# AIDS Trends among Hispanics in the United States


## ABSTRACT

*Objectives.* In 1991 the incidence of acquired immunodeficiency syndrome (AIDS) in the United States was 31.6 per 100 000 population among Hispanics and 11.8 per 100 000 among non-Hispanic Whites. The purpose of this study was to further describe the AIDS epidemic among Hispanics by examining differences in risk factors among different Hispanic groups (as defined by birthplace).

*Methods.* AIDS cases reported to the Centers for Disease Control and Prevention from 1988 through 1991 were reviewed.

*Results.* For men, except for those born in Puerto Rico, the predominant exposure category was male–male sex. The proportion of cases due to injection drug use was 35% among Hispanic men born in the United States, 27% among men born in the Dominican Republic, and 61% among men born in Puerto Rico, but <10% among other Hispanic men and non-Hispanic White men. For women the predominant exposure category was injection drug use among Hispanics born in the United States (56%) and Puerto Rico (46%) and among non-Hispanic Whites (42%). The proportion of cases associated with injection drug use was significantly lower (<30%) among other Hispanic women.

*Conclusions.* AIDS prevention strategies must be geared toward different exposure categories among different Hispanic groups. (*Am J Public Health.* 1993;83:504–509)



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## Introduction

In the United States the case rate of acquired immunodeficiency syndrome (AIDS) is two and one half times higher in Hispanics than in non-Hispanic Whites.[1–4] From 1989 to 1990, Hispanics had a larger proportionate increase (13.5%) in AIDS cases than any other racial or ethnic group in the United States.[5] Rates for AIDS cases among Hispanics vary by birthplace and region of residence; Mexican-born Hispanics residing in the South and West have the lowest rates and Puerto Rican–born Hispanics in the Northeast have the highest rates.[6,7] To update and extend previous work that examined AIDS rates among Hispanics by birthplace,[6] we analyzed data for AIDS cases reported to the Centers for Disease Control and Prevention (CDC) among Hispanics by birthplace and exposure category. We also examined trends in the incidence of AIDS among Hispanics by region of residence.

## Methods

To examine recent trends in human immunodeficiency virus (HIV) transmission, we analyzed data from 107 140 AIDS cases reported to the CDC from January 1, 1988, through December 31, 1991, in non-Hispanic White or Hispanic residents of the United States (including Puerto Rico, because all AIDS cases from Puerto Rico are reported to the CDC). We chose this period for comparison of exposure modes to avoid the complicating effect of the 1987 revision of the AIDS surveillance case definition[8,9] and to emphasize recent cases. Persons were classified by race/ethnicity at the local or state health departments. Because data are not available to classify Hispanics by ancestry, Hispanics were further classified by country or territory of birth. These areas included the Dominican Republic, Central and South America, Cuba, Mexico, Puerto Rico, and the United States (excluding Puerto Rico, because even though residents of Puerto Rico are US citizens they represent a culturally distinct Hispanic group). The CDC's hierarchical surveillance categories were used to classify exposure categories according to presumed means of acquiring HIV infection. Except for persons reporting both male–male sex and injection drug use, persons with more than one possible means of acquisition were classified only in the exposure category listed first in the hierarchy. Children <13 years of age were analyzed separately from persons ≥13 years of age. The proportional distributions of exposure categories between Whites and Hispanic groups were compared by $\chi^2$ tests.

The AIDS incidence rate for 1991 was calculated for cases reported in 1991 per 100 000 population (based on 1990 census data).[10] Because the census does not collect data by race and ethnicity from Puerto Rico, all persons in Puerto Rico were assumed to be Hispanic. Relative risk was calculated as the ratio of the incidence in Hispanics to the incidence in non-Hispanic Whites and 95% confidence intervals around relative risks were ap-


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proximated by the first-order Taylor series. Incidence rates by state were based on the state's non-Hispanic White and Hispanic population according to the 1990 census.

To determine trends, we examined AIDS cases among Hispanics by year of diagnosis from 1981 through 1990. Hispanics were categorized according to geographic region of residence (Northeast [Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont]; North Central [Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Montana, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin]; South [Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Texas, Tennessee, Virginia, West Virginia]; West [all other states]; and Puerto Rico). Annual AIDS incidence rates were calculated on the basis of 1980 and 1990 census data and intercensal estimates of the Hispanic population by region for each year from 1981 through 1990.[10] Adjustments for estimated delays in reporting were made as described by Karon et al.[11] Because this method of adjusting is less reliable for recently diagnosed cases, cases diagnosed in 1991 were excluded.

## Results

In 1991 the AIDS case rates for Hispanic adolescents/adults and children were 2.5 to 7.5 times higher than rates for comparable groups of non-Hispanic Whites; the difference was greatest for women and smallest for men (Table 1).

From 1988 through 1991, 26 198 adolescent and adult Hispanics with AIDS were reported in the United States (including Puerto Rico), of whom 23 087 (88%) had a recorded birthplace. Among those with a known birthplace, 41% were born in the United States (excluding US territories), 38% in Puerto Rico, 6% in Cuba, and 6% in Mexico. US-born Hispanics were the predominant Hispanic group in each region, followed by Mexican-born persons in the West (24% of 4652 cases), Cuban-born persons in the South (26% of 4201 cases), mainly Florida; and Puerto Rican–born persons in the Northeast (23% of 10 443 cases) and North Central (25% of 849 cases). Other Hispanic groups accounted for a very small proportion (<3%) of cases among Hispanics and were concentrated in specific regions: Dominican-born Hispanics were overwhelmingly from the Northeast (79%); South American–born Hispanics, mostly from the Northeast (41%) and South (33%); and Central American–born Hispanics, mostly from the West (47%).

TABLE 1—AIDS Incidence (per 100 000) and Relative Risk (RR) in Non-Hispanic White and Hispanic Children and Adults/Adolescents, United States, Including Puerto Rico, 1991

| | Non-Hispanic Whites | | Hispanics | | |
|---|---|---|---|---|---|
| | No. Cases | Incidence | No. Cases | Incidence | RR (95% CI) |
| Children <13 y | 142 | 0.4 | 133 | 2.0 | 5.0 (3.6, 5.8) |
| Adults/adolescents | | | | | |
| Male ≥13 y | 20 716 | 27.6 | 6850 | 69.9 | 2.5 (2.4, 2.6) |
| Female ≥13 y | 1 358 | 1.7 | 1213 | 12.8 | 7.5 (7.0, 8.2) |
| Total | 22 216 | 11.8 | 8196 | 31.6 | 2.7 (2.6, 2.8) |

*Note.* CI = confidence interval.

Among men born in Central America, South America, Cuba, and Mexico, >65% of cases were associated with male–male sex, and fewer than 10% of AIDS cases in these groups were associated with injection drug use (Table 2). In contrast, 61% of cases among Puerto Rican–born men were attributable to injection drug use and 22% were associated with male–male sex. Among Hispanic men born in the Dominican Republic and the United States, 42% and 51% of the AIDS cases, respectively, were due to male–male sex, and 27% and 35% of the cases, respectively, to injection drug use. Injection drug use was the predominant exposure mode for Puerto Rican–born men residing in Puerto Rico (2809/4627 [61%]) or the mainland United States (1591/2567 [62%]).

Among non-Hispanic White women and US-born and Puerto Rican–born Hispanic women the predominant exposure category was injection drug use, whereas <30% of cases among other Hispanic women were associated with injection drug use (Table 3). Injection drug use was the predominant mode of exposure for Puerto Rican–born women residing in Puerto Rico (532/1114 [48%]) or the mainland United States (216/499 [43%]). Both US-born and Puerto-Rican–born Hispanic women had a significantly higher proportion of cases attributable to sexual contact with an injection drug user than did non-Hispanic Whites. Approximately 40% of both Dominican-born and South American–born women with AIDS were exposed to HIV through sex with an injection drug user, but fewer than 50 women with AIDS were reported in each of these groups. Central American–born, Cuban-born, and Mexican-born women had the highest proportions of cases resulting from sex with a man known to be HIV positive (but whose mode of exposure was unknown) and from undetermined modes of exposure (Table 3).

Thirty-four percent of Mexican-born women with AIDS were reportedly exposed to HIV by a transfusion, compared with <15% of women in other Hispanic groups (Table 3). Among Mexican-born women with transfusion-associated AIDS, 24 (73%) of 33 had a known transfusion date. Of these, 6 had had transfusions after 1986, of which 5 were documented as having occurred in Mexico and 1 is still under investigation.

In pediatric AIDS cases, exposure to HIV by blood products was more common among non-Hispanic White children than among Hispanic children; a significantly larger proportion of Hispanic children than non-Hispanic White children were exposed to HIV perinatally (Table 4). Among perinatally infected children, >30% of both Hispanic and non-Hispanic White children had mothers who were injection drug users and 28% of Hispanic children had mothers who were sex partners of an injection drug user.

In most states, the incidence of AIDS among Hispanics was higher than the incidence of AIDS among non-Hispanic Whites. However, for the District of Columbia the rate among non-Hispanic Whites was three times that among Hispanics and for the states that border Mexico rates were 1.5 to 2 times higher among non-Hispanic Whites than among Hispanics (Figure 1). New York (107 per 100 000) and Florida (57 per 100 000) had the highest Hispanic AIDS rates.

From 1981 through 1990, the incidence of AIDS among Hispanics was highest in the Northeast and Puerto Rico,

**TABLE 2—Adult/Adolescent AIDS Cases among Non-Hispanic White and Hispanic Men, by Selected Exposure Categories, 1988 through 1991**

| | No. Cases | % by Exposure Categories | | | | |
|---|---|---|---|---|---|---|
| | | Male–Male Sex | Injection Drug Use | Male–Male Sex and Injection Drug Use | Heterosexual Sex | Undetermined |
| Non-Hispanic White | 75 248 | 78.9 | 7.6 | 6.8 | 0.9 | 4.0 |
| Hispanic, by birthplace | | | | | | |
| Dominican Republic | 165 | 41.8 | 26.7 | 3.6 | 4.2 | 23.0 |
| Central America | 713 | 67.0 | 8.8 | 3.6 | 2.5 | 15.0 |
| Cuba | 1 522 | 76.7 | 8.9 | 3.7 | 2.3 | 6.7 |
| Mexico | 1 441 | 68.6 | 6.2 | 5.6 | 3.1 | 14.6 |
| Puerto Rico | 7 194 | 22.0 | 61.2 | 8.3 | 3.7 | 3.4 |
| South America | 637 | 77.5 | 5.5 | 3.4 | 2.0 | 9.7 |
| United States | 8 088 | 51.2 | 35.2 | 7.0 | 1.2 | 4.0 |

*Note.* By $\chi^2$ test, $P < .01$ for all Hispanic groups compared with non-Hispanic Whites. The information in this table has been added to the Centers for Disease Control and Prevention *HIV/AIDS Surveillance* report's year-end edition.

**TABLE 3—Adult/Adolescent AIDS Cases among Non-Hispanic White and Hispanic Women, by Birthplace and by Selected Exposure Categories, 1988 through 1991**

| | No. Cases | % by Exposure Categories | | | | | |
|---|---|---|---|---|---|---|---|
| | | Injection Drug Use | Sex with Injection Drug User | Sex with Bisexual Man | Sex with HIV+ Man | Transfusion | Undetermined |
| Non-Hispanic White | 4386 | 41.7 | 16.7 | 6.2 | 3.4 | 17.3 | 8.0 |
| Hispanic, by birthplace | | | | | | | |
| Dominican Republic | 42 | 26.2 | 40.5 | 0 | 7.1 | 9.5 | 16.7 |
| Central America | 64 | 17.2 | 21.9 | 7.8 | 17.2 | 14.1 | 21.9 |
| Cuba | 41 | 17.1 | 17.1 | 2.4 | 19.5 | 14.6 | 19.5 |
| Mexico | 95 | 7.4 | 10.5 | 6.3 | 19.0 | 33.7 | 21.1 |
| Puerto Rico | 1613 | 46.4 | 34.8 | 0.8 | 6.4 | 5.3 | 5.3 |
| South America | 30 | 20.0 | 40.0 | 13.3 | 6.7 | 13.3 | 6.7 |
| United States | 1284 | 55.8 | 28.3 | 1.9 | 4.7 | 3.0 | 5.5 |

*Note.* By $\chi^2$ test, $P < .01$ for all Hispanic groups compared with non-Hispanic Whites. Sex with HIV+ man = sex with man seropositive for human immunodeficiency virus whose risk for infection is unknown. The information in this table has been added to the Centers for Disease Control and Prevention *HIV/AIDS Surveillance* report's year-end edition.

with substantial increases in all regions (Figure 2). The percentage increase in rates from 1989 to 1990 was largest in the North Central United States (20%) and Puerto Rico (17%).

## *Discussion*

The AIDS epidemic among Hispanics represents multiple epidemics influenced by the various life-styles of persons of distinct Hispanic groups in different areas of the United States.

Among men born in Mexico, Cuba, and Central and South America, the predominant exposure category was male–male sex, but among Puerto Rican–born men the predominant mode of transmission was injection drug use. For Hispanic men born in the United States and the Dominican Republic, both male–male sex and injection drug use were the predominant means of exposure to HIV. These patterns are similar to those of their country or territory of birth[12,13] except for Cuban-born and Dominican-born men. In Cuba heterosexual transmission of HIV is reportedly more common than transmission by male–male sex,[12] but because of the strong cultural biases against homosexuality this mode of exposure may be underreported.[14] In the Dominican Republic the predominant mode of transmission before 1987 was male–male sex, but since 1987 it has been heterosexual transmission; less than 2% of all cases are attributable to injection drug use.[15] The higher proportion of AIDS cases attributable to injection drug use among Dominican-born men in the United States (who were mostly from the Northeast) may be due to their higher likelihood of exposure to injection drug use in the northeastern United States than in the Dominican Republic.

Among US-born and Puerto Rican–born Hispanic women the predominant exposure category was injection drug use. Compared with non-Hispanic White women, significantly more US-born and Puerto Rican–born women were exposed to HIV through sexual relations with an injection drug user, reflecting the predominance of injection drug use among men with AIDS in these two groups. Additionally, we found that more than one third of AIDS cases among women born in the Dominican Republic and South America were attributable to heterosexual sex with an injection drug user. Data are not uniformly available on heterosexual transmission patterns by gender from Latin America. However, in Brazil approxi-

mately one third and in the Dominican Republic about one half of AIDS cases among women are attributed to heterosexual transmission; the proportion due to sex with an injection drug user has not been documented.[13,16] Among South American–born and Dominican-born women in the United States (most of whom are from the Northeast), the proportion of cases attributable to sex with an injection drug user is probably higher than it is in Latin America, where injection drug use is reportedly rare.

Transfusions were the predominant exposure category for Mexican-born women in the United States. In Mexico approximately 66% of AIDS cases among women have been attributed to blood transfusions.[14,17] Screening of blood for HIV began in Mexico in May 1986,[15] but exposure to HIV may still have been possible if not all blood collection centers had implemented HIV antibody screening in 1986.

In the Hispanic groups where male–male sex was the overwhelmingly predominant exposure category, many women were classified as having undetermined modes of exposure or heterosexual contact with HIV-infected men whose mode of exposure was not stated. These women may have become infected with HIV through sex with a bisexual man without knowing their partner's history of male–male sex. The percentage of men with AIDS attributable to male–male sex who also have had sex with women has been reported to be higher in Hispanics than in non-Hispanic Whites.[18]

Hispanic children have been disproportionately affected by the AIDS epidemic.[3] The proportion of AIDS cases due to transmission by blood products was lower among Hispanic children than among non-Hispanic White children, but the proportion attributable to perinatal transmission was significantly higher among Hispanic children. Most perinatal transmission is related to maternal drug use or to drug use by the mothers' sex partners.

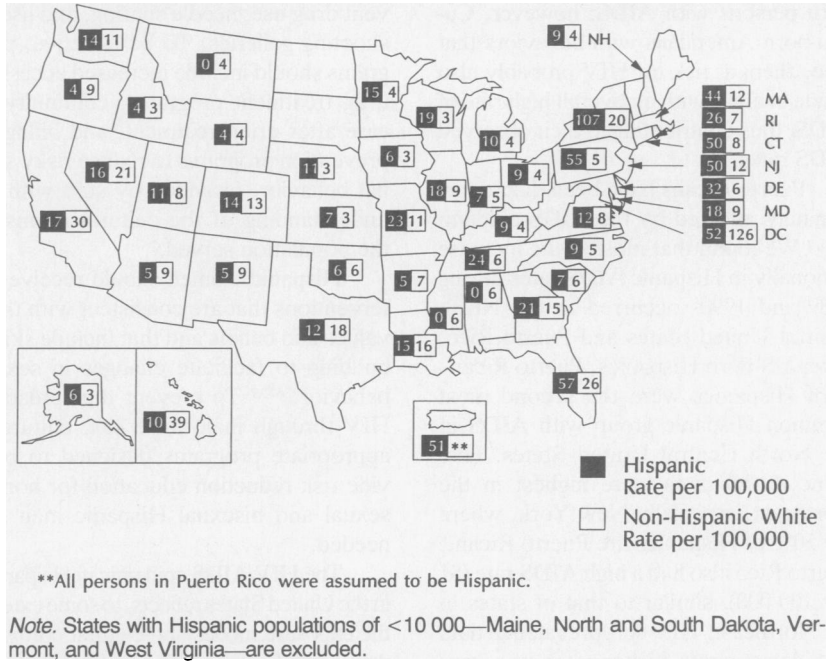
Although overall AIDS rates in Hispanics are higher than rates in Whites, rates for Hispanics vary widely by geographic area.[6] Because 1990 census data by birthplace were not yet available, we could not calculate AIDS rates by Hispanic birthplace group. However, Hispanic AIDS rates by state indicate which Hispanic groups in which areas of the United States are most affected by the AIDS epidemic. Despite probable undercounting of Hispanics in the census, we found a lower incidence of AIDS in Hispanics than in non-Hispanic Whites in all the states that border Mexico. This most likely reflects AIDS rates among Mexican Americans, because 56% to 90% of Hispanics in these states are of Mexican origin.[10] Low HIV seroprevalence rates among Hispanics in the West also support our observation.[19,20]

Florida, where 43% of the Hispanics are Cuban,[8] had the second highest rate of AIDS (57 per 100 000) among Hispanics. Miami, Fla, where many Cubans reside, had the second highest overall rate of AIDS (104 per 100 000) among US metropolitan areas in 1991.[21] Although overall seroprevalence rates in Cuba are reported as 0.00009%,[22] the HIV seroprevalence among Cuban immigrants who entered the United States during the 1980 Mariel boatlift (a high-risk population for HIV[21]) was 0.4%.[23] The 1980 immigration may

**TABLE 4—AIDS among Children (<13 Years of Age) by Selected Exposure Categories, United States, Including Puerto Rico, 1988 through 1991**

| Transmission Category | Cases in Whites (n = 566) No. | Cases in Whites (n = 566) % | Cases in Hispanics (n = 677) No. | Cases in Hispanics (n = 677) % |
|---|---|---|---|---|
| Blood/blood product recipient | 175 | 30.9 | 64 | 9.4 |
| Clotting factor | 80 | 14.1 | 21 | 3.1 |
| Other transfusion recipients | 95 | 16.8 | 43 | 6.4 |
| Perinatal | 384 | 67.8 | 594 | 87.7 |
| Injection drug use by mother | 186 | 32.9 | 274 | 40.5 |
| Mother exposed through sexual relations with an injection drug user | 74 | 13.1 | 191 | 28.2 |
| Mother had other risks | 69 | 12.2 | 65 | 9.6 |
| Mother exposed through sexual relations with an HIV+ man | 55 | 9.7 | 64 | 9.4 |
| Undetermined | 7 | 1.2 | 19 | 2.8 |

*Note.* $P < .05$ by $\chi^2$ test. Sex with HIV+ man = sex with a man seropositive for the human immunodeficiency virus whose risk for infection is unknown.




*Note.* States with Hispanic populations of <10 000—Maine, North and South Dakota, Vermont, and West Virginia—are excluded.

**FIGURE 1—Incidence of reported AIDS cases per 100 000 population among Hispanics and non-Hispanic Whites by state, United States including Puerto Rico, 1991.**

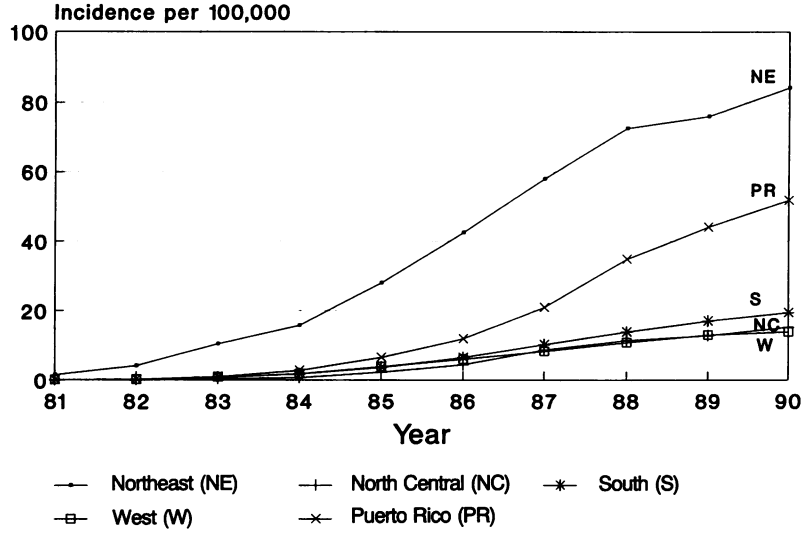



**FIGURE 2—Regional AIDS incidence among Hispanics per 100 000 population, by year of diagnosis, United States, 1981 to 1990.**

have contributed to the number of Cuban-born persons with AIDS; however, Cuban-born Americans with behaviors that place them at risk for HIV probably also reside in areas with an overall high rate of AIDS, thus contributing to their observed AIDS rates.

Puerto Ricans have been disproportionately affected by the AIDS epidemic.[6,7] We found that most of the increase nationally in Hispanic AIDS rates during 1989 and 1990[5] occurred in the North Central United States and Puerto Rico. After US-born Hispanics, Puerto Rican–born Hispanics were the second most common Hispanic group with AIDS in the North Central United States. Hispanic AIDS rates were highest in the Northeast, especially New York, where the 50% of Hispanics are Puerto Rican.[8] Puerto Rico also had a high AIDS rate (51 per 100 000), similar to that of states in the Northeast. HIV seroprevalence data also demonstrate higher rates of seropositivity among Hispanics in the Northeast (most of whom are Puerto Rican) and Puerto Rico.[19,20,24]

Resources for preventing HIV infection among Hispanics are needed most in the Northeast, Puerto Rico, and Florida. Because injection drug use is a common mode of exposure among Puerto Rican–born and US-born Hispanics (who represent most Hispanics reported with AIDS), and because some high-risk behaviors associated with drug use (e.g., frequent use of "shooting galleries") may be more predominant in Puerto Rican–born Hispanics than in other Hispanics,[25] prevention of HIV transmission should emphasize efforts to decrease and prevent drug use, needle sharing, and use of shooting galleries. To be effective, programs should include increased access to drug treatment programs, continuity of care after drug treatment, and bilingual prevention programs to reduce risky sexual behavior, provided by staff with an understanding of the cultural norms of the population served.[26]

Hispanic women should receive interventions that are consistent with their values and beliefs and that include skills-building to facilitate changes in sexual behavior.[26–29] To prevent the spread of HIV through male–male sex, culturally appropriate programs designed to provide risk reduction education for homosexual and bisexual Hispanic men are needed.

The HIV/AIDS epidemic in Hispanics in the United States reflects, to some extent, the exposure modes and cultural norms of their birthplaces combined with influences from the US communities where they reside. An understanding of these influences on behaviors is necessary to adequately target prevention efforts. □

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