Characterization of patients seeking care at a Sexual Health Clinic who report engaging in exchange sex

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Abstract

Characterization of patients seeking care at a Sexual Health Clinic who report engaging in exchange sex

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Background: People who exchange sex (PWES) for money or drugs are at increased risk of HIV and other sexually transmitted infections (STIs) and may need tailored prevention and care services. Our objective was to characterize patients in the Public Health - Seattle & King Country Sexual Health Clinic who reported engaging in exchange sex and identify opportunities for improved service.

Methods: We conducted a cross-sectional analysis of patient encounters for new problem visits October 2010 - March 2020 with a completed computer assisted self-interview, including sex assigned at birth, gender identity, and receipt of money or drugs in exchange for sex, ever or in the past year. Individual patient data was the unit of analysis. We analyzed demographics, history of STIs, HIV and Hepatitis C (HCV) testing and treatment history, and HIV Pre-exposure Prophylaxis (PrEP) use among PWES and PWES stratified by gender. We also analyzed the

reason and outcome of the visit among PWES. Our analysis focused on people who reported a lifetime history of exchange sex because the characteristics of this group represented people who reported exchange sex in the past year. We compared characteristics of PWES ever vs. never using chi-square tests.

Results: During the study period, 30,327 patients attended the clinic. Of these, 1,611 (5%) were PWES, and 700 (2%) reported exchange sex in the past 12 months. Compared to people who never exchanged sex, PWES were more likely to report homelessness (29% vs. 7%, $p<0.001$), injection drug use (IDU) (39% vs. 4%, $p<0.001$), STIs in the past 12 months (36% vs. 19%, $p<0.001$), prior HIV diagnosis (13% vs. 5%, $p<0.001$), and prior HCV diagnosis (13% vs. 2%, $p<0.001$). PWES were less likely to report HIV viral suppression (67% vs. 73%, $p=0.04$) and HCV treatment (24% vs. 37%, $p<0.001$) than people who never exchanged sex. Among PWES there were 981 (61%) cisgender men, 545 (34%) cisgender women, and 85 (5%) transgender/genderqueer/non-binary persons. Compared to cisgender men and transgender/genderqueer/non-binary persons, cisgender women were more likely to report homelessness (41%) and prior HCV diagnosis (17%) but less likely to have received HCV treatment (42%). Cisgender men were more likely to report multiple sexual partners (48%-50%), IDU (37%), STIs in the past 12 months (42%), and prior HIV diagnosis (20%) than cisgender women and transgender/genderqueer/nonbinary persons. Among PWES, the most common reasons for coming to the clinic were wanting an STI test (60%) or HIV test (45%) and having STI symptoms (38%). At the clinic visit included in the analysis, evaluation of the clinic visit outcome for PWES showed 320 (20%) were diagnosed with one or more STI, 15 (1%) were newly diagnosed with HIV, and 15 (1%) initiated PrEP.

Conclusion: Many PWES in the Sexual Health Clinic had complex barriers to care, including homelessness and IDU, and a higher prevalence of previously diagnosed STIs, HIV, and HCV. Clinic visits are an opportunity to increase HIV viral suppression, HCV treatment, and PrEP uptake for PWES.

INTRODUCTION

People who exchange sex (PWES) for money, drugs, or other resources are at increased risk for HIV and sexually transmitted infection (STIs)[1–4]. Behavioral and structural factors such as multiple sex partners, infrequent or inconsistent condom use, drug dependency, poverty, unstable housing, stigma, work environment, and criminalization of exchange sex increase the risk of HIV among PWES by creating barriers to accessing care and prevention services[5–10]. In the United States (US), HIV prevalence among women who exchange sex is estimated to range from 0.3% to 30%, with an average prevalence of 17%[5], and 8.8 times higher than the HIV prevalence among women in the general population[6]. The estimated HIV prevalence among men who exchange sex is even higher at 19.3%[11]. Furthermore, exchange sex is associated with being unaware of one's HIV status, and PWES are at risk for both HIV acquisition and transmission. This poses a critical need to increase HIV prevention and care programs in this highly vulnerable population[6,10,12].

However, HIV/STI prevention and care is a subset of the broader healthcare needs of PWES, which include drug detoxification and treatment, pregnancy and reproductive care, hepatitis treatment, physical trauma care, general medical care, and dental and eye care[13]. The use of routine healthcare services by PWES is often limited, and they are more likely to access outreach services for problems that curtail their ability to exchange sex[14]. Among women who exchange sex and inject drugs surveyed in the 2016 Seattle area National HIV Behavioral Surveillance (NHBS) survey, 55% reported that they did not get the medical care they needed in the past year[15]. PWES may avoid accessing healthcare due to structural barriers such as negative past experience in the healthcare system, providers' lack of knowledge about PWES, anticipated

stigma, need for walk-in service, evening hours, and weekend hours, cost, and transportation, as well individual barriers such as drug use, lack of time, fear of arrest, mental health, and lack of awareness of services[13,15,16]. Even when PWES do present for care, they often do not disclose that they exchange sex to providers due to concern for stigma, fear of disapproval, and discrimination[8,13,15,16].

The literature is limited regarding effective models of care for engaging PWES in the US healthcare system. Two published examples of promising models in the US include a peer-based multi-service clinic in San Francisco and a continuity clinic model co-located with a community-based organization that serves homeless people in Seattle[8,17]. These clinics address the specific healthcare needs of PWES and decrease emergency department utilization for outpatient services[18]. STI specialty clinics or Sexual Health Clinics are one venue in which PWES may seek care, particularly for urgent problems such as STI symptoms. These visits may provide an opportunity to diagnose infections (STIs, HIV, hepatitis), provide linkage to treatment, and engage patients in preventive care such as HIV pre-exposure prophylaxis (PrEP). However, little is known about the extent to which PWES seek care in Sexual Health Clinics, characteristics of PWES seen in these clinics, and the opportunity for improved care delivery in this setting. Although Sexual Health Clinics do not provide comprehensive care, they could be an effective setting to identify PWES and link them to additional healthcare and social services. The existing research in this area focuses primarily on cisgender women, and less is known about cisgender men and transgender people who exchange sex.

The purpose of this study is to characterize patients in the Public Health – Seattle & King County (PHSKC) Sexual Health Clinic who report engaging in exchange sex and identify opportunities for improved services. The objectives were to examine risk behaviors, the prevalence of STIs, HIV, and Hepatitis C (HCV), and uptake of PrEP among PWES; explore differences in these characteristics by gender among PWES; and examine the reasons for a visit to the Sexual Health Clinic and outcome of the visit to gain a better understanding of the needs and opportunities for improving care for PWES.

METHODS

Study Design and Population

We conducted a descriptive, cross-sectional analysis of patient encounters in the PHSKC Sexual Health Clinic from October 6, 2010 to March 20, 2020, in which patients reported a history of exchanging sex for money or drugs. All patients seen for a new problem visit were asked to complete the computer-assisted self-interview (CASI), which included information on demographics, sex and drug related behaviors, relevant health history, and reason for the visit. Patients who do not speak English were not asked to complete the CASI, and any patient could opt out. The analytic population included all patients who were seen for new problem visits that completed a CASI and answered questions on sex assigned at birth, gender identity, and whether they had ever received money or drugs in exchange for having sex. Individual patients were the unit of analysis, and for patients with multiple visits, data from the most recent visit was analyzed. Patients who reported exchanging sex at one or more visits but not at all clinic visits were categorized as exchanged sex ever, and data from the clinic visit in which they most recently reported exchanging sex was analyzed.

Data Collection and Measures

Data from the CASI was used to define people who exchanged sex ever, hereafter referred to as PWES, as answering "yes" to the question, *"Have you ever received money or drugs in exchange for having sex with someone?"* Those who indicated "yes" before December 19, 2018 were then asked to report the date of last exchange sex, and after December 19, 2018 asked, *"In the last 12 months, have you received money or drugs for having sex with someone?"* People who exchanged sex in the past 12 months were defined as answering yes to the latter question or reporting the date of last exchange sex within one year prior to the visit.

Patients were defined as cisgender if the current gender identity and sex assigned at birth were the same. Transgender patients were defined as having either current transgender identity or current gender identity different from their sex assigned at birth. We grouped persons who identified as genderqueer, non-binary, or other gender identities together with transgender patients. Prior to May 3, 2016, gender identity was assessed using a 1-step question that asked, *"Do you identify as male, female, or transgender?"* that allowed 4 response options: *male, female, transgender male to female, and transgender female to male*. A 2-step gender identity question was implemented on May 3, 2016 that asked, *"What gender do you consider yourself?"* that allowed for two additional response options to the 1-step question*: non-binary/genderqueer,* and a write-in option. The second question asked the sex assigned at birth, *"What sex was recorded on your original birth certificate?"*[19].

The following additional measures were collected by self-report in the CASI: age, race and ethnicity, gender of sex partners, sexual orientation, number of male partners (by gender) in the past 2 and 12 months, injection drug use (IDU) (ever and past year) and type of drugs injected with options for type (heroin, cocaine, methamphetamine, suboxone, methadone, other opiates, not listed, none), history of STIs in the past year with options for type (syphilis, gonorrhea, chlamydia, and trichomonas), HIV history (ever HIV test, result of last HIV test, ever positive HIV test, currently have a medical provider for HIV care, currently taking medicines for HIV, and last HIV viral load), HCV history (ever told positive for HCV, ever HCV test, and HCV treatment), PrEP use (ever and current), and reason for coming to the Sexual Health Clinic (want STI test, STI symptoms, partner positive for STI, follow up after STI, positive STI result, research, want HIV test, HIV follow up, positive HIV result, start PrEP, PrEP follow up, doctor referral, court ordered, health department called, IUD/contraception, other).

The wording of some of the CASI questions varied over time, and some data were collected for only subsets of the analysis period (Supplemental Table 1). The number of male partners in the past 2 months was collected for cisgender men and cisgender women, and the number of male partners in the past 12 months was collected for cisgender men and transgender patients. Sexual orientation data collection began in May 2012. Data on STIs in the past 12 months were analyzed from May 2012 onwards because the timing of past STIs was incomplete prior to that time. Data on HIV viral load were categorized by level of viral load before December 2018, and since then, patients were asked, "W*as your last viral load undetectable?"* with a yes or no response. Starting in June 2013, patients who were MSM, transgender, genderqueer, or non-binary persons were asked, *"Have you ever taken HIV medicines to prevent yourself from getting*

HIV?" this was changed to a 2-step question in December 2018, *"Are you currently taking PrEP"* if *"no"* then, *"Have you ever taken PrEP?"* There was no PrEP data collected for cisgender women who exchange sex. Housing status was assessed by front desk registration personnel starting in June 2015 and was categorized as homeless or unstable housing if they were living in a shelter, street, transitional housing, doubled up, at risk, motel, jail, institution, or not applicable.

The University of Washington Human Subjects Division deemed this de-identified analysis as exempt from IRB review.

Statistical Analyses

We used descriptive analyses to evaluate demographics, behavioral data, STIs, HIV, HCV, PrEP use, and reason for the visit. For variables collected during only part of the analysis period, we calculated percentages using the denominator of visits completed after the question was added to the CASI. We compared the characteristics of patients who reported never exchanging sex and PWES. Using 2-sided χ^2 tests with a statistical significance level of 0.05, we examined demographics, behavioral risk factors, STI, HIV, HCV, and PrEP use. Among PWES, the characteristics of those who exchanged sex in the past 12 months vs. those who did not exchange sex in the past year were not meaningfully different. Although some comparisons reached statistical significance, the absolute differences were very small (Supplemental Figure 1 and Supplemental Table 2). Moreover, the characteristics of people who did not exchange sex in the past 12 months but exchanged sex ever were more similar to PWES than those who never exchanged sex.

We compared the characteristics of PWES stratified by gender (cisgender men, cisgender women, and transgender/genderqueer/non-binary persons). The rationale was that the context of exchange sex likely differed between these groups. Among PWES, we examined the reason for a visit to the Sexual Health Clinic and key visit outcomes selected *a priori*: new STI diagnosis, HIV and HCV testing and results among those without a prior diagnosis of HIV or HCV, and PrEP initiation among HIV negative patients not on PrEP. All data were analyzed using Stata version 16.0 (College Station, TX, USA).

RESULTS

Study Population

During the study period, a total of 68,525 clinic visits included a completed CASI, of which 3 records were missing sex assigned at birth and 3,842 (6%) were missing data on exchange sex and were thus excluded. The remaining 64,680 clinic visits represented a total of 30,327 unique patients, of which 28,716 (95%) had never exchanged sex and 1,611 (5%) had ever exchanged sex (Figure 1). There were 644 patients who reported exchanging sex at one or more visits but not at all visits and were categorized as PWES. Among PWES, 700 (43%) patients reported exchange sex in the past 12 months.

Characteristics of PWES

Table 1 displays characteristics of PWES compared to people who never exchanged sex. Among PWES, 48% were in the age group of 30-49 years. Most PWES identified as White (63%)

followed by Black (20%). Compared to people who never exchanged sex, the age and race distributions for PWES were statistically significantly different, but not meaningfully so.

PWES were more likely to be cisgender women (34% vs. 24%) or transgender/genderqueer/non-binary persons (5% vs. 1%; $p<0.001$ for gender distribution) than people who never exchanged sex. PWES had a higher prevalence of homelessness or unstable housing (29% vs 7%, $p <0.001$) and IDU (39% vs 4%, $p <0.001$). Methamphetamine was the most frequently used drug by people who reported IDU (73%).

Compared to people who never exchanged sex, PWES were more likely to report STI diagnosis in the past 12 months (36% vs. 19%, $p <0.001$), ever have an HIV test (88% vs. 78%, $p <0.001$), a prior HIV diagnosis (13% vs. 5%, $p <0.001$), and a prior HCV diagnosis (13% vs. 2%, $p<0.001$). However, PWES were less likely to have an undetectable HIV viral load (67% vs. 73% of those with HIV, $p=0.04$) and less likely to report HCV treatment (24% vs. 34% of those with HCV, $p <0.001$) than those who never exchanged sex. Among 240 PWES without a prior HIV diagnosis, 33% reported currently being on PrEP, which did not statistically differ from the proportion taking PrEP among those who never exchanged sex.

PWES Stratified by Gender

Among PWES, 61% were cisgender men, 50% were cisgender MSM, 34% were cisgender women, and 5% were transgender/genderqueer/non-binary persons (Table 2).

More cisgender women identified as Black (26%), Mixed/Multiracial (7%), and Native American/Alaskan Native (4%) and were more likely to report homelessness (41%) than compared to cisgender men and transgender/genderqueer/non-binary persons. Compared to cisgender women and transgender/genderqueer/non-binary persons, more cisgender men reported >5 sexual partners (48%) and STIs in the past 12 months (42%). Gonorrhea is the most common STI reported by cisgender men (64%) and transgender/genderqueer/non-binary persons (71%). Chlamydia is the most common STI reported by cisgender women (58%), and trichomonas was reported by 31% of cisgender women. IDU was reported by 40% of cisgender men, 39% of cisgender women, and 33% of transgender/genderqueer/non-binary persons. While methamphetamine was the most common IDU among cisgender men (79%) and transgender/genderqueer/non-binary persons (68%), heroin was the most common IDU by cisgender women (68%).

More cisgender men (91%) and transgender/genderqueer/non-binary persons (91%) reported ever getting an HIV test compared to cisgender women (84%). Prior HIV diagnosis was more common among cisgender men (20%) than cisgender women (1%) and transgender/genderqueer/non-binary persons (11%). Of the 195 cisgender men with a prior HIV diagnosis, 169 (87%) reported having a current medical provider for HIV care, 150 (77%) reported currently taking Antiretroviral Therapy (ART), and 132 (68%) had an undetectable viral load.

Among transgender/genderqueer/non-binary persons, 68% reported ever getting an HCV test compared to 57% cisgender men and 43% cisgender women. However, cisgender women

reported higher prior HCV diagnosis (17%) but less frequent HCV treatment (42%). Among 143 cisgender men not previously diagnosed with HIV, 68 (48%) reported currently being on PrEP, and among 34 transgender/genderqueer/non-binary persons negative for HIV, 11 (32%) reported currently being on PrEP.

Reason for Visit

The most common reasons reported for visiting the PHSKC Sexual Health Clinic among PWES was wanting STI testing (60%), followed by wanting HIV testing (45%), evaluation of STI symptoms (38%), and partner positive for STI (26%) (Figure 2). In addition, 6% were seen for a positive STI result, 6% for follow-up after STI test, and 7% were seen as the health department called them to be evaluated. Only 2% were seen for PrEP start, and 3% for PrEP follow up.

Visit Outcomes

Among 1,611 PWES, 320 (20%) were diagnosed with one or more STI at the clinic visit included in this analysis; 11% were diagnosed with gonorrhea, 6% with chlamydia, and 5% with syphilis (Table 3). Among PWES, 1,026 (64%) were tested for HIV, and 15 (1%) were newly diagnosed with HIV. There were 362 (23%) PWES that were not tested for HIV at the clinic visit. In addition, 300 (19%) of PWES were tested for HCV, 73 (5%) tested positive for HCV antibody, and 1,311 (81%) were not tested at the clinic visit. Of the 88 PWES without previously diagnosed HIV who reported not being on PrEP, only 12 (1%) PWES were prescribed PrEP at the clinic visit.

DISCUSSION

In this study, the prevalence of exchange sex ever among patients seen in the PHSKC Sexual Health Clinic was 5%, and the prevalence of exchange sex in the past 12 months was 2%. Among PWES, 50% were cisgender MSM. Compared to people without a history of exchange sex, PWES were more likely to report homelessness, IDU, and STIs in the past 12 months. HIV prevalence among PWES seen at the Sexual Health Clinic was 13%; the majority of PWES living with HIV were cisgender men. Although PWES were more likely to have a prior HIV diagnosis and prior HCV diagnosis, they were less likely to report being virally suppressed or having received HCV treatment. Relative to cisgender men and transgender/genderqueer/non-binary persons, cisgender women disproportionately reported homelessness and untreated HCV. Less than half of HIV-negative cisgender men and one-third of transgender/genderqueer/non-binary PWES reported current PrEP use at the time of clinic intake, and very few started PrEP at the clinic visit of analysis. PWES sought care at the Sexual Health Clinic predominantly for STI/HIV testing and evaluation of STI symptoms.

To our knowledge, there is only one prior study that evaluated HIV risk factors, sexual health history, PrEP awareness, and PrEP use among men and women who exchange sex seen at a Sexual Health Clinic in Rhode Island[20]. The prevalence of HIV among cisgender men who exchanged sex (12%) and cisgender women who exchange sex (10%) was higher in our study than the Sexual Health Clinic in Rhode Island, which reported an HIV prevalence of 9.5% among men who exchanged sex and 3% among women who exchanged sex. At both Sexual Health Clinics, PWES reported higher IDU, STIs in the past 12 months, prior HIV and HCV diagnosis. These findings advance the research on PWES accessing care at Sexual Health Clinics

and have clinical implications in that this venue can identify and engage this hard-to-reach population in clinical and social services.

Our study adds to the sparse data on HIV viral suppression among PWES in the US. In our study, 67% of PWES reported HIV viral suppression compared to 73% in those who never exchanged sex. Similarly, a national surveillance study conducted between 2009-2014 that evaluated HIV viral suppression among people living with HIV who exchanged sex found that 67% were virally suppressed at their last test compared to 76% of those who did not exchange sex[21]. These findings suggest that PWES may need programs that focus on adherence to HIV medications and retention in care.

An increase in the use of PrEP is an essential strategy to prevent HIV among PWES. Interestingly, our study showed higher current PrEP use among cisgender men (48%) and transgender/genderqueer/non-binary persons (32%) than prior studies about PrEP uptake in this population, ranging from 5% - 22%[20,22]. The aforementioned Sexual Health Clinic in Rhode Island reported that among men who exchanged sex, only 6.8% ever took PrEP[20] compared to 34% of cisgender men in our clinic who ever took PrEP. One reason for the difference in PrEP use between the two sites is that the studies were conducted in different years. Our analysis includes data from more recent years, where educational interventions have led to increased PrEP awareness and use. Also, PHSKC Sexual Health Clinic is located in King County, where high awareness and uptake of PrEP among MSM has been reported due to factors such as public health campaigns to increase PrEP awareness among MSM, a large number of medical providers prescribe PrEP, PrEP drug assistance program that pays copayments, and Washington State

expanded Medicaid that pays for PrEP without copayments[23]. While data on current PrEP uptake among cisgender men and transgender/genderqueer/non-binary PWES is encouraging, targeted interventions are needed to increase PrEP uptake in this high risk population.

Previous research[1,7,24–27] supports our findings that among PWES there is considerable overlap between homelessness and IDU, particularly for women. Similar to prior studies[24,25], this study showed that cisgender women were most likely to report prior HCV infection. However, there is limited data on HCV treatment among PWES in the US. Our study adds new data that PWES are less likely to report HCV treatment, and 42% of cisgender women with HCV reported not receiving HCV treatment. These results suggest that addressing STI, HIV, and HCV prevention would need to consider measures to address homelessness and substance use in this population.

Our findings suggest that Sexual Health Clinics provide an opportunity to maximize STI/HIV screening, HIV linkage to care, HCV treatment, and PrEP uptake. Given that PWES are at high risk, they should be tested annually for HIV and HCV[28]. The guidelines on the frequency of testing for STIs in women at increased risk is unclear, but women with prior STI should be rested at 3 months, and MSM at high risk should be screened for STIs every 3-6 months[28]. Providers at the Sexual Health Clinic can ensure that these screening recommendations are being met for PWES. In addition, PWES seen at the Sexual Health Clinic should receive increased counseling about risk factors, discuss risk reduction strategies, including PrEP at every clinic visit, and explore reasons for declining PrEP with the patient. Furthermore, there is also a need to study and increase PrEP uptake among cisgender women who exchange sex, particularly given the recent HIV outbreak in Seattle among women who exchange sex and inject drugs[29]. Patients who

have ongoing illicit drug use should be counseled on substance use treatment. Active IDU is not a contraindication for HCV treatment, and all HCV positive patients should be referred for HCV treatment. Lastly, most PWES in this Sexual Health Clinic were cisgender men, suggesting the clinic may not be reaching many cisgender gender women and transgender/genderqueer/non-binary persons. Other models of care such as co-located continuity clinic model or peer based clinic could be better suitable to reach this population[8,17].

This study gives us an insight into the needs and opportunities for improvement of sexual health services for PWES that seek care at PHSKC Sexual Health Clinic. Our study had several strengths. First, we looked CASI data for PWES over a 10 year period, which captured a large population of PWES. Our research is unique in that it evaluates behavioral risk factors, history of STIs, HIV, HCV, and PrEP use among PWES by gender and is the first study to look at transgender/genderqueer/non-binary PWES seen at a Sexual Health Clinic in the US. These findings are subject to several important limitations. First and foremost, this was an analysis of patients recruited from one urban Sexual Health Clinic that were already engaged in care and may not represent the target population of PWES that do not seek care and may not generalize to other populations. The prevalence of exchange sex seen in our clinic might be underestimated since people are known to underreport exchange sex in clinical settings, and the CASI has an unknown impact on the willingness to disclose. The study did not differentiate between the types of exchange sex, and there may be a difference in perceptions that constitutes sex in exchange for money or drugs, which could have affected reporting. The definition of exchange sex did not include sex in exchange for food, housing, or other resources and missed PWES for things other than money or drugs. The CASI questionnaire elicited sensitive information regarding sexual

behavior, drug use, HIV status, and STIs, and all patients may not have felt comfortable disclosing this information, and there is potential for social desirability bias and recall bias. There is some potential for misclassification given that people who exchange sex in one or more but not all visits were classified as PWES. Finally, there might be differences between PWES and people who exchange sex in the past 12 months by gender that were not evaluated in this study.

CONCLUSION

In the Sexual Health Clinic, the prevalence of exchange sex was 5%, and the prevalence of HIV among PWES was 13%. Most patients seen in our clinic were cisgender men, suggesting the clinic may not be reaching many cisgender gender women and transgender persons who exchange sex. There is a significant overlap between exchange sex, homelessness, and injection drug use among PWES seen at the Sexual Health Clinic. Sexual Health Clinics are an opportunity to increase PrEP utilization, HIV viral suppression, and HCV testing and treatment.

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FIGURES

Figure 1. Flowchart of PHSKC Sexual Health Clinic patients that never exchanged sex, exchanged sex ever, and exchanged sex in the past 12 months, and people who exchanged sex ever by gender.

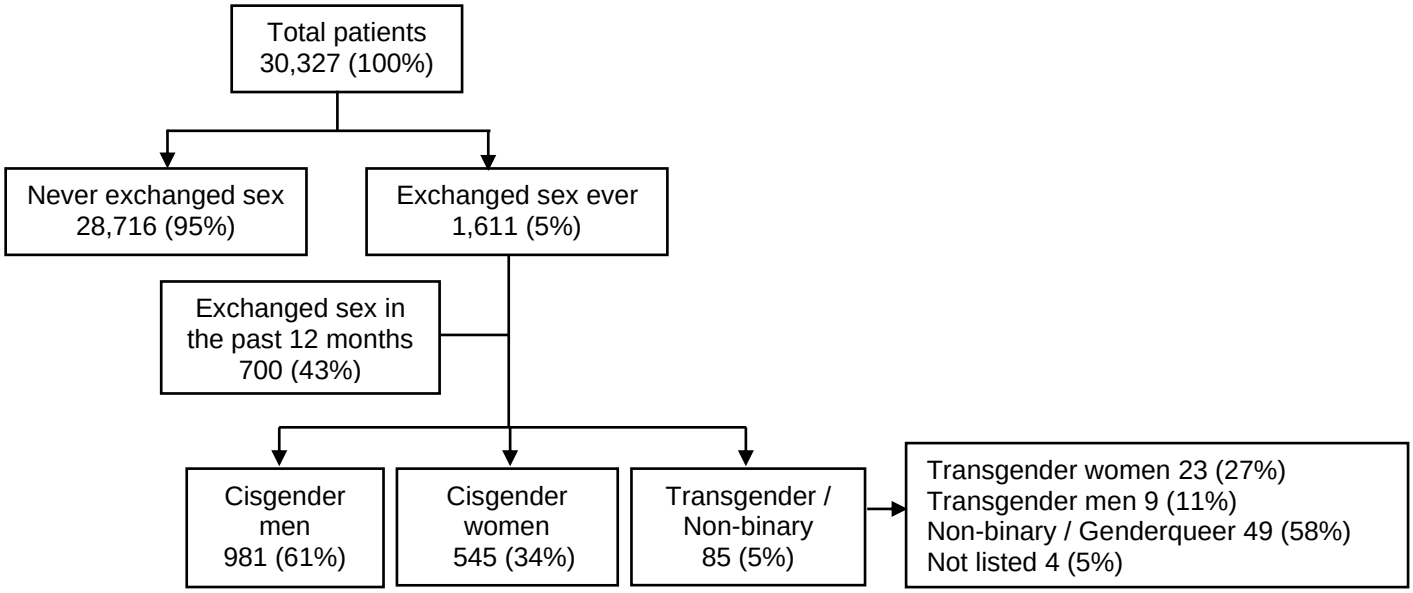
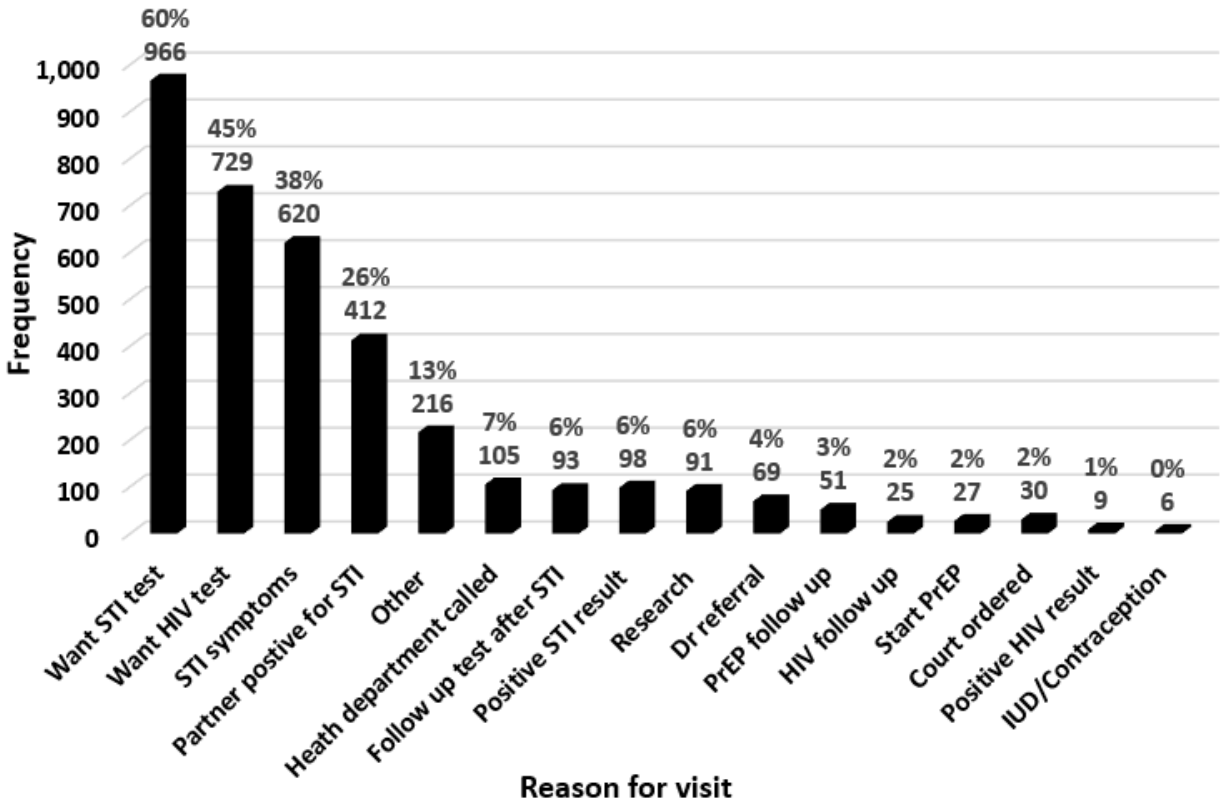


Figure 2. Reason for a visit to PHSKC Sexual Health Clinic among those who reported exchanged sex ever.



TABLES

Table 1. Characteristics of patients attending PHSKC Sexual Health Clinic for a new problem by exchange sex status, 2010 – 2020.

Characteristic	Total n (%) 30,327 (100)	Never exchanged sex n (%) 28,716 (95)	Exchanged sex ever n (%) 1,611 (5)	p-value
Age				
≤18	540 (2)	503 (2)	37 (2)	
19-24	5,184 (17)	4,892 (17)	292 (18)	0.005
25-29	7,038 (23)	6,699 (23)	339 (21)	
30-49	13,873 (46)	13,095 (46)	778 (48)	
≥50	3,692 (12)	3,527 (12)	165 (10)	
Race				
White	18,409 (61)	17,396 (61)	1,013 (63)	
Black	5,166 (17)	4,842 (17)	324 (20)	<0.001
Native American / Alaskan native	349 (1)	317 (1)	32 (2)	
Asian/Pacific Islander	2,800 (9)	2,748 (10)	52 (3)	
Mixed/Multiracial	813 (3)	733 (3)	80 (5)	
Unknown/ Missing/Refused	2,790 (9)	2,680 (9)	110 (7)	
Hispanic Ethnicity	2,717 (9)	2,569 (9)	148 (9)	0.742
Cisgender Male	22,523 (74)	21,542 (75)	981 (61)	
Cisgender Female	7,395 (24)	6,850 (24)	545 (34)	<0.001
Transgender/gender queer/non-binary	409 (1)	324 (1)	85 (5)	
Homelessness *				
Homeless/Unstable housing	1,236 (8)	980 (7)	256 (29)	<0.001
Not homeless	14,188 (92)	13,569 (93)	619 (71)	
Ever injected drugs (IDU)				
Yes	1,770 (6)	1,140 (4)	630 (39)	<0.001
No	28,493 (94)	27,526 (96)	967 (60)	
Missing	64 (0)	50 (0)	14 (1)	
Drugs injected among those with IDU	837 (47)	541 (47)	296 (47)	0.849
Heroin	504 (28)	319 (28)	185 (29)	0.537
Cocaine	1,178 (67)	719 (63)	459 (73)	<0.001
Methamphetamine	296 (17)	169 (15)	127 (20)	0.004
Other				
Bacterial STIs◊ & Trichomonas in the past 12 months‡				
Yes	5,127 (23)	4,628 (19)	499 (36)	<0.001
No	19,536 (78)	18,692 (77)	844 (61)	
Missing	480 (2)	443 (2)	37 (3)	
Type of STIs in the past 12 months among those with STIs‡				
Gonorrhea	2,513 (49)	2,217 (48)	296 (60)	<0.001

Chlamydia	3,106 (61)	2,797 (61)	309 (62)	0.483
Syphilis	1,186 (23)	1,027 (22)	159 (32)	<0.001
Trichomonas	209 (4)	167 (4)	42 (8)	<0.001
Ever HIV test				
Yes	23,900 (79)	22,477 (78)	1,423 (88)	<0.001
No	5,956 (20)	5,804 (20)	152 (9)	
Missing	471 (2)	435 (2)	36 (2)	
Prior HIV diagnosis				
Yes	1,584 (5)	1,376 (5)	208 (13)	<0.001
No	21,850 (72)	20,693 (72)	1,157 (72)	
Unknown/Missing	6,893 (23)	6,647 (23)	246 (15)	
HIV+ and currently has a medical provider for HIV care				
Yes	1,337 (84)	1,160 (84)	177 (85)	0.685
No	225 (14)	198 (14)	27 (13)	
Unknown/Missing	22 (1)	18 (1)	4 (2)	
HIV+ and currently taking ART				
	1,269 (80)	1,109 (81)	160 (77)	0.060
Yes	250 (16)	207 (15)	43 (21)	
No	65 (4)	60 (4)	5 (2)	
Unknown/Missing	0	0	0	
HIV+ and last viral load undetectable				
	1,137 (72)	998 (73)	139 (67)	0.040
Yes	203 (13)	165 (12)	38 (18)	
No	244 (15)	213 (15)	31 (15)	
Missing/Unknown	0	0	0	
Ever HCV test				
Yes	9,586 (32)	8,731 (30)	855 (53)	<0.001
No	5,878 (19)	5,659 (20)	219 (14)	
Missing/Unknown	14,863 (49)	14,326 (50)	537 (33)	
Prior HCV diagnosis				
Yes	750 (2)	538 (2)	212 (13)	<0.001
No	22,959 (76)	21,843 (76)	1,116 (69)	
Unknown/Missing	6,618 (22)	6,335 (22)	283 (18)	
HCV+ received treatment				
Yes	251 (33)	201 (37)	50 (24)	<0.001
No	198 (26)	126 (23)	72 (34)	
Unknown/Missing	301 (40)	211 (39)	90 (42)	
Currently on PrEP[¶§]				
Yes	1,120 (34)	1,041 (34)	79 (33)	0.638
No	1,371 (42)	1,274 (42)	97 (40)	
Missing	793 (24)	729 (24)	64 (27)	
PrEP use eve[¶†]				
Yes	2,496 (16)	2,287 (15)	209 (24)	<0.001
No	1,267 (16)	1,179 (8)	88 (10)	
Missing	12,126 (76)	11,553 (77)	573 (66)	

Note: IDU – injection drug use. STI – Sexually transmitted infection. ART – antiretroviral therapy. HCV – Hepatitis C. PrEP – Pre-exposure prophylaxis.

*Homelessness data from July 1, 2015, onwards

◊Bacterial STI includes (gonorrhea, chlamydia, and syphilis)

‡ Data from May 21, 2012 onwards
¶ Among those who tested negative for HIV
§Data only from December 19, 2018 onwards
† Data only from June 24, 2013 onwards

Table 2. Demographics, behavioral risk factors, STIs, HIV, and HCV of patients who reported exchanged sex ever stratified by gender.

Characteristic	**Cisgender**		**Transgender/gender queer/non-binary**
	Men n (%) 981 (61)	**Women n (%) 545 (34)**	**n (%) 85 (5)**
Age			
≤18	19 (2)	15 (3)	3 (4)
19-24	165 (17)	114 (21)	13 (15)
25-29	206 (21)	102 (19)	31 (36)
30-49	477 (49)	263 (48)	38 (45)
≥50	114 (12)	51 (9)	0
Race			
White	650 (66)	305 (56)	58 (68)
Black	175 (18)	139 (26)	10 (12)
Native American/ Alaskan native	11 (1)	21 (4)	0
Asian/Pacific Islander	36 (4)	13 (2)	3 (4)
Mixed/Multiracial	36 (4)	39 (7)	5 (6)
Unknown/ Missing/Refused	73 (7)	28 (5)	9 (11)
Hispanic Ethnicity	99 (10)	38 (7)	11 (13)
Homelessness*			
Homeless/Unstable housing	141 (25)	96 (41)	19 (22)
Not homeless	414 (75)	139 (49)	66 (78)
Gender of sex partners			
Any male	808 (82)	525 (96)	80 (94)
Any female	339 (35)	168 (31)	33 (39)
Any Transgender/gender queer/non-binary	81 (8)	13 (2)	49 (58)
None	13 (1)	7 (1)	1 (1)
Missing	5 (1)	6 (1)	0
Sexual Orientation‡			
Straight/Heterosexual	138 (16)	247 (57)	6 (7)
Gay	453 (53)	NA	12 (14)
Bisexual	155 (18)	136 (31)	9 (11)
Queer	58 (58)	19 (4)	44 (52)
Lesbian	NA	4 (1)	2 (2)
Pansexual	10 (1)	5 (1)	6 (7)
Other	27 (3)	10 (2)	3 (4)
Missing	18 (2)	13 (3)	3(4)

Number of male partners in the past 2 months			NA
0-1	113 (19)	171 (47)	
2-4	173 (30)	121 (34)	
≥5	278 (48)	54 (15)	
Missing	16 (3)	16 (4)	
Number of male partners in the past 12 months		NA	
0-1	24 (4)		2 (5)
2-4	66 (11)		9 (23)
5-9	99 (17)		7 (18)
>10	288 (50)		22 (55)
Missing	103 (18)		0
Ever injected drugs (IDU)			
Yes	392 (40)	210 (39)	28 (33)
No	581 (59)	330 (61)	56 (66)
Missing	8 (1)	5 (1)	1 (1)
Drugs injected among those with IDU			
Heroin	144 (37)	142 (68)	10 (36)
Cocaine	102 (26)	80 (38)	3 (11)
Methamphetamine	309 (79)	131 (62)	19 (68)
Other	76 (19)	46 (220	5 (18)
Bacterial STIs[◊] & Trichomonas in the past 12 months[‡]			
Yes	365 (42)	100 (23)	34 (40)
No	477 (55)	319 (74)	48 (57)
Missing	19 (2)	15 (3)	3 (4)
STIs in the past 12 months[‡]			
Gonorrhea	232 (64)	40 (40)	24 (71)
Chlamydia	228 (62)	58 (58)	23 (68)
Syphilis	141 (39)	11 (11)	7 (21)
Trichomonas	7 (2)	31 (31)	4 (12)
Ever HIV test			
Yes	890 (91)	456 (84)	77 (91)
No	74 (8)	74 (14)	4 (5)
Missing	17 (2)	15 (3)	4 (5)
Prior HIV diagnosis			
Yes	195 (20)	4 (1)	9 (11)
No	663 (68)	429 (79)	65 (76)
Unknown/Missing	123 (13)	112 (21)	11 (13)
HIV+ and currently has a medical provider for HIV care			
Yes	169 (87)	3 (75)	5 (56)
No	23 (12)	1 (25)	3 (33)
Unknown/Missing	3 (2)	0	1 (11)
HIV+ and currently taking ART			
Yes	150 (77)	3 (75)	7 (78)
No	41 (21)	1 (25)	1 (11)
Unknown/Missing	4 (2)	0	1 (11)
HIV+ and last viral load undetectable			

Yes	132 (68)	2 (50)	5 (56)
No	35 (18)	1 (25)	2 (22)
Missing/Unknown	28 (14)	1 (25)	2 (22)
	0	0	0
Ever HCV test			
Yes	561 (57)	236 (43)	58 (68)
No	111 (11)	100 (18)	8 (9)
Missing/Unknown	309 (32)	209 (38)	19 (22)
Prior HCV diagnosis			
Yes	118 (12)	90 (17)	4 (5)
No	707 (72)	331 (61)	78 (82)
Unknown/Missing	156 (16)	124 (23)	3 (4)
HCV+ received treatment			
Yes	28 (24)	22 (24)	0
No	33 (28)	38 (42)	1 (25)
Unknown/Missing	57 (48)	30 (33)	3 (75)
Currently on PrEP¶§			
Yes	68 (48)	NA	11 (32)
No	75 (52)		22 (65)
Missing			1 (3)
PrEP use ever¶†			
Yes	178 (34)	NA	30 (46)
No	68 (13)		14 (22)
Missing	276 (53)		21 (32)

Note: IDU – injection drug use. STI – Sexually transmitted infection. ART – antiretroviral therapy. HCV – Hepatitis C. PrEP – Pre-exposure prophylaxis.
*Homelessness data from July 1, 2015, onwards
◊Bacterial STI includes (gonorrhea, chlamydia, and syphilis)
‡ Data from May 21, 2012 onwards
¶ Among those who tested negative for HIV
§Data only from December 19, 2018 onwards
† Data only from June 24, 2013 onwards

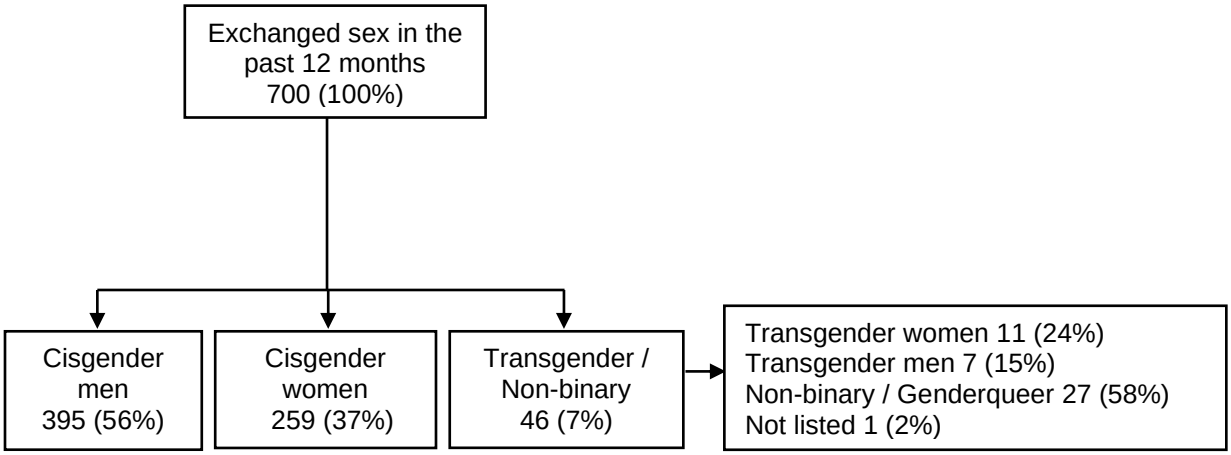
Table 3. Visit outcomes of people seen in the PHSKC Sexual Health Clinic that reported exchanged sex ever.

Visit Outcome	**Exchanged sex ever n (%)**
STI Dx	
GC	173 (11)
CT	103 (6)
Syphilis	73 (5)
HIV screening	
Negative	1,011 (63)
New Positive	15 (1)
Previous Positive	223 (14)
Not tested at visit	362 (23)
HCV Ab screening	

Negative	224 (14)
Positive	73 (5)
Missing sample/Unsatisfactory	3 (0)
Not tested at visit	1,311 (81)
Initiated PrEP	
Yes	12 (1)
No/Missing	1,599 (99)

SUPPLEMENTAL FIGURES AND TABLES

Supplemental Figure 1. Flowchart of PHSKC Sexual Health Clinic patients that exchanged sex in the past 12 months by gender.



Supplemental Table 1. CASI questions and date range.

Variable	**Question**	**Survey Question Date Range**
Age	What is your age? • Date	10/06/2010 – 03/20/2020
Race	What is your race? • White/Caucasian, African-American/Black, Asian, Native Hawaiian or Pacific Islander, American Indian or Alaska Native, Mixed/Multiracial, Patient refused, Unknown	10/06/2010 – 03/20/2020
Ethnicity	What is your ethnicity? • Hispanic, Non-Hispanic, Patient refused, Unknown	10/06/2010 – 03/20/2020
Homelessness	What is your housing situation? • Not Homeless, At risk, Doubled up, Shelter, Street, Transitional Housing, Other (motel, jail, institution)	07/01/2015 – 03/20/2020
Gender	Do you identify as male, female, or transgendered? • Male, Female, Transgender male to female, Transgender female to male What gender do you consider yourself? • Male, Female, Transgender woman / Transfeminine, Transgender man / Transmasculine, Non-binary / Genderqueer, Not listed - please specify)	10/06/2010 – 05/02/2016 05/03/2016 – 03/20/2020
Birth Gender	What sex was recorded on your original birth certificate? • Male, Female	10/06/2010 – 03/20/2020

Gender of sex partners	In the past year, who have you had sex with? • Men, Women, Trans men, Trans women, Someone else, I did not have sex in the past year	10/06/2010 – 03/20/2020
Sexual orientation	What is your sexual orientation? • Gay, Straight/Heterosexual, Bisexual, Queer, Lesbian, Pansexual, Not listed	05/21/2012 – 03/20/2020
Cis men and transgender number of sex partners past 12 months	How many men have you had sex with in the past 12 months? • Number	10/06/2010 – 03/20/2020
Cis men and cis women number of sex partners past 2 months	How many men have you had sex with in the past 2 months? • Number	10/06/2010 – 03/20/2020
Exchange sex ever	Have you ever received money or drugs in exchange for having sex with someone? • Yes, No	10/06/2010 – 03/20/2020
Exchange sex in the past 12 months	In the past 12 months, have you received money or drugs in exchange for having sex with someone? • Date In the past 12 months, have you received money or drugs in exchange for having sex with someone? • Yes, No	10/06/2010 – 05/20/2012 05/21/2012 – 03/20/2020
Injected drugs	Have you ever infected drugs? • Yes, No If yes: In the last 12 months, which drugs have you injected? • Heroin, Cocaine, Methamphetamine, Suboxone, Methadone, Other opiate, Not listed – please specify, None	10/06/2010 – 03/20/2020
STI in the past year	Have you had any of the following sexually transmitted diseases (STDs) within the last year? • Gonorrhea, Chlamydia, Syphilis, Trichomonas, No	05/21/2012 – 03/20/2020
HIV test	Have you ever had an HIV test? • Yes, No	10/06/2010 – 03/20/2020
Prior HIV diagnosis	If yes to ever had an HIV test: When you last had an HIV test, what was the result? • Positive, Negative, Unknown If last test result was negative or unknown: Have you ever tested HIV positive? • Yes, No, Unsure	10/06/2010 – 03/20/2020
Doctor for HIV care	Do you currently have a doctor or medical provider for HIV care? • Yes, No	10/06/2010 – 03/20/2020
On ART for HIV	Are you currently taking medicines for HIV? • Yes, No	10/06/2010 – 03/20/2020

HIV viral load	What was your last viral load • Undetectable • 1 to 1,000 • 1,001 to 10,000 • 10,001 to 50,000 • 50,001 to 100,000 • Greater than 100,000 • Do not know Was your last viral load undetectable? • Yes, No	10/06/2010 – 12/18/2018 12/19/2018 – 03/20/2020
HCV test and prior HCV diagnosis	Has a doctor or a medical person ever told you that you have hepatitis C? • Yes, No, Unsure Have you ever been tested for hepatitis C? • Yes, No, Unsure	10/06/2010 – 03/20/2020
HCV treatment	If yes to has a doctor or a medical person ever told you that you have hepatitis C: Have you ever received treatment for hepatitis C? • Yes, No, Unsure	10/06/2010 – 03/20/2020
PrEP ever	Have you ever taken HIV medicines to prevent yourself from getting HIV? • Yes, No, Don't remember, Refuse to answer Have you ever taken PrEP? • Yes, No	06/24/2013 – 12/18/2018 12/19/2018 – 03/20/2020
PrEP current	Are you currently taking PrEP? • Yes, No	12/19/2018 – 03/20/2020
Reason for visit	Why you came to the clinic today? • I have symptoms, I tested positive for an STD and need treatment, My sex partner was recently diagnosed with or has symptoms of an STD, I tested positive for HIV, Someone from the health department called me, I want to be tested for HIV, I want to be tested for STDs, I want to start PrEP, PrEP follow-up appointment, I want an IUD or implant/Nexplanon, I want emergency contraception (Plan B), I need follow-up testing after a recent STD, I was referred from another clinic or doctor, Research visit, Other	10/06/2010 – 03/20/2020

Supplemental Table 2. Characteristics of patients attending the PHSKC Sexual Health Clinic who reported exchanged sex ever by exchange sex status in the past 12 months, 2010 – 2020.

Characteristic	**Exchanged sex in the past 12 months n (%) 700 (2)**	**No exchange sex in the past 12 months n (%) 911 (3)**	**p-value**

Age			
≤18	18 (3)	19 (2)	
19-24	155 (22)	137 (15)	**<0.001**
25-29	159 (23)	180 (20)	
30-49	312 (45)	466 (51)	
≥50	56 (8)	109 (12)	
Race			
White	427 (61)	586 (64)	
Black	149 (21)	175 (19)	0.285
Native American/ Alaskan native	12 (2)	20 (2)	
Asian/Pacific Islander	19 (3)	33 (4)	
Mixed/Multiracial	36 (5)	44 (5)	
Unknown/ Missing/Refused	57 (8)	53 (6)	
Hispanic Ethnicity	76 (11)	72 (8)	**0.042**
Cisgender Male	395 (56)	586 (64)	
Cisgender Female	259 (37)	286 (31)	**0.003**
Transgender/gender queer/non-binary	46 (7)	39 (4)	
Homelessness *			
Homeless/Unstable housing	133 (33)	123 (26)	**0.022**
Not homeless	269 (67)	350 (74)	
Ever injected drugs (IDU)			
Yes	285 (41)	345 (38)	0.510
No	409 (58)	558 (61)	
Missing	6 (1)	8 (1)	
Drugs injected among those with IDU	146 (51)	150 (43)	0.052
Heroin	82 (29)	103 (30)	0.766
Cocaine	211 (78)	238 (69)	**0.016**
Methamphetamine	66 (23)	61 (18)	0.088
Other			
Bacterial STIs◊ & Trichomonas in the past 12 months‡			
Yes	239 (38)	260 (34)	0.266
No	366 (59)	478 (63)	
Missing	16 (3)	21 (3)	
Type of STIs in the past 12 months among those with STIs‡			
Gonorrhea	141 (59)	155 (60)	0.806
Chlamydia	149 (62)	160 (62)	0.941
Syphilis	77 (32)	82 (32)	0.871
Trichomonas	27 (11)	15 (6)	0.068
Ever HIV test			
Yes	612 (87)	811 (89)	0.613
No	71 (10)	81 (9)	
Missing	17 (2)	19 (2)	
Prior HIV diagnosis			
Yes	83 (12)	125 (14)	0.501
No	506 (72)	651 (71)	
Unknown/Missing	111 (16)	135 (15)	

HIV+ and currently has a medical provider for HIV care			
Yes	66 (79)	111 (89)	**0.026**
No	13 (16)	14 (11)	
Unknown/Missing	4 (5)	0 (0)	
HIV+ and currently taking ART			
Yes	60 (72)	100 (80)	0.403
No	21 (25)	22 (18)	
Unknown/Missing	2 (2)	3 (2)	
HIV+ and last viral load undetectable	54 (65)	85 (68)	0.565
Yes	14 (17)	24 (19)	
No	15 (18)	16 (13)	
Missing/Unknown			
Ever HCV test			
Yes	375 (54)	480 (53)	0.420
No	102 (15)	117 (13)	
Missing/Unknown	223 (32)	314 (35)	
Prior HCV diagnosis			
Yes	92 (13)	120 (13)	0.132
No	500 (72)	616 (68)	
Unknown/Missing	108 (15)	175 (19)	
HCV+ received treatment			
Yes	21 (23)	29 (24)	0.861
No	30 (33)	42 (35)	
Unknown/Missing	41 (45)	49 (41)	
Currently on PrEP¶§			
Yes	39 (35)	40 (31)	0.130
No	38 (34)	59 (46)	
Missing	35 (32)	29 (23)	
PrEP use ever¶†			
Yes	102 (25)	107 (23)	0.421
No	36 (9)	52 (11)	
Missing	275 (67)	298 (65)	

Note: IDU – injection drug use. STI – Sexually transmitted infection. ART – antiretroviral therapy. HCV – Hepatitis C. PrEP – Pre-exposure prophylaxis.

*Homelessness data from July 1, 2015, onwards

◊Bacterial STI includes (gonorrhea, chlamydia, and syphilis)

‡ Data from May 21, 2012 onwards

¶ Among those who tested negative for HIV

§Data only from December 19, 2018 onwards

† Data only from June 24, 2013 onwards