Primary and Secondary Syphilis—United States, 1999

MMWR. 2001;50:113-117
1 table, 1 figure omitted

In October 1999, CDC, in collaboration with other federal partners, launched the National Plan to Eliminate Syphilis in the United States. In 1998, Congress initiated funding for the syphilis elimination effort. Syphilis elimination is defined as the absence of sustained transmission (i.e., no transmission after 90 days of the report of an imported index case). The national goal for syphilis elimination is to reduce primary and secondary (P&S) syphilis to <1,000 cases (rate: 0.4 per 100,000 population) and to increase the number of syphilis-free counties to 90% by 2005.1 To describe the epidemiology of syphilis in the United States, CDC analyzed notifiable disease surveillance data for 1999. This report summarizes the results of that analysis, which indicate that, in 1999, P&S syphilis declined to a rate of 2.5 cases per 100,000 population, the lowest rate ever reported, and that syphilis transmission increasingly is concentrated in a few geographic areas.

Summary data for syphilis cases reported to state health departments and the District of Columbia for 1999 were sent quarterly and annually to CDC. These data included the number of syphilis cases by patients' county of residence, sex, stage of disease, racial/ethnic group, and age group. Data on reported P&S syphilis were analyzed for this report because these cases better represent incidence (i.e., newly acquired infections within the evaluated time) than reported cases of latent infection, which are usually acquired months or years before diagnosis. P&S syphilis rates were calculated by using population denominators from the U.S. Bureau of the Census.2 The 1999 rates and numbers of cases were compared with data for 19983 and 1997.4 In 1999, 6,657 cases of P&S syphilis were reported in the United States (2.5 per 100,000 population), a 5.4% decrease from the 7,035 cases (rate: 2.6) reported in 1998 and a 22% decrease from the 8,556 cases (rate: 3.2) reported in 1997. The South continues to have the highest rate in the country (4.5).5 From 1998 to 1999, rates declined 10% in the South (from 5.0 to 4.5) and 12.5% in the Northeast (0.8 to 0.7). The rate for the West remained unchanged (1.0), and the rate for the Midwest increased from 1.9 in 1998 to 2.2 in 1999. P&S syphilis rates have declined in 28 states since 1998, and 39 states have rates below the national health objective for 2000 of 4.0.

Nine of the 11 states that have rates of P&S syphilis, compared with 2,430 (78.0%) counties reporting no cases in 1998 and 2,324 (74.6%) in 1997. In 1999, 2,850 (91.5%) counties reported rates below the 2000 objective. Of the 265 counties (8.5% of all counties) with P&S syphilis rates above the 2000 objective, 243 were in the South. In 1999, 22 counties and Baltimore, Maryland; Danville, Virginia; and St. Louis, Missouri, accounted for 50% of all reported P&S syphilis cases in the United States. The overall rate for 63 of the largest cities in the United States (population >200,000) was 5.1 cases per 100,000 persons; 24 large cities had rates higher than the 2000 objective. Cities with the highest rates of P&S syphilis were Indianapolis, Indiana (50.0); Nashville, Tennessee (46.8); and Baltimore, Maryland (38.1).

The 1999 reported rate of P&S syphilis in blacks (15.2) was 30 times the rate reported in whites (0.5); the 1999 rate for blacks declined 10% compared with 1998. The rate for Hispanics increased 20% (from 1.5 in 1998 to 1.8 in 1999). The increase in rate for Hispanics was attributed to an increased number of cases in men; the number of cases in women remained stable.

Rates for American Indians/Alaska Natives and for Asians/Pacific Islanders were unchanged from 1998 (2.7 and 0.4, respectively). Rates for P&S syphilis in 1999 were 45% higher for men (2.9) than for women (2.0). The male-to-female rate ratio in 1999 was 1.5:1, and has been increasing since 1994, when it was 1:1. The increase occurred in all racial/ethnic groups except Asians/Pacific Islanders and American Indians/Alaska Natives. The greatest increase occurred among Hispanics, from 2.3:1 in 1998 to 2.9:1 in 1999. An increase in the male-to-female rate ratio occurred in 16 (62%) of the 26 states that reported ≥25 cases in 1999. The male-to-female rate ratio was remarkably high in some cities, such as Seattle (38:1) and San Francisco (25:1).

CDC Editorial Note: The number and rate of P&S syphilis cases reported in 1999 were the lowest ever reported in the United States6 with a 22% decline in both cases and rates since 1997, reflecting the substantial progress that has been made since efforts to eliminate syphilis began. The disease has become increasingly concentrated in a few geographic areas; in 1999, 50% of P&S syphilis cases occurred in <1% of counties; approximately 80% of counties reported no cases of syphilis. Although syphilis rates remain higher in the South than in other regions, the South had a 32% decline in the P&S syphilis rate from 1997 to 1999, illustrating that the...
greatest improvements in disease control have taken place where syphilis incidence has been greatest. Eliminating syphilis would reduce the likelihood of human immunodeficiency virus (HIV) transmission and improve reproductive health by preventing spontaneous abortions, stillbirths, and developmental disabilities caused by congenital syphilis. In addition, syphilis elimination would help to rebuild the capacity of communities to control infectious diseases and reduce racial disparities.1

Syphilis continues to disproportionately affect minority populations despite progress in reducing this racial disparity. P&S syphilis rates for blacks have remained substantially higher than those for whites. However, the magnitude of this difference has decreased 30% since 1997. The persistence of racial disparities in syphilis incidence is, in part, attributable to differences between blacks and whites regarding poverty and in access to and use of health-care services, especially in the rural South.5,6 In addition, rates increased 20% among Hispanics, due to an increase among males.

Historically, rates of syphilis have been higher for men than women. The male-to-female rate ratio peaked at 3:5:1 in 1980 during the height of syphilis transmission among men who have sex with men (MSM) and decreased to 1:1 in 1994; since then, it has increased gradually. The causes of the increasing trend in the male-to-female rate ratio are not understood completely. However, one important factor is the development since 1997 of several large outbreaks of syphilis among MSM, many of whom were co-infected with HIV.7,8 In outbreaks in King County, Washington; Chicago, Illinois; and southern California, 20%-73% of MSM with syphilis also had HIV infection. Substantial increases in syphilis among MSM also have been reported in other U.S. cities.

Despite national progress toward syphilis elimination, increases in rates have occurred in several states and cities. The increase in rates in these states may, in part, reflect improved reporting and case finding resulting from the national syphilis elimination effort; however, the increases also may be attributed to increases in populations that have been difficult to reach for purposes of syphilis prevention and control, such as MSM, who previously have not been a focus of the national syphilis elimination effort.

The findings in this report are subject to at least three limitations. First, the quality of surveillance activities and data vary at local and state levels. Second, sexually transmitted disease reporting is incomplete. Finally, cases among patients attending public sector clinics may be more likely to be reported than cases diagnosed in the private sector, which could magnify the racial/ethnic differences in reported rates; persons of minority race/ethnicity may be more likely to attend public clinics.

The variation in the demographic characteristics of syphilis patients over time and among regions highlights the need to recognize and respond to the changing epidemiology of this disease. Because increases in syphilis may emerge in areas or subpopulations that are not specifically targeted by ongoing elimination efforts, it is necessary to continually reassess and refine surveillance, prevention, and control strategies.

To sustain progress toward syphilis elimination, communities must understand local patterns of syphilis transmission and develop intervention strategies, including education, risk reduction, and screening of persons at risk for this disease. Syphilis elimination must also be viewed as an entry point for building broader public health capacity to control infectious diseases and to ensure reproductive health among historically underserved communities.1

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the patient had met sex partners while the patient probably was infected. Because of the increase in the number of reported cases of syphilis in 2000, staff re-evaluated and reinterviewed syphilis case-patients reported during January 1999–July 2000. Case-patients were defined as persons with a reactive syphilis serologic test result and symptoms of P&S syphilis. Men were identified as MSM if they reported having had any male sex partners during the interview period.

During January–July 2000, 130 case-patients were reported, 66 (51%) of whom were MSM compared with 26 (26%) of 100 for the same period in 1999.4 Of the 66 MSM case-patients, 15 (23%) had primary syphilis, and 51 (77%) had secondary syphilis. MSM case-patients were from the following health jurisdictions: Los Angeles County,10 Orange County,10 City of Long Beach (eight), San Diego County (six), and Riverside County (one). Overall, 47% of cases were diagnosed at private medical clinics, 18% at HIV early intervention programs, and 17% at STD clinics. The median age of MSM case-patients was 35 years (range: 20-54 years); 27 (41%) were white, 24 (36%) were Hispanic, 12 (18%) were black, and two (3%) were Asian/Pacific Islander; race/ethnicity was unknown for one (2%). Of the 57 who knew their HIV serostatus, 34 (60%) reported that they were HIV positive. The year of diagnosis was known for 27 of the 34 HIV-positive MSM; the median time since diagnosis of HIV infection was 4 years (range: 0-19 years). For those whose HIV diagnosis had been made <1 year before the diagnosis of syphilis, the number of months since HIV diagnosis was not available.

Although data on behavioral risks were not collected systematically, interview records indicate that of the 66 MSM, 33 (50%) reported that they had had anonymous sex, 17 (26%) had met sex partners in bathhouses, two (3%) had met sex partners through the Internet, and four (6%) had had sex with a commercial sex worker. Overall, 13 (20%) MSM reported using a condom during the most recent sexual contact, and 26 (40%) reported using illicit drugs. Crystal methamphetamine, the drug reported most frequently, had been used by 18%.

Local response to the outbreak included a media campaign, community education, outreach, and syphilis screening. The media campaign used radio, print, and Internet advertisements to raise awareness of the outbreak and to promote syphilis testing. Local health departments and community groups used mobile vans to conduct syphilis screening at bathhouses, gay bars, HIV treatment sites, and other locations (e.g., parks and selected street corners) that MSM case-patients had identified as places for meeting sex partners.

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**CDC Editorial Note:** The results of this investigation and other similar outbreaks suggest that an increasing number of MSM are participating in high-risk sexual behavior that places them at risk for syphilis and HIV infection.7,6 Similar trends have been reported internationally.7 These data are consistent with reports from behavioral surveys that indicate some MSM are participating in activities that increase their risk for acquiring and transmitting HIV and other STDs.8 Several factors may have contributed to this change, including the availability of highly active antiretroviral therapy (HAART).8 Since the introduction of HAART in 1996, acquired immunodeficiency syndrome incidence and deaths have declined substantially, decreasing the actual and perceived threat of HIV to MSM.8 Because syphilis increases the likelihood of acquiring and transmitting HIV infection, the increase in P&S syphilis among MSM may indicate an increase in the incidence of HIV infection. The findings in this report are subject to at least two limitations. First, information was abstracted from public health records for which data had not been collected systematically because of variations in interview style and documentation. Second, because behavioral risk data were available only for some case-patients, the proportion of case-patients with each reported behavioral risk may be inaccurate.

A high proportion of cases was identified by private providers, and communication between public health officials and HIV care and local primary-care providers was crucial in responding to the outbreak. The standard of care for MSM, regardless of HIV status, should continue to include counseling about safer sex. For MSM who are HIV positive or are at risk for HIV, voluntary screening for syphilis and other STDs is an essential component of quality care. MSM who do not know their HIV serostatus and who have an STD should be offered HIV screening to facilitate early access to care for those who are HIV positive. Partnerships with clinicians and community organizations that serve MSM will continue to be critical for the development of targeted and effective prevention messages. In this outbreak, community organizations and state and local health departments facilitated rapid outreach and education in the community. The role of outreach efforts and the media campaign in arresting the outbreak is being evaluated.

This outbreak, unlike other recent syphilis outbreaks, involved primarily white and Hispanic MSM with access to health care, most of whom were HIV positive. As syphilis rates decline and the epidemiology of syphilis changes, outbreak recognition through surveillance and the collection of enhanced behavioral risk data will be important in preventing syphilis and HIV transmission. State and local health departments should review HIV/STD and behavioral surveillance data on MSM and other at-risk populations to detect outbreaks and implement appropriate public health actions. Increased prevention efforts in MSM communi-
ties are critical in preventing STD and HIV transmission.

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Satellite Broadcast on Epidemiology and Prevention of Vaccine-Preventable Diseases

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CDC’S NATIONAL IMMUNIZATION PROGRAM (NIP) and the Public Health Training Network (PHTN) will co-sponsor a live satellite broadcast for physicians, nurses, nurse practitioners, physician assistants, pharmacists, residents, medical and nursing students, and their colleagues who either give vaccinations or set policy in their workplace. The four-part series, “Epidemiology and Prevention of Vaccine-Preventable Diseases,” will be broadcast on March 15, 22, and 29, and April 5, 2001, from noon to 3:30 PM eastern time.

The program will provide the most current information in the field of immunization. Session one will cover principles of vaccination, general recommendations on vaccination, and strategies to improve vaccination coverage levels; session two will cover pertussis, pneumococcal disease (childhood), poliomyelitis, and Haemophilus influenzae type b; session three will cover measles, rubella, varicella, and vaccine safety; and session four will focus on hepatitis B, hepatitis A, influenza, and pneumococcal disease (adult).

Participants will be able to interact with instructors through toll-free telephone, fax, and TTY lines. Continuing education for various professions will be offered based on 14 hours of instruction.

Information and registration are available through state or county health department immunization programs. A list of state immunization coordinators is available on the NIP World-Wide Web site, http://www.cdc.gov/nip/ed/coordinators.htm. Course participants will be required to obtain their own copy of the primary course text, Epidemiology and Prevention of Vaccine-Preventable Diseases, 6th edition (2000). The text is available from the Public Health Foundation for $25; telephone (877) 252-1200; World-Wide Web site, http://bookstore.phf.org. All other course materials will be provided on site.

Mortality From Coronary Heart Disease and Acute Myocardial Infarction—United States, 1998

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3 tables omitted

Despite improved clinical care, heightened public awareness, and widespread use of health innovations, coronary heart disease (CHD) remains the leading cause of death in the United States, and the decline in rates from CHD that began during the 1960s slowed during the 1990s. This report provides national and state-specific death rates for CHD and for acute myocardial infarction (AMI). During 2001, approximately 1.1 million persons are expected to have a CHD event. Prevention remains the key strategy for reducing CHD mortality.

National and state mortality statistics are based on information from death certificates filed in state vital statistics offices and are compiled by CDC’s National Center for Health Statistics. Demographics (e.g., age and race/ethnicity) listed on death certificates are reported by funeral directors or provided by family members of the decedent. CHD deaths are those in which the underlying cause of death listed on the death certificate by a physician, medical examiner, or coroner is International Classification of Diseases, Ninth Revision, codes 410.0-414.9. CHD includes AMI (410), other acute and subacute forms of ischemic heart disease (411), old myocardial infarction (412), angina pectoris (413), and other forms of chronic ischemic heart disease (414.0-414.9). Populations at risk are defined on the basis of U.S. Bureau of Census estimates of resident populations. Age-adjusted estimates are standardized to the 2000 U.S. population. Because only 0.2% of CHD deaths and 0.3% of AMI deaths occur among persons aged <35 years, the age-adjusted death rates have been limited to persons aged ≥35 years.

The annual percentage change in U.S. death rates for CHD during 1950-1959, 1960-1969, 1970-1979, 1980-1989, and 1990-1997 was 2.1, 0.2, −3.1, −3.3, and −2.7, respectively. During 1998, CHD was reported as the underlying cause of 459,841 deaths; 203,551 (44%) were attributed to AMI. During 1998, age-specific death rates per 100,000 persons increased among successive age groups for CHD and AMI. Among persons aged ≥85 years, the 1998 CHD mortality.

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death rate was 3743.9, which was three times higher than the rate among persons aged 75-84 years (1252.2), seven times higher than among persons aged 65-74 years (487.2), and 21 times higher than among persons aged 55-64 years (180.7).

The age-adjusted death rate among persons aged ≥35 years was higher among men than women (222.4 versus 135.8 per 100,000 for CHD and 99.7 versus 58.8 per 100,000 for AMI, respectively). CHD death rates were highest among white men (440.0) and second highest among black men (421.6). AMI death rates were similar among both groups (196.7 and 198.7 for white and black men, respectively). Compared with white men, American Indian/Alaska Native men and Asian/Pacific Islander men had much lower death rates for CHD (246.7 and 258.3, respectively) and AMI (120.9 and 109.1, respectively). Black women had the highest death rates for CHD (301.9) and AMI (140.4), followed by white (263.8 and 113.2 for CHD and AMI, respectively), American Indian/Alaska Native, (160.2 and 69.3 for CHD and AMI, respectively) and Asian/Pacific Islander (148.1 and 62.2 for CHD and AMI, respectively) women. Compared with black and white men and women, Hispanics had lower death rates for CHD (285.4 and 189.8 for men and women, respectively) and AMI (121.6 and 76.7 for men and women, respectively). State variations in age-adjusted death rates for CHD and AMI ranged from 208.1 (New Mexico) to 440.6 (New York) for CHD and from 80.5 (New Mexico) to 252.6 (Arkansas) for AMI.

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CDC Editorial Note: An estimated 12 million persons in the United States have CHD. Of the 1.1 million persons who are expected to have a CHD event during 2001, approximately 650,000 will be first events and 450,000 will be recurrences. Each year, approximately 220,000 fatal CHD events occur suddenly among unhospitalized persons.

The slowing decline in CHD death rates may be explained by the pattern of CHD risk factors reported during the 1990s. Minimal, if any, improvement has occurred in preventive behaviors (e.g., adequate physical activity, cessation of smoking, and the control of high blood pressure). In addition, an increase has been reported in caloric consumption and the prevalence of obesity and diabetes. Factors that may have contributed to the racial/ethnic differences, particularly those between black and white women, include differences in CHD risk factors, case fatality rates, medical care, socioeconomic status, and state of residence.

The findings in this report are subject to at least two limitations. First, the data are subject to misclassification of race/ethnicity in the population census and on death certificates, which may result in undercounting of deaths among American Indians/Alaska Natives, Asians/Pacific Islanders, and Hispanics and overcounting of deaths among black and white populations.

Second, there is no medical record verification of death certificate data on multiple-cause mortality records. The reliability and accuracy of underlying cause depend on the certifier of each death and the state and national medical examiners who determine the codes and the underlying causes.

CDC funds 25 state-based cardiovascular health programs designed to prevent the first heart attack and promote a greater decline in death and disability from CHD. Measures intended to prevent a first AMI promote policy changes (e.g., health-care providers implementing American Heart Association AMI prevention guidelines) and behavioral changes that affect cardiovascular-related risk factors (e.g., high blood pressure, high cholesterol, cigarette smoking, physical inactivity, and poor nutrition). Myocardial damage, disability, and death can be forestalled if affected persons recognize AMI warning symptoms and reach medical care quickly. To reduce delays in receiving treatment and preventing disability following a CHD event, emergency medical care often can be obtained rapidly by telephoning 911. Other interventions consist of therapeutic measures to minimize the risk for a second heart attack and subsequent heart failure, education to promote physician adherence to clinical practice guidelines, and recommendations for the appropriate treatment of CHD patients.

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