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Disparities within the Disparity – Determining HIV Risk Factors among Latino Gay and Bisexual Men Attending a Community-Based Clinic in Los Angeles, California

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Running Head

HIV Risk Factors among Latino MSM

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ABSTRACT

Background: Latino gay, bisexual, and other men who have sex with men (MSM) in the United States have a 50% greater incidence of HIV when compared to White MSM. Previous studies have analyzed factors contributing to condomless anal intercourse (CAI) among Latino MSM, but few studies have followed cohorts of HIV-negative Latino MSM to determine circumstances for HIV infection. Informed by Syndemics Theory, we examine behavioral, biological, and contextual factors associated with HIV infection for Latino MSM.

Methods: Risk assessment and HIV testing data were analyzed for all initially HIV-negative, Latino MSM (n = 3,111) visiting a community-based clinic in Los Angeles, California from January 2009 to June 2014. Survival analyses were used to determine characteristics of Latino MSM who became HIV-positive during the study timeframe.

Results: Similar to previous studies of MSM, self-reported history of Chlamydia, Gonorrhea and/or Syphilis (aHR: 1.97; CI: 1.28-3.04), receptive CAI (aHR: 1.7; CI: 1.16-2.49), and methamphetamine use (aHR: 1.99; CI: 1.15-3.43) predicted HIV infection. In addition, originating from Central America (aHR: 2.31; CI: 1.41-3.79), Latino ethnicity of the last sex partner (aHR: 1.67; CI: 1.16-2.39), and experiencing intimate partner violence (IPV) (aHR: 1.73; CI: 1.13-2.64) were also associated with HIV infection among Latino MSM.

Conclusions: This is the first study to show independent associations between IPV and HIV infection among Latino MSM. This study shows that psychosocial conditions such as IPV fuel HIV incidence among Latino MSM, and psychosocial interventions should be considered to reduce HIV disparities among Latino MSM.

KEY WORDS

INTRODUCTION

Latinos in the United States have a rate of new HIV diagnoses that is nearly three times the rate experienced by Whites.¹ Nationally, Latino individuals are 16% of the U.S. population but 24% of all newly diagnosed HIV infections among gay, bisexual, and other men who have sex with men (MSM).²⁻³ Despite this disparity, few studies have specifically looked at the factors associated with HIV infection among Latino MSM.

The studies that have analyzed sexual risk of Latino MSM have mainly looked at predictors of condomless anal intercourse (CAI). One study found that substance use was a significant predictor of CAI among Latino MSM, but another found no differences in CAI between methamphetamine users and non-users.⁴⁻⁵ Warren et al. found that older age at sexual debut and higher ethnic identification, using the Multi-Ethnic Identity Measure (MEIM) scale, were significantly related to CAI among a sample of young MSM.⁶ Studies by Mizuno et al. found that drug use, binge-drinking, 15 years or longer spent in the US (for foreign-born individuals), and exposure to discrimination were associated with a greater likelihood to report CAI with a casual partner.⁷⁻⁸ Joseph et al. found that Latino MSM with older partners were more likely to have CAI and unrecognized HIV infection.⁹ In a small study among 100 Hispanic MSM in South Florida, De Santis et al. reported that mental health variables (e.g., depression, self-esteem) were significantly related to CAI but that body image and alcohol abuse were not significantly associated with CAI.¹⁰ Lastly, a study by Halkitis and Figueroa found that being born outside the U.S. and a lower SES were associated with CAI.¹¹ Many other studies that have

analyzed the risk for CAI among Latino MSM have been confined to foreign-born Latinos or Latinos who are already HIV-positive.¹²⁻¹⁷

A few studies have looked at predictors of HIV seroconversion in both foreign and native-born, HIV-negative Latino MSM.¹⁸⁻¹⁹ These studies found that use of inhaled nitrates and serodiscordant CAI were significantly associated with seroconversion. While sexual behavior and drug use are important correlates of HIV contraction, incorporating psychosocial predictors may be critical to fully understanding HIV risk among Latino MSM.

Syndemics Theory proposes that low-income individuals and sexual and racial minority communities are marginalized in the United States. This marginalization leads to poor mental health resulting in elevated substance use to cope with the poor mental health outcomes (subsequently referred to as psychosocial outcomes). These overlapping social conditions, health states, and behaviors reinforce risky sexual behavior, such as CAI, which can in turn, lead to a greater incidence of HIV as well as numerous other health problems that burden sexual minority MSM.²⁰⁻²² Syndemics Theory has been successfully applied to numerous subgroups including MSM in the United States,²³ young MSM,²⁴⁻²⁶ African-American MSM,²⁷ MSM in China,²⁸ and aging HIV-positive MSM.²⁹

Few papers to date have discussed Syndemics Theory in the context of Latino MSM in the United States.³⁰⁻³¹ González-Guarda et al. originally proposed a Syndemics framework specific to Latino MSM. This tailored Syndemics model is comprised of substance abuse, intimate partner violence, mental health, and HIV infection.³⁰ Wilson et al. argue that in addition to these factors, Latino MSM also face elevated levels of trauma, incarceration, and poverty and therefore these factors should also be incorporated into the model.³¹ However, no studies to date

have applied a Syndemic framework to determine predictors for HIV seroconversion among Latino MSM.

Using Syndemics Theory, this study examines how psychosocial stress combines with other factors to predict HIV seroconversion within a cohort of Latino MSM who are HIV negative at baseline, controlling for overlapping health states (e.g., CAI and substance use) that fuel HIV incidence. These findings will better inform HIV risk behaviors specific in this subgroup of MSM and subsequently allow for more effective HIV prevention interventions.

METHODS

Data Collection

The Los Angeles LGBT Center (LA LGBT Center) is a federally-qualified health center headquartered in the Hollywood neighborhood of Los Angeles, California. The main clinic offers numerous services including primary health care, HIV specialty care, and testing for HIV and sexually transmitted infections (STIs). A satellite site located in the City of West Hollywood, California also provides HIV/STI testing, treatment, and provision of pre-exposure prophylaxis (PrEP) and post-exposure prophylaxis (nPEP).

Individuals who initiate HIV/STI testing services at the Los Angeles LGBT Center are first administered a standard behavioral risk assessment via a face-to-face interview with an HIV/STI testing counselor. This behavioral risk assessment is administered to all clients receiving HIV/STI testing services and includes questions on demographics, drug use behavior, STI history, intimate partner violence, and sexual risk behaviors during the last two sexual encounters.

Following this behavioral risk assessment, clients who do not opt-out of STI testing are instructed to self-collect urine and rectal samples to test for *Neisseria gonorrhoeae* (NG) and

Chlamydia trachomatis (CT). A lab assistant then collects a throat swab to test for pharyngeal NG. Lastly, the lab assistant draws a blood sample to test for HIV via OraQuick ADVANCE® Rapid HIV-1/2 Antibody Test (OraSure Technologies, Inc., Bethlehem, PA) and syphilis via rapid plasma reagin testing. Sufficient blood is saved for HIV nucleic acid amplification testing (NAAT) to test for acute HIV infection. Individuals who test positive for STIs are appropriately followed up for treatment by nursing staff. Individuals who test positive for HIV are referred to linkage to care specialists who guide newly diagnosed individuals through the process of initiating HIV care. Following the initial intake visit, sexually high-risk clients are encouraged to return for HIV testing every three to six months per the CDC testing guidelines.³²⁻³³

The present study analyzes data from all clients who received HIV testing services from the beginning of electronic medical record data capture in 2009 at the LA LGBT Center to June 2014. Individuals were included in the analysis if they 1) identified their birth sex and current gender identity as male; 2) identified as gay, bisexual, or reported sex with another man in the year prior to their initial visit; 3) identified as Latino or Hispanic, regardless of concurrent identification with other races/ethnicities; 4) tested HIV-negative at the initial visit; 5) tested for HIV on at least one subsequent HIV testing visit during the analysis period; and 6) had a determinate HIV result at the last visit. A total of 3,111 Latino MSM met these inclusion criteria for analysis.

We use the term “Latino” throughout this study because the majority of the sample is of Latin American descent (Mexico, Central America, and South America) and born in the United States or, if born in another country, from Latin America. However, the Latino term excludes people originating from Spain (referred to as “Hispanic”). There are 7 individuals who originated

from Spain and 7 individuals that are from other countries outside of Latin America. These 14 MSM are included in this analysis, but the term Latino is used to refer to the entire sample.

Measurement of Syndemics Theory Constructs

We use Syndemics Theory to guide analyses with four major constructs: biological, sexual behavioral, substance use, and psychosocial. These variables were selected based on risk assessment variables and biomedical lab tests available in the electronic medical record. The biological construct was measured by STI infections at baseline and a self-reported history of STIs. Sexual behavior was measured by reports of condom use during both insertive and receptive anal sex, meeting partners online or in person, number of sexual partners, and the age and ethnicity of the last sexual partner. Substance use was measured by reported use of ecstasy, methamphetamine, inhaled nitrates, erectile dysfunction drugs, cocaine, and alcohol use in the past year. The psychosocial construct is measured by reports of ever experiencing intimate partner violence (IPV), and IPV was the only psychosocial measure available for analysis. In addition to the Syndemic factors outlined above, this analysis also controlled for demographic characteristics which included sexual orientation; age group; preferred language; birth in the United States, Mexico or Central America as well as number of years in the United States.

Statistical Analysis

First, we plotted Kaplan Meier curves for each predictor variable and assessed the correlations between predictors to identify variables that might be highly correlated with each other. Bivariate Cox proportional hazards models were analyzed for biological, sexual behavioral, substance use, psychosocial, and demographic constructs outlined. For significant variables that were related (for example, self-reported history of gonorrhea and testing positive

for gonorrhea), the variable that was more representative of overall sexual behavior was included in the multivariate model.

The proportional hazards assumption was checked and met for all continuous variables in the multivariate model. All analyses were performed using SAS Version 9.4. This study was approved by the University of California, Los Angeles South General Institutional Review Board #5 (IRB00004474; Project No. 14-000982).

RESULTS

Demographic Predictors

There were 167 HIV infections among the 3,111 Latino MSM studied. Latino MSM contributed 4,616.2 person-years to the analysis for an HIV positivity rate of approximately 3.62 infections per 100 person-years.

There were no statistically significant differences at baseline between Latino MSM who eventually tested HIV-positive versus Latino MSM who remained HIV-negative by sexual orientation ($p = 0.44$), age group ($p = 0.11$), preferred language ($p = 0.55$), or length of time in the United States ($p = 0.6$) (**Table 1**). While there were no significant differences in HIV incidence between most groups by country of origin, Central American-born Latino MSM had a higher rate of seroconversion (10.6%) than Latino MSM born in the United States (4.8%).

Biological Predictors

Latino MSM who became HIV-positive were more likely to report a history of gonorrhea infection ($p = 0.001$) and syphilis infection ($p = 0.01$) within the past year, but there were no differences between groups in reported history of chlamydia ($p = 0.07$) or Herpes Simplex Type II ($p = 0.6$) (**Table 2**). Over 90% of the sample of Latino MSM also underwent STI testing in

addition to reporting their history of STIs. Individuals testing positive for chlamydia ($p = 0.02$), gonorrhea ($p = 0.002$), syphilis ($p = 0.0002$), or any of these STIs ($p < 0.0001$) were more likely to seroconvert over the follow-up period than individuals who tested negative for these STIs at baseline.

Sexual Behavior Predictors

Individuals who reported no condom use during last receptive anal sex were more likely to seroconvert when compared to individuals who reported condom use at last receptive anal sex ($p = 0.007$) (**Table 3**). Individuals who reported that their last sexual partner was the same ethnicity had a higher incidence of HIV infection when compared to individuals who reported a different ethnicity sex partner ($p = 0.0001$). However, there were no differences between groups with respect to condom use during last insertive anal sex ($p = 0.72$), venue for meeting sexual partners ($p = 0.26$), or age difference of the last sex partners ($p = 0.16$).

Psychosocial Predictor

In bivariate analysis, Latinos who reported intimate partner violence (IPV) had greater hazard of seroconverting. Among those who answered the IPV question, 5% of individuals who remained HIV-negative reported ever experiencing IPV whereas 9% of individuals who became HIV-positive reported ever experiencing IPV ($p = 0.001$) (**Table 3**).

Substance Use Predictors

Latino MSM who reported methamphetamine use had a significantly higher HIV seroconversion rate than Latino MSM who did not report methamphetamine use ($p = 0.0005$) (**Table 4**). However, there were no differences between HIV-negative and HIV-positive individuals by ecstasy use ($p = 0.22$), use of inhaled nitrates ($p = 0.41$), use of erectile

dysfunction drugs ($p = 0.27$), cocaine use ($p = 0.76$), alcohol use before sex ($p = 0.29$), or the number of drugs reported ($p = 0.38$).

Multivariate Analysis

Following bivariate tests, variables were selected for a multivariate analysis to appropriately measure the constructs in Syndemics Theory. Multivariate analyses showed significant associations between variables in each syndemic construct and HIV infection. Central American MSM had a 2.31-fold higher hazard of seroconversion (95% CI: 1.41-3.79) when compared to Latino MSM born in the United States ($p = 0.0009$), but there were no significant differences between US-born Latinos and individuals from Mexico ($p = 0.25$) or South America ($p = 0.89$) (Table 5). Individuals with a self-reported history of Chlamydia, Gonorrhea and/or Syphilis in the past year had an increased hazard of 1.97 (95% CI: 1.28-3.04) for HIV infection when compared to individuals never diagnosed ($p = 0.002$).

Individuals who reported no condom use as a receptive anal sex partner during their last sexual encounter had an increased hazard of 1.70 (95% CI: 1.16-2.49) for HIV infection when compared to individuals who did not report receptive anal sex at their last sexual encounter ($p = 0.007$). However, there was no significant difference in HIV between individuals who reported using a condom at last receptive anal sex and individuals who did not report engaging in receptive anal sex ($p = 0.09$). Each additional sexual partner in the last three months increased the hazard of seroconversion by 1.01 (95% CI: 1.00-1.03) ($p = 0.03$). Latino MSM who reported that their last sex partner was also Latino had an increased hazard of 1.67 (95% CI: 1.16-2.39) when compared to individuals who had sex with partners of a different ethnicity ($p = 0.006$).

Latino MSM who reported methamphetamine use in the past year had a 1.99 (95% CI: 1.15-3.43) increased hazard of seroconversion when compared to individuals who did not report

methamphetamine use ($p = 0.01$). However, there were no significant associations between ecstasy use ($p = 0.67$) or nitrates use ($p = 0.47$) and HIV. Lastly, Latino MSM with a self-reported history of intimate partner violence had an increased risk of seroconversion compared to individuals without a history of IPV (HR: 1.73; 95% CI: 1.13-2.64) ($p = 0.01$).

DISCUSSION

This analysis used data from a sample of HIV-negative, Latino MSM who attended a community-based clinic in Los Angeles, California from January 2009 to June 2014 to determine what baseline characteristics and behaviors were significantly different between Latino MSM who eventually tested HIV-positive versus Latino MSM who remained HIV-negative. In multivariate analyses, numerous variables were significantly associated with HIV seroconversion: Central American birthplace (when compared to US-born); self-reported history of Chlamydia, Gonorrhea, and/or Syphilis in the past year; lack of condom use during last receptive anal sex; same ethnicity of the last sexual partner; number of sexual partners in the last three months; IPV, and methamphetamine use in the past year. While previous HIV prediction models have reported history of STIs, number of sexual partners, and methamphetamine use as factors leading to HIV infection among MSM in general,³⁴⁻³⁶ our analysis also found a significant relationship between HIV infection and Central American birthplace, IPV, and same ethnicity of the last sex partner.

Although Central American birthplace was found to be a significant predictor of HIV incidence when compared to US-born Latino MSM, the reasons for this finding are not directly clear. Central American birthplace may serve as a possible proxy for health literacy, income, socialization patterns, acculturation, length of time in the United States, or a combination of these factors. While this analysis is specific to Latino MSM, this finding shows that there is

substantial heterogeneity in HIV incidence among Latino MSM and further parsing may be necessary for future analyses.

We also found that having sex with other Latino MSM may be important in HIV contraction among Latino MSM. Previous studies among Black MSM found that same race sexual partnerships were associated with higher rates of HIV incidence when compared to different race sexual partnerships.³⁷⁻³⁸ The rationale for this finding is that the sexual networks of Black MSM are much smaller and thus the chances of HIV transmission to individuals who remain in a small sexual network are much higher when compared to a MSM who are part of a larger sexual network. Given this study's similar finding among Latino MSM, this factor may be important to measure for subsequent studies of Latino and other racial/ethnic minority MSM.

IPV rates have been reported as high as 25% for gay couples in the United States,³⁹ and a meta-analysis showed that this rate is similar or higher than rates documented for women.⁴⁰ IPV has also been associated with elevated levels of substance use,⁴¹⁻⁴⁴ depression,⁴¹ a greater number of sexual partners,⁴³ and CAI^{41,44-46} among MSM. While the relationship between IPV and HIV for Latino MSM was originally proposed by González-Guarda et al.,³⁰ this is the first study to quantitatively show an association between IPV and HIV seroconversion among Latino MSM. This finding is further validation of both the original Syndemics theoretical framework as well as the González-Guarda modified framework for Latino MSM where IPV was hypothesized to be a part of the syndemic. These findings should reinforce the importance of psychosocial factors, particularly IPV, in future HIV incidence and serve as a renewed call to address psychosocial disparities in HIV prevention.

This study is subject to a number of important limitations. First, there was a substantial amount of missing data for duration of residence in the United States for foreign-born Latino

MSM (n = 817). This question was a write-in response on the client registration form, and many foreign-born individuals elected to not complete this section. Despite this limitation, the key remaining variables utilized in this analysis did not have a proportion of missing values above 10%. Second, although we collected data on country of origin and number of years in the United States, we did not have other measures pertaining to acculturation that could have more accurately described differences between foreign-born and native-born Latino MSM. Third, this study did not have psychosocial variables beyond IPV that have also been associated with HIV risk such as childhood sexual abuse,⁴⁷⁻⁴⁹ internalized homophobia,^{39,50} depression,¹⁰ self-esteem,^{10,30} machismo,^{44,51-52} or sexual compulsivity.⁵³⁻⁵⁵ Future studies of the Latino MSM communities in the United States that utilize Syndemics Theory could further explore how other acculturation and psychosocial variables may be related to HIV contraction within this MSM subgroup. Fourth, although we had data for the ethnicity and age of the last sexual partner, more data are needed to decipher the link between HIV incidence and sexual networks. Lastly, there are likely variables not previously mentioned that impact HIV incidence specifically among Hispanic MSM. As suggested by Wilson et al., future studies on this population should employ ethnographic research methods in order to more fully understand yet unknown factors that lead to HIV infection among this population.³¹ Given the documented disparities of HIV in among Latino MSM, it is incumbent upon HIV researchers to perform additional analyses among both foreign-born and native-born Latino MSM in other areas of the United States to further characterize the determinants of HIV infection among Latino MSM.

In summary, our study showed that Syndemics Theory is appropriate for examining and understanding HIV risk in a sample of Latino MSM visiting a large community-based organization in Los Angeles, California. In addition to the well-established predictors of HIV,

including history of STIs and condom use during receptive anal sex, we also found that Central American birthplace, ever experiencing IPV, and same ethnicity of the last sexual partner were significantly related to HIV contraction at follow-up. This study serves as further evidence for the validity of the Syndemics Framework. Furthermore, it shows the importance in intervening on psychosocial conditions, in addition to biological and behavioral outcomes, as a tool to maximize our HIV prevention strategies.

The risk factors for HIV among homosexual men are not homogeneous. Open acknowledgment and study of cultural, racial, and ethnic differences for HIV infection will lead to more accurate predictions of the circumstances for HIV among Latino MSM. Syndemics Theory shows that additional investigations into psychosocial predictors of HIV incidence among Latino MSM will allow us to develop more targeted prevention efforts for this population. While many disparities between MSM groups have been explored, further work is needed to advance understanding of both psychosocial disparities and disparities by ethnic group among MSM. Furthermore, our prevention strategy must incorporate these factors to craft a comprehensive strategy for a world free of HIV.

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Table 1 - Bivariate Survival Analyses of Demographics at Baseline by Final HIV Serostatus of Latinos (n = 3,111), January 2009 - June 2014.

| | HIV-negatives (n = 2,944) | | HIV-positives (n = 167) | | |
|----------------------------------|------------------------------|--------|----------------------------|--------|------------------|
| | n | % | n | % | |
| Sexual Orientation | | | | | <i>p</i> = 0.44 |
| Gay/Homosexual | 2,527 | 94.6% | 144 | 5.4% | |
| Bisexual | 356 | 94.2% | 22 | 5.8% | |
| Other | 61 | 98.4% | 1 | 1.6% | |
| Age Group | | | | | <i>p</i> = 0.11 |
| <25 | 940 | 93.6% | 64 | 6.4% | |
| 25-29 | 797 | 94.4% | 47 | 5.6% | |
| 30-39 | 812 | 95.0% | 43 | 5.0% | |
| 40+ | 395 | 96.8% | 13 | 3.2% | |
| Preferred Language | | | | | <i>p</i> = 0.55 |
| English | 2,326 | 94.7% | 131 | 5.3% | |
| Spanish | 434 | 93.3% | 31 | 6.7% | |
| Other | 2 | 100.0% | 0 | 0.0% | |
| Unknown | 182 | 97.3% | 5 | 2.7% | |
| Country of Origin | | | | | <i>p</i> = 0.004 |
| United States / US Territory | 1,893 | 95.2% | 95 | 4.8% | |
| Mexico | 534 | 93.4% | 38 | 6.6% | |
| Central America | 168 | 89.4% | 20 | 10.6% | |
| South America | 114 | 96.6% | 4 | 3.4% | |
| Other | 25 | 100.0% | 0 | 0.0% | |
| Unknown | 210 | 95.5% | 10 | 4.5% | |
| Length of Time in US | | | | | <i>p</i> = 0.6 |
| Less than 5 Years | 32 | 97.0% | 1 | 3.0% | |
| Between 5 and 9 Years | 43 | 95.6% | 2 | 4.4% | |
| Between 10 and 20 Years | 116 | 91.3% | 11 | 8.7% | |
| 21 Years or More | 95 | 94.1% | 6 | 5.9% | |
| Not Applicable | 1,893 | 95.2% | 95 | 4.8% | |
| Unknown | 765 | 93.6% | 52 | 6.4% | |
| Length of Time in US (Collapsed) | | | | | <i>p</i> = 0.23 |
| Less than 10 Years | 75 | 96.2% | 3 | 3.8% | |
| 10 Years or More | 211 | 92.5% | 17 | 7.5% | |
| Not Applicable | 1,893 | 95.2% | 95 | 4.8% | |
| Unknown | 765 | 93.6% | 52 | 6.4% | |
| Total | 2,944 | 94.6% | 167 | 100.0% | |

Table 2 - Bivariate Survival Analyses of Biological Risk Behaviors at Baseline by Final HIV Serostatus of Latinos (n = 3,111), January 2009 - June 2014.

| | HIV-negatives (n = 2,944) | | HIV-positives (n = 167) | | |
|---|------------------------------|--------------|----------------------------|-------------|-------------------|
| | n | % | n | % | |
| History of Chlamydia | | | | | <i>p</i> = 0.07 |
| Never Diagnosed | 2,425 | 94.9% | 130 | 5.1% | |
| Diagnosed More than One Year Ago | 368 | 94.1% | 23 | 5.9% | |
| Diagnosed in the Past Year | 132 | 90.4% | 14 | 9.6% | |
| Missing | 19 | 100.0% | 0 | 0.0% | |
| History of Gonorrhea | | | | | <i>p</i> = 0.001 |
| Never Diagnosed | 2,306 | 95.1% | 120 | 4.9% | |
| Diagnosed More than One Year Ago | 478 | 94.5% | 28 | 5.5% | |
| Diagnosed in the Past Year | 141 | 88.1% | 19 | 11.9% | |
| Missing | 19 | 100.0% | 0 | 0.0% | |
| History of Syphilis | | | | | <i>p</i> = 0.01 |
| Never Diagnosed | 2,698 | 94.9% | 146 | 5.1% | |
| Diagnosed More than One Year Ago | 133 | 94.3% | 8 | 5.7% | |
| Diagnosed in the Past Year | 78 | 86.7% | 12 | 13.3% | |
| Missing | 35 | 97.2% | 1 | 2.8% | |
| History of Herpes Simplex Type II | | | | | <i>p</i> = 0.6 |
| Never Diagnosed | 2,576 | 94.5% | 150 | 5.5% | |
| Ever Diagnosed | 158 | 93.5% | 11 | 6.5% | |
| Missing | 210 | 97.2% | 6 | 2.8% | |
| History of Chlamydia, Gonorrhea and/or Syphilis | | | | | <i>p</i> = 0.0004 |
| Never Diagnosed | 1,902 | 95.4% | 87 | 4.6% | |
| Diagnosed More than One Year Ago | 715 | 94.4% | 48 | 5.6% | |
| Diagnosed in the Past Year | 300 | 90.4% | 32 | 9.6% | |
| Missing | 27 | 99.2% | 0 | 0.8% | |
| Chlamydia Testing Result | | | | | <i>p</i> = 0.02 |
| Negative | 2,419 | 94.8% | 132 | 5.2% | |
| Positive | 396 | 92.1% | 34 | 7.9% | |
| Missing | 129 | 99.2% | 1 | 0.8% | |
| Gonorrhea Testing Result | | | | | <i>p</i> = 0.002 |
| Negative | 2,366 | 95.0% | 125 | 5.0% | |
| Positive | 455 | 91.7% | 41 | 8.3% | |
| Missing | 123 | 99.2% | 1 | 0.8% | |
| Syphilis Testing Result | | | | | <i>p</i> = 0.0002 |
| Negative | 2,554 | 95.0% | 134 | 5.0% | |
| Positive | 39 | 83.0% | 8 | 17.0% | |
| Missing | 351 | 93.4% | 25 | 6.6% | |
| Tested Positive for any STI | | | | | <i>p</i> < 0.0001 |
| Negative | 1,870 | 95.9% | 80 | 4.1% | |
| Positive | 784 | 91.9% | 69 | 8.1% | |
| Missing | 290 | 94.2% | 18 | 5.8% | |
| Total | 2,944 | 94.6% | 167 | 5.4% | |

Table 3 - Bivariate Survival Analyses of Sexual Behavioral Risks at Baseline by Final HIV Serostatus of Latinos (n = 3,111), January 2009 - June 2014.

| | HIV-negatives (n = 2,944) | | HIV-positives (n = 167) | | |
|--|------------------------------|--------------|----------------------------|---------------|-------------------|
| | n | % | n | % | |
| Had Insertive Anal Sex with Last Sex Partner | | | | | <i>p</i> = 0.72 |
| No | 1,558 | 94.9% | 84 | 5.1% | |
| Yes, with Condom | 657 | 94.5% | 38 | 5.5% | |
| Yes, without Condom | 712 | 94.2% | 44 | 5.8% | |
| Missing | 17 | 94.4% | 1 | 5.6% | |
| Had Receptive Anal Sex with Last Sex Partner | | | | | <i>p</i> = 0.007 |
| No | 1,680 | 95.6% | 78 | 4.4% | |
| Yes, with Condom | 556 | 93.8% | 37 | 6.2% | |
| Yes, without Condom | 700 | 93.1% | 52 | 6.9% | |
| Missing | 8 | 100.0% | 0 | 0.0% | |
| Had Vaginal Sex with Last Sex Partner | | | | | <i>p</i> = 0.38 |
| No | 2,752 | 94.5% | 159 | 5.5% | |
| Yes with a Condom | 21 | 100.0% | 0 | 0.0% | |
| Yes without a Condom | 73 | 97.3% | 2 | 2.7% | |
| Missing | 98 | 94.2% | 6 | 5.8% | |
| Venue for Meeting Sexual Partners | | | | | <i>p</i> = 0.26 |
| In Person | 818 | 94.2% | 50 | 5.8% | |
| Online | 408 | 92.7% | 32 | 7.3% | |
| More than One | 609 | 96.2% | 24 | 3.8% | |
| Missing | 1,109 | 94.8% | 61 | 5.2% | |
| Ethnicity of the Last Sex Partner | | | | | <i>p</i> = 0.0001 |
| Same Ethnicity | 1,522 | 93.1% | 112 | 6.9% | |
| Different Ethnicity | 1,391 | 96.2% | 55 | 3.8% | |
| Missing | 31 | 100.0% | 0 | 0.0% | |
| Age of the Last Sex Partner | | | | | <i>p</i> = 0.16 |
| Within 5 Years of Age | 1,585 | 94.1% | 99 | 5.9% | |
| More than 5 Years Older | 806 | 95.3% | 40 | 4.7% | |
| More than 5 Years Younger | 515 | 95.5% | 24 | 4.5% | |
| Missing | 38 | 90.5% | 4 | 9.5% | |
| Number of Sex Partners in the Past 30 Days | | | | | <i>p</i> = 0.04 |
| Mean | | 2.27 | | 2.65 | |
| Median | | 1 | | 2 | |
| Standard Deviation | | 2.99 | | 3.57 | |
| Number of Sex Partners in the Past 3 Months | | | | | <i>p</i> < 0.0001 |
| Mean | | 4.31 | | 5.84 | |
| Median | | 2 | | 3 | |
| Standard Deviation | | 6.80 | | 9.97 | |
| Intimate Partner Violence | | | | | <i>p</i> = 0.001 |
| Never | 2,604 | 95.0% | 136 | 5.0% | |
| Ever, Past Year, or Past Three Months | 300 | 90.6% | 31 | 9.4% | |
| Missing | 40 | 100.0% | 0 | 0.0% | |
| Total | 2,944 | 94.6% | 167 | 100.0% | |

Table 4 - Bivariate Survival Analyses of Substance Use at Baseline by Final HIV Serostatus of Latinos (n = 3,111), January 2009 - June 2014.

| | HIV-negatives (n = 2,944) | | HIV-positives (n = 167) | |
|--|------------------------------|--------------|----------------------------|---------------|
| | n | % | n | % |
| Used Ecstasy in the Past Year | | | <i>p</i> = 0.22 | |
| No | 2,684 | 94.8% | 147 | 5.2% |
| Yes | 238 | 93.0% | 18 | 7.0% |
| Missing | 22 | 91.7% | 2 | 8.3% |
| Used Methamphetamine in the Past Year | | | <i>p</i> = 0.0005 | |
| No | 2,761 | 94.9% | 147 | 5.1% |
| Yes | 161 | 89.4% | 19 | 10.6% |
| Missing | 22 | 95.7% | 1 | 4.3% |
| Used Inhaled Nitrates in the Past Year | | | <i>p</i> = 0.41 | |
| No | 2,484 | 94.8% | 136 | 5.2% |
| Yes | 436 | 93.8% | 29 | 6.2% |
| Missing | 24 | 92.3% | 2 | 7.7% |
| Used Erectile Dysfunction Drugs in the Past Year | | | <i>p</i> = 0.27 | |
| No | 2,807 | 94.5% | 162 | 5.5% |
| Yes | 113 | 96.6% | 4 | 3.4% |
| Missing | 24 | 96.0% | 1 | 4.0% |
| Used Cocaine in the Past Year | | | <i>p</i> = 0.76 | |
| No | 2,629 | 94.6% | 149 | 5.4% |
| Yes | 290 | 94.5% | 17 | 5.5% |
| Missing | 25 | 96.2% | 1 | 3.8% |
| Alcohol Use (Before Sex) in the Past Year | | | <i>p</i> = 0.29 | |
| No | 1,687 | 94.5% | 99 | 5.5% |
| Yes | 1,239 | 94.8% | 68 | 5.2% |
| Missing | 18 | 100.0% | 0 | 0.0% |
| Drug Count | | | <i>p</i> = 0.38 | |
| 0 | 2,108 | 95.0% | 111 | 5.0% |
| 1 | 518 | 94.4% | 31 | 5.6% |
| 2 | 217 | 92.7% | 17 | 7.3% |
| 3 | 31 | 93.9% | 2 | 6.1% |
| 4 | 27 | 96.4% | 1 | 3.6% |
| 5 | 9 | 81.8% | 2 | 18.2% |
| Missing | 34 | 91.9% | 3 | 8.1% |
| Total | 2,944 | 94.6% | 167 | 100.0% |

Table 5 - Multivariate Survival Analyses of Demographic, Biological, Sexual Behavioral, and Substance Use Measured Constructs at Baseline by Final HIV Serostatus of Latinos (n = 2,653 / 3,111), January 2009 - June 2014.

| Construct | Estimate | SE | p-value | HR (95% CI) |
|---|----------|------|---------|------------------|
| Country of Birth (REF = USA) | | | | <i>p</i> = 0.01 |
| Central America | 0.84 | 0.25 | 0.0009 | 2.31 (1.41-3.79) |
| Mexico | 0.24 | 0.21 | 0.25 | 1.28 (0.84-1.93) |
| South America | -0.07 | 0.52 | 0.89 | 0.93 (0.34-2.57) |
| Age Group (REF = 40+) | | | | <i>p</i> = 0.07 |
| <25 | 0.95 | 0.38 | 0.01 | 2.59 (1.22-5.48) |
| 25-29 | 0.72 | 0.37 | 0.05 | 2.07 (1.00-4.26) |
| 30-39 | 0.49 | 0.35 | 0.16 | 1.63 (0.82-3.25) |
| History of Chlamydia, Gonorrhea and/or Syphilis (REF = Never Diagnosed) | | | | <i>p</i> = 0.008 |
| Diagnosed More than One Year Ago | 0.28 | 0.21 | 0.17 | 1.33 (0.89-1.99) |
| Diagnosed in the Past Year | 0.68 | 0.22 | 0.002 | 1.97 (1.28-3.04) |
| Receptive Anal Sex with Last Sex Partner (REF = No) | | | | <i>p</i> = 0.02 |
| Yes With Condom | 0.36 | 0.21 | 0.09 | 1.44 (0.94-2.19) |
| Yes Without Condom | 0.53 | 0.20 | 0.007 | 1.70 (1.16-2.49) |
| Ethnicity of Last Sex Partner (REF = Non-Hispanic Ethnicity) | | | | <i>p</i> = 0.006 |
| Same Ethnicity | 0.51 | 0.18 | 0.006 | 1.67 (1.16-2.39) |
| Age of Last Sex Partner | 0.02 | 0.01 | 0.09 | 1.02 (1.00-1.05) |
| Number of Sex Partners in the Last 3 Months | 0.01 | 0.01 | 0.01 | 1.01 (1.00-1.03) |
| Intimate Partner Violence (REF = Never) | 0.55 | 0.22 | 0.01 | 1.73 (1.13-2.64) |
| Ecstasy Use in the Past Year (REF = No) | 0.12 | 0.29 | 0.67 | 1.13 (0.64-2.00) |
| Methamphetamine Use in the Past Year (REF = No) | 0.69 | 0.28 | 0.01 | 1.99 (1.15-3.43) |
| Nitrates Use in the Past Year (REF = No) | -0.18 | 0.25 | 0.47 | 0.84 (0.52-1.36) |