

Trends in Reportable Sexually Transmitted Diseases in the United States, 2006

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 approximately 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 \$14.7 billion annually in 2006 dollars.²

This document summarizes 2006 national data on trends in three notifiable STDs — chlamydia, gonorrhea, and syphilis — that are published in CDC's report, *Sexually Transmitted Disease Surveillance 2006* (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: Reported Cases Exceed One Million, but Majority of Infections Remain Undiagnosed

Chlamydia remains the most commonly reported infectious disease in the United States. In 2006, 1,030,911 chlamydia diagnoses were reported, up from 976,445 in 2005. 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 2006 was 347.8 cases per 100,000 population, an increase of 5.6 percent from 2005 (329.4). The increases in reported cases and rates likely reflect the continued expansion of screening efforts and increased use of more sensitive diagnostic tests; however, the continued increases 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 usually occurs without symptoms and often goes 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 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.

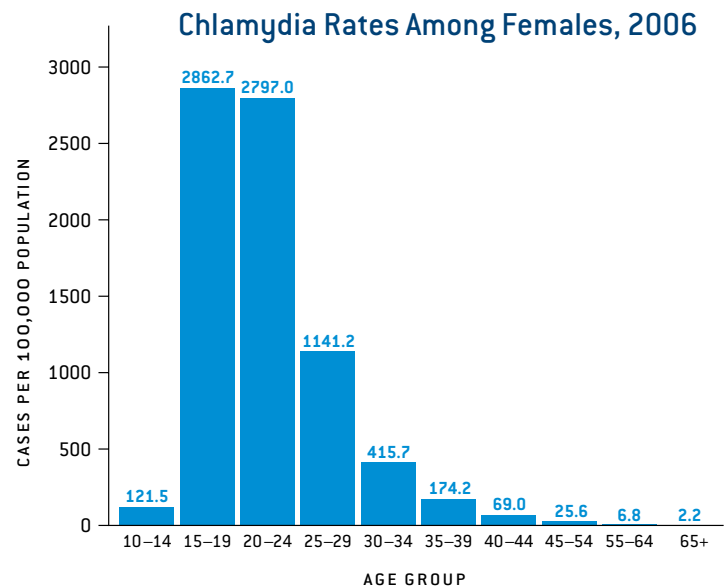


Impact on Women

Women, especially young women, are hit hardest by chlamydia. Studies have found that chlamydia is more common among adolescent females than adolescent males, and the long-term consequences of untreated disease are much more severe for females. The chlamydia case rate for females in 2006 was three times higher than for males (515.8 vs. 173.0).

Much of this difference reflects the fact that females are far more likely to be screened than males. Young females aged 15 to 19 had the highest chlamydia rate (2,862.7), followed by females aged 20 to 24 (2,797.0).

Chlamydia is common among all races and ethnic groups; however, African-American women are disproportionately affected. In 2006, the rate of reported chlamydia per 100,000 black females (1,760.9) was more than seven times that of white females (237.0) and more than twice that of Hispanic females (761.3). The rate among American Indian/Alaska Native females was the second highest, at 1,262.3, and the rate among Asian/Pacific Islander females was the lowest, at 201.2.



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 approximately 7 percent of 15- to 24-year-old females in these settings are infected.

Importance of Screening

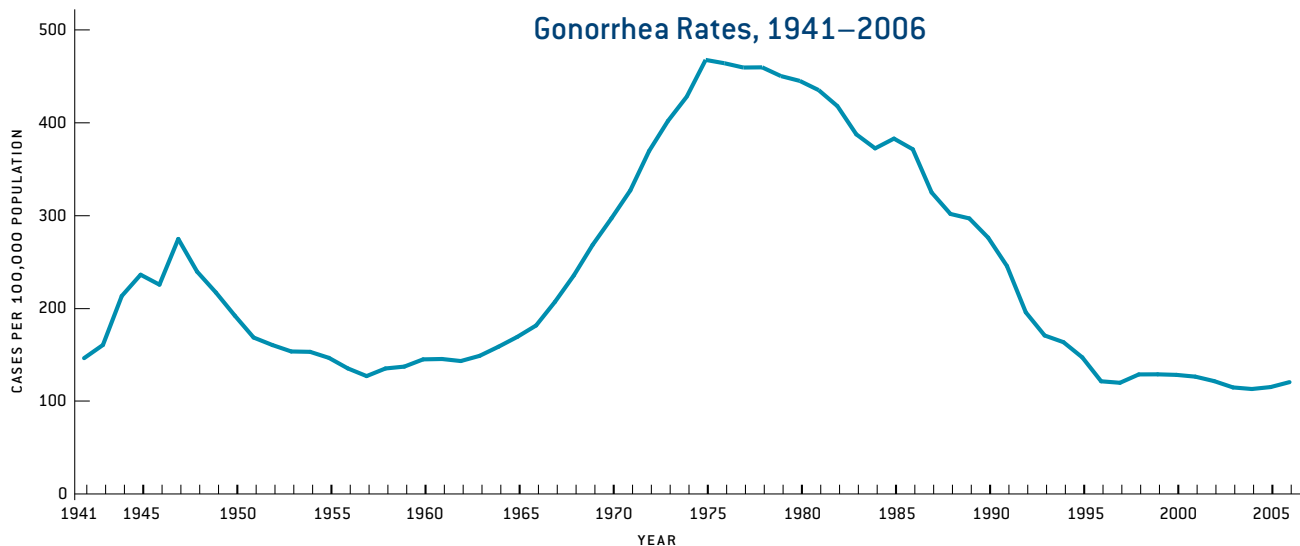
Because chlamydia is most common among young women, CDC recommends annual chlamydia screening for all sexually active women under age 26, as well as older women with risk factors such as new or multiple sex partners.⁴ Data from one study in a managed care setting suggest that chlamydia screening and treatment can reduce the 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 Research has shown that simple changes in clinical procedures, such as coupling chlamydia tests with routine Pap testing, can sharply increase the proportion of sexually active young women screened.⁷ Increased prevention screening efforts are critical to preventing 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 males in recent years (from 126.8 in 2002 to 173.0 in 2006).



Gonorrhea: Disease Stable with Slight Increases in Recent Years

Gonorrhea is the second most commonly reported infectious disease in the United States, with 358,366 cases reported in 2006. Following a 74 percent decline in the rate of reported gonorrhea from 1975 through 1997, overall gonorrhea rates plateaued, then increased for the past two years. In 2006, the gonorrhea rate was 120.9 cases per 100,000 population, an increase of 5.5 percent since 2005 and an increase for the second consecutive year. Like chlamydia, 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



Increasing Rates in Southern and Western United States

As in previous years, the South had the highest gonorrhea rate among the four regions of the country. Additionally, rates rose in the South for the first time in eight years, increasing 12.3 percent between 2005 and 2006 from 141.8 to 159.2 per 100,000 population.

While the impact is greatest in the South, researchers are also concerned about continued increases in the West, where the rate of reported gonorrhea cases rose 2.9 percent between 2005 and 2006 (from 80.5 to 82.8 per 100,000) and increased by 31.8 percent between 2002 and 2006.

Between 2002 and 2006, the rate in the South declined slightly (from 161.8 to 159.2), the Northeast declined 21.2 percent (from 93.6 to 73.8) and the rate in the Midwest showed minimal change (from 142.2 in 2002 to 136.9 in 2006).

Increased Drug Resistance Leads to New CDC Treatment Guidelines

Drug resistance is an increasingly important concern in the treatment and prevention of gonorrhea.¹⁰ 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 (28 cities in 2006).¹¹

Overall, 13.8 percent of gonorrhea isolates tested through GISP in 2006 demonstrated resistance to fluoroquinolones, a leading class of

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 infection in the tissue surrounding the testicles that can result in infertility. In addition, studies suggest that presence of gonorrhea infection makes an individual more likely to acquire HIV, if exposed.¹²



antibiotics previously recommended to treat the disease, compared to 9.4 percent in 2005 and 6.8 percent in 2004. Resistance to the fluoroquinolones has been highest among men who have sex with men (MSM). From 2005 to 2006, resistance among heterosexuals nearly doubled from 3.8 to 7 percent and continued to increase among MSM from 29 to 39 percent.

In April 2007, based on preliminary 2006 data that showed widespread fluoroquinolone-resistance among both heterosexuals and men who have sex with men (MSM), CDC revised its gonorrhea treatment guidelines, no longer recommending that this class of antibiotics be used to treat any cases of gonorrhea in the United States.¹³ CDC had previously announced that fluoroquinolones were no longer recommended as treatment for gonorrhea among MSM, as well as anyone in California, Hawaii, and other areas where fluoroquinolone-resistant cases were widespread.^{4,10}

With the loss of fluoroquinolones, recommended gonorrhea treatments are limited to a single class of antibiotics, cephalosporins. Although 2006 data show no indication of cephalosporin resistance, increased monitoring for emerging resistance and accelerated research into new treatments are needed to continue the nation's progress in controlling this common sexually transmitted disease.

Syphilis: Cases Increase for Sixth 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 six years, the syphilis rate in the United States has been increasing. Between 2005 and 2006, the national P&S syphilis rate increased 13.8 percent, from 2.9 to 3.3 cases per 100,000 population, and the number of cases increased from 8,724 to 9,756.

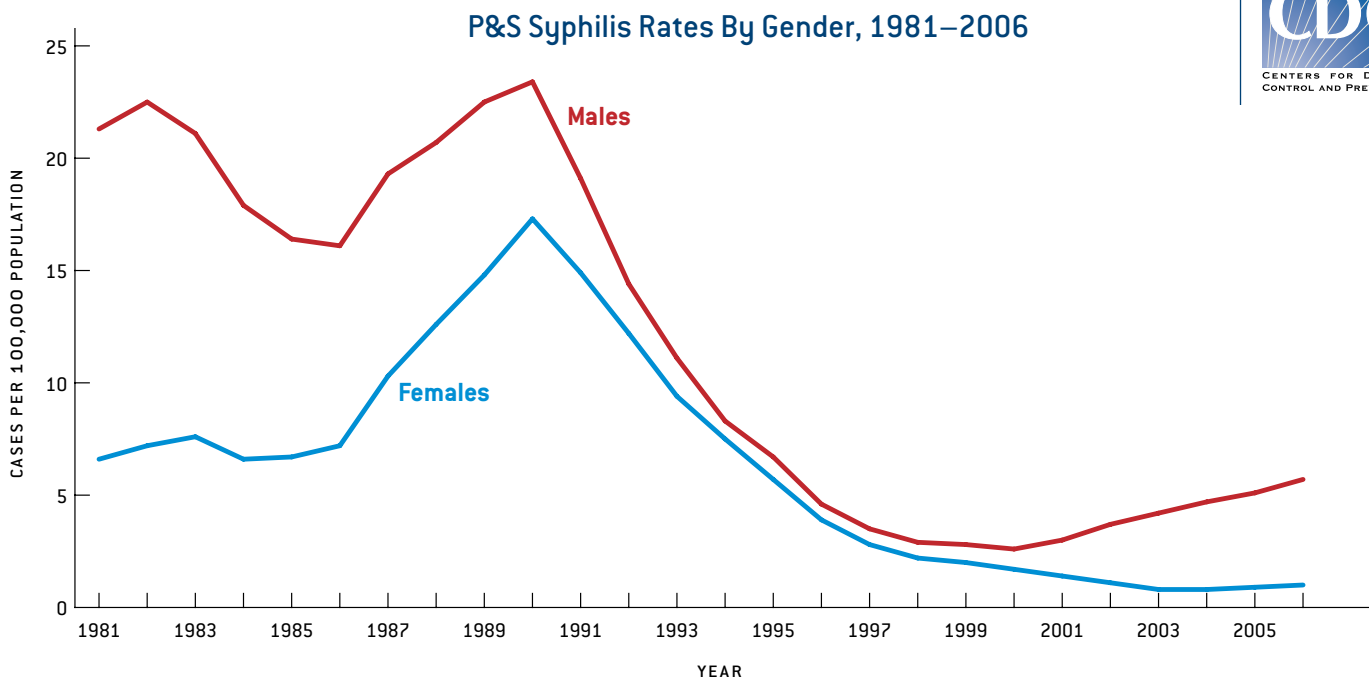
The overall increase in syphilis rates from 2005 to 2006 was driven primarily by increases among males, with the rate increasing by 11.8 percent (from 5.1 per 100,000 population in 2005 to 5.7 in 2006) in that group. However, the rate among females increased for the second year in a row, following a decade of declines (from 0.9 per 100,000 in 2005 to 1.0 in 2006, an increase of 11.1 percent). Additionally, the rate of congenital syphilis (i.e., transmission from mother to newborn) increased slightly in 2006 (from 8.2 per 100,000 live births in 2005 to 8.5 in 2006). While it is too early to determine if the increase among newborns is a trend, increases in congenital syphilis have historically followed increases among women.

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

The rate of P&S syphilis among men has risen 54 percent over the past five years (from 3.7 per 100,000 in 2002 to 5.7 per 100,000 in 2006), driving overall increases in syphilis rates for the nation. Several sources of data suggest that increased transmission of P&S syphilis 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 males is now nearly six times the rate among females, whereas the rates were almost equivalent a decade ago.

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 brain, 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 by increasing the likelihood of transmission of the virus.¹⁴



In 2005, CDC requested that case reports include the gender of sex partners for persons with syphilis. In 2006, the first full year for which data are available, 64 percent of all P&S syphilis cases were among MSM (based on data from 30 areas, 2006). More complete data on the gender of sex partners is expected in the coming years as a greater number of states report these findings.

Concerning Increases among Women

While P&S syphilis rates remained substantially lower among females than males, overall rates among females increased for the second year in a row, after a decade of declines, with an increase of 11.1 percent between 2005 and 2006 (from 0.9 to 1.0). This increase was largely driven by increased rates among African-American females, which rose 11.4 percent (from 4.4 in 2005 to 4.9 in 2006). Rates among females in all other racial/ethnic groups declined or remained stable.

The reasons for these overall increases among females are not yet clear. However, CDC is currently analyzing this trend to better understand the factors driving this increase.

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 elimination efforts in populations traditionally at risk, including African Americans and women of all races and ethnicities, and to support innovative solutions to fight the resurgence of syphilis among MSM.¹⁵

Racial Disparities Persist Across All Reportable STDs

Racial and ethnic minorities continue to be disproportionately affected by sexually transmitted diseases in the United States. These disparities may be, in part, because racial and ethnic minorities are more likely to seek care in public health clinics that report STDs more completely than private providers. However, this reporting bias does not fully explain these differences. Other contributing factors include limited access to quality health care, poverty, and higher prevalence of disease in these populations.

Data in CDC's *2006 STD Surveillance Report* show higher rates of all STDs among minority racial and ethnic populations when compared to whites, with the exception of Asians/Pacific Islanders.



Chlamydia

In 2006, the rate of chlamydia among African Americans was more than eight times higher than the rate among whites (1,275.0 vs. 153.1 per 100,000 population), with approximately 46 percent of all chlamydia cases reported among African Americans. Additionally, the rates among American Indians/Alaska Natives (797.3 per 100,000) and Hispanics (477.0 per 100,000), were five times and three times higher than whites, respectively. In 2006, chlamydia rates increased for all racial/ethnic groups, except for Asians/Pacific Islanders.

Gonorrhea

Racial disparities in gonorrhea rates are even greater and racial gaps in diagnosis of gonorrhea are more pronounced than any other disease. The gonorrhea rate among African Americans was 18 times greater than that for whites in 2006 (658.4 per 100,000 vs. 36.5 per 100,000). From 2005 to 2006, the gonorrhea rate among African Americans increased by 6.3 percent—the first increase since 1998. In 2006, African Americans accounted for 69 percent of reported cases of gonorrhea.

In that same year, American Indians/Alaska Natives had the second-highest gonorrhea rate (138.3 per 100,000), followed by Hispanics (77.4), whites (36.5), and Asians/Pacific Islanders (21.1). In 2006, there were increases in gonorrhea rates among all racial and ethnic groups, except Asians/Pacific Islanders.

Syphilis

Although racial gaps in syphilis rates are narrowing, disparities remain, with rates in 2006 approximately six times higher among blacks than among whites. This represents a substantial decline from 1999, when the rate among blacks was 29 times greater than among whites. It is important to note that this narrowing reflects both declining disease rates among African Americans as well as significant increases among white males in recent years.

Despite some progress, African Americans continue to remain disproportionately affected by syphilis with a rate of 11.3 cases per 100,000 population in 2006. This is more than three times the rate for Hispanics, who have the second highest rate (3.6 cases per 100,000) as well as American Indians/Alaska Natives (3.3 cases per 100,000).

In 2006, the P&S syphilis rate among blacks increased for the third consecutive year, following more than a decade of declines. Between 2005 and 2006, the rate among blacks increased 16.5 percent (from 9.7 to 11.3), with the largest increase among black males (15.5 to 18.3, an increase of 18.1 percent).

In 2006, the rate of P&S syphilis in black females was 16 times higher than in white females. In that same year, 43.2 percent of all reported P&S syphilis cases occurred among African Americans, while whites accounted for 38.4 percent. Syphilis rates increased for all races and ethnicities in 2006.

CDC Efforts to Address Racial and Ethnic Disparities

CDC continues to work with partners from multiple sectors to increase awareness and identify and implement new solutions to reducing the impact of STDs in communities of color. In June 2007, CDC convened a consultation to address STD disparities in African-American communities as part of its accelerated efforts to bring community leaders and other partners together to address racial and ethnic disparities in STD rates.

Continuing to highlight these disparities is one critical step in increasing awareness of the problem among health care providers and affected communities, which can lead to developing solutions to reduce the spread of STDs.



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