Prevalence and Perceived Acceptability of Nongenital Sexually Transmitted Infection Testing in a Cohort of Young Transgender Women

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Abstract

Purpose: This study documents the prevalence and acceptability of self-reported nongenital sexually transmitted infection (STI) testing among young transgender women ($n=72$).

Methods: Bivariate analyses assessed differences in outcomes by demographic and behavioral characteristics.

Results: Less than half of participants self-reported nongenital STI testing (43% rectal; 44% pharyngeal). More than half of the sample reported that they would not find self-collection of specimens uncomfortable/unpleasant (53% rectal; 62% pharyngeal). No differences were found between demographics and prevalence of nongenital STI testing; those reporting condomless receptive anal sex were more likely to report previous pharyngeal testing.

Conclusion: Future studies should document prevalence of nongenital STIs among transgender women.

Keywords: adolescent health, nongenital STI testing, STI testing, transgender women

Introduction

THE PREVALENCE of laboratory-confirmed HIV infection across studies is close to 20% for transgender women, which represents an estimated 49-fold increased odds compared with other adult populations worldwide.¹ Rates of sexually transmitted infections (STIs) in transgender women are undocumented in current U.S. national surveillance efforts, but have been estimated in convenience samples to be between 2% and 4% for laboratory-confirmed urethral bacterial infections^{2,3} and as high as 13% based on self-reports.⁴ In a recent systematic review, the weighted average prevalence among transgender women for rectal chlamydia was 26.5% and for rectal gonorrhea it was 25.4%.⁵ In addition, U.S.-based studies among men who have sex with men (MSM) may provide a proxy indicator of the potential high rates of nongenital STIs among transgender women, with rates of nongenital chlamydia between 7.9% and 14.1%, and for nongenital gonorrhea between 5.9% and 6.9%.^{6,7}

The 2015 STI treatment guidelines from the Centers for Disease Control and Prevention (CDC) recommend a comprehensive sexual behavior assessment and routine HIV/STI testing for transgender women; however, this guidance lacks explicit recommendations for rectal and pharyngeal nucleic acid-based testing of STIs.⁸ The World Health Organization (WHO) explicitly recommends screening for nongenital infections among transgender women who report a recent history of receptive anal sex.⁹ Adherence to routine nongenital STI testing can be an important strategy to control incident cases of chlamydia, gonorrhea, syphilis, and HIV infection among vulnerable populations, including transgender women, as early detection and treatment prevent onward transmission to sexual partners.^{5,10,11} Furthermore, infections may go undetected if only urethral specimens are collected as many infections are only detected in nongenital sites.^{5,7} HIV self-testing was found to be acceptable and feasible in a pilot study with 50 HIV-negative adult transgender women in San Francisco.¹² Yet, little is known about the

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prevalence of nongenital STI testing, or acceptability of and preferences for self- versus provider-collected STI specimens among transgender women.

Results from two studies indicate that rectal infections are more common than urethral infections in persons who have receptive anal sex.^{11,13} For young transgender women who engage in receptive anal sex, comprehensive STI testing is warranted.⁹ STI testing and treatment can prevent HIV transmission and can also be an opportunity to provide additional HIV prevention strategies, such as access to pre-exposure prophylaxis (PrEP), to persons most vulnerable to HIV infection.¹⁰ Despite the demonstrated need and clinical indication for PrEP among young transgender women, prior studies have demonstrated low rates of PrEP awareness and uptake.^{14,15} In a longitudinal study of more than 500 MSM, incident rectal STI diagnosis was associated with incident HIV (hazard ratio=2.7, 95% confidence interval 1.2–6.4) and time to HIV infection was significantly decreased in those who had been previously diagnosed with rectal STIs compared with those who had not.¹⁶ This analysis provides a strong connection and potential causal link between rectal STI and HIV diagnosis.

However, barriers to routine nongenital STI testing for transgender women exist, including low rates of documented urethral STIs, the perception that patients may find rectal testing invasive, absence of CDC-specific nongenital STI testing and treatment guidelines, and the lack of a Food and Drug Administration (FDA)-approved nucleic acid-based test for nongenital sites.⁸ Given these barriers and the lack of empirical evidence on nongenital STI testing and preferences among transgender women, our objectives were (1) to document the prevalence of self-reported rectal and pharyngeal STI testing among a cohort of young transgender women, and (2) to analyze preferences for self-collected specimens versus provider-collected specimens among a cohort of young transgender women.

Methods

Study sample

Data for this analysis come from a multisite efficacy trial “LifeSkills” (R01MH094323) in Chicago, Illinois and Boston, Massachusetts, of a group-level behavioral HIV prevention intervention to reduce sexual risk for HIV acquisition and transmission among young transgender women ($n=300$).¹⁷ Nongenital STI testing was not discussed or offered as part of the intervention. Eligibility for the parent study included the following: (1) ages 16–29 years; (2) assigned a male sex at birth and at the time of enrollment self-identify as a woman, female, transgender woman, trans female, male-to-female (MTF), or on the trans-feminine spectrum; (3) English speaking; (4) no plans to move from the local study area for at least 12 months; and (5) self-reported sexual risk. Participants completed baseline and follow-up study visits (at 4-month intervals) over a 12-month period, which included psychosocial and behavioral assessment via computer-assisted self-interviewing and testing for HIV and urethral gonorrhea and chlamydia infections. We extended the parent study for an additional two visits at 18- and 24-month follow-up for one-quarter of the sample (i.e., recruited and enrolled in the extension substudy sequentially in order of initial enrollment) to track the trajectory of sexual risk over time (NB: due to

financial resource constraints, we were unable to collect extended follow-up data on the entire sample).

Data collection and measures

A measure was created by the study team to assess the prevalence and perceived acceptability of nongenital STI testing among the cohort and was administered at the 18-month study visit, and therefore, only participants who completed the 18-month study visit were eligible for inclusion. Survey items included history of ever receiving an STI test at a nongenital site (“Have you ever had an oral STI test (other than HIV) that used a cotton swab that was placed in your mouth or throat?” and “Have you ever had an anal STI test that used a cotton swab that was placed in your anus (butt)?” Response options: “yes, one time,” “yes, many times,” “no, never,” “don’t know”), preference for self- versus provider-collected specimens (“Would you prefer to perform the STI test of your anus yourself or have a medical professional do it?” and “Would you prefer to perform the STI test of your throat yourself or have a medical professional do it?” Response options: “prefer to do it myself,” “prefer medical professional,” “no preference”), and acceptability of and attitudes toward self-collection (e.g., comfort, privacy, and recommendation to a friend).

Data analyzed herein include demographic characteristics collected at the baseline visit (age in years and primary race/ethnicity—non-Hispanic White, non-Hispanic Black, Hispanic or Latino of any race, and other); the most recent HIV test result (baseline, 4-month, or 12-month; testing was not offered at any other data collection point); all other data reflect those collected at the 18-month visit, including measures of housing status (experiencing homelessness in the past 6 months, yes/no), gender identity (female, male, transgender, other), sexual behavior (engaging in sex work in the past 6 months; condomless receptive anal sex in the past 6 months, both yes/no), and healthcare access (access to primary care, yes/no). All participants completed written informed consent for study participation. The Institutional Review Boards at both study sites (Ann & Robert H. Lurie Children’s Hospital and The Fenway Institute) approved the study; parental consent was waived for minors (ages 16–17 years) who assented to study procedures themselves.

Analyses

Frequencies were used to describe the sample and bivariate analyses were performed to detect differences in two outcomes: self-reported prevalence of ever receiving nongenital STI testing (yes, no) and preference for specimen collection (self-collected, provider-collected, no preference). Self-reported prevalence was dichotomized with “yes, one time” and “yes, many times” categorized as “yes” and “no, never” and “don’t know” responses categorized as “no”; nine participants indicated “don’t know” to ever receiving pharyngeal testing and three participants indicated “don’t know” to ever receiving rectal testing. Age categories (16–24, 25–29 years) were formed based on developmental stages, using guidance from the WHO (e.g., “young person” is 24 years or younger). Primary race was dichotomized as Black versus all other races. Experienced homelessness in the past 6 months was recorded as yes versus no. Chi-square and Fisher’s exact tests were used to examine differences between selected

sociodemographic and behavioral variables (categorically specified) and outcomes separately, for pharyngeal and rectal STI testing. Analyses were conducted in SPSS Version 24.¹⁸

Results

Seventy-two participants completed the 18-month study visit, representing 24% of those enrolled in the parent study (72 of 300) and 74% (72 of 97) of participants sequentially recruited for the extension 18-month follow-up sub-study. Participants reported their self-identified gender as 4% “other,” 7% male, 35% transgender, and 54% female. At enrollment, all participants screened eligible and endorsed a male sex at birth and current identity as a woman, female, transgender woman, trans female, MTF, or on the trans-feminine spectrum. The median age was 22.6 years (standard deviation = 2.8 years). Fifty-six percent of the sample considered Black/African American to be their primary race, with 15% White, 14% Latino, and 15% selecting “other” as their primary race. Twenty-one percent (15 participants) of the sample was HIV positive (laboratory confirmed); only one case represented incident infection (i.e., participant tested HIV negative at enrollment and subsequently tested HIV positive at a follow-up visit). Fifteen percent (11 of 72 participants) reported being homeless for any length of time during the previous 6 months.

Overall, 44% reported ever receiving pharyngeal STI testing and 43% reported ever receiving rectal STI testing. Sixty-three percent of those who reported nongenital testing reported both rectal and pharyngeal STI testing, whereas 38% reported only pharyngeal testing and 28% reported only rectal testing. Regardless of whether or not they had experienced nongenital STI testing in the past, 62% of participants reported they would not find self-collection of pharyngeal specimens uncomfortable or unpleasant, 70% reported they would feel in control of their health, and 68% would recommend self-testing to a friend. Likewise, 53% of participants reported they would not find self-collection of rectal specimens uncomfortable, 80% reported they would not find the test painful, 64% would feel in control of their health, and 61% would recommend testing to a friend. Approximately half of the sample reported a preference for provider-collected specimens over self-collected specimens (50% pharyngeal, 46% rectal); however, more than a third reported no preference (39% pharyngeal, 35% rectal).

No differences were found between demographic characteristics and the prevalence of self-reported nongenital STI testing at either collection site (Table 1). However, those who reported condomless receptive anal sex were more likely to report previous pharyngeal testing than those who did not report condomless receptive anal sex (Table 1, 69% vs. 38%, $p=0.03$); 56% of those reporting condomless receptive anal sex had a

TABLE 1. CHARACTERISTICS BY PREVALENCE OF EVER RECEIVING SEXUALLY TRANSMITTED INFECTION TESTING AT NONGENITAL SITE, $N=72$

	Total n (%)	Pharyngeal		p	Rectal		p
		Yes, n (%)	No, n (%)		Yes, n (%)	No, n (%)	
Site		32 (44)	40 (56)		31 (43)	41 (57)	
Boston	31 (43)	11 (35)	20 (65)	0.18	14 (45)	17 (55)	0.75
Chicago	41 (57)	21 (51)	20 (49)		17 (42)	24 (58)	
Race							
Black	40 (56)	19 (48)	21 (52)	0.56	19 (48)	21 (52)	0.39
All other races	32 (44)	13 (41)	19 (59)		12 (38)	20 (62)	
Age							
16–24 years	45 (63)	23 (51)	22 (49)	0.14	20 (44)	25 (56)	0.76
25–29 years	27 (38)	9 (33)	18 (67)		11 (41)	16 (59)	
Housing status							
Experienced homelessness	11 (15)	7 (64)	4 (36)	0.20*	6 (55)	5 (45)	0.51*
Stably housed	61 (85)	25 (41)	36 (59)		25 (41)	36 (59)	
HIV status							
Positive	15 (21)	7 (47)	8 (53)	0.85	5 (33)	10 (67)	0.39*
Negative	57 (79)	25 (44)	32 (56)		26 (46)	31 (54)	
Sex work, past 6 months							
Yes	16 (22)	7 (44)	9 (56)	0.95	8 (50)	8 (50)	0.53
No	56 (78)	25 (45)	31 (55)		23 (41)	33 (59)	
Condomless receptive anal sex							
Yes	16 (22)	11 (69)	5 (31)	0.03*	9 (56)	7 (44)	0.23
No	56 (78)	21 (38)	35 (63)		22 (39)	34 (61)	
Primary care							
Yes	47 (65)	23 (49)	24 (51)	0.29	20 (43)	27 (57)	0.91
No	25 (35)	9 (36)	16 (64)		11 (44)	14 (56)	

Percentages may not total 100, due to rounding.

*Fisher’s exact test reported when cell sizes ≤ 5 ; bold results $p < 0.05$.

previous rectal STI test compared with 39% of those who did not report condomless receptive anal sex (not significant). The majority of participants reported provider-administered experiences, with 97% of pharyngeal specimens and 74% of rectal specimens collected by a medical provider. There were no significant differences found between specimen collection mode and demographic characteristics (Table 2). There was a significant difference in preference for specimen collection mode between those who reported condomless receptive anal sex compared with those who did not report condomless receptive anal sex for both pharyngeal and rectal specimens (Table 2). A higher percentage of those who reported having condomless receptive anal sex expressed a preference for provider-collected pharyngeal and rectal specimens, compared with self-collection and not having a preference.

Few differences by participant characteristics were detected in terms of attitudes toward self-collection. Those who reported engaging in sex work in the previous 6 months were more likely than those who did not engage in sex work to report negative attitudes toward pharyngeal self-collection (e.g., being bothered, uncomfortable, finding the procedure unpleasant); however, there were no statistically significant differences in reported attitudes for rectal self-collection. For both pharyngeal and rectal self-collection, those with a primary care provider were more likely, than those without, to report positive attitudes toward self-collection (believing

the test is correct, feeling in control of their health, would recommend to a friend); however, they were also more likely to prefer a medical professional collect the specimen. These differences were statistically significant at $p < 0.05$ (not displayed, available by author request).

Discussion

Less than half of this cohort of young transgender women reported ever being screened for rectal or pharyngeal STIs. This presents a missed opportunity in HIV and STI prevention efforts and a lack of adherence to currently recommended clinical guidelines for comprehensive medical care. Rectal STIs, in particular, have been linked to increased risk for HIV transmission.^{4,5,16} Furthermore, in studies of nongenital STI rates among MSM, the majority of patients were asymptomatic and many infections were only found at nongenital sites, and therefore, if patients are not offered comprehensive STI testing, many infections will go undetected and untreated.^{7,10} It is important to note that our study found higher rates of both pharyngeal and rectal STI testing among those who reported condomless receptive anal sex compared with those who did not, indicating that those at highest risk for exposure to nongenital infections are getting screened at higher rates.

There are no FDA-approved nucleic acid-based tests for STI specimens collected from nongenital sites. Given that

TABLE 2. CHARACTERISTICS BY SELF- VERSUS CLINICIAN-COLLECTED NONGENITAL SEXUALLY TRANSMITTED INFECTION TESTING PREFERENCE, $N = 72$

	Pharyngeal				Rectal			
	Self-collected, n (%)	Provider-collected, n (%)	No preference, n (%)	p	Self-collected, n (%)	Provider-collected, n (%)	No preference, n (%)	p
Site								
Boston	4 (13)	17 (55)	10 (32)	0.66	4 (13)	19 (61)	8 (26)	0.08*
Chicago	4 (10)	19 (46)	18 (44)		10 (24)	14 (34)	17 (42)	
Race								
Black	4 (10)	21 (53)	15 (37)	0.84	9 (22.5)	17 (42.5)	14 (35)	0.74
All other races	4 (12)	15 (47)	13 (41)		5 (16)	16 (50)	11 (34)	
Age								
16–24 years	4 (9)	23 (51)	18 (40)	0.74	8 (18)	19 (42)	18 (40)	0.51
25–29 years	4 (15)	13 (48)	10 (37)		6 (22)	14 (52)	7 (26)	
Housing status								
Experienced homelessness	0 (0)	4 (36)	7 (64)	0.19*	3 (27)	4 (36)	4 (36)	0.64*
Stably housed	8 (13)	32 (53)	21 (34)		11 (18)	29 (48)	21 (34)	
HIV status								
Positive	1 (7)	9 (60)	5 (33)	0.70*	3 (20)	6 (40)	6 (40)	0.93
Negative	7 (12)	27 (47)	23 (40)		11 (19)	27 (47)	19 (33)	
Sex work, past 6 months								
Yes	1 (6)	8 (50)	7 (44)	0.92*	3 (19)	9 (56)	4 (25)	0.57*
No	7 (13)	28 (50)	21 (38)		11 (20)	24 (43)	21 (37)	
Condomless receptive anal sex								
Yes	2 (12)	12 (75)	2 (12)	0.04*	4 (25)	11 (69)	1 (6)	0.02*
No	6 (11)	24 (43)	26 (46)		10 (18)	22 (39)	24 (43)	
Primary care								
Yes	5 (11)	26 (55)	16 (34)	0.46	7 (15)	22 (47)	18 (38)	0.38
No	3 (12)	10 (40)	12 (48)		7 (28)	11 (44)	7 (28)	

Percentages may not total 100, due to rounding.

*Fisher's exact test reported when cell sizes ≤ 5 ; bold results $p < 0.05$.

many rectal infections are asymptomatic, routine testing is the most effective means to reduce the burden of infections and, in turn, reduce HIV transmission.⁹ Rectal STIs are a biomarker for condomless receptive anal sex, which poses a risk for HIV infection and transmission; STI testing at all potential infection sites provides an opportunity to disrupt the HIV transmission cycle among young transgender women.

It is important to document the prevalence of nongenital STIs among transgender women and to understand the STI testing experiences, as well as preferences, of young transgender women to provide tailored comprehensive sexual healthcare. Future mixed-methods research is needed to gather acceptability and feasibility data for nongenital STI testing while implementing self- versus provider-collection methods. Our results indicate that there may be differences in acceptability of self- versus provider-collected specimens based on sexual behavior (e.g., engaging in sex work) and/or healthcare experiences (e.g., having a primary care provider). Past relationships with providers, health literacy, and self-efficacy may influence preferences for specimen collection.

We hypothesized that self-collection of STI specimens may be an empowerment-focused way to engage young transgender women in sexual healthcare; however, our results demonstrate preference for provider-collected specimens. Despite this preference, participants reported high levels of perceived comfort with and acceptability of self-collection. Thus, the option of self-collection should not be overlooked when providing nongenital STI testing services to young transgender women. Furthermore, our participants were not given information on the efficacy of self-testing, which may have biased results in favor of provider-collected specimens.

Limitations

These results should be interpreted in light of several limitations. Previous nongenital STI testing was self-reported and we speculate that the higher rate of pharyngeal testing reported may be due to its conflation with rapid HIV testing. Findings from this convenience sample are not generalizable to the entire population of transgender women. In addition, the analysis included five individuals who reported their gender identity as male at the 18-month visit, and therefore, they should not have been considered transgender women. Those enrolled in the parent study and retained in the study at the 18-month follow-up visit may be less likely to be exposed to STIs than those who were lost to follow-up or who did not enroll in the study. Furthermore, only 24% of the cohort completed the 18-month study visit. Finally, our sample size was small and limited in statistical power.

Conclusion

Rectal STIs provide an informative marker of heightened HIV risk, which can upregulate HIV transmission and acquisition, and can function as an important opportunity to provide PrEP education and initiation and other biobehavioral HIV prevention efforts to those most vulnerable to HIV.¹⁵ Given the high rates of HIV among young transgender women, it is critical that appropriate STI testing is conducted. Future research should prioritize integrating satisfaction questions at the time of STI testing, training providers on comprehensive sexual history taking, and advocating for clear and concrete STI testing guidelines from the CDC.⁸ While adher-

ence to testing guidelines are often low, they are a starting point for allocation of resources and services. Nongenital STI testing and treatment are a viable component of HIV prevention interventions for young transgender women that are currently being underutilized. Young transgender women reported moderately high levels of acceptability for testing and preference for provider-collected specimens, demonstrating that scale-up of nongenital STI testing for this population is possible.

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Disclaimer

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Author Disclosure Statement

No competing financial interests exist.

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