Title

Sexually Transmitted Infection Positivity Among Adolescents With or at High-Risk for Human Immunodeficiency Virus Infection in Los Angeles and New Orleans.

Journal

Sexually Transmitted Diseases, 46(11)

ISSN

0148-5717

Authors

Shannon, Chelsea L
Keizur, Erin M
Fehrenbacher, Anne
et al.

Publication Date

2019-11-01

DOI

10.1097/olq.0000000000001056

Peer reviewed

HHS Public Access

Author manuscript

Sex Transm Dis. Author manuscript; available in PMC 2020 November 01.

Published in final edited form as:

Sex Transm Dis. 2019 November ; 46(11): 737–742. doi:10.1097/OLQ.0000000000001056.

Sexually transmitted infection positivity among adolescents with or at high-risk for human immunodeficiency virus-infection in Los Angeles and New Orleans

CL Shannon, BA[1], **E Keizur, BS**[1], **A Fehrenbacher, PhD MPH**[2], **W Ramos, MS**[2], **M Koussa, MPH**[2], **J Fournier, MS**[3], **SJ Lee, PhD**[2], **D Patel, BA/BS**[4], **WN Akabike, BA**[5], **SE Abdalian, MD**[3], **MJ Rotheram-Borus, PhD**[2], **JD Klausner, MD MPH**[1], **Adolescent Trials Network (ATN) CARES Team**

[1]Division of Infectious Diseases, David Geffen School of Medicine, University of California Los Angeles, CA, USA

[2]Department of Psychiatry and Biobehavioral Sciences, David Geffen School of Medicine, University of California Los Angeles, CA, USA

[3]Department of Pediatrics/Adolescent Medicine, Tulane University School of Medicine, New Orleans, LA, USA

[4]Department of Health Policy and Management, University of California, Los Angeles, CA, USA

[5]Department of Community Health Sciences, University of California, Los Angeles, CA, USA

Abstract

Background: Gay, bisexual, and transgender youth and homeless youth are at high risk for sexually transmitted infections (STIs). However, little recent data exist describing STI positivity by anatomical site among those groups. We determined the positivity of *Chlamydia trachomatis* (CT) infection, *Neisseria gonorrhoeae* (NG) infection, and syphilis antibody reactivity among lesbian, gay, bisexual, transgender, and homeless youth.

Methods: We recruited 1,264 adolescents with high risk behavior aged 12-24 years from homeless shelters, lesbian, gay, bisexual, and transgender organizations, community health centers, and using social media and online dating apps in Los Angeles, California and New Orleans, Louisiana from May 2017- February 2019. Participants received point-of-care pharyngeal, rectal, and urethral/vaginal CT and NG testing and syphilis antibody testing. We calculated STI positivity by anatomical site and compared positivity by participant subgroups based on HIV status, sex assigned at birth, and gender identity.

Results: CT and NG positivity and syphilis antibody reactivity was higher among HIV-infected adolescent MSM than HIV-uninfected adolescent MSM (40.2% versus 19%, $p < .05$), particularly CT or NG rectal infection (28% versus 12.3%, $p < .05$). Of participants with positive CT or NG

Corresponding author information: Name: Erin Keizur, Address: 10920 Wilshire Blvd, Suite 350, Los Angeles, CA 90024, Fax: 310-794-8297, Phone: 509-432-1562, Erin.keizur@gmail.com.

Conflict of interest statement

The authors do not have a commercial or other association that might pose a conflict of interest.

infections, 65% had extragenital-only infections, 20% had both extragenital and urogenital infections, and 15% had urogenital-only infections.

Conclusions: STI positivity was high, particularly among transgender women and men who have sex with men. The high proportion of rectal and pharyngeal infections highlights the importance of both urogenital and extragenital STI screening. More accessible STI testing is necessary for high-risk adolescent populations.

Short summary:

A study of adolescents in New Orleans and Los Angeles found high STI positivity, particularly among HIV-infected adolescents, transgender women, or men who have sex with men.

Keywords

Chlamydia trachomatis (CT); *Neisseria gonorrhoeae* (NG); syphilis antibody; point-of-care testing; adolescents

Introduction:

Sexually transmitted infection (STI) rates have been rising in the United States since 2013.[1] That rise has been particularly pronounced among adolescents and young adults aged 15- 24 years old. In 2017, there were 1.7 million *Chlamydia trachomatis* (CT) infections, 560,000 *Neisseria gonorrhoeae* (NG) infections, and 30,600 syphilis infections. It is estimated that over half of those new infections occurred among adolescents and young adults.[1]

Adolescents and young adults are at increased risk for STIs for a combination of biological, behavioral, and social factors. Compared to adult women, young women are biologically more susceptible to CT infection if exposed due to increased cervical ectopy.[2] Adolescents and young adults are also more likely than adults to have concurrent sexual partners.[3] Finally, adolescents and young adults are less likely to receive STI screening due to concerns about confidentiality and stigma.[4]

Rapid diagnostic STI tests present an opportunity to increase access to STI screening among adolescents and young adults, particularly high-risk adolescents who do not traditionally have access to sexual health services.[5] Those tests can be performed in non-clinical, community-based settings, allowing for opportunities to test and treat those who are not engaged in the traditional healthcare system.[6]

Gay, bisexual, and transgender youth have been shown to have particularly high rates of STIs. While numerous studies have shown increased risk of STIs among adult men who have sex with men (MSM), few studies have examined STI positivity in gay, bisexual, and transgender youth. Negative attitudes towards homosexuality, poor mental health, and substance abuse are all associated with increased likelihood of unprotected anal sex and increased number of sex partners.[7] Very few studies have compared STI rates between young MSM and other sexual and gender minority populations, including transgender women and men, non-binary youth, and lesbian or bisexual cisgender women. Youth who

are homeless, incarcerated, or use illicit substances have also been shown to be at increased risk for STIs.[8–12] However, the data that exist are limited in scope.

In this study, we used data from the Adolescent Medicine Trials Network for HIV/AIDS Interventions to evaluate baseline positivity of urogenital and extragenital CT and NG, as well as positivity of syphilis antibody among a large and diverse sample of adolescents in Los Angeles and New Orleans.

Materials and Methods:

Recruitment.

We recruited adolescents aged 12-24 years old from homeless shelters, lesbian, gay, bisexual, and transgender organizations, community health centers, and social media and online dating apps, such as Grindr, Tinder, Jack'd, Scruff, and Chappy in Los Angeles and New Orleans between May 2017 and February 2019. We referred eligible participants recruited from dating apps to one of our existing study sites for testing. We determined participant eligibility using a survey that measured gender identity and risk behaviors using 14 questions, such as illicit drug use, condomless sex, sexual contact with HIV-infected partners, transactional sex, and needle sharing or sex while incarcerated to provide an overall risk score.[13] The previous factors were weighted, and if a participant had a high enough score, they were eligible for the study.

STI testing procedures.

At each recruitment site, we tested participants for HIV using the Alere Determine HIV-½ Ag/Ab rapid test. We additionally tested participants for CT and NG using self-collected pharyngeal, rectal, and urogenital specimens. We used the Xpert ® CT/NG Assay (Cepheid, Sunnyvale, CA). The test is a qualitative real-time, Food and Drug Administration approved, PCR test, and results are available in 90 minutes.[14] It has also been verified using pharyngeal and rectal swabs in accordance with the Clinical Laboratory Improvement Amendments.[15] The Cepheid assay system included a "specimen adequacy control" which will produce an error in the result if the specimen does not contain human DNA target. In addition Cepheid provided technical support including training for the study team. The study team provided verbal and written instructions on self-collecting samples for the participants. We tested for syphilis treponemal antibodies using the Syphilis Health Check (Diagnostics Direct, Cape May Court House, NJ) which uses fingerstick whole blood to provide results in 10 minutes.[16] We allowed participants to opt out of any test they did not want to receive. We recorded STI screening and treatment results in the mobile application CommCare (Dimagi, Cambridge, MA).

STI treatment procedures.

If participants screened positive for CT or NG, we provided them with same-day treatment packs and expedited partner therapy packs. We provided participants with up to 10 expedited partner therapy packs. Participants also had the option to receive treatment with their primary care provider, if they had one, or a referral to a local medical clinic. If a participant was reactive for syphilis antibody, we referred them to a medical provider for confirmatory

testing and treatment. All partner medical clinics agreed to provide STI treatment in accordance with CDC recommendations.[17] We treated vaginal, urethral, and pharyngeal CT infections with one dose of 1 gm oral azithromycin, while we treated rectal CT infections with 100 mg oral doxycycline twice daily for 7 days. We treated NG infections with one dose of 400 mg oral cefixime and 1 gm oral azithromycin. If an NG infection was accompanied with a rectal CT infection, we treated with 100 mg oral doxycycline twice daily for 7 days and one dose of 400 mg oral cefixime. Partners were treated based on the infection of the participant (CT and/or NG) and the type of sex reported (vaginal, oral, and/or anal). Partners were also encouraged to seek follow up care with their primary care provider.

Statistical Analysis

We calculated baseline positivity of each STI as the proportion of participants who tested positive divided by the total number of participants who received each test by anatomical site (rectal, pharyngeal, or vaginal/urethral) and location (Los Angeles vs. New Orleans). We further disaggregated based on HIV-infection status, sex assigned at birth, and gender identity. Participants could refuse any test, so denominators for each proportion were allowed to vary from the total sample size within each HIV-infection status by gender subgroup. If a participant had more than one testing visit, only their first testing date was included in the analysis.

To test for significant differences in STI positivity by anatomical site, we conducted Pearson's chi-squared tests or Fisher's exact tests for cell sizes <5, comparing: 1) cisgender MSM vs. cisgender heterosexual men; 2) HIV-infected vs. HIV-uninfected participants; and 3) participants from Los Angeles vs. New Orleans. A $p<0.05$ was used to determine significant differences in chi-squared and Fisher's exact tests.

Due to small sample sizes for transgender subgroups in the study, we used grouped categories for transgender women/transfeminine and transgender men/transmasculine individuals to calculate proportions by gender identity. Non-binary individuals assigned male at birth were included in the transgender woman/transfeminine category, and non-binary individuals assigned female at birth were included in the transgender men/transmasculine category. Other non-binary groups included in those categories based on their sex assigned at birth were genderqueer, gender nonconforming, two-spirit, and questioning individuals.

The University of California Los Angeles Institutional Review Board approved the study protocol (UCLA IRB #16-001674-AM-00006). Any protocol deviations or indications of adverse events were reported to the Institutional Review Board. The study was registered at ClinicalTrials.gov on April 28, 2017 (#).

Results:

Approximately 17% of participants who were screened for the study were ineligible because they did not meet the risk criteria. We recruited 1,264 adolescents into the study, 690 from Los Angeles and 574 from New Orleans from May 2017-February 2019. Participants were

14-24 years of age, with a mean age of 21 years old (SD = 1.41). Of the total participants, 71% were cisgender men, 17% were cisgender women, 5% were transgender women, 2% were transgender men, and 4% were non-binary. Half (50.7%) of the sample identified as MSM. The majority of participants were African American (57%) or Hispanic/Latino (22%).

Table 1a and 1b show baseline STI positivity by anatomical site based on HIV-infection status, sex assigned at birth, and gender identity. Refusal for testing varied by STI test type and anatomical site: 5.6% for any rectal infection, .47% for any pharyngeal infection, and 1.1% for any vaginal/urethral infection. Cisgender, heterosexual men were more likely to opt out of rectal infections (15.4% refusals).

Of all participants with a positive STI test, 59% identified as MSM. HIV-uninfected, cisgender MSM had significantly higher syphilis antibody reactivity (6.8% versus 1.6%, $p<0.05$), rectal infections (12.3% versus 4.3%, p-value <0.05), and pharyngeal infections (7.0% versus 1.6%, $p<0.05$) compared to HIV-uninfected, heterosexual cisgender men.

Figure 1 shows STI positivity by HIV-infection status, gender identity, and sex assigned at birth.

Only 17% (4/23) of women with a rectal CT or NG infection reported having receptive anal sex in the past 4 months, and 26% (6/23) of the women had rectal infections without concurrent vaginal infections. There were no significant differences in STI positivity between Los Angeles and New Orleans.

Figure 2 shows the proportion of participants with an extragenital CT or NG infection (rectal or pharyngeal) or a urogenital CT or NG infection (vaginal or urethral).

Discussion:

We measured CT and NG infection and syphilis treponemal antibody reactivity among at-risk adolescents in Los Angeles and New Orleans and found a high proportion of STIs, especially among HIV-infected participants and transgender women. Rectal CT was the most common infection overall, followed by syphilis and rectal NG. The high prevalence of STIs in our study exceeded the 9.2% prevalence of CT, NG, and trichomoniasis and the 4.6% prevalence of CT identified in studies using the National Longitudinal Study of Adolescent Health findings.[18,19]

The CDC recommends routine oropharyngeal and anorectal screening for CT and NG among MSM. However, not all health centers have adopted that risk-based extragenital screening[18] and studies have found that urine-only CT and NG tests can miss cases of extragenital infections in men.[20,21] Additionally, cisgender women who test positive for rectal infections are often un-infected at urogenital sites.[21] Of the participants with CT or NG infections in our study, over half had only pharyngeal or rectal infections and would have remained undetected and untreated with urogenital-only screening.

In our study, approximately one in five of the HIV-infected participants were also reactive for syphilis treponemal antibodies. The highest proportions of reactive syphilis tests were seen in HIV-infected cisgender MSM and transgender women. In the United States, cases of syphilis have increased by 73% from 2013 to 2017, and 58% of the cases in 2017 were among MSM.[22] The progression to neurosyphilis may also be more common in patients with HIV-coinfection.[23] Additionally, a recent modeling study estimates that 10% of HIV infections among MSM in the United States can be attributable to a CT or NG infection.[24] Screening for syphilis, along with other STIs, is important to prevent additional risk of HIV acquisition and transmission.[22,24]

Our study findings further underscore the importance of increasing outreach and testing programs tailored to gay, bisexual, and transgender populations. Cisgender MSM accounted for more than half of all positive STIs in our study. Furthermore, transgender women and non-binary individuals assigned male at birth had high rates of STIs, especially when co-infected with HIV. According to the CDC, in 2015 the percentage of transgender people who received a new HIV diagnosis was more than three times the national average.[26] Among HIV-infected participants, transgender women were nearly twice as likely to have a rectal infection compared to cisgender MSM.

Unexpectedly, HIV-uninfected cisgender women had similar proportions of rectal infections as HIV-uninfected cisgender MSM in the study. Most of the women with CT or NG rectal infections did not report having receptive anal sex in the past 4 months. Other studies have also found high proportions of rectal infections among women who report no anal sex[27], demonstrating the need for further research into other possibilities for acquisition such as migration from vagina to the anus and reliability of self-reporting of sexual history.

HIV-uninfected cisgender women also accounted for the highest proportion of vaginal infections, while HIV-uninfected cisgender heterosexual men also had a high proportion of urethral infections. Additionally, 9 cisgender heterosexual men in our study had rectal infections. Those participants self-identified as heterosexual and some, but not all, reported having anal sex. Greater efforts are needed to understand sexual behaviors among high-risk cisgender men and women to identify potential needs for additional STI testing among some who identify as heterosexual.

Our study is limited by convenience sampling which may have resulted in selection bias. We additionally used a risk score for study recruitment, therefore our sample may not be representative of all lesbian, gay, bisexual, and transgender, homeless, or incarcerated adolescents in Los Angeles and New Orleans. As participants could refuse any test, the true prevalence of infections in the study population may be different. We additionally had small sample sizes for certain subgroups, including HIV-infected transgender women and men and cisgender women. Further, the categories used to group transgender participants do not capture the full diversity of identities reported by all participants in the study. Future studies with larger transgender samples should investigate whether there are significant differences in STI positivity between binary (e.g., transgender men and women) and non-binary identified transgender youth (e.g., genderqueer, gender non-conforming, or two spirit

individuals). Finally, syphilis treponemal antibody reactivity does not necessarily indicate an active infection, so we cannot determine the clinical significance of these infections.

As STI rates continue to rise, there is a greater need for screening and access to testing among high-risk populations, particularly MSM and transgender women. The risk of co-infections and the high positivity of often asymptomatic rectal and pharyngeal CT and NG infections found in our study reveal the importance of both genital and extragenital screening for the detection of STIs. Extragenital screening must be incorporated as standard of care for high risk adolescents who report extragenital exposures to prevent STI cases from going undetected.

Acknowledgements

We would like to thank our study participants. In addition to the authors, the following members of the ATN CARES Team made contributions to this manuscript: Drew Wood-Palmer, Maria Isabel Fernandez, Leslie Kozina, Manuel Ocasio, Risa Flynn, Scott Comulada, Rob Weiss, Ron Brookmeyer, Ellen Almirol, Cameron Goldbeck, Yvonne Bryson, Karin Nielsen-Saines, Tara Kerin, Ruth Cortado, Elizabeth Mayfield Arnold, Norweeta Milburn, Dallas Swendeman, Cathy Reback, Marguerita Lightfoot, Jasmine Fournier, and Bill Kapogiannis.

Sources of funding

Our study was funded by the ATN for HIV/AIDS Interventions at the NIH (U19HD089886). The Eunice Kennedy National Institute of Child Health and Human Development is the primary funder of this network, with the support of the National Institute of Mental Health, National Institute of Drug Abuse, and National Institute on Minority Health and Health Disparities.

References:

1. Centers for Disease Control and Prevention. Sexually transmitted disease surveillance 2017. Available at: http://www.cdc.gov/std/stats17/2017-STD-Surveillance-Report_CDC-clearance-9.10.18.pdf. Accessed April 19, 2019.
2. Lee V, Foley E, Tobin J. Relationship of cervical ectopy to chlamydia infection in young women. J Fam Plann Reprod Health Care. 2006; 32(2):104–106. [PubMed: 16824301]
3. Youth Risk Behavior Survey. Data Summary and Trends Report. 2007-2017. Available at: https://www.cdc.gov/healthyyouth/data/yrbs/pdf/trendsreport.pdf. Accessed April 19, 2019.
4. Leichliter JS, Copen C, Dittus PJ. Confidentiality issues and use of sexually transmitted disease services among sexually experienced persons aged 15-25 years: United States, 2013-2015. MMWR Morb Mortal Wkly Rep 2017; 66 (9):237–241. [PubMed: 28278143]
5. Herbst de Cortina S, Bristow CC, Joseph DD, et al. A systematic review of point of care testing for Chlamydia trachomatis, Neisseria gonorrhoeae, and Trichomonas vaginalis. Infect Dis Obstet Gynecol 2016; 2016: ID 4386127
6. Rotheram-Borus MJ, Lee SJ, Swendeman D. Getting to Zero HIV Among Youth: Moving Beyond Medical Sites. JAMA pediatr 2018; 172 (12): 1117–1118. [PubMed: 30326015]
7. Rosario M, Schrimshaw E, Hunter J. A model of sexual risk behaviors among young gay and bisexual men: Longitudinal associations of mental health, substance abuse, sexual abuse, and the coming-out process. AIDS Educ Prev 2006; 18(5): 444–460. [PubMed: 17067255]
8. Reisner SL, Jadwin-Cakmak L, Sava L. Situated vulnerabilities, sexual risk, and sexually transmitted infections' diagnoses in a sample of transgender youth in the United States. AIDS patient care STDs 2019; 33(3): 120–130 [PubMed: 30844303]
9. Sugano E, Wilderson D, Klausner JD, et al. Outreach-based STI testing accesses a higher-risk subgroup of unstably-housed youth. Public Health and Human Rights APHA Annual Meeting 2006.
10. Tapert SF, Aarons GA, Sedlar GR, et al. Adolescent substance use and sexual risk- taking behavior. J Adolesc Health 2001; 28 (3): 181–189. [PubMed: 11226840]

11. Marshall BD, Kerr T, Shoveller JA, et al. Structural factors associated with an increased risk of HIV and sexually transmitted infection transmission among street-involved youth. BMC Public Health. 2009; 9(1): 7. [PubMed: 19134203]
12. Solorio MR, Rosenthal D, Milburn N, et al. Predictors of sexual risk behaviors among newly homeless youth: a longitudinal study. J Adolesc Health 2008; 42(4): 401–409. [PubMed: 18346666]
13. Comulada WS, Tang W, Swendeman D, et al. Development of an Electronic Data Collection System to Support a Large-Scale HIV Behavioral Intervention Trial: Protocol for an Electronic Data Collection System. JMIR Research Protocols 2018; 7(12):e10777. [PubMed: 30552083]
14. Cepheid. Xpert CT/NG Assay. Available at: http://www.cepheid.com/us/cepheid-solutions/clinical-ivd-tests/sexual-health/xpert-ct-ng. Accessed April 19, 2019.
15. Bristow CC, McGrath M, Cohen A, et al. Comparative Evaluation of 2 Nucleic Acid Amplification Tests for the Detection of Chlamydia trachomatis and Neisseria gonorrhoeae at Extragenital Sites. Sex Transm Dis 2017; 44(7): 398–400. [PubMed: 28604481]
16. Diagnostics Direct, LLC. Syphilis Health Check. Available at: https://www.diagnosticsdirect2u.com/images/PDF/SHC%20products/Syphilis%20Health%20Check%20%20test_PI%20rev%20N_121014_Final[1].pdf. Accessed April 19, 2019.
17. Workowski KA, Bolan GA. Centers for Disease Control and Prevention. Sexually Transmitted Diseases Treatment Guidelines 2015. MMWR Recomm Rep 2015; 64 (R-03): 1–137.
18. Ford J, Browning C. Neighborhoods and infectious disease risk: acquisition of chlamydia during the transition to young adulthood. J Urban Health 2017: 91(1): 136–150.
19. Vasilenko SA, Kugler KC, Butera NM, et al. Patterns of adolescent sexual behavior predicting young adult sexually transmitted infections: a latent class analysis approach. Arch Sex Behav. 2015; 44 (3): 705–715. [PubMed: 24449152]
20. Drinkard LN, Huxta RA, Halbritter A, et al. The case for extragenital screening of chlamydia trachomatis and Neisseria gonorrhoeae in the college health setting. Sex Transm Dis 2017; 44(5): 274–277. [PubMed: 28407642]
21. Danby CS, Cosentino LA, Rabe LK, et al. Patterns of extragenital chlamydia and gonorrhea in women and men who have sex with men reporting a history of receptive anal intercourse. Sex Transm Dis 2016; 43(2): 105. [PubMed: 26766527]
22. Centers for Disease Control and Prevention. Sexually transmitted disease surveillance 2017. Available at: https://www.cdc.gov/std/stats17/syphilis.htm. Accessed April 19, 2019.
23. Shi M, Peng RR, Gao Z. Risk profiles of neurosyphilis in HIV-negative patients with primary, secondary and latent syphilis: implications for clinical intervention. J Eur Acad Dermatol Venereol 2016; 30(4): 659–666. [PubMed: 26660338]
24. Jones J, Weiss K, Mermin J, et al. Proportion of incident HIV cases among men who have sex with men attributable to gonorrhea and chlamydia: a modeling analysis. Sex Trans Dis 2019 Publish ahead of print: DOI: 10.1097/OLQ.0000000000000980.
25. Hafeez H, Zeshan M, Tahir M, et al. Health care disparities among lesbian, gay, bisexual, and transgender youth: a literature review. Cureus 2017; 9(4): 1–7.
26. Centers for Disease Control and Prevention. 2018 HIV among Transgender People. Available at: https://www.cdc.gov/hiv/group/gender/transgender/index.html. Accessed April 19, 2019.
27. Van Liere G, Dukers-Muijrers N, Levels L, et al. High proportion of anorectal chlamydia trachomatis and Neisseria gonorrhoeae after routine universal urogenital and anorectal screening in women visiting the sexually transmitted infection clinic. Clin Infect Dis 2017; 64(12): 1705–1710. [PubMed: 28369227]

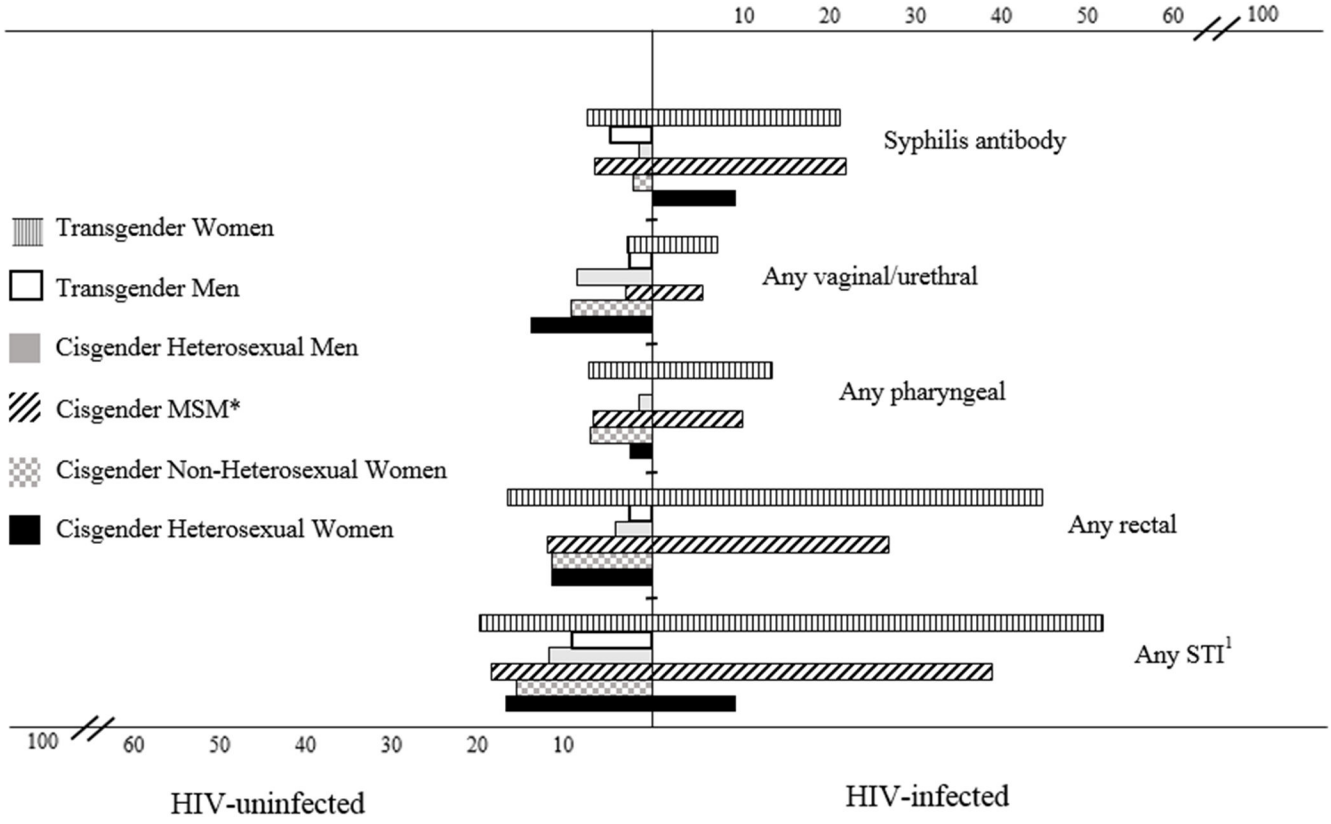

Figure 1.

Baseline prevalence of *Chlamydia trachomatis* (CT), *Neisseria gonorrhoeae* (NG), and syphilis antibody reactivity by human immunodeficiency virus (HIV)-infection status, gender identity, and sex assigned at birth for adolescents aged 14-24 years in Los Angeles and New Orleans, May 2017-February 2019.

[1]Any CT, NG, or syphilis antibody reactivity at any anatomic site

* Men who have sex with men

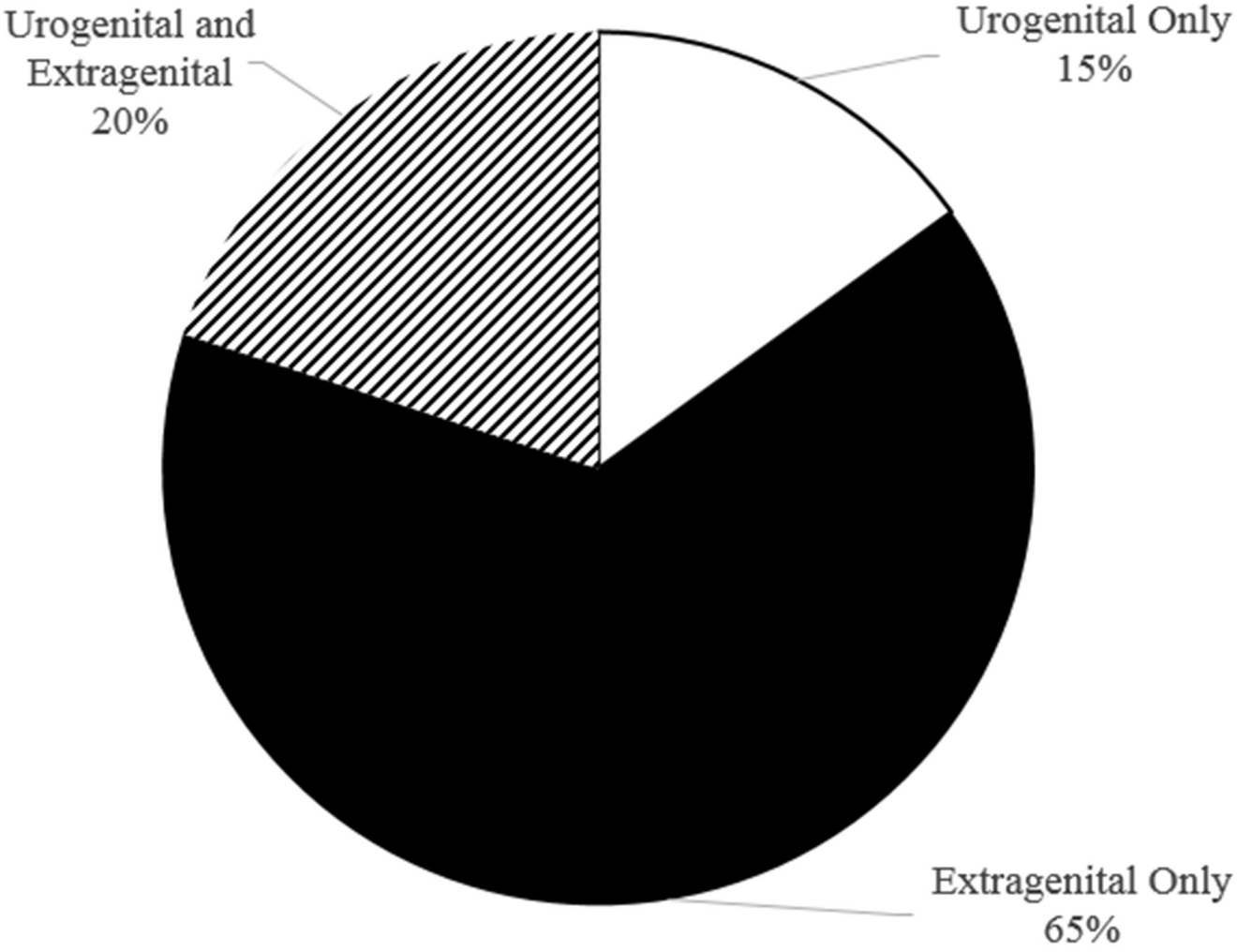

Figure 2.

Proportion of adolescents age 14-24 years with an extragenital (rectal or pharyngeal) or urogenital (urethral or vaginal) *Chlamydia trachomatis* (CT) or *Neisseria gonorrhoeae* (NG) infection in Los Angeles and New Orleans, May 2017-February 2019.

Table 1.

Baseline prevalence of *Chlamydia trachomatis* (CT), *Neisseria gonorrhoeae* (NG), and syphilis antibody among **a) human immunodeficiency virus (HIV)-infected** adolescents and **b) HIV-uninfected** adolescents aged 14-24 years in Los Angeles and New Orleans, May 2017-February 2019

a)

	HIV-infected, N=151			
	Transgender[a]	Cisgender		
	Women[b] n=18	Men n=123		Heterosexual Women n=10
		MSM[*] n= 116	Heterosexual n= 7	
	n (%)	n (%)	n (%)	n (%)
CT				
Rectal	3 (23.1)	20 (21.5)	0	0
Pharyngeal	0	2 (2.4)	0	0
Vaginal/Urethral	0	3 (3.6)	0	0
NG				
Rectal	4 (30.8)	11 (12.1)	0	0
Pharyngeal	2 (15.4)	8 (9.5)	0	0
Vaginal/Urethral	1 (7.1)	4 (4.8)	0	0
CT or NG				
Any Rectal	6 (46.2)	26 (28.0)	0	0
Any Pharyngeal	2 (14.3)	9 (10.7)	0	0
Any Vaginal/Urethral	1 (7.7)	5 (6.0)	0	0
Syphilis Antibody	2 (22.2)	19 (22.9)	0	1 (10.0)
Any STI[**]	5 (53.3)	41 (40.2)	0	1 (10.0)

b)

	Transgender[a]		Cisgender			
	Men[b] n=43	Women[c] n=86	Men n=779		Women n=205	
			MSM[*] n= 525	Heterosexual n= 254	Non-heterosexual N= 88	Heterosexual n= 117
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
CT						
Rectal	1 (2.6)	8 (10.5)	39 (8.2)	3 (1.4)	7 (8.4)	11 (10.2)
Pharyngeal	0	2 (3.0)	4 (1.2)	1 (.4)	3 (3.6)	2 (1.8)
Vaginal/Urethral	1 (2.7)	1 (1.5)	7 (2.0)	21 (8.5)	7 (8.3)	13 (11.7)
NG						
NG- Rectal	0	6 (7.9)	33 (6.9)	6 (2.9)	4 (4.8)	3 (2.8)
NG- Pharyngeal	0	3 (4.5)	23 (6.5)	3 (1.2)	4 (4.9)	1 (0.9)
NG- Vaginal/ Urethral	0	1 (1.5)	5 (1.4)	3 (1.2)	4 (4.8)	4 (3.6)

CT and NG						
Any Rectal	1 (2.6)	13 (17.1)	59 (12.3)	9 (4.3)	10 (11.9)	13 (12.0)
Any Pharyngeal	0	5 (7.5)	25 (7.0)	4 (1.6)	6 (7.2)	3 (2.7)
Any Vaginal/ Urethral	1 (2.7)	2 (2.9)	11 (3.1)	22 (8.8)	8 (9.5)	16 (14.4)
Syphilis Antibody	2 (4.9)	6 (7.6)	33 (6.8)	4 (1.6)	2 (2.3)	0
Any STI**	4 (9.5)	17 (20.4)	98 (19.0)	21 (12.2)	14 (16.1)	20 (17.4)

Note: Proportions are based on participants who received each test, as participants could refuse any test. As such, the denominators for calculated percentages vary by cell within each column. There were no HIV-infected transgender men.

[a] Includes gender non-binary individuals

[b] Assigned male sex at birth

[*] Men who have sex with men

[**] Any CT, NG, or syphilis infection at any anatomic site

Note: Proportions are based on participants who received the test, as participants could refuse any test. As such, the denominators for calculated percentages vary by cell within each column.

[a] Includes gender non-binary individuals

[b] Assigned female sex at birth

[c] Assigned male sex at birth

[*] Men who have sex with men

[**] Any CT, NG, or syphilis infection at any anatomic site