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Comprehensive Assessment of Sociodemographic and Behavioral Risk Factors for *Mycoplasma genitalium* Infection in Women

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Abstract

Background—*Neisseria gonorrhoeae* and *Chlamydia trachomatis* are characterized by different risk factors, thus control strategies for each also differ. In contrast, risk factors for *Mycoplasma genitalium* have not been well characterized.

Methods—Between 2000 and 2006, 1090 women ages 14 to 45 attending the Public Health-Seattle & King County Sexually Transmitted Diseases Clinic in Seattle, WA, underwent clinical examination and computer-assisted survey interview. *M. genitalium* was detected by transcription mediated amplification from self-obtained vaginal swab specimens. *C. trachomatis* and *N. gonorrhoeae* were detected by culture from cervical swab specimens.

Results—Prevalent *M. genitalium* infection was detected in 84 women (7.7%), *C. trachomatis* in 63 (5.8%), and *N. gonorrhoeae* in 26 (2.4%). Age <20 and nonwhite race were associated with increased risk for all 3 organisms. In addition, risk for *M. genitalium* was higher for women with a black partner (adjusted odds ratio [AOR]: 3.4; 95% confidence interval = 1.83–6.29), those never married (AOR: 2.6; 1.08–6.25), using Depo-Provera (AOR: 2.3; 1.19–4.46), and smoking (AOR: 1.7; 1.03–2.83). Drug use, history of STI in the past year, high school education, meeting and having intercourse the same day, anal sex, douching, and hormonal contraception were associated with *N. gonorrhoeae* or *C. trachomatis*, but not with *M. genitalium*. Number of partners was not associated with any of the 3 organisms.

Conclusions—The limited number of risk factors for prevalent infection common to all 3 pathogens suggests that *M. genitalium* may circulate in different sexual networks than *N. gonorrhoeae* or *C. trachomatis*. The predominance of sociodemographic risk factors for *M. genitalium*, rather than high-risk sexual behaviors, suggests broad-based testing may be the most effective control strategy.

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Gen-Probe, Inc, provided reagents and materials for the research-use only transcription mediated amplification (TMA) assay used for *M. genitalium* testing.

Mycoplasma genitalium is an emerging sexually transmitted organism^{1,2} and, similar to *Chlamydia trachomatis* and *Neisseria gonorrhoeae*, has been associated with cervicitis,^{3–7} endometritis,^{8,9} pelvic inflammatory disease,^{8,9} and tubal factor infertility.^{10,11} Given their common mode of transmission, bacterial sexually transmitted infections (STI) share many common risk factors, including young age, female gender, black race, urban residence, childhood sexual abuse, multiple or concurrent sexual relationships, and young age at sexual debut.^{12–14} Partnership discordance by ethnicity, level of commitment, and number of lifetime partners, as well as poor knowledge of partner behavior have also been associated with bacterial STI.^{15–18}

In addition to shared risk factors, gonococcal and chlamydial infections are each characterized by distinct risk factors, and these characteristics have guided the approach to targeting control strategies. *N. gonorrhoeae* circulates in networks of more marginalized individuals¹⁹ and is more geographically concentrated than *C. trachomatis*,^{20,21} whereas the strongest risk factors for chlamydial infection include female gender and young age.²² As a result, chlamydial control strategies are dominated by screening programs targeting young women, whereas gonorrhea control strategies are driven by partner notification efforts to identify and treat infected partners.

As evidence continues to emerge that *M. genitalium* is associated with reproductive tract disease in women, targeted control strategies will need to be developed. However, unlike other bacterial STI, the risk factors for infection with *M. genitalium* that would guide such control strategies are not clearly established. A relatively small number of studies to identify risk factors in women have been conducted.^{1,3,23–25} Therefore, we sought to identify detailed sociodemographic, sexual behavior, and partnership characteristics associated with *M. genitalium* infection in women and determine if risk factors for *M. genitalium* differ from those for *C. trachomatis* and *N. gonorrhoeae*.

MATERIALS AND METHODS

Study Setting and Subjects

Women attending the Public Health-Seattle and King County STD (sexually transmitted disease) clinic at Harborview Medical Center in Seattle, WA, were enrolled in a cross-sectional study of behavioral risk for STI between 2000 and 2006. Potential participants were approached by a study interviewer in clinic waiting rooms. Women aged 14 to 45 were eligible to participate if they had STI symptoms, wished to have an STI test, or were contacts to STI, whereas non-English speakers and women <14 or >45 were ineligible.

After providing informed consent, participants completed an hour-long computer-assisted survey interview consisting of questions based on the Wave III questionnaire of the National Longitudinal Study of Adolescent Health,²⁶ along with additional questions on sexual behavior. An interviewer collected data on demographics and health characteristics, whereas a self-administered portion asked sensitive questions related to sexual experiences, history of STI, delinquency, substance abuse, and characteristics of the individuals' 3 most recent sexual partnerships. After the interview, a clinician performed a routine clinical

examination, unless patient flow patterns required that an examination occur before the interview.

During the clinical examination, after obtaining sexual history and symptom information, the clinician inspected the external genitalia and performed a speculum examination. Self-obtained vaginal specimens were tested for *M. genitalium* using a research-use only transcription mediated amplification assay (Gen-Probe, Incorporated, San Diego, CA).²⁷ Cervical swab specimens were assessed for *C. trachomatis* by culture and *N. gonorrhoeae* by Gram staining and/or culture. Of the 1113 women who completed the study, 23 had examination data only and were excluded, resulting in a total sample size of 1090 women. The Institutional Review Board at the University of Washington approved all study procedures.

Statistical Analyses

We used Pearson's χ^2 and Fisher's exact tests (when expected cell values were ≤ 5) to compare categorical sociodemographic and sexual behavior characteristics, as well as those of the most recent sexual partnership for women with and without each pathogen and the Wilcoxon rank sum test to compare continuous measures. Any factor associated with a given organism at $P < 0.10$ was further evaluated in multivariate models.

We used multivariate logistic regression to identify characteristics independently associated with each organism, developing a separate model for each pathogen and seeking the most parsimonious model. Characteristics that remained significantly associated with each pathogen at $P < 0.05$ were retained in the final model. All analyses were performed using Inter-cooled Stata version 9.2 (Stata Corp, College Station, TX).

RESULTS

Study Population

The median age of women enrolled was 24 (range: 16–45) and less than half were white (44.7%), with 34.9% black. The majority of women had never been married (79.3%) and 46.6% had only a high school education or less. Approximately half of the women had an income of less than \$10,000 per year (54.8%). Most women (52.4%) attended for symptoms; 41.9% attended for screening, and only 4.6% were contacts to STI.

Prevalence

M. genitalium infection was detected in 84 women (7.7%). Sixty-three women (5.8%) had *C. trachomatis* and 26 (2.4%) had *N. gonorrhoeae*. Coinfection with *M. genitalium* and *C. trachomatis* occurred in 7 women, with *M. genitalium* and *N. gonorrhoeae* in 4 women, and with *C. trachomatis* and *N. gonorrhoeae* in 11 women. One woman was coinfecting with all 3 organisms. Women with *M. genitalium* were somewhat less likely to report symptoms as their reason for visit (39.4% vs. 53.6%, $P = 0.09$) than women without *M. genitalium*.

Univariate Analyses

Prevalent *M. genitalium* infection was significantly associated with several individual sociodemographic factors (Table 1). Women infected with *M. genitalium* were more likely to be younger, of black race, never married, and report less than a high school education. They were more likely to report an annual income <\$10,000, and smoking compared to noninfected women, but less likely to have ever been diagnosed with depression, or live alone. Few differences in sexual behavior characteristics were observed between women with and without *M. genitalium*. Only younger age at sexual debut, use of Depo-Provera, and ever receiving a previous diagnosis of STI were associated with *M. genitalium* infection; whereas ever having had a miscarriage, condom use, engaging in anal sex, douching, or the number of sex partners in the past year was not associated with *M. genitalium* infection.

A small number of the characteristics of the most recent partnership reported by each participant were associated with *M. genitalium* infection (Table 2). Women with *M. genitalium* infection were more likely to report having a nonwhite partner, a partner with less than a high school education, a low income partner (less than \$10,000 annually), or a partner who had spent a night in jail. They were less likely to report having a partner who used intravenous drugs, and somewhat less likely to report having performed oral sex. Although age difference, income discordance, and having concurrent sex partners in the most recent partnership were marginally associated with *M. genitalium*, other partnership characteristics and specific sexual behaviors were not.

Multivariate Analyses

Independent Risk Factors for Prevalent *M. genitalium* Infection—In multivariate analyses (Table 3), women under the age of 20 were nearly twice as likely to have *M. genitalium* infection (adjusted odds ratio [AOR]: 1.8; 95% confidence interval: 1.01–3.33) compared to older women. Risk for *M. genitalium* was nearly 3-fold higher (AOR: 2.8; 1.40–5.72) for nonwhite than white women. Smokers were also 70% more likely to have *M. genitalium* than nonsmokers (AOR: 1.7; 1.03–2.83) and never-married women were 2.6 times more likely to be infected with *M. genitalium* than currently married or previously married women (AOR: 2.6; 1.08–6.25). Finally, women who used Depo-Provera were twice as likely to have *M. genitalium* as women who did not use Depo-Provera (AOR: 2.3; 1.19–4.46). However, when any hormonal contraceptive use was assessed in place of Depo-Provera, there was no significant relationship with *M. genitalium* infection, suggesting the effect is related to the pharmacological formulation of Depo-Provera, rather than to contraceptive use in general. Having a nonwhite partner was the sole partnership characteristic associated with *M. genitalium*, with infection 3.4 times more likely among women whose most recent partner was nonwhite (AOR: 3.4; 1.83–6.29) than among women with a white partner, even after adjusting for the woman's own race. In contrast, there was no association with number of partners, STI history, income, education, condom use, or other sexual behaviors in the multivariate model.

Risk Factors for *M. genitalium* Compared With Those for *C. trachomatis* and *N. gonorrhoeae*—Very few risk factors were common in women with *M. genitalium*, *C. trachomatis*, and *N. gonorrhoeae*. Only age <20 and nonwhite race were associated with

increased risk for all 3 bacterial STI (Table 3). Drug use, most strongly associated with *N. gonorrhoeae* (AOR: 6.2; 1.40–27.81) and slightly less so with *C. trachomatis* (AOR: 2.4; 1.20–4.66), was not associated with *M. genitalium* infection, nor was fewer years of education, which was only associated with *N. gonorrhoeae*. Despite the fact that douching and hormonal contraceptive use were not associated with either *M. genitalium* or *C. trachomatis*, risk for *N. gonorrhoeae* was elevated among women who reported douching, but lower for women using hormonal contraceptives in the past year. STI diagnosis in the past year, typically associated with most STI, was only associated with increased risk for *C. trachomatis*, and number of partners was not associated with any of the 3 bacterial infections.

No partnership characteristics were commonly associated with all 3 pathogens. Similarly, none of the specific sexual behaviors examined were independently associated with either *M. genitalium* or *C. trachomatis* infection, but meeting and having sexual intercourse with a new partner on the same day, and engaging in anal sex with the most recent partner were strongly associated with increased risk for *N. gonorrhoeae*.

DISCUSSION

M. genitalium infection was detected in 7.7% of women attending an urban STD clinic, and was more common than either *C. trachomatis* (5.8%) or *N. gonorrhoeae* (2.4%). Nevertheless, these prevalences are relatively low for a group of women seeking care or testing for STI and reflect the generally low STI prevalences in the Pacific Northwest Region. Risk factors for prevalent *M. genitalium* infection were primarily comprised of general sociodemographic characteristics and partner race rather than risky sexual behaviors. Our direct comparison of risk factors for *M. genitalium* infection to *C. trachomatis* and *N. gonorrhoeae* revealed that only young age and nonwhite race were common to all 3 bacterial STI and nonwhite race, both of the woman and of her partner, was the strongest risk factor for *M. genitalium*. The highest risk behaviors (drug use, having sex on the same day as meeting a partner, and anal sex) were only associated with gonococcal infection and not *M. genitalium*.

Women with *M. genitalium* in this study had a notable absence of many previously identified risk factors. Other studies have consistently reported an increased risk for *M. genitalium* infection with higher numbers of recent sexual partners^{1,3,23,24} so the absence of a significant relationship among these women was unexpected. However, the number of partners was also not associated with either gonococcal or chlamydial infection in multivariate models, and the higher risk nature of women attending STD clinics, in general,²⁸ may partially explain this lack of association. Having a partner with symptoms and shorter duration of a steady relationship were risk factors for *M. genitalium* infection in Danish women,²⁴ neither of which was associated with *M. genitalium* here. Among women of a similar age range attending this same STD clinic in the 1980s, younger age and smoking were similarly associated with *M. genitalium* infection, but frequent douching, proliferative phase of the menstrual cycle, and history of spontaneous abortion were also identified as risk factors,³ which was not the case here. Finally, in a general population sample of young US adults, having ever lived with a sex partner and having used a condom at last vaginal

intercourse were identified as risk factors for *M. genitalium*, unlike these results.¹ Differences in study populations likely account for many of these differences.

Young age, nonwhite race, and drug use have consistently been identified as risk factors for a broad spectrum of STI.^{12,29,30} Less consistent condom use in younger women, and/or higher prevalence of STI in adolescent males may drive the association between young age and STI.³¹ Biologic mechanisms in younger women such as greater cervical ectopy³² may also explain their increased risk for STI. Drug use likely heightens risk for STI acquisition by decreasing inhibition and therefore increasing high-risk sexual behavior. This hypothesis is supported by Ross and Radcliffe, who noted that the association between illicit drug use and acquiring *N. gonorrhoeae* was no longer statistically significant after adjustment for multiple new partners, suggesting that the relationship was mediated by increased risk behavior.³³ Given the absence of an association between *M. genitalium* and high-risk sexual behavior, it is not surprising that drug use was also not associated with *M. genitalium*. The association with never having been married may be related to the young age of women with *M. genitalium*. Depo-Provera use alone was associated with an increased risk for *M. genitalium*, but other hormonal contraceptive use was not, which is inconsistent with data from Kenyan sex workers.³⁴ In that study, hormonal contraception was more strongly associated with *M. genitalium* than Depo-Provera use (although both were related); thus the relationship between *M. genitalium* and contraceptive use merits further exploration. We did not observe a significant association in multivariate analyses between any of the 3 bacteria and having concurrent sex partners, which was expected since having concurrent partners does not necessarily put an individual at higher risk for STI beyond the risk associated with her number of partners.³⁵ However, we also found no association between any STI and having a partner with concurrent partners, which is often a risk factor for STI. Other studies, however, have noted the difficulty in measuring partner's concurrency,^{17,36} and the lack of association we observed here may be due to inadequate knowledge of partner behavior among the women enrolled.

The importance of identifying risk factors for infection with *M. genitalium* and developing a control strategy assumes that infection with this organism results in adverse sequelae. Although previous studies have established a strong association between *M. genitalium* infection and urethritis in men,^{7,37,38} the evidence for an association between *M. genitalium* and cervicitis in women is less consistent. Some studies report a strong relationship with cervicitis^{3,7,25} as well as with acute endometritis,⁸ pelvic inflammatory disease,⁹ and infertility,¹⁰ whereas others report no association.^{23,39,40} Further research is needed to definitively determine the role of *M. genitalium* infection in female reproductive tract disease before control strategies are adopted; risk factors identified here and from other studies may help target populations for such future studies.

This comparison of risk factors for prevalent *M. genitalium* infection to those for *N. gonorrhoeae* and *C. trachomatis* is characterized by several strengths and limitations. The relatively higher prevalence of *M. genitalium* (7.7%) provided sufficient power to identify risk factors associated with infection with this emerging pathogen. The transcription mediated amplification assay used to detect *M. genitalium* provided high sensitivity relative to the culture methods used for *C. trachomatis* and *N. gonorrhoeae*, and this may explain

some of the disparity in the prevalences of the 3 bacteria, although not entirely. Although the cross-sectional nature of this study limits conclusions about cause-and-effect relationships, our results suggest that some risk factors for infection with *M. genitalium* are clearly different from other bacterial pathogens. Nevertheless, we examined a large number of potential risk factors, and some of our findings may be due to chance or influenced by uncontrolled confounding. Since we did not have a single characteristic of interest that we were testing, but rather sought to identify multiple characteristics independently associated with *M. genitalium*, a slightly different modeling strategy may have resulted in variations on the characteristics we identified here. For example, in some cases we chose 1 of 2 or more closely related variables for inclusion in final multivariate models. However, in all of these cases, the choices were between variables measuring similar constructs (e.g., general sociodemographic vs. high risk sexual behavior characteristics), thus the general conclusions are robust. Although we had adequate power to assess characteristics associated with *M. genitalium*, the prevalence of *N. gonorrhoeae* was relatively low (2.4%), reducing power for those analyses. Generalizability of these results may be limited to other urban STD clinic settings, but the use of a computer-assisted survey interview questionnaire likely reduced social desirability bias, as it has in other settings.⁴¹

Risk factors for prevalent infection with *M. genitalium*, *C. trachomatis*, and *N. gonorrhoeae*, differed by sociodemographic, sexual behavior, and partnership characteristics, consistent with the circulation of these STI in different sexual networks. These results confirm previous reports of this phenomenon for *C. trachomatis* and *N. gonorrhoeae*,¹⁹ and suggest the same is true for *M. genitalium*. In contrast to *N. gonorrhoeae*, *M. genitalium* infection was characterized by general sociodemographic and partnership attributes rather than by high-risk behavior, similar to the pattern observed with *C. trachomatis* infections. Notably these characteristics represent risk factors for prevalent infection and are likely to differ from those for incident infection.

The relatively high prevalence of *M. genitalium* suggests that control programs may become necessary as data on disease associations in women continue to accumulate. The development of such programs is often guided by the reproductive number (R_0), a measure of the sustainability of an infection in a population. R_0 equals $\beta c D$, where β represents the transmission probability, c the contact rate, and D the duration of infection.⁴² Reducing one or more of these components so that $R_0 < 1$ makes endemic infection unsustainable. Although our cross-sectional data limit our ability to accurately estimate either β or c or D , our observed lack of association with numbers of partners (a proxy for contact rate), along with data indicating that *M. genitalium* infection may have a long duration of infection⁴⁰ suggests that it may not require high rates of partner change to sustain transmission. Therefore, as we begin to develop control strategies for this emerging sexually transmitted pathogen, broad-based testing for and treatment of *M. genitalium*, similar to chlamydial control strategies, may be more effective than strategies designed to identify hard to reach high-risk populations such as those employed in the control of gonorrhea. Further longitudinal studies explicitly designed to identify characteristics and sexual network patterns related to incident *M. genitalium* infection will be essential to determine if risk

factors for incident infection are similar to those for prevalent infection, and further inform the development of control strategies.

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TABLE 1

Demographic and Sexual Behavior Characteristics in Women With and Without *M. genitalium* Infection Attending the PHSKC STD Clinic From 2000 to 2006 (N = 1090)

Characteristic	Positive N (%) (n = 84)	Negative N (%) (n = 958)	P *
Sociodemographic factors			
Age			
<20	24 (28.6)	103 (10.8)	<0.001
20–25	45 (53.5)	435 (45.4)	
26–35	11 (13.1)	262 (27.3)	
Over 35	4 (4.8)	158 (16.5)	
Race			
White	12 (14.3)	451 (47.4)	<0.001 [†]
Black	54 (64.3)	307 (32.3)	
Asian	10 (11.9)	82 (8.6)	
Native American	1 (1.2)	27 (2.8)	
Other [‡]	7 (8.3)	84 (8.8)	
Marital status			
Never married	78 (92.9)	747 (78.1)	0.006
Currently married	3 (3.1)	93 (9.7)	
Previously married	3 (3.0)	117 (12.2)	
Education			
< High school	38 (45.2)	234 (24.4)	<0.001
HS diploma	21 (25.0)	193 (20.2)	
Some college	19 (22.6)	359 (37.5)	
College graduate/some grad school	6 (7.1)	172 (17.9)	
Income [§]			
<\$10,000	55 (65.5)	509 (53.9)	0.040
\$10,000	29 (34.5)	436 (46.1)	
Living alone	7 (8.9)	204 (23.5)	0.003
Employed [¶]	36 (42.9)	429 (44.8)	0.728
Has used drugs (since June 1995)	54 (66.7)	647 (69.2)	0.637
Ever diagnosed with depression	21 (25.0)	368 (38.5)	0.014
Ever spent 1 night in jail	29 (37.7)	271 (31.0)	0.226
Current smoker	52 (53.6)	424 (44.7)	0.045
Sexual behavior factors			
Age first vaginal sex (median [range])	15 (13–16)	16 (14–17)	0.003 ^{//}
Nbr vaginal partners past year (median [range])	3 (2–5)	2 (1–4)	0.101 ^{//}
Ever had sex same day as met partner	52 (61.9)	517 (54.2)	0.173
Ever been paid for sex	21 (25.0)	193 (20.2)	0.300
Ever told they have an STI ^{**}	58 (69.1)	535 (56.5)	0.026

Characteristic	Positive N (%) (n = 84)	Negative N (%) (n = 958)	<i>P</i> [*]
Told they had an STI in past year ^{**}	24 (28.6)	246 (26.2)	0.632
Hormonal contraceptive use past year	36 (42.9)	353 (37.0)	0.288
Depo-Provera use past year	18 (21.4)	79 (8.3)	<0.001
Ever had miscarriage	9 (10.7)	82 (8.6)	0.500
Frequency of condom use during vaginal sex (past year)			
None	15 (18.5)	176 (19.7)	0.607
Some	27 (33.3)	238 (26.6)	
Half	13 (16.1)	158 (17.7)	
Most	16 (19.7)	230 (25.7)	
All	10 (12.3)	93 (10.4)	
Anal sex (ever)	45 (53.6)	512 (53.8)	0.963
Ever douched	37 (44.1)	407 (42.9)	0.843

PHSKC indicates Public Health-Seattle & King County; STI, sexually transmitted infections.

^{*} *P*-value is for Pearson's χ^2 test unless otherwise specified.

[†] *P*-value is for Fisher exact test.

[‡] "Other" includes mixed race individuals who elected not to select a primary race.

[§] Income may include that of spouse/partner for individuals who estimated joint income only.

[¶] Working more than 10 hour per week.

^{//} *P*-value is for Wilcoxon rank sum test.

^{**} STI includes "chlamydia, gonorrhea, trichomoniasis, syphilis, HSV, or HIV."

TABLE 2

Characteristics of the Most Recent Sexual Partnership in Women With and Without M. genitalium Infection Attending the PHSKC STD Clinic From 2000 to 2006

Characteristic	Positive N (%) (n = 84)	Negative N (%) (n = 958)	P *
Currently involved in a relationship	60 (76.9)	643 (71.4)	0.295
Relationship status [†]			
Dating exclusively	22 (51.2)	234 (49.6)	0.196
Dating, not exclusive	18 (41.9)	158 (33.5)	
Only having sex	3 (7.0)	80 (16.9)	
Place of first meeting (most recent partner)			
Formal place	43 (55.1)	479 (53.1)	0.891
Informal place	24 (30.8)	279 (30.9)	
Other	11 (14.1)	145 (16.1)	
Relationship duration more than 3 mo	56 (72.7)	622 (69.2)	0.517
Age difference			
Same age (within 3 yr)	40 (51.3)	430 (47.7)	0.123
Partner is older	36 (46.2)	386 (42.8)	
Partner is younger	2 (2.6)	85 (9.4)	
Partner race [‡]			
White	7 (9.0)	384 (42.3)	<0.001
Black	61 (78.2)	347 (38.5)	
Asian	3 (3.8)	35 (3.9)	
Native American	1 (1.3)	24 (2.7)	
Other [§]	6 (7.7)	112 (12.4)	
Partner's education [†]			
<High school	17 (22.7)	126 (14.9)	0.017
HS diploma	31 (41.3)	269 (31.8)	
Some college	19 (25.3)	248 (29.3)	
College graduate or some graduate school	8 (10.7)	202 (23.9)	
Education discordance			
Same education	32 (42.7)	375 (42.6)	0.332
Partner has lower education	15 (20.0)	236 (26.6)	
Partner has higher education	28 (37.3)	270 (30.7)	
Partner income [†]			
<\$10,000	36 (61.0)	312 (42.7)	0.006
\$10,000	23 (39.0)	419 (57.3)	
Income discordance			
Same income	15 (17.9)	251 (26.2)	0.137
Partner has lower income	30 (35.7)	263 (27.5)	
Partner has higher income	39 (46.4)	444 (46.4)	

Characteristic	Positive N (%) (n = 84)	Negative N (%) (n = 958)	P *
Has concurrent partners [†]	44 (62.0)	452 (52.5)	0.124
Partner has concurrent partners [†]	34 (46.6)	371 (44.7)	0.750
Partner has had an STI [†]	21 (33.9)	219 (33.2)	0.912
Partner has used drugs	46 (59.7)	506 (56.2)	0.550
Partner has used IV drugs	1 (1.3)	62 (7.1)	0.053
Partner has spent 1 night in jail			
No	19 (25.3)	398 (45.1)	
Yes	49 (65.3)	357 (40.5)	<0.001
Don't know	7 (9.3)	127 (14.4)	
Oral sex—with most recent partner [‡]			
Performed	54 (70.1)	710 (79.3)	0.059
Received	54 (69.2)	658 (73.4)	0.431
Anal sex with most recent partner [†]	19 (25.7)	223 (25.9)	0.966

PHSKC indicates Public Health-Seattle & King County; STI, sexually transmitted infections.

* P-value is for Pearson's χ^2 test unless otherwise specified.

[†] Of those who answered the question.

[‡] P-value is for Fisher exact test.

[§] Other includes mixed race individuals who elected not to select a primary race.

[¶] P-value is for Wilcoxon rank sum test.

TABLE 3

Characteristics Independently Associated With *M. genitalium*, *C. trachomatis*, and *N. gonorrhoeae* Infection^{*}

Characteristic	<i>M. genitalium</i> AOR [†] (95% CI)	<i>C. trachomatis</i> AOR (95% CI)	<i>N. gonorrhoeae</i> AOR (95% CI)
Age under 20	1.8 (1.01, 3.33)	2.0 (1.03, 3.70)	3.8 (1.23, 11.97)
Non-white race	2.8 (1.40, 5.72)	2.0 (1.14, 3.59)	3.5 (1.22–9.93)
Smoking	1.7 (1.03, 2.83)	—	—
Never been married	2.6 (1.08, 6.25)	—	—
Depo-Provera use	2.3 (1.19, 4.46)	—	—
Having a black partner (vs. a non-black partner)	3.4 (1.83, 6.29)	—	—
Previous STI (past year)	—	1.8 (1.02, 3.01)	—
Drug use	—	2.4 (1.20, 4.66)	6.2 (1.40, 27.81)
High school education or less	—	—	3.2 (1.11, 9.49)
Anal sex with most recent partner	—	—	3.0 (1.24, 7.20)
Hormonal contraceptive use in past 12 mo	—	—	0.2 (0.05, 0.58)
Douching	—	—	3.0 (1.10, 8.38)
Met and had sexual intercourse on the same day	—	—	6.7 (1.84, 24.18)

^{*} OR has been adjusted for all other characteristics independently associated with each organism. Characteristics not included for a specific organism were tested, but were not significantly associated and were left out of the model.

[†] AOR indicates adjusted odds ratio; CI, confidence interval; STI, sexually transmitted infections.