Sexually Transmitted Disease Surveillance 2002 Supplement

Syphilis Surveillance Report

Division of STD Prevention January 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/Syphilis2002/

Introduction

The Syphilis Surveillance Report, 2002, presents syphilis statistics and trends in the United States through 2002. 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 2002, data from hardcopy reports were used only from Arizona, 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 May 2, 2003, were used to create the line-graphs, bar charts, and county-level maps in this supplement.

Five states reported syphilis data from persons entering adult correctional facilities and juvenile detention facilities as part of the Jail STD Prevalence Monitoring Project; two states

reported syphilis data from persons entering correctional facilities as part of the Syphilis Elimination Initiative.

Reporting of Congenital Syphilis Cases

In 1988, the surveillance case definition for congenital syphilis was revised. This case definition has greater sensitivity than the former definition. In addition, many areas greatly enhanced their active surveillance for congenital syphilis cases during this time. For these reasons, the number of reported congenital syphilis cases increased dramatically during 1989-1991. Following the change in case definition, there was a period of transition during which trends could not be clearly interpreted. However, all reporting areas implemented the surveillance case definition for reporting of congenital syphilis cases as of January 1, 1992. Therefore, it is expected that fluctuations in reporting stabilized after that date and that trends reported after it are reliable. In addition to changing the case definition, CDC introduced a new data collection form (CDC 73.126) in 1990, and this form has been used for reporting all cases of congenital syphilis since 1995. This form collects individual case information and allows more thorough analysis of cases. Congenital syphilis cases were reported by state and city of residence of the mother during 1995-2002.

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 2001 and 2002 rates for the U.S., all states, cities and outlying areas were calculated by dividing the number of cases reported from each area in 2001 and 2002 by the estimated area-specific 2000 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) [machinereadable 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, non-Hispanic). Rates for 1991-2001 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; 1991-2000 Estimates of the Population of Counties by Age, Sex and Race/Hispanic Origin: 1990 to 2000; machine-readable data files).

Rates of congenital syphilis for 1989-2002 were calculated using live births from the National Center for Health Statistics (NCHS) (Vital Statistics: Natality Tapes 1989-2001 or Vital Statistics Reports, United States 1999, Vol. 48 No.10-Natality). Race-specific rates for 2001-2002 were calculated using live births for 2001. Rates before 1989 were calculated using published live birth data (NCHS; Vital Statistics Report, United States, 1988 [Vol.l-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.

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 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, Melinda Flock, James Heffelfinger, Rose Horsley, Richard Kahn, 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 1941.² However, the number of cases of P&S syphilis increased 2.1 % between 2000 and 2001 and increased 12.4% between 2001 and 2002. Increases in cases during 2000-2002 were 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),³⁴⁵⁶⁷⁸ and these outbreaks have been characterized by high rates of human immunodeficiency virus co-infection and high-risk sexual behavior. The number of P&S syphilis cases among women and among African-Americans has decreased every year since 1990. During 2001-2002, the number of P&S syphilis cases declined 19.0% among women and 10.3% 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 1999.² 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 2002, P&S syphilis cases reported to CDC increased to 6,862 (5,267 cases among men, 1,594 among women, and 1 with missing information for sex) from 6,103 (4,134 cases among men, 1,967 among women, and 2 with missing information for sex) in 2001, an increase of 12.4 % (Figure 1).¹⁰ The rate of P&S syphilis in the United States was 9.1% higher in 2002 than in 2001 (2.4 vs. 2.2 cases per 100,000 population).
- During 2001-2002, the number of cases of early latent syphilis reported to CDC decreased 3.1% (from 8,701 to 8,429) while the number of cases of late and late latent syphilis increased 1.1% (from 16,976 to 17,168); the total number of cases of syphilis (P&S, early latent, late and late latent, and congenital syphilis) reported to CDC increased 1.9% (from 32,272 to 32,871).¹⁰
- During 2001-2002, the rate of P &S syphilis increased 26.7% among men (from 3.0 cases to 3.8 cases per 100,000 men) and declined 21.4% among women (from 1.4 to 1.1 cases per 100,000 women)¹⁰ (Figure 2).
- The male-to-female rate ratio for P&S syphilis has risen steadily since 1996 when it was 1.1 (Figure 3). During 2001-2002, the male-to-female rate ratio increased 66.7% (from 2.1 to 3.5),¹⁰ suggesting an increase in syphilis among MSM. The male-

to-female rate ratio increased in 27 states and the District of Columbia in 2002. The increase in male-to-female rate ratios has been particularly marked in cities reporting outbreaks of syphilis among MSM (Table 1).

- During 2001-2002, the male-to-female rate ratio increased among non-Hispanic whites (from 6.0 to 11.0), non-Hispanic blacks (from 1.6 to 2.1), and Hispanics (from 3.7 to 5.0); the ratio declined slightly among Asian/Pacific Islanders (from 10.0 to 8.0) and remained unchanged among American Indian/Alaska Natives (1.2).
- 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).¹⁰ During 1992-2002, the average yearly percentage decrease in the rate of P&S syphilis reported among women was 21.2% and the average yearly percentage decrease in the congenital syphilis rate was 19.2%.
- In 2002, the rate of P&S syphilis was highest among women in the 20-24 year age group (3.3 cases per 100,000 population) and among men in the 35-39 year age group (9.9 cases per 100,000 population) (Figure 5).¹⁰ In 2001, the highest rates of syphilis among women and men were among the same respective age groups.
- 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.¹⁰
- During 2000-2002, the P&S syphilis rate among African-Americans continued to decline (from 12.2 to 9.8 cases per 100,000 population); rates increased among non-Hispanic whites from (0.5 to 1.2 cases per 100,000 population), Hispanics (from 1.6 to 2.7 cases per 100,000 population), and Asian/Pacific Islanders (from 0.3 to 0.9 cases per 100,000 population); the rate among American Indian/Alaska Natives increased during 2000-2001 (from 2.4 to 4.2 cases per 100,000 population) but declined to the 2000 rate in 2002.¹⁰
- In 2002, 49.8% of reported cases of P&S syphilis occurred among African-Americans compared with 62.5% of cases reported 2001. 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 2002, the rate of P&S syphilis was 8 times higher among African-Americans than among non-Hispanic whites compared with 16 in 2001.
- In 2002, the South continued to have a higher rate of P&S syphilis (3.1 cases per 100,000 population) than any other region. During 2001-2002, the rate declined 8.8% in the South (from 3.4 to 3.1 cases per 100,000 population); P&S syphilis rates increased 64.3% in the West (from 1.4 to 2.3 cases per 100,000 population), 54.5% in the Northeast (from 1.1 to 1.7 cases per 100,000 population), and 16.7% in the Midwest (from 1.8 to 2.1 cases per 100,000 population). P&S syphilis cases in the South accounted for 45.8% of total syphilis cases in 2002, a decrease from 56.2% in 2001. Rates in all regions were greater than the HP2010 objective of 0.2 cases per 100,000 persons in 2002 (Figure 7).

- Male-to-female rate ratios increased in all regions during 2001-2002; the rate ratio increased 56.0% in the Northeast (from 5.0 to 7.8), 40.0% in the West (from 6.0 to 8.4), 35.3% in the South (from 1.7 to 2.3), and 33.3% in the Midwest (from 2.1 to 2.8).¹⁰
- In 2002, P&S syphilis rates in 7 states were less than or equal to the Healthy People 2010 national objective of 0.2 case per 100,000 persons (Figure 8).¹¹ P&S syphilis rates were less than or equal to the Healthy People 2010 national objective in 9 states in 2001.¹²
- In 2002, 2,534 (80.7%) of 3,139 counties in the United States reported no cases of P&S syphilis compared with 2,516 (80.2%) counties reporting no cases in 2001.¹⁰ For 605 counties reporting at least one case of P&S syphilis in 2002, 10 (1.7%) reported rates at or below the Healthy People 2010 objective of 0.2 case per 100,000 persons.¹¹ Rates of P&S syphilis were at or above the Healthy People 2010 objective for 595 counties in 2002 (Figure 9). In 2002, 16 counties and one city accounted for half of all reported P&S syphilis cases in the United States, compared with 20 counties and one city in 2001.¹⁰
- Among persons in adult correctional facilities who were tested serologically for syphilis, the median percentage of reactive tests was 7.1% (range, 0.6% to 19.0%) among women (Figure 10; Table 2) and 3.2% (range, 0.9% to 5.2%) among men (Figure 11; Table 2).¹⁰ The percentage of reactive syphilis tests was higher among women than men in 8 of 10 adult corrections facilities reporting syphilis test results.
- During 1998-2002, the number of P&S syphilis cases reported from sources other than STD clinics increased and the number of cases reported from STD clinics decreased; among men, there was a large increase in the number of P&S syphilis cases reported from non-STD clinic sources and a moderate decrease in the number of cases reported from STD clinic sources; among women, the number of P&S syphilis cases reported from non-STD and STD clinic sources decreased substantially (Table 3).

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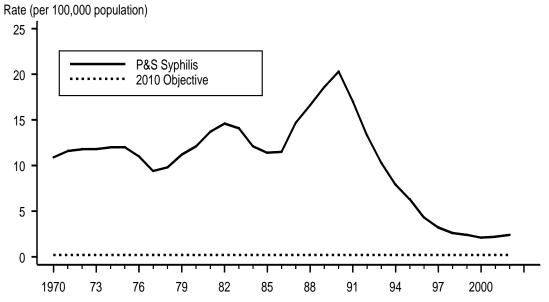
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¹⁰Centers for Disease Control and Prevention. <u>Sexually Transmitted Disease Surveillance 2002</u>. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, September 2003.

¹¹U.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.

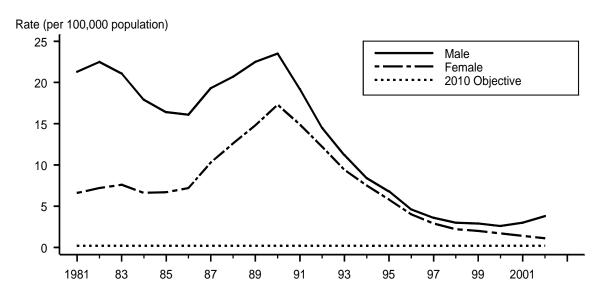
¹²Centers for Disease Control and Prevention. <u>Sexually Transmitted Disease Surveillance 2001</u>. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, September 2002.

Figure 1. Primary and secondary syphilis — Reported rates: United States, 1970–2002 and the Healthy People year 2010 objective



Note: The Healthy People 2010 (HP2010) objective 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– 2002 and the Healthy People year 2010 objective



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

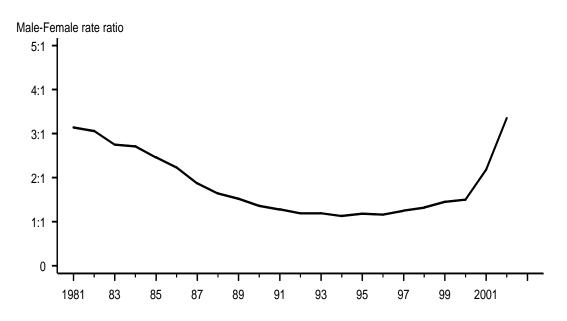
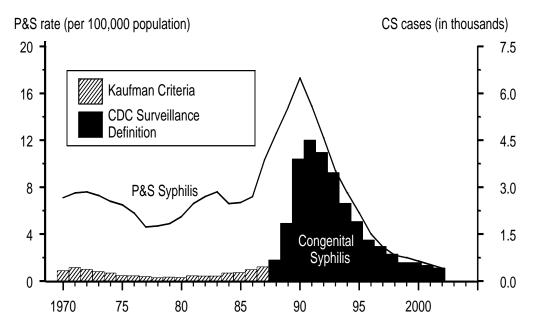


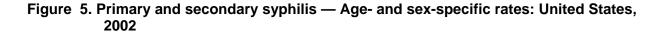
Figure 3. Primary and secondary syphilis — Male-to-female rate ratios: United States, 1981–2002

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, 1970–2002



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



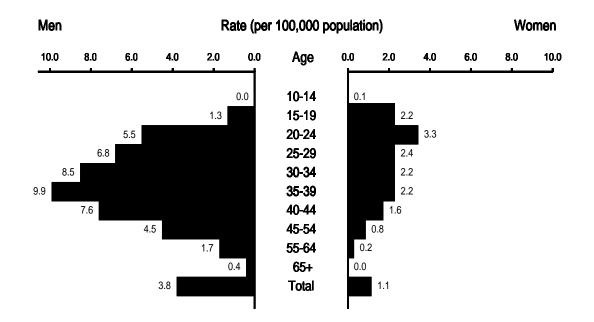
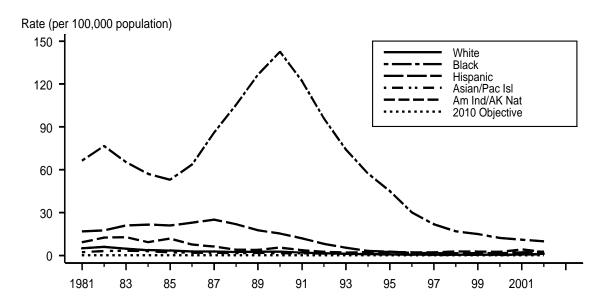
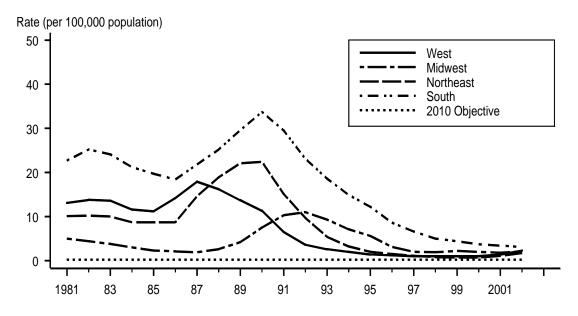


Figure 6. Primary and secondary syphilis — Rates by race and ethnicity: United States, 1981–2002 and the Healthy People year 2010 objective

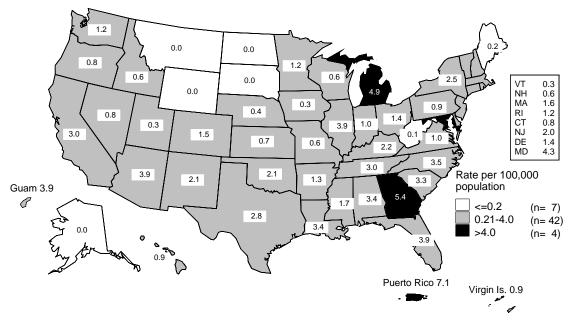


Note: The Healthy People 2010 (HP2010) objective for primary and secondary syphilis is 0.2 cases per 100,000 population

Figure 7. Primary and secondary syphilis — Rates by region: United States, 1981–2002 and the Healthy People year 2010 objective

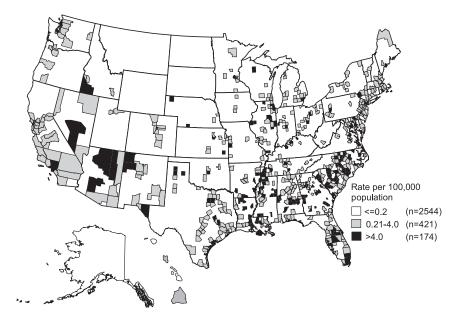


- Note: The Healthy People 2010 (HP2010) objective for primary and secondary syphilis is 0.2 cases per 100,000 population
- Figure 8. Primary and secondary syphilis Rates by state: United States and outlying areas, 2002



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 objective is 0.2 cases per 100,000 population.

Figure 9. Primary and secondary syphilis — Counties with rates above and counties with rates below the Healthy People year 2010 objective: United States, 2002



Note: The Healthy People 2010 objective 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, 2002



Note: The median positivity is presented from facilities reporting >100 test results. Texas submitted data from more than one adult corrections facilities.

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, 2002



Note: The median positivity is presented from facilities reporting >100 test results. Texas submitted data from more than one adult corrections facilities.

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

	Males			Females				M -1- (- F		
	20	01	2002 2001		01	2002		Male-to-Female Rate Ratios		
Cities	Cases	Rates	Cases	Rates	Cases	Rates	Cases	Rates	2001	2002
Atlanta, GA	157	39.1	199	49.5	67	16.2	57	13.8	2.4	3.6
Baltimore, MD	84	27.7	88	29.0	77	22.2	33	9.5	1.2	3.1
Boston, MA	17	5.9	42	14.6	1	0.3	6	1.9	19.7	7.7
Charlotte, NC	17	5.0	15	4.4	12	3.4	13	3.7	1.5	1.2
Chicago, IL	256	17.1	310	20.7	61	3.8	43	2.7	4.5	7.7
Columbus, OH	37	7.1	86	16.6	17	3.1	10	1.8	2.3	9.2
Dallas, TX	72	6.5	115	10.4	49	4.4	76	6.8	1.5	1.5
Denver, CO	13	4.6	41	14.6	2	0.7	0	0	6.6	
Detroit, MI	215	48.0	216	48.2	136	27.0	168	33.4	1.8	1.4
Fort Worth, TX	24	3.4	61	8.5	16	2.2	45	6.2	1.5	1.4
Houston, TX	75	4.4	96	5.7	28	1.6	16	0.9	2.8	6.3
Indianapolis, IN	68	16.3	26	6.3	60	13.5	10	2.2	1.2	2.9
Los Angeles, CA	175	4.0	341	7.7	9	0.2	18	0.4	20.0	19.2
Louisville, KY	10	3.0	38	11.5	9	2.5	39	10.8	1.2	1.1
Memphis, TN	102	23.8	38	8.9	106	22.6	51	10.9	1.1	0.8
Miami, FL	145	13.3	198	18.2	40	3.4	33	2.8	3.9	6.5
Minneapolis, MN	11	5.8	35	18.5	12	6.2	2	1.0	0.9	18.5
Nashville, TN	47	17.0	16	5.8	29	9.9	10	3.4	1.7	1.7
New York City, NY	263	6.9	417	11.0	19	0.5	18	0.4	13.8	27.5
Newark, NJ	37	25.9	37	25.9	21	13.3	26	16.5	1.9	1.6
Oakland, CA	22	3.1	49	6.9	1	0.1	0	0	31.0	
Oklahoma City, OK	17	8.2	42	20.4	18	8.2	10	4.6	1.0	4.4
Philadelphia, PA	55	7.8	53	7.5	24	3.0	14	1.7	2.6	4.4
Phoenix, AZ	109	7.1	96	6.2	39	2.5	59	3.8	2.8	1.6
San Antonio, TX	47	6.9	33	4.9	24	3.4	12	1.7	2.0	2.9
San Diego, CA	21	1.5	31	2.2	6	0.4	6	0.4	3.8	5.5
San Francisco, CA	137	34.7	311	78.8	2	0.5	4	1.0	69.4	78.8
San Jose, CA	9	1.1	29	3.4	1	0.1	1	0.1	11.0	34.0
Seattle, WA	40	4.6	50	5.8	1	0.1	0	0	46.0	
Tampa, FL	9	1.8	25	5.1	6	1.2	8	1.6	1.5	3.2
Washington, DC	35	13.0	49	18.2	8	2.6	9	3.0	5.0	6.1

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 2002: United States, 2001–2002

*Cases per 100,000 population

		Men		Women			
State	No. of Sites	No. of Tests	Median % Reactive (Range)	No. of Sites	No. of Tests	Median % Reactive (Range)	
Arizona	1	20, 032	1.7	1	3,027	3.9	
California	1	2,853	2.7	1	1,162	2.1	
Illinois	1	84,883	0.9	1	14,495	3.6	
Maryland	1	15,257	3.3	1	5,117	9.5	
North Carolina	1	226	3.1	1	103	5.1	
Tennessee	1	7,095	3.6	1	1,525	9.1	
Texas	4	32,424	4.9 (4.6-5.2)	4	11,324	12.2 (0.6-19.0)	
Total	10	162,770	3.2 (0.9-5.2)	10	36,753	7.1 (0.6-19.0)	

Table 2. Syphilis serology among men and women in adult corrections facilities, 2002

Table 3. Primary and secondary syphilis — Reported cases by sex and reporting source: United States, 1998-2002

					, ,,		
		I	Non-STD Clin	nic	STD Clinic		
	Year	Male	Female	Total*	Male	Female	Total*
_	1998	1,408	1,336	2,746	2,495	1,757	4,252
	1999	1,610	1,352	2,964	2,224	1,425	3,652
	2000	1,565	1,193	2,758	1,967	1,252	3,221
	2001	2,099	1,025	3,125	2,035	942	2,978
	2002	3,132	869	4,001	2,135	725	2,861

Primary and secondary syphilis cases

*The sum of male and female cases may not equal total cases because sex was not identified for some cases (sex was not identified for <1% of cases of primary and secondary syphilis reported during 1998-2002).