Disparities in HIV-treatment Responses between Haitians, African Americans, and Hispanics Living in Miami-Dade County, Florida

Jonathan Colasanti, MD
Linda Nguyen, BA
JoAnn Tjin Kon Kiem, MD
Khaled Deeb, PhD
Dushyantha Jayaweera, MD, MRCOG (UK), FACP

Abstract: **Background**. Studies evaluating response to treatment with Highly Active Antiretroviral Therapy (HAART) fail to examine Haitian patients living in the U.S. as a distinct group. **Methods**. This study was designed to determine the effectiveness of HAART in Haitians compared with other minority groups. We conducted a retrospective cohort study of HIV patients from two clinics. The cohort included 96 Hispanics, 60 African Americans, and 49 Haitians, after reviewing a total of 891 charts. **Results**. At 96 weeks, fewer Haitians (58.5%) achieved a suppressed viral load than African American (74.1%) or Hispanic (82.8%) patients (p=.021). Median CD4 counts at baseline were lowest among Haitians, with 158 cells/mm^3, compared with African Americans, 176 cells/mm^3 and Hispanics, 199 cells/mm^3. **Conclusions**. Haitians are not doing as well on HAART as other groups. This may be explained by linguistic, cultural, or other barriers that are not currently addressed by the health care system in the United States.

Key words: Haitian, HIV, minority, disparity.

Human Immunodeficiency Virus (HIV) infection disproportionately affects racial and ethnic minority populations in the United States. Despite years of prevention interventions and enhanced therapeutic options, HIV infection remains a formidable challenge, altering the social landscape of these communities and disrupting families across generations.[1] In 2007, the estimated rates of HIV/AIDS per 100,000 population of African Americans was 76.7 and among Hispanics was 27.7, compared with 21.1 for non-Hispanic Whites.[2,3] There is a paucity of information about HIV infection and treatment responses among Haitians living in the U.S. (hereafter, *Haitians*).

JONATHAN COLASANTI *is a Global Health Equity Resident at the Jay Weiss Center for Social Medicine and Health Equity, Jackson Memorial Hospital Department of Internal Medicine.* ***LINDA NGUYEN***, ***JOANN TJIN KON KIEM***, *and* ***KHALED DEEB*** *are affiliated with the University of Miami–Miller School of Medicine (UM-MSM).* ***DUSHYANTHA JAYAWEERA*** *is a Professor of Clinical Medicine, Division of Infectious Diseases, UM-MSM. Please address correspondence to Jonathan Colasanti, 1120 NW 14th St., Miami, FL 33136; Clinical Research Building, Suite 857, Miami, FL 33136; (305) 401-4613; jacolasanti@med.miami.edu.*

Miami-Dade County data, in 2009, showed a significant disparity in the incidence of HIV (non-AIDS) and AIDS cases among minorities. In 2009, the incidence of HIV was 469 African Americans, 471 Hispanics, and 140 non-Hispanic Whites, a total of 1,080 new cases. Similarly, AIDS case incidence was 448, 335 and 84 respectively, for a total of 888 new cases.[4] However, specific data on Haitians has gone unreported because to date Haitians have been grouped with African Americans. Haitians constitute a fast-growing immigrant population in the U.S., distinct in numerous ways from African Americans; there are close to 546,000 Haitian immigrants in this country.[5] The top states of Haitian immigrant settlement are Florida, New York, Massachusetts, and New Jersey.[6] In Florida and especially in Miami, Haitians are an important ethnic group when examining health outcomes.

In the U.S., significant efforts have been made to ensure that all people with HIV infection have equal access to HIV treatment, regardless of race or other factors such as financial/insurance status.[7,8] With universal access to care through the AIDS Drug Assistance (ADAP) and Ryan White programs, HIV treatment could be considered a model for health care. However, once patients are in treatment, it remains unclear if differences exist in the outcomes across different racial/ethnic groups. Multiple groups have investigated progression of HIV and HIV-related death with regard to race and ethnicity.[9–20] The results have been mixed, with most studies showing no difference in mortality or progression of HIV disease across race and ethnicity when controlling for other factors.[9,13,16,19,21] However, a few studies have demonstrated disparities, with minorities having an increased number of deaths or antiretroviral failure relative to non-Hispanic Whites.[15,17,20]

At the beginning of the scourge in the United States, Haitians were the only ethnic group identified as an at-risk group for AIDS, and in the late 1980s, a U.S. Food and Drug Administration (FDA) regulation that was later repealed excluded Haitians from donating blood.[22,23] The notion that Haitians are AIDS carriers created an early stigma in the Haitian community towards HIV and AIDS.[24] In addition to stigma associated with HIV/AIDS, it has been suggested that there is some mistrust among Haitians toward the U.S. health care system, and Haitians may not seek health care until they reach end-stage AIDS.[25] These factors suggest that Haitians are a particularly disadvantaged group with regard to HIV care and prone to complications. Yet, few studies have examined the unique traits of Haitians living with HIV, even though Haitians have been affected by HIV in Haiti and in the United States, since the beginning of this epidemic.[26]

No outpatient studies to date have evaluated the response to highly active antiretroviral therapy (HAART) among Haitians. Additionally, surveillance reports generated by the CDC and Miami-Dade County Health department have not collected data on Haitians separately, rather labeling Haitians as Black.[4] Furthermore, the previous studies that did examine Haitians as a unique group did not evaluate the treatment response rates in outpatient settings. These studies only captured initial immunologic and virologic markers at presentation to an outpatient clinic[27] or admission to a hospital.[28] Both found that Haitian ethnicity was associated with lower CD4 lymphocyte counts upon presentation, demonstrating a delay in accessing available medical services. As a large proportion of the HIV-infected individuals in Miami-Dade County are Hispanic, African American, or Haitian, this study was designed to investigate the response to

treatment with HAART between these three groups with regard to immunologic and virologic outcomes.

Methods

Design. A retrospective cohort study was conducted of adult HIV-infected patient charts from Jackson Memorial Hospital Special Immunology Clinic and the Prevention and Treatment Center (PET Center), dedicated HIV clinics for Miami-Dade County. The study was approved with waiver of informed consent by the University of Miami Institutional Review Board for Human Subject Research Protection. All charts reviewed were for patients who had initiated HAART between January 1, 2000 and May 1, 2008. The charts were accessed at each clinic consecutively from May 1, 2008 through October 1, 2008. Data extraction was conducted using standardized data collection forms to minimize the likelihood of errors.

To be included in the chart review, patients had to have tested HIV seropositive, be 18 years of age or older, be naïve to HAART at the time of initiation of treatment in the clinic and be on HAART for at least 96 weeks, with an ethnicity of African American, Haitian, or Hispanic. Patient charts were excluded if patients began HAART before the year 2000 to ensure that all were receiving HAART rather than isolated antiretrovirals. By the year 2000, the Department of Health and Human Services guidelines reflected that all patients being treated for HIV should be on HAART.[29]

Data collection. The outcome variables of the proposed study were CD4 Lymphocyte counts, HIV viral load, opportunistic infections and the number of HIV-related hospitalizations. Patient ethnicity was based on self-report. CD4 lymphocyte count and the HIV viral load results were obtained from medical records from the following time points: 0, 12 weeks, 24 weeks, 36 weeks, 48 weeks, 72 weeks, and 96 weeks. If a time point was missing, the closest possible time point results available in the chart were documented, or the space was left blank if the sequentially next time point was reached.

Opportunistic infections, AIDS-related tumors and all HIV-related hospitalizations noted in the medical record at time 0 or acquired during the 96-week period were noted. These included Pneumocystis *jiroveci* pneumonia, cytomegalovirus, Mycobacterium avium complex, Mycobacterium tuberculosis, toxoplasmosis, Kaposi's sarcoma, and non-Hodgkin's lymphoma. Finally, patient adherence to the HAART regimen was abstracted as a nominal variable of "adherent" or "non-adherent," based on physician documentation.

Co-infections with hepatitis C (HCV) or hepatitis B (HBV), either at the time of initiation of HAART or acquired during the treatment period were abstracted. Hepatitis C infection was diagnosed by the presence of antibodies to HCV or the presence of HCV viral load. The HBV infection was documented by the presence of hepatitis B surface antigen. Other co-morbidities acquired during the treatment period, based on physician documentation, including hypertension, diabetes mellitus, dyslipidemia, acute coronary syndromes, and chronic kidney disease were abstracted if the diagnosis followed HAART initiation (data not shown).

The primary endpoints were successful virologic suppression of HIV VL $<$400 copies/mL and CD4 lymphocyte count at weeks 48, 72 and 96. This value of HIV VL

<400 copies/mL was chosen for the cutoff as both institutions primarily utilized HIV VL assays with a lower limit of detection of <400 copies/mL.

Statistical analysis. Data from assessments were analyzed using the statistical software, SPSS version 17.0.[30] Descriptive statistics and bivariate analyses were conducted using Spearman's rho for ordinal variables and Pearson's r for scale variables to examine associations between variables. Characteristics of study participants were stratified by ethnicity. Contingency tables were created for all comparisons and Pearson's chi square and measures of association were calculated to examine the association and differences based on socio-demographic data, health care coverage, HIV risk factors, CD4 Lymphocyte counts, HIV RNA viral load, opportunistic infections, and co-morbidities. The frequencies and percentages were calculated using cross-tabulation between different ethnicities. Test statistics were considered significant if p-values were less than .05.

Results

Study population. We initially reviewed 636 charts at Jackson Memorial Hospital clinic and 255 at the Prevention, Education and Treatment Center (PET center) clinic for a total of 891 charts. Of the charts reviewed, 205 met all inclusion and exclusion criteria and were included in the final data analysis. The sample included 96 Hispanic, 60 African American and 49 Haitian patients (Figure 1). At Jackson Memorial Hospital clinic, 160 were excluded because the subjects were not naïve to HAART when they initially presented to the clinic. One hundred and thirty-three were excluded because they had initiated HAART before the year 2000, while 141 were excluded because they had started treatment less than 96 weeks prior to the date of the chart review. Ninety-eight were excluded because they had taken part in clinical trials and as a result the data were not accessible.

At the PET center clinic, 42 were excluded because the patients were not naïve to HAART when they initially presented to the clinic. Seventy were excluded because they had initiated HAART before the year 2000. Thirty were excluded because they had started treatment less than 96 weeks prior to the date of the chart review and 12 were excluded because they were non-Hispanic White. No charts were excluded for participation in clinical trials. The study population was 72.7% male and 27.3% female, which reflects the national gender breakdown of HIV infections.[3] A higher percentage of the Hispanics (62.4%) were men who have sex with men (MSM) in comparison with the African American (16.7%) and Haitian (8.3%) patients. There was no statistically significant difference in insurance status across groups. African Americans had a higher rate of hepatitis C co-infection than the other two groups, while there was no significant difference in hepatitis B co-infection (Table 1).

Outcomes. We observed that at 48 weeks there was no statistically significant difference in achieving virologic suppression among the three groups (Figure 2). At 72 weeks, Haitian patients had 65.1% (28), African American patients 67.3% (37) and Hispanic patients 84.1% (69) with successful virologic suppression ($p=.023$). At 96 weeks, 58.5% (24) of Haitian patients, 74.1% (40) of African American patients, and 82.8% (77) of Hispanic patients had successfully suppressed the virus ($p=.011$). Physician-reported adherence and successful virologic suppression at 48 weeks, 72 weeks, and 96 weeks

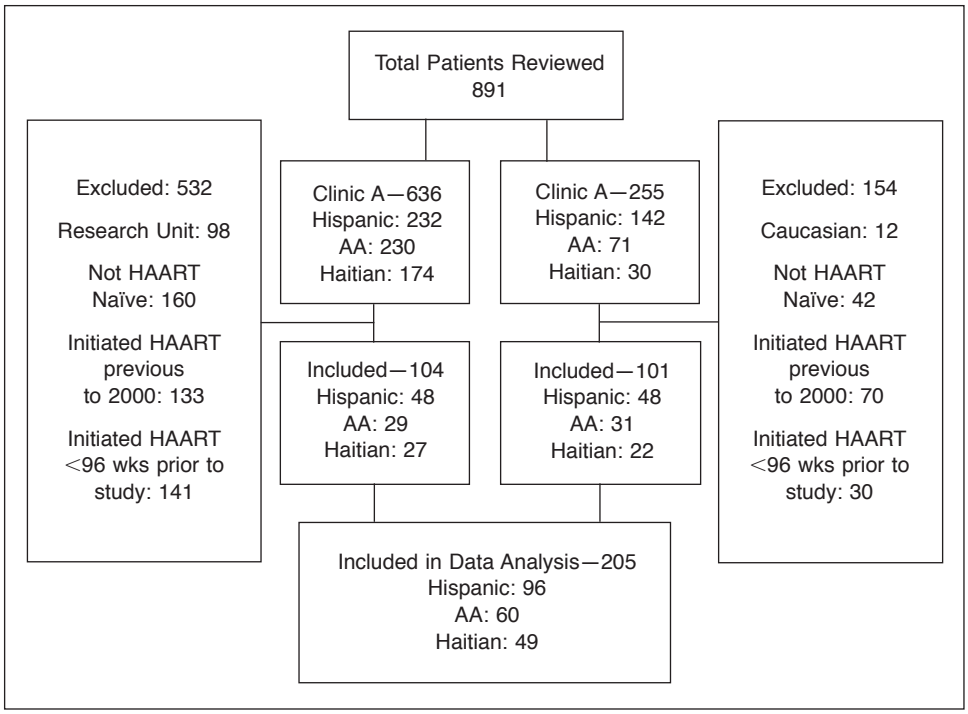

Figure 1. Study flow chart detailing number of charts reviewed at each clinic and reasons patients were excluded from complete data extraction and final data analysis.

AA = African American
HAART = Highly Active Antiretroviral Therapy

had a Pearson correlation of 0.480 ($p<.001$), 0.549 ($p<.001$) and 0.535 ($p<.001$) respectively. Median CD4 lymphocyte counts at baseline were lowest among Haitians, with 158 cells/mm^3, then African Americans with 176 cells/mm^3, and 199 cells/mm^3 in Hispanic patients. Median CD4 lymphocyte counts for each ethnicity at time points 48 weeks, 72 weeks and 96 weeks are as follows: for Haitians, 281, 341, 355 cells/mm^3; for African Americans, 343, 369, 425 cells/mm^3; for Hispanics, 350, 361, 386 cells/mm^3 (Figure 3). There was no time point where the difference in CD4 counts reached statistical significance. The majority of opportunistic infections were diagnosed in the months preceding initiation of HARRT. Refer to Table 2 for the breakdown of opportunistic infections.

Discussion

We studied the response to HAART in HIV patients of minority groups in Miami-Dade County, comparing the success of Hispanic, African American, and Haitian patients because no study to date has separated out Haitians from African Americans when studying their response to therapy. Although it is well documented that African Americans have the highest rates of HIV infection, AIDS, and AIDS-related deaths in the United

Table 1.

PATIENT BASELINE CHARACTERISTICS BASED ON DEMOGRAPHICS, RISK FACTORS, AND LABORATORY DETERMINANTS[a]

Parameters	Hispanic (n=96, 46.6%)	African American (n=60, 29.1%)	Haitian American (n=49, 23.8%)	Total Patients (n=205, 100%)	p value
Median Age—years	47.5	46.3	46.8	47	.378
Sex					<.001*
Male	83 (86.5)	36 (60.0)	30 (61.2)	149 (72.7)	
Female	13 (13.5)	24 (40.0)	19 (38.8)	56 (27.3)	
Insurance					.078
ADAP/Ryan White	72 (75.8)	30 (52.6)	33 (70.2)	135 (67.8)	
Medicaid	15 (15.8)	16 (28.1)	9 (19.1)	40 (20.1)	
Medicare	4 (4.2)	8 (14.0)	2 (4.3)	14 (7.0)	
Private	4 (4.2)	3 (5.3)	3 (6.4)	10 (5.0)	
Risk Factor					<.001*
MSM	59 (62.4)	10 (16.7)	4 (8.3)	73 (36.3)	
Heterosexual Sex	32 (36.2)	57 (78.3)	44 (91.7)	125 (69.9)	
IVDU	1 (1.0)	3 (5.0)	0 (0.0)	4 (2.0)	
Median CD4 (cells/μL)	199	176	158	171	.542
Median CD4 %	15.5	11.5	10.0	12	.308
Median HIV RNA c/mL	75,260	48,550	54,880	57,543	.398
Hepatitis C coinfection	9 (9.4)	16 (26.7)	0 (0)	25 (12.2)	<.001*
Hepatitis B coinfection	6 (6.3)	2 (3.4)	2 (4.1)	10 (4.9)	.693

[a]One-way ANOVA was computed across ethnicity.
*p-value is significant for less than .05.
ADAP = AIDS Drug Assistance Program
MSM = Men who have sex with men
IVDU = Intravenous drug use

States,[2] it is important to examine subgroups within the larger category who may have particularly poor outcomes. Our retrospective cohort study from South Florida has demonstrated a poorer outcome on treatment—in terms of virologic success—among Haitians compared with African American or Hispanic patients. More specifically, there is a trend (not statistically significant) toward increasing virologic failure at 48 weeks in the Haitian group, which becomes statistically significant at 72 weeks and persists through 96 weeks (Figure 2). Though the Haitian population shows a comparable augmentation of CD4 T-cell counts to Hispanic and African American patients, HIV RNA viral load, which independently predicts clinical progression of HIV in previous studies, remains an important finding.[31] Despite the lack of statistical significance in

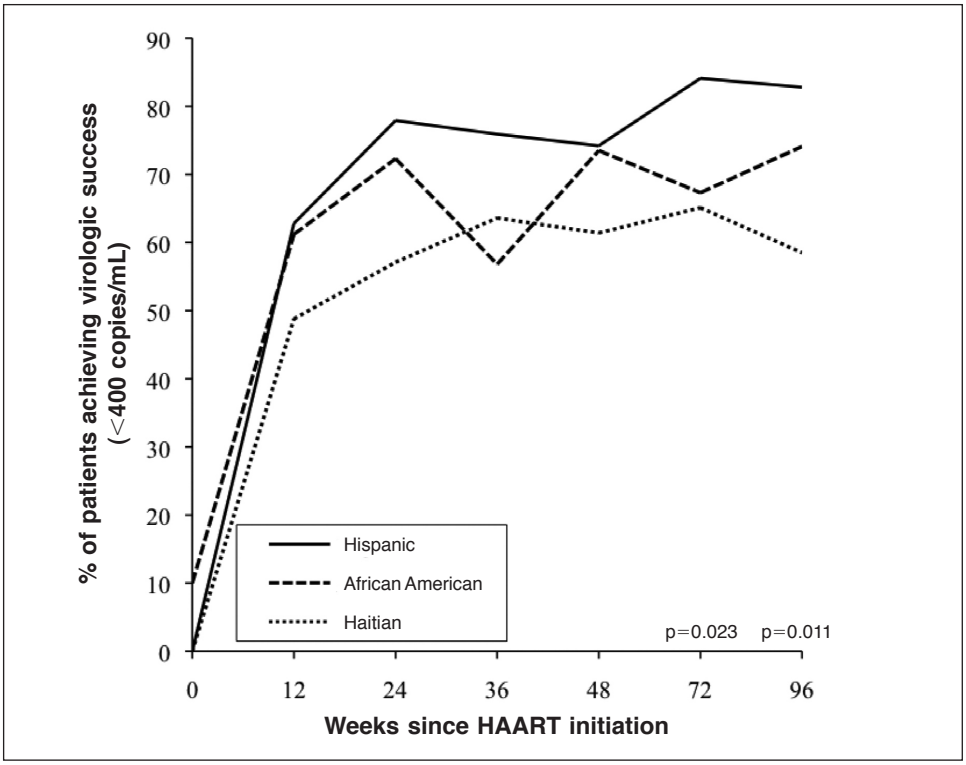

Figure 2. The percentage of patients who achieved an undetectable viral load (<400 copies/mL) at each time point from the initiation of highly active antiretroviral therapy (HAART) through 96 weeks. Fewer Hatians living in the U.S. achieved this marker for succesful HAART treatment. P-values are included at each time point on the graph and statistical significance was achieved (72 and 96 weeks).

differences between CD4 T-cell counts between the three groups, the Haitian patients presented to care with lower CD4 T-cell counts and remained with lower CD4 T-cell counts during the course of therapy.

We did not observe a statistically significant difference in opportunistic infections between the groups (Figure 2), other than with Kaposi's sarcoma and Mycobacterium tuberculosis (TB). We observed a higher rate of Kaposi's sarcoma (KS) and Mycobacterium tuberculosis in the Haitian American patient group, but the numbers were too small to draw any meaningful conclusions. The finding of a greater number of M. tuberculosis cases among the Haitian American patients was not unexpected as most of these patients are first generation immigrants from a country with high TB prevalence. This statistic serves as a reminder to clinicians for diligent TB screening practices among this particular group of HIV patients.

A previous study from Port-au-Prince, Haiti showed that 76% of patients achieved an HIV RNA Viral Load of fewer than 400 copies/mL (the same cutoff we used in our analysis), indicating that in their native environment Haitians are achieving a better rate

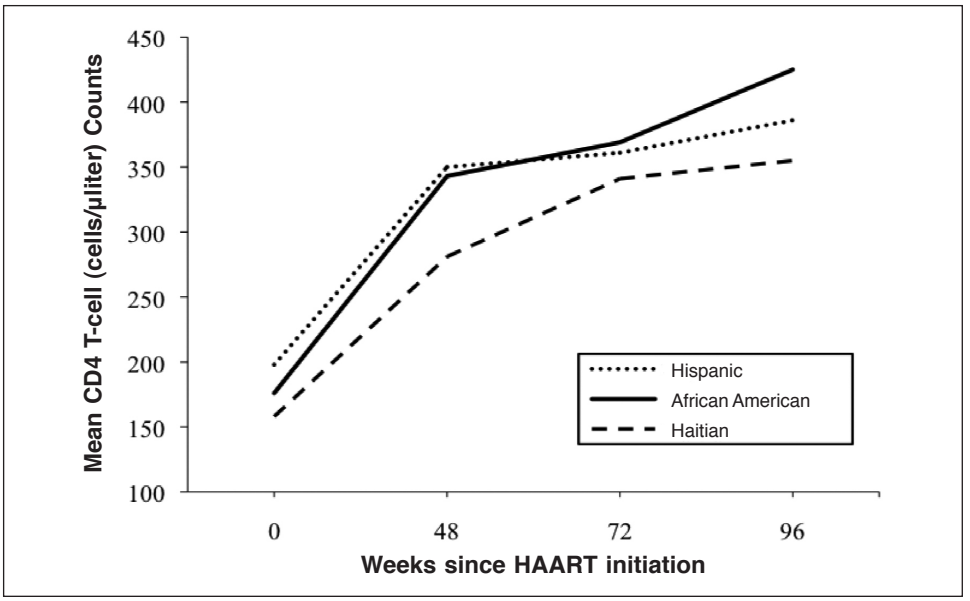

Figure 3. Median CD4 T-cell count by ethnicity over time, for sample size 205. Numerical values of CD4 count are noted in the results section of the paper. Howver, Haitian patients tended to enter treatment with lower CD4 T-cell counts and continued with that trend throughout the course of treatment, though it did not reach statistical significance at any time point.

of virologic suppression than our Haitian study sample in Miami, Florida.[32] However, one must be cautious in this cross-study comparison, as the subjects in the Port-au-Prince, Haiti analysis may have been a differentially selected population.

As physician reported adherence correlated, moderately to strongly, with achieving a virologic success, in all groups, we may postulate that Haitians fared worse than the African Americans and Hispanics because of poor adherence. The question then becomes why do Haitians have a more difficult time adhering to therapy? We can reasonably speculate that this may occur due to language barriers, inability to navigate our complex health care system, challenges that result from immigration status, lack of acculturation, fear of deportation, poverty, or physicians' own biases. Stone, in a review of physicians' contributions to disparities in HIV/AIDS care, noted that the health care provider may be a contributing factor to disparities.[33] This may be influenced by perceptions and assumptions among providers that minority patients could have lower adherence to highly active antiretroviral therapy.

As mentioned above, one possible explanation for the observed outcome disparity is the language barrier. African Americans do not generally face this challenge, and Hispanics (constituting 62% of the population in Miami-Dade[34]) encounter fewer linguistic and cultural barriers than Haitians. It is well documented that disparities exist between Haitian and other minorities in regards to disease knowledge and accessing screening/preventive health care, as well as detection and survival of cervical cancer.[35–37]

Table 2.

COMPARISON OF OPPORTUNISTIC INFECTIONS AND LYMPHOMA ACROSS ETHNICITIES[a]

Outcomes	Hispanic N=96	African American N=60	Haitian American N=49	p-value
AIDS Events		Number of Patients (%)		
Pneumocystis Jirovecii pneumonia	15 (15.6)	6 (10)	7 (14.3)[b]	.500
Cytomegalovirus	1 (1.0)	2 (3.3)	0 (0)	.316
Mycobacterium Avium Complex	1 (1.0)	1 (1.7)	0 (0)	.676
CNS Toxoplasmosis	2 (2.1)	1 (1.7)	2 (4.1)	.685
Kaposi Sarcoma	0 (0)	0 (0)	2 (4.1)	.040*
Mycobacterium Tuberculosis	0 (0)	1 (1.7)	5 (10.2)[c]	.002*
Non-Hodgkins Lymphoma	1 (1.0)	0 (0)	1 (2.0)	.557

[a]All Infections were diagnosed before the initiation of HAART unless otherwise noted. One-way ANOVA was used to identify differences across ethnicity.
*p-value is significant for less than .05.
[b]Indicates a patient who was diagnosed while failing therapy.
[c]Indicates 2 patients diagnosed while on therapy.

Interestingly, in our study population, Haitians initially responded well to HAART, but a separation in the groups became apparent over time (Figure 2). Perhaps this indicates problems with patient understanding of the necessity of long-term medication adherence or, alternatively, problems getting medications refilled. Campo et al. suggest that linguistic and cultural differences among Hispanic patients call for cultural sensitivity in managing HIV in these groups.[38] Haitians bring their own set of rich cultural beliefs and a language that is rarely spoken in the United States; this calls for a specific cultural sensitivity when managing HIV infection in this group of patients. Though the Hispanic group in this study achieved the highest rates of virologic suppression we would urge caution in making generalizations to other Hispanic populations in the U.S. Just as cultural nuances exist that separate Haitians from African Americans, there is tremendous ethnic heterogeneity within U.S. Hispanic populations. Miami, Florida contains a large Hispanic population of Cuban origin and this population may differ in many ways from Hispanics with roots in other Latin American countries.

The data suggest a need for creative solutions. A simple option would be to have minority clinics that are specifically targeted to people from Haiti. In fact, Ryan White Funding has created a minority AIDS initiative geared to address this issue whereby funding is made available to set up clinics, which are culturally sensitive to minorities. Potocky-Tropodi and colleagues found a desire amongst Haitian HIV positive patients in Palm Beach County for more culturally competent care.[39,40] Hence, by having a clinic

for Haitian patients with a Haitian case manager, social worker, and psychologist, we would expect a vast improvement in the problems of sustaining virologic suppression associated with the Haitian population. On the other hand, there may be a need for community partnership, using members of the community to assist Haitian patients through the course of their treatment to prevent the fall off in adequate virologic control. Similarly, our results suggest that Haitian patients are presenting to care with lower CD4 counts, which calls for increased voluntary counseling and testing and culturally sensitive educational campaigns to encourage early initiation of care when diagnosis is made.

There are many limitations to this study. Our original goal was to analyze 600 charts, 300 from each clinic, with 100 patients from each ethnic group at each clinic. This goal was not achieved due to stringent inclusion criteria and time constraints for data collection. The study only looked at a two-year snapshot of treatment for each patient, so patients that failed treatment after that time period were not captured. Due to the retrospective design of the study the adherence measure used (a physician report of adherence documented in the chart) was subject to bias; this is not an ideal way to measure adherence. Another factor well known to correlate with treatment success is insurance status. Though insurance was equal across groups in our study, it was only captured at one time point; therefore, any unidentified temporary lapses in insurance or funding of a patient may have contributed to virologic failure. The sample size was also too small to generate meaningful data and analysis with respect to type of insurance. Our study did not look at HIV-related deaths, a significant endpoint when assessing the success of treatment, nor did it have a large enough sample size to detect differences in HIV-related hospitalizations. Due to the small sample size we were unable to analyze any differences in Hispanics based on country of origin. In addition to a small sample size, our study focused on a specific subset of patients, minorities in Miami-Dade, and excluded non-Hispanic Whites, who has been used as a control group in many previous studies.[9–20] Our results are intriguing and support the need for greater attention to tailoring treatment modalities to specific minority groups. Though some of our results were statistically significant, we would like to see larger studies examine disparities in HIV outcomes among subgroups of racial and ethnic minorities.

Notes

1. Cargill VA, Stone VE. HIV/AIDS: a minority health issue. Med Clin North Am. 2005 Jul;89(4):895–912.
2. Centers for Disease Control and Prevention (CDC). Racial/ethnic disparities in diagnoses of HIV/AIDS—33 states, 2001–2005. MMWR Morb Mortal Wkly Rep. 2007 Mar 9;56(9):189–93.
3. Centers for Disease Control and Prevention (CDC). Epidemiology of HIV/AIDS—United States, 1981–2005. MMWR Morb Mortal Wkly Rep. 2006 Jun 2;55(21):589–92.
4. Miami-Dade County Health Department. HIV/AIDS surveillance. Miami, FL: Miami-Dade County Health Department, 2010.
5. Krikorian M. Fact sheet on Haitian immigrants in the United States. Right side news: the right news for Americans. 2010 Jan 26. Available at: http://www.rightsidenews.com/201001278381/us/homeland-security/fact-sheet-on-haitian-immigrants-in-the-united-states.html.

6. Camarota SA, McArdle N. Where immigrants live: an examination of state residency of the foreign born by country of origin in 1990 and 2000. Washington, DC: Center for Immigration Studies, 2003. Available at: http://www.cis.org/articles/2003/back1203.html.
7. Kahn JG, Zhang X, Cross LT, et al. Access to and use of HIV antiretroviral therapy: variation by race/ethnicity in two public insurance programs in the U.S. Public Health Rep. 2002 May–Jun;117(3):252–62.
8. Shapiro MF, Morton SC, McCaffrey DF, et al. Variations in the care of HIV-infected adults in the United States: results from the HIV Cost and Services Utilization Study. JAMA. 1999 Jun 23–30;281(24):2305–15.
9. Anastos K, Schneider MF, Gange SJ, et al. The association of race, sociodemographic, and behavioral characteristics with response to highly active antiretroviral therapy in women. J Acquir Immune Defic Syndr. 2005 Aug 15;39(5):537–44.
10. Chu C, Selwyn PA. Current health disparities in HIV/AIDS. AIDS Read. 2008 Mar; 18(3):144–6, 152–8, C3.
11. de Arellano ER, Benito JM, Soriano V, et al. Impact of ethnicity and HIV type 1 subtype on response to first-line antiretroviral therapy. AIDS Res Hum Retroviruses. 2007 Jul;23(7):891–4.
12. Dray-Spira R, Spire B, Heard I, et al. Heterogeneous response to HAART across a diverse population of people living with HIV: results from the ANRS-EN12-VESPA Study. AIDS. 2007 Jun;21 Suppl 1:S5–12.
13. Giordano TP, Morgan RO, Kramer JR, et al. Is there a race-based disparity in the survival of veterans with HIV? J Gen Intern Med. 2006 Jun;21(6):613–7.
14. Giordano TP, Wright JA, Hasan MQ, et al. Do sex and race/ethnicity influence CD4 cell response in patients who achieve virologic suppression during antiretroviral therapy? Clin Infect Dis. 2003 Aug 1;37(3):433–7. Epub 2003 Jul 16.
15. Hartzell JD, Spooner K, Howard R, et al. Race and mental health diagnosis are risk factors for highly active antiretroviral therapy failure in a military cohort despite equal access to care. J Acquir Immune Defic Syndr. 2007 Apr 1;44(4):411–6.
16. Jensen-Fangel S, Pedersen L, Pedersen C, et al. The effect of race/ethnicity on the outcome of highly active antiretroviral therapy for human immunodeficiency virus type 1-infected patients. Clin Infect Dis. 2002 Dec 15;35(12):1541–8. Epub 2002 Dec 3.
17. Morin SF, Sengupta S, Cozen M, et al. Responding to racial and ethnic disparities in use of HIV drugs: analysis of state policies. Public Health Rep. 2002 May–Jun; 117(3):263–72.
18. Merriman NA, Porter SB, Brensinger CM, et al. Racial difference in mortality among U.S. veterans with HCV/HIV coinfection. Am J Gastroenterol. 2006 Apr;101(4):760–7. Epub 2006 Feb 22.
19. Silverberg MJ, Wegner SA, Milazzo MJ, et al. Effectiveness of highly-active antiretroviral therapy by race/ethnicity. AIDS. 2006 Jul 13;20(11):1531–8.
20. McGinnis KA, Fine MJ, Sharma RK, et al. Understanding racial disparities in HIV using data from the veterans aging cohort 3-site study and VA administrative data. Am J Public Health. 2003 Oct;93(10):1728–33.
21. Silverberg MJ, Leyden W, Quesenberry CP Jr, et al. Race/ethnicity and risk of AIDS and death among HIV-infected patients with access to care. J Gen Intern Med. 2009 Sep;24(9):1065–72. Epub 2009 Jul 16.
22. Centers for Disease Control (CDC). Prevention of acquired immune deficiency syndrome (AIDS): report of inter-agency recommendations. MMWR Morb Mortal Wkly Rep. 1983 Mar 4;32(8):101–3.

23. Food and Drug Administration. Recommendations to decrease the risk of transmitting acquired immune deficiency syndrome (AIDS) from blood donors. In: Institute of Medicine. HIV and the blood supply: an analysis of crisis decisionmaking. Washington, DC: National Academy Press, 1983; 290–1.
24. Farmer P. AIDS and accusation: Haiti and the geography of blame. Berkeley, CA: University of California Press, 1992.
25. Jean-Louis E, Walker J, Appolon G, et al. Drug and alcohol use among Boston's Haitian community: a hidden problem unveiled by CCHER's Enhanced Innovated Case Management Program. Journal of Drugs and Society. 2000;16:107–25.
26. Miller JC. The plight of Haitian refugees. New York, NY: Praeger, 1984.
27. Samet JH, Retondo MJ, Freedberg KA, et al. Factors associated with initiation of primary medical care for HIV-infected persons. Am J Med. 1994 Oct;97(4):347–53.
28. Rodriguez AE, Metsch LR, Saint-Jean G, et al. Differences in HIV-related hospitalization trends between Haitian-born Blacks and U.S.-born Blacks. J Acquir Immune Defic Syndr. 2007 Aug 15;45(5):529–34.
29. Department of Health and Human Services Panel on Clinical Practices for Treatment of HIV Infection, Henry J. Kaiser Family Foundation, et al. Guidelines for the use of antiretroviral agents in HIV-infected adults and adolescents, January 28, 2000 by the Panel on Clinical Practices for Treatment of HIV Infection. HIV Clin Trials. 2000 Jul–Aug;1(1):60–110.
30. SPSS Inc. SPSS for Windows version 17.0. Chicago, IL: SPSS Inc., 2008.
31. Kim S, Hughes MD, Hammer SM, et al. Both serum HIV type 1 RNA levels and CD4+ lymphocyte counts predict clinical outcome in HIV type 1-infected subjects with 200 to 500 CD4+ cells per cubic millimeter. AIDS Clinical Trials Group Study 175 Virology Study Team. AIDS Res Hum Retroviruses. 2000 May 1;16(7):645–53.
32. Severe P, Leger P, Charles M, et al. Antiretroviral therapy in a thousand patients with AIDS in Haiti. N Engl J Med. 2005 Dec 1;353(22):2325–34.
33. Stone VE. Physician contributions to disparities in HIV/AIDS care: the role of provider perceptions regarding adherence. Curr HIV/AIDS Rep. 2005 Nov;2(4):189–93.
34. U.S. Census Bureau. State and County QuickFacts: Miami-Dade County, Florida. Washington, DC: U.S. Census Bureau, 2010.
35. Kobetz E, Mendoza AD, Barton B, et al. Mammography use among Haitian women in Miami, Florida: an opportunity for intervention. J Immigr Minor Health. 2010 Jun; 12(3):418–21. Epub 2008 Oct 8.
36. Kobetz E, Dunn Mendoza A, Menard J, et al. One size does not fit all: differences in HPV knowledge between Haitian and African American women. Cancer Epidemiol Biomarkers Prev. 2010 Feb;19(2):366–70.
37. Kobetz E, Menard J, Barton B, et al. Patne en Aksyon: addressing cancer disparities in Little Haiti through research and social action. Am J Public Health. 2009 Jul;99(7): 1163–5. Epub 2009 May 14.
38. Campo RE, Alvarez D, Santos G, et al. Antiretroviral treatment considerations in Latino patients. AIDS Patient Care STDS. 2005 Jun;19(6):366–74.
39. Potocky-Tripodi M, Dodge K, Greene M. Bridging cultural chasms between providers and HIV-positive Haitians in Palm Beach County, Florida. J Health Care Poor Underserved. 2007 Aug;18(3 Suppl):105–17.
40. Dodge K, Potocky-Tripodi M. Care system assessment demonstration project, Palm Beach County, Florida: methodology, findings, and recommendations. J Health Care Poor Underserved. 2007 Aug;18(3 Suppl):79–104.