NATIONAL PROFILE

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National Profile

The **National Profile** section contains figures showing trends and the distribution of nationally reportable sexually transmitted diseases (chlamydia, gonorrhea, syphilis and chancroid) by age, sex, race/ethnicity, and location for the United States. Where relevant, the figures illustrate progress towards specific Healthy People 2010 targets* for the nation.[1]

* See the **Appendix** for a listing of the Healthy People 2010 objectives for the diseases addressed in this report.

[1] U.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.

Chlamydia

Background

Chlamydia trachomatis infections are the most commonly-reported notifiable disease in the United States. They are among the most prevalent of all STDs and, since 1994, have comprised the largest proportion of all STDs reported to CDC (Table 1). Recent studies also demonstrate the high prevalence of chlamydial infections in the general U.S. population. From 1999 to 2002, chlamydia prevalence among participants (aged 14-39 years) in the National Health and Nutrition Examination Survey was 2.2%.[1] Among young adults (18-26 years of age) participating in the National Longitudinal Study of Adolescent Health from 2001 to 2002, chlamydia prevalence was 4.2%.[2]

In women, chlamydial infections, which are usually asymptomatic, may result in pelvic inflammatory disease (PID), which is a major cause of infertility, ectopic pregnancy, and chronic pelvic pain. Data from a randomized controlled trial of chlamydia screening in a managed care setting suggested that screening programs can lead to a reduction in the incidence of PID by as much as 60%.[3] As with other inflammatory STDs, chlamydial infection can facilitate the transmission of HIV infection. In addition, pregnant women infected with chlamydia can pass the infection to their infants during delivery, potentially resulting in neonatal ophthalmia and pneumonia. Due to the large burden of disease and risks associated with infection, CDC recommends screening all sexually active women younger than 26 years of age for chlamydia annually.[4]

The increase in reported chlamydial infections during the last 10 years reflects the expansion of chlamydia screening activities, use of increasingly sensitive diagnostic tests, an increased emphasis on case reporting from providers and laboratories, improvements in the information systems for reporting, and, possibly, true increases in disease. However, many women who are at risk are still not being tested, reflecting, in part, lack of awareness among some health care providers and limited resources available to support screening. Chlamydia screening and reporting are likely to continue to expand further in response to the Healthcare Effectiveness Data and Information Set (HEDIS) measure for chlamydia screening of sexually active women 15 through 25 years of age who receive medical care through commercial or Medicaid managed care organizations.[5]

To better monitor trends in disease burden in defined populations during the expansion of chlamydia screening activities, data on chlamydia positivity among persons screened in a variety of settings are used. In most instances, test positivity serves as a reasonable approximation of prevalence.[6]

Chlamydia - United States

In 2000, for the first time, all 50 states and the District of Columbia had regulations requiring the reporting of chlamydia cases.

In 2006, 1,030,911 chlamydial infections were reported to CDC from 50 states and the District of Columbia (Table 1). This is the first time reported cases of chlamydia

have exceeded 1 million. This case count corresponds to a rate of 347.8 cases per 100,000 population, an increase of 5.6% compared with the rate of 329.4 in 2005. The reported number of chlamydial infections was almost three times the number of reported cases of gonorrhea (358,366 gonorrhea cases were reported in 2006) (Table 1).

From 1987 through 2006, the rate of reported chlamydial infection increased from 50.8 to 347.8 cases per 100,000 population (Figure 1, Table 1).

Chlamydia by Region

For the years 1997-2001, chlamydia rates in the southern region of the United States were slightly higher than in any other region of the country (Figure 2, Table 3). For the years 2002-2006, overall rates were comparable in the Midwest, West, and South. Rates have consistently remained lowest in the Northeast. In 2006, rates increased in the South, West, and Northeast (363.3, 357.9, 299.0 cases per 100,000 population, respectively) and remained the same in the Midwest (352.4 cases).

Chlamydia by State

In 2006, chlamydia rates per 100,000 population by state ranged from 152.4 cases in New Hampshire to 681.8 cases in Alaska (Figure 3, Table 2). Thirty states, the District of Columbia, and Guam had chlamydia case rates higher than 300 cases per 100,000 population.

Chlamydia by Metropolitan Statistical Area (MSA)

In 2006, the chlamydia case rate per 100,000 population in the 50 most populous MSAs increased overall, among both women and men (Table 7). Among women, the 2006 case rate of 533.8 is a 4.4% increase over the 2005 case rate of 511.3 (Table 8). The 2006 case rate among men (191.5 per 100,000 population) increased 7.5% from the 2005 case rate (178.2) (Table 9). In 2006, 56.7% of chlamydia cases were reported by these MSAs.

Chlamydia by County

Counties in the United States with the highest chlamydia case rates per 100,000 population were located primarily in the Southeast and West, including Alaska (Figure 4). In 2006, 842 (26.8%) of 3,140 counties had rates greater than 300.0 cases per 100,000 population. Rates per 100,000 population were 150.0 or less in 1,296 counties (41.3%) and between 150.1 and 300 in 1,002 counties (31.9%). Eighty-nine counties and independent cities reported 50% of all chlamydia cases in 2006. Fifty-four with the greatest number of cases are shown in Table 6, with case rates ranging from 213.3 (Miami-Dade County, Florida) to 1330.3 (St. Louis (City), Missouri) per 100,000 population.

Chlamydia by Reporting Source

The majority of chlamydia cases reported in 2006 were reported from venues outside of STD clinics (Figure 5, Table A2). Among women, only 12.0% of chlamydia cases were reported through an STD clinic (93,169 of 775,788 total cases). In contrast, among men, 32.7% of chlamydia cases were reported through an STD clinic in 2006 (82,638 of 252,630 total cases).

Chlamydia by Race/Ethnicity

In 2006, chlamydia rates increased for all racial and ethnic groups except Asian/Pacific Islanders (Figure 6, Table 11B). The rate of chlamydia among African Americans was over eight times higher than that of whites (1,275.0 and 153.1 cases per 100,000, respectively). The rates among American Indian/Alaska Natives (797.3) and Hispanics (477.0) were also higher

than that of whites (5.2 and 3.1 times higher, respectively). In 2006, the chlamydia case rate per 100,000 population among Asian/Pacific Islanders was 132.1, a decrease of 11.0% from the 2005 rate (148.4).

Chlamydia by Sex

In 2006, the overall rate of reported chlamydial infection among women in the United States (515.8 cases per 100,000 females) was almost three times as high as the rate among men (173.0 cases per 100,000 males), likely reflecting a greater number of women screened for this infection (Figure 1, Tables 4 and 5). The lower rates among men also suggest that many of the sex partners of women with chlamydia are not being diagnosed or reported as having chlamydia. However, with the advent of highly sensitive nucleic acid amplification tests that can be performed on urine, symptomatic and asymptomatic men are increasingly being diagnosed with chlamydial infection. From 2002 through 2006, the chlamydial infection rate in men increased by 36.4% (from 126.8 to 173.0 cases per 100,000 males) compared with a 15.9% increase in women during the same period (from 445.0 to 515.8 cases per 100,000 females).

Chlamydia by Age and Sex

Among women, the highest age-specific rates of reported chlamydia in 2006 were among those 15 to 19 years of age (2,862.7 cases per 100,000 females) and 20 to 24 years of age (2,797.0 cases per 100,000 females) (Figure 7, Table 10). These increased rates in women may, in part, reflect increased screening in this group. Age-specific rates among men, while substantially lower than the rates among women, were highest in the 20- to 24-year-old age group (856.9 cases per 100,000 males) (Figure 7, Table 10).

Chlamydia Screening and Prevalence Monitoring Project

Chlamydia screening and prevalence monitoring activities were initiated in Health and Human Services (HHS) Region X (Alaska, Idaho, Oregon, Washington) in 1988 as a CDC-supported demonstration project. In 1993, chlamydia screening services for women were expanded to three additional HHS regions (III, VII, and VIII) and, in 1995, to the remaining HHS regions (I, II, IV, V, VI, and IX). In some regions, federally-funded chlamydia screening supplements local-and state-funded screening programs. Screening criteria and practices vary by region and state.

In 2006, the median state-specific chlamydia test positivity among 15- to 24-year-old women who were screened during visits to selected family planning clinics in all states and outlying areas was 6.7% (range 2.8% to 16.9%) (Figures 8 and 9). See **Appendix** (Chlamydia, Gonorrhea, and Syphilis Prevalence Monitoring) for details.

To examine trends in regional chlamydia positivity, rates are adjusted to account for changes in laboratory test methods and associated increases in test sensitivity (Figure 10, see **Appendix**).[7] Even after adjustment, chlamydia test positivity has remained fairly stable in all 10 HHS regions between 2002 and 2006. Positivity slightly decreased in three regions from 2005 to 2006, increased in five regions, and remained the same in two regions.

Chlamydia Among Special Populations

Additional information on chlamydia screening programs for women of reproductive age and chlamydia among adolescents and minority populations can be found in the **Special Focus Profiles**.

Chlamydia Summary

Both prevalence and reported cases of genital *Chlamydia trachomatis* infections remain high across age groups, race/ethnicity groups, geographic locales, and both sexes. The burden of chlamydia appears higher among women, especially those of younger age (15 to19 and 20 to 24 years of age), but this may be a reflection of which persons are screened. Racial differences also persist; case rates among African Americans continue to be substantially higher than rates among other race/ethnicity groups.

[1] Datta SD, Sternberg M, Johnson RE, Berman S, Papp JR, McQuillan G, Weinstock H. Gonorrhea and chlamydia in the United States among persons 14 to 39 years of age, 1999 to 2002. *Ann Intern Med* 2007;147(2):89-96.

[2] Miller WC, Ford CA, Morris M, Handcock MD, Schmitz JL, Hobbs MM, Cohen MS, Mullan Harris K, Udry JR. Prevalence of chlamydial and gonococcal infections among young adults in the United States. *JAMA* 2004;291(18): 2229-36.

[3] Scholes D, Stergachis A, Heidrich FE, Andrilla H, Holmes KK, Stamm WE. Prevention of pelvic inflammatory disease by screening for cervical chlamydial infection. *N Engl J Med* 1996;34(21):1362-66.

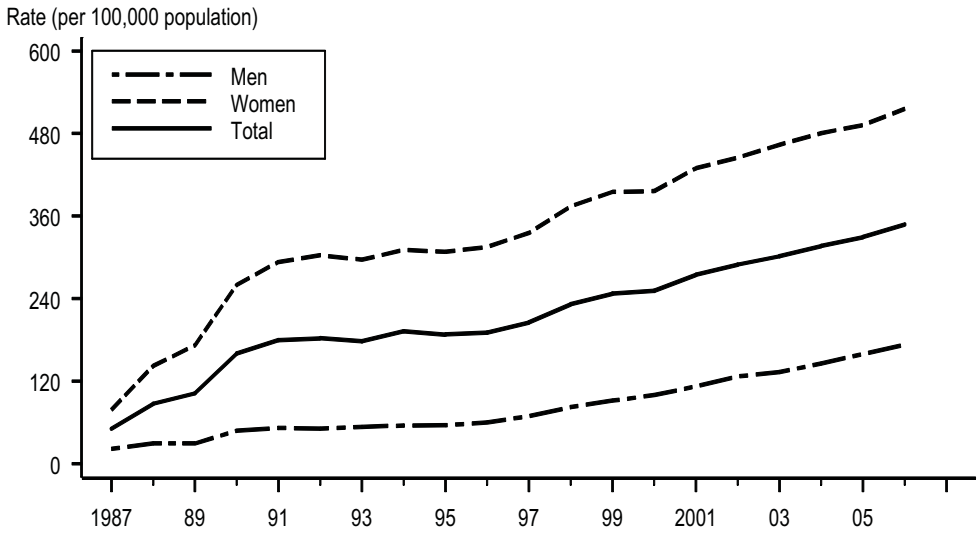
[4] Centers for Disease Control and Prevention. Sexually Transmitted Diseases Treatment Guidelines, 2006. *MMWR*, 2006;55(No.RR-11):38.

[5] National Committee for Quality Assurance (NCQA). HEDIS 2000: Technical Specifications, Washington, DC, 1999, pp. 68-70, 285-286.

[6] Dicker LW, Mosure DJ, Levine WC. Chlamydia positivity versus prevalence: what's the difference? *Sexually Transmitted Diseases* 1998;25:251-3.

[7] Dicker LW, Mosure DJ, Levine WC, et al. Impact of switching laboratory tests on reported trends in *Chlamydia trachomatis* infections. *Am J Epidemiol* 2000;51:430-5.

Figure 1. Chlamydia — Rates: Total and by sex: United States, 1987–2006



Note: As of January 2000, all 50 states and the District of Columbia had regulations requiring the reporting of chlamydia cases.

Figure 2. Chlamydia — Rates by region: United States, 1997–2006

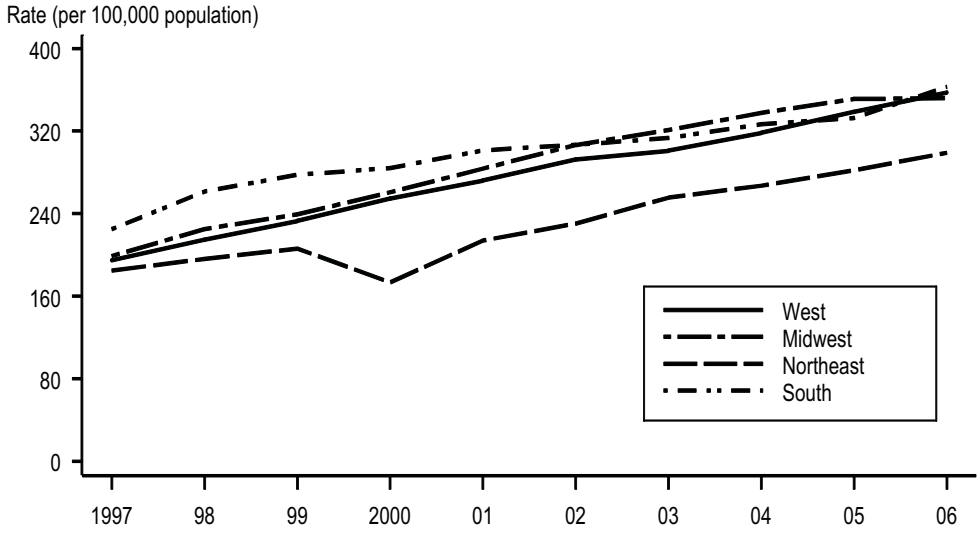
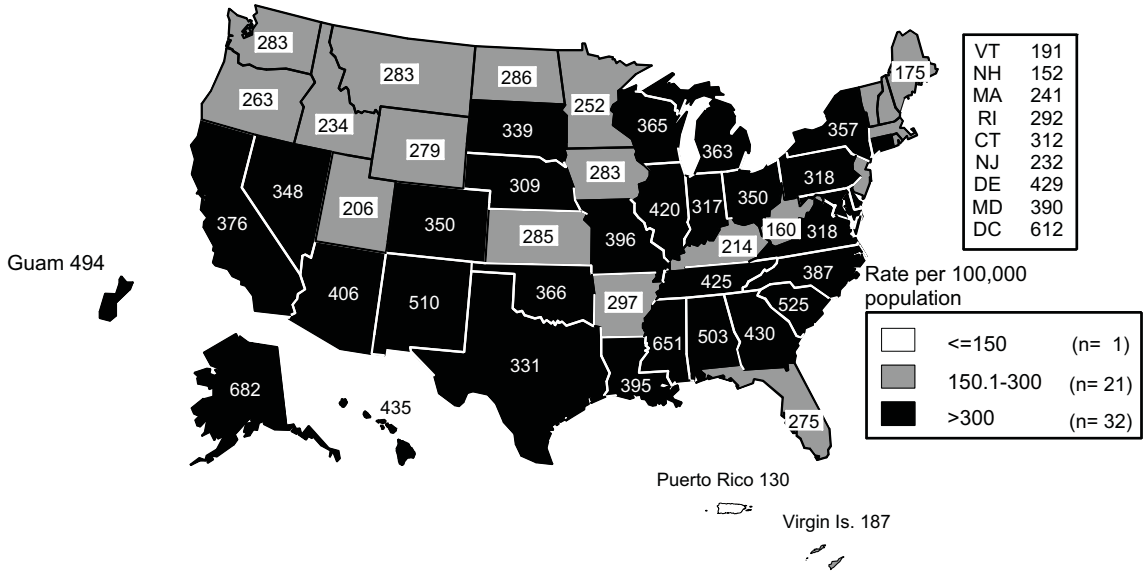


Figure 3. Chlamydia — Rates by state: United States and outlying areas, 2006



Note: The total rate of chlamydia for the United States and outlying areas (Guam, Puerto Rico and Virgin Islands) was 345.0 per 100,000 population. For further information on chlamydia reporting, see Appendix (Chlamydia Morbidity Reporting).

Figure 4. Chlamydia — Rates by county: United States, 2006

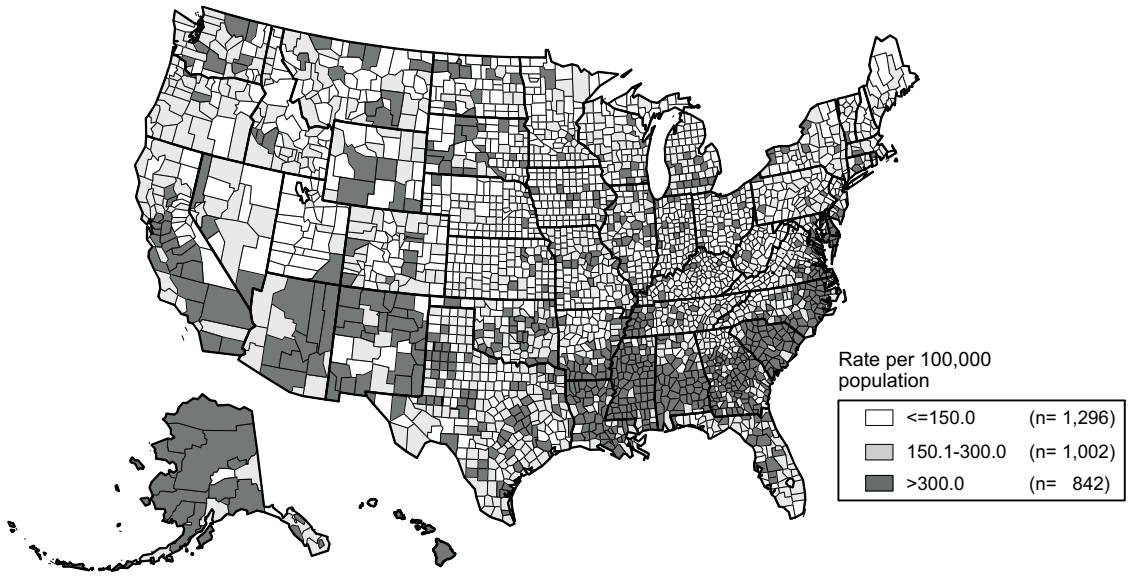


Figure 5. Chlamydia — Cases by reporting source and sex: United States, 1997–2006

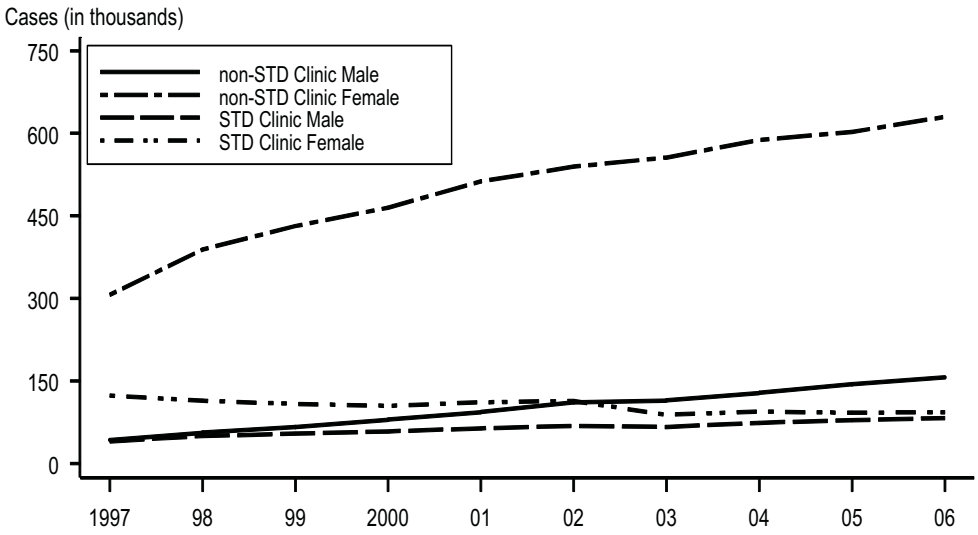


Figure 6. Chlamydia — Rates by race/ethnicity: United States, 1997–2006

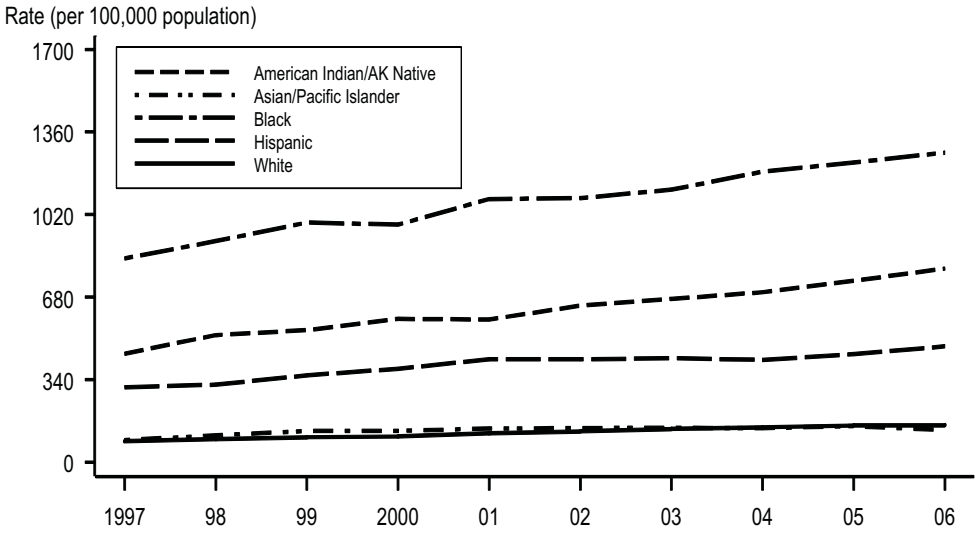


Figure 7. Chlamydia — Age- and sex-specific rates: United States, 2006

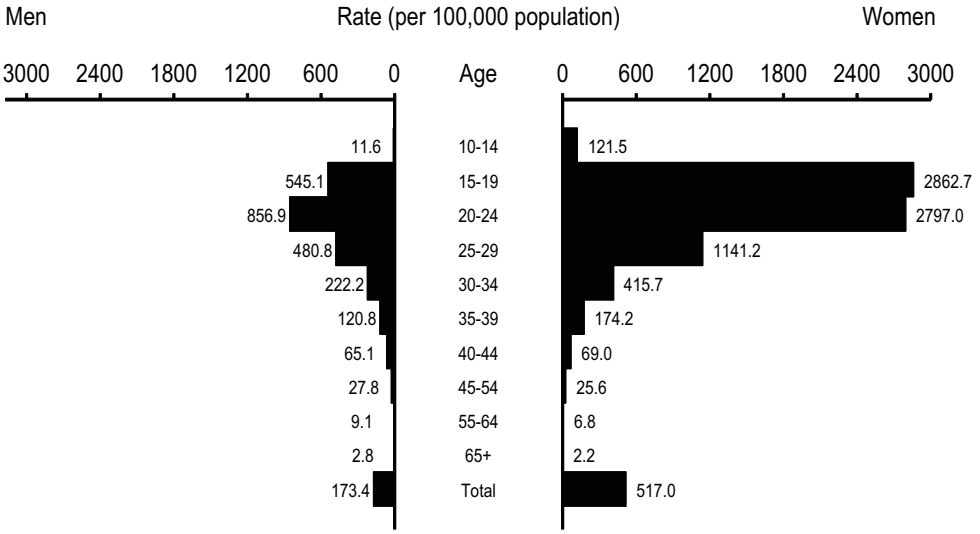
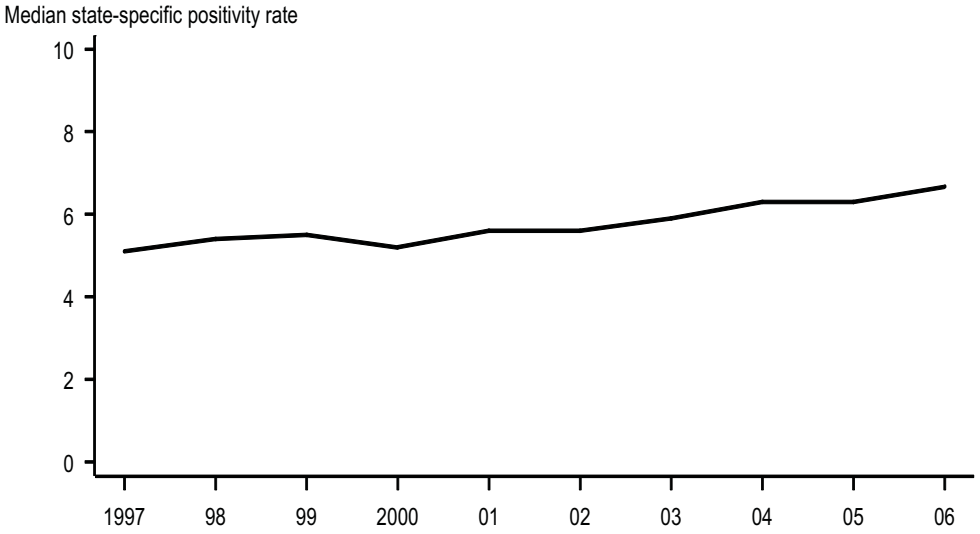


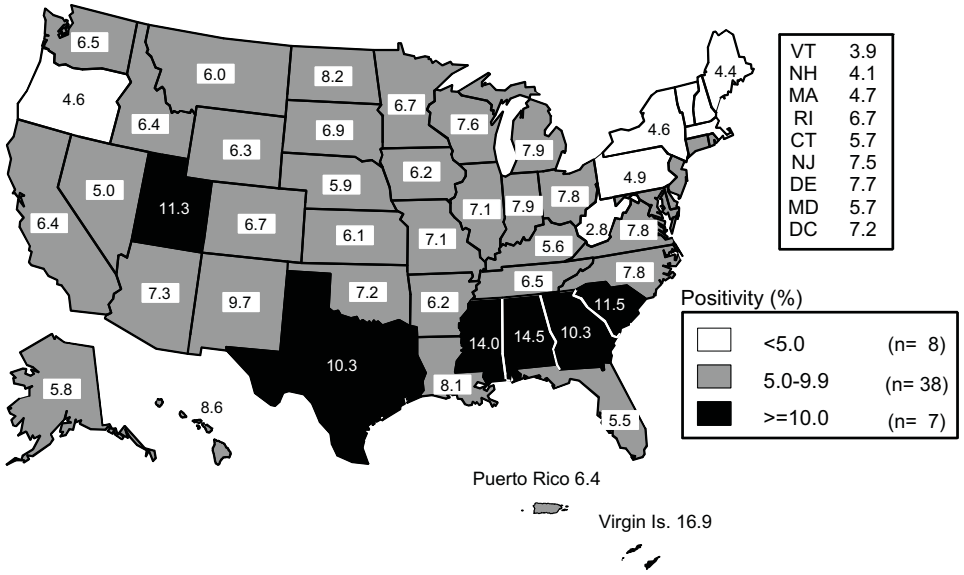
Figure 8. Chlamydia — Median state-specific positivity among 15- to 24-year-old women tested in family planning clinics: United States, 1997–2006



Note: As of 1997, all 10 Health and Human Services (HHS) regions, representing all 50 states, the District of Columbia, and outlying areas, reported chlamydia positivity data. See Appendix for definitions of HHS regions.

SOURCE: Regional Infertility Prevention Projects; Office of Population Affairs; Local and State STD Control Programs; Centers for Disease Control and Prevention

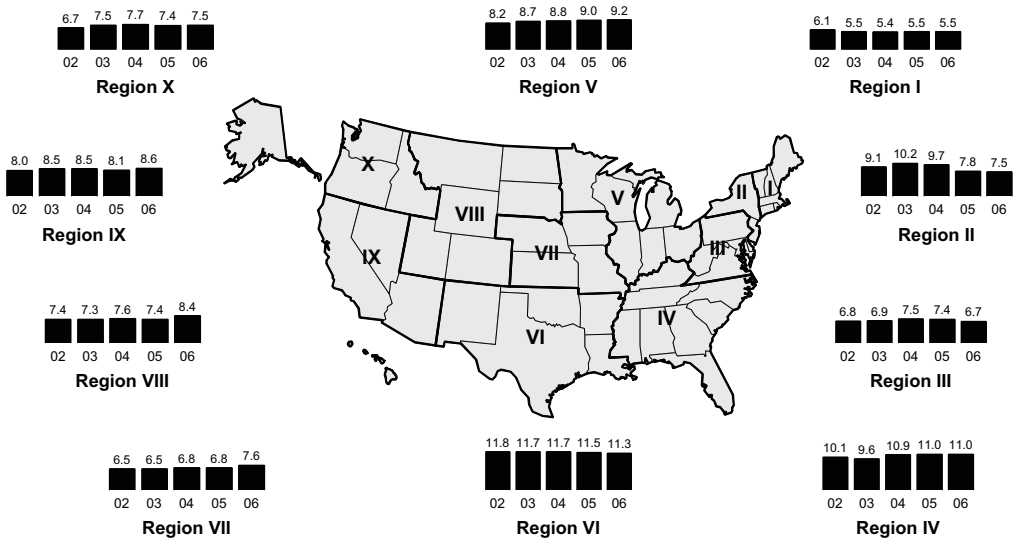
Figure 9. Chlamydia — Positivity among 15- to 24-year-old women tested in family planning clinics by state: United States and outlying areas, 2006



Note: Includes states and outlying areas that reported chlamydia positivity data on at least 500 women aged 15-24 years screened during 2006.

SOURCE: Regional Infertility Prevention Projects; Office of Population Affairs; Local and State STD Control Programs; Centers for Disease Control and Prevention

Figure 10. Chlamydia — Trends in positivity among 15- to 24-year-old women tested in family planning clinics by HHS region, 2002–2006



Note: Trends adjusted for changes in laboratory test method and associated increases in test sensitivity. See Appendix (Chlamydia, Gonorrhea, and Syphilis Prevalence Monitoring) for more information. See Appendix for definitions of Health and Human Services (HHS) regions.

SOURCE: Regional Infertility Prevention Projects; Office of Population Affairs; Local and State STD Control Programs; Centers for Disease Control and Prevention

Gonorrhea

Background

Gonorrhea is the second most commonly-reported notifiable disease in the United States. Infections due to *Neisseria gonorrhoeae*, like those resulting from *Chlamydia trachomatis*, are a major cause of PID in the United States. PID can lead to serious outcomes in women such as tubal infertility, ectopic pregnancy, and chronic pelvic pain. In addition, epidemiologic and biologic studies provide strong evidence that gonococcal infections facilitate the transmission of HIV infection.[1]

From 1975 through 1997, the national gonorrhea rate declined 74% following implementation of the national gonorrhea control program in the mid-1970s (Table 1). Gonorrhea rates subsequently appeared to plateau for several years. However, rates increased for the second consecutive year, with 358,366 cases of gonorrhea reported in the United States in 2006 (Figure 11 and Table 1).

Increases in gonorrhea rates in 8 western states from 2000 to 2005 have been described among a wide variety of populations in the affected states.[2] Increases in quinolone-resistant *Neisseria gonorrhoeae* (QRNG) in 2006 led to changes in national guidelines that now limit the recommended treatment of gonorrhea to a single class of drug, the cephalosporins.[3] The combination of increases in gonorrhea morbidity with increases in resistance and decreased treatment options have increased the need for better understanding of the epidemiology of gonorrhea.

Although gonorrhea case reporting is useful for monitoring trends in gonorrhea, true increases or decreases in disease may be masked by changes in screening practices (affected by concomitant testing for chlamydia and broader use of urine-based testing), use of diagnostic tests with differing test performance, and changes in reporting practices.[4]

For most areas, the number of gonorrhea cases reported to CDC is affected by many factors, in addition to the occurrence of the infection within the population. As with reporting of other STDs, reporting of gonorrhea cases to CDC is incomplete.[5] For these reasons, supplemental data on gonorrhea prevalence in persons screened in a variety of different settings are useful in assessing disease burden in selected populations.

Gonorrhea – United States

In 2006, 358,366 cases of gonorrhea were reported in the United States. The rate of reported gonorrhea in the United States was 120.9 cases per 100,000 population in 2006 (Figure 11 and Table 1), an increase of 5.5% since 2005. Gonorrhea rates increased in 2006 for the second consecutive year.

Gonorrhea by Region

As in previous years, in 2006 the South had the highest gonorrhea rate among the four regions of the country. Although the gonorrhea rate in the South declined for many years, in 2006 it rose by 12.3% from 2005 to a rate of 159.2 cases per 100,000 population. The rate in the West continued

to increase, with an increase of 31.8% from 2002 to 2006. In contrast, the rate in the Northeast decreased by 21.2% from 93.6 cases per 100,000 population in 2002 to 73.8 in 2006. The rate in the Midwest (142.2 in 2002 and 136.9 in 2006) has shown minimal change (Figure 13 and Table 13).

An evaluation of increases in gonorrhea in eight western states suggested that increases were likely due to a variety of factors such as changes in testing practices (increased volume and use of more sensitive tests) as well real increases in disease.[2]

Gonorrhea by State

In 2006, only four states and Puerto Rico had gonorrhea rates below the HP2010 national target of 19 cases per 100,000 population (Figure 14 and Tables 12 & 13).[6] Unfortunately this is two fewer states than met the HP2010 target in 2005.

Gonorrhea by Metropolitan Statistical Area (MSA)

The overall gonorrhea rate in the 50 most populous MSAs was 131.1 cases per 100,000 population in 2006. This is a 3.3% increase from 2005. All of these MSAs had rates higher than the HP2010 target of 19 cases per 100,000 population (Table 17). In 2006, 58.3% of gonorrhea cases were reported by these MSAs. Similar to previous years, in 2006 the total gonorrhea rate among females in these MSAs (130.1) remained similar to that among males (131.6) (Tables 18 and 19).

Gonorrhea by County

In 2006, 1,234 (39.3%) of 3,140 counties in the United States had gonorrhea rates at or below the HP2010 national target of 19 cases per 100,000 population. Rates per 100,000 population were between 19 and 100 in 1,134 counties (36.1%), and greater than 100 in 772 counties (24.6%). The majority of counties with greater than 100 cases per 100,000 population were located in the South (Figure 15).

In 2006, 50% of reported gonorrhea cases occurred in just 68 counties or independent cities (Table 16).

Gonorrhea by Reporting Source

In 2006, 26.8% of gonorrhea cases were reported by STD clinics (Table A2). This is a change from 2002, when 35.2% of gonorrhea cases were reported by STD clinics. In 2006, a higher proportion of male gonorrhea cases were reported from STD clinics than female cases (37.9% and 16.7% respectively) (Figure 16).

Gonorrhea by Race/Ethnicity

Changes in gonorrhea rates between 2002 and 2006 differed by race/ethnic group. Gonorrhea rates decreased by 7.7% during this time period for African Americans from 713.7 to 658.4 cases per 100,000 population. However, the gonorrhea rate among African Americans increased by 6.3% between 2005 and 2006, the first increase for this population since 1998.

Other racial and ethnic groups have also seen increases in gonorrhea rates. Since 2002, the gonorrhea rate among American Indian/Alaska Natives increased 22.8%, whites increased 17.7%, and Hispanics increased 11.8%. The gonorrhea rate among Asian/Pacific Islanders decreased 1.4% between 2002 and 2006(Figure 17 and Table 21B).

In 2006, the gonorrhea rate among African Americans was 18 times greater than the rate for whites. This is a decrease from 2002 when there was a 23-fold difference in rates. Gonorrhea rates were 3.8 times greater among American Indian/Alaska Natives, and 2.1 times greater among Hispanics than among whites in 2006. Rates among Asian/Pacific Islanders were

1.7 times lower than among whites in 2006.

Gonorrhea by Sex

Prior to 1996, rates of gonorrhea among men were higher than rates among women. For the sixth consecutive year, however, gonorrhea rates among women are slightly higher than among men (Figure 12). In 2006, the gonorrhea rate among women was 124.3 and the rate among men was 116.8 cases per 100,000 population (Tables 14 and 15).

Gonorrhea by Region and Sex

Between 2002 and 2006, gonorrhea rates among women increased 39.3% in the West and 1.3% in the South. Gonorrhea rates among women decreased 22.0% in the Northeast and were unchanged in the Midwest during the same time period.

Between 2002 and 2006, gonorrhea rates among men increased 25.7% in the West, and decreased 20.1% in the Northeast, 8.1% in the Midwest, and 4.8% in the South (Tables 14 and 15).

Gonorrhea by Age and Sex

In 2006, gonorrhea rates continued to be highest among adolescents and young adults. The overall gonorrhea rate was highest for the 20- to 24-year-old age group (527.5), which is over four times higher than the national gonorrhea rate. Among females in 2006, 15- to 19- and 20- to 24-year-old women had the highest rates of gonorrhea (647.9 and 605.7, respectively); 20- to 24-year-old males had the highest rate (454.1) (Figure 18 and Table 20).

Although the gonorrhea rate among those 15 to 19 years of age decreased in recent years, in 2006 this rate increased 6.3%. Similar slight increases were seen among other younger age groups (4.4% among those 20 to 24 years of age and 8.1% among those 25 to 29 years of age) (Table 20). Similar increases were seen among both males and females in all age groups 29 years of age and younger (8.4% for males and 5.3% for females ages 15 to 19 years of age; 4.5% and 4.4% for males and females aged 20 to 24 years of age, respectively; and 7.6% for males and 8.8% for females aged 25 to 29 years of age) (Figures 19 and 20, and Table 20).

Gonorrhea by Race/Ethnicity and Sex

From 2002 to 2006 the overall rate in African-American men decreased 8.8% from 770.7 per 100,000 population to 702.7 despite an increase of 6.8% between 2005 and 2006. Increases were seen in this time period for African-American men in most age groups. The overall rate in American Indian/Alaska Native men increased 8.5% between 2005 and 2006, 7.4% among Hispanic men, and 2.5% among white men. Gonorrhea rates among Asian/Pacific Islander men decreased 24.0% between 2005 and 2006 (Table 21B).

Between 2002 and 2006 the overall rate among African-American women decreased 6.6% from 662.1 per 100,000 population to 618.1. However, increases of 5.8% were seen between 2005 and 2006 overall for African-American women and in most age groups. Currently, 15- to 19-year-old African-American women still have the highest gonorrhea rate of any group (2,898.1 per 100,000 population).

Rates among Hispanic women increased 6.5% between 2005 and 2006, 4.7% among white women, and 3.5% among American Indian/Alaska Native women. A decrease of 8.1% was seen among Asian/Pacific Island women (Table 21B).

Gonorrhea Prevalence Monitoring Projects

Gonorrhea test positivity data are available from a variety of settings. Screening criteria

and practices may vary by state and over time.

Family Planning Clinics

In 2006, the median state-specific gonorrhea test positivity among 15- to 24-year-old women screened in selected family planning clinics in 43 states, Puerto Rico, the District of Columbia, and the Virgin Islands was 1.1% (range 0.0% to 4.8%) (Figure 21). Median gonorrhea positivity in family planning clinics has shown minimal change in recent years (0.9% in 2002).

Prenatal Clinics

For women attending selected prenatal clinics in 20 states, Puerto Rico, and the Virgin Islands, the median positivity was 1.0% (range 0.0% to 3.2%) (Figure F). Median gonorrhea positivity in prenatal clinics has shown minimal change in recent years (0.9% in 2002).

National Job Training Program

For 16- to 24-year-old women entering the National Job Training Program in 36 states, Puerto Rico, and the District of Columbia in 2006, the median state-specific gonorrhea prevalence was 2.4% (range 0.0% to 7.1%) in 2006 (Figure M). Among men entering the program from 20 states in 2006, the median state-specific gonorrhea positivity was 3.6% (range 0.0% to 6.2%) (Figure N).

Juvenile Corrections

In 2006, the median positivity for gonorrhea in women entering 37 juvenile corrections facilities was 3.8% (range 0.0% to 12.2%), and in men entering 62 juvenile corrections facilities was 0.9% (range 0.0% to 4.5%) (Table CC).

Gonococcal Isolate Surveillance Project (GISP)

Antimicrobial resistance remains an important consideration in the treatment of gonorrhea.[3,7-14] In 1986, the Gonococcal Isolate Surveillance Project (GISP), a national sentinel surveillance system, was established to monitor trends in antimicrobial susceptibilities of strains of *Neisseria gonorrhoeae* in the United States among selected STD clinics or sites[14] (Figure 22).

Overall, 25.6% of isolates collected in 2006 in 28 GISP sites were resistant to penicillin, tetracycline, ciprofloxacin, or some combination of those antibiotics (Figure 23).

Quinolone-resistant N. Gonorrhoeae (QRNG)

Resistance to ciprofloxacin (a fluoroquinolone in the quinolone family of antimicrobials) was first identified in GISP sites in 1991. From 1991 through 1998, fewer than nine quinolone-resistant *N. gonorrhoeae* (QRNG) isolates were identified each year, and such isolates were identified in only a few GISP clinics. However since 1999 QRNG prevalence has steadily increased, first in Hawaii and in the Pacific Islands, then in the Western states, and then among MSM.[8-11,13,15] In 2006, 843 (13.8% of the total) GISP isolates were identified as QRNG, an increase from 2005, when 581 (9.4% of the total) isolates were identified as QRNG. QRNG isolates were submitted from 27 of 28 GISP clinics in 2006 (Figures 22 and 24).

QRNG by Region

In 2006, 34 (35.8%) of 95 isolates submitted from Honolulu demonstrated ciprofloxacin-resistance, up from 17 (19.3%) of 88 isolates in 2005.

In California, increases in the number of isolates resistant to ciprofloxacin were identified in all GISP sites. In Los Angeles,

22.7% of isolates in 2006 were ciprofloxacin-resistant compared with 14.5% in 2005; in Long Beach, 28.4% were resistant in 2006 compared with 23.5% in 2005; in Orange County, 34.6% were resistant in 2006 compared with 27.5% in 2005; in San Diego, 35.1% were resistant in 2006 compared to 26.2% with 2005; and in San Francisco, 44.5% were resistant in 2006 compared with 31.3% in 2005.

Similarly in other West Coast sites, Denver, Las Vegas, Phoenix, Portland, and Seattle the prevalence of QRNG remains high. Between 2005 and 2006, in Denver, the prevalence increased to 15.7% from 10.9%; in Las Vegas, increased to 8.7% from 5.4%; in Phoenix, to 11.9% from 7.1%; in Portland, to 27.2% from 23.1%; and in Seattle the prevalence almost tripled to 31.8% from 11.6%.

In the South, increases in the prevalence of QRNG continued to be observed in Atlanta, Dallas, Greensboro, Miami, New Orleans, and Oklahoma City. Between 2005 and 2006 in Atlanta, QRNG resistance increased to 5.7% from 3.8%; in Dallas, the prevalence doubled to 6.1% from 3.2%; in Greensboro it increased to 1.7% from 0.6%; in Miami it doubled to 19.8% from 9.1%; in New Orleans, the prevalence of QRNG increased to 10.2% from 6.3%; and in Oklahoma City, it increased to 4.3% from 2.3%. In Baltimore, the prevalence was slightly down to 1.4% in 2006 from 3% in 2005. In Birmingham, the prevalence remained the same at 1.1%.

In the Midwest and Northeast, increases in prevalence of QRNG were seen in Cleveland and Philadelphia. In Cleveland, the prevalence of isolates that were resistant to ciprofloxacin increased to 3.1% in 2006 from 2.8% in 2005 and in Philadelphia, the prevalence more than doubled to 30.3% in 2006 from 14.3% in 2005. There was a slight decrease in QRNG prevalence in Chicago to 4.1% in 2006 from 4.7% in 2005; in Cincinnati to 0.7% from 1%; and in Minneapolis to 5.7% from 8%. The prevalence remained the same for Detroit at 0.3%.

Sites that identified ciprofloxacin-resistant isolates for the first time in GISP in 2006 included Albuquerque and New York City (which joined GISP in 2006). Tripler Army Medical Center did not identify any QRNG isolates in 2006 (Figure 22).

Additional information on antimicrobial susceptibility data and treatment recommendations from state and local health departments may be found in the 2006 GISP report[9] or the GISP website: **http://www.cdc.gov/std/GISP**

QRNG by Sexual Behavior

The number of QRNG isolates from MSM has continued to increase in 2006 to 499 (39% of all specimens from MSM) from 387 (29%) isolates in 2005. During the same time period, the number of these isolates from heterosexuals almost doubled from 183 (3.8%) to 328 (7%) (Figure 25).

As a result of this continued high prevalence of QRNG among MSM and more recently among heterosexuals, in April 2007, CDC revised the *2006 CDC STD Treatment Guidelines*. Fluoroquinolones are no longer recommended for use in the treatment of gonorrhea and associated conditions such as pelvic inflammatory disease.[12]

Other Antimicrobial Susceptibility Testing

To date, cephalosporin resistance has not been identified in GISP, and the proportion of GISP isolates demonstrating decreased susceptibility to ceftriaxone or cefixime has remained very low over time. In 2001, three GISP isolates with decreased susceptibility to cefixime were also found to be resistant to penicillin, tetracycline, and ciprofloxacin; such multi-drug resistance in

combination with decreased susceptibility to cefixime had not previously been identified in the United States.[13] In 2004, two GISP isolates had decreased susceptibility to cefixime; one of those isolates demonstrated the same resistance pattern as the 2001 isolates described above. In 2005, there were no GISP isolates that had decreased susceptibility to ceftriaxone or cefixime; in 2006, one GISP isolate had decreased susceptibility to cefixime only.

The proportion of GISP isolates demonstrating elevated minimum inhibitory concentrations (MICs) to azithromycin has been increasing since GISP began monitoring azithromycin susceptibility in 1992. In 2005, there was a change in the media used for antimicrobial susceptibility testing which resulted in an observational shift of the MIC curve for azithromycin. Thus, the azithromycin MIC for decreased susceptibility was changed from $\geq$ 1.0 μg/ml to $\geq$ 2.0 μg/ml from 2005 and thereafter. In 2006, 0.2% (14/6,089) isolates had azithromycin MIC $\geq$ 2.0 μg/ml which is a slight decrease from 0.6% (35/6,199) isolates from 2005.

Gonorrhea Among Special Populations

Additional information about gonorrhea in racial and ethnic minority populations, adolescents, MSM, and other at risk populations can be found in the **Special Focus Profiles**.

Gonorrhea Summary

In summary, the national gonorrhea rate increased in 2006 for the second consecutive year. Gonorrhea rates increased in all regions of the country except the Northeast, among most age groups, and among all race/ethnic groups except Asian/Pacific Islanders.

Of particular concern are increases noted for the first time since 1998 among African Americans, the population with the greatest burden of disease and experiencing the greatest disparity as compared to other race/ethnic groups.

Rates among adolescent and young adults had been decreasing in recent years, but 2006 data demonstrate increases in these populations as well.

In addition, 2006 GISP data shows notable increases in QRNG prevalence, especially in the Midwest and Northeast; regions where previously it had been lower. As a response, modifications were made to the *2006 CDC STD Treatment Guidelines*.[3]

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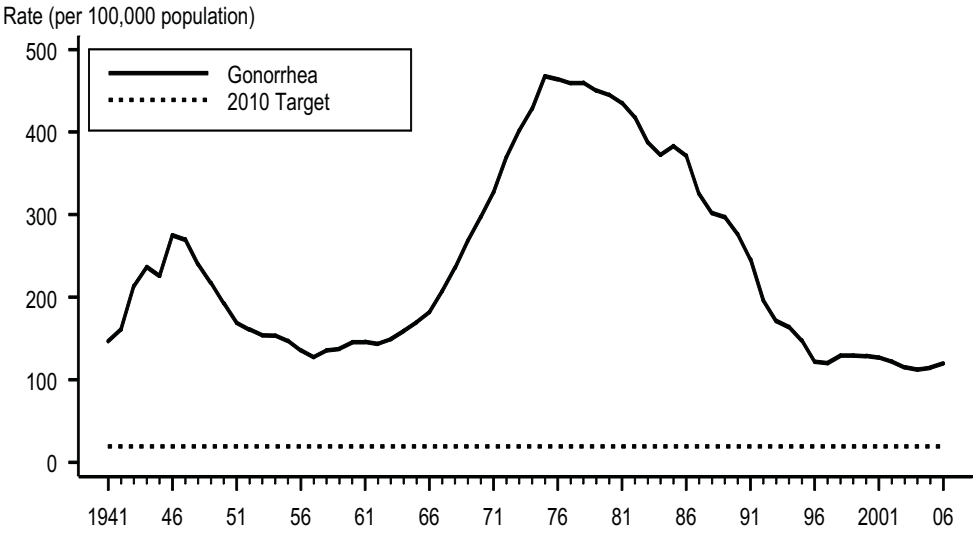
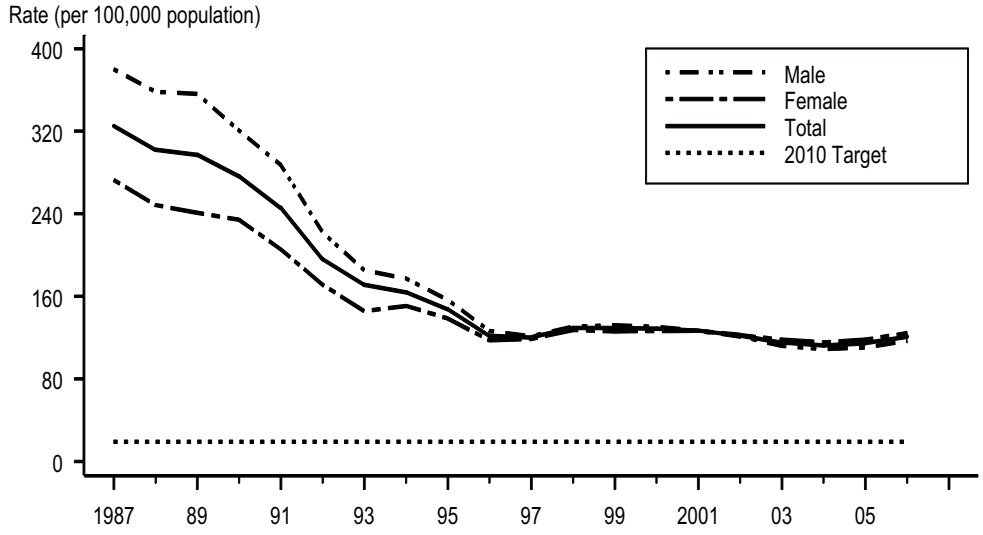
Figure 11. Gonorrhea — Rates: United States, 1941–2006 and the Healthy People 2010 target



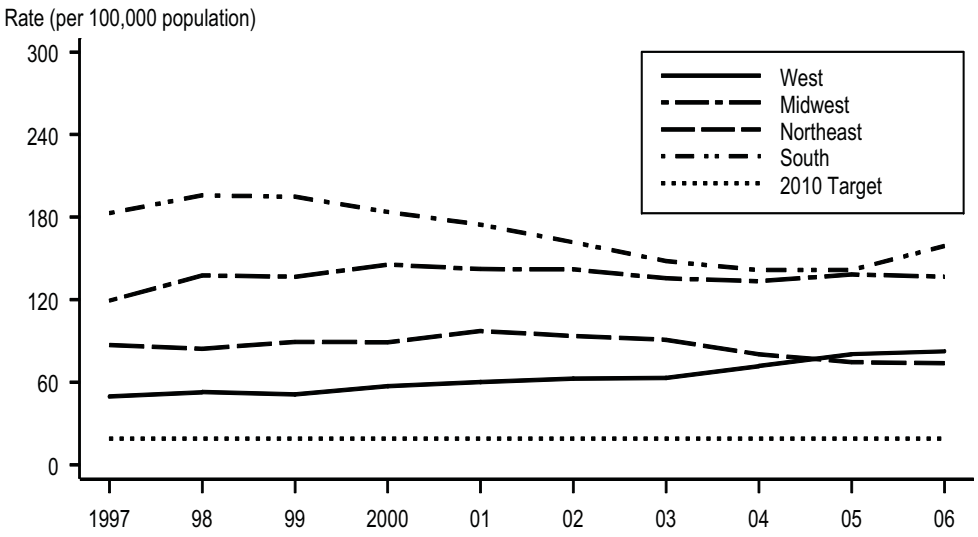
Note: The Healthy People 2010 target for gonorrhea is 19.0 cases per 100,000 population.

Figure 12. Gonorrhea — Rates: Total and by sex: United States, 1987–2006 and the Healthy People 2010 target



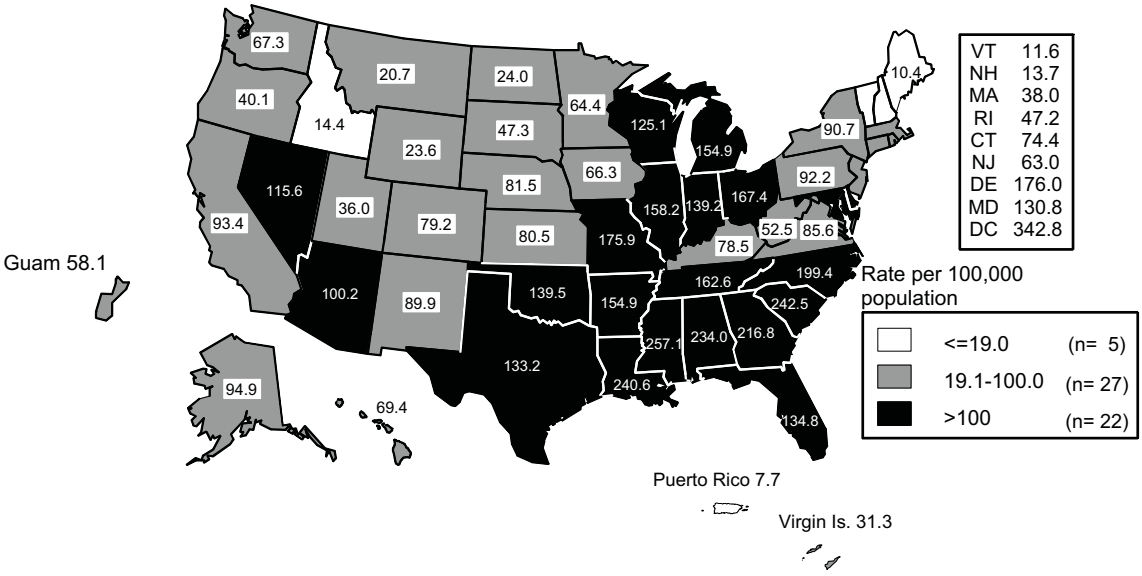
Note: The Healthy People 2010 target for gonorrhea is 19.0 cases per 100,000 population.

Figure 13. Gonorrhea — Rates by region: United States 1997–2006 and the Healthy People 2010 target



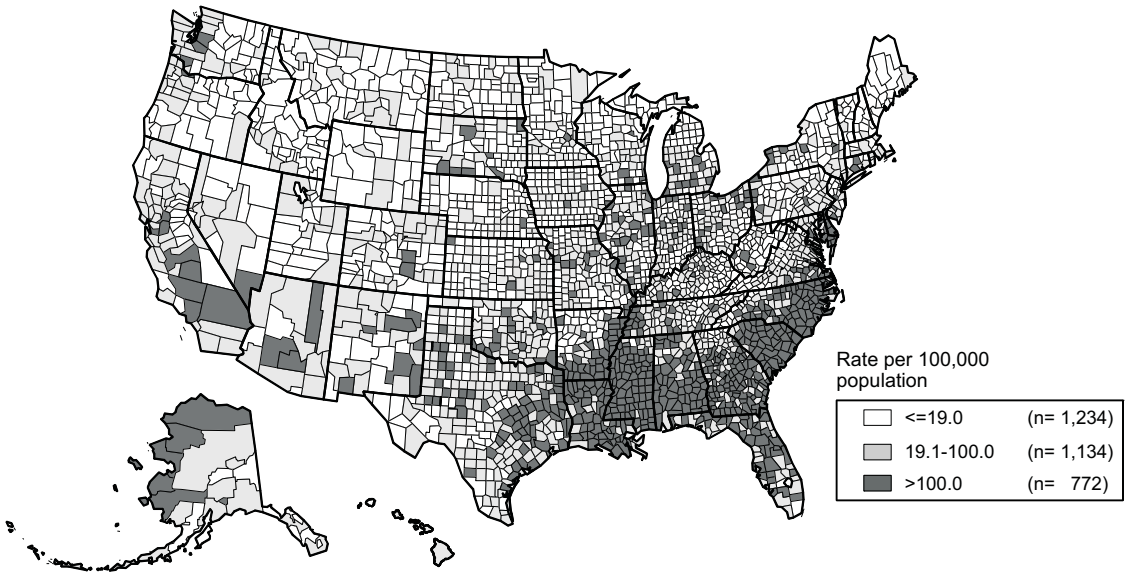
Note: The Healthy People 2010 target for gonorrhea is 19.0 cases per 100,000 population.

Figure 14. Gonorrhea — Rates by state: United States and outlying areas, 2006



Note: The total rate of gonorrhea for the United States and outlying areas (Guam, Puerto Rico and Virgin Islands) was 119.4 per 100,000 population. The Healthy People 2010 target is 19.0 cases per 100,000 population.

Figure 15. Gonorrhea — Rates by county: United States, 2006



Note: The Healthy People 2010 target for gonorrhea is 19.0 cases per 100,000 population.

Figure 16. Gonorrhea — Cases by reporting source and sex: United States, 1997–2006

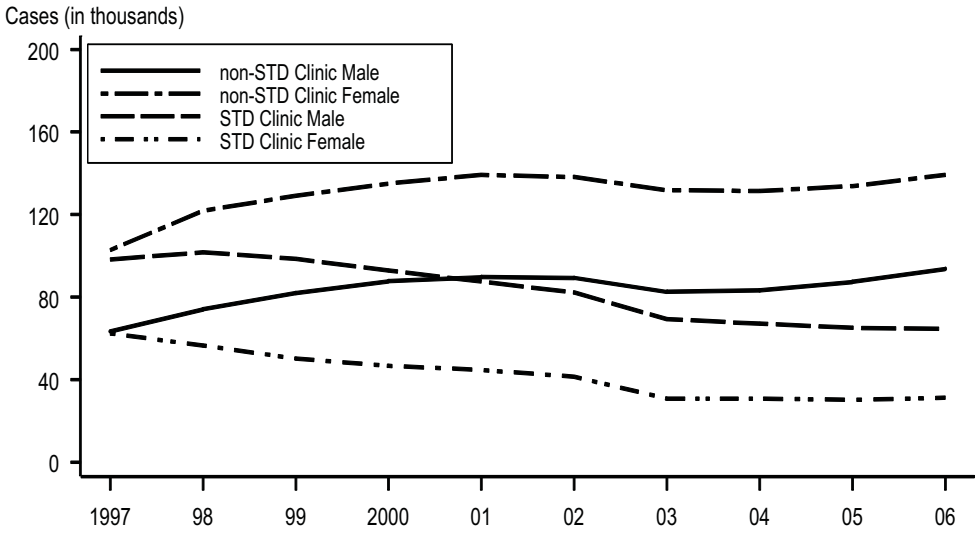


Figure 17. Gonorrhea — Rates by race/ethnicity: United States, 1997–2006

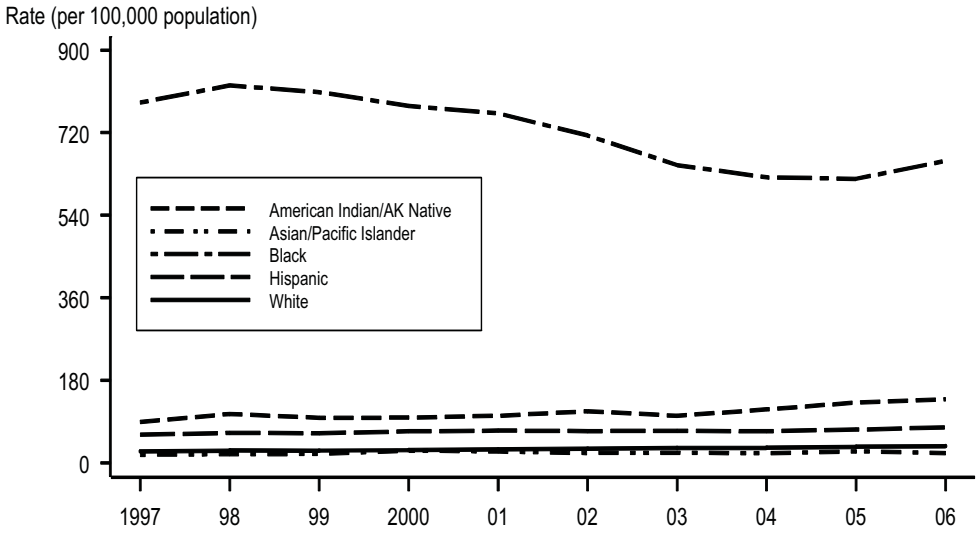


Figure 18. Gonorrhea — Age- and sex-specific rates: United States, 2006

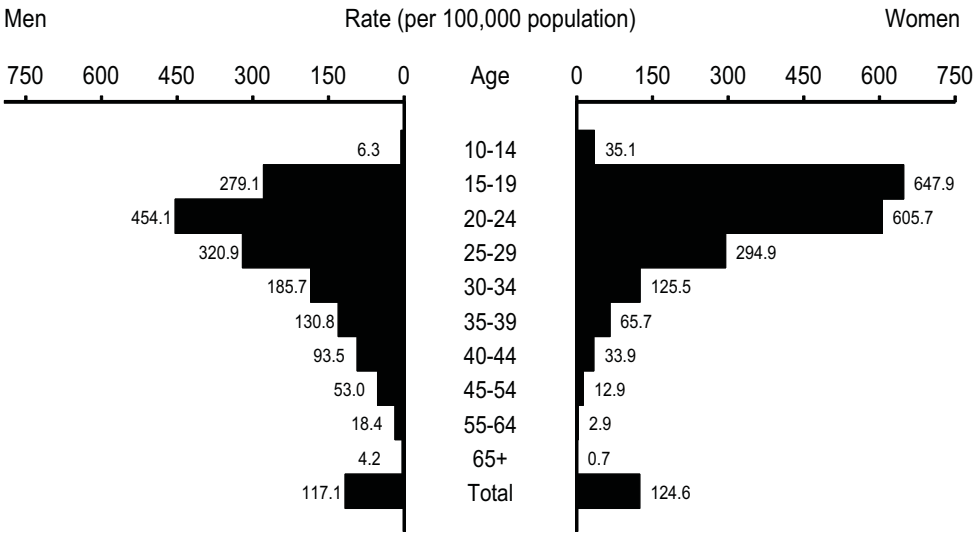


Figure 19. Gonorrhea — Age-specific rates among women 15 to 44 years of age: United States, 1997–2006

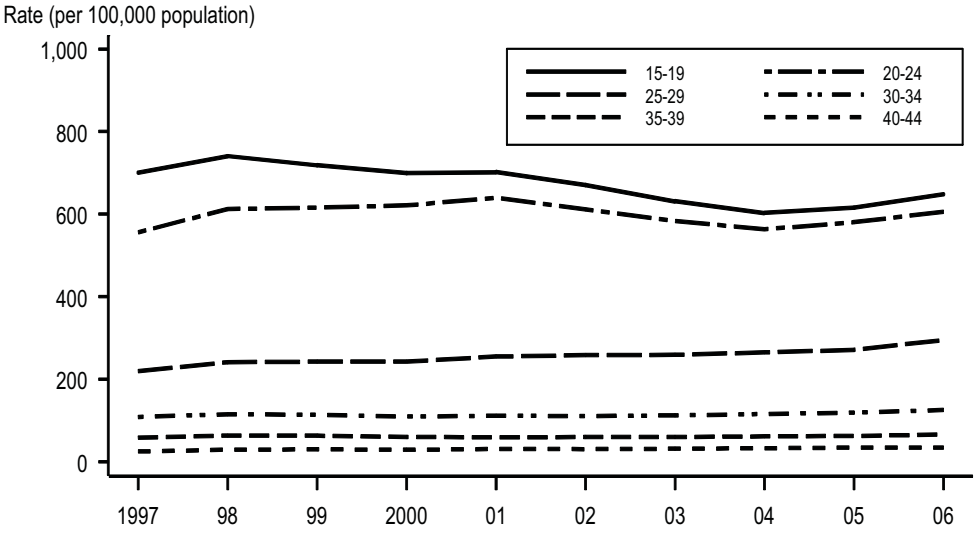


Figure 20. Gonorrhea — Age-specific rates among men 15 to 44 years of age: United States, 1997–2006

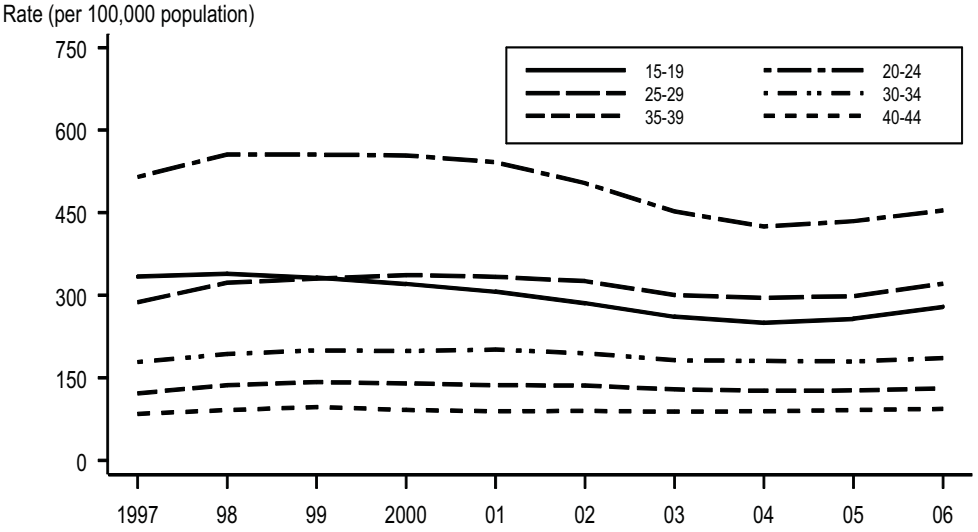
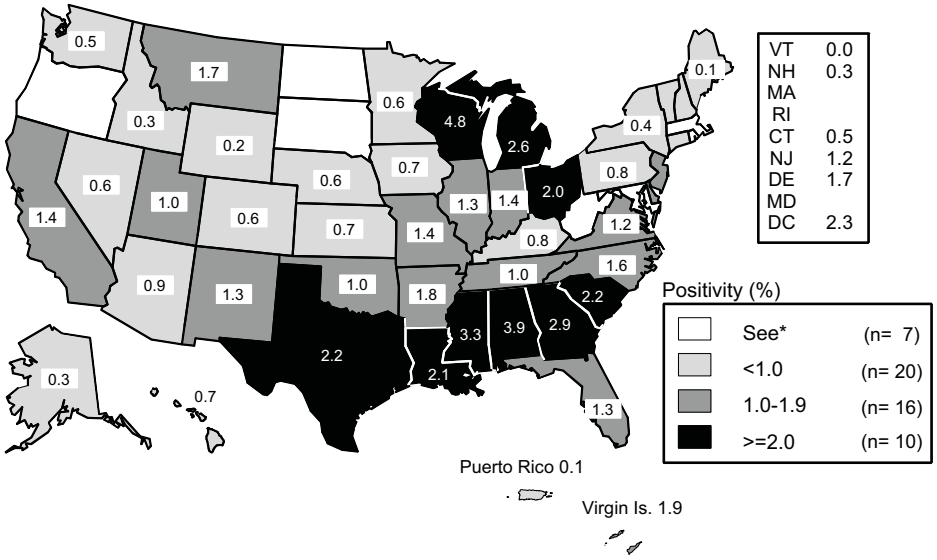


Figure 21. Gonorrhea — Positivity among 15- to 24-year-old women tested in family planning clinics by state: United States and outlying areas, 2006

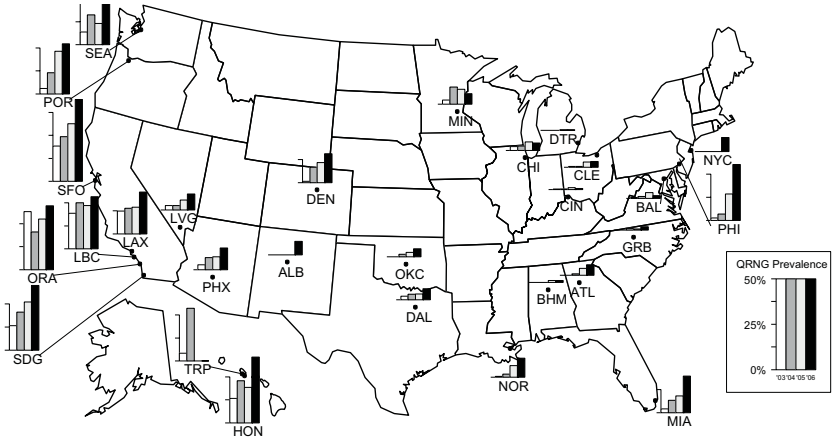


*States/areas not meeting minimum inclusion criteria.

Note: Includes states and outlying areas that reported positivity data on at least 500 women aged 15-24 years screened during 2006.

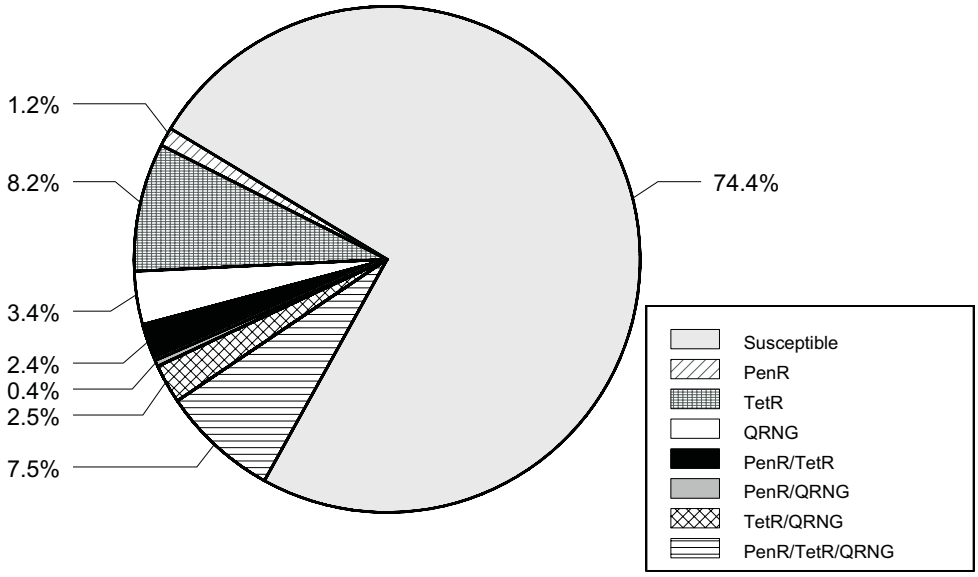
SOURCE: Regional Infertility Prevention Projects; Office of Population Affairs; Local and State STD Control Programs; Centers for Disease Control and Prevention

Figure 22. Gonococcal Isolate Surveillance Project (GISP) — Prevalence of ciprofloxacin resistant *Neisseria gonorrhoeae* by GISP site, 2003-2006



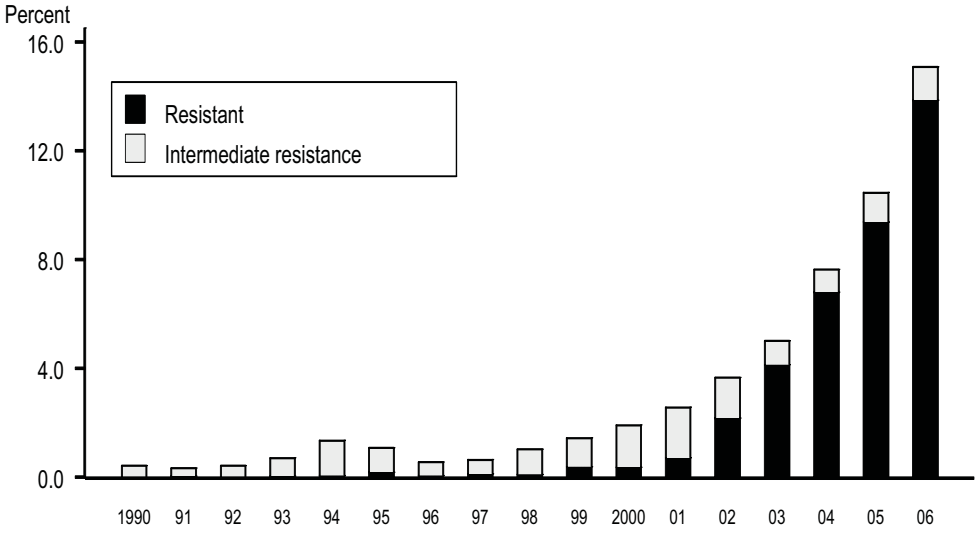
Note: Not all clinics participated in GISP for the last 4 years. Clinics include: ALB=Albuquerque, NM; ATL=Atlanta, GA; BAL=Baltimore, MD; BHM=Birmingham, AL; CHI=Chicago, IL; CIN=Cincinnati, OH; CLE=Cleveland, OH; DAL=Dallas, TX; DEN=Denver, CO; DTR=Detroit, MI; HON=Honolulu, HI; LAX=Los Angeles, CA; LBC=Long Beach, CA; LVG=Las Vegas, NV; MIA=Miami, FL; MIN=Minneapolis, MN; GRB=Greensboro, NC; NOR=New Orleans, LA; NYC=New York City, NY; OKC=Oklahoma City, OK; ORA=Orange County, CA; PHI=Philadelphia, PA; PHX=Phoenix, AZ; POR=Portland, OR; SDG=San Diego, CA; SEA=Seattle, WA; SFO=San Francisco, CA; and TRP=Tripler Army Medical Center, HI.

Figure 23. Gonococcal Isolate Surveillance Project (GISP) — Penicillin, tetracycline, and ciprofloxacin resistance among GISP isolates, 2006



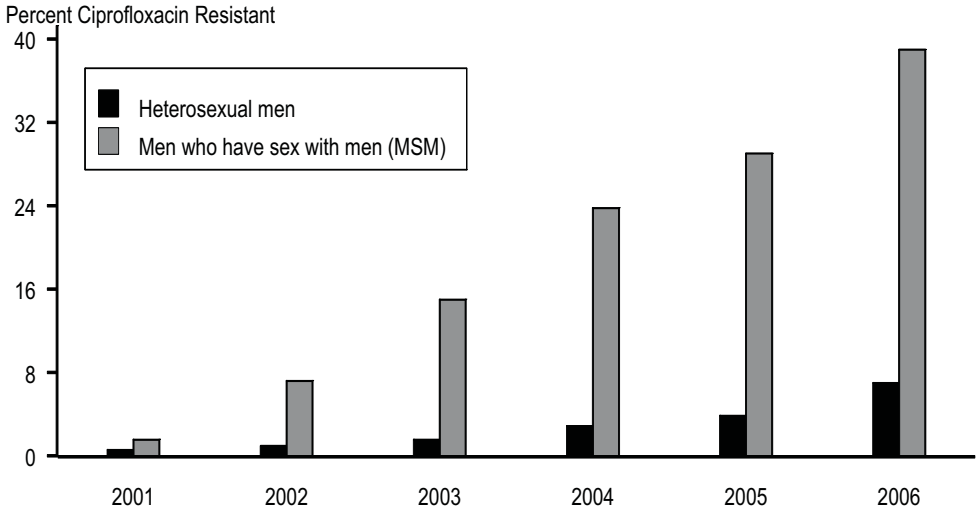
Note: PenR=penicillinase producing *N. gonorrhoeae* and chromosomally mediated penicillin-resistant *N. gonorrhoeae*; TetR=chromosomally and plasmid mediated tetracycline-resistant *N. gonorrhoeae*; QRNG=ciprofloxacin resistant *N. gonorrhoeae.*

Figure 24. Gonococcal Isolate Surveillance Project (GISP) — Percent of *Neisseria gonorrhoeae* isolates with resistance or intermediate resistance to ciprofloxacin, 1990–2006



Note: Resistant isolates have ciprofloxacin MICs ≥ 1 μg/ml. Isolates with intermediate resistance have ciprofloxacin MICs of 0.125 - 0.5 μg/ml. Susceptibility to ciprofloxacin was first measured in GISP in 1990.

Figure 25. Gonococcal Isolate Surveillance Project (GISP) — Percent of *Neisseria gonorrhoeae* isolates with resistance to ciprofloxacin by sexual behavior, 2001–2006



Syphilis

Background

Syphilis, a genital ulcerative disease, causes significant complications if untreated and facilitates the transmission of HIV. Untreated early syphilis in pregnant women 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 80% of cases.[1]

The rate of primary and secondary (P&S) syphilis reported in the United States decreased during the 1990s; in 2000, the rate was the lowest since reporting began in 1941 (Figure 26). The low rate of infectious syphilis and the concentration of the majority of syphilis cases in a small number of geographic areas in the United States led to the development of the CDC's *National Plan to Eliminate Syphilis*, which was announced by Surgeon General David Satcher in October 1999 and revised in May 2006.[2]

Although the rate of P&S syphilis in the United States declined 89.7% between 1990 and 2000, the rate of P&S syphilis increased between 2001 and 2006. Overall increases in rates between 2001 and 2006 were observed primarily among men (from 3.0 cases per 100,000 population to 5.7 cases per 100,000 population). After persistent declines since 1990, the rate of P&S syphilis among women increased from 0.8 cases per 100,000 population in 2004 to 0.9 cases per 100,000 population in 2005 to 1.0 case per 100,000 population in 2006.

Syphilis remains an important problem in the South and in urban areas in other regions of the country. Increases in cases among MSM have occurred and have been characterized by high rates of HIV co-infection and high-risk sexual behavior.[3-7] The estimated proportion of P&S syphilis cases attributable to MSM increased from 4% in 2000 to 62% in 2004.[8,9] In 2005, CDC requested that all state health departments report gender of sex partners for persons with syphilis. In 2006, the first full year for which data are available, 64% of all P&S syphilis cases from 30 areas (29 states and Washington, D.C.) with available information were among MSM.[10]

Syphilis - All Stages (P&S, Early Latent, Late, Late Latent, Congenital)

Between 2005 and 2006, the number of cases of early latent syphilis reported to CDC increased 12.4% (from 8,176 to 9,186), while the number of cases of late and late latent syphilis increased 9.9% (from 16,049 to 17,644) (Table 1). The total number of cases of syphilis (all stages: P&S, early latent, late, late latent, and congenital syphilis) reported to CDC increased 11.0% (from 33,288 to 36,935) between 2005 and 2006 (Table 1).

P&S Syphilis - United States

In 2006, P&S syphilis cases reported to CDC increased to 9,756 from 8,724 in 2005, an increase of 11.8%. The rate of P&S syphilis in the United States in 2006 (3.3 cases per 100,000 population) was 13.8% higher than the rate in 2005 (2.9 cases per 100,000 population), and it is greater than the HP 2010 target of 0.2 case per 100,000 population (Figure 27, Table

1).[11] Between 2005 and 2006, P&S syphilis rates in most age groups increased (Table 32).

P&S Syphilis by Region

The South accounted for 47.1% of the P&S syphilis cases in 2006 and 46.4% in 2005. Between 2005 and 2006, rates increased 13.2% in the South (from 3.8 to 4.3 cases per 100,000 population), 13.0% in the Northeast (from 2.3 to 2.6), and 15.2% in the West (from 3.3 to 3.8); rates remained the same in the Midwest (1.8). The 2006 rates in all regions were greater than the HP 2010 target of 0.2 cases per 100,000 population (Figure 28, Table 25).

P&S Syphilis by State

In 2006, P&S syphilis rates in four states were less than or equal to the HP 2010 target of 0.2 case per 100,000 population (Figure 29, Table 24). Five states and two outlying areas reported five or fewer cases of P&S syphilis in 2006 (Table 24).

P&S Syphilis by Metropolitan Statistical Area (MSA)

The rate of P&S syphilis in 2006 for the 50 most populous MSAs (4.9) exceeded the HP 2010 target of 0.2 case per 100,000 population (Table 29).

P&S Syphilis by County

In 2006, 2,360 of 3,140 counties (75.2%) in the United States reported no cases of P&S syphilis compared with 2,434 (77.5%) in 2005. Of 780 counties reporting at least one case of P&S syphilis in 2006, 7 (0.9%) had rates at or below the HP2010 target of 0.2 cases per 100,000 population. Rates of P&S syphilis were above the HP2010 target for 773 counties in 2006 (Figure 30). These 773 counties (24.6% of the total number of counties in the United States) accounted for 99.9% of the total P&S syphilis cases reported in 2006.

In 2006, half of the total number of P&S syphilis cases were reported from 20 counties and two cities (Table 28).

P&S Syphilis by Reporting Source

Between 1990 and 2006, the proportion of P&S syphilis cases reported from sources other than STD clinics increased from 25.6% to 65% (Figure 31, Table A2). Between 2001 and 2006, the number of cases among males reported from non-STD clinic sources increased sharply while the number from STD clinics remained stable (Figure 31).

P&S Syphilis by Age

In 2006, the rate of P&S syphilis was highest in persons in the 25- to 29-year-old age group (7.8 cases per 100,000 population) (Table 32).

P&S Syphilis by Race/Ethnicity

From 2005 to 2006, the rate of P&S syphilis increased in all racial and ethnic groups. The rate increased 5.6% among non-Hispanic whites (from 1.8 to 1.9), 16.5% among African Americans (from 9.7 to 11.3), 12.5% among Hispanics (from 3.2 to 3.6), 18.2% among Asian/Pacific Islanders (from 1.1 to 1.3), and 37.5% among American Indian/Alaska Natives (from 2.4 to 3.3) (Table 33B).

P&S Syphilis by Sex

The rate of P&S syphilis increased 11.8% among men (from 5.1 cases to 5.7 cases per 100,000 men) between 2005 and 2006 (Figure 27, Table 27). During this time, the rate increased 11.1% among women from 0.9 to 1.0 cases per 100,000 women (Figure 27, Table 26).

P&S Syphilis by Male-to-Female Rate Ratio

The male-to-female rate ratio for P&S syphilis has risen steadily since 1996 when

it was 1.2 (Figure 33), suggesting an increase in syphilis among MSM during this time. In 2006, the rate of syphilis in males was 5.7 times that in females.

Between 2005 and 2006, the male-to-female rate ratio for P&S syphilis increased among whites (from 11.0 to 11.7), African Americans (from 3.5 to 3.7), Hispanics (from 6.0 to 7.9), Asian/Pacific Islanders (from 11.0 to 25.0), and American Indians/Alaska Natives (from 2.1 to 2.5) (Table 33B).

An increase in the male-to-female rate ratio for P&S syphilis occurred in the District of Columbia, Puerto Rico, and in 20 of 34 states (59%) that reported at least 25 cases in 2006.

P&S Syphilis by Race/Ethnicity and Sex

From 2005 to 2006, the rate among non-Hispanic white males increased 6.1% (from 3.3 to 3.5), but remained the same among non-Hispanic white females (0.3). The rate increased 18.1% among African-American males (from 15.5 to 18.3) and 11.4% among African-American females (from 4.4 to 4.9). The rate increased 16.7% among Hispanic males (from 5.4 to 6.3), but decreased 11.1% among Hispanic females (from 0.9 to 0.8). The rate increased 13.6% among Asian/Pacific Island males (from 2.2 to 2.5), but decreased among Asian/Pacific Island females from 0.2 to 0.1. The rate increased 42.4% among American Indian/Alaska Native males (from 3.3 to 4.7) and 18.8% among American Indian/Alaska Native females (from 1.6 to 1.9) (Table 33B).

P&S Syphilis by Race/Ethnicity, Age, and Sex

In 2006, the rate of P&S syphilis among African Americans was highest among women aged 20 to 24 years (14.9) and among men aged 25 to 29 years (48.8). For non-Hispanic whites, the rate was highest among women aged 25 to 29 years (0.8) and among men aged 35 to 39 years (9.9). For Hispanics, the rate was highest among women aged 25 to 29 years (1.9) and among men aged 35 to 39 years (14.6). For Asian/Pacific Islanders, the rate was highest among women aged 30 to 34 years (0.5) and among men aged 25 to 29 years (6.2). For American Indian/Alaska Natives, the rate was highest among women aged 35 to 39 years (6.1) and among men aged 30 to 34 years (12.8) (Table 33B).

Congenital Syphilis - United States

After 14 years of decline in the United States, the rate of congenital syphilis increased 3.7% between 2005 and 2006 (from 8.2 to 8.5 cases per 100,000 live births) (Figure 38, Table 39). In 2006, 349 cases were reported, an increase from 339 in 2005. This small increase in the rate of congenital syphilis (Figure 38) may relate to the increase in the rate of P&S syphilis among women that has occurred in recent years (Figure 37).

Between 1996 and 2005, the average yearly percentage decrease in the congenital syphilis rate was 14.1% (Figure 38). Overall, there has been a 74.2% decrease in the rate of congenital syphilis since 1996.

Congenital Syphilis by State

In 2006, 26 states, the District of Columbia, and one outlying area had rates of congenital syphilis that exceeded the HP 2010 target of one case per 100,000 live births (Table 38).

Syphilis Among Special Populations

Additional information about syphilis and congenital syphilis in racial and ethnic minority populations, adolescents, MSM, and other at-risk populations can be found in the **Special Focus Profiles**.

Syphilis Summary

In recent years, MSM have accounted for an increasing number of estimated syphilis cases in the United States[9] and now account for 64% of syphilis in the United States based on information available from 29 states and Washington, D.C.[10] Given the recent request of CDC for states to collect and report gender of sex partners, it is expected that the availability and completeness of this information will increase. Despite the majority of U.S. syphilis cases occurring among MSM, heterosexual syphilis cases may be an emerging problem given the recent increases among women and infants.

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[2] CDC. The National Plan to Eliminate Syphilis from the United States. Atlanta, GA: U.S. Department of Health and Human Services, May 2006.

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[5] Centers for Disease Control and Prevention. Primary and secondary syphilis among men who have sex with men – New York City, 2001. *MMWR* 2002;51:853-6.

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Figure 26. Syphilis — Reported cases by stage of infection: United States, 1941–2006

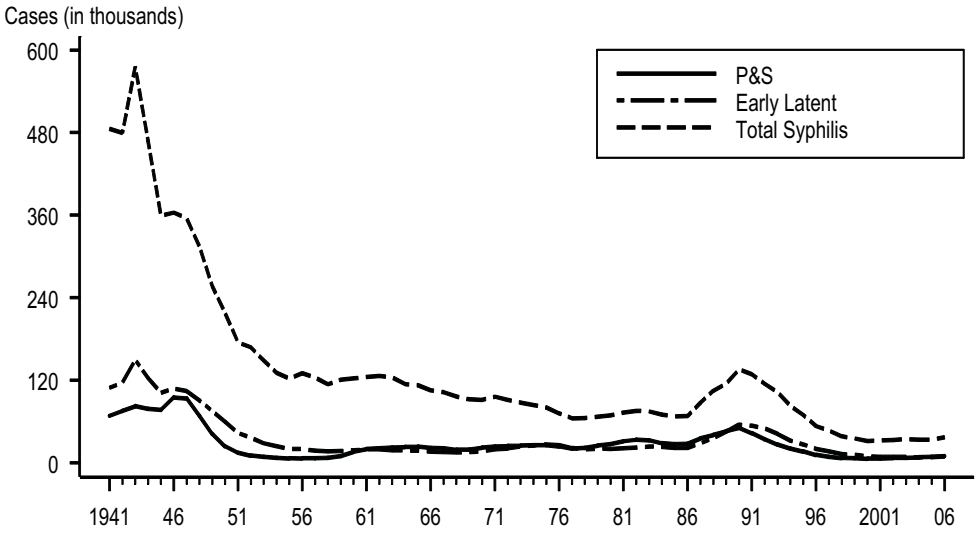
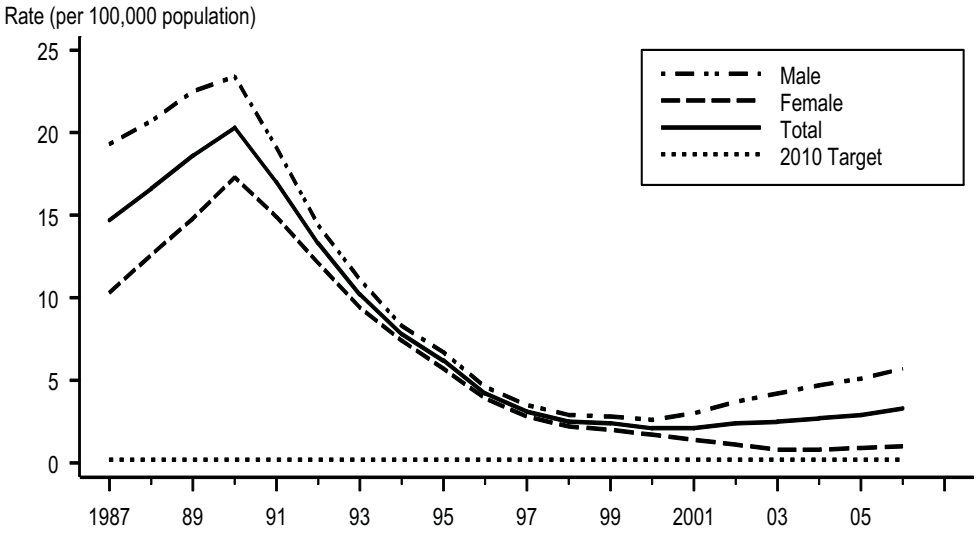
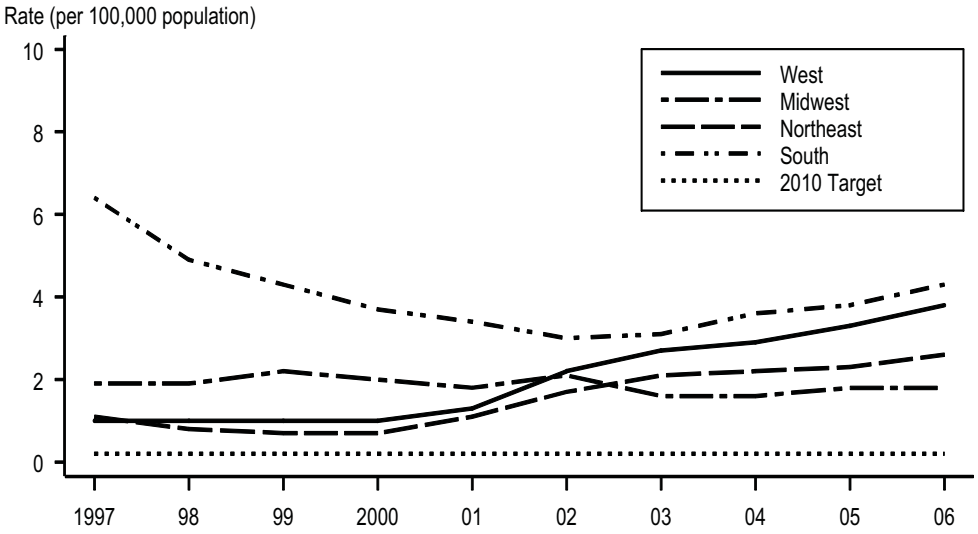


Figure 27. Primary and secondary syphilis — Rates: Total and by sex: United States, 1987–2006 and the Healthy People 2010 target



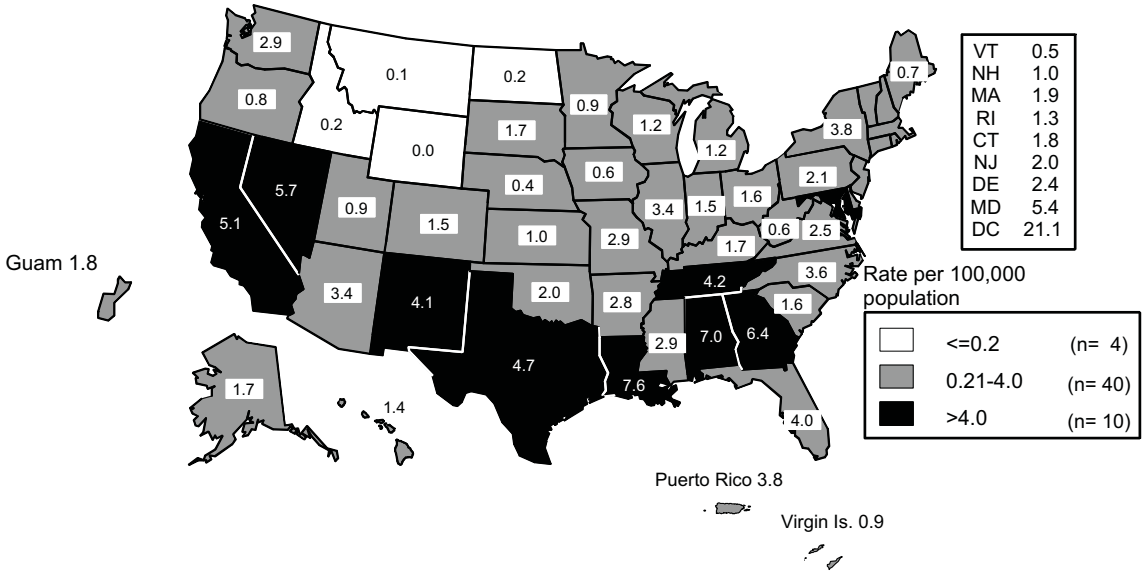
Note: The Healthy People 2010 target for P&S syphilis is 0.2 case per 100,000 population.

Figure 28. Primary and secondary syphilis — Rates by region: United States, 1997–2006 and the Healthy People 2010 target



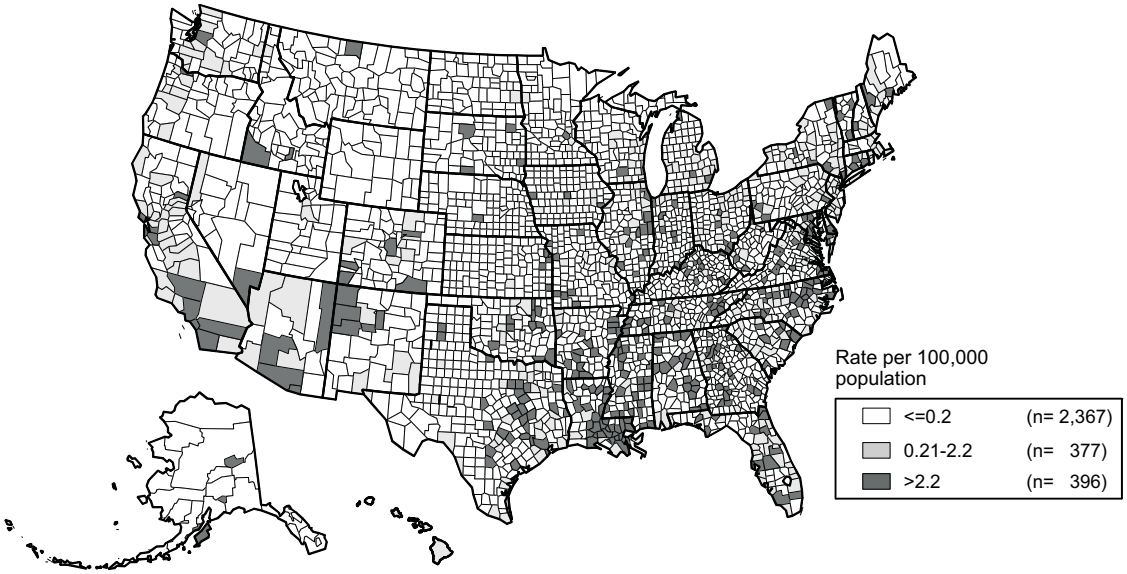
Note: The Healthy People 2010 target for P&S syphilis is 0.2 case per 100,000 population.

Figure 29. Primary and secondary syphilis — Rates by state: United States and outlying areas, 2006



Note: The total rate of P&S syphilis for the United States and outlying areas (Guam, Puerto Rico and Virgin Islands) was 3.3 per 100,000 population. The Healthy People 2010 target is 0.2 case per 100,000 population.

Figure 30. Primary and secondary syphilis — Rates by county: United States, 2006



Note: The Healthy People 2010 target for P&S syphilis is 0.2 case per 100,000 population. In 2006, 2,360 (75.2%) of 3,140 counties in the U.S. reported no cases of P&S syphilis.

Figure 31. Primary and secondary syphilis — Cases by reporting source and sex: United States, 1997–2006

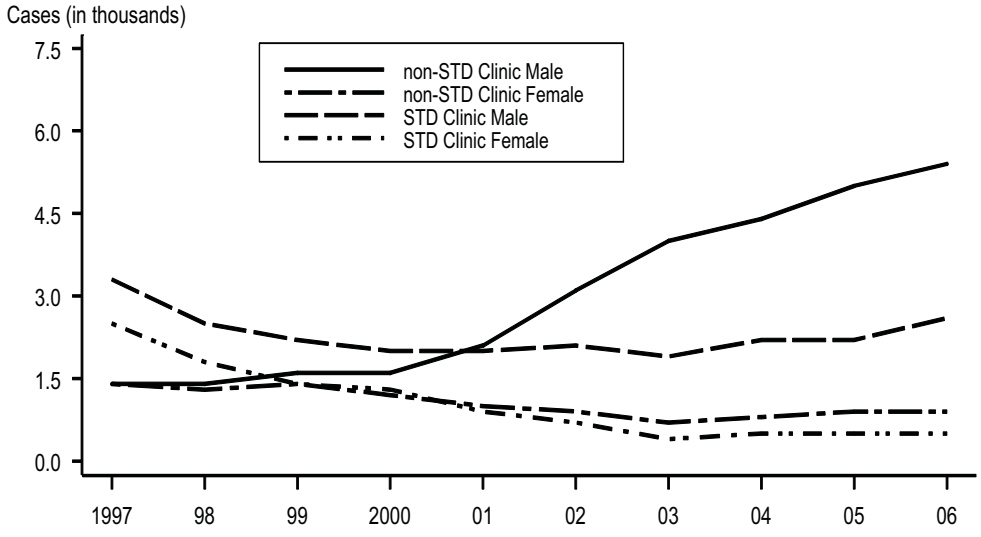


Figure 32. Primary and secondary syphilis — Rates by race/ethnicity: United States, 1997–2006

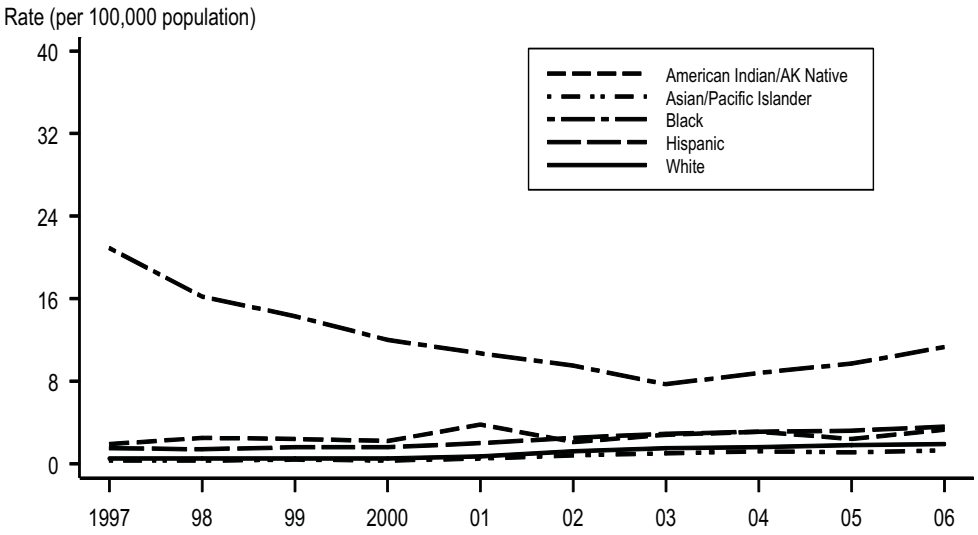


Figure 33. Primary and secondary syphilis — Male-to-female rate ratios: United States, 1997–2006

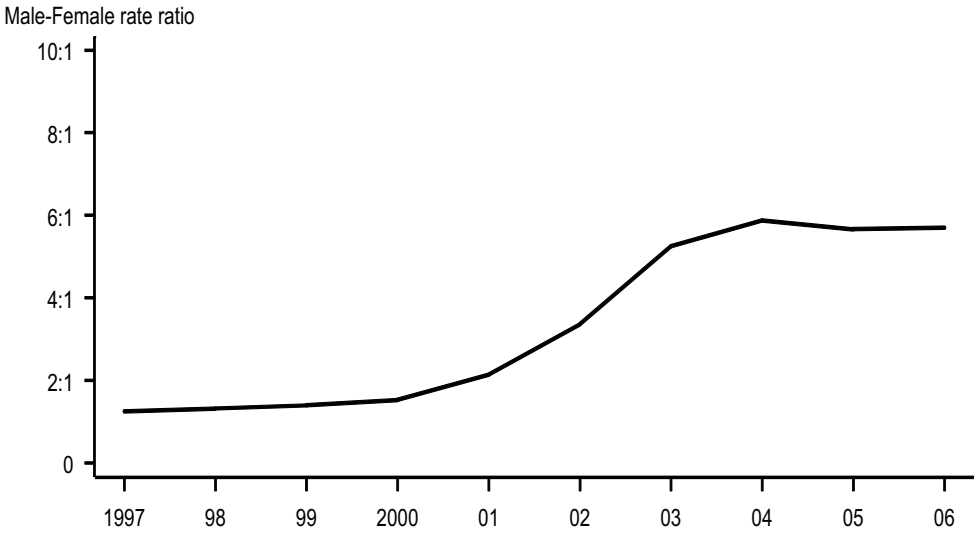


Figure 34. Primary and secondary syphilis — Age- and sex-specific rates: United States, 2006

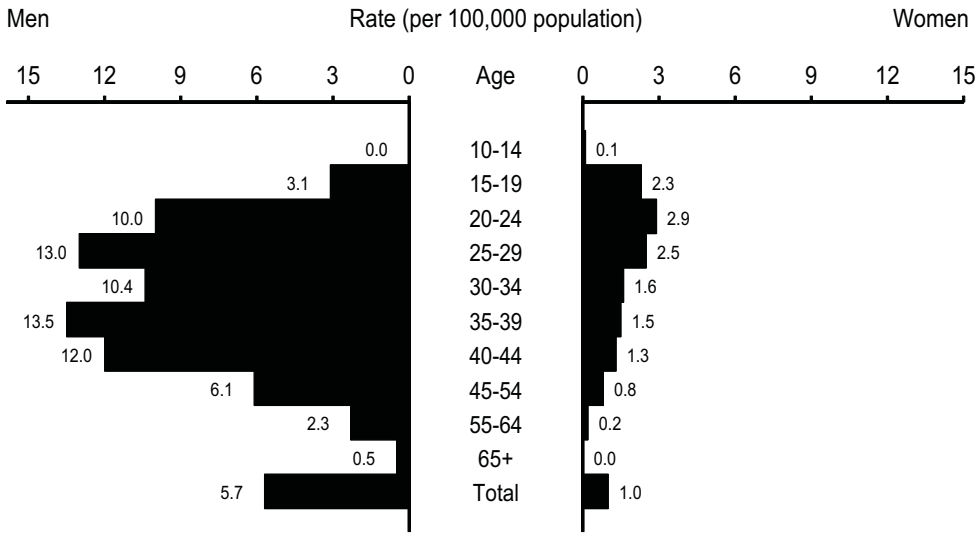


Figure 35. Primary and secondary syphilis — Age-specific rates among women 15 to 44 years of age: United States, 1997–2006

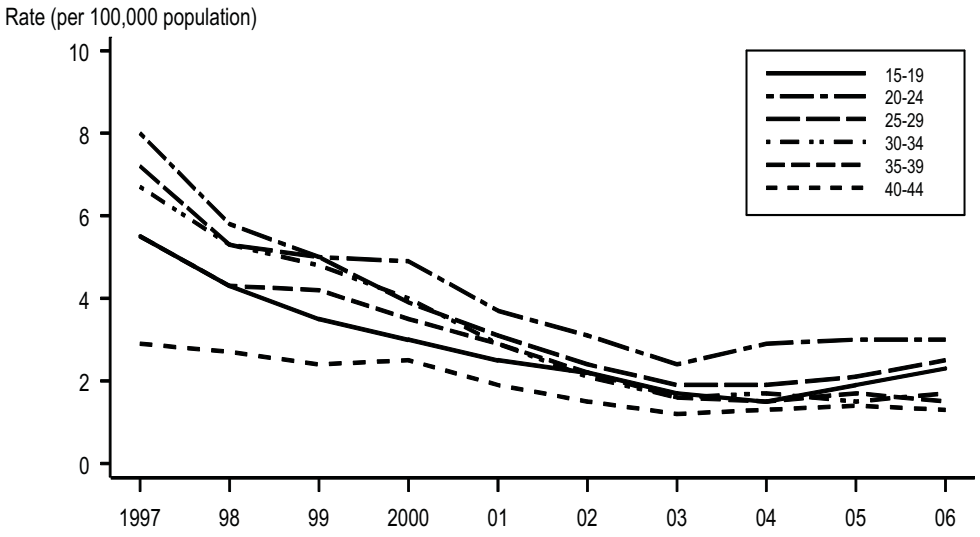


Figure 36. Primary and secondary syphilis — Age-specific rates among men 15 to 44 years of age: United States, 1997–2006

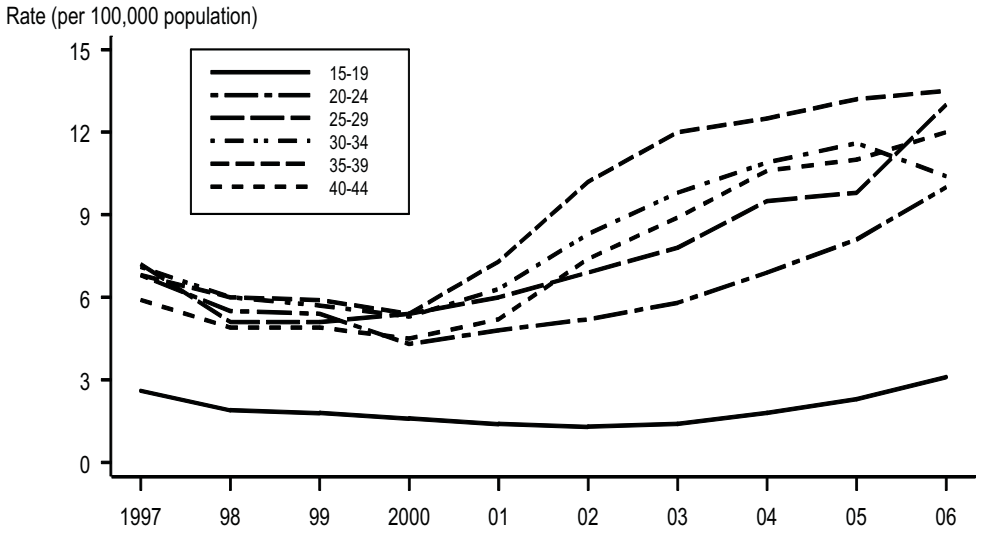


Figure 37. Congenital syphilis (CS) — Reported cases for infants < 1 year of age and rates of primary and secondary syphilis among women: United States, 1997–2006

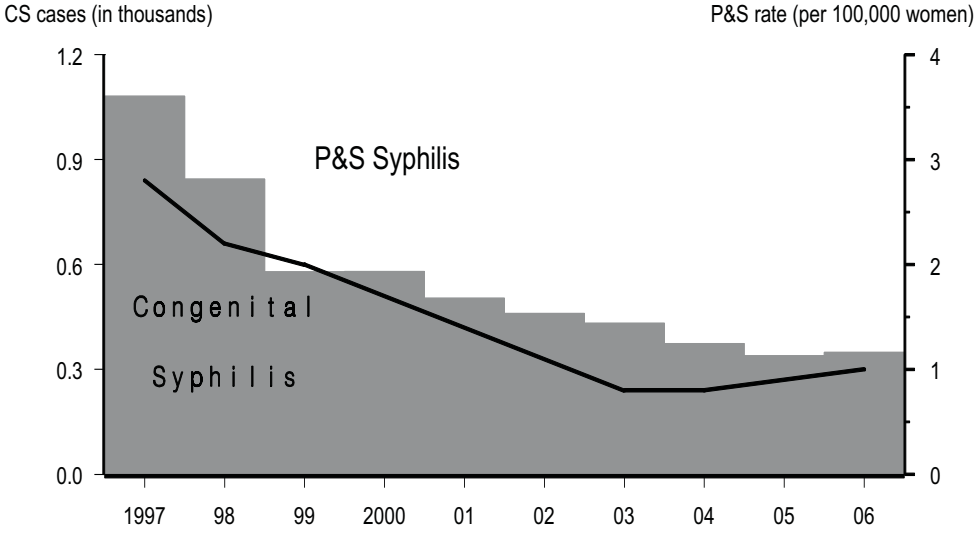
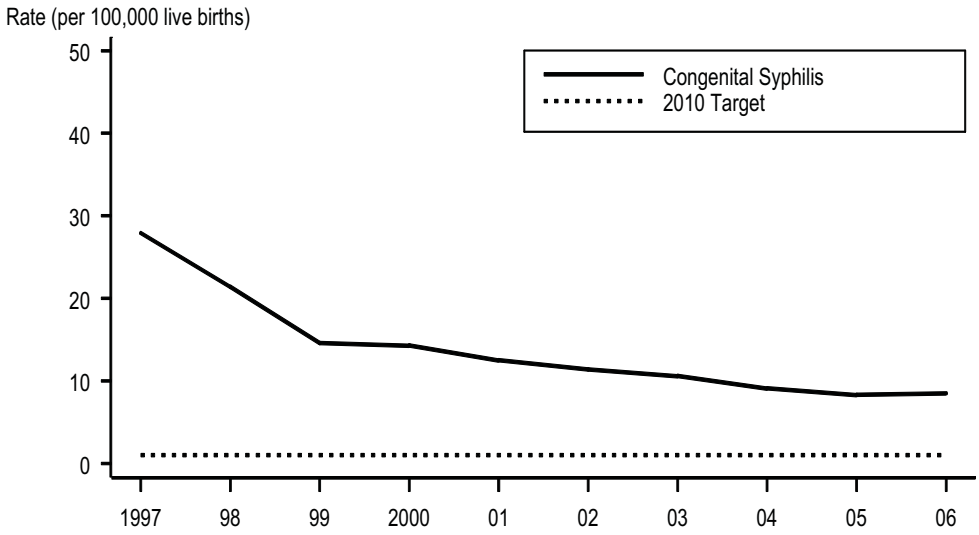


Figure 38. Congenital syphilis — Rates for infants < 1 year of age: United States, 1997–2006 and the Healthy People 2010 target



Note: The Healthy People 2010 target for congenital syphilis is 1.0 case per 100,000 live births.

Other Sexually Transmitted Diseases

Chancroid

Since 1987, reported cases of chancroid declined steadily until 2001 when 38 cases were reported (Figure 39, Table 1). In 2006, 33 cases of chancroid were reported in the United States. Only eight states reported one or more cases of chancroid in 2006 (Table 41). Although the overall decline in reported chancroid cases most likely reflects a decline in the incidence of this disease, these data should be interpreted with caution since *Haemophilus ducreyi*, the causative organism of chancroid, is difficult to culture and, as a result, this condition may be substantially under-diagnosed.[1,2]

Human Papillomavirus

Persistent infection with high risk human papillomavirus (HR-HPV) can lead to development of anogenital cancers (i.e. cervical cancer). In June 2006, a quadrivalent HPV vaccine was licensed for use in the United States. The vaccine provides protection against types 6, 11, 16, and 18. Types 6 and 11 are associated with genital warts while types 16 and 18 are high risk types associated with anogenital cancers.

Sentinel surveillance for cervical infection with high-risk human papillomavirus types 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 68 was conducted in 29 STD, family planning and primary care clinics in six locations (Boston, Baltimore, New Orleans, Denver, Seattle and Los Angeles) as part of an effort to estimate national burden of disease and inform prevention programs such as vaccine programs in the U.S.[3] Testing was performed using a commercially available test for HR-HPV DNA (Digene Hybrid Capture 2, Gaithersburg). Interim results from 2003–2004 document an overall HR-HPV prevalence of 22.5%. Prevalence in STD clinics was 28%, 24% in family planning clinics, and 16% in primary care clinics. Prevalence by age group was: 14 to 19 years 35%; 20 to 29 years 29%; 30 to 39 years 14%; 40 to 49 years 12%; and 50 to 65 years 6%.

PCR based typing provided estimates of prevalence for types 16 and 18. Overall prevalence of HPV 16/18 was 8%. Prevalence of HPV 16/18 by age group was: 16% in 14 to 19 year olds; 10% in 20 to 29 year olds; 3% in 30 to 39 year olds; 2% in 40 to 49 year olds and 1% in 50 to 65 year olds.[3,4]

In 2007, data were published from the National Health and Nutrition Examination Survey (NHANES) reporting prevalence of both HR-HPV and low-risk HPV (LR-HPV, which is associated with development of anogenital warts) in the civilian, non-institutionalized female population of the U.S., 2003-2004[5] (Figure 43). The overall HPV prevalence of high- and low-risk types was 26.8% (95% confidence interval [CI], 23.3%-30.9%) among US females aged 14 to 59 years (n = 1921). HPV prevalence was 24.5% (95% CI, 19.6%-30.5%) among females aged 14 to 19 years, 44.8% (95% CI, 36.3%-55.3%) among women aged 20 to 24 years, 27.4% (95% CI, 21.9%-34.2%) among women

aged 25 to 29 years, 27.5% (95% CI, 20.8%-36.4%) among women aged 30 to 39 years, 25.2% (95% CI, 19.7%-32.2%) among women aged 40 to 49 years, and 19.6% (95% CI, 14.3%-26.8%) among women aged 50 to 59 years. HPV vaccine types 6 and 11 (low-risk types) and 16 and 18 (high-risk types) were detected in 3.4% of female participants; HPV-6 was detected in 1.3% (95% CI, 0.8%-2.3%), HPV-11 in 0.1% (95% CI, 0.03%-0.3%), HPV-16 in 1.5% (95% CI, 0.9%-2.6%), and HPV-18 in 0.8% (95% CI, 0.4%-1.5%) of female participants.

Data from the National Disease and Therapeutic Index suggest that genital warts (Figure 41) as measured by initial visits to physicians' offices, may be increasing.

Pelvic Inflammatory Disease

For data on Pelvic Inflammatory Disease (PID), see the **Special Focus Profile** on Women and Infants.

Other Sexually Transmitted Diseases

Case reporting data for genital herpes simplex virus (HSV) are not available. Trend data are limited to estimates of the initial office visits in physicians' office practices for these conditions from the National Disease and Therapeutic Index (NDTI) (Figure 40 and Table 42). Despite reported declines in seroprevalence in HSV types 1 and 2,[6] genital herpes trends as measured through NDTI suggest possible recent increases.

Similarly, case reporting data are not available for trichomoniasis, and trend data for this infection is also limited to estimates of initial physician office visits from NDTI (Figure 42 and Table 42).

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[1] Schulte JM, Martich FA, Schmid GP. Chancroid in the United States, 1981–1990: Evidence for underreporting of cases. *MMWR* 1992;41(no. SS-3):57-61.

[2] Mertz KJ, Trees D, Levine WC, et al. Etiology of genital ulcers and prevalence of human immunodeficiency virus coinfection in 10 US cities. *J Infect Dis* 1998;178:1795-8.

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[4] Datta SD, Koutsky L, Ratelle S, et al. Type-Specific High-Risk HPV Prevalence from the HPV Sentinel Surveillance Project, US, 2003-2005 [Abstract no. P-099]. In Program and abstracts of the International Human Papillomavirus Meeting, Prague, Czech Republic, September 2006.

[5] Dunne EF, Unger ER, Sternberg M, McQuillan G, Swan DC, Patel SS, Markowitz LE. Prevalence of HPV infection among females in the United States. *JAMA*. 2007 Feb 28;297(8):813-9.

[6] Xu F, Sternberg MR, Kottiri BJ, McQuillan G, Lee FK, Nahmias AJ, Berman SM, Markowitz LE. Trends in Herpes Simplex Virus Type 1 and Type 2 seroprevalence in the United States. *JAMA* 2006 Aug 23/30 (8):964-973.

Figure 39. Chancroid — Reported cases: United States, 1981–2006

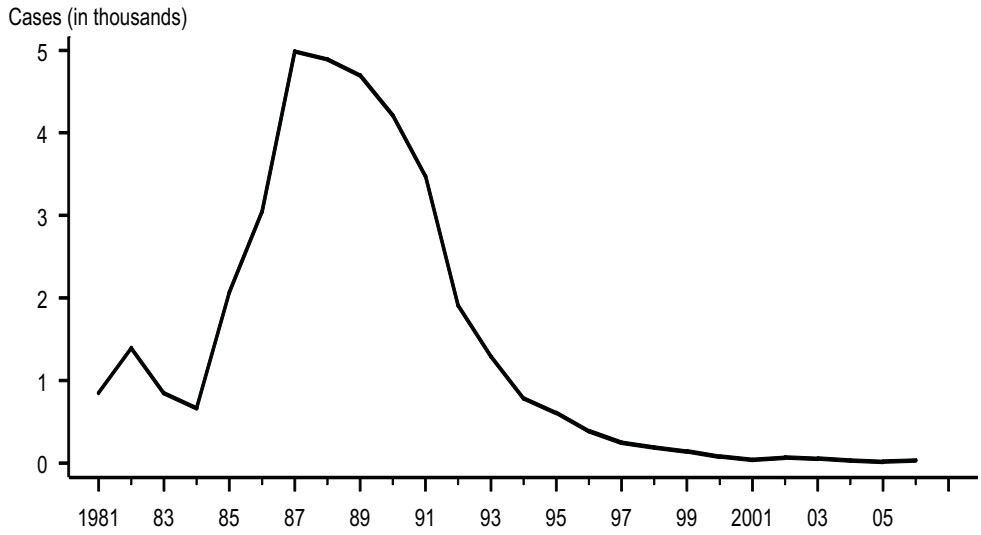
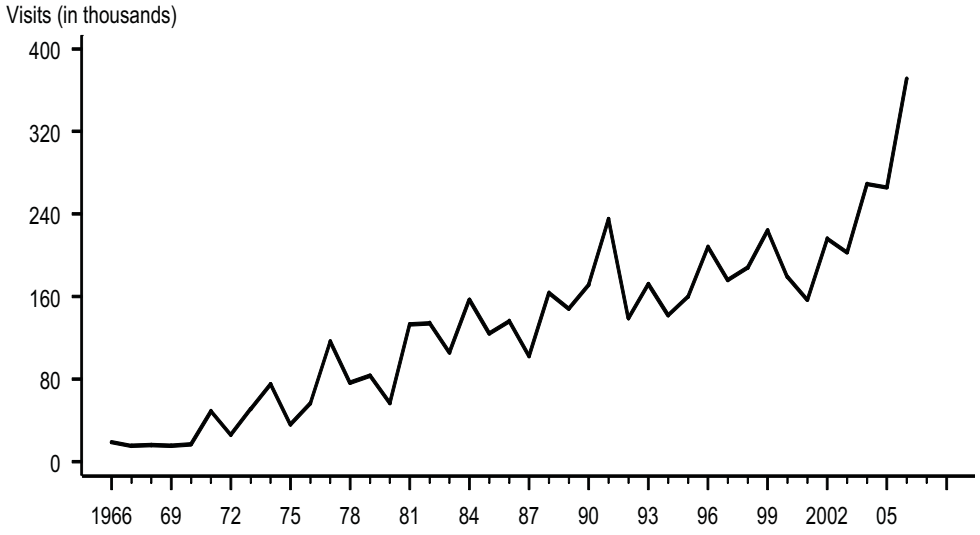


Figure 40. Genital herpes — Initial visits to physicians' offices: United States, 1966–2006



Note: See Appendix (Other Data Sources) and Table 42. The relative standard error for genital herpes estimates range from 20% to 30%.

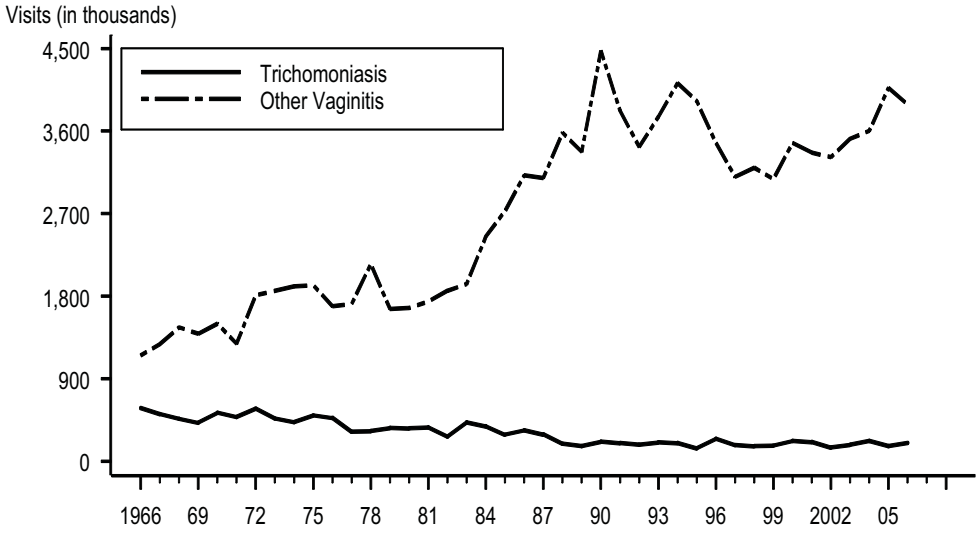
SOURCE: National Disease and Therapeutic Index (IMS Health)

Figure 41. Genital warts — Initial visits to physicians' offices: United States, 1966–2006

Note: See Appendix (Other Data Sources) and Table 42. The relative standard error for genital warts estimates range from 20% to 40%.

SOURCE: National Disease and Therapeutic Index (IMS Health)

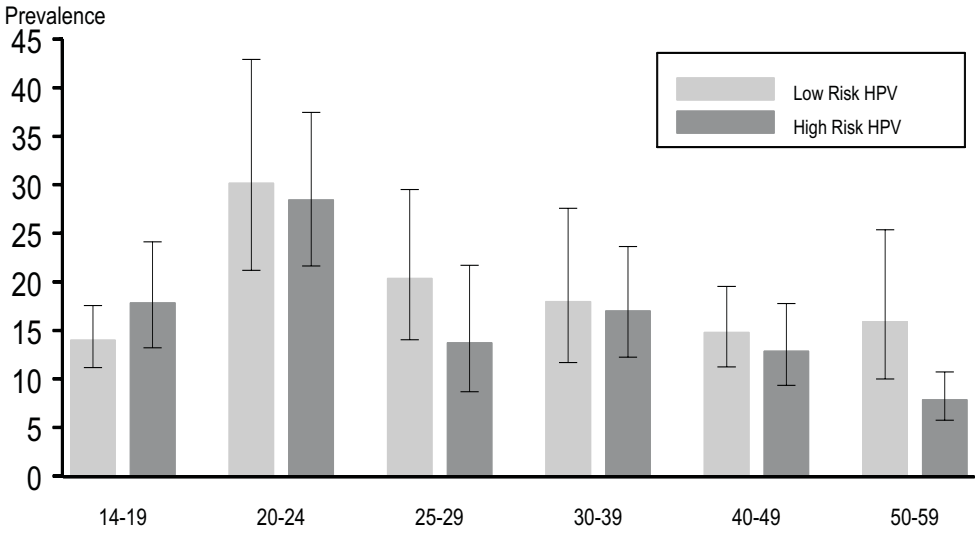
Figure 42. Trichomoniasis and other vaginal infections in women — Initial visits to physicians' offices: United States, 1966–2006



Note: See Appendix (Other Data Sources) and Table 42. The relative standard error for trichomoniasis estimates range from 16% to 30% and for other vaginitis estimates range from 9% to 13%.

SOURCE: National Disease and Therapeutic Index (IMS Health)

Figure 43. Prevalence of high-risk and low-risk human papillomavirus types among females aged 14 to 59 years, 2003-2004



Note: Error bars indicate 95% confidence intervals. Both high-risk and low-risk HPV types were detected in some females.

SOURCE: National Health and Nutrition Examination Survey