

Sexually Transmitted Disease Surveillance 2003 Supplement

Syphilis Surveillance Report

**Division of STD Prevention
December 2004**

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention
National Center for HIV, STD, and TB Prevention
Division of STD Prevention
Atlanta, Georgia 30333

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The report is also available by Internet via the CDC home page at: <http://www.cdc.gov/std/Syphilis2003/>

Introduction

The Syphilis Surveillance Report, 2003, presents syphilis statistics and trends in the United States through 2003. The surveillance information in this report is based on the following sources: case reports from the 65 Sexually Transmitted Disease (STD) project areas, and data on prevalence of reactive serologic tests for syphilis provided by the Jail STD Prevalence Monitoring Project and state and local health departments which voluntarily submitted correctional facility screening data to CDC. The STD surveillance systems operated by STD control programs of state and local health departments provide the case report data on adult and congenital syphilis and 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 Profile contains figures of syphilis case report trends at the state and county level.

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

Syphilis case report data used to create the tables and graphics in this supplement are from either hardcopy summary reporting forms (monthly, quarterly, and annual), or individual case records transmitted electronically 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 (MMWR). Project areas have been in the process of converting from hardcopy reporting of STD data to electronic submission of individual line-listed data since 1996. In 2003, data from hardcopy reports were used only from Puerto Rico, Guam and Virgin Islands. Data on reported cases of syphilis in the primary and secondary (P&S) stages were analyzed for this report because these cases best represent incidence of syphilis (i.e., newly acquired infections within the evaluated time period). Reports and corrections sent to CDC on

hardcopy forms and electronically via NETSS through April 30, 2004, were used to create the line-graphs, bar charts, and county-level maps in this supplement.

Seven states reported syphilis data from persons entering adult correctional facilities as part of the Jail STD Prevalence Monitoring Project; two states reported syphilis data from adults entering correctional facilities as part of the Syphilis Elimination Initiative.

Population Denominators and Rate Calculations

Crude incidence rates (new cases/population) were calculated on an annual basis per 100,000 population. In this report, the 2002 and 2003 rates for the U.S., all states, cities and outlying areas were calculated by dividing the number of cases reported from each area in 2002 and 2003 by the estimated area-specific 2002 population. The National Center for Health Statistics released bridged data reports for 2000-2002 resident population based on the Census 2000 counts. These estimates resulted from bridging the 31 race categories used in Census 2000, as specified in the 1997 Office of Management and Budget (OMB) standards, to four race groups specified under the 1977 OMB standards. The files were prepared under a collaborative arrangement with the U.S. Census Bureau. The population counts for 1990-1999 were also updated to incorporate the bridged single-race estimates of the April 1, 2000, resident population. These files were prepared by the U.S. Census Bureau with support from the National Cancer Institute. **Due to the updated population estimates, rates for 2002 reported here may be different from those reported in the 2002 Syphilis Surveillance Supplement.**

Rates of congenital syphilis for 1989-2003 were calculated using live births from the National Center for Health Statistics (NCHS) (Vital Statistics: Natality Tapes 1989-2002 or Vital Statistics Reports, United States 1999, Vol. 48 No.10-Natality). Race-specific rates for 2002-2003 were calculated using live births for 2002. 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

Serologic test reactivity was calculated by dividing the number of persons with reactive serologic tests for syphilis by the total number of persons tested for syphilis (denominator only 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.

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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, with regard to data reported from persons entering correctional facilities, prevalence of reactive serology may not reflect the prevalence of infectious syphilis in many communities. Confirmatory tests were not available for the majority of reactive serologic tests for syphilis and so biologic false positive results were not excluded from the proportion of reactive tests.

Acknowledgements

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, which 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 Syphilis Elimination Initiative.

This report was prepared by the following staff members of the Surveillance and Special Studies Team 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, Sharon Clanton, Melinda Flock, James Heffelfinger, Rose Horsley, Riduan Joesoef, Elvin Magee, Emmett Swint, and Hillard Weinstock.

National Summary of Syphilis Surveillance Data

Syphilis, a genital ulcerative disease, facilitates the transmission of HIV and may be important in contributing to HIV transmission in those parts of the country where, and in those populations in which, 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 decreased during the 1990s and in 2000 was the lowest since reporting began in

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The rate of primary and secondary (P&S) syphilis reported in the United States decreased during the 1990s and in 2000 was the lowest since reporting began in

1941.² However, the number of cases of P&S syphilis increased during 2000-2002 and continued to increase from 2002 (6,862 cases) to 2003 (7,177 cases). An overall increase in cases during 2000-2003 was observed only among men. Increases in syphilis cases among men are associated with reports in several cities of syphilis outbreaks among men who have sex with men (MSM)³⁻¹¹ and these outbreaks have been characterized by high rates of human immunodeficiency virus co-infection and high-risk sexual behavior. The numbers of P&S syphilis cases among women and among African-Americans have decreased every year since 1990. During 2002-2003, P&S syphilis cases declined 23.6% among women and 17.8% among African-Americans.

Low rates of syphilis and the concentration of syphilis cases in a limited number of geographic areas, many in the South, during the 1990s led to the development of the National Plan to Eliminate Syphilis from the United States, announced by the Surgeon General in October 1999. Despite continued national progress toward syphilis elimination among women and African-Americans, syphilis remains an important problem in the South and, increasingly, in urban areas of the country that have large populations of MSM.

- In 2003, P&S syphilis cases reported to CDC increased to 7,177 (5,956 cases among men, 1,217 among women, and 4 with missing information for sex) from 6,862 (5,267 cases among men, 1,594 among women, and 1 with missing information for sex) in 2002, an increase of 4.6 % (Figure 1).¹³ The rate of P&S syphilis in the United States was 4.2% higher in 2003 than in 2002 (2.5 vs. 2.4 cases per 100,000 population).
- During 2002-2003, the number of cases of early latent syphilis reported to CDC decreased 0.8% (from 8,429 to 8,361) while the number of cases of late and late latent syphilis increased 6.3% (from 17,168 to 18,319); the total number of cases of syphilis (P&S, early latent, late and late latent, and congenital syphilis) reported to CDC increased 4.1% (from 32,912 to 34,270).¹³
- During 2002-2003, the rate of P &S syphilis increased 13.5% among men (from 3.7 cases to 4.2 cases per 100,000 men) and declined 27.3% among women (from 1.1 to 0.8 cases per 100,000 women)¹³ (Figure 2).
- The male-to-female rate ratio for P&S syphilis has risen steadily since 1996 when it was 1.2 (Figure 3), suggesting that syphilis cases among MSM have increased since that year. During 2002-2003, the male-to-female rate ratio increased 52.9% (from 3.4 to 5.2).¹³ In 2003, the male-to-female rate ratio increased in 31 states and the District of Columbia, decreased in 15 states, and remained unchanged in 4 states. The increase in male-to-female rate ratios has been particularly marked in cities reporting outbreaks of syphilis among MSM (Table 1).

- During 2002-2003, the male-to-female rate ratio increased among all racial and ethnic groups; it increased from 2.1 to 2.8 among African-Americans, from 11.0 to 14.5 among non-Hispanic whites, from 5.1 to 6.2 among Hispanics, from 7.0 to 20.0 among Asian/Pacific Islanders, and from 1.2 to 2.8 among American Indian/Alaska Natives.
- 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 (Figure 4).¹³ During 1991-2003, the average yearly percentage decrease in the rate of P&S syphilis reported among women was 21.4% and the average yearly percentage decrease in the congenital syphilis rate was 17.2%.
- In 2003, the rate of P&S syphilis was highest among women in the 20-24 year age group (2.4 cases per 100,000 population) and among men in the 35-39 year age group (11.8 cases per 100,000 population) (Figure 5).¹³ In 2002, the highest rates of syphilis in women and men were among the same respective age groups as in 2003.
- During 1990-1996, rates of P&S syphilis declined among all racial and ethnic groups (Figure 6). From 1997 to 2000, rates of P&S syphilis were fairly stable in all racial and ethnic groups except African-Americans, among whom the rate steadily declined.¹³
- During 2000-2003, the P&S syphilis rate among African-Americans continued to decline (from 12.0 to 7.8 cases per 100,000 population); rates increased among non-Hispanic whites (from 0.5 to 1.5 cases per 100,000 population), Hispanics (from 1.6 to 3.0 cases per 100,000 population), and Asian/Pacific Islanders (from 0.3 to 1.0 cases per 100,000 population). The rate among American Indian/Alaska Natives increased during 2000-2001 (from 2.2 to 3.8 cases per 100,000 population), declined to 2.1 cases per 100,000 population in 2002, and then increased to 2.9 cases per 100,000 population in 2003.¹³
- In 2003, 39.2% of reported cases of P&S syphilis occurred among African-Americans compared with 49.8% of cases reported in 2002. Although the rate of P&S syphilis remains higher among African-Americans than among non-Hispanic whites, the disparity in rates between the two populations has decreased because of the declining rate of P&S syphilis among African-Americans and the increasing rate of infection among non-Hispanic whites. In 2003, the rate of P&S syphilis was 5.2 times higher among African-Americans than among non-Hispanic whites compared with 7.9 times higher in 2002.
- In 2003, the South continued to have a higher rate of P&S syphilis (3.1 cases per 100,000 population) than any other region* in the United States, and cases in the South accounted for 44.8% of total syphilis cases reported. During 2002-2003, the rate declined 23.8% in the Midwest (from 2.1 to 1.6 cases per 100,000 population); P&S syphilis rates increased 23.5% in the Northeast (from 1.7 to 2.1 cases per 100,000 population), 22.7% in the West (from 2.2 to 2.7 cases per 100,000 population), and 3.3% in the South (from

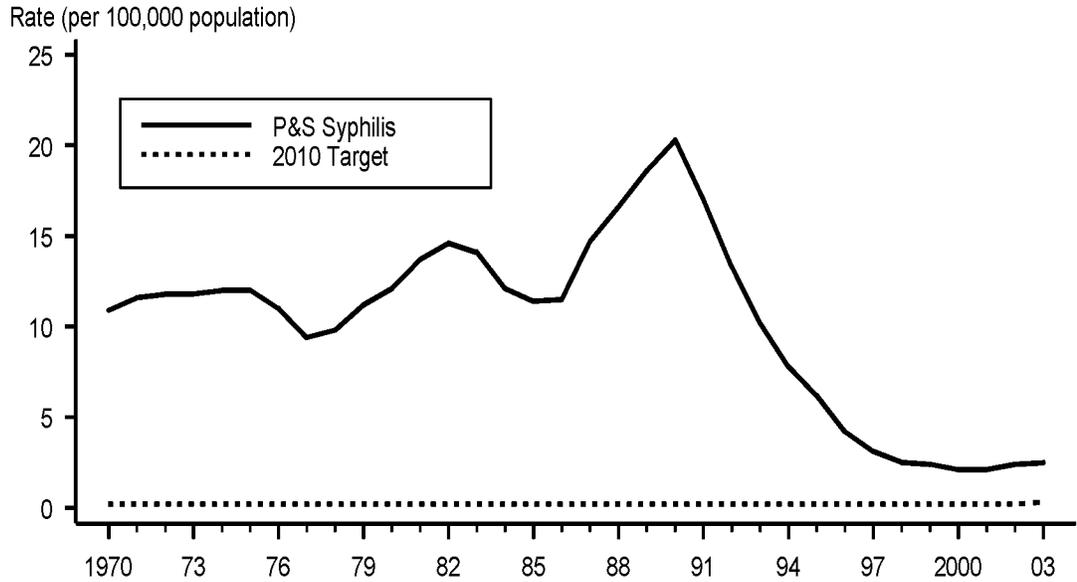
- 3.0 to 3.1 cases per 100,000 population). The rate increase in the South between 2002 and 2003 follows rate declines each year in this region during 1990-2002. Rates in all regions were greater than the HP2010 target of 0.2 case per 100,000 persons in 2003 (Figure 7).¹⁴
- Male-to-female rate ratios increased in all regions except the West during 2002-2003; rate ratios increased 72.7% in the South (from 2.2 to 3.8), 30.7% in the Northeast (from 7.5 to 9.8), and 28.6% in the Midwest (from 2.8 to 3.6); the rate ratio decreased 3.9% in the West (from 10.2 to 9.8).¹³
 - In 2003, P&S syphilis rates in 5 states were less than or equal to the Healthy People 2010 national target of 0.2 case per 100,000 persons (Figure 8). P&S syphilis rates were less than or equal to the Healthy People 2010 national target in 7 states in 2002.¹³
 - In 2003, 2,530 (80.6%) of 3,140 counties in the United States reported no cases of P&S syphilis compared with 2,534 (80.7%) counties reporting no cases in 2002.¹³ Of 610 counties reporting at least one case of P&S syphilis in 2003, 8 (1.3%) had rates at or below the Healthy People 2010 target of 0.2 case per 100,000 population. Rates of P&S syphilis were above the Healthy People 2010 target for 602 counties in 2003 (Figure 9). These 602 counties (19.2% of the total number of counties in the United States) accounted for 99.9% of the total P&S syphilis cases reported in 2003.
 - In 2003, half of the total number of P&S syphilis cases were reported from 18 counties and one city.¹³
 - The median percentage of reactive syphilis tests by facility was 7.5% (range, 2.4% to 10.7%) for women entering 11 adult corrections facilities (Figure 10, Table 2) and 2.3% (range, 0.2% to 8.3%) for men at 13 adult corrections facilities (Figure 11, Table 2) in 2003. The percentage of reactive syphilis tests representing cases of syphilis varied from facility to facility.
 - During 1999-2003, the proportion of male, female, and total cases of P&S syphilis reported from sources other than STD clinics increased (Table 3).
 - Among men, there was a large increase in cases reported from non-STD clinic sources and a moderate decrease in cases reported from STD clinic sources between 1999 and 2003; among women, the number of P&S syphilis cases reported from non-STD and STD clinic sources decreased substantially (Table 3).

*Northeast=Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; Midwest=Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin; South=Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia; West=Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

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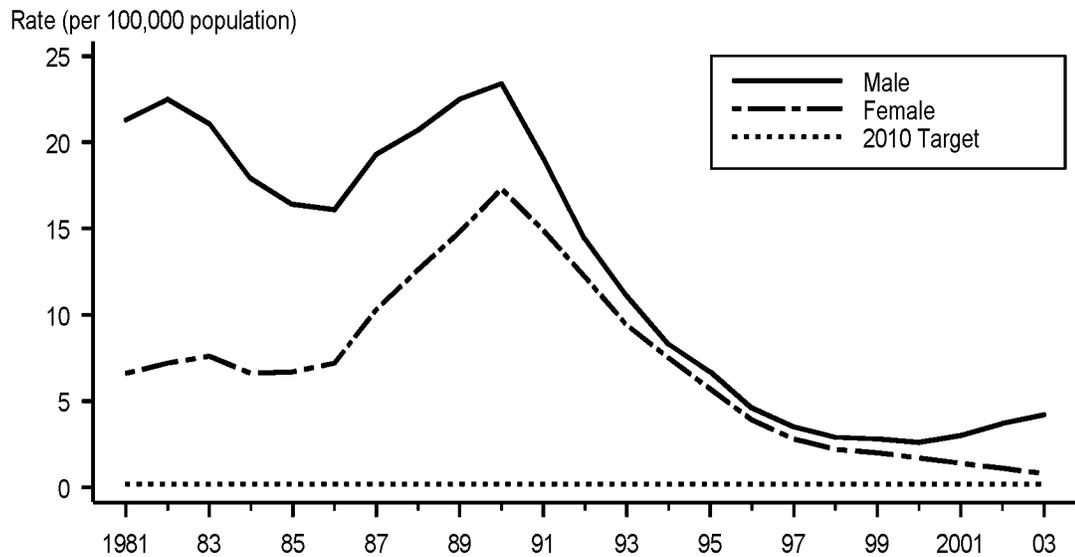
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- ¹⁴U.S. Department of Health and Human Services. Healthy People 2010. 2nd ed. With Understanding and Improving Health and Objectives for Improving Health. 2 vols. Washington, DC: U.S. Government Printing Office, November 2000.

Figure 1. Primary and secondary syphilis — Reported rates: United States, 1970–2003 and the Healthy People year 2010 target



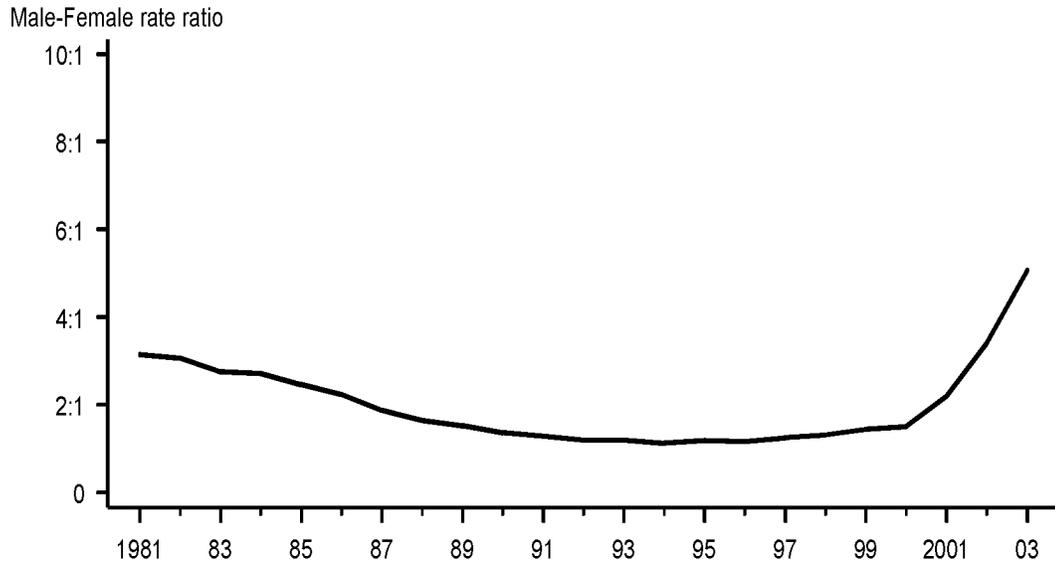
Note: The Healthy People 2010 (HP2010) target for primary and secondary syphilis is 0.2 cases per 100,000 population.

Figure 2. Primary and secondary syphilis — Rates by sex: United States, 1981–2003 and the Healthy People year 2010 target



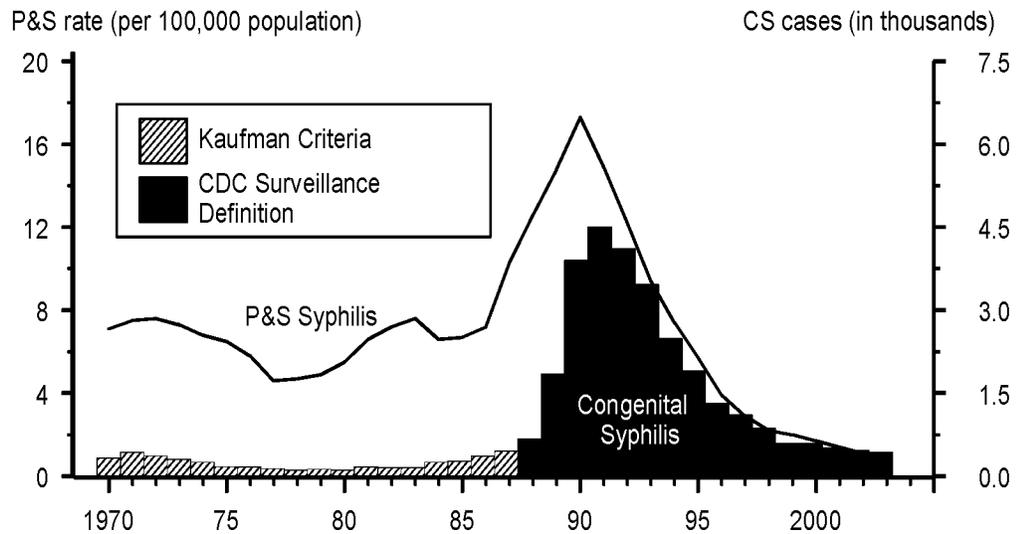
Note: The Healthy People 2010 (HP2010) target for primary and secondary syphilis is 0.2 cases per 100,000 population

Figure 3. Primary and secondary syphilis — Male-to-female rate ratios: United States, 1981–2003



Note: Male-to-female syphilis rate ratios are ratios of the annual rates of syphilis reported among men and women. A male-to-female rate ratio of one means that the rate of reported syphilis infection among men is the same as that among women.

Figure 4. Congenital syphilis — Reported cases for infants <1 year of age and rates of primary and secondary syphilis among women: United States, 1970–2003



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

Figure 5. Primary and secondary syphilis — Age- and sex-specific rates: United States, 2003

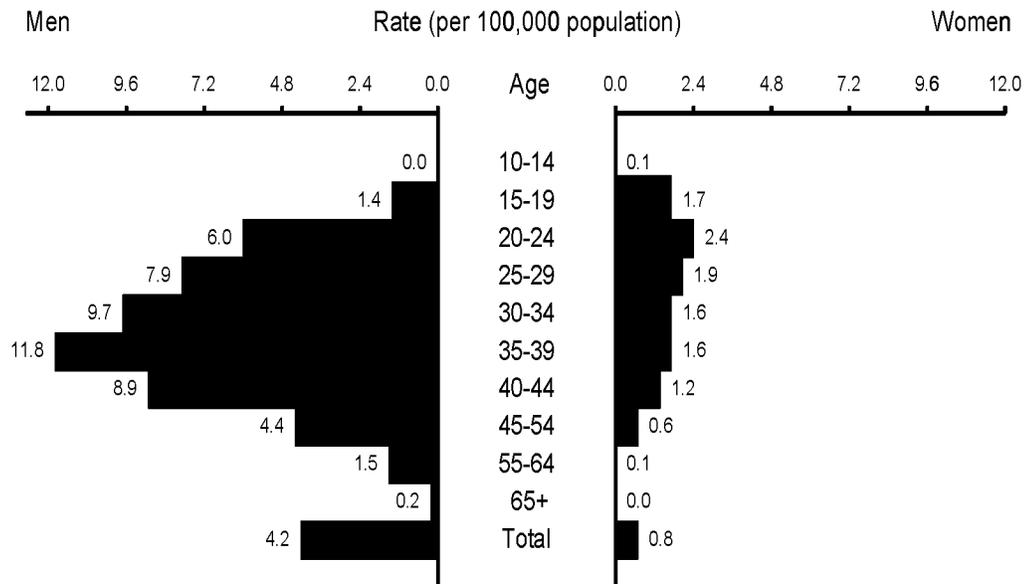
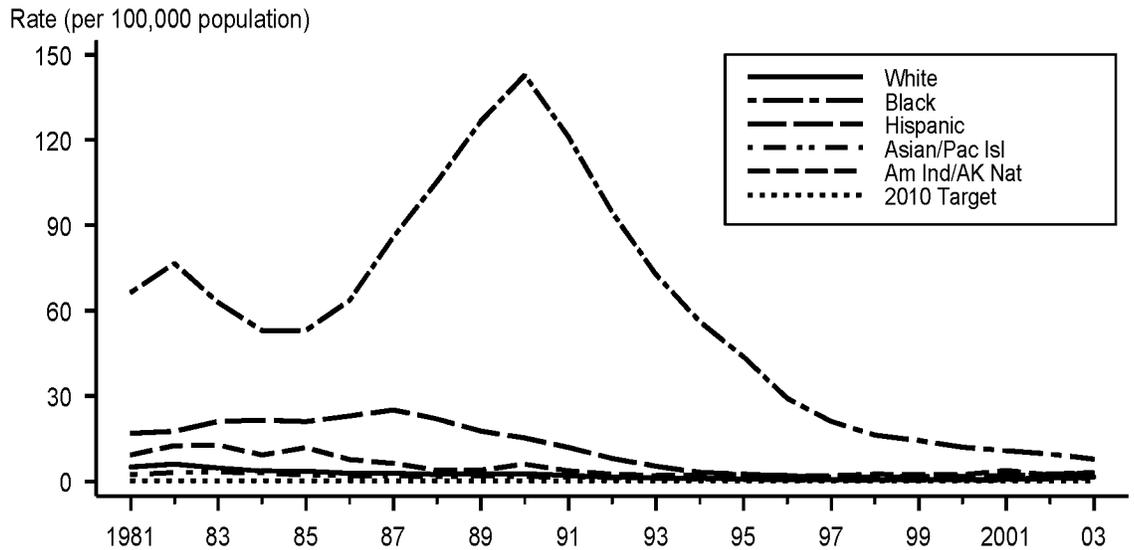
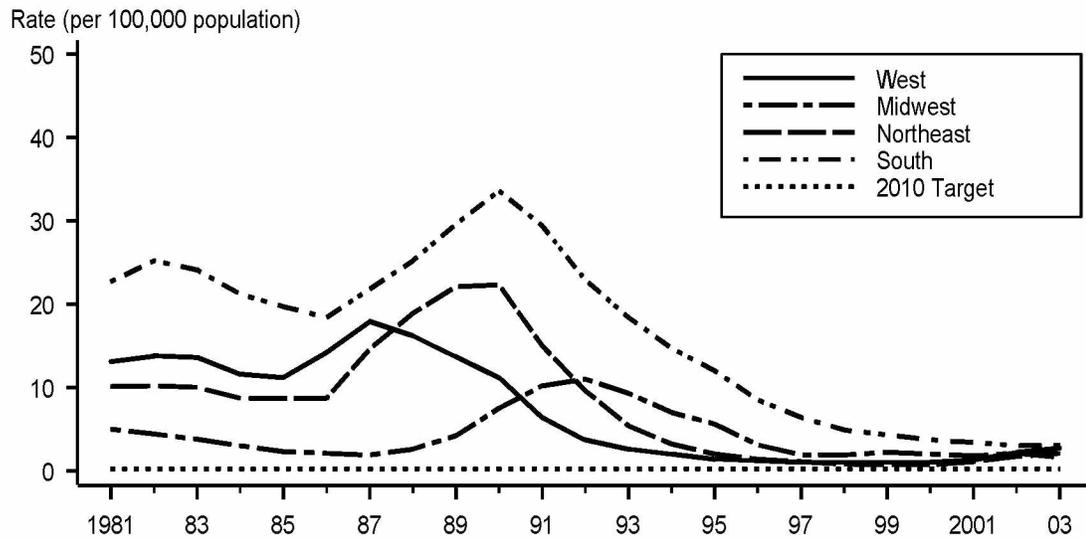


Figure 6. Primary and secondary syphilis — Rates by race and ethnicity: United States, 1981–2003 and the Healthy People year 2010 target



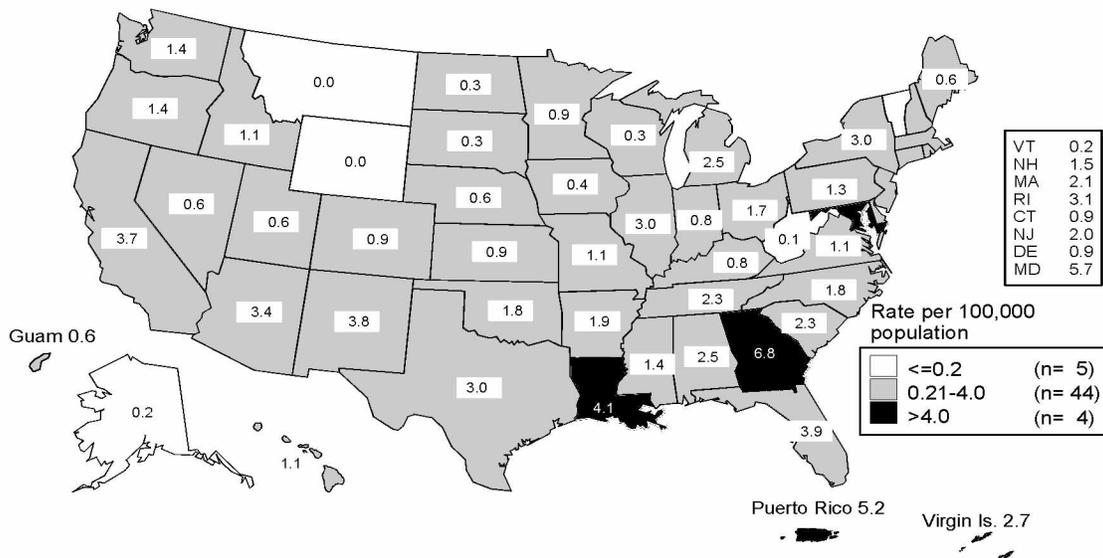
Note: The Healthy People 2010 (HP2010) target for primary and secondary syphilis is 0.2 case per 100,000 population

Figure 7. Primary and secondary syphilis — Rates by region: United States, 1981–2003 and the Healthy People year 2010 target



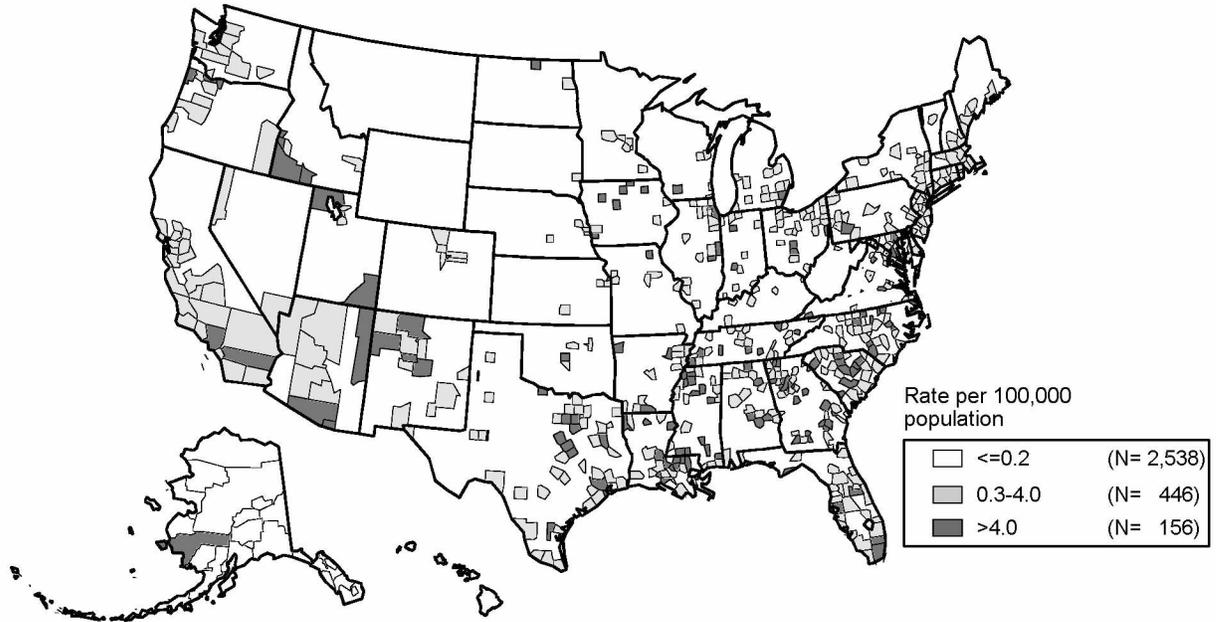
Note: The Healthy People 2010 (HP2010) target for primary and secondary syphilis is 0.2 cases per 100,000 population

Figure 8. Primary and secondary syphilis — Rates by state: United States and outlying areas, 2003



Note: The total of primary and secondary syphilis for the United States and outlying areas (Guam, Puerto Rico and Virgin Islands) was 2.5 per 100,000 population. The Healthy People 2010 target is 0.2 case per 100,000 population.

Figure 9. Primary and secondary syphilis — Counties with rates above and counties with rates below the Healthy People year 2010 target: United States, 2003



Note: The Healthy People 2010 target for P&S syphilis is 0.2 cases per 100,000 population.

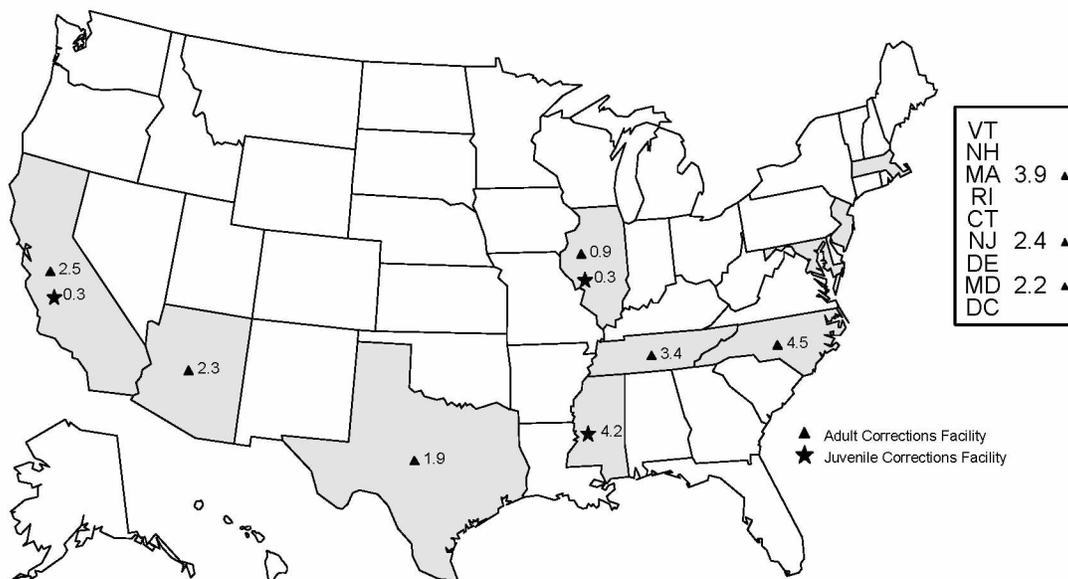
Figure 10. Syphilis serologic tests — Percent seroreactivity among women entering juvenile and adult corrections facilities, 2003



Note: The median positivity is presented from facilities reporting >100 test results. California and New Jersey submitted data from more than one adult corrections facility. California submitted data from more than one juvenile corrections facility.

SOURCE: Jail STD Prevalence Monitoring Project; Local and State STD Control Programs; Centers for Disease Control and Prevention

Figure 11. Syphilis serologic tests — Percent seroreactivity among men entering juvenile and adult corrections facilities, 2003



Note: The median positivity is presented from facilities reporting >100 test results. California and New Jersey submitted data from more than one adult corrections facilities. California and Mississippi submitted data from more than one juvenile corrections facility.

SOURCE: Jail STD Prevalence Monitoring Project; Local and State STD Control Programs; Centers for Disease Control and Prevention

Table 1. Primary and secondary syphilis — Reported cases and rates* among men and women and male-to-female rate ratios in selected cities of >200,000 population reporting at least 25 cases in 2003: United States, 2002–2003

Cities	Males				Females				Male-to-Female Rate Ratios	
	2002		2003		2002		2003		2002	2003
	Cases	Rates	Cases	Rates	Cases	Rates	Cases	Rates		
Albuquerque, NM	15	5.3	24	8.6	6	2.0	12	4.1	2.7	2.1
Atlanta, GA	199	49.0	259	63.8	57	13.6	39	9.3	3.6	6.9
Austin, TX	19	5.5	26	7.6	3	0.9	2	0.6	6.1	12.7
Baltimore, MD	88	29.6	103	34.7	33	9.7	50	14.6	3.1	2.4
Boston, MA	42	14.6	68	23.6	6	1.9	1	0.3	7.7	78.7
Chicago, IL	310	20.7	237	15.8	43	2.7	30	1.9	7.7	8.3
Columbus, OH	86	16.3	90	17.0	10	1.8	16	2.9	9.1	5.9
Dallas, TX	115	19.0	83	13.7	76	12.6	48	7.9	1.5	1.7
Denver, CO	41	14.5	24	8.5	0	0.0	1	0.4	30.0	21.3
Detroit, MI	216	48.5	106	23.8	168	33.7	73	14.6	1.4	1.6
Fort Worth, TX	61	21.7	27	9.6	45	15.8	25	8.8	1.4	1.1
Houston, TX	96	9.6	163	16.3	16	1.6	15	1.5	6.0	10.9
Indianapolis, IN	26	6.2	18	4.3	10	2.2	7	1.6	2.8	2.7
Los Angeles, CA	341	7.5	436	9.6	18	0.4	24	0.5	18.8	19.2
Louisville, KY	38	11.4	13	3.9	39	10.7	12	3.3	1.1	1.2
Memphis, TN	38	8.8	50	11.6	51	10.8	26	5.5	0.8	2.1
Miami, FL	198	17.5	171	15.1	33	2.7	23	1.9	6.5	7.9
New Orleans, LA	6	2.7	16	7.2	3	1.2	9	3.6	2.3	2.0
New York City, NY	417	10.9	509	13.3	18	0.4	22	0.5	27.3	26.6
Newark, NJ	37	25.7	31	21.5	26	16.4	26	16.4	1.6	1.3
Oakland, CA	49	6.8	33	4.6	0	0.0	0	0.0	14.6	10.2
Oklahoma City, OK	42	20.0	34	16.2	10	4.5	14	6.3	4.4	2.6
Philadelphia, PA	53	7.6	83	12.0	14	1.8	15	1.9	4.2	6.3
Phoenix, AZ	96	5.8	88	5.3	59	3.6	44	2.7	1.6	2.0
Portland, OR	15	5.7	32	12.1	5	1.9	1	0.4	3.0	30.3
San Antonio, TX	33	5.7	46	7.9	12	2.0	6	1.0	2.9	7.9
San Diego, CA	31	2.1	107	7.3	6	0.4	4	0.3	5.3	24.3
San Francisco, CA	311	80.4	328	84.8	4	1.1	3	0.8	73.1	106.0
San Jose, CA	29	3.4	52	6.1	1	0.1	4	0.5	34.0	12.2
Seattle, WA	50	5.7	59	6.7	0	0.0	1	0.1	12.4	67.0
St Petersburg, FL	20	4.5	50	11.3	2	0.4	1	0.2	11.3	56.5
Tampa, FL	25	4.8	38	7.3	8	1.5	5	0.9	3.2	8.1
Tucson, AZ	21	4.9	23	5.3	7	1.6	17	3.8	3.1	1.4
Washington, DC	49	18.2	45	16.7	9	3.0	3	1.0	6.1	16.7

*Cases per 100,000 population

Table 2. Syphilis serology among men and women in adult corrections facilities, 2003

State	Men			Women		
	No. of Sites	No. of Tests	Median % Reactive (Range)	No. of Sites	No. of Tests	Median % Reactive (Range)
Arizona	1	10,953	2.3	1	950	9.2
California	4	3,728	2.5 (0.2-8.3)	2	2,732	3.0 (2.4-3.6)
Illinois	1	75,747	0.9	1	12,119	3.4
Maryland	1	15,615	2.2	1	5,839	7.5
Massachusetts	1	900	3.9	1	113	6.2
New Jersey	2	18,025	2.4 (1.8-2.9)	2	2,775	7.0 (3.2-10.7)
North Carolina	1	1,693	4.5	1	396	10.4
Tennessee	1	15,458	3.4	1	3,005	9.0
Texas	1	25,520	1.9	1	6,159	8.7
Total	13	167,639	2.3 (0.2-8.3)	11	34,088	7.5 (2.4-10.7)

Table 3. Primary and secondary syphilis — Reported cases by sex and reporting source: United States, 1999-2003

Primary and Secondary Syphilis

Year	Male		Female				Total*					
	Non-STD Source		STD Source		Non-STD Source		STD Source		Non-STD Source		STD Source	
	Cases	Percent	Cases	Percent	Cases	Percent	Cases	Percent	Cases	Percent	Cases	Percent
1999	1,610	42	2,224	58	1,352	49	1,425	51	2,964	45	3,652	55
2000	1,565	44	1,967	56	1,193	49	1,252	51	2,758	46	3,221	54
2001	2,099	51	2,035	49	1,025	52	942	48	3,125	51	2,978	49
2002	3,132	59	2,135	41	869	55	725	45	4,00	58	2,861	42
2003	3,979	68	1,886	32	741	63	444	37	4,722	67	2,331	33

*The sum of male and female cases may not equal total cases because cases with missing information for reporting source were not identified for some cases (sex was not identified for <1% of cases of primary and secondary syphilis reported during 1999-2003).