	62	91	95	150	199	1.1	1.6	1.6	2.6	3.4
Wyoming	1	1	1	5	4	0.2	0.2	0.2	0.9	0.7
U.S. TOTAL	**16,929**	**19,452**	**24,173**	**28,924**	**34,013**	**5.4**	**6.1**	**7.5**	**9.0**	**10.5**
Northeast	3,521	3,989	4,808	5,979	6,730	6.3	7.1	8.5	10.6	12.0
Midwest	1,970	2,184	2,499	3,023	3,511	2.9	3.2	3.7	4.4	5.2
South	7,476	8,491	10,711	12,340	14,212	6.3	7.1	8.8	10.1	11.6
West	3,962	4,788	6,155	7,582	9,560	5.3	6.4	8.1	9.9	12.5
Guam	3	1	2	1	3	1.9	0.6	1.2	0.6	1.8
Puerto Rico	270	375	565	570	527	7.5	10.6	16.3	16.7	15.4
Virgin Islands	2	0	7	2	0	1.9	0.0	6.8	1.9	0.0
OUTLYING AREAS	**275**	**376**	**574**	**573**	**530**	**7.1**	**9.9**	**15.4**	**15.5**	**14.4**
TOTAL	**17,204**	**19,828**	**24,747**	**29,497**	**34,543**	**5.4**	**6.1**	**7.6**	**9.0**	**10.6**

NOTE: See Section A1.11 in the Appendix for more information on interpreting case counts and rates in outlying areas.

Table 37. Early Latent Syphilis — Reported Cases and Rates of Reported Cases in Selected Metropolitan Statistical Areas (MSAs)* in Alphabetical Order, United States, 2013–2017

	Cases					Rates per 100,000 Population				
MSAs	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Atlanta-Sandy Springs-Roswell, GA	672	863	1,067	1,053	1,027	12.2	15.4	18.7	18.2	17.7
Austin-Round Rock, TX	220	207	242	291	424	11.7	10.7	12.1	14.2	20.6
Baltimore-Columbia-Towson, MD	216	296	344	358	337	7.8	10.6	12.3	12.8	12.0
Birmingham-Hoover, AL	71	46	60	79‡	124	6.2	4.0	5.2	6.9‡	10.8
Boston-Cambridge-Newton, MA-NH	278	208	235†	408†	429	5.9	4.4	4.9†	8.5†	8.9
Buffalo-Cheektowaga-Niagara Falls, NY	15	19	37	29	32	1.3	1.7	3.3	2.6	2.8
Charlotte-Concord-Gastonia, NC-SC	74	129	206	264	259	3.2	5.4	8.5	10.7	10.5
Chicago-Naperville-Elgin, IL-IN-WI	751	734	814	1,058	1,091	7.9	7.7	8.5	11.1	11.5
Cincinnati, OH-KY-IN	70	98	92	74	83	3.3	4.6	4.3	3.4	3.8
Cleveland-Elyria, OH	14	31	37	63	73	0.7	1.5	1.8	3.1	3.6
Columbus, OH	71	82	130	149	183	3.6	4.1	6.4	7.3	9.0
Dallas-Fort Worth-Arlington, TX	550	644	932	1,038	1,256	8.1	9.3	13.1	14.4	17.4
Denver-Aurora-Lakewood, CO	166	145	175	212	213	6.2	5.3	6.2	7.4	7.5
Detroit-Warren-Dearborn, MI	152	163	206	194	196	3.5	3.8	4.8	4.5	4.6
Hartford-West Hartford-East Hartford, CT	19	16	31	20	31	1.6	1.3	2.6	1.7	2.6
Houston-The Woodlands-Sugar Land, TX	348	444	522	585	740	5.5	6.8	7.8	8.6	10.9
Indianapolis-Carmel-Anderson, IN	104	91	143	165	161	5.3	4.6	7.2	8.2	8.0
Jacksonville, FL	73	69	162	137	191	5.2	4.9	11.2	9.3	12.9
Kansas City, MO-KS	111	132	133	140	158	5.4	6.4	6.4	6.7	7.5
Las Vegas-Henderson-Paradise, NV	218	375	413	470	451	10.8	18.1	19.5	21.8	20.9
Los Angeles-Long Beach-Anaheim, CA	1,520	1,619	2,052	2,403	3,119	11.6	12.2	15.4	18.1	23.4
Louisville-Jefferson County, KY-IN	85	82	90	118	143	6.7	6.5	7.0	9.2	11.1
Memphis, TN-MS-AR	188	143	195	246	244	14.0	10.6	14.5	18.3	18.2
Miami-Fort Lauderdale-West Palm Beach, FL	885	1,094	1,220	1,282	1,569	15.2	18.4	20.3	21.1	25.9
Milwaukee-Waukesha-West Allis, WI	43	69	66	108	130	2.7	4.4	4.2	6.9	8.3
Minneapolis-St. Paul-Bloomington, MN-WI	131	155	170	226	280	3.8	4.4	4.8	6.4	7.9
Nashville-Davidson-Murfreesboro-Franklin, TN	62	83	82	72	102	3.5	4.6	4.5	3.9	5.5
New Orleans-Metairie, LA	81	122	171	242	244	6.5	9.7	13.5	19.1	19.2
New York-Newark-Jersey City, NY-NJ-PA	2,299	2,681	3,210	4,008	4,405	11.5	13.3	15.9	19.9	21.9
Oklahoma City, OK	124	107	114	195	270	9.4	8.0	8.4	14.2	19.7
Orlando-Kissimmee-Sanford, FL	175	180	266	377	359	7.7	7.8	11.1	15.4	14.7
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	497	512	616	736	835	8.2	8.5	10.1	12.1	13.8
Phoenix-Mesa-Scottsdale, AZ	150	240	268	381	440	3.4	5.3	5.9	8.2	9.4
Pittsburgh, PA	45	63	111	125	109	1.9	2.7	4.7	5.3	4.7
Portland-Vancouver-Hillsboro, OR-WA	117	124	170	226	187	5.1	5.3	7.1	9.3	7.7
Providence-Warwick, RI-MA	28	64	48†	71†	92	1.7	4.0	3.0†	4.4†	5.7
Raleigh, NC	41	77	115	135	130	3.4	6.2	9.0	10.4	10.0
Richmond, VA	75	68	98	162	157	6.0	5.4	7.7	12.6	12.2
Riverside-San Bernardino-Ontario, CA	159	223	311	379	513	3.6	5.0	6.9	8.4	11.3
Sacramento-Roseville-Arden-Arcade, CA	33	74	137	133	194	1.5	3.3	6.0	5.8	8.4
Salt Lake City, UT	37	31	23	43	55	3.2	2.7	2.0	3.6	4.6
San Antonio-New Braunfels, TX	381	308	258	339	485	16.7	13.2	10.8	14.0	20.0
San Diego-Carlsbad, CA	211	299	343	461	550	6.6	9.2	10.4	13.9	16.6
San Francisco-Oakland-Hayward, CA	656	839	964	919	1,218	14.5	18.3	20.7	19.6	26.0
San Jose-Sunnyvale-Santa Clara, CA	60	58	96	135	200	3.1	3.0	4.9	6.8	10.1
Seattle-Tacoma-Bellevue, WA	167	143	221	303	424	4.6	3.9	5.9	8.0	11.2
St. Louis, MO-IL	125	139	138	151	245	4.5	5.0	4.9	5.4	8.7
Tampa-St. Petersburg-Clearwater, FL	176	227	258	364	296	6.1	7.8	8.7	12.0	9.8
Virginia Beach-Norfolk-Newport News, VA-NC	112	90	167	245	270	6.6	5.2	9.7	14.2	15.6
Washington-Arlington-Alexandria, DC-VA-MD-WV	520	286	320	355	820	8.7	4.7	5.2	5.8	13.4
SELECTED MSAs TOTAL	**13,376**	**14,992**	**18,279**	**21,727**	**25,544**	**7.7**	**8.6**	**10.3**	**12.2**	**14.4**

* MSAs were selected on the basis of the largest population in the 2010 U.S. Census.
† The variable used to identify county, which is used to classify cases into MSAs, was complete for ≤95% of cases in a state contributing data to this MSA. See Section A1.4 in the Appendix for more information.
‡ 2016 county data for Alabama have been corrected and may not match previous reports.

Table 38. Late and Late Latent Syphilis* — Reported Cases and Rates of Reported Cases by State/Area and Region in Alphabetical Order, United States and Outlying Areas, 2013–2017

State/Area	Cases					Rates per 100,000 Population				
	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Alabama	292	167	197	232	347	6.0	3.4	4.1	4.8	7.1
Alaska	3	5	3	3	6	0.4	0.7	0.4	0.4	0.8
Arizona	455	558	532	680	829	6.9	8.3	7.8	9.8	12.0
Arkansas	175	110	145	131	156	5.9	3.7	4.9	4.4	5.2
California	3,539	4,110	4,966	6,216	7,787	9.2	10.6	12.7	15.8	19.8
Colorado	117	5	96	211	240	2.2	0.1	1.8	3.8	4.3
Connecticut	22	21	30	23	28	0.6	0.6	0.8	0.6	0.8
Delaware	63	30	21	34	88	6.8	3.2	2.2	3.6	9.2
District of Columbia	196	23	26	51	230	30.3	3.5	3.9	7.5	33.8
Florida	1,934	2,429	2,723	3,233	3,435	9.9	12.2	13.4	15.7	16.7
Georgia	1,090	1,055	1,245	1,478	1,580	10.9	10.4	12.2	14.3	15.3
Hawaii	19	13	14	13	10	1.4	0.9	1.0	0.9	0.7
Idaho	21	22	21	44	46	1.3	1.3	1.3	2.6	2.7
Illinois	1,031	1,087	1,285	1,623	1,399	8.0	8.4	10.0	12.7	10.9
Indiana	171	170	189	197	211	2.6	2.6	2.9	3.0	3.2
Iowa	57	84	88	127	96	1.8	2.7	2.8	4.1	3.1
Kansas	61	48	0	0	3	2.1	1.7	0.0	0.0	0.1
Kentucky	102	117	123	159	218	2.3	2.7	2.8	3.6	4.9
Louisiana	1,267	1,180	1,277	1,233	1,495	27.4	25.4	27.3	26.3	31.9
Maine	5	0	0	16	31	0.4	0.0	0.0	1.2	2.3
Maryland	504	481	749	719	783	8.5	8.0	12.5	12.0	13.0
Massachusetts	276	227	486	416	387	4.1	3.4	7.2	6.1	5.7
Michigan	368	416	393	424	447	3.7	4.2	4.0	4.3	4.5
Minnesota	209	215	220	289	327	3.9	3.9	4.0	5.2	5.9
Mississippi	31	116	136	107	71	1.0	3.9	4.5	3.6	2.4
Missouri	135	178	220	271	397	2.2	2.9	3.6	4.4	6.5
Montana	1	0	2	4	13	0.1	0.0	0.2	0.4	1.2
Nebraska	40	26	31	34	48	2.1	1.4	1.6	1.8	2.5
Nevada	84	142	133	347	575	3.0	5.0	4.6	11.8	19.6
New Hampshire	30	21	28	27	29	2.3	1.6	2.1	2.0	2.2
New Jersey	196	263	220	381	489	2.2	2.9	2.5	4.3	5.5
New Mexico	100	80	141	160	196	4.8	3.8	6.8	7.7	9.4
New York	2,758	3,073	2,975	3,484	3,592	14.0	15.6	15.0	17.6	18.2
North Carolina	509	791	783	756	1,015	5.2	8.0	7.8	7.5	10.0
North Dakota	11	16	14	16	22	1.5	2.2	1.8	2.1	2.9
Ohio	431	381	445	483	596	3.7	3.3	3.8	4.2	5.1
Oklahoma	28	59	83	90	95	0.7	1.5	2.1	2.3	2.4
Oregon	133	159	218	227	283	3.4	4.0	5.4	5.5	6.9
Pennsylvania	431	346	356	295	335	3.4	2.7	2.8	2.3	2.6
Rhode Island	27	40	48	81	79	2.6	3.8	4.5	7.7	7.5
South Carolina	66	28	41	36	40	1.4	0.6	0.8	0.7	0.8
South Dakota	12	16	21	15	20	1.4	1.9	2.4	1.7	2.3
Tennessee	497	502	575	713	543	7.7	7.7	8.7	10.7	8.2
Texas	3,593	4,110	4,047	4,666	6,035	13.6	15.2	14.7	16.7	21.7
Utah	51	61	73	106	97	1.8	2.1	2.4	3.5	3.2
Vermont	5	0	0	0	0	0.8	0.0	0.0	0.0	0.0
Virginia	329	137	276	235	551	4.0	1.6	3.3	2.8	6.6
Washington	223	310	366	400	480	3.2	4.4	5.1	5.5	6.6
West Virginia	14	4	17	45	25	0.8	0.2	0.9	2.5	1.4
Wisconsin	100	108	88	140	176	1.7	1.9	1.5	2.4	3.0
Wyoming	7	1	4	5	11	1.2	0.2	0.7	0.9	1.9
U.S. TOTAL	**21,819**	**23,541**	**26,170**	**30,676**	**35,992**	**6.9**	**7.4**	**8.1**	**9.5**	**11.1**
Northeast	3,750	3,991	4,143	4,723	4,970	6.7	7.1	7.4	8.4	8.8
Midwest	2,626	2,745	2,994	3,619	3,742	3.9	4.1	4.4	5.3	5.5
South	10,690	11,339	12,464	13,918	16,707	9.0	9.5	10.3	11.4	13.7
West	4,753	5,466	6,569	8,416	10,573	6.4	7.3	8.6	11.0	13.8
Guam	14	5	16	10	5	8.7	3.1	9.9	6.0	3.0
Puerto Rico	154	101	166	117	110	4.3	2.8	4.8	3.4	3.2
Virgin Islands	5	4	10	0	0	4.8	3.8	9.7	0.0	0.0
OUTLYING AREAS	**173**	**110**	**192**	**127**	**115**	**4.5**	**2.9**	**5.1**	**3.4**	**3.1**
TOTAL	**21,992**	**23,651**	**26,362**	**30,803**	**36,107**	**6.9**	**7.3**	**8.1**	**9.4**	**11.0**

* Late and late latent syphilis includes late latent syphilis, latent syphilis of unknown duration, and late syphilis with clinical manifestations (including late benign syphilis and cardiovascular syphilis).

NOTE: See Section A1.11 in the Appendix for more information on interpreting case counts and rates in outlying areas.

Table 39. Late and Late Latent Syphilis* — Reported Cases and Rates of Reported Cases in Selected Metropolitan Statistical Areas (MSAs)[†] in Alphabetical Order, United States, 2013–2017

	Cases					Rates per 100,000 Population				
MSAs	**2013**	**2014**	**2015**	**2016**	**2017**	**2013**	**2014**	**2015**	**2016**	**2017**
Atlanta-Sandy Springs-Roswell, GA	782	804	927[§]	1,135	1,146	14.2	14.3	16.2[§]	19.6	19.8
Austin-Round Rock, TX	134	246	175	212	226	7.1	12.7	8.7	10.3	11.0
Baltimore-Columbia-Towson, MD	218	226	316	327	389	7.9	8.1	11.3	11.7	13.9
Birmingham-Hoover, AL	96	53	62	57[‡]	68	8.4	4.6	5.4	5.0[‡]	5.9
Boston-Cambridge-Newton, MA-NH	211	159[§]	319[§]	271[§]	266	4.5	3.4[§]	6.7[§]	5.7[§]	5.5
Buffalo-Cheektowaga-Niagara Falls, NY	62	67	53	54	83	5.5	5.9	4.7	4.8	7.3
Charlotte-Concord-Gastonia, NC-SC	151	183	191	201	252	6.5	7.7	7.9	8.1	10.2
Chicago-Naperville-Elgin, IL-IN-WI	963	988	1,169	1,529	1,288	10.1	10.3	12.2	16.1	13.5
Cincinnati, OH-KY-IN	191	124	129	105	136	8.9	5.8	6.0	4.8	6.3
Cleveland-Elyria, OH	64	88	120	159	176	3.1	4.3	5.8	7.7	8.6
Columbus, OH	98	101	106	109	155	5.0	5.1	5.2	5.3	7.6
Dallas-Fort Worth-Arlington, TX	1,081	1,065	837	1,069	1,854	15.9	15.3	11.8	14.8	25.6
Denver-Aurora-Lakewood, CO	81	0	59	150	185	3.0	0.0	2.1	5.3	6.5
Detroit-Warren-Dearborn, MI	277	312	291	295	312	6.4	7.3	6.8	6.9	7.3
Hartford-West Hartford-East Hartford, CT	10	10	8	3	3	0.8	0.8	0.7	0.2	0.2
Houston-The Woodlands-Sugar Land, TX	1,154	1,430	1,592	1,805	2,060	18.3	22.0	23.9	26.7	30.4
Indianapolis-Carmel-Anderson, IN	90	83	93	87	106	4.6	4.2	4.7	4.3	5.3
Jacksonville, FL	75	128	179	181	249	5.4	9.0	12.3	12.2	16.8
Kansas City, MO-KS	54	54	40	87	92	2.6	2.6	1.9	4.1	4.4
Las Vegas-Henderson-Paradise, NV	54	133	102	315	513	2.7	6.4	4.8	14.6	23.8
Los Angeles-Long Beach-Anaheim, CA	1,705	1,679	1,902	2,532	3,164	13.0	12.7	14.3	19.0	23.8
Louisville-Jefferson County, KY-IN	52	70	92	112	127	4.1	5.5	7.2	8.7	9.9
Memphis, TN-MS-AR	283	236	256	336	257	21.1	17.6	19.0	25.0	19.1
Miami-Fort Lauderdale-West Palm Beach, FL	1,075	1,371	1,524	1,868	1,745	18.4	23.1	25.3	30.8	28.8
Milwaukee-Waukesha-West Allis, WI	56	63	43	70	84	3.6	4.0	2.7	4.5	5.3
Minneapolis-St. Paul-Bloomington, MN-WI	175	187	192	251	261	5.1	5.4	5.4	7.1	7.3
Nashville-Davidson-Murfreesboro-Franklin, TN	120	148	161	196	101	6.8	8.3	8.8	10.5	5.4
New Orleans-Metairie, LA	442	383	370	363	391	35.6	30.6	29.3	28.6	30.8
New York-Newark-Jersey City, NY-NJ-PA	2,707	3,057	2,915	3,534	3,687	13.6	15.2	14.4	17.5	18.3
Oklahoma City, OK	11	31	32	47	42	0.8	2.3	2.4	3.4	3.1
Orlando-Kissimmee-Sanford, FL	250	364	344	416	509	11.0	15.7	14.4	17.0	20.8
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	439	311	314	266	342	7.3	5.1	5.2	4.4	5.6
Phoenix-Mesa-Scottsdale, AZ	335	397	394	534	645	7.6	8.8	8.6	11.5	13.8
Pittsburgh, PA	11	13	11	11	12	0.5	0.6	0.5	0.5	0.5
Portland-Vancouver-Hillsboro, OR-WA	118	143	171	173	207	5.1	6.1	7.2	7.1	8.5
Providence-Warwick, RI-MA	45	48[§]	74[§]	102[§]	105[§]	2.8	3.0[§]	4.6[§]	6.3[§]	6.5[§]
Raleigh, NC	68	111	125	109	169	5.6	8.9	9.8	8.4	13.0
Richmond, VA	58	9	36	35	111	4.7	0.7	2.8	2.7	8.7
Riverside-San Bernardino-Ontario, CA	433	432	508	707	911	9.9	9.7	11.3	15.6	20.1
Sacramento-Roseville-Arden-Arcade, CA	107	134	205	199	264	4.8	6.0	9.0	8.7	11.5
Salt Lake City, UT	34	39	50	76	61	3.0	3.4	4.3	6.4	5.1
San Antonio-New Braunfels, TX	457	448	483	531	612	20.1	19.2	20.3	21.9	25.2
San Diego-Carlsbad, CA	245	310	367	425	576	7.6	9.5	11.1	12.8	17.4
San Francisco-Oakland-Hayward, CA	421	502	553	629	691	9.3	10.9	11.9	13.4	14.8
San Jose-Sunnyvale-Santa Clara, CA	69	125	129	145	237	3.6	6.4	6.5	7.3	12.0
Seattle-Tacoma-Bellevue, WA	161	211	224	268	321	4.5	5.7	6.0	7.1	8.4
St. Louis, MO-IL	104	119	165	160	254	3.7	4.2	5.9	5.7	9.0
Tampa-St. Petersburg-Clearwater, FL	227	255	299	326	392	7.9	8.7	10.0	10.8	12.9
Virginia Beach-Norfolk-Newport News, VA-NC	86	45	90	65	122	5.0	2.6	5.2	3.8	7.1
Washington-Arlington-Alexandria, DC-VA-MD-WV	599	295	501	474	827	10.1	4.9	8.2	7.7	13.5
SELECTED MSAs TOTAL	**16,739**	**17,790**	**19,298**	**23,111**	**26,786**	**9.7**	**10.2**	**10.9**	**13.0**	**15.1**

* Late and late latent syphilis includes late latent syphilis, latent syphilis of unknown duration, and late syphilis with clinical manifestations (including late benign syphilis and cardiovascular syphilis).

[†] MSAs were selected on the basis of the largest population in the 2010 U.S. Census.

[‡] 2016 county data for Alabama have been corrected and may not match previous reports.

[§] The variable used to identify county, which is used to classify cases into MSAs, was complete for ≤95% of cases in a state contributing data to this MSA. See Appendix A1.4 for more information.

Table 40. Congenital Syphilis — Reported Cases and Rates of Reported Cases by State†, Ranked by Rates, United States, 2017

Rank*	State†	Cases	Rate per 100,000 Live Births
1	Louisiana	59	93.4
2	Nevada	21	57.9
3	California	281	57.5
4	Texas	176	44.2
5	Florida	93	41.3
6	Arizona	30	35.5
7	Maryland	20	27.3
	U.S. TOTAL‡	**918**	**23.3**
8	Arkansas	8	20.9
9	North Carolina	23	19.0
10	Georgia	23	17.7
11	Oregon	8	17.6
12	Hawaii	3	16.6
13	South Carolina	8	14.0
14	Illinois	21	13.6
15	Missouri	10	13.4
16	Oklahoma	7	13.3
17	Ohio	18	13.0
18	New Jersey	13	12.7
19	Tennessee	10	12.4
20	Virginia	11	10.7
21	West Virginia	2	10.5
22	Alabama	6	10.1
23	Indiana	8	9.6
	HP 2020 TARGET		**9.6**
24	Kentucky	5	9.0
25	Michigan	10	8.8
26	South Dakota	1	8.1
27	Montana	1	8.1
28	New York	16	6.8
29	Washington	6	6.6
30	Colorado	4	6.0
31	Iowa	2	5.1
32	Wisconsin	3	4.5
33	Pennsylvania	6	4.3
34	New Mexico	1	4.0
35	Nebraska	1	3.8
36	Minnesota	2	2.9
37	Mississippi	1	2.6
	Alaska	0	0.0
	Connecticut	0	0.0
	Delaware	0	0.0
	Idaho	0	0.0
	Kansas	0	0.0
	Maine	0	0.0
	Massachusetts	0	0.0
	New Hampshire	0	0.0
	North Dakota	0	0.0
	Rhode Island	0	0.0
	Utah	0	0.0
	Vermont	0	0.0
	Wyoming	0	0.0

* States were ranked by rate, then by case count, then in alphabetical order, with rates shown rounded to the nearest tenth.

† Mother's state of residence was used to assign case.

‡ Total includes cases reported by the District of Columbia with 0 cases and a rate of 0.0, but excludes outlying areas (Guam with 0 cases and rate of 0.0, Puerto Rico with 4 cases and rate of 14.2, and Virgin Islands with 0 cases and rate of 0.0).

Table 41. Congenital Syphilis — Reported Cases and Rates of Reported Cases by Year of Birth, State/Area* and Region in Alphabetical Order, United States and Outlying Areas, 2013–2017

	Cases					Rates per 100,000 Live Births				
State/Area*	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Alabama	2	3	3	4	6	3.4	5.0	5.0	6.8	10.1
Alaska	1	0	0	0	0	8.7	0.0	0.0	0.0	0.0
Arizona	14	13	14	16	30	16.4	15.0	16.4	18.9	35.5
Arkansas	12	7	5	6	8	31.7	18.2	12.9	15.7	20.9
California	58	102	140	207	281	11.7	20.3	28.5	42.3	57.5
Colorado	0	0	0	4	4	0.0	0.0	0.0	6.0	6.0
Connecticut	0	0	1	0	0	0.0	0.0	2.8	0.0	0.0
Delaware	1	0	1	0	0	9.2	0.0	9.0	0.0	0.0
District of Columbia	2	0	1	1	0	21.5	0.0	10.4	10.1	0.0
Florida	35	48	38	60	93	16.2	21.8	16.9	26.7	41.3
Georgia	20	17	21	21	23	15.5	13.0	16.0	16.1	17.7
Hawaii	0	0	2	1	3	0.0	0.0	10.9	5.5	16.6
Idaho	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Illinois	23	27	31	18	21	14.7	17.0	19.6	11.7	13.6
Indiana	0	8	5	8	8	0.0	9.5	5.9	9.6	9.6
Iowa	0	1	0	1	2	0.0	2.5	0.0	2.5	5.1
Kansas	0	0	0	1	0	0.0	0.0	0.0	2.6	0.0
Kentucky	4	3	1	5	5	7.2	5.3	1.8	9.0	9.0
Louisiana	40	46	54	48	59	63.3	71.3	83.5	76.0	93.4
Maine	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Maryland	14	16	18	16	20	19.5	21.6	24.5	21.9	27.3
Massachusetts	4	3	4	3	0	5.6	4.2	5.6	4.2	0.0
Michigan	9	15	11	13	10	7.9	13.1	9.7	11.5	8.8
Minnesota	0	0	2	7	2	0.0	0.0	2.9	10.0	2.9
Mississippi	0	1	0	2	1	0.0	2.6	0.0	5.3	2.6
Missouri	3	1	4	8	10	4.0	1.3	5.3	10.7	13.4
Montana	0	0	0	0	1	0.0	0.0	0.0	0.0	8.1
Nebraska	0	1	0	1	1	0.0	3.7	0.0	3.8	3.8
Nevada	2	5	8	12	21	5.7	13.9	22.0	33.1	57.9
New Hampshire	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
New Jersey	0	0	0	12	13	0.0	0.0	0.0	11.7	12.7
New Mexico	2	1	2	3	1	7.6	3.8	7.7	12.1	4.0
New York	11	22	12	13	16	4.6	9.2	5.1	5.5	6.8
North Carolina	4	6	9	18	23	3.4	5.0	7.4	14.9	19.0
North Dakota	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Ohio	18	15	17	12	18	13.0	10.8	12.2	8.7	13.0
Oklahoma	0	6	7	3	7	0.0	11.2	13.2	5.7	13.3
Oregon	0	2	6	6	8	0.0	4.4	13.1	13.2	17.6
Pennsylvania	3	4	7	5	6	2.1	2.8	5.0	3.6	4.3
Rhode Island	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
South Carolina	1	5	3	9	8	1.8	8.7	5.2	15.7	14.0
South Dakota	0	3	0	2	1	0.0	24.4	0.0	16.3	8.1
Tennessee	2	2	5	8	10	2.5	2.5	6.1	9.9	12.4
Texas	74	75	52	71	176	19.1	18.8	12.9	17.8	44.2
Utah	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Vermont	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Virginia	3	2	3	8	11	2.9	1.9	2.9	7.8	10.7
Washington	0	2	5	3	6	0.0	2.3	5.6	3.3	6.6
West Virginia	0	0	0	2	2	0.0	0.0	0.0	10.5	10.5
Wisconsin	0	0	0	1	3	0.0	0.0	0.0	1.5	4.5
Wyoming	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
U.S. TOTAL	**362**	**462**	**492**	**639**	**918**	**9.2**	**11.6**	**12.4**	**16.2**	**23.3**
Northeast	18	29	24	33	35	2.9	4.6	3.8	5.3	5.6
Midwest	53	71	70	72	76	6.4	8.5	8.4	8.7	9.2
South	214	237	221	282	452	14.2	15.4	14.3	18.4	29.5
West	77	125	177	252	355	8.0	12.8	18.4	26.3	37.0
Guam	1	0	2	0	0	30.4	0.0	59.4	0.0	0.0
Puerto Rico	2	0	5	5	4	5.5	0.0	16.0	17.7	14.2
Virgin Islands	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
OUTLYING AREAS	**3**	**0**	**7**	**5**	**4**	**7.3**	**0.0**	**19.5**	**15.2**	**12.2**
TOTAL	**365**	**462**	**499**	**644**	**922**	**9.2**	**11.5**	**12.4**	**16.2**	**23.2**

* Mother's state of residence was used to assign case.

NOTE: See Section A1.11 in the Appendix for more information on interpreting case counts and rates in outlying areas.

Table 42. Congenital Syphilis — Reported Cases and Rates of Reported Cases per 100,000 Live Births by Year of Birth and Race/Hispanic Ethnicity of Mother, United States, 2013–2017

	Whites		Blacks		Hispanics		Asians/ Pacific Islanders		American Indians/ Alaska Natives		Other		Unknown		Total	
Year of Birth	Cases	Rates	Cases	Rates	Cases	Rates	Cases	Rates	Cases	Rates	Cases	Rates	Cases	Rates	Cases	Rates
2013	62	2.9	185	31.4	93	10.3	9	3.5	5	12.8	3	NA	5	NA	362	9.2
2014	79	3.6	227	38.2	112	12.3	19	7.0	5	13.2	9	NA	11	NA	462	11.6
2015	97	4.5	207	34.8	143	15.5	15	5.5	4	10.7	7	NA	19	NA	492	12.4
2016	119	5.6	264	44.8	189	20.6	25	8.9	12	32.8	8	NA	22	NA	639	16.2
2017	206	9.7	347	58.9	308	33.5	12	4.3	13	35.5	12	NA	20	NA	918	23.3

NA = Not applicable.

Table 43. Chancroid — Reported Cases and Rates of Reported Cases by State/Area in Alphabetical Order, United States and Outlying Areas, 2013–2017

State/Area	Cases 2013	Cases 2014	Cases 2015	Cases 2016	Cases 2017	Rates per 100,000 Population 2013	Rates 2014	Rates 2015	Rates 2016	Rates 2017
Alabama	1	0	0	1	0	0.0	0.0	0.0	0.0	0.0
Alaska	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Arizona	0	0	1	0	0	0.0	0.0	0.0	0.0	0.0
Arkansas	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
California	6	4	2	2	1	0.0	0.0	0.0	0.0	0.0
Colorado	0	0	0	1	0	0.0	0.0	0.0	0.0	0.0
Connecticut	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Delaware	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
District of Columbia	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Florida	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Georgia	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Hawaii	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Idaho	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Illinois	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Indiana	0	0	1	0	0	0.0	0.0	0.0	0.0	0.0
Iowa	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Kansas	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Kentucky	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Louisiana	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Maine	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Maryland	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Massachusetts	2	1	3	1	2	0.0	0.0	0.0	0.0	0.0
Michigan	0	0	0	0	1	0.0	0.0	0.0	0.0	0.0
Minnesota	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Mississippi	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Missouri	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Montana	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Nebraska	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Nevada	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
New Hampshire	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
New Jersey	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
New Mexico	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
New York	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
North Carolina	0	0	0	1	1	0.0	0.0	0.0	0.0	0.0
North Dakota	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Ohio	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Oklahoma	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Oregon	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Pennsylvania	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Rhode Island	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
South Carolina	0	0	0	1	0	0.0	0.0	0.0	0.0	0.0
South Dakota	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Tennessee	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Texas	1	1	2	0	2	0.0	0.0	0.0	0.0	0.0
Utah	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Vermont	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Virginia	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Washington	0	0	1	0	0	0.0	0.0	0.0	0.0	0.0
West Virginia	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Wisconsin	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Wyoming	0	0	1	0	0	0.0	0.0	0.2	0.0	0.0
U.S. TOTAL	**10**	**6**	**11**	**7**	**7**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Guam	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Puerto Rico	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Virgin Islands	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
OUTLYING AREAS	**0**	**0**	**0**	**0**	**0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
TOTAL	**10**	**6**	**11**	**7**	**7**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

NOTE: See Section A1.11 in the Appendix for more information on interpreting case counts and rates in outlying areas.

Table 44. Selected STDs and Complications — Initial Visits to Physicians' Offices, National Disease and Therapeutic Index (NDTI), United States, 1966–2016

Year	*Trichomonas vaginalis* Infections*	Other Vaginal Infections*	Pelvic Inflammatory Disease†
1966	579,000	1,155,000	NA
1967	515,000	1,277,000	NA
1968	463,000	1,460,000	NA
1969	421,000	1,390,000	NA
1970	529,000	1,500,000	NA
1971	484,000	1,281,000	NA
1972	574,000	1,810,000	NA
1973	466,000	1,858,000	NA
1974	427,000	1,907,000	NA
1975	500,000	1,919,000	NA
1976	473,000	1,690,000	NA
1977	324,000	1,713,000	NA
1978	329,000	2,149,000	NA
1979	363,000	1,662,000	NA
1980	358,000	1,670,000	423,000
1981	369,000	1,742,000	283,000
1982	268,000	1,859,000	374,000
1983	424,000	1,932,000	424,000
1984	381,000	2,450,000	381,000
1985	291,000	2,728,000	425,000
1986	338,000	3,118,000	457,000
1987	293,000	3,087,000	403,000
1988	191,000	3,583,000	431,000
1989	165,000	3,374,000	413,000
1990	213,000	4,474,000	358,000
1991	198,000	3,822,000	377,000
1992	182,000	3,428,000	335,000
1993	207,000	3,755,000	407,000
1994	199,000	4,123,000	332,000
1995	141,000	3,927,000	262,000
1996	245,000	3,472,000	286,000
1997	176,000	3,100,000	260,000
1998	164,000	3,200,000	233,000
1999	171,000	3,077,000	250,000
2000	222,000	3,470,000	254,000
2001	210,000	3,365,000	244,000
2002	150,000	3,315,000	197,000
2003	179,000	3,516,000	123,000
2004	221,000	3,602,000	132,000
2005	165,000	4,071,000	176,000
2006	200,000	3,891,000	106,000
2007	205,000	3,723,000	146,000
2008	204,000	3,571,000	104,000
2009	216,000	3,063,000	100,000
2010	149,000	3,192,000	113,000
2011	168,000	3,102,000	90,000
2012	219,000	3,452,000	106,000
2013	225,000	3,278,000	88,000
2014	155,000	3,419,000	51,000
2015	139,000	3,215,000	68,000
2016	222,000	4,112,000	90,000

* Women only.
† Women aged 15–44 years only.
NA = Not available.
NOTE: Standard errors for estimates under 100,000 are not available. The relative standard errors for estimates 100,000–299,999 are from 23% to 19%; 300,000–599,999 are from 19% to 16%; 600,000–999,999 are from 16% to 13%; and 1,000,000–5,000,000 are from 13% to 7%.
SOURCE: National Disease and Therapeutic Index, IMS Health, Integrated Promotional Services. IMS Health report, 1966–2016. The 2017 data were not obtained in time to include them in this report. See Section A2.5 in the Appendix for more information.

Appendix

A. Interpreting STD Surveillance Data

Sexually Transmitted Disease Surveillance 2017 presents surveillance information derived from the official statistics for the reported occurrence of nationally notifiable STDs in the United States, including data from sentinel surveillance and national surveys.

A1. Nationally Notifiable STD Surveillance

Nationally notifiable STD surveillance data are collected and compiled from reports sent by the STD control programs and health departments in all 50 states, the District of Columbia, selected cities, United States dependencies and possessions, and independent nations in free association with the United States to the Division of STD Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, Centers for Disease Control and Prevention (CDC). Included among the dependencies, possessions, and independent nations are Guam, Puerto Rico, and the Virgin Islands. These entities are identified as “outlying areas” of the United States in selected figures and tables.

A1.1 Reporting Formats

STD morbidity data presented in this report are compiled from a combination of data reported on standardized hard copy reporting forms and electronic data received through the National Electronic Telecommunications System for Surveillance (NETSS).

Summary Report Forms

The following hard copy forms were used to report national STD morbidity data:

1. FORM CDC 73.998: *Monthly Surveillance Report of Early Syphilis*. This monthly hard copy reporting form was used during 1984–2002 to report summary data for primary and secondary (P&S) syphilis and early latent syphilis by county and state.

2. FORM CDC 73.688: *Sexually Transmitted Disease Morbidity Report*. This quarterly hard copy reporting form was used during 1963–2002 to report summary data for all stages of syphilis, congenital syphilis, gonorrhea, chancroid, chlamydia, and other STDs by sex and source of report (private versus public) for all 50 states, the District of Columbia, 64 selected cities (including San Juan, Puerto Rico), and outlying areas of the United States.

   Note: Chlamydial infection became a nationally notifiable condition in 1995 and the form was modified to support reporting of chlamydia that year. Congenital syphilis was dropped from this aggregate form in 1995 and replaced by the case-specific CDC 73.126 form described later in this section.

3. FORM CDC 73.2638: *Report of Civilian Cases of Primary & Secondary Syphilis, Gonorrhea, and Chlamydia by Reporting Source, Sex, Race/Ethnicity, and Age Group*. This annual hard copy form was used during 1981–2002 to report summary data for P&S syphilis, gonorrhea, and chlamydia by age, race, sex, and source (public versus private) for all 50 states, seven large cities (Baltimore, Chicago, New York City, Los Angeles, Philadelphia, San Francisco, and the District of Columbia), and outlying areas of the United States.

   Note: Chlamydial infection became a nationally notifiable condition in 1995, and the form was modified to support reporting of chlamydia that year.

4. FORM CDC 73.126: *Congenital Syphilis (CS) Case Investigation and Reporting*. This case-specific hard copy form was first used in 1983 and continues to be used to report detailed case-specific data for congenital syphilis in some areas.

National Electronic Telecommunications System for Surveillance

Notifiable STD data reported electronically through NETSS make up the nationally notifiable disease information published in CDC's *Morbidity and Mortality Weekly Report*.

As of December 31, 2003, all 50 states and the District of Columbia had converted from summary hard copy reporting to electronic submission of line-listed (i.e., case-specific) STD data through NETSS (41 reporting areas submitted congenital syphilis surveillance data through NETSS in 2017). Puerto Rico converted to electronic reporting in 2006 for all STDs excluding congenital syphilis. Guam and the Virgin Islands continue to report STD data through summary hard copy forms.

Surveillance data and updates sent to CDC through NETSS and on hard copy forms through June 19, 2018, are included in this report. The data presented in the figures and tables in this report supersede those in all earlier publications.

A1.2 Population Denominators and Rate Calculations

2000–2017 Rates and Population

For those figures and tables presenting race using the 1997 Office of Management and Budget (OMB) standards, non-bridged-race data provided directly by the United States Census Bureau were used to calculate race. The latest available year for population estimates at the time this report was written was 2016. Thus, 2016 population estimates were used to calculate 2017 rates.

Once published, the 2017 population estimates will be used to calculate 2017 rates in *Sexually Transmitted Disease Surveillance 2018*.

Population estimates for Puerto Rico were obtained from the US Census Bureau Web site at: https://factfinder.census.gov.

Population estimates for Guam and the Virgin Islands were obtained from the US Census Bureau International Programs Web site at: www.census.gov/programs-surveys/international-programs.html.

The 2017 rates by age and sex for Guam and the Virgin Islands were calculated using the latest population estimates available at: https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml.

Because of the use of the updated population data, rates for 2000–2016 may be different from those presented in previous STD surveillance reports.

Several figures throughout this report depict state- or county-specific rates of reported cases of STDs. Rates were grouped and displayed by quintiles in Figures 3, 4, 16, 17, 37, E, F, I, J, K, L, M, N, O, P, Q, R, and AA. Rates were grouped and displayed in 4 categories – zero cases and tertiles – in Figure 38.

1990–1999 Rates and Population

The population counts for 1990 through 1999 incorporated the bridged single-race estimates of the April 1, 2000, US resident population. These files were prepared by the US Census Bureau with support from the National Cancer Institute.

1981–1989 Rates and Population

Rates were calculated by using US Census Bureau population estimates for 1981 through 1989.[1,2]

1941–1980 Rates and Population

Rates for 1941 through 1980 were based on population estimates from the US Census Bureau and are currently maintained by CDC's Division of STD Prevention.

1941–2017 Congenital Syphilis Rates and Live Births

The congenital syphilis data in Table 1 of this report represent the number of congenital syphilis cases per 100,000 live births for all years during 1941–2017. Previous publications presented congenital syphilis rates per 100,000 population during 1941–1994 and rates for cases diagnosed at younger than 1 year of age per 100,000 live births during 1995–2005. To allow for trends in congenital syphilis rates to be compared for the period of 1941 through 2017, live births now are used as the denominator for congenital syphilis and case counts are no longer limited to those diagnosed within the first year of life. Congenital syphilis morbidity is assigned by year of birth. Rates of congenital syphilis for 1963 through 1988 were calculated by using published live birth data.[3] Congenital syphilis rates for 1989 through 2016 were calculated by using live birth data based on information coded by the states and provided to the National Center for Health Statistics (NCHS) through the Vital Statistics Cooperative Program. Rates for 2017 were calculated by using live birth data for 2016.

2010–2017 Gay, Bisexual, and Other Men Who Have Sex with Men Rates and Population

Figures 26 and AA show rates of reported cases of gonorrhea and P&S syphilis among gay, bisexual, and other men who have sex with men (collectively referred to as MSM). Population estimates of MSM are based on a method that combines published estimates of the prevalence of same-sex behavior among adult men with housing and population data from the American Community Survey 5-year summary file (2012–2016).[4-7] County-specific estimates begin with MSM prevalence estimates that are determined by their urbanicity according to the NCHS urban-rural classification scheme for counties and their United States region.[8] Estimates are then multiplied by a modified ratio of each county's percentage of male same-sex households to the total percentage of male same-sex households among all counties at the same level of urbanicity and within the same region. Thus, the final estimate for each county reflects what would be expected based on the county's geography, urban-rural classification, and observed concentration of households with a male head of household and a male partner.

A1.3 Reporting Practices

Although most state and local STD programs generally adhere to the national notifiable STD case definitions collaboratively developed by the Council of State and Territorial Epidemiologists (CSTE) and CDC, differences in policies and systems for collecting surveillance data may exist. Thus, comparisons of case numbers and rates between jurisdictions should be interpreted with caution. However, because case definitions and surveillance activities within a given area remain relatively stable over time, trends should be minimally affected by these differences.

A1.4 Reporting of Surveillance Data by Metropolitan Statistical Area

Sexually Transmitted Disease Surveillance 2017 continues the presentation of STD incidence data and rates for the 50 metropolitan statistical areas (MSA) with the largest populations according to 2010 United States census data. MSAs are defined by the OMB to provide nationally consistent definitions for collecting, tabulating, and publishing federal statistics for a set of geographic areas.[9] An MSA is associated with at least one urbanized area that has a population of at least 50,000. The MSA comprises the central county or counties containing the central county, plus adjacent, outlying counties that have a high degree of social and economic integration with the central county as measured through commuting. The title of an MSA includes the name of the principal city with the largest 2010 census population. If there are multiple principal cities, the names of the second largest and third largest principal cities appear in the title in order of descending population size.

Reported cases are assigned to MSAs based on the reported county; cases reported with a missing a value for the county variable cannot be assigned to an MSA. Consequently, if a jurisdiction reports cases missing values for the county variable, reported rates for MSAs in their jurisdiction may be incomplete. Additionally, relative rankings of case counts by counties may be impacted by completeness of the variable used to identify county. Table A1 reports the percentage of cases reported with missing county information in each state for P&S syphilis, chlamydia, and gonorrhea.

The MSA concept has been used as a statistical representation of the social and economic links between urban cores and outlying, integrated areas. However, MSAs do not equate to an urban-rural classification; all counties included in MSAs and many other counties contain both urban and rural territory and populations. STD programs that treat all parts of an MSA as if they were as urban as the densely settled core ignore the rural conditions that may exist in some parts of the area. In short, MSAs are not intended to be a general purpose geographic framework for nonstatistical activities or for use in program funding formulas.

For more information on the MSA definitions used in this report, go to:
https://www.census.gov/programs-surveys/metro-micro.html.

A1.5 Reporting of Data for Race/Hispanic Ethnicity

In April 2008, the NETSS record layout was updated to conform to the OMB's current government-wide standard for race/Hispanic ethnicity data. The OMB standards were first issued in 1997.[10] Beginning with the publication of *Sexually Transmitted Disease Surveillance 2012*, the race/Hispanic ethnicity data are presented according to the current OMB standard categories: American Indian or Alaska Native, Asian, Black or African American, Hispanic or Latino, Native Hawaiian or Other Pacific Islander, White, and Multirace. As of 2017, most reporting jurisdictions are locally compliant with current OMB standards and report in the current OMB standard race categories, including Multirace. However, a small number of jurisdictions reported race in pre-1997 single race categories; while other jurisdictions were using current OMB standards categories but were unable to report more than one race per person in 2017.

For this report, all race and Hispanic ethnicity data reported by jurisdictions are summarized in tables, charts, and interpretative text *regardless of local compliance with the 1997 OMB standards*. However, a small number of cases reported in the legacy 'Asian/Pacific Islander' category from non-compliant jurisdictions are re-coded to 'Unknown' because these cases cannot be properly re-coded into an appropriate current OMB standards category of 'Asian' or 'Native Hawaiian/Other Pacific Islander.' No redistribution of cases is done; cases missing race and/or Hispanic ethnicity are not included in the calculation of rates by race and Hispanic ethnicity. As a consequence, rate data presented in this report underestimate actual case incidence in these population categories by a roughly similar proportion to the overall percentage of cases missing/unknown race and Hispanic ethnicity.

All states and reporting jurisdictions are encouraged to continue efforts to upgrade local surveillance systems to be fully compliant with OMB standards for the collection of race and Hispanic ethnicity, to redouble efforts to ascertain complete information for all cases, and to implement CDC's HL7 case reporting guides at the earliest opportunity.

A1.6 Management of Unknown, Missing, or Invalid Data for Age Group, Race/Hispanic Ethnicity, and Sex

The percentage of unknown, missing, or invalid data for age group, race/Hispanic ethnicity, and sex varies from year to year, state to state, and by disease for reported STDs (Table A1).

Prior to the publication of *Sexually Transmitted Disease Surveillance 2010*, when the percentage of unknown, missing, or invalid values for age group, race/Hispanic ethnicity, and sex exceeded 50% for any state, the state's incidence and population data were excluded from the tables that presented data stratified by one or more of these variables. For the states for which 50% or more of their data were valid for age group, race/Hispanic ethnicity, and sex, the values for unknown, missing, or invalid data were redistributed on the basis of the state's distribution of known age group, race/Hispanic ethnicity, and sex data. Beginning with the publication of *Sexually Transmitted Disease Surveillance 2010*, redistribution methodology is not applied to any of the data. The counts presented in this report are summations of all valid data reported in reporting year 2017.

As a result, rate data that are stratified by one or more of these variables reflect rates based on reported data only; caution should be used in interpreting specific rate data points as these may underestimate reported case incidence by race and Hispanic ethnicity due to the exclusion of cases missing these important demographic data.

A1.7 Classification of STD Morbidity Reporting Sources

Before 1996, states classified the source of case reports as either private source (including private physicians, hospitals, and institutions) or public source (primarily STD clinics). As states began reporting morbidity data electronically in 1996, the classification categories for source of case reports expanded to include the following data sources: STD clinics, HIV counseling and testing sites, drug treatment clinics, family planning clinics, prenatal/obstetrics clinics, tuberculosis clinics, private physicians/health maintenance organizations (HMOs), hospitals (inpatient), emergency rooms, correctional facilities, laboratories, blood banks, the National Job Training Program (NJTP), school-based clinics, mental health providers, the military, the Indian Health Service, and other unspecified sources. Figures 9, 10, 23, and 24 display trends in the proportion of cases reported in 2017 categorized by reporting source. Categories displayed vary across these figures and include the five most commonly reported sources for the population included in the figure, along with trends for all other reporting sources combined into the "All Other" category, and trends in the proportion of cases with unknown reporting source.

A1.8 Interpreting Chlamydia Case Reporting

Trends in rates of reported cases of chlamydia are influenced by changes in incidence of infection, as well as changes in diagnostic, screening, and reporting practices. As chlamydial infections are usually asymptomatic, the number of infections identified and reported can increase as more people are screened even when incidence is flat or decreasing. During 2000–2011, the expanded use of more sensitive diagnostic tests (e.g., nucleic acid amplification tests [NAATs]) likely increased the number of infections identified and reported independently of increases in incidence. Also, although chlamydia has been a nationally notifiable condition since 1994, it was not until 2000 that all 50 states and the District of Columbia required reporting of chlamydia cases. National case rates prior to 2000 reflect incomplete reporting. The increased use of electronic laboratory reporting over the last decade or so also likely increased the proportion of diagnosed cases reported. Consequently, an increasing chlamydia case rate over time may reflect increases in incidence of infection, screening coverage, and use of more sensitive tests, as well as more complete reporting. Likewise, decreases in chlamydia case rates may suggest decreases in incidence of infection or screening coverage.

A1.9 Syphilis Morbidity Reporting

The category of "total syphilis" or "all stages of syphilis" includes primary syphilis, secondary syphilis, early latent syphilis, late latent syphilis, late syphilis with clinical manifestations (including late benign syphilis and cardiovascular syphilis), and congenital syphilis.

Although neurosyphilis can occur at almost any stage of syphilis, during 1996–2005 it was classified and reported as one of several mutually exclusive stages of syphilis. Beginning in 2005, neurosyphilis was no longer classified or reported as a distinct stage of syphilis.

A1.10 Congenital Syphilis Morbidity Reporting

In 1988, the surveillance case definition for congenital syphilis was changed. This case definition has greater sensitivity than the former definition.[11] In addition, many state and local STD programs have greatly enhanced active case finding for congenital syphilis since 1988. For these reasons, as well as because of increasing morbidity, the number of reported cases increased dramatically during 1989–1991. All reporting areas had implemented the new case definition for reporting congenital syphilis by January 1, 1992. In addition to changing the case definition for congenital syphilis, CDC introduced a new data collection form (CDC 73.126) in 1990 (revised February 2013). Since 1995, the data collected on this form have been used for reporting congenital syphilis cases and associated rates. This form is used to collect individual case information, which allows more thorough analysis of case characteristics. For the purpose of analyzing race/Hispanic ethnicity, cases are classified by the race/Hispanic ethnicity of the mother. Similarly, since 1995, congenital syphilis cases are reported by state and city of residence of the mother.

Congenital syphilis reporting may be delayed as a result of case investigation and validation. Cases for previous years are added to CDC's surveillance databases throughout the year. Congenital syphilis data reported after publication of the current annual STD surveillance report will appear in subsequent reports and are assigned by the case patient's year of birth.

A1.11 Interpreting Surveillance Data from Outlying Areas

There are a number of issues affecting the STD surveillance data reported to CDC from the US outlying areas, including test kit stock-outs, resulting in an inability to test or screen for undetermined periods of time, as well as a variety of data collection, entry, and transmission issues. As such, the data likely underestimate the total STD burden in these areas and should be interpreted cautiously.

A2. Other Sources of Surveillance Data

A2.1 National Job Training Program

Chlamydia and gonorrhea prevalence was calculated for men and women entering the NJTP. To increase the stability of the estimates, chlamydia or gonorrhea prevalence data are presented when valid test results for 100 or more students per year are available for the population subgroup and state. The majority of NJTP's chlamydia screening tests are conducted by a single national contract laboratory, which provides these data to CDC. Gonorrhea screening tests for male and female students in many training centers are conducted by local laboratories; these data are not available to CDC. Test results for students at centers that submit specimens to the national contract laboratory are included only if the number of gonorrhea tests submitted is greater than 90% of the number of chlamydia tests submitted from the same center for the same period. Prevalence data for state-specific figures were published with permission from the Department of Labor. Prevalence data are presented in figures O, P, Q, and R.

A2.2 STD Surveillance Network

In 2005, CDC established the STD Surveillance Network (SSuN) as a collaborative network of state, county and/or city health departments following protocols to conduct sentinel and enhanced STD surveillance activities. The purpose of SSuN is to improve the capacity of national, state and local STD programs to detect, monitor, and respond to trends in STDs through enhanced collection, reporting, analysis, visualization, and interpretation of disease information.

Cycle 3 (2013–2018) of SSuN provides funding to 10 jurisdictions to conduct two core STD surveillance activities including; (1) sentinel facility component, providing clinical and demographic information on a full census of patients attending categorical STD clinics and women aged 15–44 years presenting for care in reproductive health settings, and, (2) population component, conducting enhanced health department look-back, provider, and patient investigations on a probability sample of all persons diagnosed and reported with gonorrhea. Funded jurisdictions for both core activities in SSuN Cycle 3 include Baltimore City (Maryland), California (excluding San Francisco County), Florida, Massachusetts, Minnesota, Multnomah County (Oregon), Philadelphia City (Pennsylvania), New York City (New York), San Francisco County (California), and Washington State.

In both the facility and population components of SSuN Cycle 3, unique patients can be anonymously followed using unique, coded IDs to provide longitudinal information. In the facility component, the primary unit of analysis is the patient visit, which is merged with multiple laboratory, diagnostic, and treatment observations. In the population component, the primary unit of analysis is a reported episode of gonorrhea for a unique person merged with multiple laboratory observations, health department disease registry history, provider-based clinical information, and patient demographic and behavioral interview data. For analysis in the population component, cases in the probability sample are weighted to reflect study design and to adjust for non-response by demographic category of the patient. Weighted analyses provide estimates of case and person characteristics representative of all reported cases in the collaborating jurisdictions.

MSM are defined in all SSuN data collection activities as men who either reported having sex with another man in the preceding 2–3 months, reported current history of male sex partners, and/or those who reported that they considered themselves gay/homosexual or bisexual. Men who have sex with women (MSW) are defined as men who reported having sex with women only or who did not report the sex of their sex partners but reported that they considered themselves to be straight/heterosexual.

Data presented in this report from the facility component of SSuN are from nine participating jurisdictions (Baltimore City [Maryland], California [excluding San Francisco County], Massachusetts, Minnesota, Multnomah County [Oregon], New York City [New York], Philadelphia City [Pennsylvania], San Francisco County [California] and Washington State). Figures 13, 27, DD, EE, FF, and GG are based on STD clinic data and Figure G is based on data from facilities that provide family planning and reproductive health services. Data presented in this report from the population component of SSuN include Figures 25 and 26. Figure 25 presents data collected January–December 2017 showing the proportion of cases attributable to MSM, MSW, and women for all ten SSuN jurisdictions. Figure 26 presents data collected January 2010–June 2013 and June 2015–December 2017 for six SSuN jurisdictions collaborating in both SSuN Cycle 2 and SSuN Cycle 3 (Baltimore City [Maryland], California [excluding San Francisco County], New York City [New York], Philadelphia City [Pennsylvania], San Francisco County [California], and Washington State).

A2.3 Gonococcal Isolate Surveillance Project

Data on antimicrobial susceptibility in *Neisseria gonorrhoeae* were collected through the Gonococcal Isolate Surveillance Project (GISP), a sentinel system of selected STD clinics located at 25–30 GISP sentinel sites and regional laboratories in the United States. For more details on findings from GISP, go to: https://www.cdc.gov/std/GISP/.

For 2017, the antimicrobial agents tested by GISP were ceftriaxone, cefixime, azithromycin, ciprofloxacin, penicillin, tetracycline, and gentamicin.

The antimicrobial susceptibility criteria used in GISP for 2017 are as follows:

- Ceftriaxone, minimum inhibitory concentration (MIC) ≥0.5 µg/ml (decreased susceptibility)*
- Ceftriaxone, MIC ≥0.125 µg/ml (elevated MICs)*
- Cefixime, MIC ≥0.5 µg/ml (decreased susceptibility)*
- Cefixime, MIC ≥0.25 µg/ml (elevated MICs)*
- Azithromycin, MIC ≥2.0 µg/ml (elevated MICs)*
- Ciprofloxacin, MIC ≥1.0 µg/ml (resistance)
- Ciprofloxacin, MIC 0.125–0.5 µg/ml (intermediate resistance)
- Penicillin, MIC ≥2.0 µg/ml (resistance)
- Tetracycline, MIC ≥2.0 µg/ml (resistance)
- Gentamicin (MIC values correlated with susceptibility and resistance have not been established)*

The majority of these criteria are also recommended by the Clinical and Laboratory Standards Institute (CLSI).[12]

* The CLSI criteria for decreased susceptibility and resistance to ceftriaxone, cefixime, gentamicin, and azithromycin and for susceptibility to gentamicin and azithromycin have not been established for *N. gonorrhoeae*.

A2.4 National Health and Nutrition Examination Survey

The National Health and Nutrition Examination Survey (NHANES) is a series of cross-sectional surveys designed to provide national statistics on the health and nutritional status of the general household population in the United States. Data are collected through household interviews, standardized physical examinations, and the collection of biological samples in special mobile examination centers. In 1999, NHANES became a continuous survey with data released every two years. The sampling plan of the survey is a stratified, multistage, probability cluster design that selects a sample representative of the United States civilian, non-institutionalized population. For more information, see: https://www.cdc.gov/nchs/nhanes.htm.

A2.5 National Disease and Therapeutic Index

The information on the number of initial visits to private physicians' offices for STDs was based on analysis of data from the National Disease and Therapeutic Index (NDTI) (machine-readable files or summary statistics for 1966 through 2016; the 2017 NDTI data were not obtained in time to include them in this report). NDTI is a probability sample survey of private physicians' clinical management practices. For more information on this database, contact IMS Health, e-mail: ServiceCenter@us.imshealth.com; Telephone: (800) 523–5334.

References

1. US Census Bureau. United States population estimates by age, sex and race: 1980–1988. In: Current population reports [Series P-25, No. 1045]. Washington, DC: US Government Printing Office; 1990.
2. US Census Bureau. United States population estimates by age, sex and race: 1989. In: Current population reports [Series P-25, No. 1057]. Washington, DC: US Government Printing Office; 1990.
3. Centers for Disease Control and Prevention. Vital statistics of the United States 1988. vol.1 — natality. Hyattsville (MD): US Department of Health and Human Services; 1990.
4. American Community Survey. 5-year summary file, 2012–2016. US Census Bureau: 2016.
5. Grey JA, Bernstein KT, Sullivan PS, et al. Estimating the population sizes of men who have sex with men in US states and counties using data from the American Community Survey. JMIR Public Health Surveill 2016; 2(1):e14.
6. Oster AM, Sternberg M, Lansky A, et al. Population size estimates for men who have sex with men and persons who inject drugs. J Urban Health 2015; 92(4):733–743.
7. Purcell DW, Johnson CH, Lansky A, et al. Estimating the population size of men who have sex with men in the United States to obtain HIV and syphilis rates. Open AIDS J 2012; 6(Suppl 1):98–107.
8. Ingram DD, Franco SJ. 2013 NCHS urban-rural classification scheme for counties. National Center for Health Statistics. Vital Health Stat 2014; 2(166):1–81.
9. Office of Management and Budget. Standards for defining metropolitan and micropolitan statistical areas. Federal Register 2000; 65(249):82228–82238.
10. Office of Management and Budget. Revisions to the Standards for Classification of Federal Data on Race and Ethnicity. Federal Register Notice. October 30, 1997.
11. Kaufman RE, Jones OG, Blount JH, et al. Questionnaire survey of reported early congenital syphilis: Problems in diagnosis, prevention, and treatment. Sex Transm Dis 1977; 4(4):135–139.
12. Clinical and Laboratory Standards Institute. Performance standards for antimicrobial susceptibility testing; Twenty-fifth informational supplement. M100-S25, 35(3). Wayne (PA): Clinical and Laboratory Standards Institute; 2015.

Table A1. Selected STDs — Percentage of Unknown, Missing, or Invalid Values for Selected Variables by State and by Nationally Notifiable STD, 2017

	Primary and Secondary Syphilis				
State	Percentage Unknown Race/Hispanic Ethnicity	Percentage Unknown Age	Percentage Unknown Sex	Percentage Unknown Sex Partner	Percentage Unknown County
Alabama	0.5	0.9	0.0	39.6	0.0
Alaska	0.0	0.0	0.0	0.0	0.0
Arizona	2.5	0.0	0.0	6.4	0.0
Arkansas	0.4	0.0	0.0	8.5	0.0
California	5.8	0.1	0.0	12.7	0.0
Colorado	6.8	0.0	0.0	8.9	0.0
Connecticut	5.5	0.0	0.0	10.9	0.0
Delaware	7.0	0.0	0.0	78.9	0.0
District of Columbia	30.3	0.0	1.1	47.8	0.0
Florida	4.7	0.0	0.0	11.6	0.0
Georgia	4.0	0.0	0.0	30.3	0.1
Hawaii	2.1	0.0	0.0	18.1	0.0
Idaho	7.8	3.1	0.0	28.1	0.0
Illinois	5.2	0.0	0.0	23.9	0.5
Indiana	0.6	0.0	0.0	5.6	0.0
Iowa	0.0	0.0	0.0	9.9	0.0
Kansas	0.0	0.0	0.0	4.5	0.0
Kentucky	0.4	0.0	0.0	16.4	0.0
Louisiana	0.0	0.0	0.0	2.7	0.0
Maine	1.5	1.5	3.1	96.9	4.6
Maryland	4.4	0.0	0.0	8.7	0.0
Massachusetts	2.6	0.0	0.0	6.7	4.8
Michigan	0.2	0.0	0.0	11.5	0.0
Minnesota	1.7	0.0	0.7	4.1	0.0
Mississippi	0.0	0.0	0.0	3.9	0.0
Missouri	1.0	0.0	0.0	11.8	0.0
Montana	0.0	0.0	0.0	27.1	0.0
Nebraska	18.6	0.0	0.0	46.5	0.0
Nevada	3.1	0.0	0.0	11.1	0.0
New Hampshire	25.6	0.0	0.0	4.7	0.0
New Jersey	4.0	0.0	0.0	30.9	0.0
New Mexico	12.4	0.0	0.0	14.0	0.0
New York	5.8	0.1	0.8	25.6	0.0
North Carolina	0.0	0.0	0.0	8.3	0.0
North Dakota	0.0	0.0	0.0	11.4	0.0
Ohio	0.2	0.0	0.0	7.0	0.1
Oklahoma	0.0	0.0	0.0	2.4	0.0
Oregon	6.5	0.0	0.6	17.0	0.0
Pennsylvania	6.7	0.0	0.0	9.2	0.0
Rhode Island	4.2	0.0	0.0	33.8	0.0
South Carolina	3.9	0.0	0.0	6.4	0.0
South Dakota	0.0	0.0	0.0	6.1	0.0
Tennessee	0.2	0.0	0.0	4.3	0.0
Texas	1.6	0.0	0.0	6.1	0.0
Utah	3.4	0.0	0.0	7.7	1.7
Vermont	0.0	0.0	0.0	15.4	0.0
Virginia	9.7	0.0	0.9	14.0	0.0
Washington	5.5	0.0	0.1	4.4	0.0
West Virginia	0.0	0.0	0.0	11.3	0.0
Wisconsin	2.9	0.0	0.0	59.5	0.0
Wyoming*	0.0	0.0	0.0	0.0	0.0
U.S. TOTAL	**4.2**	**0.0**	**0.1**	**14.3**	**0.1**

Continued on next page.

Table A1. Selected STDs — Percentage of Unknown, Missing, or Invalid Values for Selected Variables by State and by Nationally Notifiable STD, 2017 (continued)

	Gonorrhea				Chlamydia			
State	Percentage Unknown Race/Hispanic Ethnicity	Percentage Unknown Age	Percentage Unknown Sex	Percentage Unknown County	Percentage Unknown Race/Hispanic Ethnicity	Percentage Unknown Age	Percentage Unknown Sex	Percentage Unknown County
Alabama	32.8	0.2	0.3	0.0	37.3	0.2	0.4	0.0
Alaska	0.5	0.0	0.0	0.0	3.5	0.0	0.0	0.3
Arizona	21.1	0.0	0.2	0.0	29.9	0.0	0.2	0.0
Arkansas	5.1	0.0	0.0	0.0	6.5	0.0	0.0	0.0
California	21.4	0.2	0.2	0.0	34.2	0.2	0.2	0.0
Colorado	33.4	0.0	0.0	0.0	48.0	0.0	0.0	0.0
Connecticut	28.7	0.0	0.2	3.0	76.8	0.2	3.6	5.7
Delaware	4.1	0.0	0.0	0.0	6.0	0.0	0.0	0.0
District of Columbia	88.0	0.2	0.5	0.0	90.9	0.5	0.8	0.0
Florida	11.6	0.0	0.0	0.0	17.8	0.0	0.0	0.0
Georgia	27.5	0.1	0.2	3.1	39.8	0.1	0.3	4.1
Hawaii	33.3	0.1	0.0	0.1	45.2	0.1	0.0	0.1
Idaho	21.7	0.9	0.1	0.0	32.9	0.1	0.2	0.0
Illinois	14.0	0.0	0.2	0.0	17.9	0.0	0.1	0.0
Indiana	6.2	0.0	0.0	0.0	9.7	0.0	0.0	0.0
Iowa	2.8	0.0	0.0	0.0	4.4	0.0	0.0	0.0
Kansas	10.4	0.0	0.0	0.0	28.6	0.0	0.0	0.0
Kentucky	25.3	0.1	0.4	0.0	34.6	0.1	0.5	0.0
Louisiana	0.1	0.0	0.0	0.0	0.2	0.0	0.0	0.1
Maine	4.8	1.0	0.5	1.0	27.3	0.4	0.0	4.6
Maryland	23.7	0.0	0.0	0.0	40.6	0.0	0.0	0.0
Massachusetts	37.0	0.1	0.5	11.7	68.1	0.1	0.3	14.7
Michigan	18.3	0.1	0.1	0.1	23.8	0.1	0.1	0.0
Minnesota	15.5	0.0	0.2	1.3	19.7	0.0	0.1	2.0
Mississippi	16.8	0.0	0.2	0.0	26.0	0.0	0.2	0.0
Missouri	8.2	0.0	0.0	0.0	13.0	0.0	0.0	0.0
Montana	4.1	0.4	0.0	0.0	3.1	0.3	0.0	0.0
Nebraska	15.8	0.0	0.1	0.0	24.1	0.1	0.1	0.0
Nevada	35.1	0.0	0.2	4.0	44.4	0.0	0.3	4.9
New Hampshire	14.2	0.0	0.0	0.0	29.5	0.0	0.0	0.0
New Jersey	35.8	0.5	0.1	0.9	51.1	0.4	0.2	0.8
New Mexico	25.7	0.0	0.1	0.0	30.3	0.0	0.0	0.0
New York	27.8	0.1	0.2	0.0	42.2	0.2	0.1	0.0
North Carolina	14.4	0.0	0.0	0.0	19.5	0.0	0.0	0.0
North Dakota	3.1	0.0	0.0	0.0	8.7	0.0	0.0	0.0
Ohio	17.6	0.1	0.0	1.7	23.4	0.1	0.0	1.8
Oklahoma	10.6	0.0	0.0	0.0	15.0	0.0	0.0	0.0
Oregon	10.3	0.0	0.1	0.0	23.1	0.1	0.1	0.0
Pennsylvania	21.9	0.0	0.1	0.0	32.0	0.0	0.1	0.0
Rhode Island	15.5	0.0	0.1	3.9	17.0	0.0	0.1	2.5
South Carolina	30.2	0.0	0.2	0.1	35.2	0.0	0.3	0.1
South Dakota	0.9	0.0	0.0	0.0	7.3	0.0	0.0	0.0
Tennessee	2.2	0.0	0.0	0.0	3.4	0.0	0.0	0.0
Texas	11.9	0.0	0.2	0.0	15.2	0.0	0.2	0.0
Utah	5.4	0.0	0.2	0.1	6.5	0.0	0.1	0.1
Vermont	3.9	0.0	0.0	0.0	12.8	0.0	0.3	0.0
Virginia	28.0	0.2	0.7	0.0	39.9	0.2	1.1	0.0
Washington	10.2	0.0	0.0	0.0	16.0	0.0	0.0	0.0
West Virginia	10.3	0.0	0.0	0.0	16.6	0.0	0.0	0.0
Wisconsin	24.3	0.0	0.1	0.0	20.8	0.0	0.1	0.1
Wyoming*	17.0	0.0	0.0	0.0	38.1	0.0	0.1	0.0
U.S. TOTAL	**19.0**	**0.1**	**0.2**	**0.5**	**27.8**	**0.1**	**0.2**	**0.7**

* Percentages for primary and secondary syphilis are based on fewer than 10 cases.
NOTE: For all categories, unknown included cases reported as unknown or missing.

Table A2. Reported Cases of STDs by Reporting Source and Sex, United States, 2017

Disease	Non-STD Clinic			STD Clinic			Total		
	Male	Female	Total*	Male	Female	Total*	Male†	Female†	Total‡
Chlamydia	432,467	909,467	1,343,625	56,172	43,168	99,469	577,644	1,127,651	1,708,569
Gonorrhea	241,098	184,210	425,921	36,935	14,996	51,982	322,169	232,587	555,608
Primary Syphilis	6,554	819	7,377	1,807	132	1,940	9,539	1,078	10,623
Secondary Syphilis	12,542	2,026	14,589	2,906	345	3,255	17,346	2,644	20,021
Early Latent Syphilis	21,142	3,487	24,691	4,022	612	4,638	29,251	4,684	34,013
Late and Late Latent Syphilis§	17,956	7,019	25,030	2,265	677	2,948	26,178	9,740	35,992
Chancroid	3	3	6	0	0	0	4	3	7

* Total includes cases reported with unknown sex.
† Total includes cases reported with unknown reporting source.
‡ Total includes cases reported with unknown sex and reporting source.
§ Late and late latent syphilis includes late latent syphilis and late syphilis with clinical manifestations (including late benign syphilis and cardiovascular syphilis).

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B. National Objectives and Goals

B1. *Healthy People 2020* Objectives

For three decades, Healthy People has provided a comprehensive set of national 10-year health promotion and disease prevention objectives aimed at improving the health of all Americans.[1] It is grounded in the principle that establishing objectives and providing benchmarks to track and monitor progress over time can motivate, guide, and focus action.

Healthy People 2020 (HP2020) continues in the tradition of its ambitious, yet achievable, 10-year agenda for improving the Nation's health. HP2020 is the result of a multiyear process that reflects input from a diverse group of individuals and organizations. HP2020 is organized into 42 topic areas, with more than 1,200 measures designed to drive action that will support its four overarching goals:

- Attain high-quality, longer lives free of preventable disease, disability, injury, and premature death.
- Achieve health equity, eliminate disparities, and improve the health of all groups.
- Create social and physical environments that promote good health for all.
- Promote quality of life, healthy development, and healthy behaviors across all life stages.

The topic area, Sexually Transmitted Diseases, contains objectives and measures related to STDs. Baselines, HP2020 targets, and annual progress toward the targets are reported in Table B1. The year 2020 targets for the diseases addressed in this report are as follows: primary and secondary (P&S) syphilis (males), 6.7 cases per 100,000 males; P&S syphilis (females), 1.3 cases per 100,000 females; congenital syphilis, 9.6 cases per 100,000 live births; gonorrhea (females aged 15–44 years), 251.9 cases per 100,000 females and gonorrhea (males aged 15–44 years), 194.8 cases per 100,000 males. The majority of the STD-related HP2020 targets were set using a standard percentage improvement with a standard default of a "10 percent improvement over the baseline."

B2. Government Performance and Results Act of 1993

The Government Performance and Results Act (GPRA) of 1993 was enacted by Congress to increase confidence in the capability of the federal government to increase the effectiveness and accountability of federal programs, to improve service delivery, to provide federal agencies a uniform tool for internal management, and to help Congress make decisions.

GPRA requires each agency to have a performance plan with long-term outcomes and annual, measurable performance goals and to report on these plans annually, comparing results with annual goals. There are two GPRA goals for STD: reducing pelvic inflammatory disease (PID) and eliminating congenital syphilis. Each of these goals has specific measures of progress, which are outlined in Table B2.

References

1. U.S. Department of Health and Human Services. Healthy People 2020 (Healthy People 2020 Web site). Available at https://www.healthypeople.gov/ Accessed on August 16, 2018.

Table B1. *Healthy People 2020 (HP 2020)* Sexually Transmitted Diseases Objectives

	HP2020 Objectives	Baseline Year	Baseline	2015	2016	2017	2020 Target
1	**Reduce the proportion of adolescents and young adults with *Chlamydia trachomatis* infections**						
	a. Among females aged 15 to 24 years attending family planning clinics	2008	7.4%	8.6%	8.4%	9.6%	6.7%
	b. Among females aged 24 years and under enrolled in a National Job Training Program	2008	12.8%	12.7%	11.4%	11.8%	11.5%
	c. Among males aged 24 years and under enrolled in a National Job Training Program	2008	7.0%	7.5%	7.1%	6.6%	6.3%
2	**Increase the proportion of sexually active females aged 24 years and under enrolled in Medicaid plans who are screened for genital Chlamydia infections during the measurement year**						
	a. Females aged 16 to 20 years	2008	52.7%	51.2%	53.9%	N/A	70.9%
	b. Females aged 21 to 24 years	2008	59.4%	60.1%	62.2%	N/A	80.0%
3	**Increase the proportion of sexually active females aged 24 years and under enrolled in commercial health insurance plans who are screened for genital Chlamydia infections during the measurement year**						
	a. Females aged 16 to 20 years	2008	40.1%	42.4%	44.3%	N/A	61.3%
	b. Females aged 21 to 24 years	2008	43.5%	52.4%	54.8%	N/A	74.6%
4	**Reduce the proportion of females aged 15 to 44 years who have ever required treatment for pelvic inflammatory disease (PID)**	2006–2010	4.2%	3.0%	N/A	N/A	3.8%
5	**Reduce gonorrhea rates**						
	a. Females aged 15 to 44 years	2008	279.9	263.4	297.1	350.0	251.9
	b. Males aged 15 to 44 years	2008	216.5	307.6	370.2	440.4	194.8
6	**Reduce sustained domestic transmission of primary and secondary syphilis**						
	a. Among females	2008	1.4	1.4	1.9	2.3	1.3
	b. Among males	2008	7.4	13.7	15.6	16.9	6.7
7	**Reduce congenital syphilis**	2008	10.7	12.4	15.7	23.3	9.6
8	**Reduce the proportion of young adults with genital herpes infection due to herpes simplex type 2**	2005–2008	10.5%	N/A	N/A	N/A	9.5%

HP2020 Objective	Data Source
1a	STD Surveillance Network (SSuN), CDC
1b, 1c	National Job Training Program (NJTP)
2a, 2b	Healthcare Effectiveness Data and Information Set (HEDIS), National Committee for Quality Assurance (NCQA)
3a, 3b	Healthcare Effectiveness Data and Information Set (HEDIS), National Committee for Quality Assurance (NCQA)
4	National Survey of Family Growth (NSFG), CDC
5a, 5b	National Notifiable Disease Surveillance System (NNDSS), CDC
6a, 6b	National Notifiable Disease Surveillance System (NNDSS), CDC
7	National Notifiable Disease Surveillance System (NNDSS), CDC
8	National Health and Nutrition Examination Survey (NHANES), CDC

NOTE: Data presented in this table reflect data reported to HP2020 in current and prior years. Data for years prior to 2016 may not match estimates presented in other sections of this report. More information about HP2020 is available at: https://www.healthypeople.gov/
N/A = Not available.

Table B2. Government Performance and Results Act (GPRA) Sexually Transmitted Diseases Goals, Measures, and Target

GPRA Goals	Actual			Target
	2015	2016	2017	2018
Goal 1: Reduction in PID (as measured by initial visits to physicians in women 15–44 years of age)	68,000	90,000	N/A	68,000
a. Proportion of high-risk women aged 16–20 infected with chlamydia*	13.4%	12.3%	13.1%	11.7%
b. Proportion of high-risk women aged 21–24 infected with chlamydia*†	8.5%	7.4%	7.9%	8.3%
c. Rate of gonorrhea/100,000 population in women aged 16–20	537.0	586.0	680.8	523.9
d. Rate of gonorrhea/100,000 population in women aged 21–24	523.9	573.0	654.8	511.8
e. Black: White ratio of gonorrhea in women aged 16–24	9.5	8.4	7.8	9.5:1
f. Proportion of sexually active females aged 16–20 years enrolled in Medicaid who are screened for chlamydia infections	51.2%	53.9%	N/A	62.5%
g. Proportion of sexually active females aged 21–24 years enrolled in Medicaid who are screened for chlamydia infections	60.1%	62.2%	N/A	66.0%
h. Proportion of sexually active females aged 16–20 years enrolled in commercial health insurance plans who are screened for chlamydia infections	42.4%	42.5%	N/A	43.5%
i. Proportion of sexually active females aged 21–24 years enrolled in commercial health insurance plans who are screened for chlamydia infections	52.4%	53.3%	N/A	52.7%
Goal 2: Elimination of Congenital Syphilis				
a. Incidence of P&S syphilis/100,000 population in women aged 15–44	3.2	4.2	5.1	0.8
b. Incidence of congenital syphilis/100,000 live births	12.4	15.7	23.3	6.2
c. Proportion of pregnant women that are screened for syphilis at least one month before delivery	84.0%	N/A	N/A	87.2%

GPRA Goals	Data Source
1	National Disease and Therapeutic Index (IMS Health)
1a, 1b	National Job Training Program (NJTP)
1c, 1d, 1e	National Notifiable Disease Surveillance System (NNDSS), CDC
1f, 1g, 1h, 1i	Healthcare Effectiveness Data and Information Set (HEDIS), National Committee for Quality Assurance (NCQA)
2a, 2b	National Notifiable Disease Surveillance System (NNDSS),CDC
2c	MarketScan Commercial Claims and Encounters Database, Truven Health Analytics

NOTE: Data presented in this table reflect data reported to GPRA in current and prior years. Data for years prior to 2016 may not match estimates presented in other sections of this report.
* Median state-specific chlamydia prevalence/positivity among states with >100 females in this age group entering the National Job Training Program.
† In FY 2013, CDC improved the calculation of these data to increase the stability of estimates over time. Data for 2010 and later years reflect this improved calculation method.
N/A = Not available; GPRA = Government Performance and Results Act; PID = pelvic inflammatory disease; P&S = primary and secondary.

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C. STD Surveillance Case Definitions

C1. Case Definitions For Nationally Notifiable Infectious Diseases

The Council of State and Territorial Epidemiologists (CSTE) recommends that state health departments report cases of selected diseases to CDC's National Notifiable Diseases Surveillance System (NNDSS). Case definitions are periodically revised using CSTE's Position Statements and provide uniform criteria of nationally notifiable conditions for reporting purposes. The most current surveillance case definitions for nationally notifiable STDs are listed below. Please see the NNDSS website (https://wwwn.cdc.gov/nndss/case-definitions.html) for historical case definitions.

C1.1 Chancroid (Revised 9/96)

Clinical description

A sexually transmitted disease characterized by painful genital ulceration and inflammatory inguinal adenopathy. The disease is caused by infection with *Haemophilus ducreyi*.

Laboratory criteria for diagnosis

- Isolation of *H. ducreyi* from a clinical specimen.

Case classification

Probable: a clinically compatible case with both a) no evidence of *Treponema pallidum* infection by darkfield microscopic examination of ulcer exudate or by a serologic test for syphilis performed ≥7 days after onset of ulcers and b) either a clinical presentation of the ulcer(s) not typical of disease caused by herpes simplex virus (HSV) or a culture negative for HSV.

Confirmed: a clinically compatible case that is laboratory confirmed.

C1.2 *Chlamydia trachomatis* Infection (Effective 1/10)

Clinical description

Infection with *Chlamydia trachomatis* may result in urethritis, epididymitis, cervicitis, acute salpingitis, or other syndromes when sexually transmitted; however, the infection is often asymptomatic in women. Perinatal infections may result in inclusion conjunctivitis and pneumonia in newborns. Other syndromes caused by *C. trachomatis* include lymphogranuloma venereum (see Lymphogranuloma Venereum) and trachoma.

Laboratory criteria for diagnosis

- Isolation of *C. trachomatis* by culture or
- Demonstration of *C. trachomatis* in a clinical specimen by detection of antigen or nucleic acid

Case classification

Confirmed: a case that is laboratory confirmed.

C1.3 Gonorrhea (Effective 1/14)

Clinical description

A sexually transmitted infection commonly manifested by urethritis, cervicitis, proctitis, salpingitis, or pharyngitis. Infection may be asymptomatic.

Laboratory criteria for diagnosis

- Observation of gram-negative intracellular diplococci in a urethral smear obtained from a male or an endocervical smear obtained from a female, or
- Isolation of typical gram-negative, oxidase-positive diplococci by culture (presumptive *Neisseria gonorrhoeae*) from a clinical specimen, or
- Demonstration of *N. gonorrhoeae* in a clinical specimen by detection of antigen or nucleic acid

Case classification

Probable: demonstration of gram-negative intracellular diplococci in a urethral smear obtained from a male or an endocervical smear obtained from a female.

Confirmed: a person with laboratory isolation of typical gram-negative, oxidase-positive diplococci by culture (presumptive *N. gonorrhoeae*) from a clinical specimen, or demonstration of *N. gonorrhoeae* in a clinical specimen by detection of antigen or detection of nucleic acid via nucleic acid amplification (e.g., polymerase chain reaction [PCR]) or hybridization with a nucleic acid probe.

C1.4 Syphilis (Effective 1/14)

Syphilis is a complex sexually transmitted disease that has a highly variable clinical course. Adherence to the following surveillance case definitions will facilitate understanding the epidemiology of this disease across the US.

Syphilis, primary (Effective 1/14)

Clinical description

A stage of infection with *Treponema pallidum* characterized by one or more ulcerative lesions (e.g. chancre), which might differ considerably in clinical appearance.

Laboratory criteria for diagnosis

Demonstration of *T. pallidum* in clinical specimens by darkfield microscopy, or by PCR or equivalent direct molecular methods.

Case classification

Probable: a case that meets the clinical description of primary syphilis with a reactive serologic test (nontreponemal: Venereal Disease Research Laboratory [VDRL], rapid plasma reagin [RPR], or equivalent serologic methods; treponemal: fluorescent treponemal antibody absorbed [FTA-ABS], *T. pallidum* particle agglutination [TP-PA], enzyme immunoassay [EIA], chemiluminescence immunoassay [CIA], or equivalent serologic methods). These treponemal tests supersede older testing technologies, including microhemagglutination assay for antibody to *T. pallidum* [MHA-TP].

Confirmed: a case that meets the clinical description of primary syphilis that is laboratory confirmed.

Syphilis, secondary (Effective 1/14)

Clinical description

A stage of infection caused by *T. pallidum* characterized by localized or diffuse mucocutaneous lesions (e.g., rash – such as non-pruritic macular, maculopapular, popular, or pustular lesions), often with generalized lymphadenopathy. Other symptoms can include mucous patches, condyloma lata, and alopecia. The primary ulcerative lesion may still be present. Because of the wide array of symptoms possibly indicating secondary syphilis, serologic tests for syphilis and a thorough sexual history and physical examination are crucial to determining if a case should be classified as secondary syphilis.

Laboratory criteria for diagnosis

Demonstration of *T. pallidum* in clinical specimens by darkfield microscopy, or by PCR or equivalent direct molecular methods.

Case classification

Probable: a case that meets the clinical description of secondary syphilis with a nontreponemal (VDRL, RPR, or equivalent serologic methods) titer ≥4 and a reactive treponemal test (FTA-ABS, TP-PA, EIA, CIA, or equivalent serologic methods).

Confirmed: a case that meets the clinical description of secondary syphilis (with at least one sign or symptom) that is laboratory confirmed.

Syphilis, early latent (Effective 1/14)

Clinical description

A subcategory of latent syphilis (a stage of infection caused by *T. pallidum* in which organisms persist in the body of the infected person without causing symptoms or signs) when initial infection has occurred within the previous 12 months.

Case classification

Probable: A person with no clinical signs or symptoms of syphilis who has one of the following:

- No past diagnosis of syphilis, and a reactive nontreponemal test (e.g., VDRL, RPR, or equivalent serologic methods), and a reactive treponemal test (e.g., FTA-ABS, TP-PA, EIA, CIA, or equivalent serologic methods), or
- A current nontreponemal test titer demonstrating fourfold or greater increase from the last nontreponemal test titer

AND evidence of having acquired the infection within the previous 12 months based on one or more of the following criteria:

- Documented seroconversion or fourfold or greater increase in titer of a nontreponemal test during the previous 12 months
- Documented seroconversion of a treponemal test during the previous 12 months
- A history of symptoms consistent with primary or secondary syphilis during the previous 12 months
- A history of sexual exposure to a partner within the previous 12 months who had primary, secondary, or early latent syphilis (documented independently as duration <12 months)
- Only sexual contact was within the last 12 months (sexual debut).

There is no confirmed case classification for early latent syphilis.

Syphilis, late latent (Effective 1/14)

Clinical description

A subcategory of latent syphilis (a stage of infection caused by *T. pallidum* in which organisms persist in the body of the infected person without causing symptoms or signs) when initial infection has occurred >12 months previously.

Case classification

Probable: a person with no clinical signs or symptoms of syphilis who has one of the following:

- No past diagnosis of syphilis, and a reactive nontreponemal test (e.g., VDRL, RPR, or equivalent serologic methods), and a reactive treponemal test (e.g., FTA-ABS, TP-PA, EIA, CIA, or equivalent serologic methods), or
- A past history of syphilis therapy and a current nontreponemal test titer demonstrating fourfold or greater increase from the last nontreponemal test titer.

AND who has no evidence of having acquired the disease within the preceding 12 months (see Syphilis, early latent).

There is no confirmed case classification for late latent syphilis.

Neurosyphilis (Effective 1/14)

Neurosyphilis can occur at any stage of syphilis. If the patient has neurologic manifestations of syphilis, the case should be reported with the appropriate stage of infection (as if neurologic manifestations were not present) and neurologic manifestations should be noted in the case report data. If no other stage is appropriate, the case should be staged as "late, with clinical manifestations".

Neurosyphilis can apply to all stages of infection of syphilis listed, including: primary syphilis, secondary syphilis, early latent syphilis, late latent syphilis, and late syphilis with clinical manifestations.

Clinical description

Infection of the central nervous system with *T. pallidum*, as evidenced by manifestations including syphilitic meningitis, meningovascular syphilis, optical involvement including interstitial keratitis and uveitis, general paresis, including dementia, and tabes dorsalis.

Laboratory criteria for diagnosis

- A reactive VDRL in cerebrospinal fluid (CSF) and either (1) a reactive treponemal serologic test for syphilis (e.g., FTA- ABS, TP-PA, EIA, CIA, or equivalent serologic methods) or (2) a reactive nontreponemal serologic test for syphilis (VDRL, RPR, or equivalent serologic method).

Case classification

Probable: syphilis of any stage with a negative VDRL test in CSF specimen and either (1) a reactive treponemal serologic test for syphilis (e.g., FTA-ABS, TP-PA, EIA, CIA, or equivalent serologic methods) or (2) a reactive non-treponemal serologic test for syphilis (VDRL, RPR, or equivalent serologic method), and both of the following:

- Elevated CSF protein (>50 mg/dL2) or leukocyte count (>5 white blood cells/cubic millimeter CSF) in the absence of other known causes of these abnormalities, and
- Clinical symptoms or signs consistent with neurosyphilis without other known causes for these clinical abnormalities.

Confirmed: syphilis of any stage that meets the laboratory criteria for neurosyphilis.

Syphilis, late with clinical manifestations (including late benign syphilis and cardiovascular syphilis) (Effective 1/14)

Clinical description

Clinical manifestations of late syphilis may include inflammatory lesions of the cardiovascular system (e.g., aortitis, coronary vessel disease), skin (e.g., gummatous lesions) bone (e.g., osteitis) or other tissue. Rarely, other structures (e.g., the upper and lower respiratory tracts, mouth, eye, abdominal organs, reproductive organs, lymph nodes, and skeletal muscle) may be involved. Late syphilis usually becomes clinically manifest only after a period of 15–30 years of untreated infection. If only neurologic manifestations of syphilis (e.g., tabes dorsalis, dementia) are present and infection occurred more than 12 months ago, the case should be reported as "late syphilis".

Laboratory criteria for diagnosis

Demonstration of *T. pallidum* in late lesions by special stains (although organisms are rarely visualized in late lesions), or equivalent methods, or by PCR or equivalent direct molecular methods.

Case classification

Probable: characteristic abnormalities or lesions of the cardiovascular system (e.g., aortitis, coronary vessel disease), skin (e.g., gummatous lesions), bone (e.g., osteitis), or other tissue and a reactive treponemal test (e.g., FTA-ABS, TP-PA, EIA, CIA, or equivalent serologic methods), in the absence of other known causes of these abnormalities. CSF abnormalities and clinical symptoms or signs consistent with neurologic manifestations of syphilis might be present.

Confirmed: a case that meets the clinical description of late syphilis that is laboratory confirmed.

Syphilis, Congenital (Effective 1/15)

Clinical description

A condition caused by infection in utero with *T. pallidum*. A wide spectrum of severity exists, from inapparent infection to severe cases that are clinically apparent at birth. An infant or child (aged less than 2 years) may have signs such as hepatosplenomegaly, rash, condyloma lata, snuffles, jaundice (nonviral hepatitis), pseudoparalysis, anemia, or edema (nephrotic syndrome and/or malnutrition). An older child may have stigmata (e.g., interstitial keratitis, nerve deafness, anterior bowing of shins, frontal bossing, mulberry molars, Hutchinson teeth, saddle nose, rhagades, or Clutton joints).

Laboratory criteria for diagnosis

- Demonstration of *T. pallidum* by darkfield microscopy of lesions, body fluids, or neonatal nasal discharge, or
- PCR or other equivalent direct molecular methods of lesions, placenta, umbilical cord, or autopsy material, or
- Immunohistochemistry (IHC), or special stains (e.g., silver staining) of specimens from lesions, neonatal nasal discharge, placenta, umbilical cord, or autopsy material.

Case classification

Probable: a condition affecting an infant whose mother had untreated or inadequately treated* syphilis at delivery, regardless of signs in the infant, or an infant or child who has a reactive non-treponemal test for syphilis (VDRL, RPR, or equivalent serologic methods) AND any one of the following:

- Any evidence of congenital syphilis on physical examination (see Clinical description)
- Any evidence of congenital syphilis on radiographs of long bones
- A reactive CSF VDRL test
- In a nontraumatic lumbar puncture, an elevated CSF leukocyte (white blood cell [WBC]) count or protein (without other cause):

* Adequate treatment is defined as completion of a penicillin-based regimen, in accordance with CDC treatment guidelines, appropriate for stage of infection, initiated 30 or more days before delivery.

Suggested parameters for abnormal CSF WBC and protein values:

- During the first 30 days of life, a CSF WBC count of >15 WBC/mm3 or a CSF protein >120 mg/dL.
- After the first 30 days of life, a CSF WBC count of >5 WBC mm3 or a CSF protein >40 mg/dL, regardless of CSF serology.
- The treating clinician should be consulted to interpret the CSF values for the specific patient.

Confirmed: a case that is laboratory confirmed.

Syphilitic Stillbirth

Clinical case definition

A fetal death that occurs after a 20-week gestation or in which the fetus weighs greater than 500 g and the mother had untreated or inadequately treated* syphilis at delivery.

Comment

Congenital and acquired syphilis may be difficult to distinguish when a child is seropositive after infancy. Signs of congenital syphilis may not be obvious, and stigmata may not yet have developed. Abnormal values for CSF VDRL, WBC cell count, and protein may be found in either congenital or acquired syphilis. Findings on radiographs of long bones may help because radiographic changes in the metaphysis and epiphysis are considered classic signs of congenitally acquired syphilis. While maternal antibodies can complicate interpretation of serologic tests in an infant, reactive tests past 18 months of age are considered to reflect the status of the child. The decision may ultimately be based on maternal history and clinical judgment. In a young child, the possibility of sexual abuse should be considered as a cause of acquired rather than congenital syphilis, depending on the clinical picture. For reporting purposes, congenital syphilis includes cases of congenitally acquired syphilis among infants and children as well as syphilitic stillbirths.

* Adequate treatment is defined as completion of a penicillin-based regimen, in accordance with CDC treatment guidelines, appropriate for stage of infection, initiated 30 or more days before delivery.

C2. Case Definitions For Non-Notifiable Infectious Diseases

Although the conditions below are not currently nationally notifiable, they may be reportable in some jurisdictions. To provide uniform criteria for those jurisdictions, case definitions are provided by CSTE. Case definitions are periodically revised. The most current surveillance case definitions for non-notifiable STDs are listed below. Please see the NNDSS website (https://wwwn.cdc.gov/nndss/case-definitions.html) for historical case definitions.

C2.1 Genital Herpes (Herpes Simplex Virus) (Revised 9/96)

Clinical description

A condition characterized by visible, painful genital or anal lesions.

Laboratory criteria for diagnosis

- Isolation of herpes simplex virus from cervix, urethra, or anogenital lesion, or
- Demonstration of virus by antigen detection technique in clinical specimens from cervix, urethra, or anogenital lesion, or
- Demonstration of multinucleated giant cells on a Tzanck smear of scrapings from an anogenital lesion.

Case classification

Probable: a clinically compatible case (in which primary and secondary syphilis have been excluded by appropriate serologic tests and darkfield microscopy, when available) with either a diagnosis of genital herpes based on clinical presentation (without laboratory confirmation) or a history of one or more previous episodes of similar genital lesions.

Confirmed: a clinically compatible case that is laboratory confirmed.

Comment

Genital herpes should be reported only once per patient. The first diagnosis for a patient with no previous diagnosis should be reported.

C2.2 Genital Warts (Revised 9/96)

Clinical description

An infection characterized by the presence of visible, exophytic (raised) growths on the internal or external genitalia, perineum, or perianal region.

Laboratory criteria for diagnosis

- Histopathologic changes characteristic of human papillomavirus infection in specimens obtained by biopsy or exfoliative cytology or
- Demonstration of virus by antigen or nucleic acid detection in a lesion biopsy.

Case classification

Probable: a clinically compatible case without histopathologic diagnosis and without microscopic or serologic evidence that the growth is the result of secondary syphilis.

Confirmed: a clinically compatible case that is laboratory confirmed.

Comment

Genital warts should be reported only once per patient. The first diagnosis for a patient with no previous diagnosis should be reported.

C2.3 Granuloma Inguinale

Clinical description

A slowly progressive ulcerative disease of the skin and lymphatics of the genital and perianal area caused by infection with *Calymmatobacterium granulomatis*. A clinically compatible case would have one or more painless or minimally painful granulomatous lesions in the anogenital area.

Laboratory criteria for diagnosis

Demonstration of intracytoplasmic Donovan bodies in Wright or Giemsa-stained smears or biopsies of granulation tissue.

Case classification

Confirmed: a clinically compatible case that is laboratory confirmed.

C2.4 Lymphogranuloma Venereum

Clinical description

Infection with L1, L2, or, L3 serovars of *C. trachomatis* may result in a disease characterized by genital lesions, suppurative regional lymphadenopathy, or hemorrhagic proctitis. The infection is usually sexually transmitted.

Laboratory criteria for diagnosis

Isolation of *C. trachomatis*, serotype L1, L2, or L3 from clinical specimen, or

- Demonstration by immunofluorescence of inclusion bodies in leukocytes of an inguinal lymph node (bubo) aspirate, or
- Positive microimmunofluorescent serologic test for a lymphogranuloma venereum strain of *C. trachomatis*.

Case classification

Probable: a clinically compatible case with one or more tender fluctuant inguinal lymph nodes or characteristic proctogenital lesions with supportive laboratory findings of a single *C. trachomatis* complement fixation titer of >64.

Confirmed: a clinically compatible case that is laboratory confirmed.

C2.5 Mucopurulent Cervicitis (Revised 9/96)

Clinical description

Cervical inflammation that is not the result of infection with *N. gonorrhoeae* or *Trichomonas vaginalis*. Cervical inflammation is defined by the presence of one of the following criteria:

- Mucopurulent secretion (from the endocervix) that is yellow or green when viewed on a white, cotton-tipped swab (positive swab test)
- Induced endocervical bleeding (bleeding when the first swab is placed in the endocervix).

Laboratory criteria for diagnosis

No evidence of *N. gonorrhoeae* by culture, Gram stain, or antigen or nucleic acid detection, and no evidence of *T. vaginalis* on wet mount.

Case classification

Confirmed: a clinically compatible case in a female who does not have either gonorrhea or trichomoniasis.

Comment

Mucopurulent cervicitis (MPC) is a clinical diagnosis of exclusion. The syndrome may result from infection with any of several agents (see *C. trachomatis*). If gonorrhea, trichomoniasis, and chlamydia are excluded, a clinically compatible illness should be classified as MPC. An illness in a female that meets the case definition of MPC and *C. trachomatis* infection should be classified as chlamydia.

C2.6 Nongonococcal Urethritis (Revised 9/96)

Clinical description

Urethral inflammation that is not the result of infection with *N. gonorrhoeae*. Urethral inflammation may be diagnosed by the presence of one of the following criteria:

- A visible abnormal urethral discharge, or
- A positive leukocyte esterase test from a male aged <60 years who does not have a history of kidney disease or bladder infection, prostate enlargement, urogenital anatomic anomaly, or recent urinary tract instrumentation, or
- Microscopic evidence of urethritis (≥5 white blood cells per high-power field) on a Gram stain of a urethral smear.

Laboratory criteria for diagnosis

No evidence of *N. gonorrhoeae* infection by culture, Gram stain, or antigen or nucleic acid detection.

Case classification

Confirmed: a clinically compatible case in a male in whom gonorrhea is not found, either by culture, Gram stain, or antigen or nucleic acid detection.

Comment

Nongonococcal urethritis (NGU) is a clinical diagnosis of exclusion. The syndrome may result from infection with any of several agents (see *C. trachomatis*). If gonorrhea and chlamydia are excluded, a clinically compatible illness should be classified as NGU. An illness in a male that meets the case definition of NGU and *C. trachomatis* infection should be classified as chlamydia.

C2.7 Pelvic Inflammatory Disease (Revised 9/96)

Clinical case definition

A clinical syndrome resulting from the ascending spread of microorganisms from the vagina and endocervix to the endometrium, fallopian tubes, and/or contiguous structures. In a female who has lower abdominal pain and who has not been diagnosed as having an established cause other than pelvic inflammatory disease (PID) (e.g., ectopic pregnancy, acute appendicitis, and functional pain), all the following clinical criteria must be present:

- Lower abdominal tenderness, and
- Tenderness with motion of the cervix, and
- Adnexal tenderness.

In addition to the preceding criteria, at least one of the following findings must also be present:

- Meets the surveillance case definition of *C. trachomatis* infection or gonorrhea
- Temperature >100.4 F (>38.0 C)
- Leukocytosis >10,000 WBC/mm3
- Purulent material in the peritoneal cavity obtained by culdocentesis or laparoscopy
- Pelvic abscess or inflammatory complex detected by bimanual examination or by sonography
- Patient is a sexual contact of a person known to have gonorrhea, chlamydia, or nongonococcal urethritis.

Case classification

Confirmed: a case that meets the clinical case definition.

Comment

For reporting purposes, a clinician's report of PID should be counted as a case.

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