Subpopulation Estimates From the HIV Incidence Surveillance System United States, 2006

JAMA. 2009;301(2):155-156 (doi:10.1001/jama.301.2.155)

http://jama.ama-assn.org/cgi/content/full/301/2/155

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MMWR. 2008;57:985-989

2 tables omitted

CDC HAS CREATED AN HIV INCIDENCE SURveillance system in selected areas of the United States as a component of its national human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) reporting system.[1] The purpose of the new system is to estimate the number of new HIV infections occurring each year in the United States. Initial results published recently for 2006[2] showed that 73% of new infections were in males, 45% were in blacks, and 53% were in men who have sex with men (MSM). To provide additional subpopulation estimates by age group, race/ethnicity, and HIV transmission category, CDC conducted a more detailed analysis of data from the new surveillance system. The results indicated that, in 2006, of new HIV infections among males, 72% were in MSM. Among MSM with new infections, 46% were white, 35% were black, and 19% were Hispanic. Among MSM aged 13-29 years, the number of new HIV infections in blacks (5,220) was 1.6 times the number in whites (3,330) and 2.3 times the number in Hispanics (2,300). Among females, the predominant HIV transmission category was high-risk heterosexual contact, which accounted for 80% of new infections. The HIV incidence rate for black females was 14.7 times the rate for white females, and the rate for Hispanic females was 3.8 times the rate for white females. MSM (of all races), blacks, and Hispanics were represented disproportionately in 2006 among those with new HIV infections. The new incidence data will help guide local, state, and national intervention measures tailored to those populations at greatest risk for HIV infection.

The ability to distinguish recent from long-standing HIV infection using a serologic testing algorithm for recent HIV seroconversion (STARHS)[3,4] enabled development of the new national HIV incidence surveillance system and integration with the established national HIV/AIDS reporting system.[1] HIV surveillance data, testing and treatment history, and STARHS results are now used to estimate HIV incidence using a stratified extrapolation approach. Detailed descriptions of this method have been published previously.[2,5] For this report, the extrapolations were based on a total of 33,802 HIV diagnoses (with or without AIDS, adjusted to 39,400 for reporting delays) in 2006 among adults and adolescents aged ≥13 years, reported to CDC from 22 states* through June 2007. Based on risk factors, cases were classified in the following hierarchy of transmission categories: (1) male-to-male sexual contact, (2) injection-drug use, (3) both male-to-male sexual contact and injection-drug use, (4) high-risk heterosexual contact (i.e., with a person of the opposite sex known to have HIV or an HIV risk factor [e.g., male-to-male sexual contact or injection-drug use]), and (5) all other risk factors combined. Data for the fifth category are not reported because the number of cases was too small to permit analysis by race/ethnicity.

Incidence was calculated for the 22 states included in the analysis and extrapolated to the 50 states and the District of Columbia by applying the ratio of HIV incidence to AIDS in the 22 states to those states without incidence data. Percentages and rates were based on extrapolated data. Rates were calculated based on official postcensal estimates for 2006.[6] Data were adjusted for reporting delays and redistribution of risk factors among persons initially reported without sufficient information to classify them into a transmission category.[7] Persons diagnosed with AIDS within 6 months of HIV diagnosis were classified as having long-term infections. Missing testing and treatment history and STARHS results were imputed using a 20-fold multiple imputation procedure.[5,8] Stratified data were analyzed for three racial/ethnic populations: white (i.e., non-Hispanic white), black (non-Hispanic black), and Hispanic. An estimated 2.6% of new infections in 2006 occurred among American Indian/Alaska Natives and Asian/Pacific Islanders; however, these populations were not included in the analyses because the small numbers precluded further stratification. The 22 states accounted for approximately 73% of AIDS cases in the United States (excluding territories) diagnosed in 2006.

Of the estimated 54,230 new infections among whites, blacks, and Hispanics in 2006, 46% of the infections occurred among blacks, 36% occurred among whites, and 18% occurred among Hispanics. Among males, 40% of new infections occurred in blacks, 41% occurred in whites, and 19% occurred in Hispanics. Among females, 61% of infections were in blacks, 23% were in whites, and 16% were in Hispanics. Among both males and females, the highest rates of new infections occurred among blacks (115.7 and 55.7 per 100,000 population, respectively). Among black males, the incidence rate was 5.9 times the rate among white males; the rate among black males aged 13-29 years was 7.1 times the rate among white males in the same age group. Among black females, the incidence rate was 14.7 times the rate among white females. Among Hispanic males and females, incidence rates were 2.2 and 3.8 times the rates among white males and females, respectively. High-risk heterosexual contact was the predominant transmission category (80%) among females but accounted for 13% of new infections among males (20% among blacks, 13% among Hispanics, and 6% among whites).

The male-to-male sexual contact transmission category represented 72% of new infections among males, including 81% of new infections among whites, 63% among blacks, and 72% among Hispanics. Among MSM, whites had 46% of new infections, and blacks and Hispanics had 35% and 19%, respectively. Among MSM aged 13-29 years, blacks had an estimated 5,220 (48%) infections, compared with 3,300 (31%) for whites and 2,300 (21%) for Hispanics. MSM aged 13-29 years had 38% of new infections among all MSM and 25% of new infections among white MSM,

52% among black MSM, and 43% among Hispanic MSM. Among white MSM, by age group, the largest number of new infections (5,600 [34%]) was among those aged 30-39 years.

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CDC Editorial Note: The new CDC HIV incidence surveillance system provides the first U.S. estimates of HIV incidence based on a biologic marker of recent infection. Recently published estimates of HIV incidence provided overall incidence estimates for the nation,[2] but stratification was limited. The additional analyses presented in this report show the distribution of new HIV infections among certain racial/ethnic populations, transmission categories, and age groups.

The distribution of new HIV infections in 2006 demonstrates that, more than 25 years after the first report of AIDS, the disease continues to affect the MSM population more than any other in the United States. Although MSM represented the most new infections in the white, black, and Hispanic populations, the age distribution of persons with new infections suggests important differences by race and ethnicity. Among black and Hispanic MSM, most new infections were in persons aged 13-29, whereas, among white MSM, most new infections were in persons aged 30-39 years.

The recently published incidence estimates confirmed that new infections of HIV occurred disproportionately among blacks and Hispanics.[2] The results in this report indicate further that the disparity between racial/ethnic minorities and whites is greatest among females. Data on new HIV diagnoses, especially among females and young MSM, also have suggested these racial/ethnic differences[9,10]; however, using new diagnoses as a proxy for incidence is complicated by numerous factors, including (1) difficulty in ascertaining the relationship between testing rates and HIV diagnoses and (2) diagnoses that occur years after the initial infection.

The findings in this report are subject to at least three limitations. First, although the 22 states account for 73% of all AIDS diagnoses in the United States (excluding territories), they might not be nationally representative. Data from some areas with high AIDS morbidity but without confidential, name-based HIV reporting in 2006 were not included (e.g., California and the District of Columbia). Second, classification of cases with no risk factor data was based on historical patterns of reassignment to transmission category groups; these cases were assumed to constitute a representative sample of all cases initially reported without a risk factor. Finally, the stratified extrapolation approach is based on a number of assumptions that require more discussion than could be included in this report; however, these assumptions have been discussed fully in previous reports.[2,5]

In areas not covered by the new CDC HIV incidence surveillance system and in areas without enough HIV incidence surveillance data to accommodate subpopulation analyses, data on HIV diagnoses continue to provide the best data regarding the distribution of HIV infection despite the potential limitations of using HIV diagnosis data as a proxy measurement for HIV incidence. However, comprehensive surveillance systems are essential for HIV incidence estimation. All states are now implementing confidential, name-based HIV surveillance, and national data on HIV diagnoses and incidence likely will continue to improve. CDC will use the HIV incidence data in conjunction with data from the national HIV/AIDS reporting system and other recently implemented surveillance systems (e.g., the Variant, Atypical and Resistant HIV Surveillance System and the National HIV Behavioral Surveillance System) to provide greater understanding of the scope of HIV infection and to refine and evaluate national prevention programs. CDC supports state and local health departments and community-based organizations to promote effective HIV prevention interventions that target those persons at greatest risk for HIV infection.

Acknowledgments

This report is based, in part, on contributions by N Benbow, MAS, Chicago Dept of Public Health, M Merritt, Illinois Dept of Public Health; Y Bennani, MPH, New York City Dept of Health and Mental Hygiene, L Smith, MD, New York State Dept of Health; KA Brady, MD, Philadelphia County Dept of Public Health, G Obiri, DrPH, Pennsylvania Dept of Health; S Chan, MPH, Houston Dept of Health and Human Svcs, Texas; D Crippen, Georgia Div of Public Health; N Diallo, MPH, Virginia Dept of Health; JA Donnelly, Colorado Dept of Public Health and Environment; A Exarchos, MPH, Washington State Dept of Health; DK Fields, Indiana State Dept of Health; T Harris, MPH, Oklahoma State Dept of Health; CL Jablonski, MA, Texas Dept of State Health Svcs; K McCormick, MHA, South Carolina Dept of Health and Environmental Control; H Mergenthaler, MPH, Arizona Dept of Health Svcs; A Merriweather, MSPH, Alabama Dept of Public Health; H Noga, MPH, Connecticut Dept of Public Health; M O'Connor, MPH, Michigan Dept of Community Health; PJ Padgett, PhD, North Carolina Dept of Health and Human Svcs; S Ramirez, MPH, Louisiana Dept of Health and Hospitals; C Sadashige, MSS, New Jersey Dept of Health and Senior Svcs; TJ Shavor, MBA, Tennessee Dept of Health; S Singh, MPH, Mississippi State Dept of Health; M Van Dyne, Missouri Dept of Health and Senior Svcs; and S White, MPH, Florida Dept of Health.

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*The 22 states were those with confidential, name-based HIV surveillance and HIV incidence surveillance with adequate data to calculate incidence estimates: Alabama, Arizona, Colorado, Connecticut, Florida, Georgia, Illinois, Indiana, Louisiana, Michigan, Mississippi, Missouri, New Jersey, New York, North Carolina, Oklahoma, Pennsylvania, South Carolina, Tennessee, Texas, Virginia, and Washington.