Adverse health outcomes among Black Americans: Living with HIV - Nature or Nurture?

David J Malebranche, *Emory University*
HIV is currently ravaging the Black community in the United States. It is estimated that one out of every 50 Black men is HIV-positive, and a recent CDC study with Black men who have sex with men (MSM) found an HIV prevalence of 46% in five major metropolitan cities. Black women, while only comprising 12% of the entire female population in the United States, make up approximately 70% of all female HIV/AIDS cases.

While primary HIV prevention issues have been at the forefront of the American public health agenda for years, stressing the secondary prevention needs for Black Americans currently living with HIV is equally important. Despite the availability of over 20 FDA-approved antiretrovirals (ARVs), African Americans are still suffering from disproportionate HIV-related morbidity and mortality rates when compared to their White and Hispanic counterparts. The reasons for the racial disparity are multi-factorial, but are often categorized into two distinct camps of thinking: one suggests that inherent genetic racial differences account for the disparity, while the other emphasizes the role of broader environmental and social issues. So which is it?

It’s in the genes

As HIV has progressed so rapidly among both African and African American populations worldwide, medical officials have postulated that there may be genetic factors influencing this current trend. On the HIV prevention front, researchers have been pursuing a couple of interesting leads with regards to susceptibility of individuals to HIV infection. CCR5 receptors are receptors on the surface of the CD4 cell (T-cell) and are one of the receptor types that HIV attaches to in order to gain entry into the T-cell. Enhanced CCR5 receptor expression or a lower number of CCL31 protein gene copies (which are proteins that block CCR5 receptors) are possible factors that may contribute to enhanced HIV-1 susceptibility among people of African descent.1,2

The thought of genetics factoring into responses to medication and HIV morbidity and mortality rates is also taking shape. A recent ACTG study, A5095 & A5097s, found that a greater percent of African Americans than Whites have changes in their cytochrome P450 system (the enzymes which aid in liver metabolism of medications), called polymorphisms CYP2B6 and CYP3A4. These polymorphisms lead to slower clearance of ARVs in the liver (in this case, Sustiva), increased blood levels and body exposure to Sustiva, and increased side effects among African Americans. The authors concluded that these differences “may” help explain the HIV racial disparity in treatment outcomes seen among African Americans. While the study found no direct relationship between genetic subtypes and discontinuation rates or adverse events among study participants, the findings do suggest that these decreased clearance rates of Sustiva among African Americans may influence adherence patterns and ultimately, resistance profiles and outcomes.

The results from the Sustiva study may not necessarily surprise anyone living with HIV or who has been doing clinical work with HIV for years. Darkening skin and nail discoloration among African Americans with medications such as AZT, Bactrim, and
Americans is compelling. African Americans with HIV/AIDS are what's environment got to do with it? (NRTIs) such as Zerit or Epivir occurs more commonly than with Data Systems (USRDS) reported that 94% of the 825 HIV-positive developing steam, information supporting the role of social infl uences on the poor HIV morbidity and mortality rates of African Americans, though this may have been related to high initial prescribing doses that increased the risk of serious side effects. Genetic explanations for these disparities have been hinted at, but not directly implicated in factoring into adherence patterns, discontinuation of HAART and increased morbidity and mortality rates among HIV-positive African Americans.

An example of where genetics may help explain poor HIV-related outcomes among African Americans is HIV-associated nephropathy (HIVAN, HIV-related kidney disease). In a review of HIVAN among African Americans, the United States Renal Data Systems (USRDS) reported that 94% of the 825 HIV-positive patients with HIVAN were African American. HIVAN is caused by direct toxicity to kidney cells by HIV-1 accessory proteins, but it is unknown what specific genetic basis may determine this increased susceptibility among African Americans. Studies have also noted decreased rates of HIV-related and ARV-related lipodystrophy, but increased rates of glucose intolerance, diabetes and coronary artery disease among African Americans when compared to HIV-positive people of other races/ethnicities. Some of these differences may not be associated with HIV-specific genetic differences between people of African and European descent, but may in fact represent existing genetic differences in prevalence of high blood pressure, kidney failure, heart disease and diabetes, which might be magnified by co-infection with HIV or side effects from ARVs. Regardless of whether these potential genetic differences are specific to HIV or not, their potential influence on medication clearance, ARV side effects and adherence, and ultimately, the health outcomes of HIV-positive African Americans warrants further exploration.

What's environment got to do with it?

While the genetic argument for adverse health outcomes is developing steam, information supporting the role of social infl uences on the poor HIV morbidity and mortality rates of African Americans is compelling. African Americans with HIV/AIDS are often diagnosed at more advanced stages of HIV, and utilize less outpatient and more inpatient care than their White counterparts, even when controlling for socioeconomic status and insurance. This is to be expected, as an expectation on emergency medical treatment utilization instead of primary care services has long been a staple of healthcare access patterns in the Black community. However, when you consider studies demonstrating that heavy reliance on inpatient and ER facilities lead to worse HIV outcomes, and increased outpatient HIV support leads to improved medication adherence, clinic retention rates and lower hospital admission rates, one can see where this mode of accessing health care services is like shooting ourselves in the proverbial foot. 

Access

So what are the reasons for the patterns of healthcare access and utilization that may be impacting the morbidity and mortality rates among HIV-positive African Americans? At first glance, many would cite the high rates of poverty, lack of insurance, poor access and inadequate transportation as the main culprits of this public health dilemma. Moreover, policy barriers such as Medicaid requirements for legal immigration status and residency, limits on Medicaid eligibility based on disability requirements, and state-imposed income and benefit limits on ADAP also represent larger structural forces at work. While these factors are surely the major external “barriers” to improved HIV care for African Americans, would the HIV outcome disparity among African Americans be resolved if everyone had money, insurance, a car, and access to a healthcare facility at every corner? Maybe, maybe not. Addressing these broader structural factors is definitely a start, but there are also interpersonal, institutional and individual behavioral and cultural factors driving this racial HIV outcome disparity.

Black doctors

While the overall prevalence of HAART use has increased among HIV-positive individuals since the mid-1990s, African Americans and those with an injection drug use risk factor are less likely to receive HAART. While these findings can be partially explained by problems with insurance and access, studies have demonstrated that the interpersonal provider-patient interaction has influence on this dynamic as well. Physician perceptions of African Americans as less educated, less intelligent and less pleasant influence their expectations of these patients to engage in risk behavior and follow advice. Specifically, one study found that physicians’ predictions that Black men are less likely to adhere to HAART influenced their treatment decisions. However, another study found that HIV-positive Black men’s perceptions of physician competence and support may influence their adherence to protease inhibitors. These findings underscore the fact that statistics of low HAART use among African Americans may also be influenced if patient and medical provider are not of the same race, individual provider or patient bias, and lack of cultural competency and effective communication between both parties.

Stigma

Institutional factors within clinical settings can also potentially affect HAART adherence among African Americans. In focus groups conducted with Black MSM in New York a few years ago, participants were asked to detail their experiences with medical institutions and providers. In addition to stories of overt racial and sexual discrimination experienced by these men in medical facilities, they also told of specific institutional barriers to healthcare. The social stigma associated with going to a certain clinic known for HIV care, long waiting times for providers, problems with patient confidentiality and the impersonal approach of healthcare staff were all factors influencing how often the men in this study accessed healthcare services, the level of communication they had with providers, and their adherence to medical advice.
These clinic variables, both interpersonal and systematic, create an environment that can potentially affect the manner in which HIV-positive individuals decide on how to communicate with healthcare providers and access services. This, in turn, may have a direct impact on adherence to medications, development of resistance, and rapid progression of disease.

**Beliefs**

Medical and public health officials have also speculated about specific cultural and individual behavioral factors that may influence healthcare utilization, adherence patterns and other variables influencing HIV morbidity and mortality among African Americans. These factors include, but are not limited to: religiosity, beliefs regarding complementary and alternative medicine practices, mental health status and substance abuse. Perhaps the most widely discussed variable that has not yet been adequately measured involves the pervasive distrust of medical and public health messages and personnel, combined with widespread support of HIV conspiracy theories. These factors have been put in context in medical literature, and a recent random telephone survey with 500 African Americans found that stronger Black genocide conspiracy beliefs were significantly associated with negative contraceptive beliefs. Believing that contraception methods such as condoms and birth control are social genocide provide a strong counter-argument against current HIV public health messages emphasizing safer sex.

**Conspiracy Theory**

I often field questions from my patients regarding how effective ARVs are against HIV, whether HIV is truly the causative agent of AIDS, and if I think the pharmaceutical companies are holding out the cure to HIV to get more Black people dependent on their medications. While some medical providers would scoff at these questions, they are legitimate questions founded in historical context. Given the United States’ infamous history of medical experimentation on Black people, ranging from heat tolerance testing of slaves in the 1800s to the Tuskegee experiments from 1940 to 1972; it shouldn’t be difficult for others to appreciate the current climate of distrust of medical institutions among African Americans today. In fact, while recently doing a radio show on HIV and the “down low” on a local Atlanta radio station, the majority of Black men who called in had questions and concerns regarding the truth of HIV being the causative agent of AIDS, not about so-called “down low” men. Survey instruments measuring levels of distrust and support of conspiracy theories and their relationship with unprotected sex rates among African Americans are sorely needed. Moreover, disbelief in HIV as the virus that causes AIDS can influence healthcare utilization practices, medication adherence, and overall open communication and discussion with medical practitioners. These factors, unfortunately, may also collectively contribute to the current adverse health outcomes for African Americans living with HIV/AIDS.

These social and environmental factors I have described are undoubtedly present in the equation leading to poor health outcomes among HIV-positive African Americans, yet they present a difficult challenge when measuring direct associations with health outcomes due to their subjective nature. How do you measure distrust or how one experiences discrimination? It’s as difficult as mapping a gene nowadays. Nonetheless, these forces are vital to our consideration of the complex overlap of variables influencing these poor outcomes.

**Genetics and Environment: Not mutually exclusive?**

**Hypertension**

In a study examining the prevalence of hypertension among seven populations of West African origin, researchers found a linear increase in prevalence among Black people living in West Africa (16%), the Caribbean (26%) and the United States (36%). They argued that by standardizing blood pressure measuring in geographic locations that traced the path of the African Diaspora, the increase in mean blood pressure going from West Africa to the United States suggested that high blood pressure among African Americans was a reflection of social conditions rather than due to specific racial genetic traits. In other words, Black folk developed this tendency to have high blood pressure as a direct result of forced and traumatic passage and acculturation to the United States. Since 90% of hypertension is said to be “essential,” or genetically inherited, it is plausible to speculate that over generations, Black people living in the United States and exposed to adverse social conditions that contribute to high blood pressure (raceism, stress, poor diet, lack of exercise, obesity) developed over time a genetic “predisposition” that reflects chronic exposure to these conditions.

**Circumcision**

Similarly, the role of circumcision in the susceptibility to HIV provides an example of possible biologic/genetic traits and environmental forces interacting to drive the epidemic among African Americans. A study by Australian researchers examined biologic traits of the foreskins from 30 men who had recently undergone adult circumcision or were recently deceased. They found that the inner aspect of the foreskin had less keratin than other areas of the penis, but just as many Langerhans cells that express CD4 and CCR5 receptors to which HIV can attach. HIV binds to these receptors and the Langerhans cells migrate to regional lymph nodes, transporting HIV to resident T-cells. The authors concluded that circumcision may provide a protective effect against HIV as it removes the main site for HIV entry into the penis.

Additionally, results from a recent prospective study following over 3,000 men outside of Johannesburg, South Africa found that over 1½ years, men who were circumcised were 65% less likely to contract HIV than those who were not circumcised. If Black men are less likely than White men to be circumcised in the United States, it is possible that this culturally-based preference may aid in the perpetuation of HIV among the Black community. To date there are no comparative studies between the genetic makeup of Black and White men with regards to biologic keratinization of foreskin or relative presence of Langerhans cells that influence HIV susceptibility, but these recent findings on circumcision dem
onstrate a potential intersection of genetics, biologic and cultural factors influencing disease susceptibility that warrants further exploration.

**Putting it all together**

Given the results of the studies on hypertension and circumcision with primary HIV susceptibility, it is apparent that the answers to the disproportionately adverse HIV morbidity and mortality rates among African Americans likely involve both genetic and environmental explanations. And these seemingly separate and distinct entities are likely in a constant state of influencing and informing one another. We know that traumatic events among HIV-positive gay men and attributing negative experiences to self can predict faster CD4 decline and progression of disease.\(^2\text{2,23}\) The broader environmental and institutional social conditions (racism, poverty, trauma) impacting African Americans can influence individual behavioral choices regarding healthcare utilization and adherence and health behaviors that drive other medical conditions such as hypertension and diabetes, but may also directly impact the immune system's status and subsequent HIV disease progression. Whether this constellation of forces directly impacts the expression of genes that influence responses to particular HAART medications, such as cytochrome P450 polymorphisms that influence the clearance of Sustiva, is not known. But what research has demonstrated thus far suggests how environmental forces and genetics influence one another and is a subject that is worth further investigation when it comes to the health outcomes of HIV-positive African Americans.

**Confronting the HIV Racial Disparity—Individual Suggestions**

There are many challenges that lie ahead in addressing the reasons behind the adverse health outcomes of HIV-positive African Americans. It is apparent that genetic factors may be influencing issues surrounding medication clearance, susceptibility and side effects to certain AIDS-related complications (such as HIVAN). Yet it is also clear that social conditions and stressors may be driving individual health behavioral choices and rapidity of HIV disease progression. Research on the intersection of genetic and social determinants of racial HIV disparities should continually be at the forefront of the academic agenda. Racism, sexual prejudice and HIV-related stigma and discrimination are not going to disappear overnight, and at least until 2008 federal HIV policies will be unsatisfactory. And cultural competency programs in medical training facilities are more common now, but medical culture still has a long way to go with regards to sensitivity and effectiveness issues of those living with HIV. So, what can I suggest to my brothers and sisters living with HIV in this maze of issues in the meantime? Here are a few ideas:

- **Read, read, read!** The more you know, the more informed you will be. Whether you read *Positively Aware* for your biomedical treatment/medication updates or consult with a local herbal specialist, keep up to date with what’s current in how medications and supplements may be interacting with your body so that you can understand potential benefits and side effects.
- **Be persistent with your provider**—When you notice bodily changes that may be medication-related, no matter how insignificant you may think they are, mention them to your provider. If they can’t give you an answer, ask them to refer you to someone who can, or get a second opinion on your own. This way you’ll know soon if you need to change medications or if a side effect is something you can tolerate.
- **Be honest with your word**—Honesty with yourself as far as what your actual needs are from a clinic, clinic staff and your provider, and honesty with the staff and providers regarding who you are as an individual so they can work with you to provide an appropriate and acceptable treatment plan. Lying to yourself or keeping secrets from providers leaves you in a position to blame no one but yourself if anything goes wrong.
- **Embrace healthy skepticism**—Yes, some pharmaceutical companies can be very money-hungry and probably wouldn’t benefit from a cure for HIV. Yes, medical providers can be impersonal, insensitive and flat-out racist at times. Yes, God has a plan for all of us and we can’t control everything. And yes, there are alternative theories to HIV origins and treatment that you could consider. But don’t let these realities prevent you from making informed choices about what is best for your mental, spiritual and physical health.
- **Don’t let stress get the best of you**—regardless of whether you are on ARVs or not, your reaction to environmental stressors is key to your living healthy with HIV. Pay attention to your body in times of personal and professional stress, and seek help when you need it. Whether you take a private moment to yourself, or consult a trained psychological counselor, your local pastor, or a friend or family member—reach out when you need to. You and your body will be glad you did.

**Conclusion**

Whether its genetics or environment, the responsibility falls on all of us as people of African descent to love ourselves enough in our approach to HIV (and life in general) to modify the social conditions that we can change, and adapt to the genetic realities we cannot. **Loving ourselves**—now there’s a social condition worth passing on to our future generations until it becomes a genetic trait.

David Malebranche, MD, MPH, is an Assistant Professor at Emory University’s Division of Medicine in Atlanta, Georgia. He sees HIV-positive patients at Grady’s Ponce de Leon Clinic and conducts research on the social and behavioral HIV risk factors among Black men who have sex with men.


