

Sexually Transmitted Disease Surveillance 1999 Supplement

Syphilis Surveillance Report

**Division of STD Prevention
November 2000**

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention
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Introduction

The Syphilis Surveillance Report, 1999 presents syphilis statistics and trends in the United States through 1999. The surveillance information in this report is based on the following sources of data: case reports for the STD project areas, and prevalence of reactive serologic tests for syphilis from the Jail STD Prevalence Monitoring Projects, the Innovations in Syphilis Prevention Project, and from state and local health departments who voluntarily submitted jail screening data to CDC. The STD surveillance systems operated by state and local STD control programs, which provide the case report data on adult and congenital syphilis, are the sources of most of the information in this publication. These systems are an integral part of program management at all levels of STD prevention and control in the United States.

The Syphilis Surveillance Report consists of two parts. The National Profile contains figures that provide an overview of syphilis morbidity in the United States. The State Specific Data contains figures of syphilis case report trends at the state and county level and tables detailing the prevalence of reactive serologic tests for syphilis from jails, delivery rooms, and drug treatment centers for those states that report data to CDC.

Any comments and suggestions that would improve the usefulness of future publications are appreciated and should be sent to Director, Division of STD Prevention, National Center for HIV, STD and TB Prevention, Centers for Disease Control and Prevention, 1600 Clifton Road, Mailstop E-02, Atlanta, Georgia, 30333.

Methods

Sources of Data

At present, STD case report data are submitted to CDC on a variety of hardcopy summary reports (monthly, quarterly, and annually) and electronically either in summary or individual case-listed format via the National Electronic Telecommunications System for Surveillance (NETSS) — the system that provides notifiable disease information that is published in the Morbidity and Mortality Weekly Report, or MMWR. CDC is currently working with project areas on converting from hardcopy reporting of summary data to electronic submission of line-listed (i.e., case-specific) data through NETSS. Data on reported cases of syphilis in the P&S stages were analyzed for this report because these cases best represent incidence (i.e., newly acquired infections within the evaluated time period). The data used in this report are based on a combination of aggregated NETSS data and summary hardcopy reports. Monthly reports included summary data for syphilis by county and state. Quarterly reports included summary data for syphilis by gender and source of report (STD clinic or non-STD clinic) for the 50 states, and outlying areas of the United States. Annual reports included summary data for P&S syphilis by age, race, and gender for the 50 states and six large cities. Reports and corrections sent to CDC on hardcopy forms and for NETSS electronic data through August 4, 2000 were used to create the line-graphs, bar charts and county-level maps in this supplement. Hardcopy data received after these dates will appear in subsequent issues.

Twelve health departments collaborated with CDC to report STD prevalence data from persons entering jails and juvenile detentions facilities, as part of the Jail STD Prevalence Monitoring Project (9) or by voluntarily submitting their data to CDC (3). Three research centers collaborated with CDC to report results of serologic tests for syphilis from jails, drug treatment centers and obstetrical service delivery rooms, as part of the Innovations in Syphilis Prevention Project.

Reporting of Congenital Syphilis Cases

In 1988, a new surveillance case definition for congenital syphilis was introduced. The new case definition has greater sensitivity than the former definition. In addition, many areas greatly enhanced active case finding for congenital syphilis during this time. For these reasons, the number of reported cases increased dramatically during 1989-1991. As is true of any change, a period of transition during which trends cannot be clearly interpreted has resulted; however, all reporting areas had implemented the new case definition for reporting all cases of congenital syphilis after January 1, 1992. Therefore, the reliability of trends is expected to have stabilized after this date. In addition to changing the case definition, CDC introduced a new data collection form (CDC 73.126) in 1990. Beginning with 1995, the data collected on this form are used for reporting congenital syphilis reported cases and associated rates. This form collects individual case information which allows more thorough analysis of cases. Congenital syphilis cases have been reported by state and city of residence of the mother for 1995-1999.

Population Denominators and Rate Calculations

Crude incidence rates (new cases/population) were calculated on an annual basis per 100,000 population. For the United States, rates were calculated using Bureau of the Census population estimates for 1981 through 1989 (Bureau of the Census; United States Population Estimates by Age, Sex and Race: 1980-1989 [Series P-25, No. 1045]; Washington: US Government Printing Office, 1990; and United States Population Estimates by Age, Sex and Race: 1989 [Series P-25, No. 1057]; Washington: US Government Printing Office, 1990). Rates for states and counties were calculated using published intercensal estimates based on Bureau of the Census population estimates for 1980-1989 (Irwin R; 1980-1989 Intercensal Population Estimates by Race, Sex, and Age; Alexandria, [VA]: Demo-Detail, 1992; machine-readable data file). Rates for 1990 were calculated using population data from the 1990 census (Census of Population and Housing, 1990: Summary Tape File 1 (All States) [machine-readable file]; Washington: Bureau of the Census, 1991), which included information on area (county, state), age (5-year age groups), race (White, Black, Asian/Pacific Islander, American Indian/Alaska Native) and ethnicity (Hispanic). Rates for 1991-1997 were updated from previous issues of this report using postcensal population estimates based on the Bureau of the Census data (U.S. Bureau of the Census; 1991-1998 Estimates of the Population of Counties by Age, Sex and Race/Hispanic Origin: 1990 to 1998; machine-readable data files). Rates for 1999 use population estimates for 1998.

Rates of congenital syphilis for 1989-1999 were calculated using live births from the National Center for Health Statistics (NCHS) (Vital Statistics: Natality Tapes 1989-1997 or Vital Statistics Reports, United States 1999, Vol. 48 No.10—Natality). Race-specific rates for 1996-1999 were calculated using live births for 1997. Rates before 1989 were calculated using published live birth data (NCHS; Vital Statistics Report, United States, 1988 [Vol.1—Natality]).

Calculation of Proportion of Reactive Serologic Tests for Syphilis

Syphilis serologic test data are presented for those states that reported in 1999 through the Jail STD Prevalence Monitoring Project (9), the Innovations in Syphilis Prevention Project (3) or by voluntarily submitting their data to CDC (3). Serologic test reactivity was calculated by dividing the number of persons with a reactive serologic test for syphilis by the total number of persons tested for syphilis (denominator includes those with valid test results) and is expressed as a percentage. The denominator may include more than one test from the same individual if that individual was tested more than once in that setting.

Data Limitations

The interpretation of syphilis data is complicated by two factors. First, for syphilis, as for other STDs, differential reporting of cases from public and private sectors may magnify the differences in reported rates by race and ethnicity. Second, prevalence of reactive serology may not reflect the prevalence of infectious syphilis in some communities. Confirmatory tests were not available for the majority of reactive serologic tests for syphilis and thus biologic false positive results were not excluded from the proportion of reactive tests. In an effort to more closely estimate the prevalence of infectious syphilis, the proportion of persons with high syphilis serologic titer ($> 1:8$) were included in the tables as those persons are more likely to have infectious syphilis and less likely to have biologic false positive tests. However, quantification of the syphilis serologic titer was only available from some sites.

Acknowledgments

Publication of this report would not have been possible without the contributions of the State and Territorial Health Departments and the Sexually Transmitted Disease Control Programs, who provided state and local surveillance data to the Centers for Disease Control and Prevention and to those participating agencies in the Jail STD Prevalence Monitoring Project and the Innovations in Syphilis Prevention Project.

This report was prepared by the following staff members of the Surveillance and Special Studies Section of the Epidemiology and Surveillance Branch, and the Statistics and Data Management Branch, of the Division of STD Prevention, National Center for HIV, STD and TB Prevention, Centers for Disease Control and Prevention: Susan Bradley, Lyn Finelli, Melinda Flock, Kathleen Hutchins, William Levine, Kristen Mertz, and Emmett Swint.

National Summary Of Syphilis Surveillance Data

Syphilis, a genital ulcerative disease, facilitates the transmission of HIV and may be particularly important in contributing to HIV transmission in those parts of the country, such as the South, where rates of both infections are high. Untreated early syphilis during pregnancy results in perinatal death in up to 40% of cases and, if acquired during the four years preceding pregnancy, may lead to infection of the fetus in over 70% of cases.¹

The rate of primary and secondary (P&S) syphilis reported in the United States is at its lowest level since reporting began in 1941. This unprecedented low rate and the concentration of the majority of syphilis cases in a small number of geographic areas have led to the development of the National Plan to Eliminate Syphilis from the United States, which was announced by Surgeon General David Satcher in October 1999.² Collaboration with diverse organizations, public health professionals, the private medical community, and other partners working in STD and HIV will be essential if this effort is to be successful.³

The rate of P&S syphilis in the United States declined by 88% from 1990 through 1999. Although the 5.4% decline in the number of P&S syphilis cases reported in 1999 is less than the declines of approximately 20% per year since the last major syphilis epidemic peaked in 1990, it is possible that this smaller decline at least partially reflects improved case finding and reporting resulting from the national syphilis elimination effort. Syphilis remains an important problem in the South and in some urban areas in other regions of the country. In 1999 large outbreaks occurred in several states. Recently, outbreaks of syphilis among men who have sex with men (MSM) have been reported, possibly reflecting an increase in risk behavior in this population associated with the availability of highly active antiretroviral therapy for HIV infection.^{4,5}

As with the other STDs addressed in this report, the number of syphilis cases reported to CDC is less than the actual number of cases occurring among the United States population. As a result, for most areas, the number of syphilis cases reported to CDC reflects many factors, only one of which is the occurrence of the disease among the population. In addition, differential reporting of syphilis cases from public and private sectors may magnify the race and ethnicity differences in the reported rates.

- In 1999, 6,657 cases of P&S syphilis were reported to CDC, a decline of 5.4% compared with 1998, when 7,035 cases were reported (Figure 1). The number of P&S syphilis cases reported in 1999 is the lowest yearly number of cases reported since 1957.⁶ The reported rate of P&S syphilis in the United States in 1999 (2.5 cases per 100,000 persons) was slightly below the rate reported in 1998 (2.6 cases per 100,000). The 1999 rate is below the Healthy People 2000 (HP2000) national objective of 4.0 cases per 100,000 persons as it has been since 1997.⁶ However, the current reported rate in the United States exceeds the new Healthy People 2010 (HP2010) provisional objective of 0.2 cases per 100,000 persons.⁷
- Since the peak rate in 1990, the rate of early latent syphilis has exceeded the rate of P&S syphilis. There were approximately 0.9 reported cases of early latent syphilis for every reported case of P&S syphilis in the five years preceding 1990 and 1.8 reported cases of early latent syphilis for every reported case of P&S syphilis in 1999 (Figure 2).

- Since the peak rate in 1993, the rate of late and late latent syphilis has exceeded the rate of P&S syphilis. There were approximately 0.6 reported cases of late and late latent syphilis for every reported case of P&S syphilis in the five years preceding 1993 and 2.5 reported cases of late and late latent syphilis for every reported case of P&S syphilis in 1999 (Figure 2).
- The P&S syphilis rate for 1999 in the southern region of the United States (4.5 cases per 100,000 persons) was higher than the rate reported in any other region of the country. In addition, the 1999 rate in the South exceeds the HP2000 objective (Figure 3). The rates in the other three regions of the country (Northeast, Midwest, and West) in 1999 were below the HP2000 objective. The 1999 reported rates in all regions exceeded the HP2010 provisional objective of 0.2 cases per 100,000 persons.
- In 1999, P&S syphilis rates in 39 states and three outlying areas were below the HP2000 national objective of 4.0 cases per 100,000 persons (Figure 4). In addition, 12 states reported 1999 rates equal to or below the HP2010 provisional objective of 0.2 cases per 100,000 persons. Fourteen states and two outlying areas reported five or fewer cases of P&S syphilis in 1999.
- In 1999, 2,473 (79%) of 3,115 counties in the United States reported no cases of P&S syphilis compared with 2,430 (78%) counties reporting no cases in 1998. Of 642 counties reporting at least one case of P&S syphilis in 1999, 377 (59%) reported rates below the HP2000 objective of 4.0 cases per 100,000 persons. Alternatively, rates of P&S syphilis were above the HP2000 objective for 265 counties in 1999 (Figure 5). These 265 counties (9% of the total number of counties in the U.S.) accounted for approximately 74% of the total P&S syphilis cases reported in 1999.
- In 1999, the largest numbers of cases of P&S syphilis were reported from 22 counties, and the three independent cities of Baltimore, MD, Danville, VA, and St. Louis, MO. These 25 areas account for half of the total number of P&S syphilis cases that were reported in the United States in 1999.⁶
- In 1999, the rate of P&S syphilis reported in African-Americans (15.2 cases per 100,000 persons) was 30.4 times greater than the rate reported in whites (0.5 cases per 100,000 persons). However, this differential was substantially less than in 1995, when the rate of P&S syphilis among African-Americans was 56.1 times greater than the rate reported among whites (Figure 6).
- Overall, rates of P&S syphilis have declined for all racial and ethnic groups since 1990, with the largest declines among non-Hispanic blacks. From 1998 to 1999 rates of P&S syphilis were stable for non-Hispanic whites, declined 10% in non-Hispanic blacks and increased 20% in Hispanics (Figure 6); this increase in Hispanics rates was largely attributable to increases among Hispanic males.
- In 1999, the reported rate of P&S syphilis among men (2.9 cases per 100,000 males) was 1.5 times greater than the rate among women (2.0 cases per 100,000 females) (Figure 7). The overall male to female rate ratio has risen steadily since 1994 when it

was 1.1. The male to female rate ratio has increased since 1994 in all racial ethnic groups except American Indian/Alaska Natives. The change in the male to female rate ratio was most notable in Hispanics, where it increased from 1.8 in 1994 to 2.9 in 1999. The male to female ratio of P&S syphilis rates was greater in 1999, as compared to the ratio in 1998, for 16 (59%) of the 26 states and the District of Columbia that reported 25 or more cases in 1998.⁶ In Seattle, and possibly in other cities, the increase in the male to female rate ratio in 1999 corresponded to an increase in syphilis among MSM.⁵

- The incidence of P&S syphilis was highest among women aged 20-29 years and among men 35-39 years (Figure 8). Since 1994, the age group of highest syphilis incidence among men has shifted gradually from early-to-mid twenties to mid-to-late thirties.⁶
- The median percentage of reactive syphilis tests was 8.5% (range, 0.3% to 25.1%) for women in 19 adult corrections facilities and 3.9% (range, 1.0% to 7.7%) for men in 18 adult corrections facilities (Figures 9 and 10). The percentage of reactive syphilis tests was higher for women than for men in 19 (95%) of 20 facilities reporting syphilis test results for both sexes. In women tested for syphilis, seroreactivity was greater than 5% in 13 (68%) of 19 adult facilities reporting syphilis test results. Overall the percentage of reactive syphilis tests for women tested was 2 to 3 times higher than that for men tested in the same city.
- Between 1998 and 1999, the overall rate of congenital syphilis decreased by 34% in the United States from 21.6 to 14.3 cases per 100,000 live births (Figure 11). In addition, among the 24 states and outlying areas with five or more reported cases of congenital syphilis in 1999, 18 had rates that decreased from the 1998 value. Eleven of these states and Puerto Rico had decreases of 30% or more between the 1998 and 1999 reported rates.⁶
- The continuing decrease in the rate of congenital syphilis likely reflects the substantial reduction in the rate of P&S syphilis among women that has occurred in the last decade.⁸ During the period from 1991 through 1999, the average yearly percentage decrease in the congenital syphilis rate was 22% which is equal to the average yearly percentage decrease in the rate of P&S syphilis reported among women for the years 1990 through 1998.

¹Ingraham NR. The value of penicillin alone in the prevention and treatment of congenital syphilis. *Acta Derm Venereol* 31 (suppl 24): 60, 1951.

²Division of STD Prevention. *The National Plan to Eliminate Syphilis from the United States*. National Center for HIV, STD, and TB Prevention, Centers for Disease Control and Prevention, 1999.

³Centers for Disease Control and Prevention. Primary and secondary syphilis – United States, 1998. *MMWR* 1999;48:873-8.

⁴Centers for Disease Control and Prevention. Resurgent bacterial sexually transmitted disease among men who have sex with men – King County, Washington, 1997-1999. *MMWR* 1999;48:773-7.

⁵Miller M, Meyer L, Boufassa F, et al. Sexual behavior changes and protease inhibitor therapy. *AIDS* 1999;14:F33-9.

⁶Division of STD Prevention. Sexually Transmitted Disease Surveillance 1999. Department of Health and Human Services, Atlanta: Centers for Disease Control and Prevention (CDC), October 2000.

⁷U.S. Department of Health and Human Services. *Healthy People 2010 (Conference Edition, in Two Volumes)*. U.S. Government Printing Office, Washington, DC, 2000.

⁸Centers for Disease Control and Prevention. Congenital Syphilis – United States, 1998. *MMWR* 1998;48:757-61.

Figure 1. Primary and secondary syphilis — Reported rates: United States, 1970–1999 and the Healthy People year 2000 objective

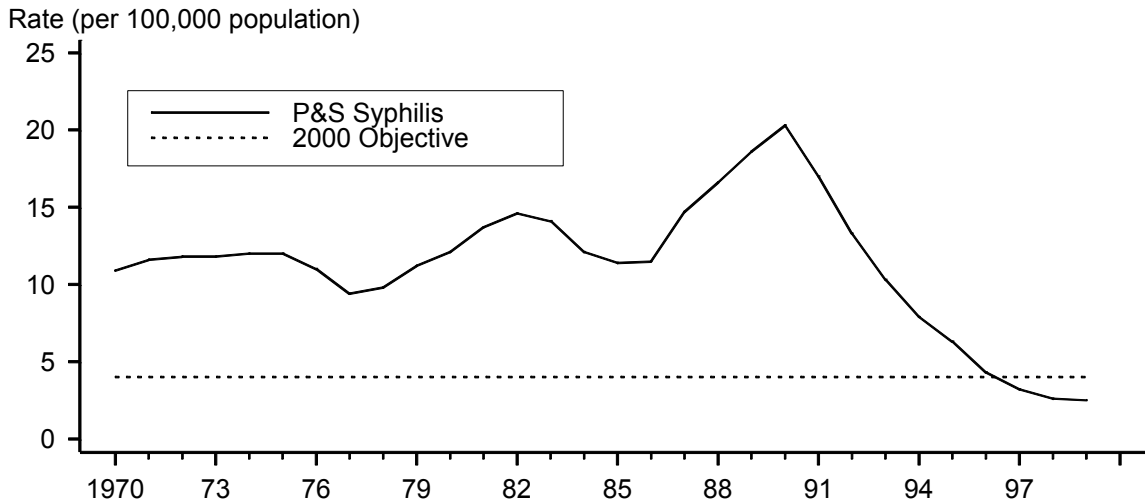


Figure 2. Syphilis — Reported cases by stage of illness: United States, 1941–1999

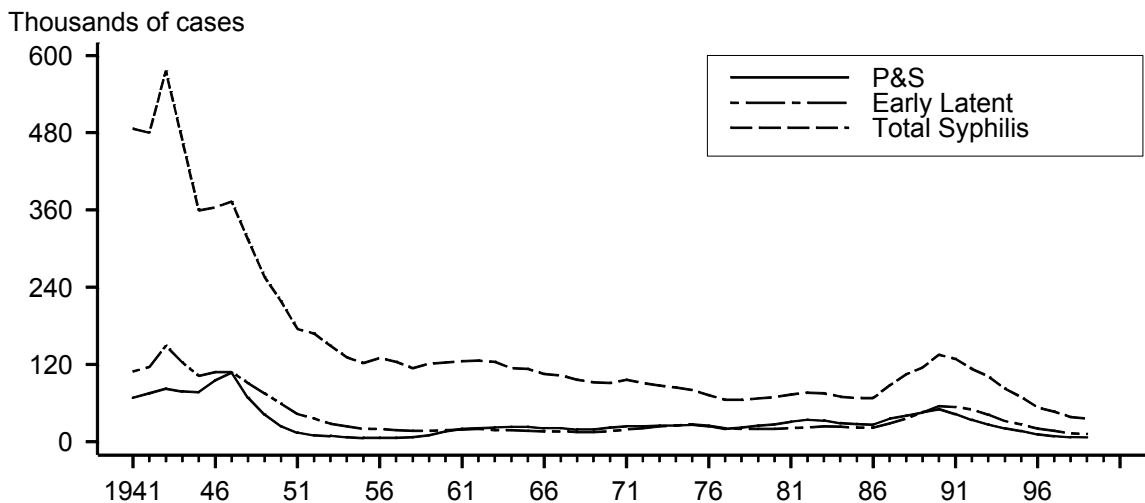


Figure 3. Primary and secondary syphilis — Rates by region: United States, 1981–1999 and the Healthy People year 2000 objective

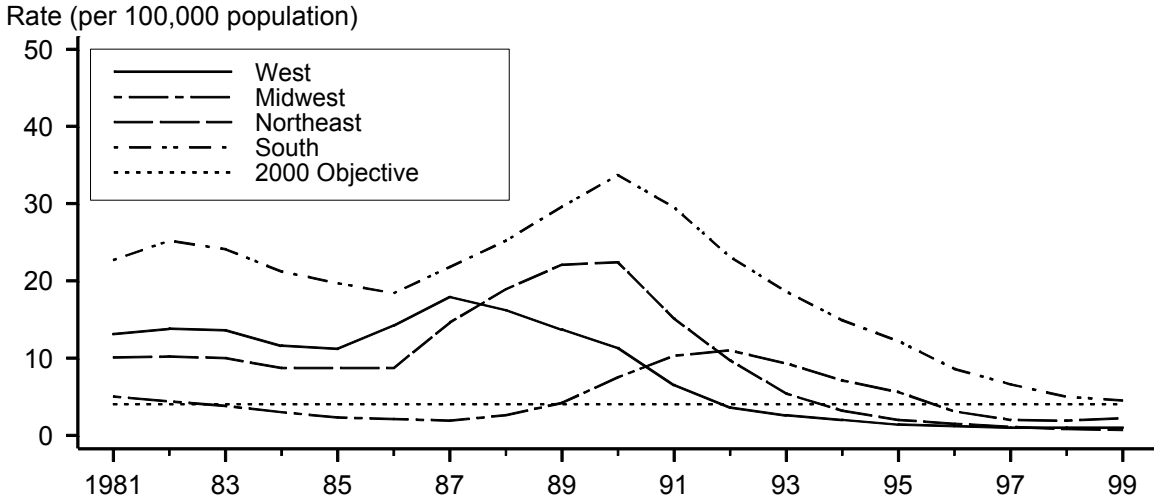
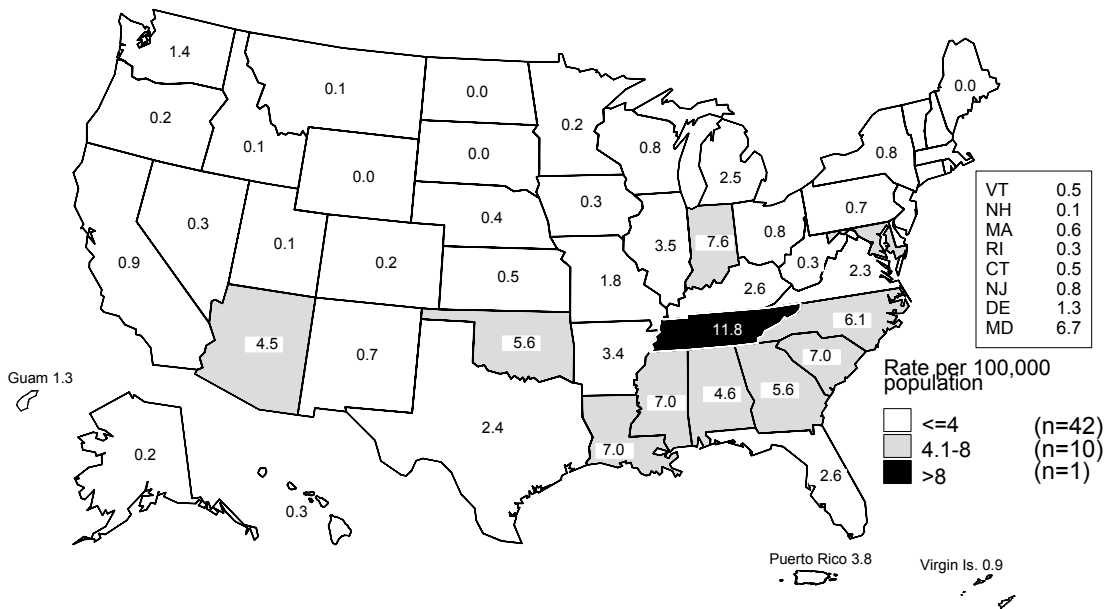


Figure 4. Primary and secondary syphilis — Rates by state: United States and outlying areas, 1999

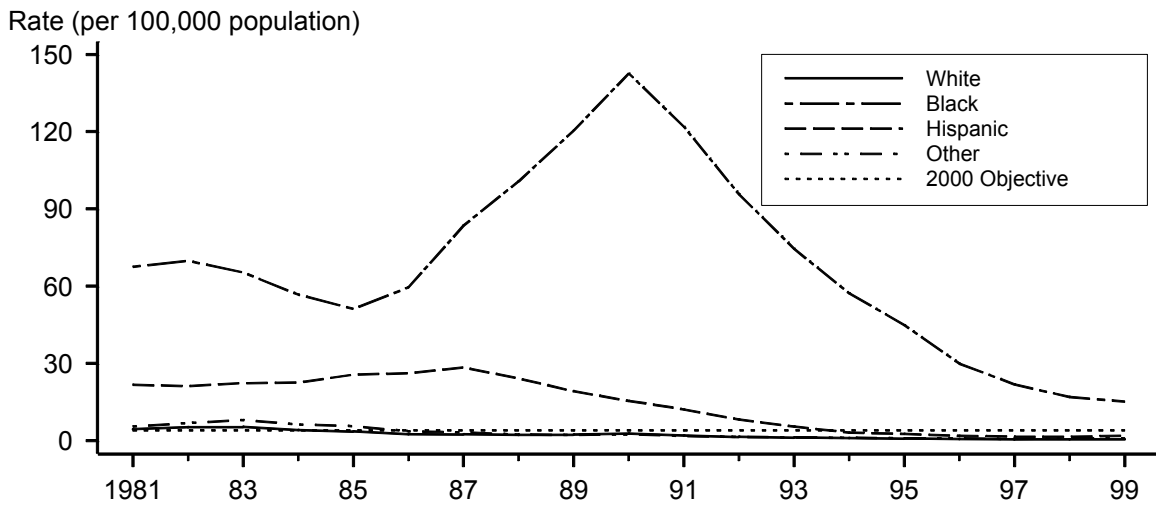


Note: The total rate of primary and secondary syphilis for the United States and outlying areas (including Guam, Puerto Rico and Virgin Islands) was 2.5 per 100,000 population. The Healthy People year 2000 objective is 4.0 per 100,000 population.

Figure 5. Primary and secondary syphilis — Counties with rates above and counties with rates below the Healthy People year 2000 objective: United States, 1999



Figure 6. Primary and secondary syphilis — Rates by race and ethnicity: United States, 1981–1999 and the Healthy People year 2000 objective



Note: "Other" includes Asian/Pacific Islander and American Indian/Alaska Native populations. Black, White, and Other are non-Hispanic.

Figure 7. Primary and secondary syphilis — Rates by gender: United States, 1981–1999 and the Healthy People year 2000 objective

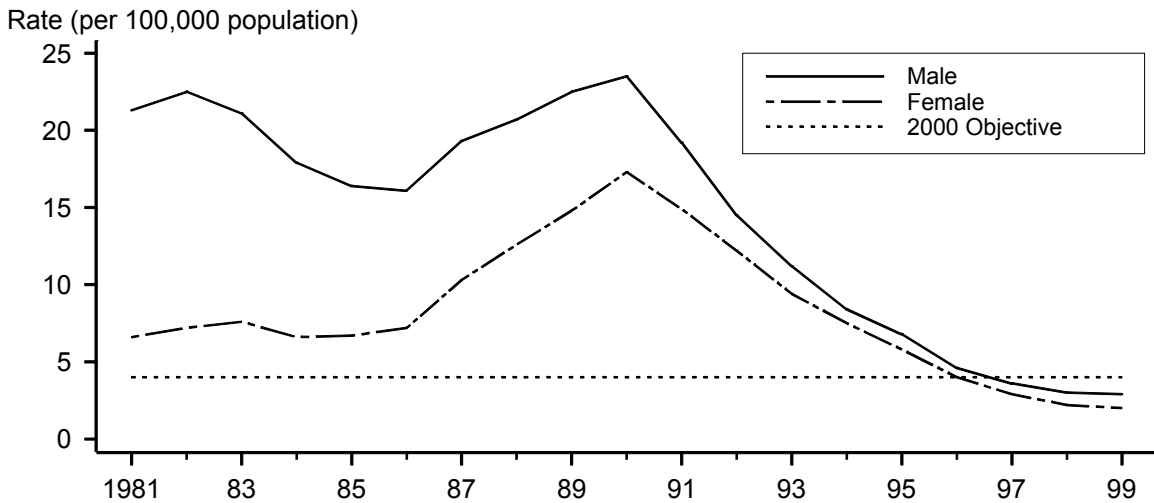


Figure 8. Primary and secondary syphilis — Age- and gender-specific rates: United States, 1999

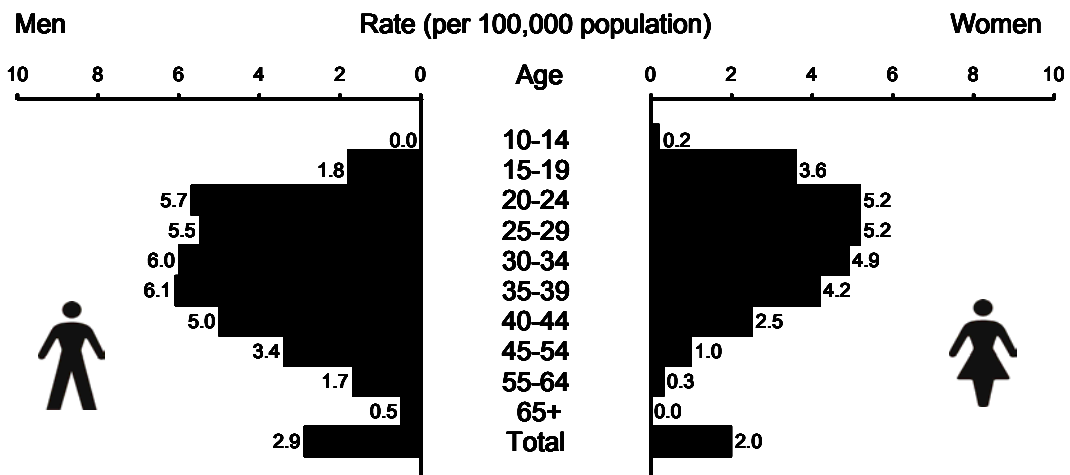
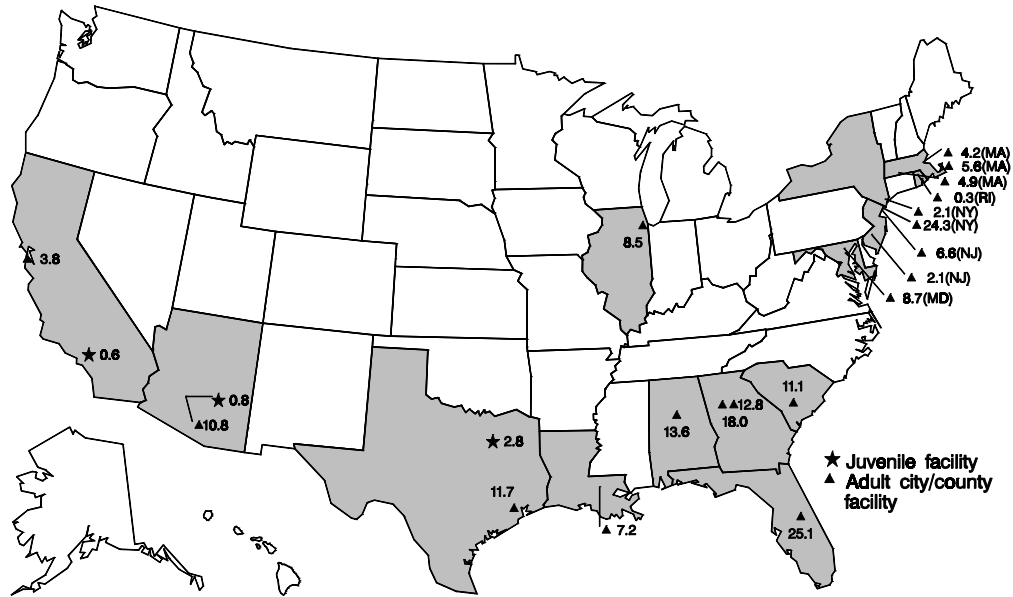


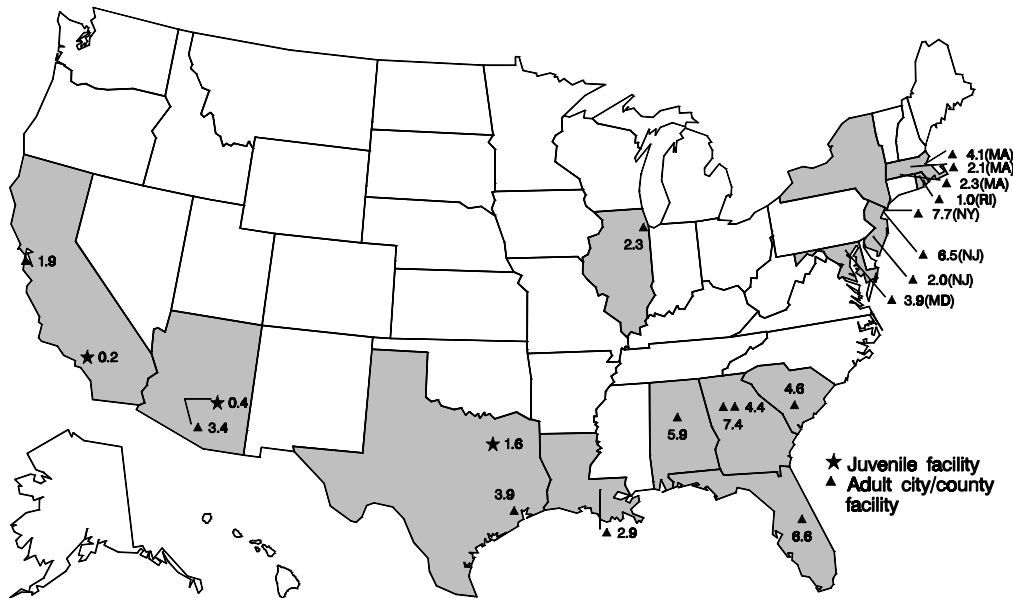
Figure 9. Syphilis serologic tests — Percent seroreactivity in women entering city or county jails or juvenile detention centers[†], 1999



[†]From facilities reporting >100 test results.

SOURCE: Local and State STD Control Programs; Regional Infertility Prevention Programs; Centers for Disease Control and Prevention

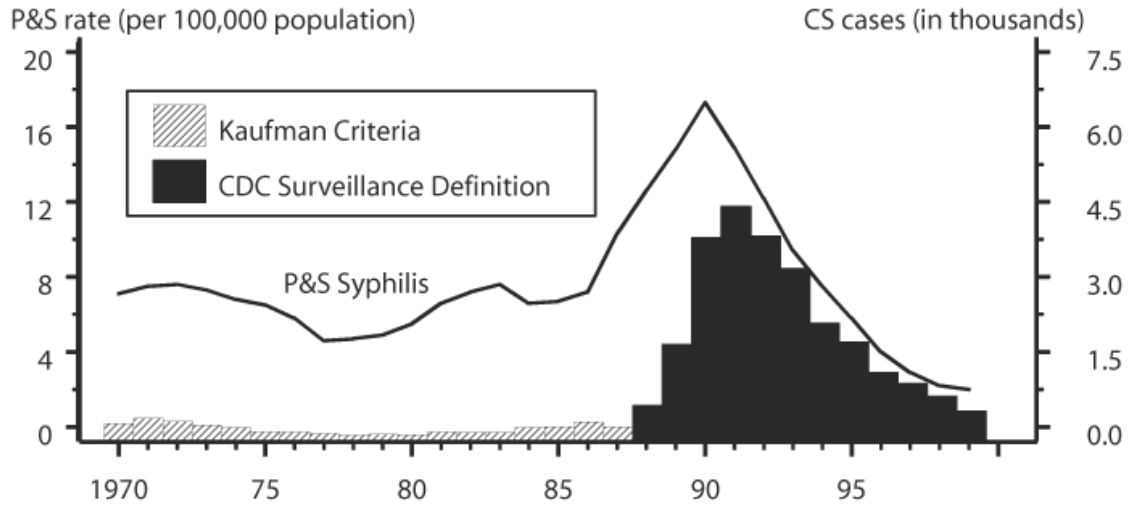
Figure 10. Syphilis serologic tests — Percent seroreactivity in men entering city or county jails or juvenile detention centers[†], 1999



[†]From facilities reporting >100 test results.

SOURCE: Local and State STD Control Programs; Regional Infertility Prevention Programs; Centers for Disease Control and Prevention

Figure 11. Congenital syphilis — Reported cases for infants <1 year of age and rates of primary and secondary syphilis among women: United States, 1970–1999



Note: The surveillance case definition for congenital syphilis changed in 1988.