Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

National Notifiable Diseases Surveillance System (NNDSS)

Four STDs are nationally notifiable conditions: chlamydia, gonorrhea, syphilis, and chancroid. STD control programs in state, local, and territorial health departments (also referred to as jurisdictions) collect case reports for these conditions using case definitions developed by the Council of State and Territorial Epidemiologists (CSTE) and CDC. Health departments voluntarily provide STD case data to the Division of STD Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, CDC for national surveillance efforts. HIV, which can be sexually transmitted, is also a nationally notifiable condition; national data for trends in diagnosed HIV are available here: https://www.cdc.gov/hiv/library/reports/hiv-surveillance.html

National data collection for gonorrhea, syphilis, and chancroid began in 1941; however, gonorrhea, syphilis, and chancroid became nationally notifiable in 1944. 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. For more information on nationally notifiable conditions, please refer to the NNDSS website: https://wwwn.cdc.gov/nndss/conditions/

Reporting formats

NNDSS STD data presented in this report are compiled from electronic data received through the National Electronic Telecommunications System for Surveillance (NETSS) and via Health level 7 (HL7) messaging using National Electronic Disease Surveillance System (NEDSS) standards. Additionally, select jurisdictions provide congenital syphilis cases via REDCap and a few jurisdictions (e.g., territories) provide data using standardized hard copy reporting forms. Surveillance data sent to CDC through December 21, 2020 are included in this report.

Prior to 2003, the following hard copy forms were used to provide NNDSS STD data to CDC:

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.

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, and territories of the United States. Chlamydia 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 to encourage use of the congenital syphilis case-specific CDC 73.126 form that was introduced in 1983.

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 of report (private versus public) for all 50 states, seven large cities (Baltimore, Chicago, New York City, Los Angeles, Philadelphia, San Francisco, and the District of Columbia), and territories of the United States. Chlamydia became a nationally notifiable condition in 1995, and the form was modified to support reporting of chlamydia that year.

FORM CDC 73.126: *Congenital Syphilis (CS) Case Investigation and Reporting*. This case-specific hard copy form was first used in 1983 and was revised in 1990 and in 2013 to align with changes to the congenital syphilis case definition; minor revisions were also made in 2010. It continues to form the basis of the congenital syphilis REDCap form used by some jurisdictions.

As of December 31, 2003, all 50 states and the District of Columbia converted from summary hard copy reporting to electronic submission of line-listed (i.e., case-specific) data for chlamydia, gonorrhea, syphilis, and chancroid through NETSS. Puerto Rico converted to electronic reporting in 2006 for all STDs, excluding congenital syphilis. American Samoa, Guam, Northern Mariana Islands, and the Virgin Islands continue to report STD data through summary hard copy forms. In 2019, six jurisdictions (Connecticut, Idaho, Michigan, North Carolina, Oregon, and South Carolina) provided STD case data to CDC via HL7 messaging. In 2019, 20 states/cities that reported congenital syphilis data through REDCap.

Reporting Practices

Although most state and local STD programs generally adhere to the national notifiable STD case definitions collaboratively developed by 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.

Chlamydia and Gonorrhea Reporting

Trends in rates of reported cases of chlamydia and gonorrhea are influenced by changes in incidence of infection, as well as changes in diagnostic, screening, and reporting practices. As both chlamydial and gonococcal infections can be asymptomatic, the number of infections identified and reported can increase as more people are screened—even when incidence is flat or decreasing. Beginning in 2000, the expanded use of more sensitive diagnostic tests (e.g., nucleic acid amplification tests) likely increased the number of infections identified and reported independently of increases in incidence. Additionally, expanded testing at extragenital (rectal and pharyngeal) anatomic sites likely increased the number of infections identified. Further, the increased use of electronic laboratory reporting over the last decade or so also likely increased the proportion of diagnosed infections reported. 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 chlamydia case rates prior to 2000 reflect incomplete reporting. Consequently, increasing case rates over time may reflect more complete reporting, as well as increases in incidence of infection, screening coverage, and use of more sensitive tests. Likewise, decreases in case rates may suggest decreases in incidence of infection or screening coverage.

Syphilis Reporting

The surveillance case definition for syphilis has changed over time. Since 2018, the category of "total syphilis" or "all stages of syphilis" includes: primary, secondary, early non-primary non-secondary, unknown duration or late, congenital syphilis, and syphilitic stillbirth. However, in previous years, "total syphilis" or "all stages of syphilis" have included different case classifications. For example, in the 1990 syphilis case definition, "total syphilis" or "all stages of syphilis" included: primary, secondary, latent, early latent, late latent, latent unknown duration, neurosyphilis, syphilitic stillbirth, and congenital syphilis. More information on syphilis case definition changes over time can be found at: https://wwwn.cdc.gov/nndss/conditions/syphilis/case-definition/2018/.

Congenital Syphilis Reporting

Prior to 1989, reported cases of congenital syphilis were defined and classified on the basis of a complex set of clinical and serologic features known as the Kaufman criteria. The Kaufman criteria, however, were not designed for use as a surveillance case definition. In 1988, CDC developed a surveillance case definition for congenital syphilis, which was more sensitive (i.e., inclusive) than the Kaufman clinical criteria. At the same time, many STD programs began to enhance active case finding for congenital syphilis. These surveillance changes, in addition to rising morbidity, led to a dramatic increase in the number of congenital syphilis cases reported during 1989–1991. By January 1, 1992, the new congenital syphilis case definition was fully implemented by all reporting areas. Since 1995, congenital syphilis cases are reported by state and city of residence of the mother and by the reported race/Hispanic ethnicity of the mother. Congenital syphilis is usually diagnosed at birth but can be identified years later; therefore, cases are sent to CDC when they are reported to local public health officials and are assigned to the infant's year of birth. Congenital syphilis data reported after publication of the current annual STD surveillance report will appear in subsequent reports.

Missed prevention opportunities among mothers of infants with congenital syphilis are identified based on information reported to CDC related to prenatal care, syphilis testing, and treatment. To describe the primary missed prevention opportunity, each reported congenital syphilis case is assigned to one of five mutually exclusive categories, assigned by hierarchy: 1) lack of timely prenatal care with no timely syphilis testing; 2) lack of timely syphilis testing despite timely prenatal care; 3) lack of adequate maternal treatment despite a timely syphilis diagnosis; 4) late identification of seroconversion during pregnancy (identified <30 days before delivery); or 5) clinical evidence of congenital syphilis despite maternal treatment completion. For categorization purpose, congenital syphilis prevention opportunities are considered timely if they occurred ≥30 days before delivery. Adequate maternal treatment is defined as completion of a penicillin-based regimen recommended for the mother's stage of syphilis which was initiated ≥30 days before delivery. For a case of congenital syphilis to be categorized as resulting from lack of adequate maternal treatment despite a timely syphilis diagnosis, a pregnant person would 1) need to have evidence of a diagnosis of syphilis during pregnancy with syphilis testing performed ≥30 days before delivery and 2) not have received adequate treatment for syphilis. Those who did not receive adequate treatment had no treatment at all, only received 1 dose when 3 doses were indicated based on maternal staging, received the doses at improper intervals, received the first dose of treatment <30 days before delivery, or were treated with a nonpenicillin–based regimen.

Race/Hispanic Ethnicity

In April 2008, the NETSS record layout was updated to conform to the Office of Management and Budget's (OMB's) current government-wide standard for collection and reporting of race/Hispanic ethnicity data. The OMB standards were first issued in 1997. Beginning with the publication of *Sexually Transmitted Disease Surveillance 2012*, the majority of 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 (NHOPI), White, and

Multirace. Cases are reported with information on both race and Hispanic ethnicity. Cases reported as Hispanic are classified as Hispanic, regardless of their race, and include cases with unknown race. Cases reported as non-Hispanic or of unknown Hispanic ethnicity are considered non-Hispanic and categorized based on race.

Most reporting jurisdictions are locally compliant with current OMB standards and report in the current OMB standard race categories, including Multirace; however, in 2019, a small number of jurisdictions reported race in pre-1997 single race categories or reported race using categories based on current OMB standards but were unable to report more than one race per person. For this report, all race/Hispanic ethnicity data reported by jurisdictions are summarized in tables, charts, and interpretative text regardless of local compliance with the 1997 OMB standards. The few cases reported in the legacy 'Asian/Pacific Islander' category from non-OMB compliant jurisdictions are re-coded to 'Unknown' because these cases cannot be properly re-coded into a category currently in OMB standards. Therefore, the rates for Asians, NHOPI, or Multirace individuals may be minimally under- or overestimated. An exception to this approach is the presentation of congenital syphilis data; due to current availability of data from the National Center for Health Statistics (NCHS) Vital Statistics Cooperative Program, congenital syphilis data are presented using NCHS bridged race categories to allow for the display of data across several years.

In 2019, 29.7% of chlamydia cases and 19.7% of gonorrhea cases were reported with missing information on race/Hispanic ethnicity. (Table A1) Given the substantial number of these infections diagnosed, case data are primarily based on information received on the laboratory report which may not contain information about race/Hispanic ethnicity. As most P&S syphilis cases are investigated by local public health officials, only a small proportion (5.6%) were reported with missing information on race/Hispanic ethnicity in 2019. Cases missing race and/or Hispanic ethnicity are not included in the calculation of rates by race/Hispanic ethnicity. As a consequence, rate data presented in this report underestimate actual case incidence in these population categories and caution should be used in interpreting specific rate data points.

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, hospitals (inpatient), emergency rooms, correctional facilities, laboratories, blood banks, the National Job Training Program, school-based clinics, mental health providers, the military, the Indian Health Service, and other unspecified sources. For figures displaying trends in source of report, 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. Table A2 provides trends by STD clinic versus non-STD clinic.

Geography

Data are presented at the national, regional, state and territory, metropolitan statistical areas (MSA), and county level. Data are presented for MSAs with the largest populations according to 2010 United States census data. Reported cases are assigned to MSAs based on the reported county; cases reported with a missing 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 county variable. Table A1 displays the percentage of cases reported with missing county information in each state for P&S syphilis, chlamydia, and gonorrhea. For more information on the MSA definitions used in this report, go to: https://www.census.gov/programs-surveys/metro-micro.html .

Selected tables and figures include data from five U.S. territories (American Samoa, Guam, Northern Mariana Islands, Puerto Rico, and the U.S. Virgin Islands); however, the majority of national case counts and rates presented in the report exclude data from these territories. There are a number of issues affecting STD surveillance data reported to CDC from the US territories, including limited access to test kits, 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.

Population Denominators and Rate Calculations

2000–2019 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 rates. To align with previous reports, the 2018 population estimates were used to calculate 2019 rates. Because of the use of the updated population data, rates for 2000–2018 may be different from those presented in previous STD surveillance reports.

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

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.

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.

1941–2019 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 1941–2019. 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 2019, 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. Congenital syphilis rates for 1989 through 2019 were calculated by using live birth data provided to NCHS through the Vital Statistics Cooperative Program. Rates for 2019 were calculated using live birth data for 2017, the most recently available data at time of publication.

2010–2019 Gay, Bisexual, and Other Men Who Have Sex with Men Rates and Population

For figures showing rates of reported cases of gonorrhea and P&S syphilis among gay, bisexual, and other men who have sex with men (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 (2014–2018).[1] 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. 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. State-level estimates are then aggregated from the county-specific estimates.

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