Racial/Ethnic Differences in the Risk of AIDS in the United States

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Abstract: We analyzed the variation in the risk of AIDS in US Blacks, Hispanics, and other racial/ethnic groups relative to that in Whites (non-Hispanic) by geographic area and mode of acquiring HIV infection, based on data reported between June 1, 1981 and January 18, 1988 to the Centers for Disease Control and 1980 US census data. Relative risks (RRs) in Blacks and Hispanics were highest in the northeast region, and higher in suburbs than in central cities of metropolitan areas. RRs in Blacks and Hispanics were greatest for AIDS directly or indirectly associated with intravenous-drug abuse by heterosexuals (range: 5.7–26.9) and were also high for AIDS associated with male bisexuality (range: 2.5–4.8), suggesting that these behaviors may be more prevalent in Blacks and Hispanics than in Whites. Prevention strategies should take into account these racial/ethnic differences. (*Am J Public Health* 1988; 78:1539–1545.)

Introduction

Although most patients reported with acquired immunodeficiency syndrome (AIDS) in the United States are non-Hispanic White homosexual males, the perception of AIDS as predominantly a disease of gay White men has changed. The risk of AIDS is higher in American Blacks and Hispanics and the racial/ethnic differences in risk are greatest in association with intravenous-drug abuse (IVDA) by heterosexuals.[1–9] We present here the results of a study to determine more precisely the magnitude of the association between AIDS and racial/ethnic group for different means of acquiring human immunodeficiency virus (HIV) infection and the variation in this association by geographic area and over time.

Methods

To measure the risk of AIDS in a given racial/ethnic group, we used the cumulative incidence (number of AIDS cases reported in that group per million population of the same group). AIDS cases were those meeting the case definition[10] in residents of the United States (excluding US territories) reported to the Centers for Disease Control (CDC) between June 1, 1981 and January 18, 1988. Reporting of AIDS cases by health care providers is mandatory in all states. CDC receives data on these cases from the health departments of state and selected local governments. The population of each racial/ethnic group was that reported by the US Bureau of the Census for 1980.[11]

We used relative risk (RR) to examine the magnitude of the association between AIDS and racial/ethnic group. The RR in a given group was the ratio of the cumulative incidence of AIDS in that group to the cumulative incidence in a reference group, in this instance being Whites who are not Hispanic. We stratified the analyses by sex and age group (men, women, and children <15 years of age).

The 99 per cent confidence intervals around RRs were approximated by the first-order Taylor series method.[12] For RRs equal to zero, the upper limits of the confidence intervals were estimated by the method of Fleiss.[13]

We classified AIDS patients in a hierarchy of exposure categories according to their presumed means of acquiring HIV infection. Patients with more than one possible means of acquisition were classified only in the exposure category listed first in the hierarchy, except for the combination of IVDA and male homosexuality/bisexuality.

We also stratified the analyses by region,[11] population of metropolitan areas, and residence inside or outside the central cities of selected metropolitan areas. For analysis by residence inside or outside the central cities of metropolitan areas, we selected the 16 most populous SMSAs (≥2 million inhabitants each) that had central cities.

To assess trends in RRs by exposure category from 1979 through 1987, we used weighted least-squares regression analysis (with the inverse variances of the quarter-yearly RRs as weights).[15] Only RRs significant at the $p<0.01$ level were analyzed.

Results

CDC received reports of 50,830 AIDS patients in the United States between June 1, 1981 and January 18, 1988. Of the 50,704 (99.8 per cent) with specified race/ethnicity, 60.9 per cent were classified as White, 25.5 per cent as Black, 12.9 per cent as Hispanic, and 0.7 per cent as Other. In contrast, of the US population (226,545,805), 79.6 per cent were classified as White, 11.5 per cent as Black, 6.4 per cent as Hispanic, and 2.5 per cent as Other. Overall, the risk (cumulative incidence) of AIDS in Blacks and Hispanics was almost three times as great as that in Whites. By sex and age group, the risks of AIDS in Black and Hispanic men were 2.8 and 2.7 times, respectively, that in White men; the risks in Black and Hispanic women were 13.2 and 8.1 times that in White women; and the risks in Black and Hispanic children were 11.6 and 6.6 times that in White children (Table 1). The risks in other racial/ethnic groups were less than the risk in Whites.

Analysis by Exposure Category

The proportion of AIDS cases associated with IVDA by heterosexuals (including their sex partners and children) was 39.7 per cent in Blacks and 38.7 per cent in Hispanics, compared with 6.3 per cent in Whites, 4.0 per cent in Asians and Pacific Islanders, and 19.6 per cent in American Indians, Eskimos, and Aleuts. These IVDA-exposure categories were associated with the highest RRs in Blacks and Hispanics, ranging from 5.7 to 26.9 (Table 2).

The risk of AIDS in exclusively homosexual men without a history of IVDA was 1.3 and 1.7 times as great in Black and Hispanic men, respectively, as in White men (Table 3). For bisexual men with AIDS, the RRs were higher (3.6 and 2.5 in Blacks and Hispanics, respectively). The proportion of bisexual men among homosexual and bisexual men with

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TABLE 1—Cumulative Incidence* and Relative Risk (RR)† of AIDS, by Racial/Ethnic Group

Sex and Age Group	Racial/Ethnic Group	AIDS Cases	Cumulative Incidence*	RR	(99% Confidence Interval)
Men,					
≥15 years	White	29,614	432.9	1.0	
	Black	10,569	1,233.7	2.8	(2.8, 2.9)
	Hispanic	5,783	1,179.7	2.7	(2.6, 2.8)
	Other	317	123.1	0.4	(0.3, 0.4)
Women,					
≥15 years	White	1,090	14.7	1.0	
	Black	1,946	193.4	13.2	(12.0, 14.5)
	Hispanic	596	118.5	8.1	(7.1, 9.2)
	Other	26	12.6	0.9	(0.5, 1.4)
Children,					
<15 years	White	183	4.9	1.0	
	Black	423	56.6	11.6	(9.3, 14.6)
	Hispanic	151	32.3	6.6	(5.0, 8.8)
	Other	6	3.9	0.8	(0.3, 2.3)
Total	White	30,887	171.4	1.0	
	Black	12,938	495.6	2.9	(2.8, 3.0)
	Hispanic	6,530	447.0	2.6	(2.5, 2.7)
	Asian or Pacific Islander	298	83.9	0.5	(0.4, 0.6)
	American Indian, Eskimo, or Aleut	51	35.6	0.2	(0.1, 0.3)

*AIDS cases reported from June 1, 1981 to January 18, 1988 per million population of same race/ethnicity.
†Reference group for relative risk: Non-Hispanic Whites

AIDS was greater in Blacks (30 per cent) and Hispanics (20 per cent) than in Whites (14 per cent). This pattern was reflected in the risk of AIDS in women whose sex partner was a bisexual man, which was 4.6 and 3.6 times as great in Black and Hispanic women, respectively, as in White women. The addition of a history of IVDA increased the racial/ethnic RRs associated with male homosexuality (Table 3).

The risk of AIDS associated with prior receipt of a blood transfusion was 2.5 times as great in Black and Hispanic children as in White children. In addition, the risks of AIDS in transfused women, in male sex partners of transfused women, and in children of transfused women were higher in Blacks than in Whites (Table 4). The only category in which Blacks had a lower risk of AIDS than Whites was coagulation disorders (e.g., hemophilia), in which the RR in Black men was 0.4 (99 per cent confidence interval: 0.3, 0.8).

The risks of AIDS in Blacks and Hispanics were substantially higher than the risk in Whites for exposure categories associated with undetermined means of acquiring HIV infection, including categories involving heterosexual and perinatal transmission from persons with undetermined means of acquiring HIV infection (Table 5).

Analysis by Geographic Area

In general, the RRs in Blacks and Hispanics were greatest in the northeast US and least in the west (Table 6). In the west, the risk of Hispanics was actually less than that in Whites for AIDS in exclusively homosexual men and for AIDS overall. In all regions, the risk in other groups (e.g., Asians) was less than the risk in Whites for AIDS in homosexual men and overall; for no exposure category was it significantly greater than the risk in Whites. The northeast was the only region in which most AIDS cases in Blacks and Hispanics (54 per cent and 57 per cent, respectively) were associated with IVDA by heterosexuals (including their sex partners and children).

Of AIDS patients with a reported city or county of residence (97 per cent), 95 per cent resided in 314 of the 318 SMSAs recognized by the Bureau of the Census; 5 per cent resided outside SMSAs. The 168 SMSAs in the smallest population category (50,000–250,000 population) contained 10 per cent of the US population and accounted for 3 per cent of AIDS cases, whereas the 16 SMSAs in the largest population category (>2,000,000 population) contained 27 per cent of the US population and accounted for 62 per cent

TABLE 2—Relative Risk* of AIDS Associated with History of Intravenous-Drug Abuse (IVDA), by Racial/Ethnic Group and Exposure Category

Exposure Category	White*	Black	Hispanic	Other
Adults with IVDA:				
Homosexual or bisexual men	1.0	3.0 (2.7, 3.3)	2.3 (2.0, 2.6)	0.2 (0.1, 0.4)
Heterosexual men	1.0	20.7 (19.1, 22.6)	20.6 (18.8, 22.6)	0.2 (0.1, 0.6)
Women	1.0	18.1 (15.7, 21.0)	10.3 (8.5, 12.5)	0.7 (0.3, 1.7)
Adults whose sex partner had IVDA:				
Heterosexual men	1.0	15.3 (9.8, 23.9)	5.7 (2.9, 11.2)	0.7 (0.1, 9.2)
Women	1.0	21.9 (16.4, 29.2)	22.7 (16.5, 31.3)	0.3 (0.0, 4.5)
Children whose mother:				
Had IVDA	1.0	26.9 (17.0, 42.7)	16.7 (10.0, 28.0)	1.3 (0.2, 8.5)
Had sex partner with IVDA	1.0	18.7 (8.6, 40.5)	17.8 (7.8, 40.8)	0.0 (0.0, 9.7)

*Reference group: non-Hispanic Whites (99% confidence interval around relative risk is in parentheses).

TABLE 3—Relative Risk* of AIDS Associated with History of Male Homosexual Activity, by Racial/Ethnic Group and Exposure Category

Exposure Category	White*	Black	Hispanic	Other
Exclusively homosexual men:				
without IVDA†	1.0	1.3 (1.2, 1.4)	1.7 (1.6, 1.8)	0.3 (0.3, 0.4)
with IVDA	1.0	2.5 (2.2, 2.8)	2.0 (1.7, 2.3)	0.2 (0.1, 0.4)
Bisexual men:				
without IVDA	1.0	3.6 (3.3, 3.9)	2.5 (2.2, 2.8)	0.6 (0.4, 0.8)
with IVDA	1.0	4.8 (4.0, 5.7)	3.3 (2.6, 4.3)	0.1 (0.0, 0.8)
Women whose sex partner was a bisexual man	1.0	4.6 (2.9, 4.7)	3.6 (1.9, 6.9)	0.9 (0.1, 5.8)
Children whose mother's sex partner was a bisexual man	1.0	3.8 (0.9, 15.1)	1.0 (0.1, 15.4)	0.0 (0.0, 17.1)

*Reference group: non-Hispanic Whites (99% confidence interval around relative risk is in parentheses).
†History of intravenous-drug abuse.

of AIDS cases. The cumulative incidence of AIDS was correlated with the population of SMSAs (p=0.0001, Spearman rank sum correlation coefficient=0.49). The cumulative incidence was higher in Blacks and Hispanics than in Whites in each population category of SMSAs and outside SMSAs (RR range: 1.3–3.7) (Figure 1).

In the 16 SMSAs with ≥2,000,000 inhabitants, the cumulative incidence of AIDS was higher in the central cities than in the suburbs. For cases in exclusively homosexual men, in the central cities, the risk in Blacks and Hispanics was about half that in Whites; in the suburbs the risk in Blacks and Hispanics was slightly higher than the risk in Whites (Table 7). For cases associated with bisexual men, heterosexual intravenous drug abusers (IVDAs), and undetermined means of acquiring HIV infection, the risks in Blacks and Hispanics were higher than the risk in Whites in both the central cities and the suburbs. The pattern was similar in each of the four regions of the United States, except that, in the west (Los Angeles and San Francisco-Oakland), the risk of AIDS in exclusively homosexual men was lower in Blacks and Hispanics than in Whites in the suburbs as well as in the central cities.

Analysis by Time of Diagnosis

In 1980, the annual incidence of AIDS in heterosexual IVDAs was already 23.0 and 28.7 times as great in Blacks and Hispanics, respectively, as in Whites. By 1987, in Hispanics the RR of AIDS in heterosexual IVDAs had dropped to 14.8 (regression coefficient=−0.38, SE=0.15) along with a decline of Hispanics' overall RR of AIDS from 3.2 in 1981 to 2.5. The declining RR reflected an incidence increasing at a slower rate than that in Whites, rather than a decreasing incidence. The RR in Blacks has not had a significant downward or upward trend for AIDS overall or for any exposure category. In other racial/ethnic groups, the RR rose from 0.1 in 1982 to 0.4 in 1987, both overall and for cases in homosexual/bisexual men (regression coefficient=0.018, SE=0.004).

Discussion

The wide range in the RRs of AIDS in Blacks and Hispanics for different exposure categories, and the variation in these RRs by geographic area of residence, support the view that the higher risks of AIDS in Blacks and Hispanics are due primarily to behavioral and perhaps environmental differences between the racial/ethnic groups, rather than genetic differences. A large part of the difference in cumulative incidence between racial/ethnic groups may be due to different levels of prevalence of the various means of acquiring HIV infection, but reliable data on risk factor prevalence by racial/ethnic group are not currently available.

Analyses of data from drug treatment programs and emergency room visits for drug-related conditions are biased by geographical location and/or exclusion of data on private patients or drug abusers not seeking treatment.[9,16,17] Thus, the disproportionate numbers of Black and Hispanic clients in these settings provide suggestive but not conclusive evidence of a higher prevalence of IVDA in Blacks and Hispanics.

Studies of heterosexual IVDAs also have found a higher prevalence and incidence of HIV infection in Blacks and Hispanics than in Whites,[18–23] even after controlling for frequency of needle sharing.[18,20–22] This might have resulted

TABLE 4—Relative Risk* of AIDS Associated with Blood Transfusion, by Racial/Ethnic Group and Exposure Category

Exposure Category	White*	Black	Hispanic	Other
Transfusion before AIDS diagnosis:				
Men	1.0	1.2 (0.1, 1.7)	1.1 (0.7, 1.6)	0.9 (0.4, 1.7)
Women	1.0	1.9 (1.4, 2.7)	1.4 (0.8, 2.3)	1.2 (0.5, 2.9)
Children	1.0	2.5 (1.4, 4.5)	2.5 (1.2, 5.0)	0.0 (0.0, 2.4)
Heterosexual sex partner had transfusion:				
Men	1.0	24.0 (1.2, 468.0)	0.0 (0.0, 78.1)	0.0 (0.0, 194.9)
Women	1.0	0.5 (0.0, 7.6)	2.1 (0.3, 14.8)	0.0 (0.0, 14.4)
Children whose mother had transfusion	1.0	10.1 (2.1, 48.6)	4.0 (0.4, 37.4)	0.0 (0.0, 34.1)

*Reference group: non-Hispanic Whites (99% confidence interval around relative risk is in parentheses).

TABLE 5—Relative Risk* of AIDS Associated with Undetermined Means of Acquiring HIV Infection (UMAHI), by Racial/Ethnic Group and Exposure Category

Exposure Category	White*	Black	Hispanic	Other
Patients with UMAHI				
Men	1.0	7.2 (6.1, 8.5)	6.3 (5.2, 7.8)	1.2 (0.6, 2.2)
Women	1.0	12.0 (8.7, 16.6)	8.5 (5.5, 13.0)	0.7 (0.1, 4.5)
Children	1.0	7.8 (2.9, 21.0)	5.1 (1.5, 17.8)	0.0 (0.0, 12.4)
Patients with no risk factor for AIDS other than a sex partner with HIV infection but UMAHI				
Men	1.0	9.0 (3.6, 22.5)	1.9 (0.3, 12.9)	0.0 (0.0, 13.0)
Women	1.0	8.6 (4.5, 16.3)	3.4 (1.2, 10.1)	2.4 (0.4, 15.7)
Children with no risk factor for AIDS other than a mother with HIV infection but UMAHI	1.0	24.1 (6.8, 85.6)	3.2 (0.4, 27.7)	4.9 (0.3, 81.7)
Children with no risk factor for AIDS other than a mother whose sex partner had HIV infection but UMAHI	1.0	10.1 (2.1, 48.6)	10.1 (1.8, 56.5)	6.1 (0.3, 108.3)

*Reference group: non-Hispanic Whites (99% confidence interval around relative risk is in parentheses).

from greater use of "shooting galleries" by Blacks and Hispanics, where needles and syringes may be shared with a greater number of persons.*

Blacks' and Hispanics' higher cumulative incidence of AIDS associated with male homosexual activity are not easily explained, as no data are available on the prevalence of homosexuality by race/ethnicity. A study of homosexual men in San Francisco found that Blacks had a higher prevalence and incidence of HIV infection than Whites, which could not be explained by differences in number of sex partners, frequency of receptive anal/genital contact, or sharing needles for drug abuse.[24] Perhaps the higher prevalence of HIV infection in Black and Hispanic IVDAs, noted above, has led to a higher infection rate in their sex partners, whether homosexual or heterosexual.

*Personal communication: L. R. Petersen.

Blacks' and Hispanics' higher cumulative incidence of AIDS associated with male bisexuality could be due to a greater proportion of bisexuals among Black and Hispanic homosexual/bisexual men than among White homosexual/bisexual men.[25] This would be consistent with our finding of a higher risk of AIDS in Black and Hispanic women whose sex partner was a bisexual man, but is not yet significantly reflected in Black and Hispanic children whose mothers' sex partners were bisexual.

Blacks' and Hispanics' higher risk of AIDS in children who have received blood transfusions is probably due to their having a rate of low birth weight at least twice that of Whites.[26] Such births are associated with a higher rate of transfusion for treatment of iatrogenic anemia due to blood sampling in neonatal intensive care units.[27] Blacks' higher risk of AIDS in transfused women, their sex partners, and their children (Table 4) might be explained if Black women

TABLE 6—Cumulative Incidence* and Relative Risk† of AIDS, by Racial/Ethnic Group, Exposure Category, and Geographic Region

Exposure Category	US Region	White		Black		Hispanic		Other	
		CI	RR	CI	RR	CI	RR	CI	RR
Exclusively homosexual men without IVDA‡	Northeast	376.8	1.0	893.2	2.4 (2.2, 2.6)	1,242.2	3.3 (3.0,3.6)	152.5	0.4 (0.3, 0.6)
	Midwest	88.9	1.0	217.7	2.4 (2.1, 2.8)	180.6	2.0 (1.5, 2.7)	34.6	0.4 (0.2, 0.9)
	South	255.2	1.0	248.8	1.0 (0.9, 1.1)	390.4	1.5 (1.4, 1.7)	35.2	0.1 (0.1, 0.3)
	West	657.5	1.0	747.2	1.1 (1.0, 1.3)	400.8	0.6 (0.6, 0.7)	126.3	0.2 (0.2, 0.2)
Bisexual men with IVDA	Northeast	49.3	1.0	341.4	6.9 (6.0, 8.0)	283.0	5.7 (4.7, 7.0)	37.3	0.8 (0.3, 1.7)
	Midwest	21.5	1.0	114.1	5.3 (4.3, 6.7)	57.9	2.7 (1.6, 4.6)	11.5	0.5 (0.1, 2.4)
	South	43.4	1.0	115.9	2.7 (2.3, 3.1)	65.4	1.5 (1.1, 2.0)	8.8	0.2 (0.0, 0.9)
	West	86.6	1.0	245.3	2.8 (2.3, 3.5)	100.4	1.2 (1.0, 1.4)	33.7	0.4 (0.3, 0.6)
Heterosexual adults with IVDA	Northeast	36.8	1.0	951.3	25.9 (23.7, 28.2)	1,128.8	30.7 (27.9, 33.7)	15.0	0.4 (0.2, 1.0)
	Midwest	2.1	1.0	43.5	20.6 (14.6, 29.0)	47.8	22.6 (13.8, 37.0)	3.8	1.8 (0.3, 11.2)
	South	6.0	1.0	92.4	15.4 (12.9, 18.5)	20.0	3.4 (2.3, 4.8)	2.8	0.5 (0.1, 3.0)
	West	7.3	1.0	82.5	11.3 (8.5, 15.2)	23.6	3.2 (2.4, 4.5)	2.3	0.3 (0.1, 1.0)
Adults with undetermined means of acquiring HIV infection	Northeast	5.5	1.0	78.7	14.3 (11.2, 18.3)	91.6	16.7 (12.6, 22.0)	13.3	2.4 (1.0, 6.1)
	Midwest	1.9	1.0	9.1	4.9 (2.9, 8.3)	10.8	5.8 (2.3, 14.3)	1.9	1.0 (0.1, 13.4)
	South	4.5	1.0	24.7	5.5 (4.3, 7.1)	15.8	3.5 (2.4, 5.3)	7.1	1.6 (0.5, 5.1)
	West	6.0	1.0	45.5	7.6 (5.3, 10.9)	15.2	2.5 (1.7, 3.7)	2.3	0.4 (0.1, 1.2)
All AIDS patients (including children)	Northeast	218.4	1.0	1,445.9	6.6 (6.3, 6.9)	1,538.8	7.0 (6.7, 7.4)	100.0	0.5 (0.3, 0.6)
	Midwest	53.1	1.0	171.8	3.2 (2.9, 3.6)	138.6	2.6 (2.1, 3.2)	28.1	0.5 (0.3, 0.9)
	South	143.9	1.0	286.7	2.0 (1.9, 2.1)	206.3	1.4 (1.3, 1.6)	31.4	0.2 (0.1, 0.3)
	West	351.0	1.0	560.9	1.6 (1.5, 1.7)	227.5	0.6 (0.6, 0.7)	71.5	0.2 (0.2, 0.2)

*Cumulative incidence (CI): AIDS cases reported from June 1, 1981, to January 18, 1988, per million population.
†Reference group for relative risk (RR): non-Hispanic Whites (99% confidence interval around RR is in parentheses).
‡History of intravenous-drug abuse.

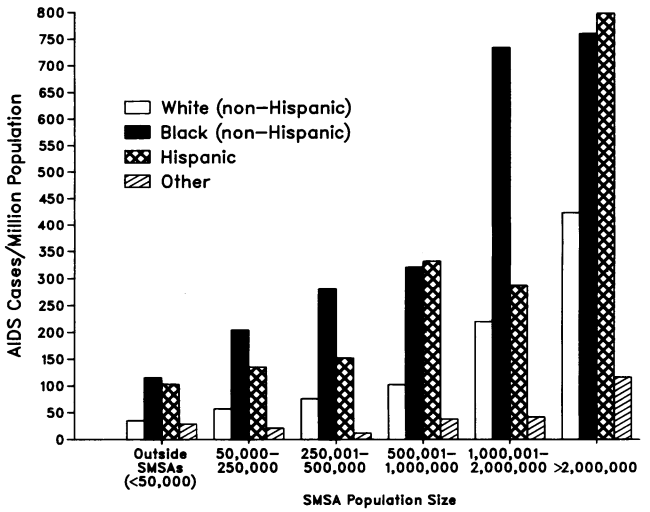

FIGURE 1—Cumulative Incidence of AIDS as of January 18, 1988 by Racial/Ethnic Group and Population Category of Standard Metropolitan Statistical Areas (SMSAs), based on the 1980 US Census

had a higher incidence of transfusions than White women. If they do, their higher transfusion rate might be due to their higher rates of birth, abortions, and ectopic pregnancies.[28–30] Alternatively, since HIV transmission by transfusion is generally only presumed in these cases, without being confirmed by assessing the HIV infection status of the blood donors, the history of blood transfusion may be merely a coincidental finding in a proportion of these cases.

Black men's lower risk of AIDS related to hemophilia suggests that this inherited disorder may be less common in Blacks than Whites, but demographic data on hemophiliacs are unavailable to substantiate this.**

Blacks' and Hispanics' higher risk of AIDS associated with undetermined means of acquiring HIV infection could result if Blacks and Hispanics were more reluctant to admit to IVDA or homosexual activity than Whites. Even without a higher rate of concealment of risk factors, however, a disproportionately high number of Black and Hispanic AIDS patients in the undetermined categories should be expected simply due to their higher proportions in the IVDA and homosexual/bisexual categories. In addition to concealing IVDA or homosexual activity in AIDS patients, these undetermined categories might reflect heterosexual transmission to persons unaware that their sex partners were IVDAs or bisexual men or had other sex partners with risk factors. Such heterosexual transmission might be occurring at a greater rate in Blacks and Hispanics than Whites.

The focus of this study has been on RRs, because they reveal differences not readily apparent from the percentage distribution of AIDS cases by race/ethnicity and exposure category. However, the importance of racial/ethnic differences in risks is reinforced by the magnitude of the proportion of Blacks and Hispanics in certain categories of AIDS patients. Of AIDS cases associated with IVDA by heterosexuals (including sex partners and children of IVDAs), more than 80 per cent were in Blacks and Hispanics. The preponderance of Blacks and Hispanics among heroin addicts was noted more than 20 years ago.[31] In addition, Blacks and Hispanics constitute a disproportionate 48 per cent of AIDS cases in women whose male sex partners were bisexual and 59 per cent of cases with undetermined means of acquiring HIV infection.

The prevalence of high-risk behavior may differ between persons in different areas, despite their belonging to the same racial/ethnic group as broadly categorized here. For example, if high-risk homosexual activity were more prevalent in Whites or less prevalent in Hispanics in the western US than in their counterparts in other regions, either situation could explain why the RR in Hispanics is lower in the west than in other regions (Table 6). The same principle could explain why, in the central cities, the general populations of Blacks and Hispanics have a lower cumulative incidence than Whites of AIDS in exclusively homosexual men (Table 7). Since our comparison of central cities with suburbs was limited to SMSAs with ≥2,000,000 population, the differences observed may not necessarily reflect the situation in smaller SMSAs or outside SMSAs. Independent of the prevalence of high-risk behavior, the prevalence of HIV infection may differ between regions due to differences in the time when the epidemic began in particular exposure categories.

Our analysis of trends was too early to assess the impact of the 1987 revision of the AIDS case definition on relative risks, as reporting of cases under the revised definition did not begin until September 1, 1987.[10]

The possibility that the observed higher risks in Blacks and Hispanics may be due to biased data needs to be considered. The proportion of the population not counted in the 1980 census was greater for Blacks†[32] and Hispanics‡ than Whites. When we modified our calculations, however, by increasing the populations by estimates of their undercounts, RRs in Blacks and Hispanics were not significantly reduced. If private physicians were more concerned than other physicians about guarding the confidentiality of their patients, reporting of AIDS cases might be more complete in indigent (disproportionately Black and Hispanic) patients of public hospitals than in patients who can afford private medical care. A bias in the opposite direction, however, may result if indigent patients were less likely to undergo expensive diagnostic procedures needed to meet the AIDS case definition (presumptive diagnoses were not accepted until September 1987).[10] A reporting bias would probably be too small to explain the magnitude of the observed RRs, since a validation study estimated the completeness of AIDS reporting to be about 90 per cent, a rate that did not vary by racial/ethnic group.[33] Furthermore, a reporting bias would be unlikely to explain fully the variation in RRs by exposure category and geographic area.

HIV-antibody tests in applicants for military service[34] and in volunteer blood donors[35] have shown that the prevalence of HIV infection is higher in Blacks and Hispanics than in Whites, but not higher in American Indians/Alaskan Natives and Asians/Pacific islanders. This supports our analyses. Awareness that the risk of AIDS is not higher in racial/ethnic minorities other than Blacks and Hispanics

**Literature search by R. M. Selik and personal communication from J. Jason.

†Passel JS, Robinson JG: Bureau of the Census memorandum, April 8, 1985.

‡Passel JS, Woodrow KA: Bureau of the Census memorandum, January 16, 1987.

TABLE 7—Cumulative Incidence* and Relative Risk† of AIDS, by Racial/Ethnic Group, Exposure Category, and Residence in the Central Cities or Suburbs of Standard Metropolitan Statistical Areas of ≥2 Million Population

Exposure Category	Residence	Racial/Ethnic Group	AIDS Cases	Cumulative Incidence	RR	(99% Confidence Interval)
Exclusively homosexual men	Central cities	White	12,192	1,013.4	1.0	
		Black	2,638	346.8	0.3	(0.3, 0.4)
		Hispanic	1,760	511.1	0.5	(0.5, 0.5)
		Other	128	125.9	0.1	(0.1, 0.2)
	Suburbs	White	2,686	88.1	1.0	
		Black	387	140.3	1.6	(1.4, 1.8)
		Hispanic	261	113.3	1.3	(1.1, 1.5)
		Other	23	23.3	0.3	(0.2, 0.5)
Bisexual men	Central cities	White	1,128	93.8	1.0	
		Black	1,050	138.0	1.5	(1.3, 1.6)
		Hispanic	378	109.8	1.2	(1.0, 1.4)
		Other	25	24.6	0.3	(0.2, 0.4)
	Suburbs	White	588	19.3	1.0	
		Black	169	61.3	3.2	(2.5, 4.0)
		Hispanic	86	37.3	1.9	(1.4, 2.6)
		Other	9	9.1	0.5	(0.2, 1.1)
Heterosexual adults with IVDA¶	Central cities	White	608	50.5	1.0	
		Black	2,401	315.6	6.2	(5.6, 7.0)
		Hispanic	1,537	446.4	8.8	(7.8, 10.0)
		Other	8	7.9	0.2	(0.1, 0.4)
	Suburbs	White	258	8.5	1.0	
		Black	491	178.0	21.0	(17.3, 25.6)
		Hispanic	133	57.7	6.8	(5.2, 9.0)
		Other	5	5.1	0.6	(0.2, 1.9)
Adults with undetermined means of acquiring HIV infection	Central cities	White	157	13.0	1.0	
		Black	298	39.2	3.0	(2.3, 3.9)
		Hispanic	166	48.2	3.7	(2.8, 4.9)
		Other	9	8.9	0.7	(0.3, 1.6)
	Suburbs	White	119	3.9	1.0	
		Black	68	24.7	6.3	(4.3, 9.3)
		Hispanic	40	17.4	4.4	(2.8, 7.1)
		Other	4	4.0	1.0	(0.3, 3.8)
All AIDS patients (including children)	Central cities	White	14,379	1,195.2	1.0	
		Black	7,246	952.5	0.8	(0.8, 0.8)
		Hispanic	4,126	1,198.2	1.0	(1.0, 1.0)
		Other	187	183.9	0.2	(0.1, 0.2)
	Suburbs	White	4,038	132.5	1.0	
		Black	1,306	473.5	3.6	(3.3, 3.9)
		Hispanic	571	247.8	1.9	(1.7, 2.1)
		Other	49	49.6	0.4	(0.3, 0.5)

*Cumulative incidence = AIDS cases reported from June 1, 1981 to January 18, 1988 per million population of the same race/ethnicity.
†Reference group for relative risk: non-Hispanic Whites.
¶History of intravenous-drug abuse.

should help stop misleading generalizations that imply higher risks in all "minority" groups.[2,3,18]

Black and Hispanic communities should be targetted for special efforts to prevent and treat IVDA and to counsel IVDAs on the risk of HIV infection. The need for this is greatest in the northeast. Recommendations for preventing HIV transmission to IVDAs, their sex partners, and their children have been published.[36–41] Black and Hispanic women need to know that they can acquire HIV infection by sexual contact with male IVDAs. Prevention messages to Black and Hispanic men must be addressed not only to men who identify themselves as gay, but also to men who see themselves as basically heterosexual despite occasional sexual relations with other men. For these and other recommendations to be implemented, they must be endorsed by Black and Hispanic community leaders and others whose judgment is respected by the persons for whom the messages are intended.

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