



# White Coat Notes

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## Study rethinks AIDS prevalence among Haitians

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In the early days of the AIDS epidemic, before the syndrome had a scientific name, the illness was sometimes called “the 4H disease,” named for four groups thought to be at highest risk: homosexuals, hemophiliacs, heroin users, and Haitians.

Haitians who immigrated to the United States have been stigmatized, and even blamed for bringing the virus to North America, since that time, partly based on higher estimates of infections among Haitian-born people compared to other groups. A new study led by a Haitian-American researcher challenges those rates with data showing that the prevalence of AIDS among Haitian immigrants is similar to the levels reported among African-Americans.

Dr. Linda Marc of the Center for Multicultural Mental Health Research at Cambridge Health Alliance led a team that analyzed national AIDS data from 1985 through 2007. According to the US Centers for Disease Control and Prevention, Haitian-born immigrants made up 1.2 percent of AIDS cases in the country, but they accounted for only 0.18 percent of the US population. That amounts to a seven-fold over-representation of AIDS among Haitian immigrants compared to the US population as a whole.

But when higher population figures from Haitian consulates in US cities were used, that over-representation of AIDS cases fell to four-fold, which is about the same level as among African-Americans.

Haitian immigrants are likely to be undercounted by American census takers, Marc and her co-authors write, particularly if they are not in the country legally. Sources at Haitian consulates estimate that 1.2 million Haitian-born people live in the United States, double the US census figure.

Marc’s paper, which appears in the journal [AIDS](#), also reports that Haitian immigrants tend to be diagnosed with HIV at a later stage than other people. That means public health messages need to be targeted and tailored to this group, Marc said in an interview.

“We didn’t know that Haitians are getting in much later for their diagnoses,” she said. “They’re not being tested for HIV as part of routine care and they don’t recognize the signs and symptoms of the illness. It has major implications for us.”

# HIV among Haitian-born persons in the United States, 1985–2007

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**Objective:** Haitian-born persons have been historically stigmatized for introducing HIV to North America; however, no previous study has reported on the national HIV surveillance trends among this foreign-born group.

**Methods:** Annual AIDS cases were estimated for adults and adolescents (aged >12 years) from all 50 US states and the District of Columbia who were diagnosed between 1985 and 2007, and who reported 'Haiti' as country of birth to the Centers for Disease Control and Prevention. HIV data (with or without AIDS) for Haitian-born adults and adolescents diagnosed between 2004 and 2007 were obtained from 34 US states. Denominators for AIDS rates by race/ethnicity are from postcensal estimates, the American Community Survey of the US Census Bureau and the Haitian Consulates.

**Results:** In 2007, Haitian-born persons constituted 1.2% of US AIDS cases, yet accounted for 0.18% of the total US population based on the American Community Survey estimates, which suggests a seven-fold overrepresentation in the CDC AIDS surveillance data. However, when using population estimates from the Haitian Consulate, the overrepresentation ranges from three-to-four-fold, which is similar to the AIDS rate for blacks/African-Americans.

**Conclusion:** The importance of having accurate denominators to estimate the AIDS rate for the Haitian population is paramount.

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**Keywords:** foreign-born, Haitian, HIV prevention, HIV/AIDS, surveillance

## Introduction

Current epidemiological data suggest that HIV disproportionately affects blacks in the United States; however, few studies have examined HIV trends among the immigrant black population [1,2]. Although Haitian-born persons (HBPs) have been historically stigmatized for introducing HIV to North America [3], no previous study has reported the US national HIV surveillance trends among this foreign-born group. This is in stark contrast to the number of scientific reports published on native and foreign-born Hispanic communities that have described the personal and situational risk factors that

place them at risk for acquiring HIV [4–11]. In addition, reports on Haitians with AIDS have been primarily based on data from the homeland. The World Health Organization reports that Haiti faces the worst AIDS epidemic outside sub-Saharan Africa, and it has the highest prevalence of HIV (2.2%) in the Caribbean and Latin American region [12]. Hence, studies describing HIV trends among HBPs living in the United States are of utmost importance and long overdue.

In the early 1980s at the beginning of the epidemic, the scientific community did not have an official name for HIV or AIDS [13,14]; however, in the general press, 'the

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4H disease' was coined standing for Haitians, homosexuals, hemophiliacs and heroin users – the perceived risk factors at the time [15,16]. Reportedly for Haitians, linguistic and cultural issues were barriers to effective communication with caregivers and researchers [16]. Historically, this was also the period in the United States when Haitians were in the limelight seeking political asylum, dying at sea from sinking boats, their bodies washing ashore on Florida beaches, with many incarcerated and transferred to immigration detention centers. Similar to other populations at this time, some Haitians were diagnosed with a new syndrome. However, Federal officials placed Haitian immigrants in a separate risk category, asserting there was a higher incidence among HBPs than other groups [17]. By 1990, Haitians were removed from the high-risk category because Federal officials recognized a need to eliminate the ban on blood donations based on geographical and national groups. Nevertheless, almost 27 years later, a publication in the *Proceedings of The National Academy of Sciences* concluded that Haiti was the key conduit for the introduction of HIV to the North American continent [3]. Despite these ongoing discussions linking Haitians with HIV over the past 20 years, no study has previously reported on HIV surveillance trends among foreign-born Haitians living in the United States, though country of birth information has been collected as part of the HIV/AIDS surveillance case report form by the Centers for Disease Control and Prevention (CDC) since 1982 [18].

The primary objective of this study is to report on the national trends for AIDS diagnoses among HBPs and compare those trends with those for the US population and non-Hispanic blacks. The secondary objective is to identify the major risk factors associated with HIV morbidity in HBPs in an effort to provide up-to-date information to medical, mental and public health practitioners working with this population. These data are necessary to tailor culturally sensitive interventions as HIV risk factors may differ substantially between HBPs and native-born blacks.

## Methods

Data on HIV and AIDS diagnoses reflected herein are from CDC's National HIV/AIDS Reporting System. Beginning in 1982, all 50 US states and the District of Columbia reported AIDS cases to the CDC in a uniform format. Since the inception of national AIDS case reporting, the surveillance case definitions for AIDS were based on clinical conditions. With the 1993 expanded surveillance case definition for AIDS among adolescents and adults, AIDS (HIV infection with AIDS) could also be distinguished from HIV infection without AIDS by a count of CD4<sup>+</sup> T-lymphocytes/ $\mu$ l of less than 200 or CD4<sup>+</sup> T-lymphocyte percentage of total lymphocytes of

less than 14. In 1994, CDC implemented data management for national reporting of HIV integrated with AIDS case reporting, at which time 25 states with confidential, name-based HIV reporting started submitting case reports to CDC. Over time, additional states implemented name-based HIV reporting and started reporting these cases to CDC. For the most recent time period (2004–2007), data were available from 34 US states (Alabama, Alaska, Arizona, Arkansas, Colorado, Florida, Georgia, Idaho, Indiana, Iowa, Kansas, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, West Virginia, Wisconsin, Wyoming). All cases were reported to CDC without identifying information. Assessments of duplicate cases occurred both at the state and national level [potential duplicates were identified based on soundex code (a phonetic algorithm for indexing names by sound, as pronounced in English) and selected demographic characteristics], and elimination of such cases occurred at the state level. An assessment of the completeness of case reporting found that more than 80% of AIDS diagnoses and more than 75% of HIV (without AIDS) diagnoses are reported within 12 months after the diagnosis date [19].

We determined trends in the number of AIDS diagnoses in the United States for 1985 through 2007 for Haitian-born adults and adolescents. Cases were identified by the designation of 'Haiti' as place of birth on the CDC case report form. The majority of HBPs with AIDS (97%) were classified as non-Hispanic black; therefore, results were not presented by race/ethnicity. Less than 1% ( $n = 88$ ) of AIDS cases diagnosed (1985–2007) of persons born in Haiti were among children less than 13 years of age and were excluded from these analyses. The number of persons living with AIDS was determined overall for HBPs, and by age group, sex and transmission categories [men who have sex with men (MSM); injection drug user (IDU); MSM who are also injection drug users (MSM/IDU); heterosexual contact with a person known to have, or to be at high risk for, HIV infection]. The proportional decrease in AIDS cases (after the introduction of HAART to present) was calculated by dividing the number of 1997 cases by 2007 cases, and the construction of the two-sided confidence intervals for the proportion is based on the binomial distribution using a normal approximation [20].

The number of persons diagnosed with HIV (with or without a concurrent AIDS diagnosis) during 2004 through 2007 in the 34 states was examined by age, sex and transmission category. To determine differences in late AIDS diagnosis in the course of disease, we calculated the proportion of persons diagnosed with HIV during 2004 through 2006 who had an AIDS diagnosis within 12 months. All data presented were adjusted for reporting

delays and transmission category, using a multiple imputation method for persons reported without an identified risk factor [21].

Rates per 100 000 population were calculated for the numbers of diagnoses of AIDS among HBPs and by race/ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, Asian/Pacific Islander, American Indian/Alaska Native) for all persons diagnosed with AIDS in 2007. The population denominators used to compute AIDS rates by race/ethnicity for the 50 states and the District of Columbia were based on official postcensus estimates for 2007 from the US Census Bureau [22] and bridged-race estimates for 2007 obtained from the National Center for Health Statistics [23]. The bridged estimates are based on the Census 2000 counts and produced under a collaborative agreement with the US Census Bureau. These estimates result from bridging the 31 race categories used in Census 2000, as specified in the Office of Management and Business's 1997 standards for the classification of data on race and ethnicity, to the four race categories specified in the 1977 standards and to correspond to the surveillance data. Denominator information to compute rates for HBPs was obtained from data of the American Community Survey (ACS) from the US Census Bureau (Grieco E, Humes K, personal communication, 2008). However, because foreign-born Haitians are considered a 'hard-to-count population', ACS figures may underestimate foreign-born Haitians in the United States. Therefore, population estimates for foreign-born Haitians have also been obtained from the Haitian Consulates for comparison (Augustin F, personal communication, 2008; Geneus J, personal communication, 2008; Joseph R, personal communication, 2008; Jospitre A, personal communication, 2008). The latter estimates are based on the number of consular services (e.g., passports, registration of births to Haitian-born parents, etc.) performed for HBPs throughout the United States and on estimates of Haitians attending events sponsored by the Haitian Consulates, in collaboration with community-based organizations serving HBPs living in the United States.

### Ethics

This project was approved by the institutional review board of the Weill Medical College of Cornell, the former institution of the primary study author (L.G.M.). At CDC, public health disease surveillance activities are not considered research and therefore human participants review was not required.

### Results

A total of 13 202 Haitian-born adults and adolescents were diagnosed with AIDS during 1985 through 2007 (Table 1). The majority of persons from this population resided in the southern (62%) or northeastern (37%) part

of the United States. Trend analyses showed that AIDS diagnoses within HBPs increased during the 1980s and early 1990s, peaked in the mid-1990s (about 858 AIDS diagnoses in 1995) and subsequently decreased and leveled off in the 2000s, with an estimated 441 AIDS diagnoses in 2007 (Fig. 1). Cumulative AIDS diagnoses during the period of 1985–2007 showed that HBPs constitute 1.3% ( $N=13\,202$ ) of the total US AIDS cases ( $N=998\,482$ ) for this time period and 3.1% of the cumulative AIDS cases among non-Hispanic blacks ( $N=417\,491$ ) reported to CDC (Table 1). Comparisons across sex show there has been a 40% proportional decrease [95% confidence interval (CI) 35–45%] in incident AIDS cases among Haitian-born men, compared to a 3% decrease (95%CI 1–6%) in Haitian-born women over the same time period (Fig. 1). Comparisons across racial/ethnic groups show the AIDS rate for HBPs is higher than for non-Hispanic blacks overall (81.6/100 000 vs. 59.2/100 000), using denominator data from the ACS to calculate the AIDS rate for HBPs (Table 1). However, using denominator data from the Haitian Consulates, the AIDS rate for HBPs is lower than that for non-Hispanic blacks, ranging from 34.7 to 46.2 per 100 000 (Table 1).

By the end of 2007, an estimated 6928 HBPs were living with AIDS in the United States (Table 2). More than three-quarters of these persons were between 40 and 64 years of age. The HIV infection for 54% of Haitian men occurred through high-risk heterosexual contact, 28% in MSM and 14% occurred through injection drug use. Among Haitian women living with AIDS, 88% were exposed through high-risk heterosexual contact and 9% were exposed through injection drug use.

Selected characteristics for HBPs diagnosed with HIV infection between 2004 and 2007 in 34 states show that a majority (60% of men and 58% of women) are between 30 and 49 years of age, with high-risk heterosexual contact as the primary mode of transmission for both women and men; and among men, male-to-male contact accounted for 25% and 6% occurred through injection drug use exposure (Table 3). Irrespective of transmission risk category, 53% of Haitian-born men ( $N=663/1247$ ) received an AIDS diagnosis within 12 months of an HIV diagnosis compared to 42% ( $N=458/1089$ ) of their female counterparts ( $\chi^2=29.0$ ,  $P<0.001$ ; Table 4). Analyses by age also show that persons 40 or older were more likely to receive a late HIV diagnosis compared to individuals between ages 13 and 39 years [odds ratio (OR) 1.8, 95%CI 1.5–2.2;  $\chi^2=51.1$ ,  $P<0.001$ ].

### Discussion

These results represent the first surveillance estimates for HIV cases among HBPs residing in the United States,

**Table 1. Estimated numbers of AIDS cases and rates among adults and adolescents by racial/ethnic group (from 1985 through 2007, United States).**

	1985–2007 estimated AIDS cases among adults and adolescents		AIDS cases (%)	
White, not Hispanic	396 435		39.7	
Black, not Hispanic <sup>a</sup>	417 491		40.5	
Haitian (Foreign-born) <sup>b</sup>	12 789		1.3	
Hispanic	165 956		16.6	
Asian/Pacific Islander	7 432		0.7	
American Indian/Alaskan Native	3 452		0.3	
Total <sup>c</sup>	998 482		100.0	

	2007 estimated AIDS cases among adults and adolescents	AIDS cases (%)	2007 population data among adults in the 50 states and the District of Columbia	Rate/100 000
White, not Hispanic	10 402	28.9	169 669 112	6.1
Black, not Hispanic <sup>a</sup>	17 486	48.7	29 520 707	59.2
Haitian (Foreign-born) <sup>b</sup>	416	1.2	530 897 <sup>e</sup>	78.4
Haitian (Consulate, lower estimate)	416	–	900 000 <sup>f</sup>	46.2
Haitian (Consulate, upper estimate)	416	–	1 200 000 <sup>f</sup>	34.7
Hispanic	6 918	19.3	33 976 467	20.4
Asian/Pacific Islander	475	1.3	10 927 024	4.3
American Indian/Alaskan Native	158	0.4	1 830 961	8.6
Total <sup>d</sup>	35 934	100.0		

<sup>a</sup>The category 'Black, not Hispanic' reflects all persons of African descent, including Haitians.

<sup>b</sup>Cases were identified by the designation of 'Haiti' as place of birth on the Centers for Disease Control and Prevention (CDC) case report form. The cumulative figure in Table 1 ( $N = 12\,789$ ) reflects the majority of Haitian-born persons (HBPs) with AIDS who were classified as non-Hispanic black (97%). There are an additional 413 cases (3%) included in the total cumulative AIDS cases ( $N = 13\,202$ ) diagnosed amongst HBPs between 1985 through 2007. There is a total of 416 estimated AIDS cases diagnosed amongst HBPs in 2007, classified as non-Hispanic Black. This does not reflect an additional 25 AIDS cases diagnosed amongst HBPs classified in other racial/ethnic categories; making an estimated total of 441 AIDS cases diagnosed in 2007. The number ( $N = 416$ ) is intentionally repeated to calculate rates using different denominators.

<sup>c</sup>Includes persons of unknown race or multiple races and persons of unknown sex. Cumulative total includes 7003 of persons of unknown race or multiple races. Because column totals were calculated independently of the values for the subpopulations, the values in each column may not sum to the column total.

<sup>d</sup>Includes persons of unknown race or multiple races and persons of unknown sex. Cumulative total includes 418 of persons of unknown race or multiple races. Because column totals were calculated independently of the values for the subpopulations, the values in each column may not sum to the column total.

Rates are based on postcensal estimates unless otherwise noted.

<sup>e</sup>Data are taken from the Census, American Community Survey (ACS). The foreign-born Haitian population reflected in the table above includes all persons who were not US citizens at birth. Foreign-born persons are those who indicated they were either a US citizen by naturalization or they were not a citizen of the United States. Census does not ask about immigration status. The foreign-born population surveyed includes all people who indicated that the United States was their usual place of residence on the Census date. This population includes immigrants (legal permanent residents), temporary migrants (e.g., students), humanitarian migrants (e.g., refugees) and unauthorized migrants (people illegally residing in the United States).

<sup>f</sup>In 2007, the governmental Ministry for Haitians Living Abroad, Republic of Haiti, estimated there were between 900 000 and 1 200 000 persons of Haitian ancestry living in the United States. Estimates were based on information provided by Haitian Consulates in the United States; however, it is important to note that Consulates do not run nationally representative surveys/censuses to estimate/count the size of the Haitian population in the United States. Estimates are generated by the approximated population served by Consulates, over a period of time. The estimates may, or may not, be limited to foreign-born Haitians and may include persons of Haitian ancestry born outside Haiti.

with four important findings. First, HBPs constitute 1.2% ( $N = 416$  divided by 35 934) of the estimated AIDS cases among adults and adolescents for 2007 (Table 1). Yet, HBPs account for only 0.18% of the total US population (using 2007 ACS data;  $N = 530\,897$  divided by 301 621 159), which suggests a seven-fold overrepresentation of Haitians in the CDC AIDS surveillance data (1.2% divided by 0.18%). In comparison, blacks/African-Americans constitute 48.7% ( $N = 17\,486$  divided by 35 934) of the estimated AIDS cases among adults and adolescents for 2007; and blacks/African-Americans account for 12% of the total US population, suggesting a four-fold overrepresentation (48.7% divided by 12%) in the CDC AIDS surveillance data [24]. However, when

population estimates from the Haitian Consulates are used, there is a 3–4-fold overrepresentation of HBPs in the CDC AIDS surveillance data (1.2% divided by 0.30–0.40%), which is similar to that for blacks/African-Americans overall. Population estimates for HBPs (0.30–0.40%) are calculated using Consulate estimates of the number of HBPs living in the United States, which range from  $N = 900\,000$  to 1 200 000 (divided by 301 621 159, using 2007 ACS data for the US population).

Although data from the ACS are reliable, they may reflect an undercount for Haitians living in the United States. Although Consulates do not run nationally representative surveys or censuses to estimate, or count, the number of

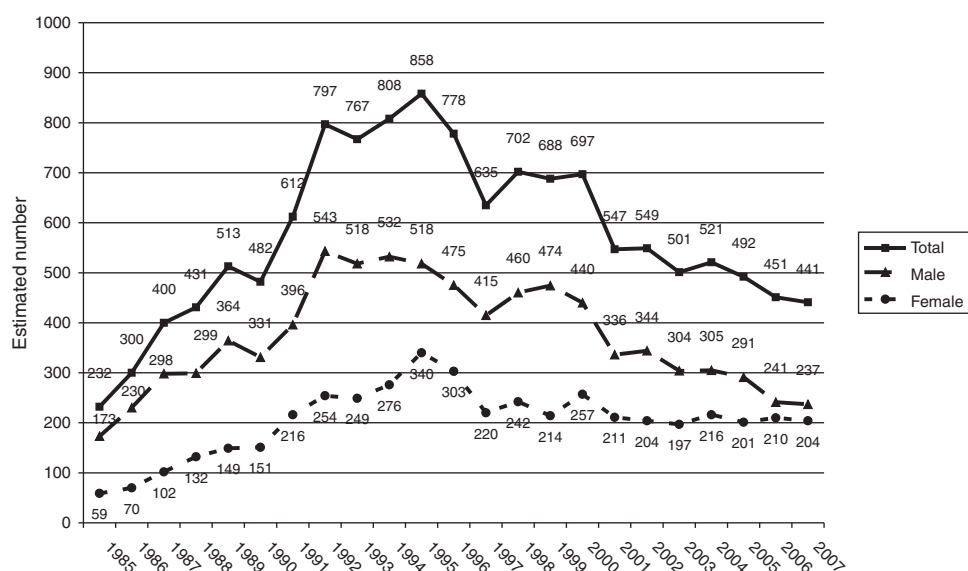


Fig. 1. Estimated number of AIDS diagnoses among Haitian-born adults and adolescents in the United States, by sex (1985–2007).

their nationals living in the United States, their upper estimate of approximately 1.2 million HBPs living in the United States is twice that of the ACS (Augustin F, personal communication, 2008; Geneus J, personal communication, 2008; Joseph R, personal communication, 2008; Jospitre A, personal communication, 2008) [25,26]. Furthermore, the US Census Bureau acknowledges that foreign-born populations are often ‘hard-to-count’, if they are undocumented aliens, which might explain the difference in the population estimates used herein.

Second, compared to the national trends for AIDS diagnoses among the US population and non-Hispanic blacks, the trend among Haitians was similar with a peak in the early 1990s, a decline in the HAART era around the turn of the century and since then a plateau [27]. However, important differences are recognized in the

HIV risk profile for Haitian men compared to non-Hispanic black men. In the former, the primary transmission category (diagnosed during the period of 2004–2007) is high-risk heterosexual contact (68%), followed by sexual contact with other men (25%) and injection drug use (6%; Table 3). This pattern differs from trends in non-Hispanic black men living with HIV, for whom the primary transmission category is sexual contact with other men (51%), followed by injection drug use (21%) and high-risk heterosexual contact (20%) [1].

One possible explanation for differences describing sexual contact is that greater reporting of male-to-male sexual behavior among US-born African-American men may be due to greater social acceptance [28,29], whereas machismo is a central feature of masculine expression among men from the Latin American region, including Haiti [30]. As little has been previously published on the

Table 2. Estimated numbers of Haitian-born adults and adolescents living with AIDS at the end of 2007, by selected characteristics, United States.

	Men		Women		Total	
	No.	%	No.	%	No.	%
Age (years)						
13–19	15	0.4	13	0.5	28	0.4
20–29	51	1.2	92	3.4	143	2.1
30–39	450	10.6	471	17.6	921	13.3
40–49	1617	38.0	1025	38.3	2642	38.1
50–64	1841	43.3	917	34.3	2758	39.8
65+	279	6.6	156	5.8	435	6.3
Transmission category						
Male-to-male sexual contact	1198	28.2	0	0.0	1198	17.3
Injection drug use	582	13.7	244	9.1	826	11.9
Male-to-male sexual contact and injection drug use	113	2.7	0	0.0	113	1.6
High-risk heterosexual contact	2308	54.3	2349	87.8	4657	67.2
Other	51	1.2	82	3.1	133	1.9
Total	4253	100.0	2675	100.0	6928	100.0

**Table 3. Estimated numbers of Haitian-born adults and adolescents diagnosed with HIV/AIDS, by selected characteristics (2004–2007, 34 US states).**

	Men		Women		Total	
	No.	%	No.	%	No.	%
Age at diagnosis (years)						
13–19	13	1.1	21	2.0	35	1.5
20–29	108	9.1	170	15.5	278	12.2
30–39	287	24.1	319	29.2	606	26.5
40–49	431	36.1	312	28.6	742	32.5
50–64	306	25.7	232	21.2	538	23.6
65+	47	4.0	38	3.5	86	3.8
Transmission category						
Male-to-male sexual contact	298	25.0			298	13.0
Injection drug use	73	6.1	57	5.2	130	5.7
Male-to-male sexual contact and injection drug use	13	1.1			13	0.6
High-risk heterosexual contact	806	67.5	1028	94.2	1834	80.3
Other	3	0.3	7	0.7	10	0.5
Total	1193	100.0	1092	100.0	2286	100.0

sexual practices of Haitian men, this publication will help to serve as a benchmark to follow the patterns and prevalence of high-risk sexual behaviors in this immigrant group.

In addition, although injection drug use is the second leading cause of HIV infection for African-Americans,

our results confirm lower transmission through this route among HBPs [31,32], which is consistent with other published findings on Haitians. A recent study on hepatitis C in Haiti reports that only 2% of study participants self-identified as having a prior history of IDU [33]; and Marcelin *et al.* [34] also report that Haitian

**Table 4. Estimated distribution of Haitian-born adults and adolescents with and without a diagnosis of AIDS within 12 months of diagnosis of HIV infection, by selected characteristics (2004–2006, 34 US states).**

	AIDS diagnosis				Total no.
	≥12 months after diagnosis of HIV infection		<12 months after diagnosis of HIV infection		
	No.	(%) <sup>a</sup>	No.	(%) <sup>a</sup>	
Age at diagnosis (years)					
13–29	232	70	97	30	329
30–39	353	56	279	44	632
40–49	367	47	418	53	785
50–64	222	44	285	56	507
65+	41	50	41	50	82
Transmission category/male adult or adolescent					
Male-to-male sexual contact	150	49	158	51	308
Injection drug use	34	45	41	55	75
Male-to-male sexual contact and injection drug use	6	47	7	53	14
High-risk heterosexual contact <sup>b</sup>	392	46	454	54	847
Other <sup>c</sup>	2	49	2	51	4
Subtotal	584	47	663	53	1247
Female adult or adolescent					
Injection drug use	29	56	23	44	52
High-risk heterosexual contact <sup>b</sup>	598	58	430	42	1028
Other <sup>c</sup>	4	47	5	53	9
Subtotal	632	58	458	42	1089
Total <sup>d</sup>	1216	52	1121	48	2336

These numbers do not represent reported case counts. Rather, these numbers are point estimates, which result from adjustments of reported case counts. The reported case counts are adjusted for reporting delays and missing risk-factor information but not for incomplete reporting. Data include persons in whom AIDS has developed and persons whose first diagnosis of HIV infection and the diagnosis of AIDS were made at the same time. Data exclude one person whose month of diagnosis of HIV infection is unknown.

<sup>a</sup>Heterosexual contact with a person known to have or at high risk for HIV infection.

<sup>b</sup>Percentages represent proportions of the total number of diagnoses of HIV/AIDS made during 2003–2006 for the corresponding group (see row entries).

<sup>c</sup>Includes hemophilia, blood transfusion, and risk factor not reported or not identified.

<sup>d</sup>Includes 26 persons of unknown race or multiple races. Because column totals were calculated independently of the values for the subpopulations, the values in each column may not sum to the column total.

youth in Florida express very negative opinions about crack, cocaine and heroin use. Therefore, future investigations may be useful to better characterize the protective attitudes and behaviors regarding substance use in Haitians that prevent IDU behaviors and HIV transmission.

Third, there was a greater proportional decrease in the number of incident AIDS cases for Haitian men, compared with women, since the HAART era (Table 3). Possible explanations include a sex difference in access to, or adherence to HAART, which is consistent with the literature on women's differential use of HIV medications [35,36]; or that Haitian women did not modify their sexual behaviors because their perception of HIV risk (and subsequent AIDS) may be obscured by their marital status. Decennial 2000 Census estimates show that at least 70% of all HBPs living in the United States, both men and women, have been married at some time [37]. Also, some authors show that foreign-born pregnant women often refuse HIV-testing because they are in monogamous relationships [38] and they perceive their risk of acquiring HIV as low because of their relationship status. Data from the CDC Enhanced Perinatal Surveillance Project (1999–2001) support this hypothesis, showing that among foreign-born HIV-infected pregnant women, 42% are married compared to 16% of their US-born counterparts (Patel-Larson A, personal communication, 2006).

Another possible reason for the differential decrease, between Haitian men and women, in incident AIDS cases is explained by the 'bisexual bridge' of HIV transmission, which has been speculated for the African-American community linking black MSMs to black heterosexual women. These men are often referred to as being on the 'down low' (also known as DL), which defines them as heterosexuals who do not disclose their male-to-male sexual behavior to their female partners [39,40]. In a study conducted on down low-identified MSM in 12 US cities, it was found that they were more likely than nondown low-identified men to have had a female sex partner in the prior 30 days and to have had unprotected vaginal sex [41]. Findings from this study also report that down low-identified MSM were less likely to have ever been tested for HIV than were nondown low MSM. Thus, Haitian women involved with down low men might have no knowledge of their sexual partners' HIV behavioral risk factors, contributing to their lowered perception of HIV risk and decreased likelihood of seeking prevention services.

Little information is available about sexual risk or protective and disclosure practices among bisexual Haitian men, and how this behavior may be amenable to intervention [28,29]. What is known, however, is that the prevalence of bisexuality is reportedly higher in both black and Latino men compared to their white counterparts [42], and Haitian notions regarding masculin-

lity are very similar to Latino men [30,43]. White MSMs are more likely to identify as being 'gay,' whereas black and Latino men are less likely to identify as 'gay,' join gay-related organizations, read gay-related media [44] or disclose their male-to-male sexual behavior to female partners [45]. The literature helps to predict these ethnic differences by explaining that black and Latino men see the gay culture in the United States as a white, and sometimes feminine phenomenon, that conflicts with their notions of masculinity [42]. Black and Latino men also believe they may have to give up their ethnic identity if they self-identify as being 'gay,' including loss of the social support received from their ethnic community and that their communities will not accept male-to-male sexual behavior [46,47].

Fourth, study findings also show that Haitian men (53%) are more likely to be diagnosed with AIDS within 12 months after an HIV diagnosis compared to Haitian women (42%); however, when these figures are compared to non-Hispanic blacks overall (38%), HBPs have a higher proportion of late-stage diagnosis (Table 2 of the National Surveillance Report [48]). One possible explanation for the difference across sex is that women, in general, use more healthcare services than men, even after correcting for the use of healthcare services that are specific for women, such as gynecology [49–52], which may indirectly result in earlier stage HIV diagnoses for women. Additionally, a possible explanation for the differences in late-stage diagnosis between HBPs and non-Hispanic blacks may be related to healthcare insurance because HBPs who are not US citizens are among the most likely to be uninsured, compared to other immigrants living in the United States [53]. Hence, the latter may significantly impact healthcare utilization patterns, resulting in greater emergency room use [54] and thus in later diagnosis.

### Recommendations

In light of the study's findings, we recommend that HIV awareness and prevention efforts be customized for HBPs on HIV knowledge, behavioral risk factors, antiretroviral adherence [55,56], as well as prevention services use that encourage seeking routine medical care to reduce late-stage diagnosis, particularly in Haitian men. Tailored health communications are necessary for Haitian women who are married, in cohabitating monogamous relationships and/or pregnant (Patel-Larson A, personal communication, 2006) [38]. Also, a model for HIV prevention for Haitian MSMs living in the United States is needed and could be adapted from available interventions for black MSMs [29], or adapted from the model for Haitian MSMs living in Haiti, which has already been launched (Genece E, personal communication, 2008).

### Limitations

There are several limitations to these analyses. In 2007, 17% of case reports were missing a country or continent of birth; thus, it is unknown whether there are HBPs among these cases. For the analyses of HIV reports, data

from 34 states may not be representative of the whole United States because these states report only 66% of all AIDS cases diagnosed during 2004 through 2007. Data were not available for Massachusetts, which has the third largest number of Haitians residing in the United States according to the Census Bureau [26]. Analyses were adjusted for reporting delay and multiple imputation was used to adjust risk for cases reported without a risk factor information [21]; these are standard surveillance data adjustments. We also cannot say definitively where foreign-born Haitians became infected, because date of arrival is not collected in HIV surveillance data. Persons may have acquired infection in the home country, during an immigration waiting period after they arrived in the United States or during travel outside, rather than in the United States.

## Conclusion

This publication is the first to report on the trends in diagnoses of HIV infection for Haitians living in the United States. Study findings show the importance of having accurate denominators to estimate the AIDS rate for the Haitian population. Using estimates from the 2007 ACS, results suggest a seven-fold overrepresentation of Haitians in the CDC AIDS surveillance data. In contrast, using denominator estimates from the Haitian Consulates, HBPs in the United States, at this time, have a similar AIDS rate to blacks/African-Americans overall, which challenges beliefs that Haitian immigrants have a higher prevalence of AIDS than other groups. More to the point, the Haitian community remains steadfast in their beliefs that it is an ill-targeted effort to focus on linking Haitians to the introduction of AIDS in the United States. Rather, scientific methods need to be used to better understand what places Haitians at risk for HIV. Study authors recommend that research is urgently needed to adequately address prevention efforts for this ethnic group.

*During the planning phase of this study, portions of the study design were presented at the Second Annual Conference on Health Disparities at Teachers College, Columbia University, 9–10 March 2007. Preliminary study findings were presented at the 2008 Annual International HIV/AIDS Research Conference on the Role of Families in Preventing and Adapting to HIV/AIDS, sponsored by the US National Institutes of Mental Health.*

## References

- Centers for Disease Control. Fact sheet: HIV/AIDS amongst African-American. <http://www.cdc.gov/hiv/topics/aa/resources/factsheets/aa.htm>. [Accessed 10 August 2009].
- Kent JB. **Impact of foreign-born persons on HIV diagnosis rates among blacks in King County, Washington.** *AIDS Educ Prev* 2005; **17** (6 Suppl B):60–67.
- Gilbert MT, Rambaut A, Wlasiuk G, Spira TJ, Pitcheuk AE, Worobey M. **The emergence of HIV/AIDS in the Americas and beyond.** *Proc Natl Acad Sci U S A* 2007; **104**:18566–18570.
- Corales RB. **Editorial comment: foreign-born Latinos with HIV-AIDS: improving clinical care.** *AIDS Read* 2007; **17**:87.
- Kelley CF, Hernandez-Ramos I, Franco-Paredes C, del Rio C. **Clinical, epidemiologic characteristics of foreign-born Latinos with HIV/AIDS at an urban HIV clinic.** *AIDS Read* 2007; **17**:73–74; 8–80, 5–8.
- London AS, Driscoll AK. **Correlates of HIV/AIDS knowledge among U.S.-born and foreign-born Hispanics in the United States.** *J Immigr Health* 1999; **1**:195–205.
- Painter TM. **Connecting the dots: when the risks of HIV/STD infection appear high but the burden of infection is not known: the case of male Latino migrants in the southern United States.** *AIDS Behav* 2008; **12**:213–226.
- Klevens RM, Diaz T, Fleming PL, Mays MA, Frey R. **Trends in AIDS among Hispanics in the United States, 1991–1996.** *Am J Public Health* 1999; **89**:1104–1106.
- Murphy J, Mueller G, Whitman S. **Epidemiology of AIDS among Hispanics in Chicago.** *J Acquir Immune Defic Syndr Hum Retrovirol* 1996; **11**:83–87.
- Diaz T, Buehler JW, Castro KG, Ward JW. **AIDS trends among Hispanics in the United States.** *Am J Public Health* 1993; **83**:504–509.
- Espinoza L, Hall HI, Selik RM, Hu X. **Characteristics of HIV infection among Hispanics, United States 2003–2006.** *J Acquir Immune Defic Syndr* 2008; **49**:94–101.
- WHO. Haiti: summary country profile for HIV/AIDS treatment scale-up, 2005. [http://www.who.int/hiv/HIVCP\\_HTI.pdf](http://www.who.int/hiv/HIVCP_HTI.pdf). [Accessed 12 April 2010].
- Centers for Disease Control. **Persistent, generalized lymphadenopathy among homosexual males.** *MMWR* 1982; **31**:249–251.
- Gallo RC. **A reflection on HIV/AIDS research after 25 years.** *Retrovirology* 2006; **3**:72.
- Centers for Disease Control. **Opportunistic infections and Kaposi's sarcoma among Haitians in the United States.** *MMWR* 1982; **31**:353–354.
- Nachman SR, Dreyfuss G. **Haitians and AIDS in South Florida.** *Med Anthropol Q* 1986; **17**:32–33.
- Hilts PT. FDA Set to reverse blood ban. *The New York Times*; 1990 (Issue date: 24 April 1990).
- Centers for Disease Control. **Recommendations and reports: mandatory reporting of infectious diseases by clinicians.** *MMWR* 1990; **39**:1–17.
- Hall HI, Song R, Gerstle JE 3rd, Lee LM. **Assessing the completeness of reporting of human immunodeficiency virus diagnoses in 2002–2003: capture-recapture methods.** *Am J Epidemiol* 2006; **164**:391–397.
- Pagano M, Gauvreau K. *Principles of biostatistics*. 2nd ed. Australia; Pacific Grove, CA: Duxbury; 2000.
- Harrison KM, Kajese T, Hall HI, Song R. **Risk factor redistribution of the national HIV/AIDS surveillance data: an alternative approach.** *Public Health Rep* 2008; **123**:618–627.
- Census Bureau US. Population estimates: entire data set. 1 July 2007. <http://www.census.gov/popest/estimates.php>. Published 21 August 2008. [Accessed 20 December 2008]. In: Department of Commerce EaSA; 2008.
- NCHS. Bridged-race vintage postcensal population estimates for July 1, 2000–July 1, 2007, by year, county, single-year of age, bridged-race, Hispanic origin, and sex. National Center for Health Statistics; 2007. <http://www.cdc.gov/nchs/about/major/dvs/popbridge/datadoc.htm#vintage2007>.
- Centers for Disease Control. HIV/AIDS surveillance: general epidemiology (through 2006). <http://www.cdc.gov/hiv/topics/surveillance/resources/slides/epidemiology/index.htm>. [Accessed 10 August 2009].
- Metayer N, Jean-Louis E, Madison A. **Overcoming historical and institutional distrust: key elements in developing and sustaining the community mobilization against HIV in the Boston Haitian community.** *Ethn Dis* 2004; **14** (3 Suppl 1):S46–S52.
- Newland K, Grieco E. Spotlight on Haitians in the United States 2004. <http://www.migrationinformation.org/USfocus/display.cfm?ID=214>. [Accessed 27 July 2005].
- Centers for Disease C. Slide sets: AIDS surveillance trends 1985–2006. Reference slide 3. <http://www.cdc.gov/hiv/topics/surveillance/resources/slides/trends/index.htm>. [Accessed 10 August 2009].

28. Dodge B, Jeffries WLIV, Sandfort TG. **Beyond the down low: sexual risk, protection, and disclosure among at-risk Black men who have sex with both men and women (MSMW).** *Arch Sex Behav* 2008; **37**:683–696.
29. Jones KT, Gray P, Whiteside YO, Wang T, Bost D, Dunbar E, et al. **Evaluation of an HIV prevention intervention adapted for Black men who have sex with men.** *Am J Public Health* 2008; **98**:1043–1050.
30. Sara-Lafosse V. *Machismo in Latin America and the Caribbean.* New York, New York: Garland Publishing; 1998.
31. Halsey NA, Coberly JS, Holt E, Coreil J, Kissinger P, Moulton LH, et al. **Sexual behavior, smoking, and HIV-1 infection in Haitian women.** *JAMA* 1992; **267**:2062–2066.
32. The Collaborative Study Group of AIDS in Americans. **Risk factors for AIDS among Haitians residing in the United States. Evidence of heterosexual transmission.** *JAMA* 1987; **257**:635–639.
33. Hepburn MJ, Lawitz EJ. **Seroprevalence of hepatitis C and associated risk factors among an urban population in Haiti.** *BMC Gastroenterol* 2004; **4**:31.
34. Marcelin LH, Vivian J, DiClemente R, Shultz J, Page J. **Trends in alcohol, drug and cigarette use among Haitian youth in Miami-Dade County, Florida.** *J Ethn Subst Abuse* 2005; **4**:105–131.
35. Sayles JN, Wong MD, Cunningham WE. **The inability to take medications openly at home: does it help explain gender disparities in HAART use?** *J Womens Health (Larchmt)* 2006; **15**:173–181.
36. Mocroft A, Gill MJ, Davidson W, Phillips AN. **Are there gender differences in starting protease inhibitors, HAART, and disease progression despite equal access to care?** *J Acquir Immune Defic Syndr* 2000; **24**:475–482.
37. Census Bureau US. *People born in Haiti: profile of selected demographic and social characteristics; Tables FBP-1, FBP-2; Census 2000 Special Tabulations (STP-159).* Washington, DC: U.S. Dept. of Commerce, Economics and Statistics Administration; 2000.
38. Aynalem G, Mendoza P, Frederick T, Mascola L. **Who and why? HIV-testing refusal during pregnancy: implication for pediatric HIV epidemic disparity.** *AIDS Behav* 2004; **8**:25–31.
39. Malebranche DJ. **Bisexually active Black men in the United States and HIV: acknowledging more than the 'Down low'.** *Arch Sex Behav* 2008; **37**:810–816.
40. Frieden L. **Invisible lives: addressing the Black male bisexuality in the novels of E. Lynn Harris.** *J Bisexuality* 2002; **2**:75–90.
41. Wolitski RJ, Jones KT, Wasserman JL, Smith JC. **Self-identification as 'down low' among men who have sex with men (MSM) from 12 US cities.** *AIDS Behav* 2006; **10**:519–529.
42. Sandfort TG, Dodge B. **...And then there was the down low'': introduction to Black and Latino male bisexualities.** *Arch Sex Behav* 2008; **37**:675–682.
43. Smallman SC. *The AIDS pandemic in Latin America.* Chapel Hill, N.C.: University of North Carolina Press; 2007.
44. Millett G, Malebranche D, Mason B, Spikes P. **Focusing 'down low': bisexual black men, HIV risk and heterosexual transmission.** *J Natl Med Assoc* 2005; **97** (7 Suppl):525–595.
45. Kalichman SC, Roffiman RA, Picciano JF, Bolan M. **Risk for HIV infection among bisexual men seeking HIV-prevention services and risks posed to their female partners.** *Health Psychol* 1998; **17**:320–327.
46. Ward EG. **Homophobia, hypermasculinity and the US black church.** *Cult Health Sex* 2005; **7**:493–504.
47. Fullilove MT, Fullilove RE III. **Stigma as an obstacle to AIDS action.** *Am Behav Sci* 1999; **42**:1117–1129.
48. CDC. *HIV/AIDS surveillance report.* Volume 17, Revised. Atlanta, GA: Centers for Disease Control and Prevention, U.S. Department of Health and Human Services; 2005.
49. Koopmans GT, Lamers LM. **Gender and healthcare utilization: the role of mental distress and help-seeking propensity.** *Soc Sci Med* 2007; **64**:1216–1230.
50. Ladwig KH, Marten-Mittag B, Formanek B, Dammann G. **Gender differences of symptom reporting and medical healthcare utilization in the German population.** *Eur J Epidemiol* 2000; **16**:511–518.
51. Corney RH. **Sex differences in general practice attendance and help seeking for minor illness.** *J Psychosom Res* 1990; **34**:525–534.
52. Briscoe ME. **Why do people go to the doctor? Sex differences in the correlates of GP consultation.** *Soc Sci Med* 1987; **25**:507–513.
53. Carrasquillo O, Carrasquillo AI, Shea S. **Health insurance coverage of immigrants living in the United States: differences by citizenship status and country of origin.** *Am J Public Health* 2000; **90**:917–923.
54. Sanchez JP, Hailpern S, Lowe C, Calderon Y. **Factors associated with emergency department utilization by urban lesbian, gay, and bisexual individuals.** *J Commun Health* 2007; **32**:149–156.
55. Reynolds NR, Testa MA, Marc LG, Chesney MA, Neidig JL, Smith SR, et al. **Psychosocial influences of attitudes and beliefs toward medication adherence in HIV+ persons naïve to anti-retroviral therapy: a cross-sectional survey.** *J AIDS Behav* 2004; **8**:141–150.
56. Marc LG, Testa MA, Walker AM, Robbins GK, Shafer RW, Anderson NB, et al. **Educational attainment and response to HAART during initial therapy for HIV-1 infection.** *J Psychosom Res* 2007; **63**:207–216.