SPECIAL FOCUS PROFILES

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Special Focus Profiles

The **Special Focus Profiles** highlight trends and distribution of STDs in populations of particular interest for STD and HIV prevention programs in state and local health departments. These populations are most vulnerable to STDs and their consequences: women and infants, adolescents and young adults, racial and ethnic minorities, MSM, and persons entering corrections facilities. The **Special Focus Profiles** refer to figures located in disease-specific sections in the **National Profile** and additional figures and tables (Figures A-EE and Tables A-F) that highlight specific points made in the text.

STDs in Women and Infants

Public Health Impact

Women and infants disproportionately bear the long term consequences of STDs. Women infected with *Neisseria gonorrhoeae* or *Chlamydia trachomatis* can develop PID, which, in turn, may lead to reproductive system morbidity such as ectopic pregnancy and tubal factor infertility. If not adequately treated, up to 40% of women infected with chlamydia or gonorrhea may develop PID.[1,2] Among women with PID, tubal scarring can cause involuntary infertility in 20%, ectopic pregnancy in 9%, and chronic pelvic pain in 18%.[3] Approximately 70% of chlamydial infections and 50% of gonococcal infections in women are asymptomatic.[4-6] These infections are detected primarily through screening programs. The vague symptoms associated with chlamydial and gonococcal PID cause 85% of women to delay seeking medical care, thereby increasing the risk of infertility and ectopic pregnancy.[7] Data from a randomized controlled trial of chlamydia screening in a managed care setting suggest that such screening programs can reduce the incidence of PID by as much as 60%.[8]

Human papillomavirus (HPV) infections are highly prevalent, especially among young sexually-active women. While the great majority of HPV infections in women resolve within one year, they are a major concern because persistent infection with specific types are causally related to cervical cancer; these types also cause Pap smear abnormalities. Other types cause genital warts, low grade Pap smear abnormalities and, rarely, recurrent respiratory papillomatosis in infants born to infected mothers.[9]

Direct Impact on Pregnancy

Gonorrhea and chlamydia can result in adverse outcomes of pregnancy, including neonatal ophthalmia and, in the case of chlamydia, neonatal pneumonia. Although topical prophylaxis of infants at delivery is effective for prevention of gonococcal ophthalmia neonatorum, prevention of neonatal pneumonia requires prenatal detection and treatment.

Genital infections with herpes simplex virus are extremely common, may cause painful outbreaks, and may have serious consequences for pregnant women.[10]

When a woman has a syphilis infection during pregnancy, she may transmit the infection to the fetus *in utero*. This may result in fetal death or an infant born with physical and mental developmental disabilities. Most cases of congenital syphilis are easily preventable if women are screened for syphilis and treated early during prenatal care.[11]

Observations

Chlamydia — United States

Between 2006 and 2007, the rate of chlamydial infections in women increased from 510.8 to 543.6 per 100,000 females (Figure 1, Table 4). Chlamydia rates exceed gonorrhea rates among women in all states (Figures A and C, Tables 4 and 14).

Chlamydia Prevalence Monitoring Project

Prenatal Clinics — In 2007, the median state-specific chlamydia test positivity among 15- to 24-year-old women screened in selected prenatal clinics in 22 states, Puerto Rico, and the Virgin Islands was 7.4% (range: 2.0% to 20.7%) (Figure B).

Family Planning Clinics — In 2007, 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 50 states, Puerto Rico, and the Virgin Islands was 6.9% (range: 2.9% to 16.8%) (Figures 9 and 10).

Gonorrhea — United States

Gonorrhea rates among women were higher than the overall HP 2010 target of 19.0 cases per 100,000 population[12] in 45 states, Washington D.C., Guam, and the Virgin Islands in 2007 (Figure C, Table 14).

Like chlamydia, gonorrhea is often asymptomatic in women. Gonorrhea screening, therefore, is an important strategy for the identification of gonorrhea among women. Large-scale screening programs for gonorrhea in women began in the 1970s. After an initial increase in cases detected through screening, gonorrhea rates for both women and men declined steadily throughout the 1980s and early 1990s, and then reached a plateau (Figure 13). The gonorrhea rate for women (123.5 per 100,000 females) increased slightly in 2007 for the third consecutive year (Figure 14).

Although the gonorrhea rate in men has historically been higher than the rate in women, the gonorrhea rate among women has been comparable to the rate among men for seven consecutive years (Figure 14 and Tables 14 and 15).

Gonorrhea Prevalence Monitoring Project

Prenatal Clinics — In 2007, the median state-specific gonorrhea test positivity among 15- to 24-year-old women screened in selected prenatal clinics in 19 states, Puerto Rico, and the Virgin Islands was 0.8% (range: 0.0% to 3.9%) (Figure D). Median gonorrhea positivity in prenatal clinics has shown minimal change in recent years.

Family Planning Clinics — In 2007, 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, and the Virgin Islands was 0.9% (range: 0.1% to 4.9%) (Figure 23). Median gonorrhea positivity in family planning clinics has shown minimal change in recent years.

Primary and Secondary Syphilis by State

The HP 2010 target for primary and secondary (P&S) syphilis is 0.2 case per 100,000 population. In 2007, 32 states and the District of Columbia had rates of P&S syphilis for women that were greater than 0.2 case per 100,000 population (Table 26).

Congenital Syphilis

The HP 2010 target for congenital syphilis is 1.0 case per 100,000 live births. In 2007, 29 states, the District of Columbia, Guam, and Puerto Rico had rates higher than this target (Table 38).

Trends in congenital syphilis usually follow trends in P&S syphilis among women, with a lag of one to two years (Figure 41). The congenital syphilis rate peaked in 1991 at 107.3 cases per 100,000 live births, and declined by 92.4% to 8.2 cases per 100,000 live births in 2005 (Table 39). The rate of P&S syphilis among women

declined 94.8% (from 17.3 to 0.9 cases per 100,000 females) during 1990–2005 (Figure 29).

After 14 years of decline in the United States, the rate of congenital syphilis increased 11.0% between 2005 and 2006 (from 8.2 to 9.1 cases per 100,000 live births) (Table 39). Rates increased again between 2006 and 2007 by 15.4% (from 9.1 to 10.5 cases per 100,000 live births) (Table 39).

The 2007 rate of congenital syphilis for the United States is currently 10.5 times higher than the HP 2010 target of 1.0 case per 100,000 live births (Table 38).

While most cases of congenital syphilis occur among infants whose mothers have had some prenatal care, late or limited prenatal care has been associated with congenital syphilis. Failure of health care providers to adhere to maternal syphilis screening recommendations also contributes to the occurrence of congenital syphilis.[13]

Pelvic Inflammatory Disease

Accurate estimates of pelvic inflammatory disease (PID) and tubal factor infertility resulting from gonococcal and chlamydial infections are difficult to obtain. Definitive diagnoses of these conditions can be complex. Hospitalizations for PID have declined steadily throughout the 1980s and early 1990s,[14,15] but have remained relatively constant between 2000 and 2006 (Figure H).

The estimated number of initial visits to physicians' offices for PID from the National Disease and Therapeutic Index (NDTI) has generally declined from 2000 through 2007 (Figure I and Table 42).

Since 2000, the number of cases of PID diagnosed in emergency departments among women 15 to 44 years of age has generally declined though cases increased from 2005–2006.

Racial disparities in diagnosed PID have been observed in both ambulatory and hospitalized settings. Black women had rates of disease that were two to three times those in white women. These disparities are consistent with the marked racial disparities observed for chlamydia and gonorrhea; however, because of the subjective methods by which PID is diagnosed, racial disparity data should be interpreted with caution.[15]

Ectopic Pregnancy

Evidence suggests that health care practices associated with clinical management of ectopic pregnancy changed in the late 1980s and early 1990s. Before that time, treatment of ectopic pregnancy usually required admission to a hospital. Hospitalization statistics were therefore useful for monitoring trends in ectopic pregnancy. From 1997 to 2006, hospitalizations for ectopic pregnancy have remained generally stable (Figure G). As of the date of publication of this report, 2007 data are not available. Data suggest that nearly half of all ectopic pregnancies are treated on an outpatient basis.[16]

[1] Stamm WE, Guinan ME, Johnson C. Effect of treatment regimens for *Neisseria gonorrhoeae* on simultaneous infections with *Chlamydia trachomatis*. *N Engl J Med* 1984;310:545–9.

[2] Platt R, Rice PA, McCormack WM. Risk of acquiring gonorrhea and prevalence of abnormal adnexal findings among women recently exposed to gonorrhea. *JAMA* 1983;250:3205–9.

[3] Westrom L, Joesoef R, Reynolds G, *et* al. Pelvic inflammatory disease and fertility: a cohort study of 1,844 women with laparoscopically verified disease and 657 control women with normal laparoscopy. *Sexually Transmitted Diseases* 1992;9:185–92.

[4] Hook EW III, Handsfield HH. Gonococcal infections in the adult. In: Holmes KK, Sparling PF, Mardh PA, , *et* al, *eds*. *Sexually Transmitted Diseases*, 3rd edition. New York, New York: McGraw-Hill, 1999.

[5] Stamm WE, Holmes KK. *Chlamydia trachomatis* infections in the adult. In: Holmes KK, Mardh PA, Sparling PF, *et* al, *eds*. *Sexually Transmitted Diseases*, 2nd edition. New York City: McGraw-Hill, Inc, 1990:181–93.

[6] Zimmerman HL, Potterat JJ, Dukes RL, *et* al. Epidemiologic differences between chlamydia and gonorrhea. *Am J Public Health* 1990;80:1338–42.

[7] Hillis SD, Joesoef R, Marchbanks PA, *et* al. Delayed care of pelvic inflammatory disease as a risk factor for impaired fertility. *Am J Obstet Gynecol* 1993;168:1503–9.

[8] 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):1362–6.

[9] Division of STD Prevention. *Prevention of Genital HPV Infection and Sequelae: Report of an External Consultants' Meeting*. National Center for HIV, STD, and TB Prevention, Centers for Disease Control and Prevention, Atlanta, December 1999.

[10] Handsfield HH, Stone KM, Wasserheit JN. Prevention agenda for genital herpes. *Sexually Transmitted Diseases* 1999;26:228–231.

[11] Centers for Disease Control. Guidelines for prevention and control of congenital syphilis. *MMWR* 1988;37(No.S-1)

[12] 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.

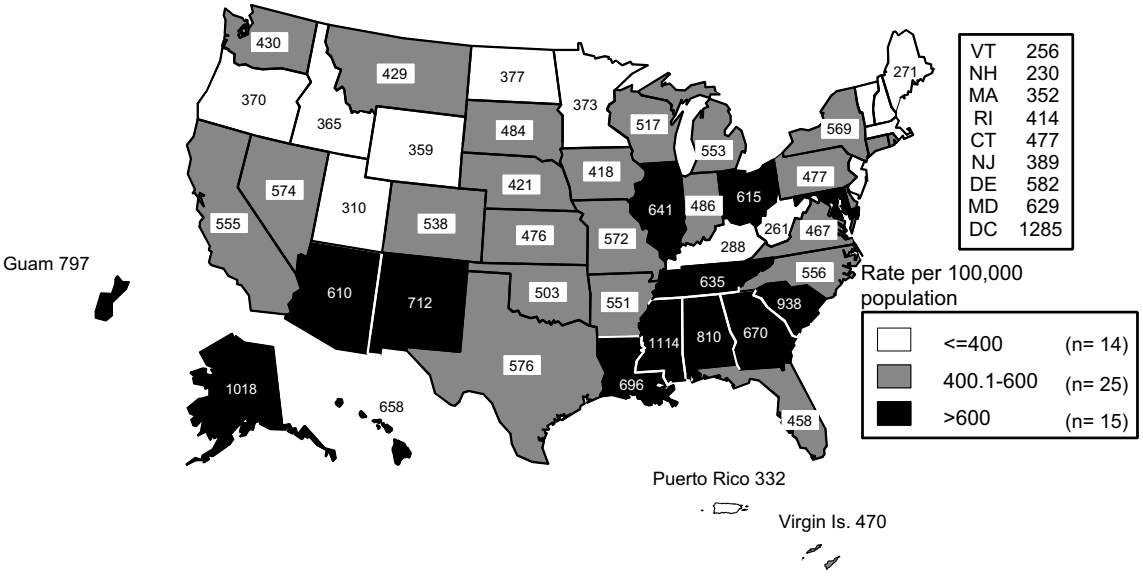
[13] Centers for Disease Control and Prevention. Congenital syphilis – United States, 2002. *MMWR* 2004;53:716–9.

[14] Rolfs RT, Galaid EI, Zaidi AA. Pelvic inflammatory disease: trends in hospitalization and office visits, 1979 through 1988. *Am J Obstet Gynecol* 1992;166:983–90.

[15] Sutton MY, Sternberg M, Zaidi A, St. Louis ME, Markowitz LE. Trends in pelvic inflammatory disease hospital discharges and ambulatory visits, United States, 1985–2001. *Sexually Transmitted Diseases* 2005;32(12)778–784.

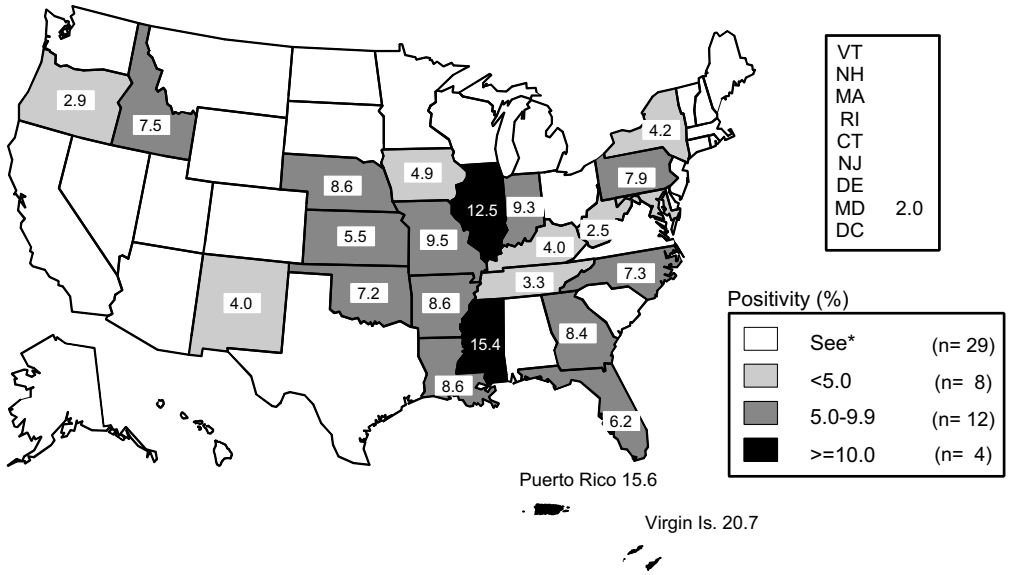
[16] Centers for Disease Control and Prevention. Ectopic pregnancy in the United States, 1990–1992. *MMWR* 1995;44:46–8.

Figure A. Chlamydia — Rates among women by state: United States and outlying areas, 2007



Note: The total chlamydial infection rate among women in the United States and outlying areas (Guam, Puerto Rico and Virgin Islands) was 540.9 per 100,000 female population.

Figure B. Chlamydia — Positivity in 15- to 24-year-old women tested in prenatal clinics by state: United States and outlying areas, 2007

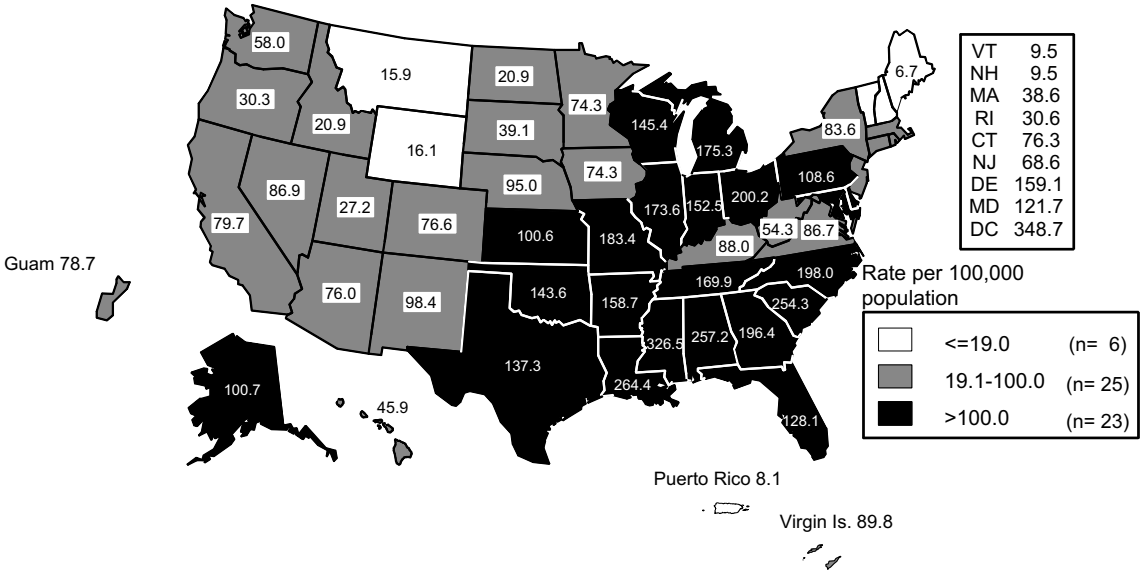


*States/areas not meeting minimum inclusion criteria in prenatal clinics.

Note: Includes states and outlying areas that reported chlamydia positivity data on at least 100 women aged 15 to 24 years during 2007.

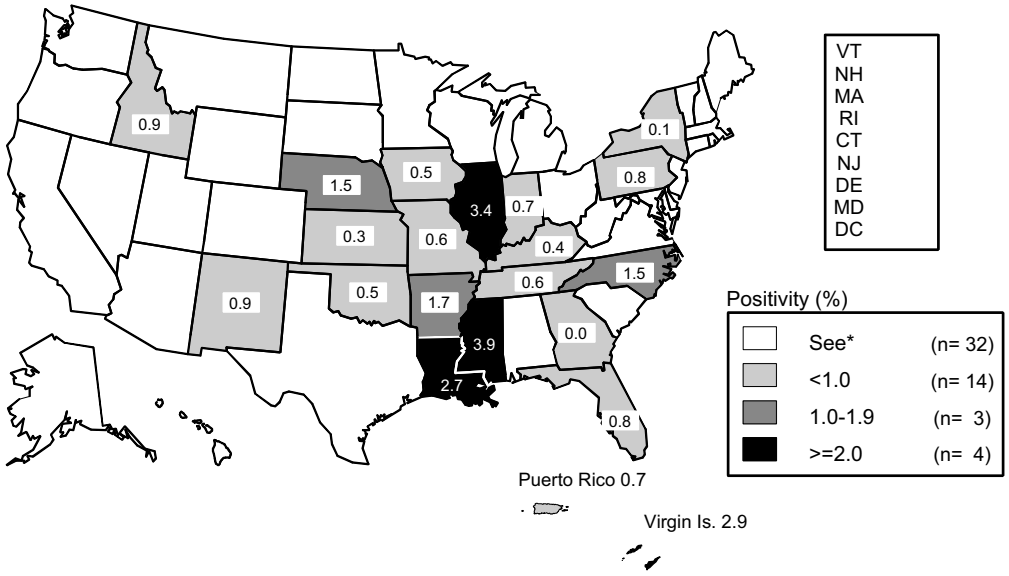
SOURCE: Chlamydia Prevalence Monitoring Project (Regional Infertility Prevention Projects); Office of Population Affairs; Local and State STD Control Programs; Centers for Disease Control and Prevention

Figure C. Gonorrhea — Rates among women by state: United States and outlying areas, 2007



Note: The total gonorrhea infection rate among women in the United States and outlying areas (Guam, Puerto Rico and Virgin Islands) was 121.9 per 100,000 female population.

Figure D. Gonorrhea — Positivity in 15- to 24-year-old women tested in prenatal clinics by state: United States and outlying areas, 2007

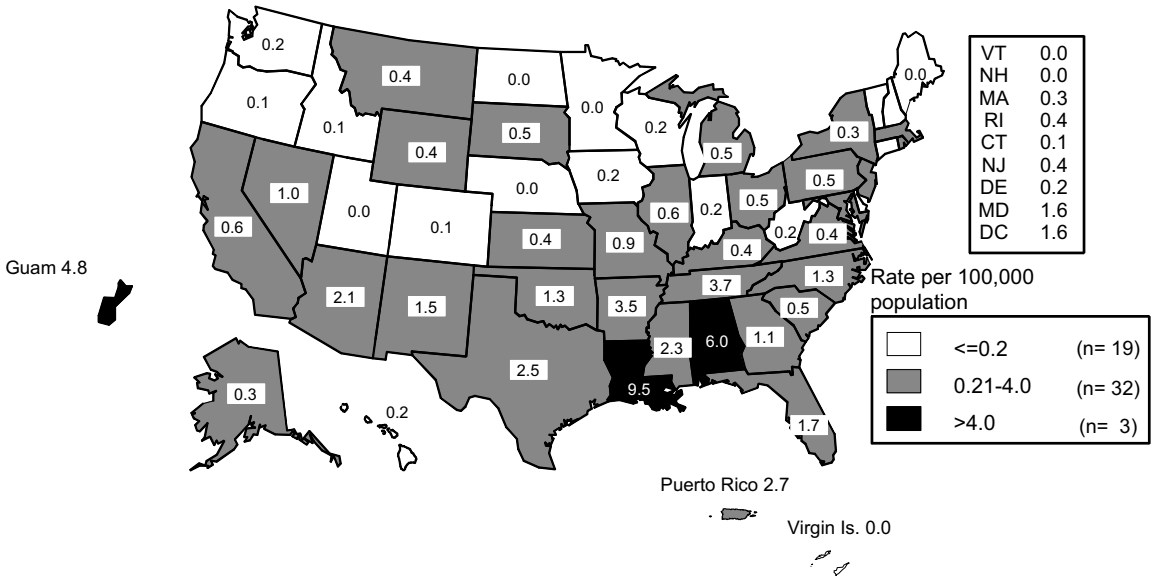


*States/areas not meeting minimum inclusion criteria in prenatal clinics.

Note: Includes states and outlying areas that reported gonorrhea positivity data on at least 100 women aged 15 to 24 years during 2007.

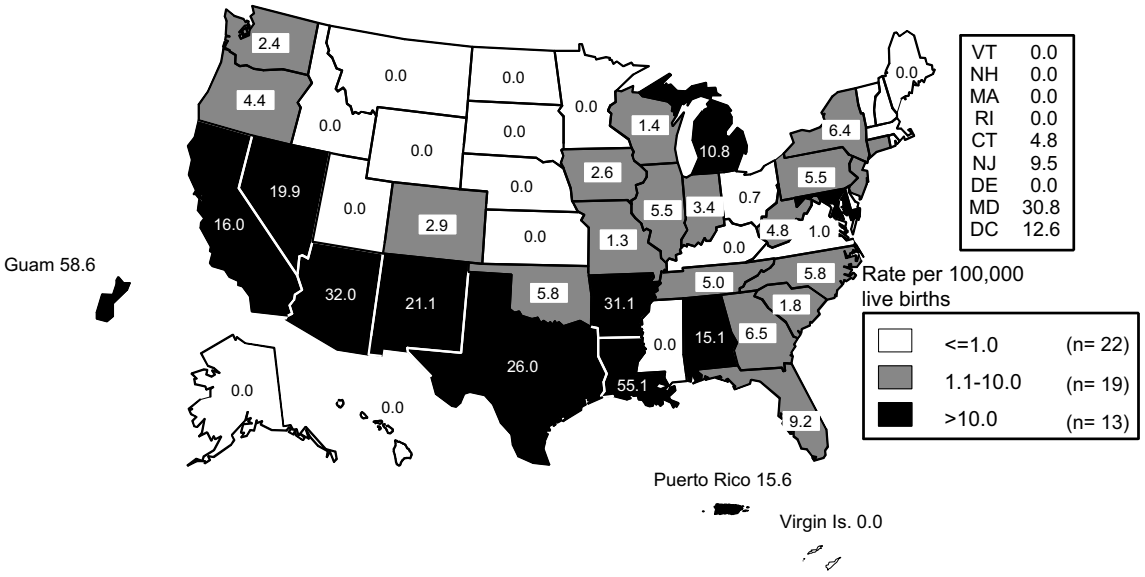
SOURCE: Gonorrhea Prevalence Monitoring Project (Regional Infertility Prevention Projects); Office of Population Affairs; Local and State STD Control Programs; Centers for Disease Control and Prevention

Figure E. Primary and secondary syphilis — Rates among women by state: United States and outlying areas, 2007



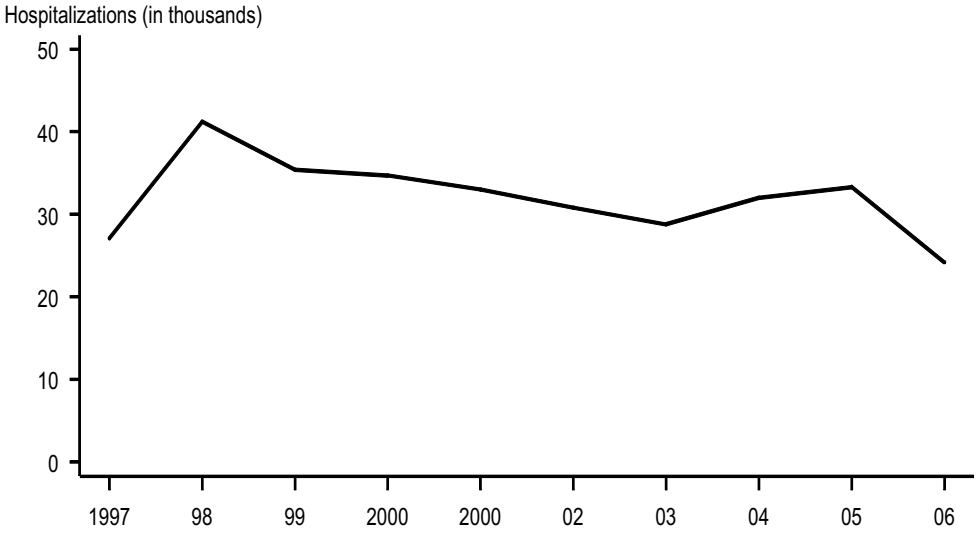
Note: The total rate of P&S syphilis among women in the United States and outlying areas (Guam, Puerto Rico, and Virgin Islands) was 1.1 per 100,000 female population.

Figure F. Congenital syphilis — Rates for infants < 1 year of age by state: United States and outlying areas, 2007



Note: The total rate of congenital syphilis for infants < 1 year of age for the United States and outlying areas (Guam, Puerto Rico, and Virgin Islands) was 10.5 per 100,000 live births. The Healthy People 2010 target is 1.0 case per 100,000 live births.

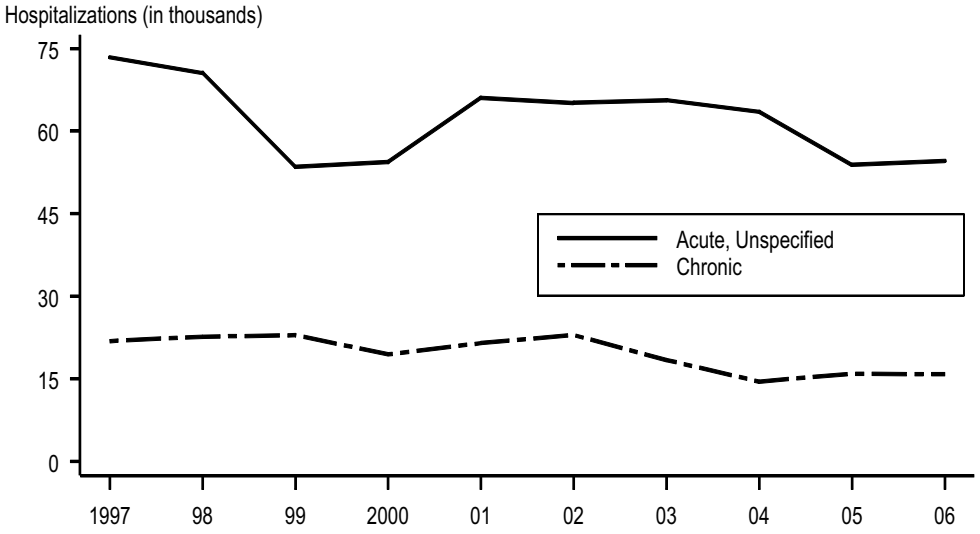
Figure G. Ectopic pregnancy — Hospitalizations of women 15 to 44 years of age: United States, 1997–2006



Note: The relative standard error for these estimates is 14.2%. Data only available through 2006.

SOURCE: National Hospital Discharge Survey (National Center for Health Statistics, CDC)

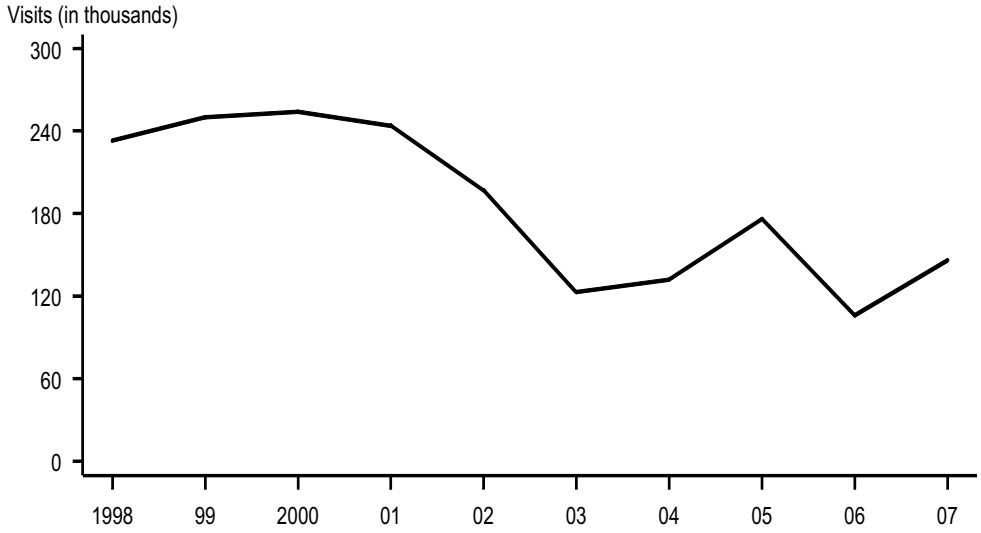
Figure H. Pelvic inflammatory disease — Hospitalizations of women 15 to 44 years of age: United States, 1997–2006



Note: The relative standard error for these estimates of the total number of acute unspecified PID cases ranges from 11.9% to 17.2%. The relative standard error for these estimates of the total number of chronic PID cases ranges from 11% to 18%. Data only available through 2006.

SOURCE: National Hospital Discharge Survey (National Center for Health Statistics, CDC)

Figure I. Pelvic inflammatory disease — Initial visits to physicians' offices by women 15 to 44 years of age: United States, 1998–2007



Note: The relative standard error for these estimates range from 21.6% to 29.3%. See Appendix (Other Data Sources) and Table 42.

SOURCE: National Disease and Therapeutic Index (IMS Health)

STDs in Adolescents and Young Adults

Public Health Impact

Compared to older adults, sexually-active adolescents 15 to 19 years of age and young adults 20 to 24 years of age are at higher risk for acquiring STDs for a combination of behavioral, biological, and cultural reasons. For some STDs, for example, *Chlamydia trachomatis*, adolescent women may have a physiologically increased susceptibility to infection due to increased cervical ectopy. The higher prevalence of STDs among adolescents also reflects multiple barriers to accessing quality STD prevention services, including lack of insurance or other ability to pay, lack of transportation, discomfort with facilities and services designed for adults, and concerns about confidentiality. Recent estimates suggest that while representing 25% of the ever sexually active population, 15 to 24 year-olds acquire nearly half of all new STDs.[1]

Observations

Chlamydia

Chlamydia rates for persons 15 to 19 and 20 to 24 years of age continue to increase as they have for all age groups. Between 2006 and 2007, the increase for those 15 to 19 years of age was 7.7%, and for those 20 to 24 years of age was 6.6% (Table 10).

15- to 19-Year-Old Women — As in previous years, in 2007 15- to 19-year-old women had the highest rate of chlamydia (3,004.7 per 100,000 population) compared to any other age/sex group (Figure 5 and Table 10). Chlamydia rates for 15- to 19-year-old women increased 6.4% from 2,824 per 100,000 population in 2006 to 3,004.7 per 100,000 population in 2007.

20- to 24-Year-Old Women — In 2007, as in previous years, 20- to 24-year-old women had the second highest rate of chlamydia (2,948.8 per 100,000 population) compared to any other age/sex group. Chlamydia rates in women of this age group increased 5.6% from 2006 to 2007.

15- to 19-Year-Old Men — Chlamydia rates for 15- to 19-year-old men increased 14.3% from 537.9 per 100,000 population in 2006 to 615.0 per 100,000 population in 2007.

20- to 24-Year-Old Men — As in previous years, in 2007, 20- to 24-year old men had the highest rate of chlamydia among men (932.9 per 100,000 population). Chlamydia rates in men of this age group increased 9.4% from 2006 to 2007.

Gonorrhea

For the third consecutive year, gonorrhea rates for persons 15 to 19 and 20 to 24 years of age increased. Between 2006 and 2007, the increase for those 15 to 19 years of age was 2.1%, and for those 20 to 24 years of age was 0.7% (Table 20).

15- to 19-Year-Old Women — As in previous years, in 2007 15- to 19-year-old women had the highest rate of gonorrhea

(647.9 per 100,000 population) compared to any other age/sex group (Figure 19 and Table 20). Gonorrhea rates in women of this age group have increased for the past three years.

20- to 24-Year-Old Women — In 2007, as in previous years, 20- to 24-year-old women had the second highest rate of gonorrhea (614.5 per 100,000 population) compared to any other age/sex group. Gonorrhea rates in women of this age group have also increased for the past three years.

15- to 19-Year-Old Men — Gonorrhea rates for 15- to 19-year-old men increased 3.8% from 275.4 per 100,000 population in 2006 to 286.0 per 100,000 population in 2007. Gonorrhea rates in men of this age group have increased for the past three years. (Figure 20, Table 20).

20- to 24-Year-Old Men — As in previous years, in 2007, 20- to 24-year old men had the highest rate of gonorrhea among men (450.1 per 100,000 population). Gonorrhea rates in men of this age group declined 0.4% from 2006 to 2007.

Primary and Secondary Syphilis

Syphilis rates among 15- to 19-year old women have increased annually since 2004 from 1.5 cases per 100,000 population to 2.4 per 100,000 population in 2007. Rates in women have been the highest each year in the 20 to 24 year age group. In this age group there were 3.5 cases per 100,000 population in 2007 (Figure 33, Table 32). Syphilis rates for women in these younger age groups are comparable to rates in older age groups.

In contrast, in men, rates among 15- to 19-years olds are much lower than those in men in older age groups. However, these rates have increased since 2002 from 1.3 cases per 100,000 population in 2002 to 3.0 in 2006 and 3.8 in 2007. During 2003 to 2006, rates in men had been the highest each year in the 35 to 39 year old age group. In 2007, rates in men were highest in the 25 to 29 year old age group, with 14.9 cases per 100,000 population, and 14.4 cases per 100,000 population in the 35 to 39 year old age group (Figure 33, Table 32).

Chlamydia Prevalence Monitoring Project

Chlamydia test positivity among 15- to 19-year-old women screened in family planning clinics fluctuated in all 10 HHS regions between 2003 and 2007 (Figure J). Positivity has remained fairly stable in four regions (I, III, V, X). From 2003 to 2006, slight decreases in positivity occurred in one region (II), followed by a small increase in 2007. In the remaining five regions (IV, VI, VII, VIII, IX), positivity rates increased slightly over the five-year time frame from 2003 to 2007. The positivity rates presented in Figure J are not adjusted for changes in laboratory test methods and associated increases in test sensitivity.

National Job Training Program

Since 1990, approximately 20,000 female National Job Training Program entrants have been screened each year for chlamydia. Since 2004, approximately 35,000 male entrants have been screened annually. This program, administered by the National Job Training Program at more than 100 sites throughout the country, is a job training program for socioeconomically-disadvantaged youth aged 16 to 24 years of age.

Chlamydial infection is widespread geographically and highly prevalent among socioeconomically-disadvantaged young women and men entering the National Job Training Program.[2–4] Specimens from at least 100 students from each state and outlying area were tested by a single national contract laboratory.* Among women entering the program from

40 states, the District of Columbia, and Puerto Rico in 2007, based on their place of residence before program entry, the median state-specific chlamydia prevalence was 13.2% (range: 3.8% to 23.5%) (Figure K). Among men entering the program from 47 states, the District of Columbia, and Puerto Rico in 2007, the median state-specific chlamydia prevalence was 7.2% (range: 2.0% to 14.5%) (Figure L).

Data from National Job Training Program centers that submit gonorrhea specimens from female students aged 16 to 24 years to the national contract laboratory indicated a high prevalence of gonococcal infection in this population. Specimens from at least 100 students from each state and outlying area were tested by the contract laboratory. Among women entering the program from 36 states and Puerto Rico, the median state-specific gonorrhea prevalence was 3.0% (range: 0.0% to 7.2%) in 2007 (Figure M). Among men entering the program from 32 states and Puerto Rico in 2007, the median state-specific gonorrhea prevalence was 1.1% (range: 0.0% to 4.4%) (Figure N).

Juvenile Corrections Facilities

Among adolescent women entering juvenile corrections facilities, the Corrections STD Prevalence Monitoring Project identified a median facility-specific chlamydia positivity rate of 14.3% (range: 2.5% to 32.1%) (Table A) and a median gonorrhea positivity rate of 5.3% (range: 0.0% to 13.9%) (Table C). Among adolescent men entering juvenile corrections facilities, the median facility-specific chlamydia positivity rate was 5.7% (range: 0.0% to 14.2%) and the median gonorrhea positivity rate was 1.0% (range: 0.0% to 4.5%). See **Special Focus Profiles** (STDs in Persons Entering Corrections Facilities) for additional details.

*Laboratory data are provided by the Center for Disease Detection, San Antonio, Texas.

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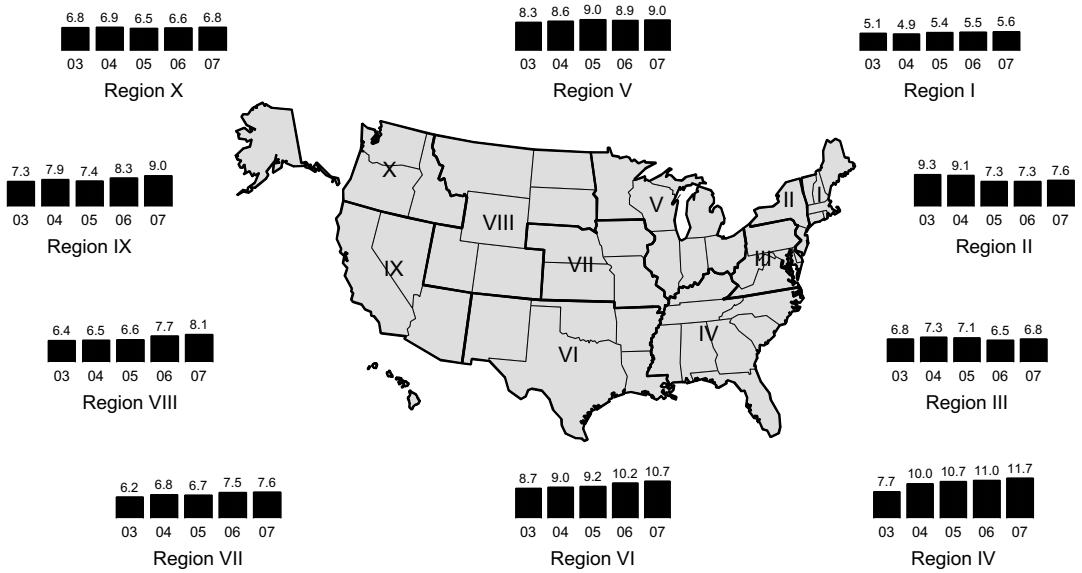
[1] Weinstock, H, Berman, S, Cates, W, Jr. Sexually transmitted diseases among American youth: Incidence and prevalence estimates, 2000. *Perspect Sex Reprod Health*, 2004:36(1):6–10.

[2] Mertz KJ, Ransom RL, St. Louis ME, Groseclose SL, Hadgu A, Levine WC, Hayman C. Decline in the prevalence of genital chlamydia infection in young women entering a National Job Training Program, 1990–1997. *Am J Pub Health* 2001;91(8):1287–1290.

[3] Joesoef MR, Mosure DJ. Prevalence of chlamydia in young men in the United States from newly implemented universal screening in a National Job Training Program. *Sexually Transmitted Diseases* 2006;33(10):636–639.

[4] Joesoef MR, Mosure DJ. Prevalence of chlamydia in young women entering the National Job Training Program 1998–2004. *Sexually Transmitted Diseases* 2006;33(9):571–575.

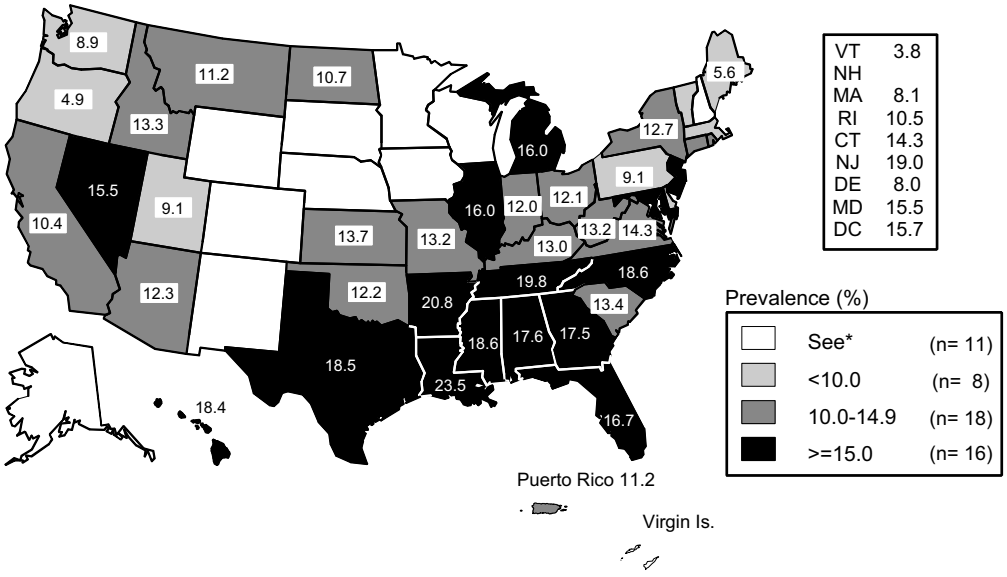
Figure J. Chlamydia — Trends in positivity among 15- to 19-year-old women tested in family planning clinics by HHS region, 2003–2007



Note: 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

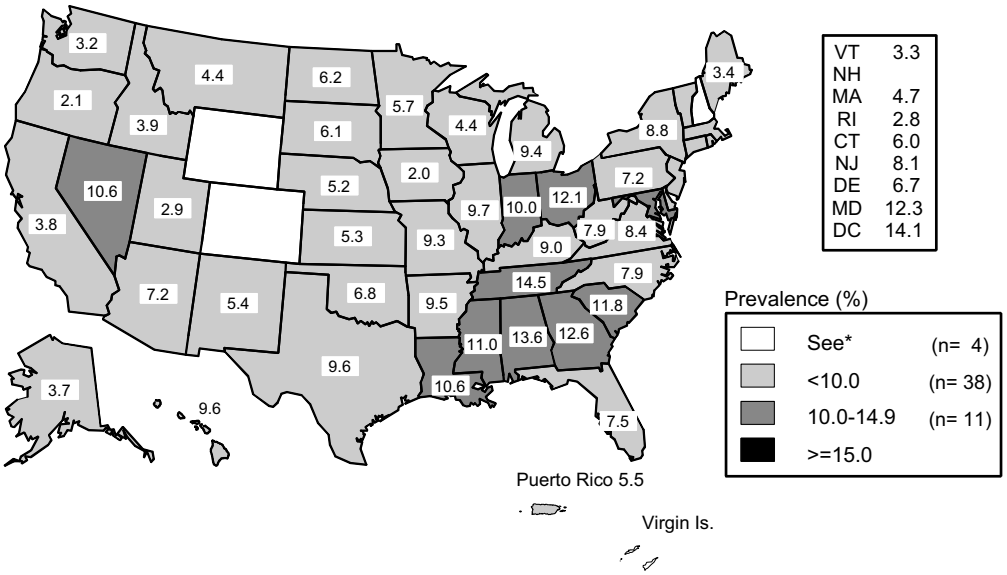
Figure K. Chlamydia — Prevalence among 16- to 24-year-old women entering the National Job Training Program by state of residence: United States and outlying areas, 2007



*Fewer than 100 women residing in these states/areas and entering the National Job Training Program were screened for chlamydia in 2007.

SOURCE: National Job Training Program; Department of Labor (in collaboration with the Center for Disease Detection, San Antonio, Texas)

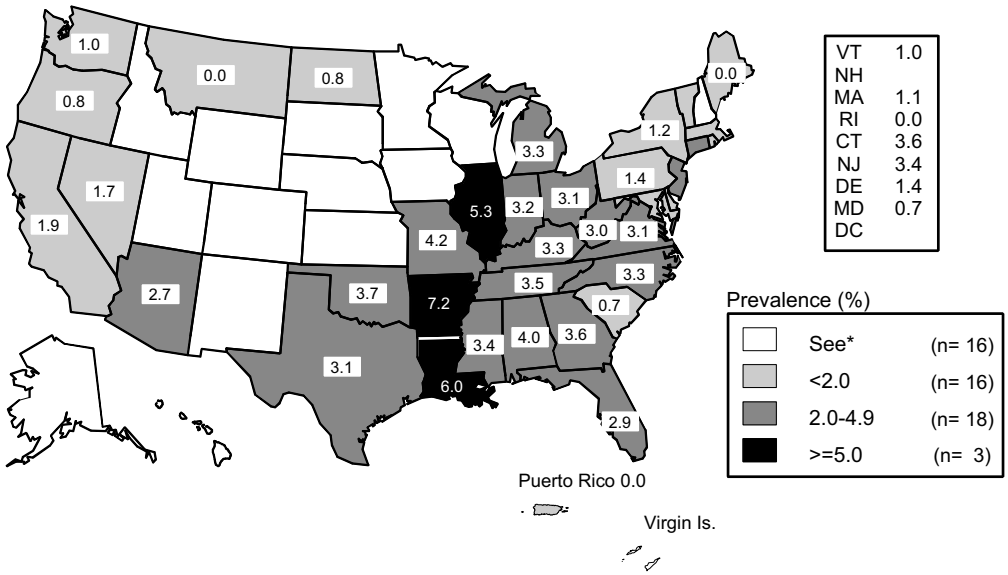
Figure L. Chlamydia — Prevalence among 16- to 24-year-old men entering the National Job Training Program by state of residence: United States and outlying areas, 2007



*Fewer than 100 men residing in these states/areas and entering the National Job Training Program were screened for chlamydia in 2007.

SOURCE: National Job Training Program; Department of Labor (in collaboration with the Center for Disease Detection, San Antonio, Texas)

Figure M. Gonorrhea — Prevalence among 16- to 24-year-old women entering the National Job Training Program by state of residence: United States and outlying areas, 2007

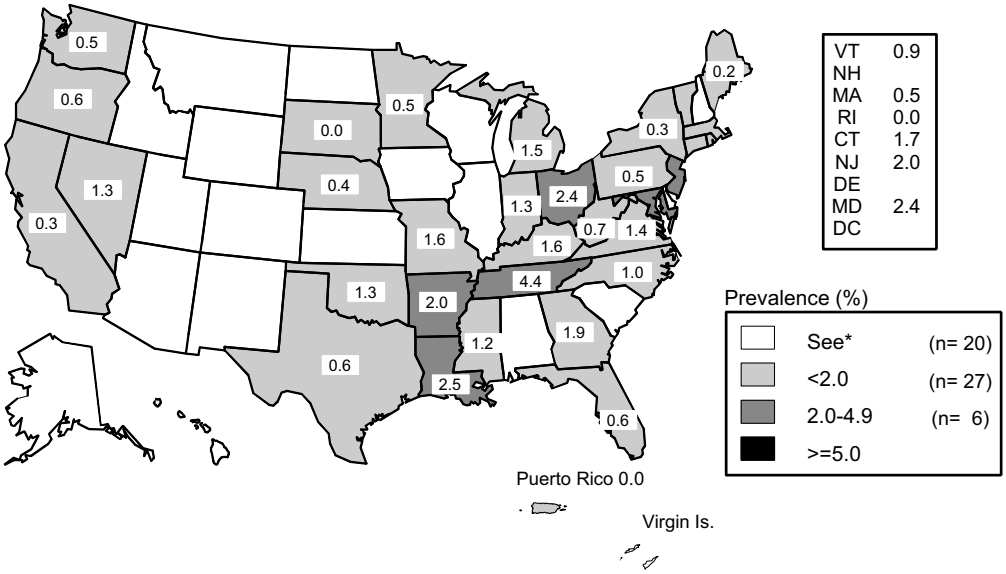


*Fewer than 100 women residing in these states/areas and entering the National Job Training Program were screened for gonorrhea by the national contract laboratory in 2007.

Note: Many training centers test female students for gonorrhea using local laboratories; these results are not available to CDC. For this map, gonorrhea test results for students at centers submitting specimens to the national contract laboratory were included if the number of gonorrhea tests submitted was greater than 90% of the number of chlamydia tests submitted.

SOURCE: National Job Training Program; Department of Labor (in collaboration with the Center for Disease Detection, San Antonio, Texas)

Figure N. Gonorrhea — Prevalence among 16- to 24-year-old men entering the National Job Training Program by state of residence: United States and outlying areas, 2007



*Fewer than 100 men residing in these states/areas and entering the National Job Training Program were screened for gonorrhea by the national contract laboratory in 2007.

Note: Many training centers test male students for gonorrhea using local laboratories; these results are not available to CDC. For this map, gonorrhea test results for students at centers submitting specimens to the national contract laboratory were included if the number of gonorrhea tests submitted was greater than 90% of the number of chlamydia tests submitted.

SOURCE: National Job Training Program; Department of Labor (in collaboration with the Center for Disease Detection, San Antonio, Texas)

STDs in Racial and Ethnic Minorities

Public Health Impact

Surveillance data show higher rates of reported STDs among some minority racial or ethnic groups when compared with rates among whites. Race and ethnicity in the United States are risk markers that correlate with other more fundamental determinants of health status such as poverty, access to quality health care, health care seeking behavior, illicit drug use, and living in communities with high prevalence of STDs. Acknowledging the disparity in STD rates by race or ethnicity is one of the first steps in empowering affected communities to organize and focus on this problem.

STD Reporting Practices

Surveillance data are based on cases of STDs reported to state and local health departments (see **Appendix**). In many areas, reporting from public sources, (for example, STD clinics) is thought to be more complete than reporting from private sources. Since minority populations may utilize public clinics more than whites, differences in rates between minorities and whites may be increased by this reporting bias. However, prevalence data from population-based surveys such as the National Health and Nutrition Examination Survey (NHANES) and the National Longitudinal Study of Adolescent Health (Add Health) confirm the existence of marked STD disparities.[1,2]

Completeness of Race/Ethnicity Data

To adjust for missing case report data, cases for which information is unknown are redistributed according to the distribution of cases in which race or ethnicity is known. This process may exacerbate any reporting bias.

Chlamydia — In 2007, 25.7% of reports on chlamydia cases were missing race or ethnicity (ranging by state from 0.0% to 55.5%) (Table A1).

Gonorrhea — In 2007, 20.3% of reports on gonorrhea cases were missing information on race or ethnicity (ranging by state from 0.0% to 40.2%).

Syphilis — In 2007, only 4.1% of reports on syphilis cases were missing information on race or ethnicity (ranging from 0.0% to 22.6% among states with 10 or more cases of P&S syphilis).

Observations

Chlamydia

All racial and ethnic groups except American Indian/Alaska Natives reported increases in chlamydia rates from 2006 to 2007 (Table 11B). From 2003 to 2007, chlamydia rates increased by 24.6% among blacks; 9.0% among American Indian/Alaska Natives; 10.5% among Hispanics; and 18.7% among whites. Over the same time period, rates decreased by 1.5% among Asian/Pacific Islanders.

Blacks — In 2007, approximately 48% of all chlamydia cases occurred among blacks (Table 11A). Overall, the rate of chlamydia among blacks in the United States was more than eight times that among whites. The rate of chlamydia among black women was more than seven times higher than the rate among white women (1,906.0 and 249.3 per 100,000 women, respectively) (Figure O, Table 11B). The chlamydia rate among black men was more than 11 times higher than that among white men (841.3 and 71.9 per 100,000 men, respectively).

American Indian/Alaska Natives — In 2007, the chlamydia rate among American Indian/Alaska Natives was 732.9 cases per 100,000 population, a decrease of 7.2% from the 2006 rate of 790.1. The chlamydia positivity rate among females aged 15–24 years screened in Indian Health Service (IHS) clinics ranged from 8.1% in HHS region V to 11.6% in region VIII (Figure P).

Asian/Pacific Islanders — In 2007, the chlamydia rate among Asian/Pacific Islanders was 139.5 cases per 100,000 population, a slight increase from the 2006 rate of 127.2.

Hispanics — In 2007, the chlamydia rate among Hispanics was 473.2 cases per 100,000 population, nearly three times higher than the rate among whites (162.3).

Gonorrhea

All racial and ethnic groups except blacks saw declines in gonorrhea rates from 2006 to 2007. In contrast, the gonorrhea rate among blacks increased by 1.8% from 2006 to 2007 (Table 21B and Figure 21).

Blacks — In 2007, approximately 70% of the total number of reported cases of gonorrhea occurred among blacks (Table 21A). In 2007, the rate of gonorrhea among blacks was 662.9 cases per 100,000 population. Overall, the rate of gonorrhea among blacks in the United States was 19 times greater than that among whites This disparity is unchanged from recent years (20 times higher in 2003) (Figure Q, Table 21B). This disparity was higher for black men (26.1 times higher) than for black women (14.9 times higher) (Figure R). The disparity in gonorrhea rates for blacks was higher in the Midwest and Northeast (27.2 and 24.8 times higher, respectively) than in the South or the West (15.6 and 12.4 times higher, respectively) (Figure S).

In 2007, gonorrhea rates were highest for blacks aged 15 to 19 and 20 to 24 years among all racial, ethnic, and age categories. Black women aged 15 to 19 years had a gonorrhea rate of 2,955.7 cases per 100,000 women. This rate was 14.7 times greater than the 2007 rate among white women of similar age (200.6). Black men in the 15- to 19-year-old age category had a 2007 gonorrhea rate of 1,537.8 cases per 100,000 men, which was 38.7 times higher than the rate among 15- to 19-year-old white men of 39.7 per 100,000 men. Among those aged 20 to 24 years, the gonorrhea rate among blacks was 16.5 times greater than that among whites (2,618.3 and 158.8 cases per 100,000 population, respectively) (Table 21B).

American Indian/Alaska Natives — In 2007 the gonorrhea rate among American Indian/Alaska Natives was 107.1 which was 3.1 times higher than the rate among whites. This disparity is similar to recent years (3.1 times higher in 2003) (Figure Q, Table 21B). This disparity was higher for American Indian/Alaska Native women (3.4 times higher) than for American Indian/Alaska Native men (2.6 times higher) (Figure R). The disparity in gonorrhea rates for American Indian/Alaska Natives was higher in the Northeast and the Midwest (3.9 and 3.3 times higher, respectively) than in the West or the South (2.9 and 2.6 times, respectively) (Figure S).

Asian/Pacific Islanders — In 2007 the gonorrhea rate among Asian/Pacific Islanders was 18.8 cases per 100,000 population which was lower than the rate among whites (Figure Q, Table 21B). This difference is greater for Asian/Pacific Islander women than for Asian/Pacific Islander men (Figure R). Rates among Asian/Pacific Islanders are consistently lower than among whites in all four regions of the U.S. (Figure S).

Hispanics — In 2007, the gonorrhea rate among Hispanics was 69.2 which was higher than the rate among whites. This disparity is similar to that in recent years (Figure Q, Table 21B). This disparity was higher for Hispanic men than for Hispanic women (Figure R). The disparity in gonorrhea rates for Hispanics was higher in the Northeast than in the West, the Midwest, or the South (Figure S).

Primary and Secondary Syphilis

The syphilis epidemic in the late 1980s occurred primarily among heterosexual and minority populations.[3,4] During the 1990s, the rate of P&S syphilis declined among all racial and ethnic groups (Figure 36). Between 2003 and 2007, the rate of P&S syphilis increased among all racial and ethnic groups.

Blacks — Between 2006 and 2007, the rate of P&S syphilis among blacks increased 25.0% (from 11.2 to 14.0). In 2007, 46.0% of all cases of P&S syphilis reported to CDC were among blacks and 35.3% of all cases were among non-Hispanic whites (Table 33A). Compared to whites, the overall 2007 rate for blacks was 7.0 times higher. It was 5.9 times higher in 2006 (Table 33B). In 2007, the P&S rate among black men was more than 6.0 times higher than that among white men; the rate among black women was 14 times higher than that among white women. In some age groups, particularly 15–19 year old black men, disparities have increased markedly in recent years as rates of disease have increased (Figure V).

Recent trends in young black men are of particular concern given data indicating high HIV incidence in this population.[5]

American Indian/Alaska Natives — Between 2006 and 2007, the rate of P&S syphilis among American Indian/Alaska Natives increased 6.3% (from 3.2 to 3.4). In 2007, 0.7% of all cases of P&S syphilis reported to CDC were among American Indian/Alaska Natives (Table 33A).

Compared to whites, the 2007 rate for American Indian/Alaska Natives was 1.7 times higher (Table 33B).

Asian/Pacific Islanders — Between 2006 and 2007, the rate of P&S syphilis among Asian/Pacific Islanders remained unchanged (1.2 per 100,000 population). In 2007, 1.2% of all cases of P&S syphilis reported to CDC were among Asian/Pacific Islanders (Table 33A). The 2007 rate for Asian/Pacific Islanders was 0.6 times the rate for whites (Table 33B).

Hispanics — Between 2006 and 2007, the rate of P&S syphilis among Hispanics increased 22.9% (from 3.5 to 4.3). In 2007, 16.5% of all cases of P&S syphilis reported to CDC were among Hispanics (Table 33A). Compared to whites, the 2007 rate for Hispanics was 2.2 times higher (Table 33B).

Congenital Syphilis

In 2007, the rate of congenital syphilis (based on the mother's race/ethnicity) was 32.3 cases per 100,000 live births among blacks and 15.3 cases per 100,000 live births among Hispanics. These rates are 14 and 6.6 times higher, respectively, than the 2007 rate among whites (2.3 cases per 100,000 live births) (Figure W, Table 40).

[1] Datta SD, Sternberg M, Johnson RE, Berman S, Papp JR, McQuillan G, et al. 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 MS, Schmitz JL, Hobbs MM et al. Prevalence of chlamydial and gonococcal infections among young adults in the United States. *JAMA* 2004; 291(18):2229–2236.

[3] Nakashima AK, Rolfs RT, Flock ML, Kilmarx P, Greenspan JR. Epidemiology of syphilis in the United States, 1941 through 1993. *Sexually Transmitted Diseases* 1996;23:16–23.

[4] Peterman TA, Heffelfinger JD, Swint EB, Groseclose SL. The changing epidemiology of syphilis. *Sex Transm Dis* 2005;32:S4-S10.

[5] Centers for Disease Control and Prevention. Subpopulation estimates from the HIV incidence surveillance system–United States, 2006. *MMWR* 2008;57:985–989.

Figure O. Chlamydia — Rates by race/ethnicity and sex: United States, 2007

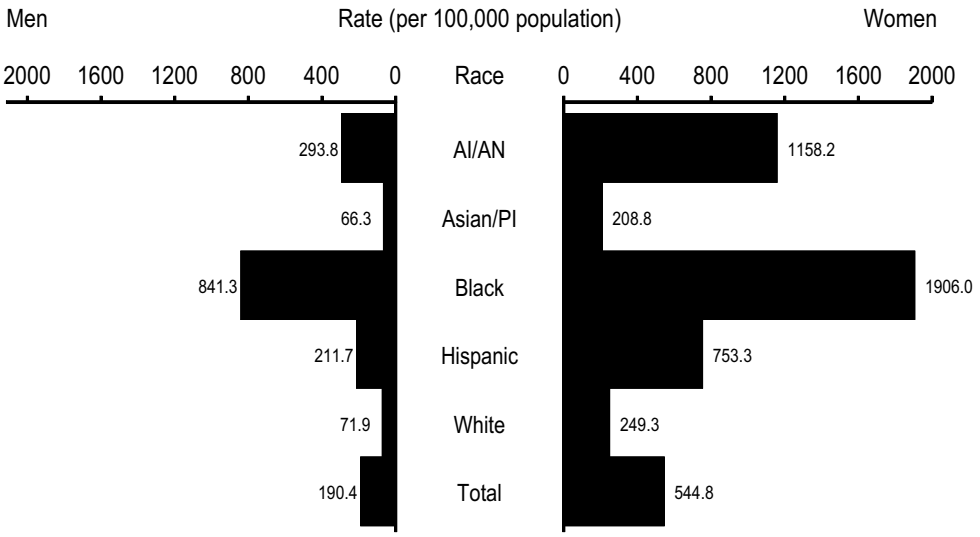
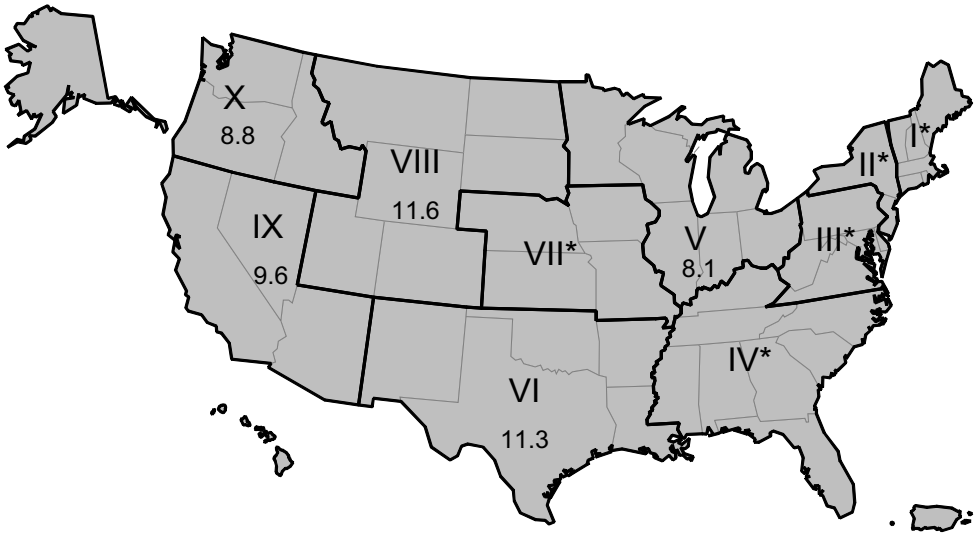
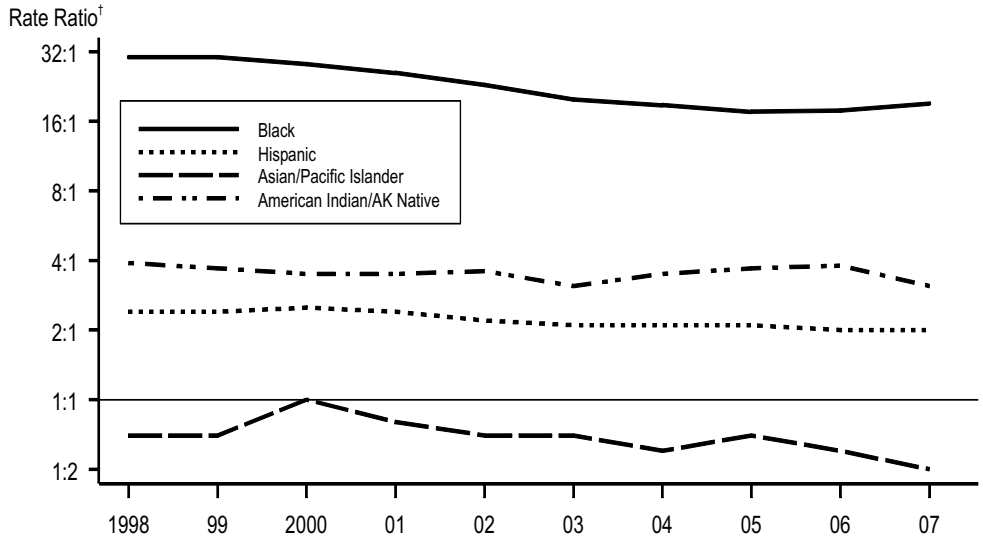


Figure P. Chlamydia — Positivity among 15- to 24-year-old women screened in Indian Health Service (IHS) clinics by HHS region, 2007



*Chlamydia positivity data not available. See Appendix for definitions of HHS Regions.

Figure Q. Gonorrhea — Rate ratios* by race/ethnicity: United States, 1998–2007



*Rate ratios are calculated as the gonorrhea rate per 100,000 population for a given racial or ethnic minority population divided by the gonorrhea rate per 100,000 population for non-Hispanic whites. Any population with a lower rate of gonorrhea than the non-Hispanic white population will have a rate ratio less than 1:1.

†Y-axis is log scale.

Figure R. Gonorrhea — Rates by race/ethnicity and sex: United States, 2007

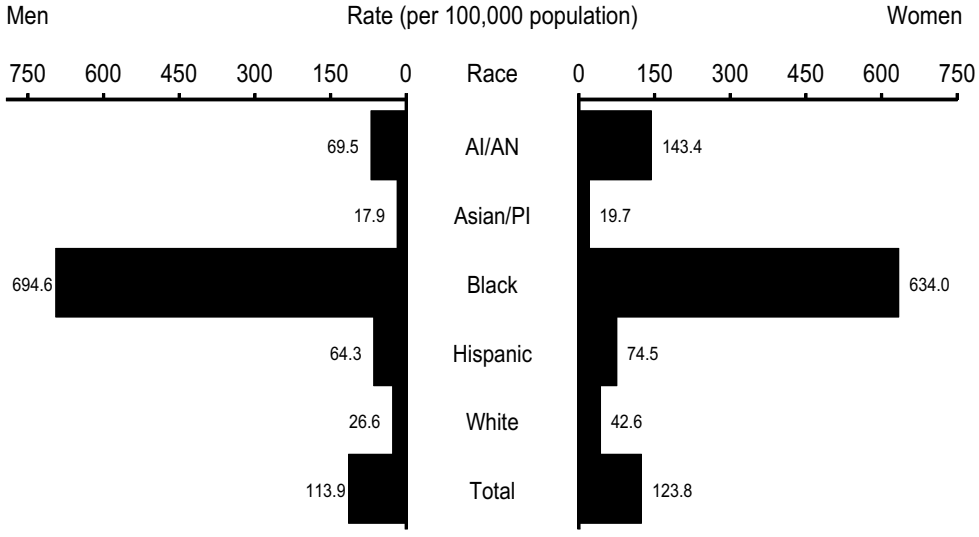
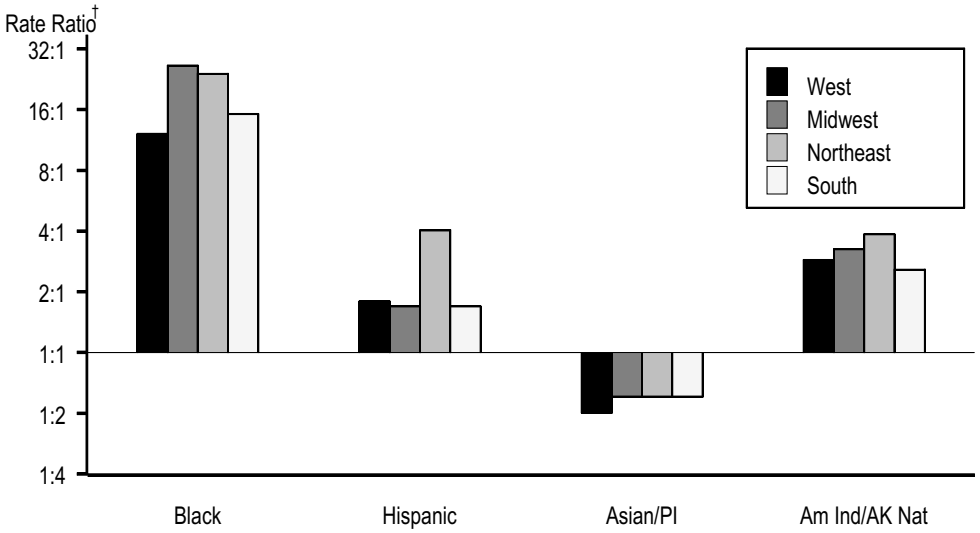


Figure S. Gonorrhea — Rate ratios* by race/ethnicity and region: United States, 2007



*Rate ratios are calculated as the gonorrhea rate per 100,000 population for a given racial or ethnic minority population divided by the gonorrhea rate per 100,000 population for non-Hispanic whites. Any population with a lower rate of gonorrhea than the non-Hispanic white population will have a rate ratio less than 1:1.

†Y-axis is log scale.

Figure T. Primary and secondary syphilis — Rates by race/ethnicity and sex: United States, 2007

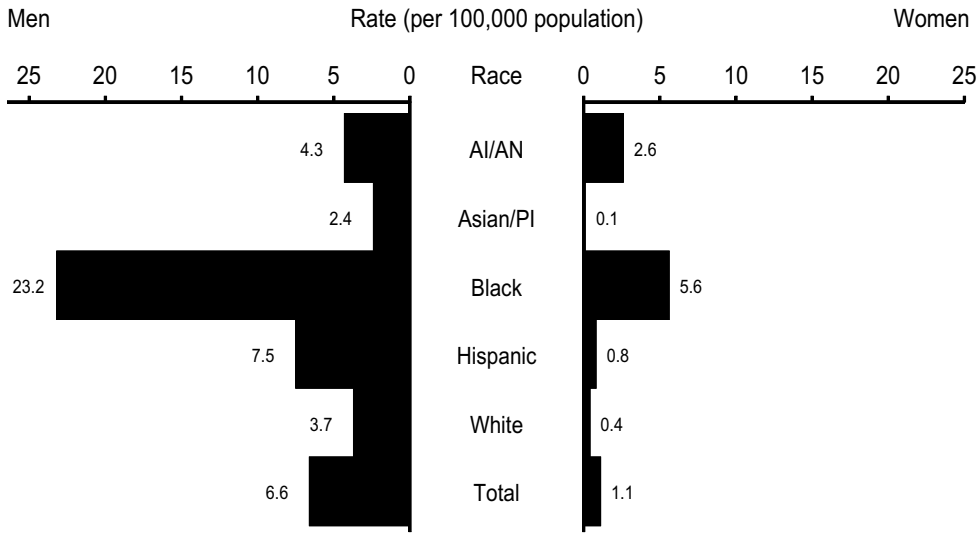


Figure U. Primary and secondary syphilis — Rates among 15- to 19-year-old females by race/ethnicity: United States, 1998–2007

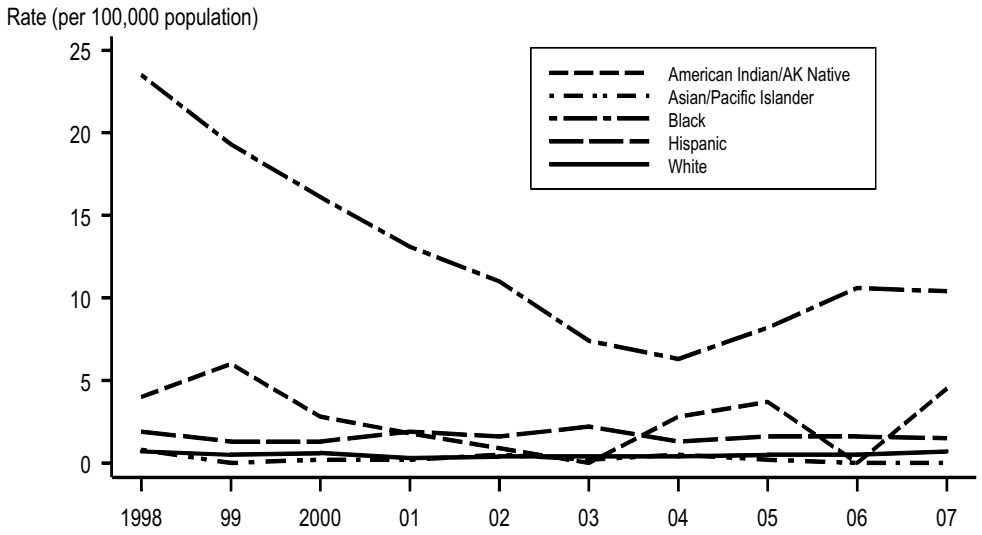


Figure V. Primary and secondary syphilis — Rates among 15- to 19-year-old males by race/ethnicity: United States, 1998–2007

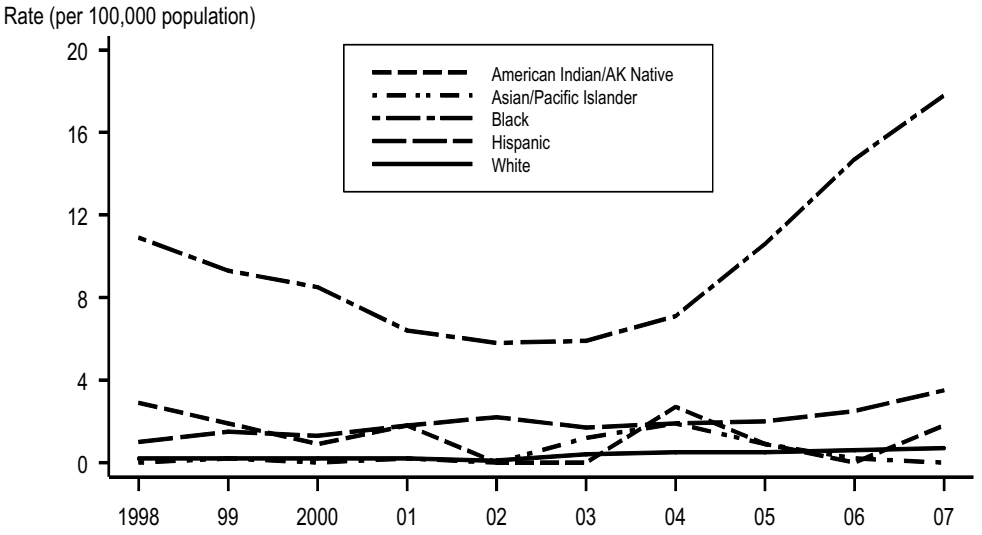
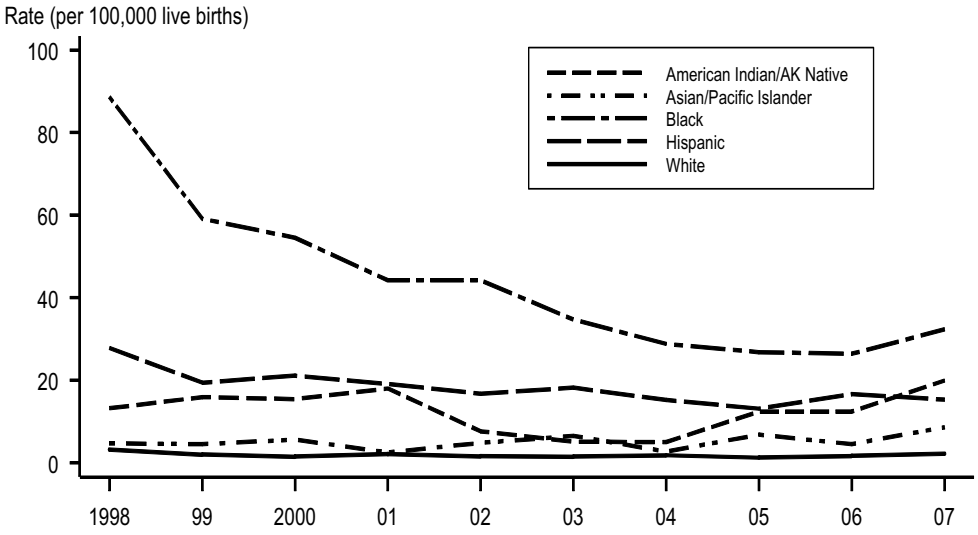


Figure W. Congenital syphilis — Rates among infants < 1 year of age by mother's race/ethnicity: United States, 1998–2007



Note: The Healthy People 2010 target for congenital syphilis is 1.0 case per 100,000 live births. Less than 5% of cases had missing maternal race/ethnicity information and were excluded.

STDs in Men Who Have Sex with Men

Public Health Impact

Notifiable disease surveillance data on syphilis and data from the Gonococcal Isolate Surveillance Project (GISP) suggest that an increasing number of MSM are acquiring STDs.[1-7] Data also suggest that an increasing number of MSM engage in sexual behaviors that place them at risk for STDs and HIV infection.[8] Several factors may be contributing to this change, including the availability of highly active antiretroviral therapy (HAART) for HIV infection.[9] Because STDs and the behaviors associated with acquiring them increase the likelihood of acquiring and transmitting HIV infection,[10] the rise in STDs among MSM may be associated with an increase in HIV diagnoses among MSM.[11]

With the exception of reported syphilis cases, most nationally notifiable STD surveillance data do not include information regarding sexual behaviors; national trends in STDs among MSM in the United States are not currently available. Data from enhanced surveillance projects are presented in this section to provide information regarding STDs in MSM.

Monitoring Trends in Prevalence of STDs, HIV and Risk Behaviors among Men Who Have Sex with Men (MSM Prevalence Monitoring Project), STD Clinics, 1999–2007

From 1999 through 2007, eight U.S. cities participating in the MSM Prevalence Monitoring Project submitted syphilis, gonorrhea, chlamydia, and HIV test data to CDC from 143,478 MSM visits to STD clinics; data from 121,353 MSM visits were submitted from five public STD clinics (Denver, New York City, Philadelphia, San Francisco, and Seattle) and data from 22,125 MSM visits were submitted from three STD clinics in community-based, gay men's health clinics (Chicago, the District of Columbia, and Houston).

Changes in testing technology for gonorrhea and chlamydia have occurred in recent years with the advent of nucleic acid amplification tests (NAATs) which achieve greater sensitivity than traditional culture methods.[12,13] The MSM Prevalence Monitoring Project includes data from culture and non-culture tests collected during routine care and reflects testing practices at participating clinics. Tests for gonorrhea included culture, NAATs, or nucleic acid hybridization tests (DNA probes). Tests for chlamydia included culture, NAATs, DNA probes, or direct fluorescent antibody tests (DFAs). Nontreponemal syphilis tests included the Rapid Plasma Reagin (RPR) test and the Venereal Disease Research Laboratory (VDRL) test.

All statistics were based on data collected from clinic visits and may reflect multiple visits by a patient rather than unique individuals. City-specific medians and ranges were calculated for the proportion of tests done and for STD and HIV test positivity.

Gonorrhea

Between 1999 and 2007 the number of gonorrhea tests for all anatomic sites combined increased in all eight cities. The trend in the number of positive gonorrhea tests for all anatomic sites varied by city. For all cities, the number of positive gonorrhea tests in symptomatic men accounted for the majority of the overall positive tests (Figure X).

In 2007, 79% (range: 58–90%) of MSM were tested for urethral gonorrhea, 37% (range: 5–51%) were tested for rectal gonorrhea, and 58% (range: 5–83%) were tested for pharyngeal gonorrhea.

In 2007, median clinic urethral gonorrhea positivity in MSM was 8% (range: 5–15%), median rectal gonorrhea positivity was 7% (range: 3–11%), and median pharyngeal gonorrhea positivity was 6% (range: 1–13%).

Chlamydia

In 2007, a median of 79% (range: 59–90%) of MSM visiting participating STD clinics were tested for urethral chlamydia, compared to 65% (range: 57–68%) in 1999. In 2007, the median urethral chlamydia positivity was 7% (range: 5–9%).

Syphilis

In 2007, 79% (range: 60–96%) of MSM visiting participating STD clinics had a nontreponemal serologic test for syphilis (RPR or VDRL) performed, compared with 69% (range: 53–93%) in 1999 (Figure Y).

Overall, median seroreactivity among MSM tested for syphilis increased from 4% (range: 3–13%) in 1999 to 8% (range: 4–18%) in 2007.

Syphilis seroreactivity is used as a proxy for syphilis prevalence and has been correlated with prevalence of P&S syphilis in this population.[14]

HIV Infection

Overall, the percent of MSM tested for HIV in STD clinics increased between 1999 and 2007. In 2007, a median of 70% (range: 38–87%) of MSM visiting STD clinics who were not previously known to be HIV-positive were tested for HIV, while 44% (range: 23–55%) were tested in 1999. In 2007, median HIV positivity in MSM was 4% (range: 2–5%) (Figure Z).

In 2007, median HIV prevalence among MSM, including persons previously known to be HIV-positive and persons testing HIV-positive at their current visit, was 13% (range: 7–15%).

HIV/STDs by Race/Ethnicity

HIV positivity among persons tested for HIV during 2007 varied by race/ethnicity, but was highest in black MSM. HIV positivity was 2% (range: 2–3%) in whites, 8% (range: 2–10%) in blacks, and 5% (range: 2–7%) in Hispanics (Figure AA).

HIV positivity was 9% (range: 6–15%) in whites, 17% (range: 15–24%) in blacks, and 14% (range: 6–16%) in Hispanics.

In 2007, urethral gonorrhea positivity was 6% (range: 5–14%) in whites, 15% (range: 7–27) in blacks, and 6% (range: 4–14%) in Hispanics. Rectal gonorrhea positivity was 6% (range: 2–10%) in whites, 7% (range: 2–11%) in blacks, and 5% (range: 1–7%) in Hispanics. Pharyngeal gonorrhea positivity was 6% (range: 1–15%) in whites, 6% (range: 1–13%) in blacks, and 5% (range: 1–10%) in Hispanics (Figure AA).

Urethral chlamydia positivity was 6% (range: 3–8%) in whites; 8% (range: 5–10%) in blacks, and 5% (range: 3–13%) in Hispanics (Figure AA).

Median syphilis seroreactivity was 7% (range: 4–12%) in whites; 14% (range:

8–30%) in blacks, and 11% (range: 3–22%) in Hispanics (Figure AA).

STDs by HIV Status, STD Clinics

In 2007, urethral gonorrhea positivity was 11% (range: 8–16%) in HIV-positive MSM and 7% (range: 5–15%) in MSM who were HIV-negative or of unknown HIV status; rectal gonorrhea positivity was 10% (range: 4–14%) in HIV-positive MSM and 4% (range: 3–10%) in MSM who were HIV-negative or of unknown HIV status; pharyngeal gonorrhea positivity was 4% (range: 2–12%) in HIV-positive MSM and 5% (range: 1–13%) in MSM who were HIV-negative or of unknown HIV status.

Median urethral chlamydia positivity was 6% (range: 3–12%) in HIV-positive MSM and 7% (range: 4–9%) in MSM who were HIV-negative or of unknown HIV status.

Median syphilis seroreactivity was 32% (range: 19–42%) in HIV-positive MSM and 6% (range: 3–13%) in MSM who were HIV-negative or of unknown HIV status.

Nationally Notifiable Syphilis Surveillance Data

P&S syphilis increased in the United States between 2003 and 2007, with a 64.0% increase in the number of P&S syphilis cases among men and a 39.0% increase in the number of cases among women (Tables 26 and 27). In 2007, the rate of reported P&S syphilis among men (6.6 cases per 100,000 males) was 6.0 times greater than the rate among women (1.1 case per 100,000 females) (Tables 26 and 27). Higher rates in men are observed for all racial and ethnic groups.

In 2007, MSM accounted for 65% of P&S syphilis cases in the United States. MSM account for more cases than heterosexual men or women for all racial and ethnic groups. (Figure 38) Additional information on syphilis can be found in the Syphilis section (**National Profile**).

Gonococcal Isolate Surveillance Project (GISP)

GISP is a national sentinel surveillance system designed to monitor trends in antimicrobial susceptibilities of strains of *Neisseria gonorrhoeae* in the United States.[15,16]

GISP also reports the percentage of *N. gonorrhoeae* isolates obtained from MSM. Overall, the proportion of isolates from MSM in selected STD clinics from GISP sentinel sites have increased steadily from 4% in 1988 to 22.4% in 2007 (Figure BB). Additionally, the proportion of isolates coming from MSM varies geographically with the largest percentage from the West Coast (Figure CC).

Additional information on GISP may be found in the Gonorrhea section (**National Profile**).

[1] Centers for Disease Control and Prevention. Gonorrhea among men who have sex with men – selected sexually transmitted disease clinics, 1993–1996. *MMWR* 1997;46:889–92.

[2] Centers for Disease Control and Prevention. Resurgent bacterial sexually transmitted disease among men who have sex with men – King County, Washington, 1997–1999. *MMWR* 1999;48:773–7.

[3] Centers for Disease Control and Prevention. Outbreak of syphilis among men who have sex with men – Southern California, 2000. *MMWR* 2001;50:117–20.

[4] Fox KK, del Rio C, Holmes K, et. al. Gonorrhea in the HIV era: A reversal in trends among men who have sex with men. *Am J Public Health* 2001;91:959–964.

[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.

[6] Centers for Disease Control and Prevention. Primary and secondary syphilis – United States, 2003–2004. *MMWR* 2006;55:269–73.

[7] Beltrami JF, Shouse RL, Blake PA. Trends in infectious diseases and the male to female ratio: possible clues to changes in behavior among men who have sex with men. *AIDS Educ Prev* 2005;17:S49-S59.

[8] Stall R, Hays R, Waldo C, Ekstrand M, McFarland W. The gay '90s: a review of research in the 1990s on sexual behavior and HIV risk among men who have sex with men. *AIDS* 2000;14:S1-S14.

[9] Scheer S, Chu PL, Klausner JD, Katz MH, Schwarcz SK. Effect of highly active antiretroviral therapy on diagnoses of sexually transmitted diseases in people with AIDS. *Lancet* 2001;357:432–5.

[10] Fleming DT, Wasserheit JN. From epidemiologic synergy to public health policy and practice: the contribution of other sexually transmitted diseases to sexual transmission of HIV infection. *Sex Transm Infect* 1999;75:3–17.

[11] Hall HI, Song R, Rhodes P, et. al. HIV Incidence Surveillance Group. *JAMA*, 2008 Aug 6;300(5):520–9.

[12] Kent CK, Chow JK, Wong W, et. al. Prevalence of rectal, urethral, and pharyngeal chlamydia and gonorrhea detected in 2 clinical settings among men who have sex with men: San Francisco, California, 2003. *Clin Infect Dis* 2005;41:67–74.

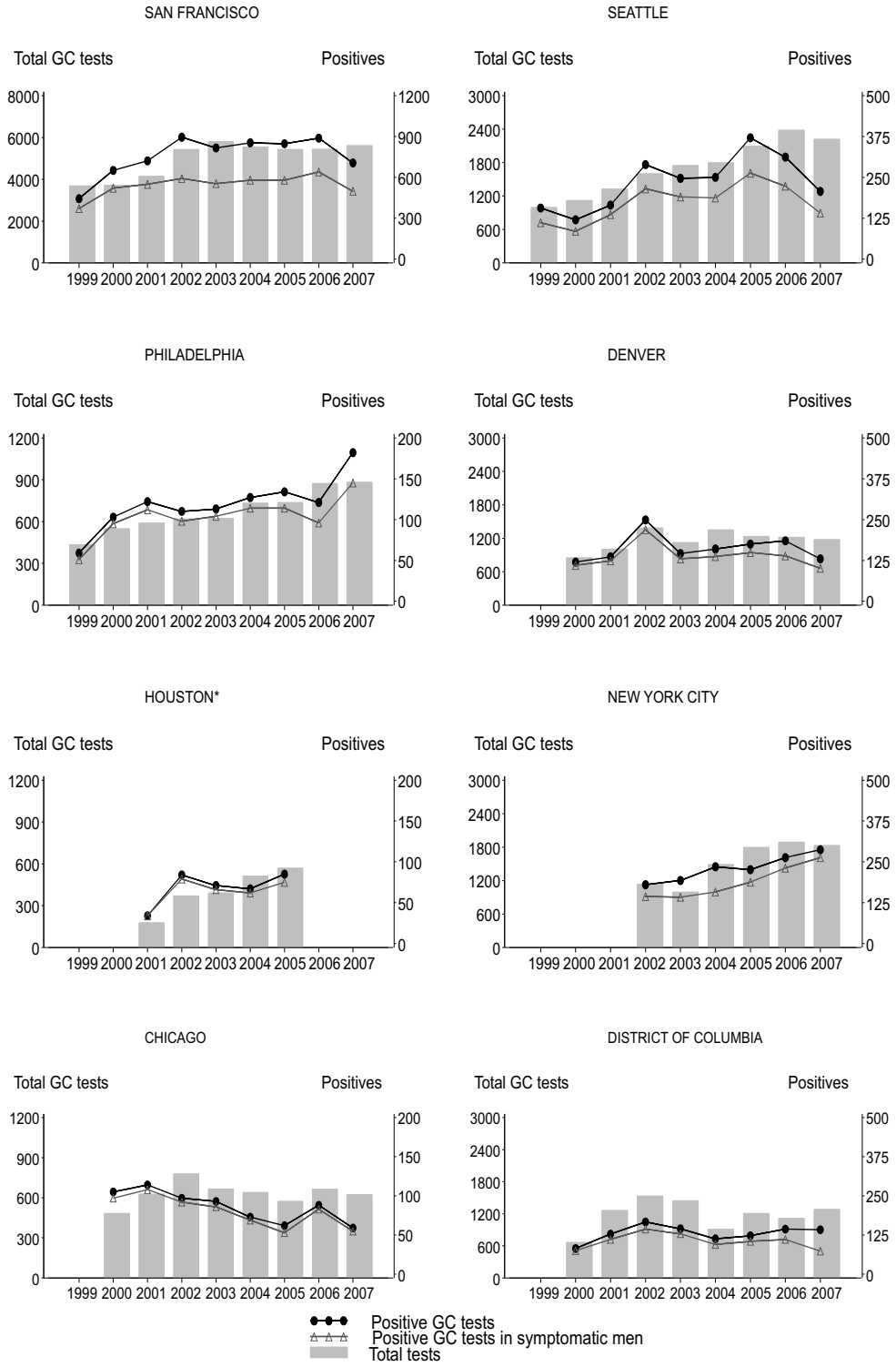
[13] Jespersen DJ, Flatten KS, Jones MF, Smith TF. Prospective comparison of cell cultures and nucleic acid amplification tests for laboratory diagnosis of *Chlamydia trachomatis* infections. *J Clin Microbiol* 2005; 43(10):5324–6.

[14] Helms DJ, Weinstock HS, et. al. Increases in syphilis among men who have sex with men attending STD clinics, 2000–2005. In: program and abstracts of the 17 Biennial meeting of the ISSTDR, Seattle, WA, July 29-August 1, 2007 [abstract P-608].

[15] Schwarcz S, Zenilman J, Schnell D, et. al. National Surveillance of Antimicrobial Resistance in *Neisseria gonorrhoeae*. *JAMA* 1990; 264(11): 1413–1417.

[16] Centers for Disease Control and Prevention. *Sexually Transmitted Disease Surveillance 2007 Supplement: Gonococcal Isolate Surveillance Project (GISP) Annual Report 2007*. Atlanta, GA: U.S. Department of Health and Human Services (available first quarter 2009).

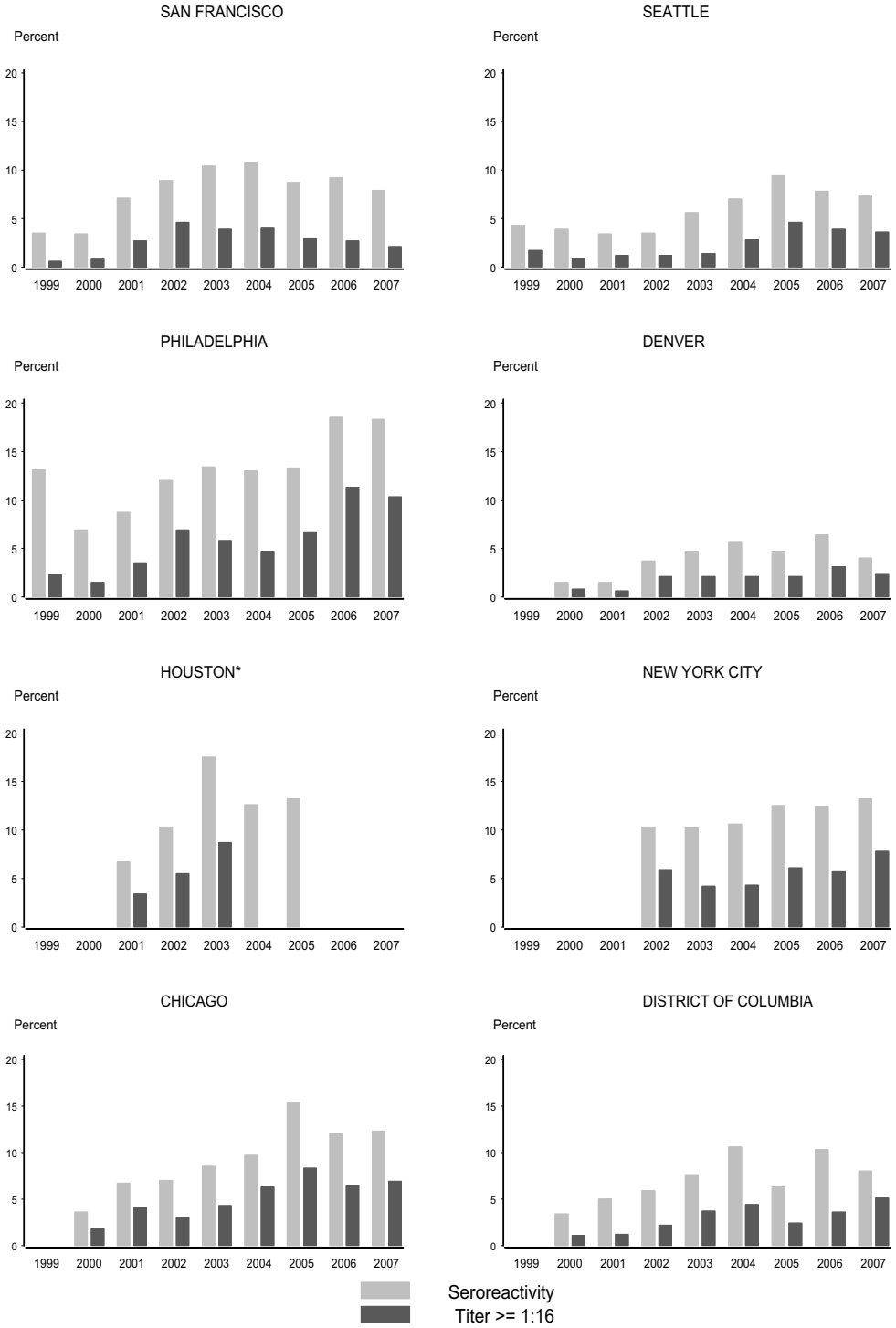
Figure X. MSM Prevalence Monitoring Project — Number of gonorrhea tests and number of positive tests in men who have sex with men, STD clinics, 1999–2007



*Data not reported in 2006 or 2007.

Note: The bars represent the number of total GC tests considering all anatomic sites (pharyngeal, rectal, and urethral) each year. The scales on the left and right axis differ. The bar graphs use the scale on the left. The line graphs use the scale on the right.

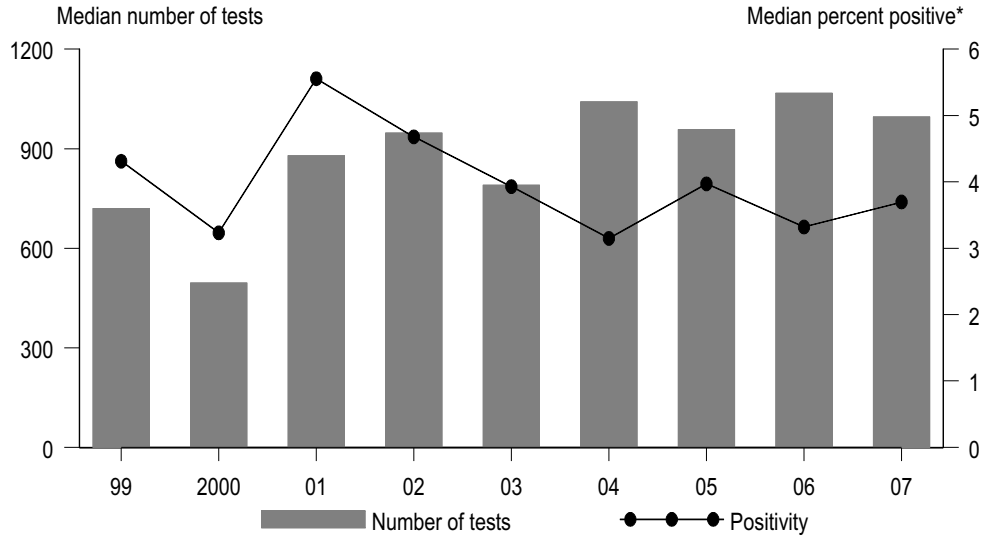
Figure Y. MSM Prevalence Monitoring Project — Syphilis serologic reactivity among men who have sex with men, STD clinics, 1999–2007



*Data not reported in 2006 or 2007. Titer data not reported in 2004 or 2005.

Note: Seroreactivity was based on nontreponemal tests results. All sites used the Rapid Plasma Reagin (RPR) test, with the exception of San Francisco where the Venereal Disease Research Laboratory (VDRL) test was used and Seattle where the type of test was changed from VDRL to RPR in 2004.

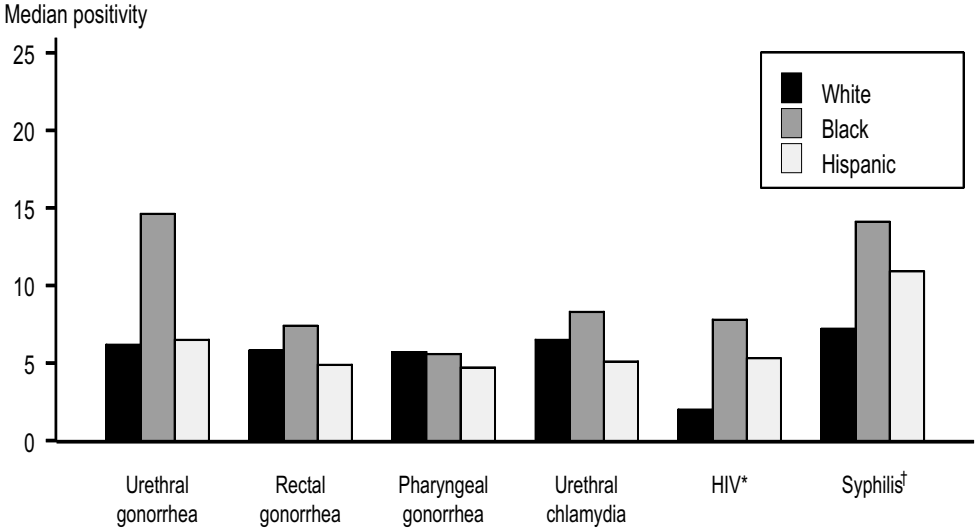
Figure Z. MSM Prevalence Monitoring Project — City-specific median number of HIV tests and positivity among men who have sex with men, STD clinics, 1999–2007



*Excludes persons previously known to be HIV-positive.

Note: The bar graph uses the scale on the left. The line graph uses the scale on the right.

Figure AA. MSM Prevalence Monitoring Project — Test positivity for gonorrhea, chlamydia, and HIV and seroreactivity to syphilis among men who have sex with men, by race/ethnicity, STD clinics, 2007



*Excludes persons previously known to be HIV-positive.

†Seroreactivity

Figure BB. Gonococcal Isolate Surveillance Project (GISP) — Percent of urethral *Neisseria gonorrhoeae* isolates obtained from men who have sex with men attending STD clinics, 1988–2007

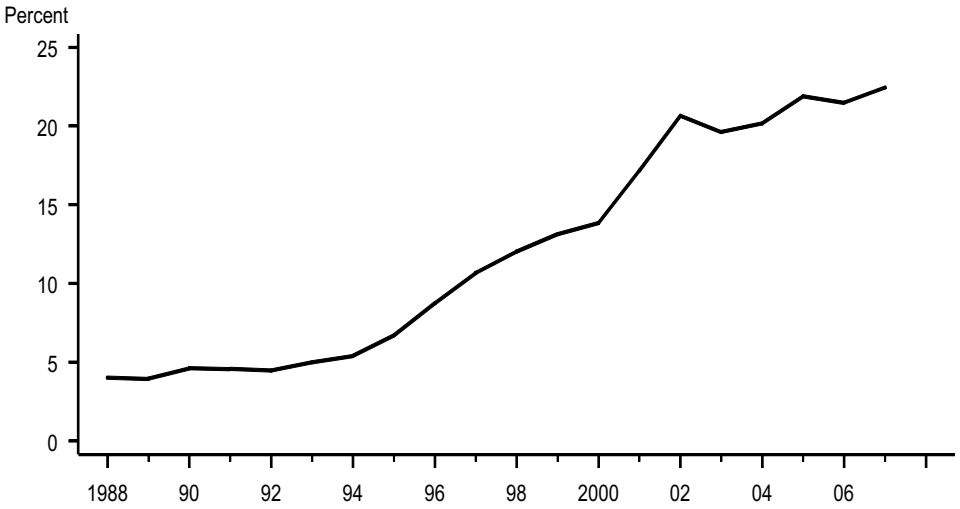
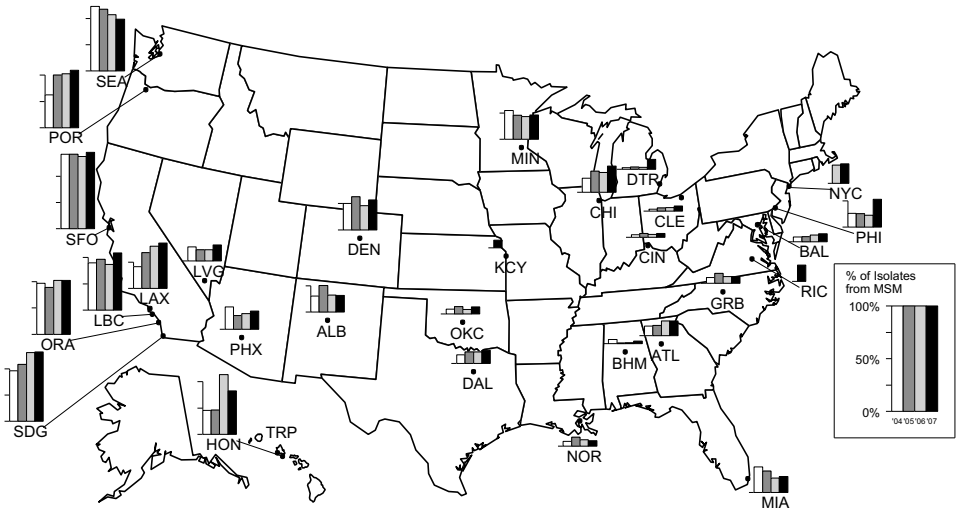


Figure CC. Gonococcal Isolate Surveillance Project (GISP) — Percent of urethral *Neisseria gonorrhoeae* isolates obtained from men who have sex with men attending STD clinics by GISP site, 2004–2007



Note: Not all sites participated in GISP for the last 4 years. Sites 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; GRB=Greensboro, NC; HON=Honolulu, HI; KCY=Kansas City, MO; LAX=Los Angeles, CA; LBC=Long Beach, CA; LVG=Las Vegas, NV; MIA=Miami, FL; MIN=Minneapolis, MN; 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; RIC=Richmond, VA; SDG=San Diego, CA; SEA=Seattle, WA; SFO=San Francisco, CA; and TRP=Tripler Army Medical Center, HI (does not provide sexual risk behavior data).

STDs in Persons Entering Corrections Facilities

Public Health Impact

Multiple studies and surveillance projects have demonstrated a high prevalence of STDs in persons entering jails and juvenile corrections facilities.[1-4] Prevalence rates for chlamydia and gonorrhea in these settings are consistently among the highest observed in any venue.[4] Screening for chlamydia, gonorrhea, and syphilis at intake offers an opportunity to identify infections, prevent complications, and reduce transmission in the general community. For example, data from one study in a locale with high syphilis incidence suggested that screening and treatment of women inmates for syphilis may result in reduction of syphilis in the general community.[5] In some locations, a substantial proportion of all early syphilis cases are reported from corrections facilities.[6]

Description of Population

In 2007, STD screening data from corrections facilities were reported from 37 states and Puerto Rico for chlamydia, 33 states and Puerto Rico for gonorrhea, and 19 states for syphilis. The Infertility Prevention Project (IPP) provided CDC with line-listed data for chlamydia and gonorrhea. Aggregate syphilis data were reported to CDC by local and state STD prevention programs.

The figures and tables shown in this section represent 47,042 chlamydia tests in women and 115,014 in men; 37,243 gonorrhea tests in women and 97,666 in men; and 50,666 syphilis serologic tests in women and 200,064 in men entering corrections facilities during 2007.

Chlamydia

Overall, chlamydia positivity was higher in women than in men for all age groups.

Adolescent Men — In adolescent men entering 109 juvenile corrections facilities in 2007, the median chlamydia positivity by facility was 5.7% (range: 0.0% to 14.2%) (Table A). In men 12 to 18 years of age entering these facilities, the overall chlamydia positivity was 6.4% (Figure DD). Chlamydia positivity increased from 1.4% for adolescent men aged 12 years to 9.1% for those aged 18 years.

Adolescent Women — In adolescent women entering 73 juvenile corrections facilities in 2007, median chlamydia positivity by facility was 14.3% (range: 2.5% to 32.1%); positivity was greater than 10% in almost all facilities reporting data (Table A). In women 12 to18 years of age entering these facilities, the overall chlamydia positivity was 14.8% (Figure DD). Positivity in women increased from 6.8% for those aged 12 years to 15.7% for those aged 14 years and, then remained high for women aged 15 to 18 years.

Men — In men entering 51 adult corrections facilities in 2007, the median chlamydia positivity by facility was 7.7% (range: 0.5% to 25.3%) (Table D). Positivity in young adult men aged less than 25 years in these facilities (8.7%) was higher than the overall prevalence

observed in adolescent men entering juvenile facilities (6.4%) (Figure EE). Chlamydia positivity decreased with age from 8.7% for those younger than 25 years of age to 1.8% for those older than 34 years. Overall positivity among adult men entering corrections facilities in 2007 was 6.2%

Women — In women entering 37 adult corrections facilities in 2007, median positivity for chlamydia by facility was 6.4% (range: 0.0% to 21.0%) (Table B). Overall, in women entering these facilities, the chlamydia positivity was 9.7% (Figure EE). Chlamydia positivity decreased with age from 18.6% for those younger than 20 years to 3.5% for those older than 34 years. Overall chlamydia positivity in women entering adult corrections facilities (9.7%) was significantly lower than that in adolescent women entering juvenile corrections facilities (14.8%). However, chlamydia positivity in women younger than 20 years of age attending adult corrections facilities was higher than that in women attending juvenile corrections facilities.

Gonorrhea

Overall, gonorrhea positivity in women was uniformly higher than in men for all age groups.

Adolescent Men — The median positivity for gonorrhea by facility in adolescent men entering 90 juvenile corrections facilities in 2007 was 1.0% (range: 0.0% to 4.5%) (Table C). The overall positivity was 1.2% in men 12 to 18 years of age attending these facilities. (Figure FF). Gonorrhea positivity increased with age from 0.1% for those aged 12 years to 2.1% for those aged 18 years.

Adolescent Women — The median positivity for gonorrhea by facility in women entering 52 juvenile corrections facilities in 2007 was 5.3% (range: 0.0% to 13.9%) (Table C). In women 12 to18 years of age entering these, the overall gonorrhea positivity was 5.6% (Figure FF). In 2007, gonorrhea positivity increased with age from 1.8% among 12-year-olds to 7.1% among young women aged 18 years of age.

Men — In men entering 42 adult corrections facilities in 2007, the median gonorrhea positivity was 1.7% (range: 0.0% to 10.7%) (Table D). Overall gonorrhea positivity for men attending these facilities was 1.6% (Figure GG). Gonorrhea positivity was highest in men aged 20 to 24 years at 2.2%, declining with age to 0.9% in men older than 34 years. Men aged younger than 20 years attending adult facilities had higher gonorrhea positivity than men attending juvenile detention facilities.

Women — In women entering 31 adult corrections facilities in 2007, the median gonorrhea positivity by facility was 2.9% (range: 0.0% to 7.3%) (Table D). Overall, in women entering these facilities, the gonorrhea positivity was 3.7% (Figure GG). Gonorrhea positivity decreased with age from 6.5% for those younger than 20 years to 1.5% for those older than 34 years. Women younger than 20 years attending adult facilities had higher gonorrhea positivity than young women attending juvenile detention facilities.

Syphilis

Adolescent Men — In 2007, the median syphilis serologic positivity by facility was 0.1% (range: 0.0% to 0.9%) in adolescent men entering eight juvenile corrections facilities (Table E).

Adolescent Women — In 2007, the median syphilis serologic positivity by facility was 0.2% (range: 0.0% to 2.1%) in adolescent women entering five juvenile corrections facilities (Table E).

Men — In men entering 60 adult corrections facilities in 2007, the median

syphilis serologic positivity by facility was 1.0% (range: 0.0% to 47.0%) (Table F).

Women — In women entering 36 adult corrections facilities in 2007, the median serologic positivity by facility was 2.1% (range: 0.0% to 28.0%) (Table F).

[1] Heimberger TS. Chang HG. Birkhead GS. DiFerdinando GD. Greenberg AJ. Gunn R. Morse DL. High prevalence of syphilis detected through a jail screening program. A potential public health measure to address the syphilis epidemic. *Arch Intern Med* 1993;153:1799–1804.

[2] Kahn RH, Mosure DJ, Blank S, Kent CK, Chow JM, Boudov MR, Brock J, Tulloch S, and the Jail Prevalence Monitoring Project. *Chlamydia trachomatis* and *Neisseria gonorrhoeae* prevalence and coinfection in adolescents entering selected US juvenile detention centers, 1997–2002. *Sex Transm Dis* 2005;29:255–259.

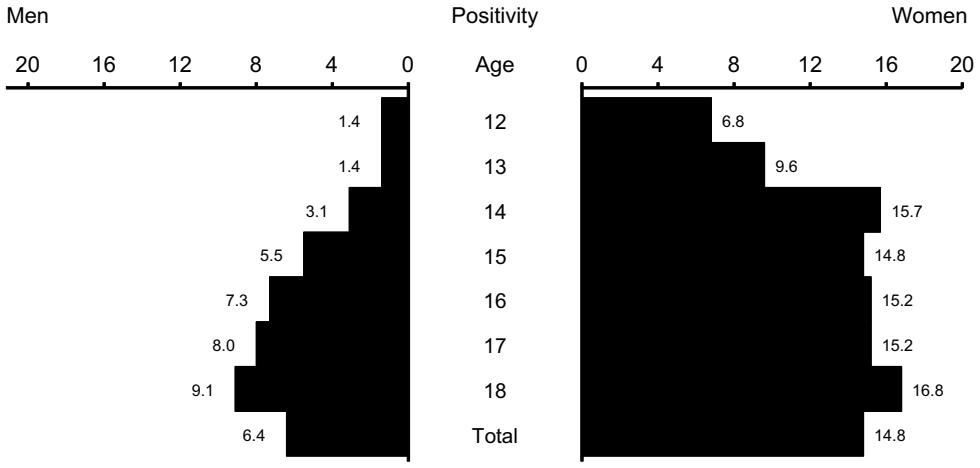
[3] Joesoef MR, Weinstock HS, Kent CK, Chow JM, Boudov MR, Parvez FM, Cox T, Lincoln T, Miller JL, Sternberg MS and the Corrections STD Prevalence Monitoring Group. Sex and age correlates of chlamydia prevalence in adolescents and adults entering correctional facilities, 2005: Implications for screening policy. *Sex Transm Dis* (in press).

[4] Satterwhite CL, Joesoef MR, Datta SD, Weinstock H. Estimates of *Chlamydia trachomatis* Infections among men:United States. *Sex Trans Dis* (in press).

[5] Blank S, McDonnell DD, Rubin SR et al. New approaches to syphilis control. Finding opportunities for syphilis treatment and congenital syphilis prevention in a women's correctional setting. *Sexually Transmitted Diseases* 1997; 24:218–26.

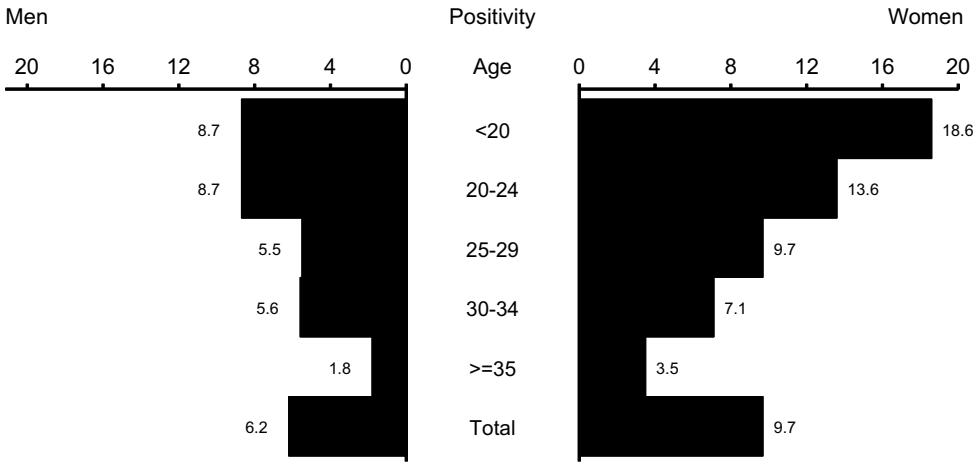
[6] Kahn R, Voigt R, Swint E, Weinstock H. Early syphilis in the United States identified in corrections facilities, 1999–2002. *Sex Trans Dis* 2004; 29:271–276.

Figure DD. Chlamydia — Positivity by age and sex, juvenile corrections facilities, 2007



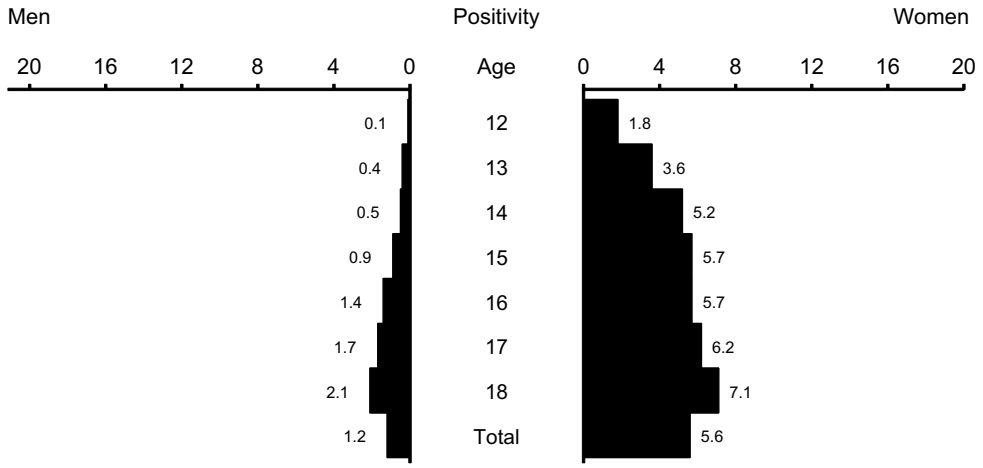
Note: Percent positivity is presented from facilities reporting > 100 test results.

Figure EE. Chlamydia — Positivity by age group and sex, adult corrections facilities, 2007



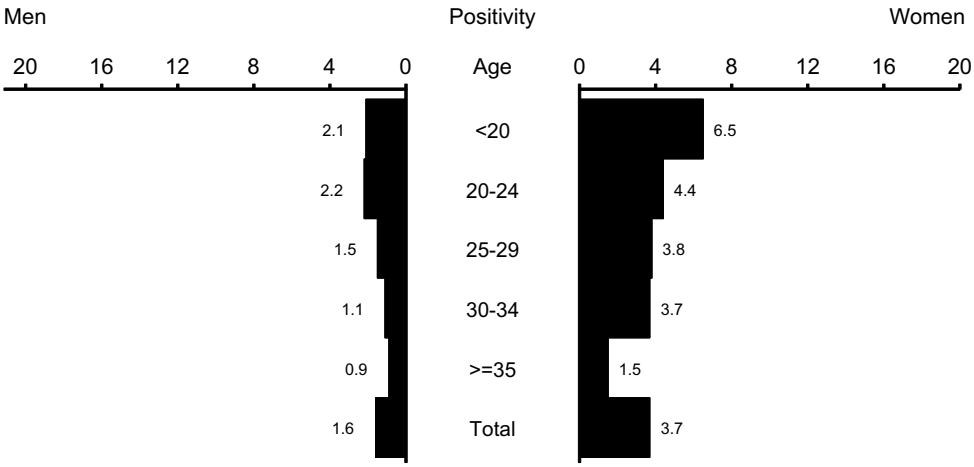
Note: Percent positivity is presented from facilities reporting > 100 test results.

Figure FF. Gonorrhea — Positivity by age and sex, juvenile corrections facilities, 2007



Note: Percent positivity is presented from facilities reporting > 100 test results.

Figure GG. Gonorrhea — Positivity by age group and sex, adult corrections facilities, 2007



Note: Percent positivity is presented from facilities reporting > 100 test results.

Table A. Chlamydia — Positivity among men and women in juvenile corrections facilities, 2007

State	Men			Women		
	No. of Facilities	*No. of Tests*	*Median % Positivity (Range)*	*No. of Facilities*	*No. of Tests*	*Median % Positivity (Range)*
Alabama	–	–	–	1	119	16.0
Arizona	6	5,375	5.4 (2.4-8.4)	5	1,503	16.1 (3.2-20.8)
California*	18	24,033	4.9 (0.0-10.6)	22	11,007	11.1 (2.5-27.0)
Colorado	1	236	7.6	–	–	–
Connecticut	2	726	3.2 (2.6-3.8)	2	257	11.3 (10.9-11.6)
Georgia	15	5,787	6.2 (1.7-11.0)	11	2,101	20.0 (13.5-27.7)
Hawaii	1	147	8.8	–	–	–
Idaho	–	–	–	1	208	11.5
Illinois	5	4,705	7.8 (6.5-10.9)	1	396	17.9
Indiana	1	979	10.1	1	237	21.1
Kentucky	7	2,152	4.9 (2.3-9.8)	1	176	12.5
Maryland	4	1,731	5.9 (2.7-7.5)	2	408	15.1 (14.3-15.9)
Massachusetts	1	412	2.2	–	–	–
Michigan	8	5,096	10.1 (6.2-13.9)	4	1,378	17.0 (10.3-19.7)
Minnesota	1	306	11.8	–	–	–
Mississippi	1	465	9.0	1	106	15.1
Missouri	1	449	6.9	–	–	–
Nebraska	1	368	6.3	1	193	12.4
Nevada	2	1,388	8.9 (3.7-14.2)	2	278	23.0 (13.9-32.1)
New Jersey	3	2,786	7.9 (6.6-11.4)	1	169	18.3
New Mexico	2	638	5.7 (4.1-7.2)	–	–	–
New York	7	4,616	4.2 (2.6-6.1)	5	1,086	14.6 (12.1-15.7)
North Dakota	1	132	6.8	–	–	–
Ohio	5	6,216	8.2 (5.0-11.2)	3	1,314	18.8 (7.6-20.4)
Oregon	3	1,442	4.5 (3.3-8.6)	3	423	7.6 (6.5-19.5)
Pennsylvania	1	127	3.1	–	–	–
Puerto Rico	2	354	4.1 (3.5-4.7)	1	107	20.6
Tennessee	1	1,911	4.3	1	825	12.4
Texas	1	832	9.4	1	199	16.6
Virginia	1	729	8.1	–	–	–
Washington	5	1,030	5.0 (2.7-13.4)	3	907	12.4 (3.5-21.0)
Wisconsin	2	576	5.6 (4.5-6.8)	–	–	–
Total	109	75,744	5.7 (0.0-14.2)	73	23,397	14.3 (2.5-32.1)

Note: The percent positivity by facility is presented from facilities reporting > 100 test results.
*Includes Los Angeles and San Francisco project areas.

Table B. Chlamydia — Positivity among men and women in adult corrections facilities, 2007

State	Men			Women		
	No. of Facilities	*No. of Tests*	*Median % Positivity (Range)*	*No. of Facilities*	*No. of Tests*	*Median % Positivity (Range)*
Arizona	3	874	13.9 (11.5-15.7)	2	1,474	9.9 (4.7-15.2)
California*	5	4,338	4.2 (2.9-5.8)	4	9,316	11.2 (5.3-15.6)
Delaware	1	679	4.1	2	1,008	7.8 (5.1-10.4)
Hawaii	–	–	–	2	288	12.3 (6.4-18.3)
Illinois	6	2,621	10.5 (5.9-14.8)	3	2,903	5.1 (3.3-5.7)
Indiana	1	1,209	6.7	2	1,433	10.1 (10.1-10.2)
Iowa	2	768	13.8 (8.1-19.4)	1	435	5.1
Maryland	1	633	6.0	–	–	–
Massachusetts	2	3,601	4.7 (4.7-4.8)	2	911	4.0 (3.6-4.3)
Michigan	1	154	25.3	1	240	10.4
Missouri	1	3,018	5.8	1	570	4.6
Montana	–	–	–	1	106	0.0
Nebraska	4	1,585	8.2 (6.2-19.9)	1	225	11.6
Nevada	1	294	9.5	1	182	8.8
New Mexico	1	130	10.8	1	478	10.5
New York	2	7,054	7.0 (3.7-10.3)	1	249	5.2
North Dakota	1	469	5.5	1	101	5.9
Oregon	2	233	20.4 (18.4-22.3)	1	169	7.7
Pennsylvania	3	2,210	7.7 (4.3-10.3)	3	610	5.4 (4.9-6.9)
South Carolina	2	1,101	8.6 (7.9-9.3)	1	145	8.3
Texas	3	2,264	7.1 (0.5-16.6)	2	942	19.1 (17.3-21.0)
Utah	1	110	9.1	1	171	11.7
Washington	–	–	–	1	801	6.1
West Virginia	4	1,510	2.9 (0.5-5.1)	1	151	0.7
Wisconsin	4	4,415	9.0 (5.6-13.5)	1	737	2.0
Total	51	39,270	7.7 (0.5-25.3)	37	23,645	6.4 (0.0-21.0)

Note: The percent positivity by facility is presented from facilities reporting > 100 test results.
*Includes Los Angeles and San Francisco project areas.

Table C. Gonorrhea — Positivity among men and women in juvenile corrections facilities, 2007

State	Men			Women		
	No. of Facilities	*No. of Tests*	*Median % Positivity (Range)*	*No. of Facilities*	*No. of Tests*	*Median % Positivity (Range)*
Alabama	–	–	–	1	120	10.8
Arizona	6	5,373	0.9 (0.0-1.4)	5	1,503	3.8 (0.9-5.6)
California*	6	16,309	0.5 (0.0-1.2)	6	4,426	4.2 (0.8-5.9)
Colorado	1	236	1.7	–	–	–
Connecticut	2	724	0.5 (0.0-1.1)	2	258	4.1 (1.7-6.5)
Georgia	15	5,781	1.8 (0.0-4.5)	11	2,098	8.3 (1.8-13.9)
Hawaii	1	147	0.0	–	–	–
Idaho	–	–	–	1	208	0.0
Illinois	5	4,708	1.0 (0.0-2.3)	1	398	8.8
Indiana	1	979	3.8	1	237	7.2
Kentucky	7	2,151	1.2 (0.5-2.5)	1	176	3.4
Maryland	4	1,731	0.8 (0.0-1.1)	2	408	4.7 (4.7-4.7)
Michigan	8	4,979	1.9 (0.4-2.9)	4	1,353	6.7 (1.7-7.3)
Minnesota	1	307	4.2	–	–	–
Mississippi	1	464	1.1	1	106	5.7
Missouri	1	449	2.9	–	–	–
Nebraska	1	368	2.4	1	193	5.2
Nevada	2	1,389	0.8 (0.5-1.0)	2	278	2.7 (0.8-4.5)
New Jersey	3	2,787	2.0 (0.4-2.2)	1	169	5.3
New Mexico	2	638	0.3 (0.0-0.7)	–	–	–
New York	6	4,085	0.5 (0.0-1.0)	4	962	3.4 (1.7-6.7)
Ohio	5	6,215	1.7 (0.0-1.8)	3	1,314	6.5 (3.5-6.6)
Pennsylvania	1	127	0.0	–	–	–
Puerto Rico	2	354	0.0	1	107	1.9
Tennessee	1	1,913	0.7	1	828	4.0
Texas	1	832	1.6	1	199	8.0
Virginia	1	729	0.5	–	–	–
Washington	4	649	0.0 (0.0-2.2)	2	723	5.8 (4.5-7.1)
Wisconsin	2	572	0.6 (0.0-1.3)	–	–	–
Total	90	64,996	1.0 (0.0-4.5)	52	16,064	5.3 (0.0-13.9)

Note: The percent positivity by facility is presented from facilities reporting > 100 test results. *Includes Los Angeles and San Francisco project areas.

Table D. Gonorrhea — Positivity among men and women in adult corrections facilities, 2007

State	Men			Women		
	No. of Facilities	*No. of Tests*	*Median % Positivity (Range)*	*No. of Facilities*	*No. of Tests*	*Median % Positivity (Range)*
Arizona	3	873	10.7 (9.6-10.7)	2	1,475	5.8 (5.3-6.2)
California*	5	4,340	1.2 (0.4-2.2)	4	9,310	4.2 (2.5-5.4)
Delaware	1	679	1.2	2	1,008	3.6 (2.9-4.3)
Hawaii	–	–	–	2	290	3.3 (0.6-6.1)
Illinois	7	2,634	2.9 (0.6-5.5)	3	2,397	1.6 (1.6-2.9)
Indiana	1	1,209	2.7	2	1,433	7.1 (6.8-7.3)
Iowa	2	768	4.4 (0.8-7.9)	1	435	0.7
Maryland	1	633	0.9	–	–	–
Michigan	1	154	7.1	1	240	2.9
Missouri	1	3,020	1.2	1	570	1.9
Montana	–	–	–	1	106	0.0
Nebraska	4	1,585	0.9 (0.0-8.2)	1	225	5.3
Nevada	1	294	2.7	1	182	2.7
New Mexico	1	131	2.3	1	477	2.1
New York	1	6,373	0.5	–	–	–
Pennsylvania	3	2,210	1.7 (0.5-2.8)	3	610	2.4 (1.3-4.0)
South Carolina	2	991	1.7 (0.8-2.7)	1	133	4.5
Texas	3	2,263	1.6 (0.0-5.1)	2	943	5.9 (5.3-6.6)
Utah	1	110	1.8	1	170	0.6
Washington	–	–	–	1	467	1.7
Wisconsin	4	4,403	2.3 (0.7-6.1)	1	708	0.1
Total	42	32,670	1.7 (0.0-10.7)	31	21,179	2.9 (0.0-7.3)

Note: The percent positivity by facility is presented from facilities reporting > 100 test results. *Includes Los Angeles and San Francisco project areas.

Table E. Syphilis— Positivity among men and women in juvenile corrections facilities, 2007

	Men			Women		
State	No. of Facilities	No. of Tests	Median % Positivity (Range)	No. of Facilities	No. of Tests	Median % Positivity (Range)
Arizona	2	2,345	0.3 (0.1-0.5)	1	478	0.2
Illinois	1	796	0.9	1	142	2.1
Mississippi	1	141	0.0	–	–	–
North Carolina	1	354	0.0	–	–	–
Texas	3	2,653	0.1 (0.0-0.8)	3	1,036	0.2 (0.0-1.6)
Total	8	6,289	0.1 (0.0-0.9)	5	1,656	0.2 (0.0-2.1)

Note: The percent positivity by facility is presented from facilities reporting > 100 test results.

Table F. Syphilis— Positivity among men and women in adult corrections facilities, 2007

	Men			Women		
State	No. of Facilities	No. of Tests	Median % Positivity (Range)	No. of Facilities	No. of Tests	Median % Positivity (Range)
Arizona	1	27,629	2.0	1	6,310	4.3
Connecticut	–	–	–	1	3,108	2.0
Illinois	3	575	0.7 (0.0-1.4)	1	111	3.6
Indiana	1	1,120	0.4	1	1,284	1.4
Kentucky	1	324	0.3	1	332	0.3
Louisiana	–	–	–	1	1,003	28.0
Maryland	12	37,183	0.8 (0.3-3.7)	6	8,821	3.4 (0.8-8.5)
Massachusetts	16	17,546	1.1 (0.0-3.0)	4	3,883	0.9 (0.5-1.2)
Michigan	1	8,638	1.5	1	736	4.9
Mississippi	3	1,678	7.2 (4.0-12.6)	–	–	–
Missouri	3	6,103	1.8 (1.1-47.0)	2	956	2.5 (1.1-4.0)
New Jersey	3	31,007	1.8 (0.7-3.8)	3	3,762	0.0 (0.0-8.9)
New York*	2	8,782	1.7 (1.1-2.4)	2	1,802	4.0 (2.3-5.7)
North Carolina	6	4,908	0.7 (0.0-0.8)	5	1,418	1.8 (0.0-3.5)
Oklahoma	1	1,402	0.0	1	2,019	0.0
Tennessee	1	8,027	3.3	1	5,322	9.4
Texas	4	31,096	3.0 (0.5-6.0)	4	6,643	7.7 (4.7-12.6)
Washington	1	7,270	4.0	1	1,500	0.0
Wisconsin	1	487	0.6	–	–	–
Total	60	193,775	1.0 (0.0-47.0)	36	49,010	2.1 (0.0-28.0)

Note: The percent positivity by facility is presented from facilities reporting > 100 test results.
*New York data is for confirmatory results.