

Trends in Reportable Sexually Transmitted Diseases in the United States, 2005

National Surveillance Data for Chlamydia, Gonorrhea, and Syphilis

Sexually transmitted diseases (STDs) remain a major public health challenge in the United States. While substantial progress has been made in preventing, diagnosing, and treating certain STDs in recent years, CDC estimates that 19 million new infections occur each year, almost half of them among young people ages 15 to 24.¹ In addition to the physical and psychological consequences of STDs, these diseases also exact a tremendous economic toll. Direct medical costs associated with STDs in the United States are estimated at up to \$14.1 billion annually.²

This document summarizes 2005 national data on trends in notifiable STDs — chlamydia, gonorrhea, and syphilis — that are published in CDC's report, *Sexually Transmitted Disease Surveillance 2005* (available at www.cdc.gov/std/stats). These data, which are useful for examining overall trends and trends among populations at risk, represent only a small proportion of the true national burden of STDs. Many cases of notifiable STDs go undiagnosed, and some highly prevalent viral infections, such as human papillomavirus and genital herpes, are not reported at all.

Chlamydia: Expanded Screening Efforts Result in More Reported Cases, but Majority of Infections Remain Undiagnosed

Chlamydia remains the most commonly reported infectious disease in the United States. In 2005, 976,445 chlamydia diagnoses were reported, up from 929,462 in 2004. Even so, most chlamydia cases go undiagnosed. It is estimated that there are approximately 2.8 million new cases of chlamydia in the United States each year.¹

The national rate of reported chlamydia in 2005 was 332.5 cases per 100,000 population, an increase of 5.1 percent from 2004 (316.5). The increases in reported cases and rates likely reflect the continued expansion of screening efforts and increased use of more sensitive diagnostic tests; however, this trend may also reflect an actual increase in infections.

Health Consequences of Chlamydia

Chlamydia is a bacterial infection that can easily be cured with antibiotics, but it is usually asymptomatic and often undiagnosed. Untreated, it can cause severe health consequences for women, including pelvic inflammatory disease (PID), ectopic pregnancy, and infertility. Up to 40 percent of females with untreated chlamydia infections develop PID, and up to 20 percent of those may become infertile.³ Complications from chlamydia among men are relatively uncommon, but may include epididymitis and urethritis, which can cause pain, fever, and in rare cases, sterility.



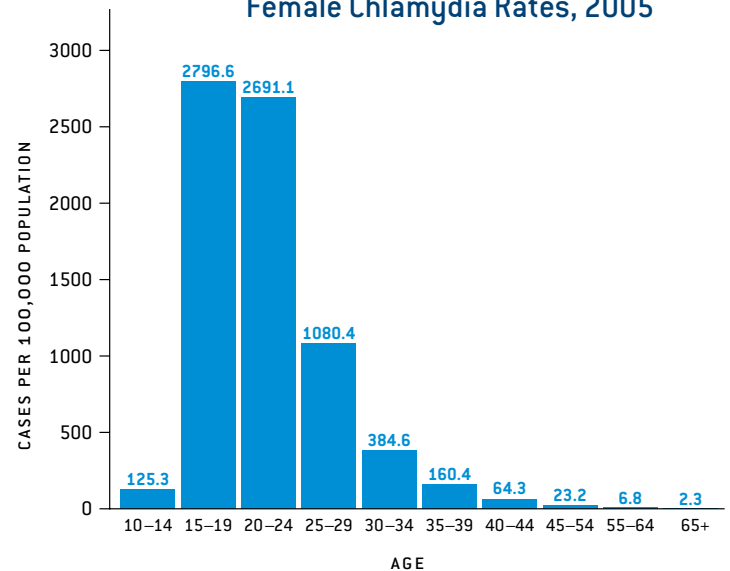
Impact on Women

Women, especially young women, are hit hardest by chlamydia. Studies have found that chlamydia is more common among young women than young men, and the long-term consequences of untreated disease are much more severe for women. The chlamydia case rate per 100,000 population for females in 2005 was more than three times higher than for males (496.5 vs. 161.1). However, much of this difference reflects the fact that women are far more likely to be screened than men. Females aged 15 to 19 had the highest chlamydia rate (2,796.6), followed by females aged 20 to 24 (2,691.1).

African-American women are also disproportionately affected by chlamydia. In 2005, the rate of reported chlamydia cases per 100,000 black females (1,729.0) was more than seven times that of white females (237.2) and more than twice that of Hispanic females (733.2). The rate among American Indian/Alaska Native women was the second highest, at 1,177.7 per 100,000 population, and the rate among Asian/Pacific Islander women was the lowest, at 222.3.

Because case reports do not provide a complete account of the burden of disease, researchers also evaluate chlamydia prevalence in subgroups of the population to better estimate the true extent of the disease. For example, data from chlamydia screening in family planning clinics across the United States indicate that roughly 6 percent of 15- to 24-year-old females in these settings are infected.

Female Chlamydia Rates, 2005



Importance of Screening

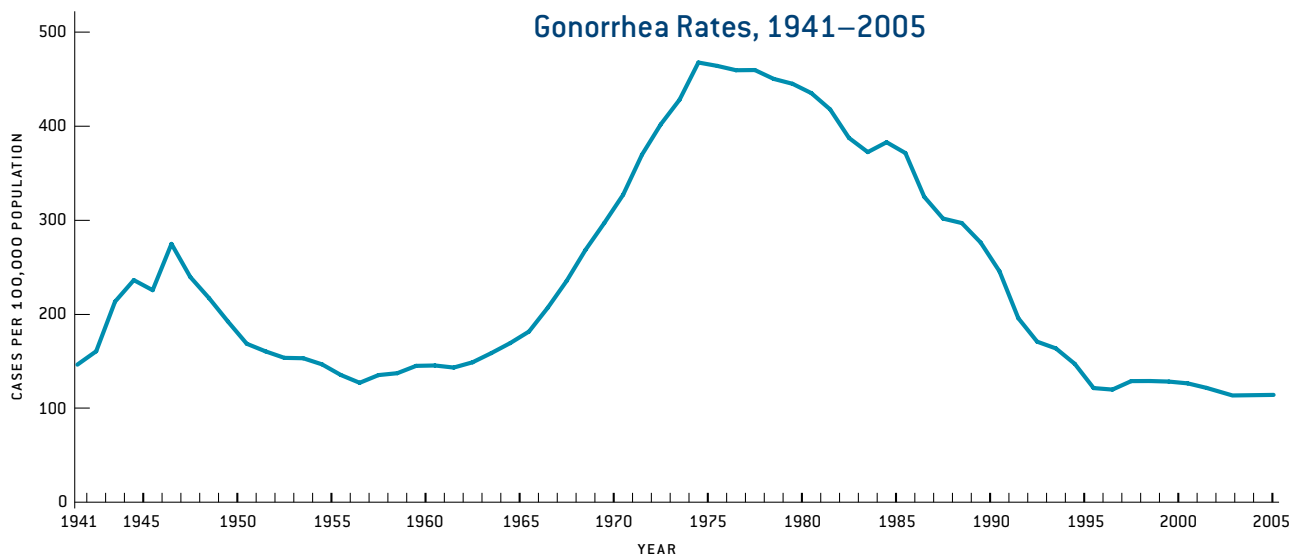
Because chlamydia is most common among young women, CDC recommends annual chlamydia screening for all sexually active women under age 26, as well as for older women with risk factors such as new or multiple sex partners.⁴ Data from one study in a managed care setting suggest that chlamydia screening and treatment can reduce incidence of pelvic inflammatory disease (PID) by over 50 percent.⁵ Unfortunately, many sexually active young women are not being tested for chlamydia, in part reflecting a lack of awareness among some providers and limited resources for screening.⁶ Recent research has shown that a simple change in clinical procedures — coupling chlamydia tests with routine Pap testing — can sharply increase the proportion of sexually active young women screened.⁷ Increased screening efforts are a critical part of efforts to prevent the serious health consequences of this infection, particularly infertility.

Recent studies have also shown that many young women who have been diagnosed with chlamydia may become re-infected by male partners who have not been diagnosed or treated.^{8,9} CDC's *2006 STD Treatment Guidelines* recommend that women be re-tested for chlamydia approximately three months after treatment, and also recommend the delivery of antibiotic therapy by heterosexual patients to their partners if other strategies for reaching and treating partners are not likely to succeed.⁴ The availability of urine tests for chlamydia is likely contributing to increased detection of the disease in men, and consequently the rising rates of reported chlamydia among men in recent years (from 112.3 per 100,000 population in 2001 to 161.1 in 2005).



Gonorrhea: Disease Rate Remains Stable

Gonorrhea is the second most commonly reported infectious disease in the United States, with 339,593 cases reported in 2005. Following a 74 percent decline in the rate of reported gonorrhea from 1975 through 1997, overall gonorrhea rates appear to have plateaued in recent years. In 2005, the gonorrhea rate was 115.6 cases per 100,000 population, representing only a slight increase from the rate of 112.4 in 2004. Like chlamydia, however, gonorrhea is substantially under-diagnosed and under-reported, and approximately twice as many new infections are estimated to occur each year as are reported.¹



Racial Disparities Persist

African Americans remain the group most heavily affected by gonorrhea, with a rate in 2005 that was 18 times greater than the rate for whites (626.4 per 100,000 population compared to 35.2 per 100,000, respectively). American Indians/Alaska Natives had the second-highest gonorrhea rate in 2005 (131.7), followed by Hispanics (74.8), whites (35.2), and Asians/Pacific Islanders (25.9).

Ethnic minorities in the United States have traditionally had higher rates of reported gonorrhea and other STDs, which likely reflects limited access to quality health care, poverty, and higher prevalence of disease in these populations.

Increases in the Western United States

In contrast to the other regions of the United States, gonorrhea rates per 100,000 population in the West have increased steadily in recent years. The gonorrhea rate in the West increased by 13.5 percent between 2004 (71.8) and 2005 (81.5), and increased by 35.4 percent between 2001 and 2005 (from 60.2 to 81.5).

Although the South had the highest gonorrhea rate (143.9 per 100,000 population) in 2005, the rate of reported disease in the South has declined, dropping 17.6 percent between 2001 and 2005 (from 174.6 to 143.9 per 100,000). During the same time period, the rate in the Northeast declined 23.1 percent (from 97.2 to 74.7) and the rate in the Midwest showed minimal change (from 142.5 in 2001 to 139.1 in 2005).

Health Consequences of Gonorrhea

While gonorrhea is easily cured, untreated cases can lead to serious health problems. Among women, gonorrhea is a major cause of PID, which can lead to chronic pelvic pain, ectopic pregnancy, and infertility. In men, untreated gonorrhea can cause epididymitis, a painful condition of the testicles that can result in infertility. In addition, studies suggest that the presence of gonorrhea infection makes an individual three to five times more likely to acquire HIV, if exposed.¹⁰



Drug Resistance Increasing in Communities Across the United States

Drug resistance is an increasingly important concern in the treatment and prevention of gonorrhea.¹¹ CDC monitors trends in gonorrhea drug resistance through the Gonococcal Isolate Surveillance Project (GISP), which tests gonorrhea samples (“isolates”) from the first 25 men with urethral gonorrhea attending STD clinics each month in sentinel clinics across the United States (27 cities in 2005).¹²

Overall, 9.4 percent of gonorrhea isolates tested through GISP in 2005 demonstrated resistance to fluoroquinolones, a leading class of antibiotics used to treat the disease, compared to 6.8 percent in 2004 and 4.1 percent in 2003. Resistance is especially worrisome among men who have sex with men (MSM), where resistance was nearly eight times higher than among heterosexuals (29% vs. 3.8%).

In April 2004, CDC recommended that fluoroquinolones no longer be used as treatment for gonorrhea among MSM.¹¹ Fluoroquinolones are also not recommended to treat gonorrhea for anyone in California, Hawaii, and other areas where fluoroquinolone-resistant cases have become widespread.⁴ Outside of California and Hawaii, 6.1 percent of gonorrhea isolates in 2005 were resistant to fluoroquinolones, an increase from 3.6 percent in 2004.

Syphilis: Cases Increase for Fifth Consecutive Year

The rate of primary and secondary (P&S) syphilis — the most infectious stages of the disease — decreased throughout the 1990s, and in 2000 reached an all-time low. However, over the past five years, the syphilis rate in the United States has been increasing. Between 2004 and 2005, the national P&S syphilis rate increased 11.1 percent, from 2.7 to 3.0 cases per 100,000 population; during this time, the number of reported P&S syphilis cases in the United States increased from 7,980 to 8,724. The rate of congenital syphilis, however, continued to decline, falling 12 percent between 2004 and 2005 (from 9.1 per 100,000 live births to 8.0). This decline likely reflects the continuing impact of the substantial declines in syphilis among women in earlier years and the ongoing contribution of prenatal screening programs.

The overall increase in syphilis rates among adults and adolescents from 2004 to 2005 was driven primarily by increases among males, with the rate increasing 8.5 percent (from 4.7 per 100,000 population in 2004 to 5.1 in 2005). However, troubling trends were also seen among females, as the rate of reported cases among females increased for the first time in over ten years. Additionally, 2005 marked the second year of increases in the P&S syphilis rate among African Americans, following more than a decade of declines.

Rising Rates Driven Largely by Cases among Men Who Have Sex with Men

The rate of P&S syphilis among males has risen 70 percent over the past five years (from 3.0 per 100,000 population in 2001 to 5.1 per 100,000 in 2005), driving overall increases in syphilis rates for the nation. Several sources of data suggest that increased transmission of P&S syphilis

Health Consequences of Syphilis

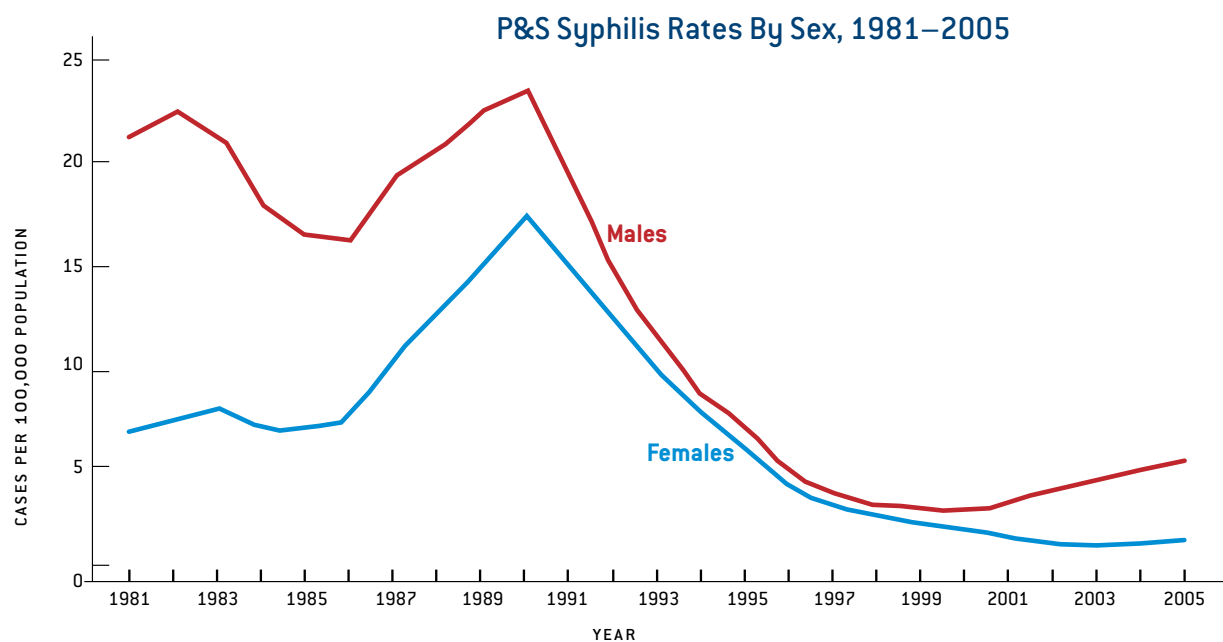
Syphilis, a genital ulcerative disease, is highly infectious, but easily curable in its early (primary and secondary) stages. If untreated, it can lead to serious long-term complications, including neurologic, cardiovascular, and organ damage, and even death. Congenital syphilis can cause stillbirth, death soon after birth, and physical deformity and neurological complications in children who survive. Syphilis, like many other STDs, facilitates the spread of HIV, increasing transmission of the virus at least two- to five-fold.¹³

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among MSM may be largely responsible for these increases. Over time, the disparity between male and female case rates has grown considerably. The P&S syphilis rate among men is now nearly six times the rate among women, whereas the rates were almost equivalent a decade ago. Additionally, prior CDC research has estimated that more than half of P&S syphilis cases in recent years have occurred among MSM [an estimated 64 percent of cases in 2004, compared to 5 percent in 1999].¹⁴

CDC is currently working to collect more complete data on the gender of sex partners of individuals diagnosed with syphilis. This will enable CDC to more accurately assess and track the impact of syphilis among MSM.



Recent Declines Among African Americans and Women May Be Reversing

In 2005, the P&S syphilis rate among blacks increased for the second consecutive year, following more than a decade of declines. Between 2004 and 2005, the rate among blacks per 100,000 population increased 11.4 percent (from 8.8 to 9.8), with the largest increases among black men. Between 2004 and 2005, the syphilis rate among black males increased 12.9 percent (from 13.9 to 15.7), while the rate among black women rose 4.8 percent (from 4.2 to 4.4).

Although wide disparities persist, racial gaps in syphilis rates are narrowing. The rate of P&S syphilis per 100,000 in 2005 was 5.4 times higher among blacks than among whites, representing a substantial decline from 1999, when the rate among blacks was 29 times greater than the rate among whites. This narrowing reflects both declining disease rates among African Americans and the significant increases among white men in recent years.

While P&S syphilis rates remained substantially lower among females than males, rates among females increased for the first time in over a decade, with an increase of 12.5 percent from 2004 to 2005 (from 0.8 per 100,000 population to 0.9). This increase was driven by increased rates among black women, as noted above, and Hispanic women (28.6% increase, up from 0.7 in 2004 to 0.9 in 2005). Rates among women in all other ethnic groups declined or remained stable.

Reversing these trends and eliminating syphilis as a health threat in the United States will require an ongoing commitment to syphilis education, testing, and treatment in all populations affected. In May 2006, CDC released its updated National Plan to Eliminate Syphilis, designed to sustain efforts in populations traditionally at risk, including women and African Americans, and to support innovative solutions to fight the resurgence of syphilis among MSM.¹⁵



References

- 1 Weinstock H, et al. Sexually transmitted diseases among American youth: incidence and prevalence estimates, 2000. *Perspectives on Sexual and Reproductive Health* 2004;36(1):6-10.
- 2 HW Chesson, JM Blandford, TL Gift, G Tao, KL Irwin. The estimated direct medical cost of STDs among American youth, 2000. 2004 National STD Prevention Conference. Philadelphia, PA. March 8-11, 2004. Abstract P075.
- 3 Hillis SD and Wasserheit JN. Screening for Chlamydia — A Key to the prevention of pelvic inflammatory disease. *New England Journal of Medicine* 1996;334(21):1399-1401.
- 4 CDC. Sexually transmitted diseases treatment guidelines, 2006. *Morbidity and Mortality Weekly Report* 2006; 55(RR-11).
- 5 Scholes D et al. Prevention of pelvic inflammatory disease by screening for cervical chlamydial infection. *New England Journal of Medicine* 1996; 334(21):1362-1366.
- 6 National Committee for Quality Assurance. The State of Health Care Quality 2006. Washington, D.C., 2006:30, 57-67. Available at: http://www.ncqa.org/communications/SOHC2006/SOHC_2006.pdf.
- 7 Burstein G et al. Chlamydia screening in a health plan before and after a national performance measure introduction. *Obstetrics & Gynecology* 2005;106(2):327-334.
- 8 Klinger E, et al. Burden of repeat Chlamydia trachomatis infection in young women in New York City. 2006 National STD Prevention Conference. Jacksonville, FL. May 8-11, 2006. Abstract A1e.
- 9 Chow J, et al. Repeat chlamydia and gonorrhea infection using case-based surveillance reports and laboratory-based prevalence monitoring data, California, 2003-2004. 2006 National STD Prevention Conference. Jacksonville, FL. May 8-11, 2006. Abstract P32.
- 10 Fleming DT and Wasserheit JN. From epidemiological synergy to public health policy and practice: the contribution of other sexually transmitted diseases to sexual transmission of HIV infection. *Sexually Transmitted Infections* 1999;75:3-17.
- 11 CDC. Increases in fluoroquinolone-resistant *Neisseria gonorrhoeae* among men who have sex with men — United States, 2003, and revised recommendations for gonorrhea treatment, 2004. *Morbidity and Mortality Weekly Report* 2004;53(16):335-338.
- 12 CDC. Gonococcal Isolate Surveillance Project. Available at: www.cdc.gov/std/gisp.
- 13 CDC. HIV prevention through early detection and treatment of other sexually transmitted diseases — United States recommendations of the Advisory Committee for HIV and STD Prevention. *Morbidity and Mortality Weekly Report* 1998; 47(RR-12):1-24.
- 14 CDC. Unpublished data.
- 15 CDC. Together we can: The national plan to eliminate syphilis from the United States, May 2006. Available at: <http://www.cdc.gov/stopsyphilis/SEEPlan2006.pdf>.