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Sexually Transmitted Infection Prevalence and Behavioral Risk Factors among Latino and Non-Latino Patients Attending the Baltimore City STD Clinics

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Abstract

Background—Many studies have evaluated factors influencing STD/HIV disparities between African-American and white populations, but fewer have explicitly included Latinos for comparison.

Methods—We analyzed demographic and behavioral data captured in electronic medical records of patients first seen by a clinician in one of two Baltimore City public STD clinics between 2004 and 2007. Records from white, African-American, and Latino patients were included in the analysis.

Results—There were significant differences between Latinos and other racial/ethnic groups for several behavioral risk factors studied, with Latino patients reporting fewer behavioral risk factors than other patients. Latinos were more likely to have syphilis, but less likely to have gonorrhea than other racial/ethnic groups. English-proficient Latina (female) patients reported higher rates of infection and behavioral risk factors than Spanish-speaking Latina patients. After adjustment for gender and behavioral risk factors, Spanish-speaking Latinas also had significantly less risk of sexually transmitted infections than did English-speaking Latinas.

Conclusions—These results are consistent with other studies showing that acculturation (as measured by language proficiency) is associated with increases in reported sexual risk behaviors among Latinos. Future studies on sexual risk behavior among specific Latino populations characterized by country of origin, level of acculturation, and years in the U.S. may identify further risk factors and protective factors to guide development of culturally appropriate STD/HIV interventions.

Keywords

Hispanic/Latino; sexually transmitted disease clinic; racial/ethnic disparities; acculturation; gonorrhea; chlamydia; syphilis; HIV

1. INTRODUCTION

Significant racial and ethnic disparities exist in HIV and sexually transmitted diseases (STD) in the United States. Latinos in the U.S. are disproportionately affected by HIV and other STDs, with significantly higher rates of HIV and bacterial STDs than whites.[1,2] The factors associated with disparities in STD/HIV among Latinos compared to whites are not well

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SHORT SUMMARY:

Latino patients at the STD clinics in Baltimore, Maryland reported fewer behavioral risks than non-Latinos. Latinos had higher syphilis rates but lower gonorrhea rates. Acculturation is explored as a factor.

understood, but are likely influenced by the cultural and socioeconomic characteristics unique to different Latino groups.

Studies attempting to explain ethnic disparities in STDs using data from national surveys have had conflicting results. Adult Latinos are no more likely than whites to report two or more sex partners in the past 12 months [4,5]. However, Latino adolescents were more likely than white youth to report several sexual risk behaviors [6]. Studies examining racial and ethnic disparities at the individual level tend not to indicate strong associations between STD/HIV positivity and sexual risk behaviors, implicating more distal factors [7–9].

Cultural factors such as region of origin and acculturation, or assimilation by an ethnic or racial group to a host culture, have been shown to influence the risk of STD/HIV [10]. Among Latinos specifically, there is evidence that country of origin impacts HIV risk behaviors. [11,12] Acculturation has also been associated with increased prevalence of sexual and drug risk behaviors among Latinos, such as lower frequency of condom use, greater number of sexual partners, younger age at first intercourse, and increased substance use [13–15]. Acculturated individuals may place less value on the traditional family and gender roles that protect against multiple partnerships and early sexual initiation.[14]

Acculturation may also increase the probability of selecting an infected sexual partner, if STD/HIV prevalence is lower in the Latino community than in the surrounding communities. Latinos living in a predominantly Latino area may tend to select Latino partners, as people tend to choose sexual partners based on both race/ethnicity as well as geographic proximity. [16,17] Acculturation decreases the likelihood of living in single-ethnic neighborhoods, so discordant partnerships may result from more acculturated Latinos moving out of majority-Latino areas. [18] Ethnically concordant partner selection was more common among a subset of respondents of Latino ethnicity who self-identified as Hispanic/Latino rather than as “white” race in a national survey. Greater acculturation (as measured by less ethnic self-identification) may be related to discordant partnerships, [17] which are in turn associated with an increased risk of STD infection. [19–21] The available evidence suggests that acculturation should be explored as a factor in the prevalence of STD/HIV and sexual risk behaviors among Latinos.

Many studies have evaluated factors influencing STD/HIV disparities between African-American and white populations, but fewer have explicitly included Latinos for comparison. [22,23] With the proportion of Latinos in the U.S. population expected to double by 2050, it is critical to understand the potentially unique factors influencing STD/HIV risk in this group [24]. In Baltimore City, the Latino community has almost doubled since 1990, with accelerated growth over the last 5 years [25]. Approximately half of Baltimore City Latino residents were foreign born as compared to 40% nationwide. Nearly half of Latinos in Baltimore City reported Mexico as their country of origin, followed by Central and South America. [26]

The Baltimore City Health Department (BCHD) STD clinics have experienced a dramatic increase in the number of Latino patients presenting for STD care in recent years, with the clinics adding clinicians proficient in medical Spanish during this time period. The objective of this study was to compare sexual risk behaviors between Latino patients and non-Latino patients presenting to the BCHD STD clinics and to identify risk factors associated with STD/HIV among Latino patients.

2. MATERIALS AND METHODS

Population

We analyzed demographic and behavioral data captured in electronic medical records of patients first registered into the clinical database and seen by a clinician in one of two Baltimore

City public STD clinics between 2004 and 2007. Clinic location and hours of operation did not change over this time period. We selected the first clinical record from each patient. The Institutional Review Boards of the Johns Hopkins Medical Institutes approved the use of clinical data for this analysis.

Study Measures

Demographic variables of interest included race, language spoken, sex, and age. Race/ethnicity was self-identified, though patients were able to choose only one category from the following: white, African-American, Hispanic/Latino, Asian, and Indian. Only data from white, African-American, and Latino patients were used for this analysis. Race/ethnicity was self-identified by patients at first visit, with Hispanic/Latino considered a racial category in the administrative records. Acculturation status among Latinos was based on English language use, which was presumed to be English unless patients requested Spanish-language intake forms.

Clinical and behavioral factors such as sexual preference, condom use at last sexual encounter, contraceptive use, drug use, and partner risk factors were elicited during the clinical interview. Patients reporting injection drug use or cocaine use by themselves or their partners were considered to have “drug risk.” Patients reporting using alcohol before sex were considered to have “alcohol risk.” Condom use for last sexual encounter was determined during the interview. Patients were asked about their reason for visit, and those reporting sexual contact with a partner diagnosed with chlamydia, gonorrhea, trichomoniasis, HIV, or other non-gonococcal urethritis were classified as having an STD contact. STD/HIV diagnoses (gonorrhea, chlamydia, syphilis, and HIV) were documented by clinicians after point-of-care or laboratory testing. Laboratory results completed after the visit were matched by sample date to the visit record.

Statistical Methods

We determined the frequency of selected demographic variables, behavioral risk factors, and clinical outcomes by race/ethnicity and acculturation status. We used Pearson’s chi-square test and Fisher’s exact test to test for differences in frequency between Latino and non-Latino patients, as well as English-proficient and Spanish-speaking Latinos. We used multivariate logistic regression to test for differences in STD diagnoses by race/ethnicity and language. Variables missing data for a substantial (>30%) proportion of records were excluded from multivariate analyses. Multivariate models were stratified by gender, and adjusted for age as a continuous variable and for year of visit. Multivariate models were restricted to patients reporting heterosexual intercourse due to the small number of patients reporting same-sex partners. Acculturation status was redefined as two binary variables combining race/ethnicity and language (i.e. Spanish-speaking Latino; Non-Latino), with English-proficient Latinos as the reference category. These variables allowed for comparisons between English-proficient and Spanish-speaking Latino patients as well as English-proficient Latinos and non-Latino patients within the same multivariate model. Fit statistics helped to determine the variables included in the final models.

3. RESULTS

Demographics

Slightly more than half (57%) of the 39,728 patients attending the BCHD STD clinics for the first time between 2004 and 2007 were male. Most (91%) of patients were African-American, 5% were white, and 2% were Latino. Patients in the other race categories accounted for 2% of the patient population and were excluded from this analysis. Latino patients were significantly younger than African-American or white patients, with a mean age of 28.9 compared with 30.5 ($p = 0.002$). More than half of Latino patients were documented as speaking only Spanish

(60%), though this differed by gender (57% of males vs. 65% of females, $p = 0.01$) and age group (53% of those < 25 vs. 64% of those ≥ 25 , $p = 0.001$).

Clinical and Behavioral Factors

There were significant differences between racial and ethnic groups for most of the behavioral risk factors studied (Table 1). Overall, Latino patients reported fewer behavioral risk factors than white or African-American patients. White males were twice as likely as Latino or African-American males to report homosexual/bisexual preference (10% vs. 3% and 5% among those reporting sexual preferences, respectively). Latino males were significantly more likely to report condom use than white or African-American males. Both Latino males and females were less likely to report substance risk and multiple partnerships in the past 30 days. Latina females were less likely than white or African-American patients to report sex in exchange for drugs or money. Latina females were also less likely than other females to attend the STD clinic because a sex partner had been diagnosed with an STD, while Latino males were more likely than white patients to attend the clinic because of STD contacts. There was substantial missing data ($>30\%$) for the number of partners in the past 30 days for both Latinos and non-Latinos (33% and 28%, respectively, $p=0.003$). Spanish-speaking Latino patients were no more likely to be missing these data than those who were proficient in English (28% vs. 29%, $p=0.6$).

To examine the impact of acculturation, we examined behavioral risk factors among Latino patients by English language proficiency. English-speaking Latino males were no more likely to report risk behaviors than Spanish-speaking Latino males for all risk behaviors measured (Table 2). English-speaking Latina females were at increased risk of alcohol use before sex and multiple partners in the past 30 days, with a prevalence of these behaviors similar to non-Latina patients. However, English-speaking Latinas were significantly more likely to report condom use. While Latina females were less likely to report recent contact with an infected partner than non-Latina females, English-proficient Latinas were somewhat more likely than Spanish-speaking Latinas to report attending the clinic because of a partner with an STD (11% vs. 5%, $p = 0.07$), suggesting that acculturation may influence selection of higher-risk partners.

STD/HIV Prevalence

Prevalence of any STD or HIV was roughly equal across racial/ethnic groups in this population (Table 3), except for a higher prevalence among white females than among Latina females (22% vs. 16%). Differences were observed in the prevalence of specific infections among racial/ethnic groups. The prevalence of gonorrhea and syphilis were comparable, while the prevalence of HIV and chlamydia were much lower. Males are not routinely screened for chlamydia at the clinics, so the prevalence of this infection for all racial/ethnic groups is likely underestimated. Latina female patients were significantly less likely than white females to have chlamydia, and less likely than white and African-American females to have gonorrhea. Latino male patients were significantly less likely than African-American males to have gonorrhea, but significantly more likely to have syphilis. No significant differences by race/ethnicity were found for HIV infection in this study population.

Acculturation status was also associated with specific infections among Latino patients (Table 4). Among male Latino patients, English language proficiency was not significantly associated with higher prevalence of gonorrhea, syphilis, or HIV compared with Spanish-speakers, but English proficient Latinos had significantly higher rates of chlamydia and syphilis and significantly lower rates of gonorrhea compared with non-Latinos. However, English-proficient Latina patients had significantly higher rates of gonorrhea than Spanish-speaking Latinas, while English-speakers had a prevalence of gonorrhea infection similar to non-Latina

patients. English proficient Latina patients had marginally higher rates of syphilis compared with Spanish-speakers and significantly higher rates than non-Latina patients.

Final multivariate models stratified by gender examined the associations between STD/HIV diagnosis and behavioral and demographic factors. (Table 5) In the adjusted models, STD/HIV diagnosis was associated with increasing age among men, decreasing age among women, no condom use at last sex, sex in exchange for money or drugs, reporting injection drug use or cocaine use (“drug risk”) and not specifying STD contact as a reason for visit. Spanish-speaking Latinas were significantly less likely than English-proficient Latinas to have any STD/HIV diagnosis, with no statistical difference between English-proficient Latinas and non-Latinas.

Different patterns emerged for the impact of acculturation when models were restricted to specific infections. Latino patients of both genders were more likely to have syphilis than non-Latinos. Non-Latino males were significantly more likely to have gonorrhea than Latino males. Non-Latina females were (non-significantly) more likely to have gonorrhea than English-proficient Latina females. Spanish-speaking Latinas were (non-significantly) less likely to have gonorrhea than English-proficient Latinas. Multivariate analysis of factors associated with chlamydia and HIV was not performed due to insufficient number of cases.

4. DISCUSSION

In this study, we found that despite similar overall prevalence of infection, Latino patients reported fewer behavioral risk factors associated with STD/HIV than non-Latino patients. We found differences in the prevalence of specific infections, with Latinos having a higher prevalence of syphilis among Latinos and lower prevalence of gonorrhea than non-Latino patients. We also found associations among Latinas between sexual risk behaviors, sexually transmitted infections, and marginal associations with level of acculturation, as measured by self-reported language proficiency.

Based on the prevalence of sexual risk factors among Latino patients, we would have expected to see lower prevalence of all sexually transmitted infections for both males and females. The discrepancy that we observed between reported behavioral risk factors and infection prevalence among Latino patients compared to non-Latino patients has several possible explanations, including reporting bias, differences in natural history of infection, and differences in sexual networks.

One concern is that Latino patients under-reported behavioral risk factors. Cultural factors can impact disclosure of risk behavior, and fear of deportation could be an obstacle to full disclosure of illicit activities such as injection drug use or relations with commercial sex workers, especially among undocumented immigrants. Communication barriers can complicate the assessment of risk behavior, even when conducted by an experienced STD clinician fluent in Spanish. We found that English-proficient Latina patients were more likely to report some risk behaviors than Spanish-speaking Latinas. However, the English speakers also had a higher prevalence of STDs than Spanish speakers, suggesting that at least some of the reported differences in risk behavior are accurate.

Although most sexual risk behaviors and gonorrhea infection were less prevalent in Latinos than in non-Latinos, Latino patients were more likely to have a syphilis diagnosis than non-Latino patients. The natural history of the infections may provide some explanation; gonorrhea has a short (2–100 day) infectious period which reflects recent high-risk behavior [27], while syphilis is a chronic infection which may go undetected for years [28]. However, with no observable difference in the proportion of syphilis cases that were early syphilis (primary or secondary) between Latinos compared to non-Latinos (15% vs. 19%, $p = 0.45$), our results

suggest that the higher risk of syphilis among Latino patients was related to current risk behavior.

These findings might also be consistent with a sexual networks approach; syphilis may be more common than gonorrhea in the sexual networks of Latino patients presenting to the STD clinic. The disparity in infection prevalence by racial and ethnic group is also consistent with our earlier hypothesis that partner selection patterns are influenced by ethnicity, contributing to an increased risk of syphilis among Latinos choosing Latino partners. While data on the race/ethnicity of partner are needed to further supporting this hypothesis, these data are not currently collected as part of the clinical record.

Unexpectedly, we found that patients who reported a contact to STD were actually less likely to have an STD. Contact to STD was elicited as part of a “reason for visit” variable, and may have been more frequently recorded when patients did not report symptoms or high-risk behaviors. We found that patients who did not report risk behaviors (e.g. non-condom use, sex for drugs or money) were significantly more likely to indicate an STD contact.

In addition to measuring disparities in infection and behavior prevalence, this study also adds to the growing body of literature on the impact of acculturation on sexual behavioral and sexually transmitted infection risk among Latinos. We found that Spanish-speaking Latinas were marginally less likely to be diagnosed with STD/HIV than English-proficient Latinas, even after accounting for behavioral and demographic risk factors. These results are consistent with other studies showing that acculturation (as measured by language proficiency) is associated with increases in reported sexual risk behaviors and sexually transmitted infections among Latinos [13–15,29,30]. Interestingly, English language proficiency was significantly associated in multivariate models with sexual risk behaviors and infection among female but not male Latino patients, suggesting that acculturation has differential impact on these outcomes by gender. Other studies have found that gender may modify the association between acculturation and risk behavior. [31,32] Some studies have specifically found that acculturation effects are significant for women but not for men. [33–35] Changing traditional gender roles perpetuated by *machismo*, or “male pride,” during the acculturation process possibly has a different influence on female than male decision-making power and STD risk behavior. [36]

This study has several limitations. Our study sample was drawn from public STD clinics, so our findings are not representative of the general U.S. population. National surveillance consistently finds racial disparities in STD/HIV prevalence that were not evident in the BCHD STD clinic patient population. STD clinic patients are not a representative sample of the general population, tending to be poor, uninsured, and people of color. [37] Measurement of risk factors is likely to be incomplete in this study, especially since the data used were collected for the purpose of routine care delivery. Residual confounding by unmeasured factors may contribute to the continued association of race/ethnicity and language with disease outcomes.

Heterogeneity within the Latino population by immigrant status and culture may make classification of patients as a single “Latino” group difficult, and may introduce noise into the estimates of risk factor and infection prevalence. The impact of acculturation may be meaningful only for foreign-born Latino populations, and immigrant status was not assessed as part of the clinical record. Finally, while many public health studies use language proficiency to measure acculturation, theory-based, multidimensional acculturation scales may have measured acculturation more accurately.

In conclusion, this study showed that despite lower reported risk behavior, Latino patients had a higher prevalence of syphilis than non-Latino patients. English-speaking Latinas had the highest risk of syphilis compared to non-Latina and Spanish-speaking Latinas, suggesting that acculturation plays an important role in the risk of syphilis, at least among females in this

population. In contrast, prevalence of gonorrhea was lowest in Latinos compared to African-Americans and whites. Future studies on partnership selection among specific Latino populations characterized by country of origin, level of acculturation, and years in the U.S. may further elucidate additional risk factors and help guide interventions to address disparities in STD/HIV among Latinos.

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Baseline Characteristics of Latino, White, and African-American Patients Attending Baltimore City Health Department STD Clinics, 2004–2007 (N=39,072)

Table 1

	Male		Female		
	Latino	White	African-American	Latino	White
	(N=549)	(N=1197)	(N=20,633)	(N=381)	(N=977)
Mean age, years (SD)	29.8 (8.4) ^{1,2}	33.7 (10.8)	31.7 (10.6)	29.1 (8.8)	29.0 (9.7)
<i>Behavioral Factors</i>					
N (%)					
Homo/bisexual preference	18 (3%) ^{1,2}	119 (10%)	1068 (5%)	13 (3%) ^{1,2}	119 (12%)
Non-Condom use	358 (65%) ^{1,2}	839 (70%)	14,639 (71%)	307 (81%) ¹	716 (73%)
Drug risk	87 (16%) ^{1,2}	418 (35%)	5155 (25%)	26 (7%) ^{1,2}	319 (33%)
Alcohol risk	94 (17%) ¹	373 (31%)	4161 (20%)	26 (7%) ^{1,2}	247 (25%)
Sex for drugs/\$	107 (19%)	208 (17%)	4179 (20%)	9 (2%) ^{1,2}	64 (7%)
Contact to STD	66 (16%) ¹	83 (10%)	2714 (17%)	22 (7%) ^{1,2}	91 (13%)
2+ ptns in past 30 days	86 (21%) ²	179 (20%)	4505 (32%)	14 (5%) ^{1,2}	125 (18%)

Notes: “Drug risk” and “Alcohol risk” include reports of patient or partner injection drug use, cocaine use, or alcohol use before sex.

¹ significant difference (p<.05) between Latino and White

² significant difference (p<.05) between Latino and African-American

Table 2

Behavioral Characteristics by Language Proficiency of Latino Patients Attending Baltimore City Health Department STD Clinics, 2004–2007 (N= 930)

	Males		Females	
	English-speaking (N=235)	Spanish-speaking (N=314)	English-speaking (N=132)	Spanish-speaking (N=249)
Non-Condom use	162 (69%)	196 (62%)	99 (75%)*	208 (84%)
Drug risk	30 (13%)	57 (18%)	14 (11%)	12 (5%)
Alcohol risk	40 (17%)	54 (17%)	17 (13%)*	9 (4%)
Sex for drugs/\$	45 (19%)	62 (20%)	6 (5%)	3 (1%)
Contact to STD	30 (17%)	36 (16%)	11 (11%)	11 (5%)
2+ ptrs in past 30 days	36 (21%)	50 (22%)	9 (10%)*	5 (3%)

Notes: “Drug risk” and “Alcohol risk” include reports of patient or partner injection drug use, cocaine use, or alcohol use before sex.

* Significant difference ($p < .05$) between English and Spanish speakers

Table 3

STD Prevalence of Latino, White, and African-American Patients Attending Baltimore City Health Department STD Clinics, 2004–2007 (N=39,072)

	Males		Females		
	Latino	White	African-American	Latino	White
	(N=549)	(N=1197)	(N=20,633)	(N=381)	(N=977)
STD +	87 (21%)	166 (20%)	3756 (24%)	48 (16%) ¹	149 (22%)
Chlamydia	6 (1%)	8 (1%)	134 (1%)	14 (5%) ¹	16 (2%)
Gonorrhea	33 (8%) ²	79 (9%)	2961 (18%)	18 (6%) ^{1,2}	91 (13%)
Syphilis	54 (11%) ^{1,2}	82 (8%)	934 (5%)	24 (7%)	80 (10%)
HIV	7 (2%)	21 (3%)	311 (2%)	3 (1%)	6 (1%)
					177 (2%)

Notes: “STD +” is positivity for any of the following: chlamydia, gonorrhea, syphilis, or HIV.

¹ significant difference (p<.05) between Latino and White

² significant difference (p<.05) between Latino and African-American

STD Prevalence of Patients Attending Baltimore City Health Department STD Clinics, by Latino ethnicity and language status 2004–2007 (N=39,072)

Table 4

	Males			Females		
	Latino Spanish-speaking (N=230)	Latino English-proficient (N=182)	Non-Latino (N=16,407)	Latino Spanish-speaking (N=204)	Latino English-proficient (N=99)	Non-Latino (N=11,732)
STD +	42 (18%)	45 (25%)	3922 (24%)	22 (11%)	26 (26%) ^{1,2}	2121 (18%)
Chlamydia	0 (0%)	6 (3%) ^{1,2}	142 (1%)	8 (4%)	6 (6%)	384 (3%)
Gonorrhea	15 (6%)	18 (10%) ²	3040 (18%)	8 (4%)	10 (15%) ¹	1449 (12%)
Syphilis	29 (10%)	25 (13%) ²	1016 (6%)	12 (5%)	12 (11%) ²	748 (6%)
HIV	3 (1%)	4 (2%)	332 (2%)	1 (0.5%)	2 (2%)	183 (2%)

Notes: “STD +” is positivity for any of the following: chlamydia, gonorrhea, syphilis, or HIV.

¹ significant difference (p<.05) between Latino English and Spanish-speaking

² significant difference (p<.05) between Latino English-proficient and non-Latino

Table 5
Odds ratios and 95% CI for the associations between risk factors and selected STDs, by language status 2004–2007.

Factor	STD +		Syphilis		Gonorrhea	
	Males	Females	Males	Females	Males	Females
	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)
Non-Condom use	1.32 (1.22–1.44)	1.16 (1.04–1.30)			1.40 (1.27–1.53)	1.16 (1.02–1.33)
Sex for drugs/\$	1.21(1.08–1.37)	1.06 (0.87–1.31)			1.15 (1.00–1.32)	1.04 (0.80–1.35)
Drug risk	1.17 (1.04–1.32)	1.44 (1.22–1.69)	1.16 (0.99–1.35)	1.82 (1.54–2.15)	1.02 (0.90–1.17)	1.37 (1.10–1.72)
Contact to STD	0.27 (0.24–0.32)	0.38 (0.31–0.46)	0.40 (0.30–0.53)	0.76 (0.58–1.00)	0.35 (0.31–0.41)	0.48 (0.38–0.60)
<i>Acculturation</i>						
Latino Spanish-speaking vs. Latino English-proficient	0.71 (0.43–1.17)	0.38 (0.20–0.74)	0.83 (0.45–1.52)	0.61 (0.25–1.50)	0.72 (0.35–1.48)	0.45 (0.17–1.23)
Non-Latino vs. Latino English-proficient	0.93 (0.65–1.32)	0.64 (0.40–1.02)	0.26 (0.17–0.41)	0.49 (0.25–0.95)	2.08 (1.27–3.41)	1.32 (0.66–2.66)

Notes: aOR = adjusted odds ratio. CI = confidence interval. ORs were adjusted for age as a continuous variable and for year of visit (2004–2007). Number of partners in past 30 days was not included in regression analyses due to substantial (>30%) missing data. Non-condom use and sex for drugs/money were dropped from syphilis models to find the most parsimonious models.