# Differences in HIV-Related Hospitalization Trends Between Haitian-Born Blacks and US-Born Blacks

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**Objectives:** To examine the HIV care needs and hospital admission patterns of HIV-positive Haitian-born blacks (Haitians) and compare them with those of US-born blacks (Blacks).

**Methods:** We abstracted the medical records of 635 Blacks and Haitians consecutively admitted to the adult HIV Service at Jackson Memorial Hospital during 2004 for information on demographics, use of antiretroviral therapy, CD4 cell counts, primary and secondary diagnoses at admission, and substance use. The probability of being prescribed highly active antiretroviral therapy (HAART) was examined by country of origin.

**Results:** There was no statistically significant difference between the groups in likelihood to be prescribed HAART. In controlled analyses, however, Haitians were 76% more likely than Blacks to have a CD4 count $<51$ cells/mm$^3$ and tended to be more recently diagnosed with HIV. Moreover, tuberculosis was the most prevalent opportunistic infection for Haitians compared with candidiasis for Blacks.

**Conclusions:** Findings suggest that barriers to medical care may exist for Haitians at an early stage of the access continuum and that prevention efforts among the Haitian HIV-positive population should be directed at promoting the need for timely use of health services.

**Key Words:** disparity, Haitian, HIV, hospitalization, utilization

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In the past 2 decades, major strides have been made in the management of HIV disease. The most dramatic has been the advent of potent antiretroviral medications (highly active antiretroviral therapy [HAART]) that have led to considerable immune recovery, sufficient in most cases to provide adequate protection against AIDS-associated opportunistic infections. Yet, despite the success of HAART, a sizeable proportion of the HIV-positive population still receives their HIV care in the hospital setting.[1] Of those individuals who test positive for HIV, it is estimated that approximately one fourth to one third delay seeking care or do not seek care until their disease has progressed and acute treatment is needed.[2] Instead, these individuals may cycle in and out of the emergency rooms and inpatient wards of local hospitals, and thus fail to receive optimal HIV care.

Racial/ethnic disparities have been widely documented for those receiving or accessing primary outpatient services and for persons needing inpatient care.[3] Nonwhites, in general, and blacks, in particular, have not participated in clinical trials and have not been offered antiretroviral therapy to the same extent as whites.[4–7] Reports have also consistently shown that white HIV-infected patients are less likely to have an inpatient admission than their black counterparts.[1] This is particularly concerning, because blacks and other minority ethnic groups have been disproportionately affected by the AIDS epidemic in the United States, where they account for a significant proportion of AIDS cases.

Few studies have examined the HIV care characteristics of Haitians living with HIV, although Haitians have been affected by the HIV epidemic in Haiti and the United States since the beginning of the epidemic.[8] At the beginning of the epidemic in the United States, Haitians were the only ethnic group identified as an "at-risk" group for AIDS, and in the late 1980s, a US Food and Drug Administration (FDA) regulation excluded Haitians from donating blood (this was later repealed). This notion of Haitians as "AIDS carriers" created early stigma in the Haitian community toward the HIV/AIDS disease.[9] In addition to stigma associated with HIV/AIDS, it has been suggested that there may be some mistrust among Haitians toward the American health care system, and Haitians may not seek care until late in the course of their illness.[10] These factors suggest that Haitians may represent a group particularly disadvantaged with regard to HIV care utilization and may be more prone to hospitalization. Nevertheless, there are virtually no studies published on the health care seeking patterns of Haitians living with HIV. Previous studies have classified Haitian participants as black or African American. We found only one study conducted in the pre-HAART era showing that Haitian ethnicity was associated with a lower CD4 cell count at presentation for initial primary care for HIV-positive persons, indicating a delay in accessing available medical services.[11] Within this context, the present study examined the HIV care needs and hospital admission patterns of HIV-positive Haitians in Miami, Florida.

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## METHODS

### Setting

The study was conducted among patients admitted to the adult HIV Service at Jackson Memorial Hospital (JMH) during 2004. JMH is a major tertiary care hospital with 1498 licensed beds that serves the entire Miami-Dade County community. As the only public hospital in the county, JMH provides care for more than 40% of the county's HIV/AIDS-infected patients. The HIV Adult Service of the Division of Infectious Diseases at the University of Miami Miller School of Medicine is the admitting service for all HIV-positive patients admitted to the hospital. This service is staffed by 3 teams of specialized HIV providers who manage patients admitted for acute medical problems. Each HIV medical team is composed of an attending physician (faculty from the Division of Infectious Diseases), a house physician, and a nurse practitioner. These teams rotate on a monthly basis. On average, 180 patients are admitted per month, with most being admitted through the emergency room. Although a patient with any medical complication can be admitted to the service, an HIV diagnosis is required for a patient to be referred to one of the HIV teams. These teams manage more than 90% of HIV-positive patients admitted to the hospital.

### Study Sample

Data were collected on patients admitted to the adult HIV Service at JMH during 2004. Data for all consecutive admissions from January 1 through December 31, 2004, were abstracted from the discharge summaries and the medical records contained in the hospital management information system (MIS) by an infectious disease physician and an HIV care nurse specialist. The MIS is an electronic medical record that contains a patient's demographic data, health insurance, transcriptions of hospital notes, medical orders, laboratory results, and appointments. This information was collected from all patients receiving medical care at our institution. Data were abstracted on race, country of origin, date of birth, substance use (self-report on the use of cocaine, marijuana, or opioids), drug of abuse screen (DAU; a urine toxicology screen test that was conducted on 43.5% of participants), use of antiretroviral therapy, year of HIV infection diagnosis, admission and discharge dates, discharge diagnosis, disposition of the patient on discharge (ie, patient returned home; went to a nursing home, hospice, or other institution; death), receipt of opportunistic infection prophylaxis, and most recent CD4 cell counts. We report here analyses that compare 2 self-identified ethnic groups: US-born blacks (hereafter referred to as Blacks) and Haitian-born blacks (hereafter referred as Haitians).

### Data Analysis

SPSS 14.0 (SPSS, Chicago, IL) was used for all analyses. For Haitians and Blacks, this article describes sociodemographic characteristics, substance use, reasons for hospital admissions, CD4 cell counts, and prescription and use of antiretroviral therapy. Second, multivariable analyses were used to assess CD4 cell counts and prescription of HAART while controlling for differences in age, gender, date of HIV diagnosis, substance use, hepatitis C coinfection, and diagnosis at the first 2004 admission. The primary dependent variables were CD4 level ($<351$, $<201$, and $<51$ cells/mm$^3$) and prescription of HAART therapy (yes/no). The primary independent variable was country of origin (United States/Haiti), and the covariates were the other variables listed previously. We fitted 1 logistic model for each of 3 CD4 levels ($<351$, $<200$, and $<51$ cells/mm$^3$) by entering all the variables (dependent variables, independent variables, and covariates) simultaneously into each model. These categories of CD4 cell counts allowed us to compare patients with no demonstrable need for HAART ($>350$ cells/mm$^3$) with those with the greatest need as indicated by their advanced disease status ($<201$ and $<51$ cells/mm$^3$). For each model, we present a comparison of the 2 ethnic groups' odds of being prescribed versus not being prescribed HAART. Analyses were conducted with data collected during 2004 admissions by examining an individual's first admission to the hospital. When we describe reasons for admissions, however, we also report on all consecutive admissions for the year 2004. Additionally, for the models with HAART prescription as the dependent variable, we removed the 52 participants whose HIV diagnosis was concurrent with their 2004 admission from the data set.

## RESULTS

### Demographics

The study population included 1092 individual admissions (227 Haitians and 865 Blacks) and 635 individual patients (133 Haitians and 502 Blacks). Haitians were more likely to be male and were older than their Black counterparts. Haitians were also more likely to be recently diagnosed. Thirty-one percent of Haitians were recently diagnosed (1 year or less before hospital admission) compared with 16% of Blacks. Only 15% of Haitian patients were diagnosed before 1996 compared with 35% of Blacks. Blacks were more likely to report current or previous substance use; more than two thirds of Blacks (67.5%) compared with 13.7% of Haitians reported such use (Table 1).

### Admission Diagnosis

Active medical problems at the time of admission were abstracted from the medical records. Eighty-two percent of the total admissions among Haitians and 85% among Blacks were attributable to an HIV-related diagnosis. HIV-related diagnoses included opportunistic infections such as oral candidiasis, esophageal candidiasis, *Pneumocystis jiroveci* pneumonia (PCP), cytomegalovirus (CMV) infections, mycobacteria infections, toxoplasmosis, and a number of less common conditions; malignancies such as Kaposi sarcoma and lymphoma; and other conditions such as wasting syndrome, HIV nephropathy, HIV dementia, and pruritic papular eruption (PPE). The most common of these diagnoses was *Mycobacterium tuberculosis* (MTB), followed by PCP and candidiasis. For Blacks, the proportion of MTB infection of all and first admissions was half that of Haitians but PCP rates were similar, whereas candidiasis was more commonly observed in Blacks (Table 2). Hepatitis C was also more commonly observed in Blacks.

**TABLE 1.** Sociodemographic and Clinical Characteristics of Study Sample

| | 2004 Patients | | | | |
|---|---|---|---|---|---|
| | Haitian-Born Blacks (N = 133) | | US-Born Blacks (N = 502) | | |
| Characteristic | n | % | n | % | *P* |
| Gender | | | | | |
| Male | 88 | 66.2 | 267 | 53.2 | 0.00 |
| Female | 45 | 33.8 | 235 | 46.8 | |
| Age (y) | | | | | |
| 18 to 24 | 4 | 3.0 | 17 | 3.4 | |
| 25 to 39 | 36 | 27.3 | 169 | 33.7 | |
| 40 to 54 | 71 | 53.8 | 269 | 53.6 | 0.11 |
| 55 to 64 | 14 | 10.6 | 38 | 7.6 | |
| 65+ | 7 | 5.3 | 9 | 1.8 | |
| Substance abuse: self-report | | | | | |
| Current | 11 | 8.4 | 256 | 51.6 | |
| Past | 7 | 5.3 | 79 | 15.9 | 0.00 |
| No | 110 | 84.0 | 157 | 31.7 | |
| Substance abuse: DAU test | | | | | |
| Total tested | 27 | 20.3 | 249 | 49.6 | — |
| Cocaine | 2 | 7.4 | 106 | 42.6 | |
| Cannabis | 0 | 0 | 17 | 6.8 | |
| Cocaine + other drugs | 0 | 0 | 29 | 11.6 | 0.00 |
| Other drugs | 1 | 3.7 | 14 | 5.6 | |
| Negative | 24 | 88.9 | 83 | 33.3 | |
| CD4 count (cells/mm$^3$) | | | | | |
| 0 to 50 | 70 | 52.6 | 186 | 37.1 | |
| 51 to 200 | 36 | 27.1 | 162 | 32.3 | |
| 201 to 350 | 12 | 9.0 | 78 | 15.5 | 0.02 |
| 351 to 500 | 8 | 6.0 | 37 | 7.4 | |
| 501+ | 7 | 5.3 | 39 | 7.8 | |
| Date of HIV diagnosis | | | | | |
| 2003 to 2004 | 41 | 30.8 | 80 | 15.9 | |
| 1996 to 2002 | 72 | 54.1 | 247 | 49.2 | 0.00 |
| Before 1996 | 20 | 15.0 | 175 | 34.9 | |
| HAART prescription and use | | | | | |
| Total | 78 | 62.4 | 314 | 68.1 | 0.23 |
| 2003 to 2004 diagnosis | 9 | 22.5 | 19 | 24.4 | 0.82 |
| 1996 to 2002 diagnosis | 55 | 84.6 | 167 | 74.5 | 0.09 |
| Diagnosis before 1996 | 14 | 70.0 | 128 | 80.5 | 0.27 |
| HAART used | 54 | 40.9 | 171 | 34.6 | 0.18 |
| Opportunistic infection prophylaxis (among those eligible) | 71 | 57.7 | 268 | 60.1 | 0.66 |
| Hepatitis C diagnosis | 3 | 2.3 | 97 | 19.3 | 0.00 |

## HIV Disease Stage

Table 1 and Table 3 summarize findings on differences in CD4 cell count between Haitians and Blacks. Fifty-three percent of Haitians had a CD4 count of <51 cells/mm$^3$ on admission compared with 37% of Blacks (see Table 1). After controlling for sociodemographic, hepatitis C coinfection, date of HIV diagnosis, use of HAART, and self-report of substance abuse differences, Haitians were 76% more likely than Blacks to have a CD4 count of <51 cells/mm$^3$ (see Table 3).

## Antiretroviral and Opportunistic Infection Prevention Medication Use

HAART was prescribed to 62% of Haitians and 68% of Blacks, and opportunistic infection prevention medication was prescribed to 58% of eligible Haitians and 60% of eligible Blacks. Table 4 displays results of the multivariable analyses on HAART prescription. There was no statistically significant difference between the 2 groups in their likelihood to be prescribed HAART. Conversely, the year of HIV diagnosis is the variable most strongly associated with HAART prescription. Compared with individuals more recently diagnosed (ie, during 2003–2004), those diagnosed before 2003 were at least 6 times as likely to be prescribed HAART. A hepatitis C diagnosis is positively associated with the likelihood of being prescribed HAART, except for those with a CD4 count of 50 cells/mm$^3$ or less, for whom the relation with HAART prescription was not statistically significant.

# DISCUSSION

Findings of this study suggest that HIV-positive Haitians attending our inner city hospital may be confronting challenges of access and utilization of health care services. The pattern of late presentation for HIV care that was identified for this population a decade ago[8] may still persist in this era of HAART. Compared with Blacks, HIV-positive Haitians tend to have a lower CD4 cell count, to be older, and more likely to be recently diagnosed with HIV.

The data suggest the need for further examination to explore the interaction of Haitians with the health care system. Our data cannot answer whether these disparities are attributable to patient, provider, or system level factors. A plausible reason for this observed barrier to medical care could be related to the possibility that Haitians were living in Haiti during the early course of their HIV disease. Analysis of the CD4 cell levels of the Haitian subsample by duration of residence in the United States did not yield any significant results, however. It is also possible that some of the mistrust among Haitians toward government-sponsored health care and the American health care system that has been observed in other studies may be associated with delayed use of HIV care services among Haitians.[12,13] The US policy to deny permanent residency to HIV-positive immigrants may also have acted as a disincentive for HIV testing by Haitians who self-perceived being at high risk of HIV infection. It is also possible that language barriers and issues related to health literacy among Haitians may have been associated with the study findings. Interestingly, there was no significant difference between Blacks and Haitians in self-reported HAART prescription, which suggests that the 2 groups have equal access to antiretroviral drugs.

The fact that the proportion of women in the Haitian cohort is lower than in the Black cohort is reflective of the epidemiology of these populations in the state. In Florida, of the 9011 cumulative HIV/AIDS cases reported among the Haitian population through December 2004, 5590 (62%) were in men and 3421 (38%) were in women.[14] Among 51,250 Black non-Hispanics in general living with HIV/AIDS in

**TABLE 2.** Five Most Frequent HIV-Related Reasons for Admission in 2004*

| All Admissions | | | | First Admissions Only | | | |
|---|---|---|---|---|---|---|---|
| Haitian-Born Blacks (N = 159) | | US-Born Blacks (N = 388) | | Haitian-Born Blacks (N = 90) | | US-Born Blacks (N = 238) | |
| Rank (%) | Diagnosis | Rank (%) | Diagnosis | Rank (%) | Diagnosis | Rank (%) | Diagnosis |
| 1 (21.4) | MTB | 1 (27.6) | Candida | 1 (22.2) | MTB | 1 (29.4) | Candida |
| 2 (15.7) | PCP | 2 (16.5) | PCP | 2 (21.1) | PCP | 2 (21.4) | PCP |
| 3 (13.8) | Candida | 3 (11.6) | MTB | 3 (14.4) | Candida | 3 (11.8) | MTB |
| 4 (11.3) | Toxo-CNS | 4 (10.6) | MAC | 4 (11.1) | Toxo-CNS | 4 (7.6) | MAC |
| 5 (6.3) | CMV | 5 (5.7) | Wasting | 5 (7.8) | Wasting | 5 (4.6) | Wasting |

*Includes first, second, and third diagnosis.
CNS indicates central nervous system.
NOTE: MTB, Mycobacterium tuberculosis infection; PCP, Pneumocystis jiroveci pneumonia; MAC, Mycobacterium avium complex infection; CMV, Cytomegalovirus infection.

2004, 29,210 (56.9%) were men and 22,040 (43.1%) were women.[15]

The 2 most common HIV-related diagnoses in HIV-positive Haitians were MTB and PCP, which are illnesses that are potentially preventable with adequate outpatient care and medications. The high prevalence of MTB among these patients may reflect the tuberculosis epidemiologic profile among the larger Haitian immigrant population. In Miami-Dade County, 32% of cases of tuberculosis among foreign-born individuals were diagnosed among Haitians in 2003; 34% of these patients were coinfected with HIV.[16]

Substance abuse does not seem to be a major concern among HIV-positive Haitians, because more than two thirds (84%) of the Haitians in our sample had no history of substance abuse, which compared favorably with the US-born group, of which only 32% had no history of substance use. This is consistent with literature findings, which indicate that immigrants generally exhibit low rates of substance abuse.[17] Substance abuse has been linked to an increased use of inpatient services in people with HIV.[18] The implications of this low rate of substance abuse for our Haitian sample are not fully understood and could be attributable to issues of self-report and the incomplete data from drug abuse screening. The low rates of hepatitis C and substance use among Haitians seem to confirm earlier research findings that heterosexual transmission is the main source of HIV infection in this population.[19]

## CONCLUSIONS

We sought to improve our understanding of differences in the demographic profile and patterns of access and utilization of HIV care by 2 important and related groups of HIV inpatient services users. Findings indicate that compared with their US-born counterparts, HIV-positive Haitians attending our inner city hospital tend to be more recently diagnosed with HIV and to have more advanced disease. We did not find any differences in their rates of prescription of antiretroviral or opportunistic infection prevention medication. Therefore, the discrepancy in hospital presentation does not seem to be one of unequal treatment in the health system. Once in the US health system, Haitians have the same access to HAART and opportunistic infection prophylaxis prescriptions as their Black counterparts.

This suggests that barriers to medical care exist at an early stage of the access continuum and that those Haitians who manage to enter the system have an equal chance as native-born Blacks to receive state-of-the-art treatment for their ailments. Preventive efforts among the Haitian HIV population should thus be directed at improving access to information on available health care services and coverage alternatives and promoting the need for timely use of health services.

In interpreting these findings, the reader should, however, be cognizant of 3 study limitations. The study sample was drawn from the inpatient population of a major urban teaching hospital that serves a large share of the county's

**TABLE 3.** Comparisons of Low CD4 Cell Level

| Outcome (Cells/mm$^3$) | Group | Unadjusted | | | Adjusted* | |
|---|---|---|---|---|---|---|
| | | %† | OR (95% CI) | *P* | OR (95% CI) | *P* |
| CD4 <351 | Haitian-born blacks | 88.7 | 1.40 (0.97 to 2.53) | 0.26 | 1.51 (0.74 to 3.04) | 0.22 |
| | US-born blacks | 84.9 | Reference | | Reference | |
| CD4 <201 | Haitian-born blacks | 79.7 | 1.73 (1.09 to 2.76) | 0.01 | 1.61 (0.93 to 2.80) | 0.08 |
| | US-born blacks | 69.3 | Reference | | Reference | |
| CD4 <51 | Haitian-born blacks | 52.6 | 1.88 (1.28 to 2.77) | 0.01 | 1.76 (1.16 to 2.68) | 0.00 |
| | US-born blacks | 37.1 | Reference | | Reference | |

*Adjusted for age, gender, hepatitis C coinfection, date of HIV diagnosis, use of HAART, and self-report of substance abuse.
†Percentage of patients with various levels of CD4 cell counts in each ethnic group.
95% CI indicates 95% confidence interval; OR, odds ratio.

**TABLE 4.** Correlates of HAART Prescription

| Variables | First Model | | Final Model | |
|---|---|---|---|---|
| | OR (95% CI) | *P* | OR (95% CI) | *P* |
| CD4 count <351 cells/mm$^3$ | | | | |
| Age (y) | 1.00 (0.98 to 1.02) | 0.55 | — | — |
| Gender (female) | 0.84 (0.53 to 1.35) | 0.48 | — | — |
| First admission diagnosis (HIV-related, yes/no) | 1.55 (0.93 to 2.45) | 0.09 | — | — |
| Hepatitis C-positive first admission | 3.73 (1.56 to 8.90) | 0.00 | 3.69 (1.58 to 8.63) | 0.00 |
| Self-report of substance abuse | 1.17 (0.89 to 1.44) | 0.25 | — | — |
| HIV diagnosis before 1996 | 7.13 (3.46 to 14.68) | 0.00 | 7.15 (3.58 to 14.30) | 0.00 |
| HIV diagnosis 1996 to 2002 | 6.69 (3.50 to 12.80) | 0.00 | 6.31 (3.38 to 11.80) | 0.00 |
| HIV diagnosis 2003 to 2004 | 1.0 | — | 1.0 | — |
| Haitian-born blacks | 1.51 (0.77 to 2.96) | 0.23 | 1.78 (0.97 to 3.26) | 0.06 |
| US-born blacks | 1.0 | — | 1.0 | — |
| CD4 count <201 cells/mm$^3$ | | | | |
| Age (y) | 1.00 (0.98 to 1.03) | 0.70 | — | — |
| Gender (female) | 0.75 (0.46 to 1.24) | 0.27 | — | — |
| First admission diagnosis (HIV-related, yes/no) | 1.32 (0.78 to 2.19) | 0.28 | — | — |
| Hepatitis C-positive first admission | 3.52 (1.30 to 9.48) | 0.01 | 3.43 (1.29 to 9.09) | 0.01 |
| Self-report of substance abuse | 1.18 (0.87 to 1.59) | 0.28 | | |
| HIV diagnosis before 1996 | 6.92 (3.17 to 15.10) | 0.00 | 6.65 (3.15 to 14.04) | 0.00 |
| HIV diagnosis 1996 to 2002 | 6.67 (3.33 to 13.36) | 0.00 | 6.01 (3.08 to 11.72) | 0.00 |
| HIV diagnosis 2003 to 2004 | 1.0 | — | 1.0 | — |
| Haitian-born blacks | 1.36 (0.67 to 2.76) | 0.39 | 1.64 (0.88 to 3.06) | 0.12 |
| US-born blacks | 1.0 | — | 1.0 | — |
| CD4 count <51 cells/mm$^3$ | | | | |
| Age (y) | 1.01 (0.97 to 1.06) | 0.47 | — | — |
| Gender (female) | 1.31 (0.63 to 2.71) | 0.47 | — | — |
| First admission diagnosis (HIV-related, yes/no) | 1.33 (0.66 to 2.66) | 0.42 | — | — |
| Hepatitis C-positive first admission | 1.34 (0.33 to 5.51) | 0.68 | — | — |
| Self-report of substance abuse | 1.16 (0.76 to 1.77) | 0.49 | — | — |
| HIV diagnosis before 1996 | 7.58 (2.58 to 22.24) | 0.00 | 8.39 (2.99 to 23.50) | 0.00 |
| HIV diagnosis 1996 to 2002 | 9.88 (3.86 to 25.28) | 0.00 | 9.50 (3.81 to 23.70) | 0.00 |
| HIV diagnosis 2003 to 2004 | 1.0 | — | 1.0 | — |
| Haitian-born blacks | 0.88 (0.35 to 2.20) | 0.79 | 1.03 (0.46 to 2.23) | 0.95 |
| US-born blacks | 1.0 | — | 1.0 | — |

indigent and low-income population. Findings may thus not be generalizable to the overall HIV-positive population of the county or the United States. Second, our hospital clinical database is limited with regard to information of psychologic, social, and cultural barriers that may explain delayed use of HIV care. Third, our study is limited to hospital admissions over a 1-year period; therefore, we cannot evaluate whether reported diagnoses are new or recurrent.

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