Washington HIV Prevention Project

Key findings, 2017

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Washington HIV Prevention Project

Overview

The Washington HIV Prevention Project is an internet-based survey that was designed to collect statewide data on demand, uptake, and unmet need for HIV prevention interventions. In particular, the survey was developed to monitor awareness, interest in, and use of HIV pre-exposure prophylaxis (PrEP). PrEP is a strategy for HIV prevention that involves HIV-negative people taking medicine on a regular basis. When taken every day, PrEP reduces the risk of HIV infection by more than 90% [2, 3]. Washington has identified increasing access to PrEP as an important component of the state's goal to reduce new HIV diagnoses by 50% by 2020 [5]. To help people who are at high risk for HIV infection cover the costs of PrEP, the Washington State Department of Health (DOH) established a drug assistance program (PrEP DAP) in 2014. The data from this survey will be used to characterize prevention needs and inform programmatic decision-making.

The group at highest risk for HIV infection in Washington is men who have sex with men (MSM). In 2016, 75% of persons living with HIV and 67% of newly diagnosed cases were MSM [6]. To focus on this population, the survey was delivered to HIV-negative Washington residents aged 16 and older who were male sex at birth and who reported having had oral or anal sex with a man in the past 12 months. After the survey was launched, eligibility was expanded to include those who reported having ever had sex with a man.

Respondents were recruited by placing banner and broadcast advertisements on social media, male-male sexual networking, and general LGBTQ-interest apps and websites. The survey could be completed in either English or Spanish. From January 1 to February 28, 2017, a total of 1,063 people completed the survey. An additional 173 people provided partial survey responses which included information about use of PrEP.

We'd like to thank all respondents for taking the time to complete the survey and provide us with valuable data that will be used to improve HIV prevention programs and services in Washington. Some respondents were randomly selected to choose a charitable organization to which we would donate $10 for completing the survey. In total, the project raised $5,170 for the following organizations:

- Equal Rights Washington
- NW Network of Bi, Trans, Lesbian, and Gay Survivors of Abuse
- It Gets Better Project
- The Human Rights Campaign Foundation
- The Latino Commission on AIDS

In this report, data are presented separately for respondents who were and weren't sexually active with men in the past year. Because relatively few respondents last had sex with a man

more than 12 months ago, analyses of regional differences are restricted to those who were sexually active with men in the past 12 months. Only 36 respondents reported a gender other than cisgender male: 4 identified as transgender or female, 8 identified as queer, 21 reported multiple genders, and 3 identified as 'other' gender. Because these numbers are too small to support subgroup analyses, the data presented in the report are restricted to cisgender males.

Summary of findings

Sample characteristics

- The median age of respondents was 31 years (range: 16-82).
- Men who reported sex with men in the past 12 months (sexually active MSM) were younger than men who did not (median 30 vs. 42.5 years).
- Two-thirds (68%) of the survey sample was white, 18% was Hispanic, and 4% was black.
- Nearly half (48%) the sample reported having earned a 4-year college degree or higher.
- Sexually active MSM living in King County were more likely to identify as gay or homosexual than those living in other parts of the state.

Healthcare utilization and HIV risk behavior

- Sexually active MSM were more likely to have been tested for HIV in the past year (61%) compared to MSM who did not report sex with a man in the past 12 months (24%).
- Three-quarters (75%) of sexually active MSM reported condomless anal sex in the past year, often with men who were not their main or primary partners.
- One-third of sexually active men reported one or more risk behaviors which suggest PrEP should be recommended according to Washington guidelines; an additional 30% reported behaviors suggesting they should discuss PrEP with their doctor.

PrEP awareness, interest, and use

- Compared to men who had not had sex with a man in the past 12 months, sexually active MSM were more likely to be aware of PrEP (79% vs. 55%) and to be currently using PrEP (19% vs. 1%).
- PrEP use was greatest among sexually active MSM living in King County (23% vs. 13% among MSM living in other Washington counties).
- Among sexually active MSM for whom Washington guidelines recommend initiating or discussing PrEP with a provider, 28% reported current PrEP use.
- Interest in PrEP among sexually active MSM who are recommended to initiate PrEP and had never used it was 56%. Figure 1 presents a PrEP cascade among sexually active MSM.

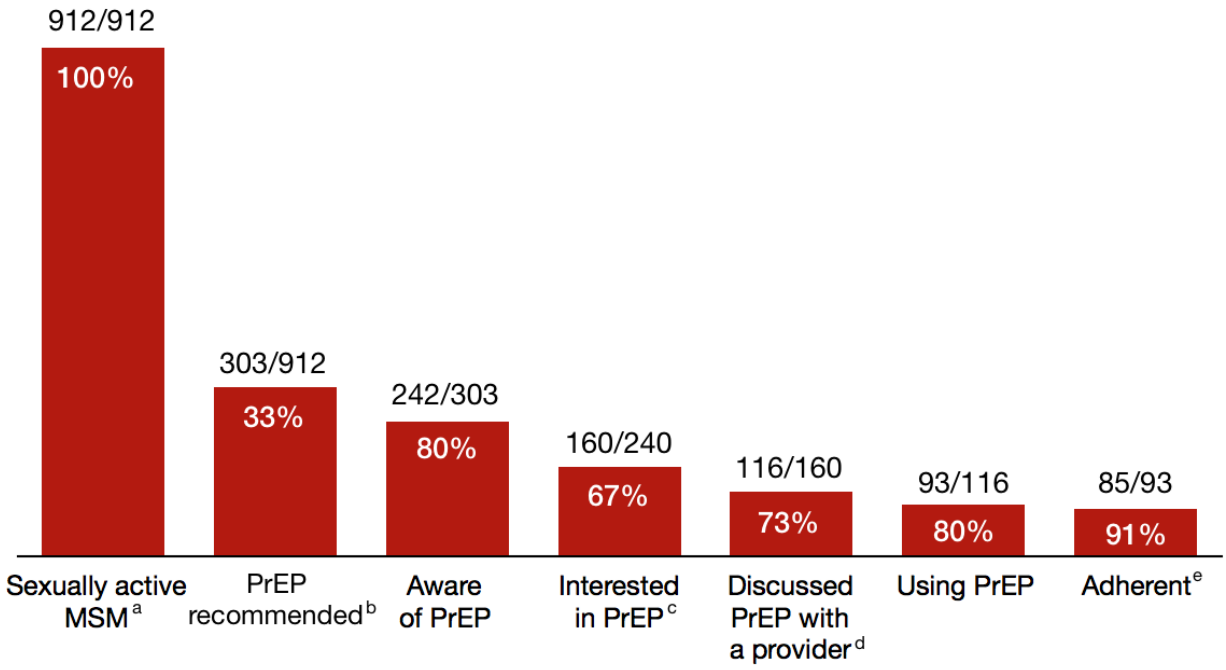

Figure 1: PrEP cascade among respondents who had sex with men in the past 12 months and meet indications for PrEP being recommended[b]

[a]The denominator is MSM who reported sex with men in the past 12 months and provided data on PrEP candidacy indicators; [b]See Box 2 for detail on Washington PrEP guidelines; [c]Includes men who are currently using PrEP; [d]Indicates discussion of PrEP with a healthcare provider in the past 12 months, and includes men who are currently using PrEP; [e]Corresponds to taking PrEP 27 or more out of the past 30 days.

- Awareness appears to be a barrier to PrEP use. Sixty-four percent of sexually active MSM who want to start PrEP said they don't know where to get it.
- Current use of PrEP was significantly associated with age, higher education, and HIV risk behaviors and/or diagnosis with a sexually transmitted infection.

<u>Stigma and disclosure of sex with men</u>

- Respondents reported high levels of acceptance of LGBTQ individuals among people they regularly talk to or interact with and more generally from people where they live. Perceptions of LGBTQ acceptance were highest among sexually active MSM in King County and lowest among sexually active MSM in eastern Washington.
- Seventy-nine percent of sexually active MSM reported telling their non-LGBTQ friends that they have had sex with men; 69% had told family, and 43% had told neighbors. Disclosure of same sex activity was lowest among MSM in eastern Washington.

Characteristics of the sample

More than half of the sample reported residence in King County, which houses 29% of the state's population and 52% of people diagnosed with HIV [7]. Twenty-nine percent of men who had sex with men in the past 12 months (sexually active MSM) reported residence in other counties in western Washington and 15% reported residence in eastern Washington.[1] The regional distribution among men last had sex with a man more than 12 months ago was similar (30% in other western counties and 17% in eastern Washington; Table 1).

Among men who had sex with men in the past 12 months, the median age was 30, with respondents ranging in age from 16 to 82. Eighty-three percent identified as gay or homosexual, 15% identified as bisexual, and 1% identified as heterosexual or straight. Nearly half of these respondents (49%) reported having completed a four-year college degree or postgraduate education, and 25% reported an annual income less than $30,000.

Men who last had sex with a man more than 12 months ago were older than respondents who had sex with men in the past 12 months, with a median age of 43 and ranging in age from 16 to 81 (Kruskal-Wallis p-value<0.001). They were less likely to identify as gay or homosexual (32% vs. 83%; p<0.001[2]); nearly one-third (31%) identified as bisexual, and 37% identified as heterosexual or straight. These men were also more likely than respondents who had sex with men in the past 12 months to report an income under $30,000 (37% vs. 25%; p=0.018) and to have been recruited through social networking platforms (91% vs. 75%; p<0.001), which accounted for three quarters of the sample overall.

By race and ethnicity, men who were and were not recently sexually active with men were similar. The sample overall was comparable to all Washington males aged 15 and older [8], though with fewer Asian men and more Hispanics relative to the general population distribution (Figure 2). A limitation of this comparison is that it is unknown to what extent the demographic characteristics of all men in Washington correspond the characteristics of men who have had sex with men.

The characteristics of respondents who had sex with men in the past 12 months differed by region of the state (Table 2). Compared to men living in other parts of Washington, King county residents were more likely to identify as gay or homosexual (86% vs. 79%; p=0.002), to have a college degree or higher (62% vs. 33%; p<0.001), and to report an annual income above $30,000 (81% vs. 66%; p<0.001). By race, the sample of men from western Washington outside of King County had the smallest proportion of Hispanic respondents, and the sample from

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[1] *Western Washington outside of King County was defined to include the following counties: Clallam, Clark, Cowlitz, Grays Harbor, Island, Jefferson, Kitsap, Lewis, Mason, Pacific, Pierce, San Juan, Skagit, Skamania, Snohomish, Thurston, and Whatcom. Eastern Washington includes Adams, Asotin, Benton, Chelan, Douglas, Ferry, Franklin, Grant, Kittitas, Klickitat, Okanogan, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman, and Yakima Counties*.

[2] *Chi-square p-values unless otherwise indicated*

eastern Washington had the smallest proportion of non-Hispanic black or Asian respondents. Men living outside of King County were less likely to have been recruited from advertisements on social networking platforms (69% vs. 79%; p<0.001)

Figure 2: Race/ethnicity of the sample compared to all Washington males

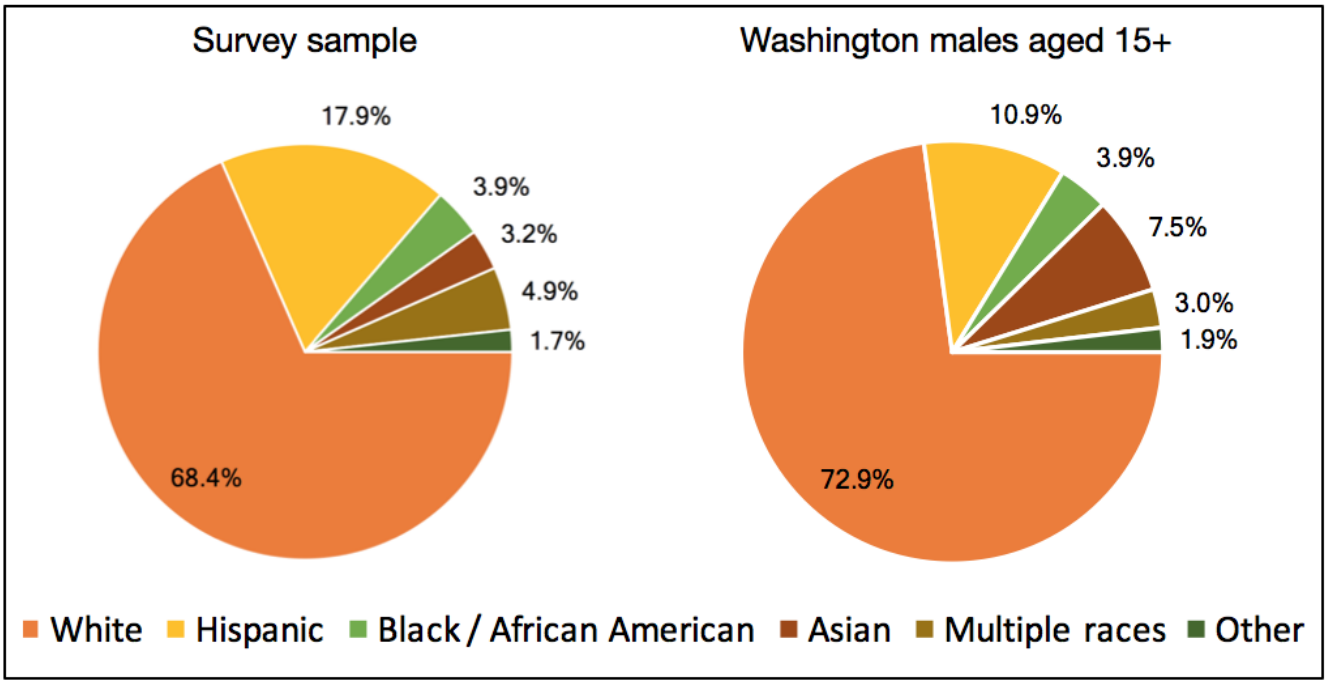


Table 1: Characteristics of the sample

	Men who had sex with men in the past 12 months (N=1080[a]) Column %	Men who last had sex with men >12 months ago (N=98[a]) Column %	p-value[b]
Region			0.760
King County	56.5%	53.1%	
Other western WA	28.5%	29.6%	
Eastern WA	15.0%	17.3%	
Age			
16 to 24	29.0%	22.4%	<0.001
25 to 34	32.5%	15.3%	
35 to 44	15.5%	14.3%	
45 to 54	11.9%	17.3%	
55 and older	11.2%	30.6%	
Race/ethnicity[c]			0.450
Hispanic	18.6%	11.2%	
White	67.9%	73.5%	
Black	3.9%	3.1%	
Asian	3.2%	3.1%	
Multiple Races	4.8%	6.1%	
Other[d]	1.6%	3.1%	
Gay/homosexual identity	82.6%	31.6%	<0.001
Education			0.222
High school or less	16.5%	18.6%	
Some college/vocational school	34.2%	41.2%	
4-year college or higher	49.3%	40.2%	
Income			0.039
Less than $15,000	11.8%	15.2%	
$15,000 to $29,999	11.9%	18.5%	
$30,000 to $49,999	18.0%	13.0%	
$50,000 to $99,999	29.9%	17.4%	
$100,000 or more	23.1%	27.2%	
Prefer not to answer	5.3%	8.7%	
Recruitment platform			0.001
Social networking	74.6%	90.8%	
Sexual networking	19.5%	6.1%	
General LGBTQ interest	5.8%	3.1%	

[a]The number of respondents for each variable may vary due to survey drop-off and missing responses: 31 respondents chose not to answer one or more variables in this table (0-16 for any given variable), and the minimum sample size due to survey drop-off was 930 for men who had sex with a man in the past 12 months and 92 for men who last had sex with men >12 months ago; [b]Pearson χ^2 p-value; [c]Hispanic respondents can be of any race, and all other racial groups are non-Hispanic; [d]Includes American Indian or Alaska Native, Native Hawaiian or other Pacific Islander, and other non-Hispanic races

Table 2: Characteristics of male respondents who had sex with men in the past 12 months, by region

	King County (N=610[a]) Column %	Other Western WA (N=308[a]) Column %	Eastern WA (N=162[a]) Column %	p-value[b]
Age				
16 to 24	25.2%	32.8%	35.8%	0.018
25 to 34	34.9%	29.9%	28.4%	
35 to 44	17.4%	13.0%	13.0%	
45 to 54	12.6%	12.3%	8.0%	
55 and older	9.8%	12.0%	14.8%	
Race/ethnicity[c]				0.006
Hispanic	20.0%	13.8%	22.3%	
White	66.3%	70.5%	69.4%	
Black	4.3%	4.6%	1.3%	
Asian	4.5%	2.0%	0.6%	
Multiple Races	3.6%	6.6%	5.7%	
Other[d]	1.3%	2.6%	0.6%	
Gay/homosexual identity	85.7%	79.5%	76.9%	0.008
Education				<0.001
High school or less	11.1%	22.3%	26.3%	
Some college/vocational school	27.0%	43.9%	42.9%	
4-year college or higher	61.9%	33.8%	30.8%	
Income				<0.001
Less than $15,000	8.4%	14.0%	21.5%	
$15,000 to $29,999	9.3%	15.2%	16.3%	
$30,000 to $49,999	17.8%	17.5%	19.3%	
$50,000 to $99,999	31.8%	29.2%	23.7%	
$100,000 or more	27.9%	17.5%	14.8%	
Prefer not to answer	4.8%	6.6%	4.4%	
Recruitment platform				<0.001
Social networking	79.2%	67.9%	70.4%	
Sexual networking	17.5%	21.8%	22.8%	
General LGBTQ interest	3.3%	10.4%	6.8%	

[a]The number of respondents for each variable may vary due to survey drop-off and missing responses: 30 respondents chose not to answer one or more variables in this table (0-15 for any given variable), and the minimum sample size due to survey drop-off was 538 for King County, 257 for other Western Washington, and 135 for eastern Washington; [b]Pearson χ^2 p-value for regional differences; [c]Hispanic respondents can be of any race, and all other racial groups are non-Hispanic; [d]Includes American Indian or Alaska Native, Native Hawaiian or other Pacific Islander, and other non-Hispanic races

Healthcare utilization

Increasing access to healthcare is an important component of HIV prevention strategies, including PrEP. Ninety percent of sexually active MSM reported that they have insurance, and 90% had visited a clinic, hospital, or other medical facility in the past 12 months (Figure 3). Over three-quarters (77%) reported that they have a regular doctor or other provider, but only 59% indicated that they have a regular doctor or provider who knows they have had sex with men. Eight in ten men had tested for HIV in their lifetime, and six in ten had tested for HIV in the past 12 months. Just over half (54%) of respondents had been screened for a sexually transmitted infection (STI) in the past 12 months. Sexually active MSM are recommended to test for HIV and STIs at least once per year, if not more often (Box 1). These data suggest possible missed opportunities for HIV and STI testing during healthcare encounters, perhaps reflecting low rates of providers asking men about their sexual behavior or men's unwillingness to discuss their behavior with health care professionals or accept HIV or STI testing.

Box 1. HIV and STI Testing Information

Current guidelines recommend that sexually active men who have sex with men test for STIs and HIV at least once a year [1]. Some may benefit from testing every 3-6 months. Transgender persons are advised to talk to a provider to identify a strategy for screening and prevention [4]. Men who are not sexually active with other men should test for HIV at least once in their lifetime.

To learn more about HIV and STI testing and to find out where you can get tested, follow these links:

http://www.doh.wa.gov/YouandYourFamily/IllnessandDisease/HIVAIDS/Prevention/Testing

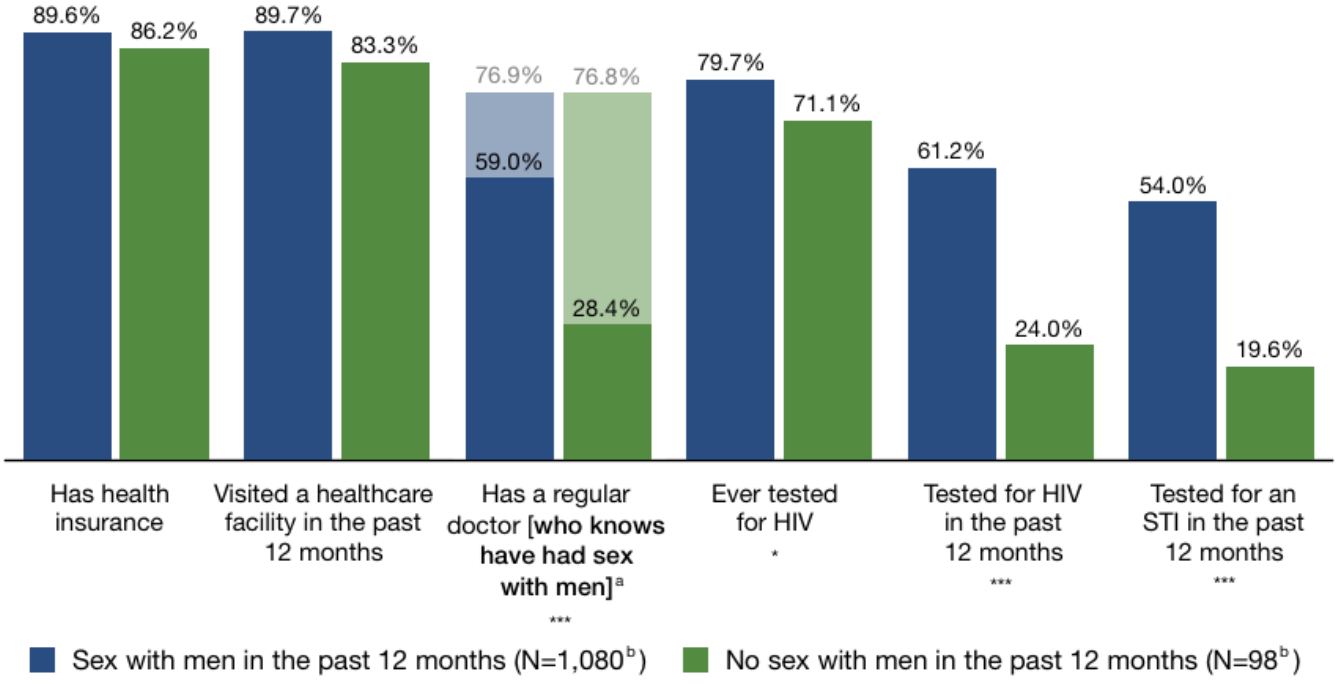
http://www.kingcounty.gov/depts/health/communicable-diseases/hiv-std/patients/testing.aspx

https://aidsvu.org/locators/testing-sites/

Compared to respondents who had sex with men in the past 12 months living in other parts of the state, men living in King County were the most likely to report a regular doctor who knows they have had sex with men (65% vs. 52% in all other counties combined; $p<0.001$), to have health insurance (92% vs. 87%; $p=0.008$), to have been tested for HIV in the past 12 months (66% vs. 55%; $p<0.001$), and to have been tested for an STI in the past 12 months (60% vs. 46%; $p<0.001$). Men living in eastern Washington were less likely than men in King County to have tested for HIV in their lifetime (71% vs. 83%; $p=0.001$) (Figure 4).

Among respondents who last had sex with men more than 12 months ago, health insurance was reported by 86%, and 83% visited a medical facility in the past 12 months (Figure 3). Seventy-seven percent reported a regular doctor or provider, and 28% indicated that they have a regular doctor or provider who knows they have had sex with men. Since these men are not currently sexually active with men, this disclosure may not be as relevant to their present healthcare decisions. HIV testing was reported by 71%, though only 24% had tested in the past 12 months, and 20% had been screened for an STI in the past 12 months. For men who are not sexually active with other men, guidelines do not call for frequent, repeated HIV or STI testing.

Figure 3: Healthcare utilization

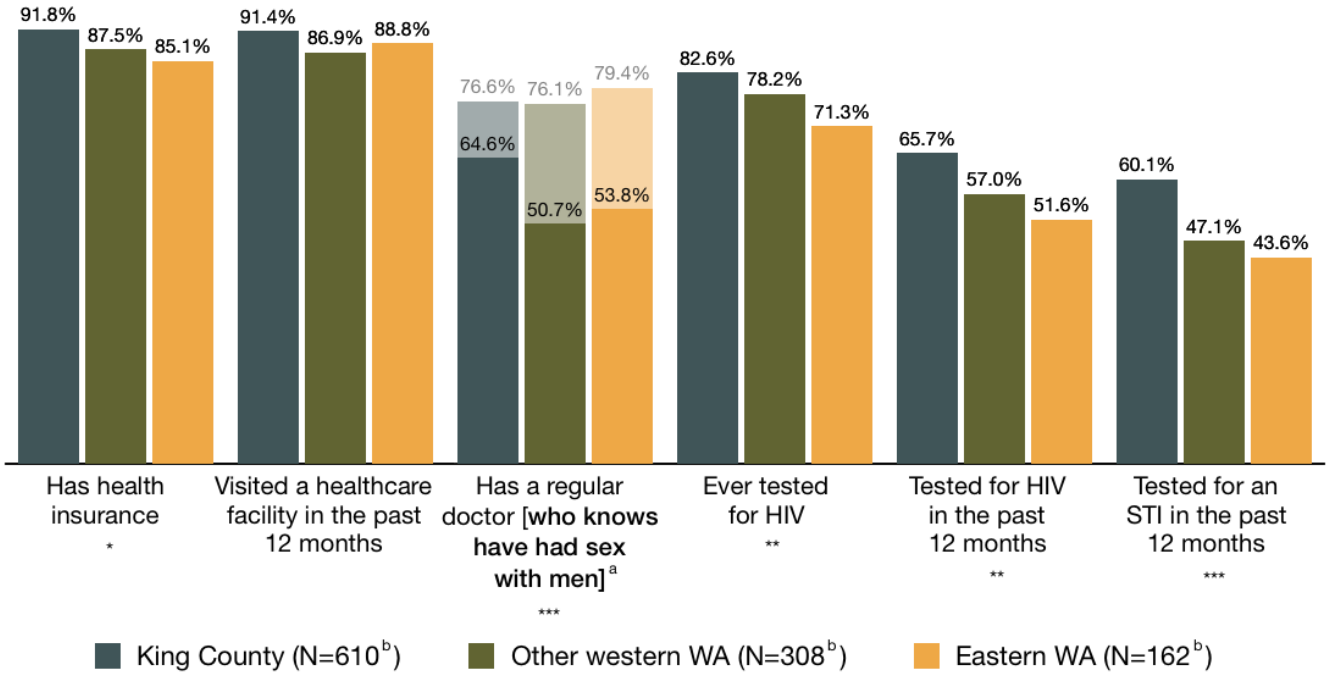


Acronyms: STI, sexually transmitted infection

*Pearson χ^2 p-value<0.05; ***p-value<0.001

[a]Back (light) columns indicate the percent who reported having a regular doctor, columns in front indicate the percent who reported having a regular doctor who knows they have had sex with men; [b]The number of respondents for each variable may vary due to survey drop-off and missing responses: 26 respondents chose not to answer one or more variables in this table (3-9 for any given variable), and the minimum sample size due to survey drop-off and non-response was 1,024 for men who had sex with a man in the past 12 months and 92 for men who last had sex with men >12 months ago.

Figure 4: Healthcare utilization among respondents who had sex with men in the past 12 months, by region



Acronyms: STI, sexually transmitted infection *Pearson χ^2 p-value<0.05; **p-value<0.01; ***p-value<0.001

[a]Back (light) columns indicate the percent who reported having a regular doctor, columns in front indicate the percent who reported having a regular doctor who knows they have had sex with men; [b]The number of respondents for each variable may vary due to survey drop-off and missing responses: 20 respondents chose not to answer one or more variables in this table (3-6 for any given variable), and the minimum sample size due to survey drop-off and non-response was 586 for King County, 288 for other Western Washington, and 149 for eastern Washington.

Sexual behavior and HIV risk indicators

Monitoring reported sexual and drug use behaviors provides valuable information about HIV transmission risk that can be used to improve prevention programs, including programs to expand access to PrEP. Respondents who had sex with men in the past 12 months reported a median of 2 male anal sex partners in the past year, and 16% had ten or more male anal sex partners in the past year (Table 3). Forty-four percent of men reported a current male partner whom they consider to be main or primary, and 35% indicated that they live with a man whom they consider to be their boyfriend, spouse, husband, significant other, or life partner. Eight percent reported an ongoing relationship with an HIV positive male partner. In addition to reporting male sex partners, 10% of these men also had oral, anal, or vaginal sex with cisgender females in the past year, 3% had sex with transgender males, and 2% had sex with transgender females.

Condomless anal sex (CAS) was common, reported by 75% of sexually active MSM. Forty-nine percent reported CAS with a man who they did not consider to be a main or primary partner, 29% reported CAS with male partners of unknown HIV status, and 15% reported CAS with male partners known to be HIV-positive. Eighteen percent of men indicated that they were diagnosed with a bacterial STI in the past year. Use of poppers (alkyl nitrites) was reported by 23% of men, 9% reported use of methamphetamine, and 6% reported injection drug use.

Men who had not had sex with men in the past 12 months were more likely to report sex with female partners (54% vs 10%; $p<0.001$) and were less likely to report living with a male partner (10% vs. 35%; $p<0.001$). These men reported their last oral or anal sex with a man a median of 69 months (5.8 years) ago (interquartile range (IQR): 25 to 206 months). Two percent reported diagnosis with a bacterial STI in the past year. Whereas recreational drug use was relatively common among sexually active MSM, only 2% of men who had not been sexually active with males in the past year reported use of poppers, 1% used methamphetamine, and 1% used injection drugs.

Based on these reported risk behaviors, Washington's guidelines for PrEP use [9, 10] (see Box 2) indicate that 33% of respondents who had sex with men in the past year and 4% of respondents who did not have sex with men in the past year should be recommended use of PrEP. Providers should discuss PrEP with 30% and 1% of men who did and did not report sex with men in the past year, respectively. Figure 5 illustrates how each reported indicator contributes to the percent of men in the two PrEP candidacy categories. Use of poppers was the most commonly reported indicator for PrEP being recommended, and CAS outside of a monogamous long-term partnership with an HIV-negative male partner (measured as CAS with a non-main partner or with a partner of unknown or positive HIV status) was the primary indicator for discussion of PrEP.

Regional differences among sexually active MSM are presented in Table 4. Respondents living in King County were less likely to have had sex with cisgender females in the past 12 months

(8% vs. 13% in all other counties combined; p=0.004) and more likely to have a current male partner whom they consider to be main or primary (49% vs. 38%; p=0.001). King County residents were also more likely to be in an ongoing sexual relationship with an HIV-positive male partner (11% vs. 4%; p<0.001) and to have had condomless anal sex with an HIV-positive partner (18% vs. 10%; p=0.001). Recent diagnosis with a bacterial STI was highest among King County residents and lowest among eastern Washington residents (21% vs. 12%; p=0.015), and men in King county were more likely than men in other counties to report recent popper use (26% vs. 19%; p=0.008). Following this pattern, the proportion of respondents who meet Washington's guidelines for use of PrEP was highest in King County (36%), but the proportion of respondents who may still be at risk and are encouraged to discuss PrEP with their providers was highest in eastern Washington (33%).

Box 2. Washington State PrEP Implementation Guidelines

PrEP is recommended for individuals who meet the following criteria:

- Men and transgender persons who have sex with men and…
  - have been diagnosed with rectal gonorrhea or syphilis in the past 12 months,
  - used methamphetamine or poppers in the past 12 months
  - or have provided sex in exchange for money or drugs in the past 12 months
- All persons in ongoing sexual partnerships with HIV-positive partner(s) who are not taking or are within 6 months of starting antiretroviral therapy (ART), or who are not virologically suppressed

Providers should discuss use of PrEP with individuals who meet the following criteria:

- Men and transgender persons who have sex with men and…
  - have had CAS outside of a mutually monogamous long-term partnership with a man who is HIV negative[a],
  - or have been diagnosed with urethral gonorrhea or rectal chlamydia in the past 12 months
- All persons who…
  - are in ongoing sexual partnerships with HIV-positive partner(s) who have been on ART for more than 6 months and are virologically suppressed
  - use injection drugs not prescribed by a medical provider

Not measured[b]:

- are seeking a prescription for PrEP
- are completing a course of post-exposure prophylaxis (PEP) for non-occupational exposure to HIV
- are in ongoing sexual partnerships with HIV-positive female partner(s) who are trying to get pregnant
- or are females with a history of providing sex in exchange for money or drugs

[a]For this analysis, respondents were considered to have had CAS outside of a mutually monogamous long-term partnership with an HIV-negative partner if they reported CAS with a partner they did not consider to be main/primary or with a partner of unknown or positive HIV status in the past 12 months

[b]These indications for discussing PrEP were not measured in the survey and not included in this analysis

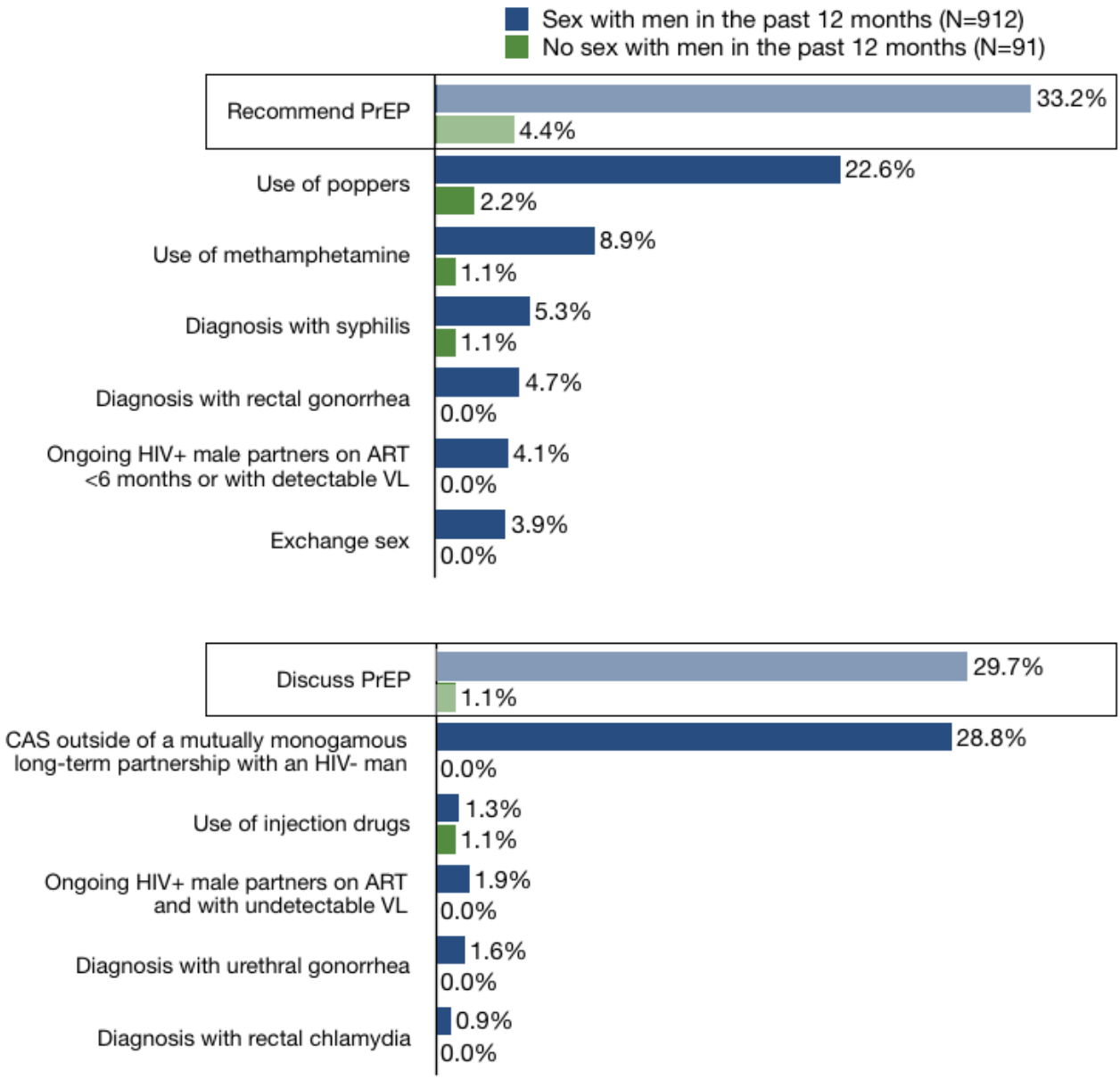
Table 3: Sexual behavior and HIV risk indicators[a]

	Men who had sex with men in the past 12 months (N=1080[b]) Column %	Men who last had sex with men >12 months ago (N=98[b]) Column %	p-value[c]
Sex with cisgender females	10.2%	54.1%	<0.001
Sex with trans males	3.4%	3.1%	0.849
Sex with trans females	1.6%	2.0%	0.725
≥10 male anal sex partners[d]	16.0%	--	
Current main/primary male partner[d]	44.4%	--	
Living with a male partner	34.7%	9.9%	<0.001
Current HIV-positive male partner[d]	8.1%	--	
CAS with a non-main male partner[d]	48.6%	--	
CAS with an unknown status male partner[d]	28.7%	--	
CAS with an HIV-positive male partner[d]	14.8%	--	
STI diagnosis (past 12 months)			
Rectal gonorrhea	4.6%	0.0%	0.036
Syphilis	5.6%	1.1%	0.064
Any bacterial STI[e]	18.4%	2.2%	<0.001
Drug use			
Injection drugs	6.1%	1.1%	0.046
Methamphetamine	8.7%	1.1%	0.010
Poppers	22.8%	2.2%	<0.001
History of exchange sex	3.9%	0.0%	0.055
PrEP candidacy[e]			<0.001
Discuss	29.7%	1.1%	
Recommend	33.2%	4.4%	

Acronyms: STI, sexually transmitted infection; CAS, condomless anal sex; PrEP, pre-exposure prophylaxis

[a]Indicators refer to current or past-year behaviors and events; [b] The number of respondents for each variable may vary due to survey drop-off and missing responses: 44 respondents chose not to answer one or more variables in this table (0-17 for any given variable), and the minimum sample size due to survey drop-off and non-response was 912 for men who had sex with a man in the past 12 months and 91 for men who last had sex with men >12 months ago; [c]Pearson χ^2 p-value; [d]Not asked of men who had not had sex with a man in the past 12 months; [e]Diagnosis of gonorrhea (pharyngeal, urethral, or rectal), chlamydia (pharyngeal, urethral, or rectal), or syphilis; [f]See Box 2 for detail on Washington PrEP guidelines

Figure 5: Percent of men who reported each indicator contributing to PrEP candidacy[a]



[a]See Box 2 for detail on Washington PrEP guidelines. The percentages reporting indicators for discussing PrEP exclude men for whom PrEP is recommended

Table 4: Sexual behavior and HIV risk indicators[a] among respondents who had sex with men in the past 12 months by region

	King County (N=610[b]) Column %	Other Western WA (N=308[b]) Column %	Eastern WA (N=162[b]) Column %	p-value[c]
Sex with cisgender females	7.9%	12.0%	15.4%	0.008
Sex with trans males	3.4%	2.9%	4.3%	0.730
Sex with trans females	1.0%	2.3%	2.5%	0.204
≥10 male anal sex partners	17.6%	12.0%	17.4%	0.099
Current main/primary male partner	49.0%	37.5%	39.5%	0.003
Living with a male partner	36.2%	35.3%	27.8%	0.191
Current HIV-positive male partner	10.9%	5.1%	2.8%	0.001
CAS with a non-main male partner	49.2%	49.3%	44.8%	0.614
CAS with an unknown status male partner	29.1%	27.8%	28.9%	0.930
CAS with an HIV-positive male partner	18.1%	10.6%	9.7%	0.003
STI diagnosis (past 12 months)				
Rectal gonorrhea	4.9%	4.2%	4.0%	0.823
Syphilis	6.5%	4.2%	4.6%	0.338
Any bacterial STI[d]	20.6%	17.5%	11.9%	0.044
Drug use				
Injection drugs	5.5%	6.5%	7.4%	0.683
Methamphetamine	9.0%	10.0%	5.2%	0.266
Poppers	25.9%	18.5%	18.7%	0.029
History of exchange sex	3.9%	3.1%	5.1%	0.594
PrEP candidacy[e]				0.197
Discuss	27.9%	31.8%	33.1%	
Recommend	36.5%	29.4%	27.8%	

Acronyms: STI, sexually transmitted infection; CAS, condomless anal sex; PrEP, pre-exposure prophylaxis

[a]Indicators refer to current or past year behaviors and events; [b]The number of respondents for each variable may vary due to survey drop-off and missing responses: 42 respondents chose not to answer one or more variables in this table (0-17 for any given variable), and the minimum sample size due to survey drop-off and non-response was 524 for King County, 255 for other Western Washington, and 133 for eastern Washington; [c]Pearson χ^2 p-value for regional differences; [d]Diagnosis of gonorrhea (pharyngeal, urethral, or rectal), chlamydia (pharyngeal, urethral, or rectal), or syphilis; [e]See Box 2 for detail on Washington PrEP guidelines

PrEP awareness, interest, and use

Awareness, interest, and use of PrEP was high among respondents who had sex with men in the past 12 months. Over three-quarters (79%) of these respondents had heard of PrEP and 19% reported current use of PrEP (Table 5). An additional 4% reported that they had used PrEP in the past, and 53% of past users stated that they want to start taking PrEP again and 28% were unsure about taking it again. Of sexually active MSM who had never used PrEP, 36% stated that they want to start taking it and 33% stated that they are not sure but want to learn more about PrEP. However, knowledge of where to get PrEP or learn more about it was low. Nearly two-thirds (64%) of men who expressed interest in PrEP indicated that they don't know where or how to get it, and 56% of those unsure about PrEP indicated that they don't know where to go to learn more.

Respondents who last had sex with men more than 12 months ago were less likely to have heard of PrEP (55% vs. 79%; p<0.001) and less likely to have ever used PrEP (1% vs. 23%; p<0.001; Table 5). These men were also less likely than sexually active MSM to indicate interest in starting PrEP (8% vs. 36%; p<0.001), and those who were interested or unsure were more likely to report having no preference regarding where to get PrEP (21% vs. 8%; Fisher's exact p=0.016). Only 21% of these men perceived PrEP to be 90% effective, compared to 51% of sexually active MSM (p<0.001). Of the 7 men who had not had sex with men in the past 12 months who expressed interest in PrEP, 6 (86%) stated that they don't know where or how to get it, and 16 of the 25 (64%) who were unsure about PrEP stated that they don't know where to go to learn more about it.

Box 3. PrEP information and resources

Learn more about PrEP, and find a PrEP provider near you:

http://www.doh.wa.gov/YouandYourFamily/IllnessandDisease/HIVAIDS/Prevention/PrEP

**This page also has information about programs to help you pay for PrEP*

http://www.kingcounty.gov/depts/health/communicable-diseases/hiv-std/patients/pre-exposure-prophylaxis.aspx

Because few respondents who had not had sex with men in the past 12 months were PrEP candidates (men for whom PrEP is recommended or with whom it should be discussed; n=5) or reported use of (n=1) or interest in PrEP (n=7), the remainder of this section focuses on men who had sex with men in the past 12 months. Nearly one in four sexually active MSM who had heard of PrEP and were not using it reported that they had discussed PrEP with a healthcare provider in the past 12 months. Men who had never used PrEP were asked to indicate the reasons they are not using or are not interested in it. Among those interested in taking PrEP, the most commonly cited reasons for not having started were not knowing where or how to get it (38%) and cost or insurance concerns (35%), followed by not knowing enough about it (26%), and concern about side-effects (25%). Respondents who were unsure about PrEP but interested in learning more cited not knowing enough about it (52%), perceiving themselves to be at low risk for HIV (39%), concern about side-effects (38%), and not knowing where or how to get it (28%) as the most common reasons. Respondents not interested

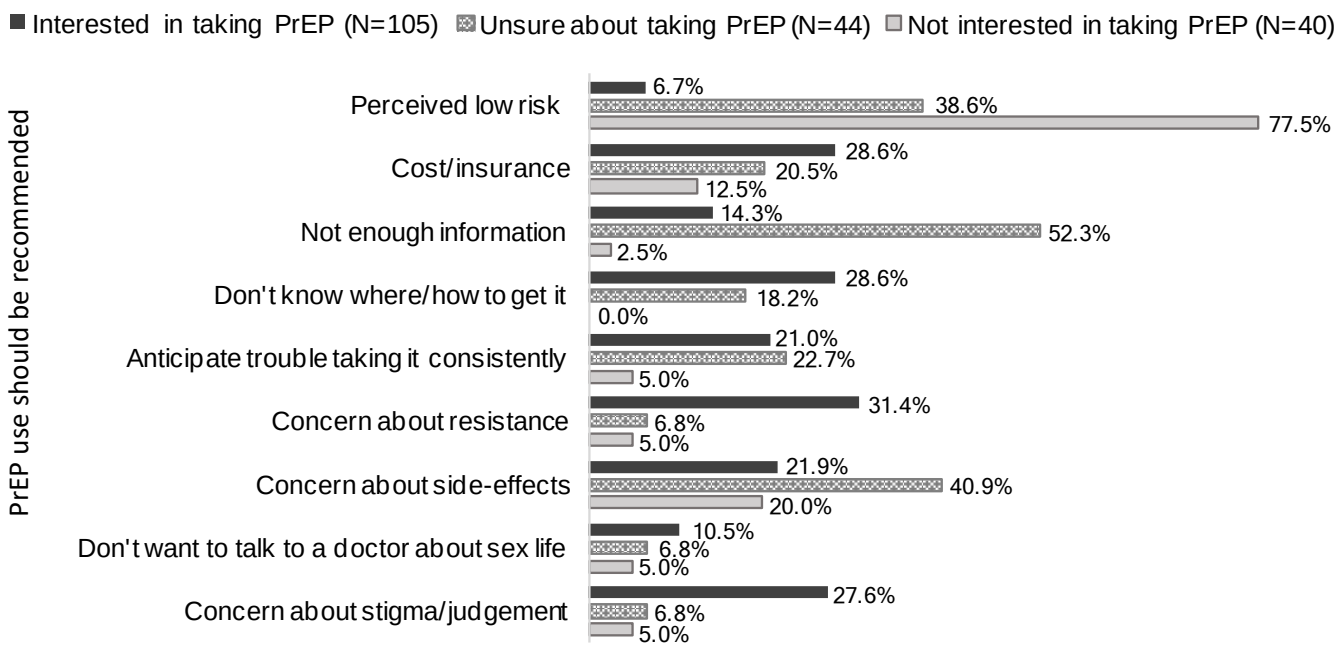
in taking PrEP indicated that they perceive themselves to be at low risk for HIV (82%) or are concerned about side-effects (27%). Figure 6 presents the reasons for not using or not being interested in PrEP among MSM for whom Washington guidelines recommend use and among those encouraged to discuss it with a provider. Overall, 31% of respondents for whom PrEP is recommended and 30% of those who met indications for discussing PrEP cited being at low risk for HIV as a reason for not using or not being interested in it.

Among sexually active MSM respondents for whom Washington's guidelines recommend use of PrEP, 31% reported current and 6% reported past use. Over half (56%) of men for whom PrEP is recommended who had never used it reported interest in starting it, and 23% said they were unsure. Among respondents who met indications for discussing PrEP with a provider, 25% reported current use, 4% reported past use. Fifty-one percent of those with whom PrEP should be discussed who had never used PrEP reported interest in starting it, and 32% said they were unsure.

Men currently using PrEP reported that they started it a median of 12 months ago (IQR 5, 20), and 30% started it within the prior 6 months. Two-thirds of current PrEP users (67%) reported taking it every day of the past 30 days, and 86% reported taking it on at least 90% of the past 30 days. To help cover the costs of PrEP, 57% reported enrollment in Gilead's Medication Assistance or Co-Pay Assistance Programs, and 13% reported enrollment in Washington's PrEP Drug Assistance Program. Sixty percent of PrEP users indicated that they have no out-of-pocket expenses for taking PrEP, and 13% reported that they spend $50 or more each month.

Respondents who reported having used PrEP in the past took it for a median of 5 months (IQR 2, 8.5), and 86% used it for 1 year or less. The most common reason cited for having stopped PrEP was no longer feeling at risk for HIV, which was reported by 23 of 44 respondents who discontinued (52%). Concern about the long-term health effects of PrEP (27%), being unable to afford PrEP or loss of insurance (23%), and not liking how they felt on PrEP (20%) were also commonly reported.

There were regional differences in awareness, use of, and perceptions of PrEP (Table 6). Respondents from King County were more likely than respondents in the rest of the state to have heard of (82% vs 75%; $p=0.003$) to be using PrEP (23% vs. 13%; $p<0.001$), and to believe that PrEP is at least 90% effective (58% vs. 40%; $p<0.001$). Respondents from eastern Washington were less likely than those in King County to be enrolled in a PrEP drug assistance program (40% vs. 69%; $p=0.012$). Among respondents who had never used PrEP, there were no differences by region in interest in starting or learning more about it. Figure 7 presents patterns of PrEP use and interest by region among respondents for whom PrEP is recommended and who are encouraged to discuss it with a provider.



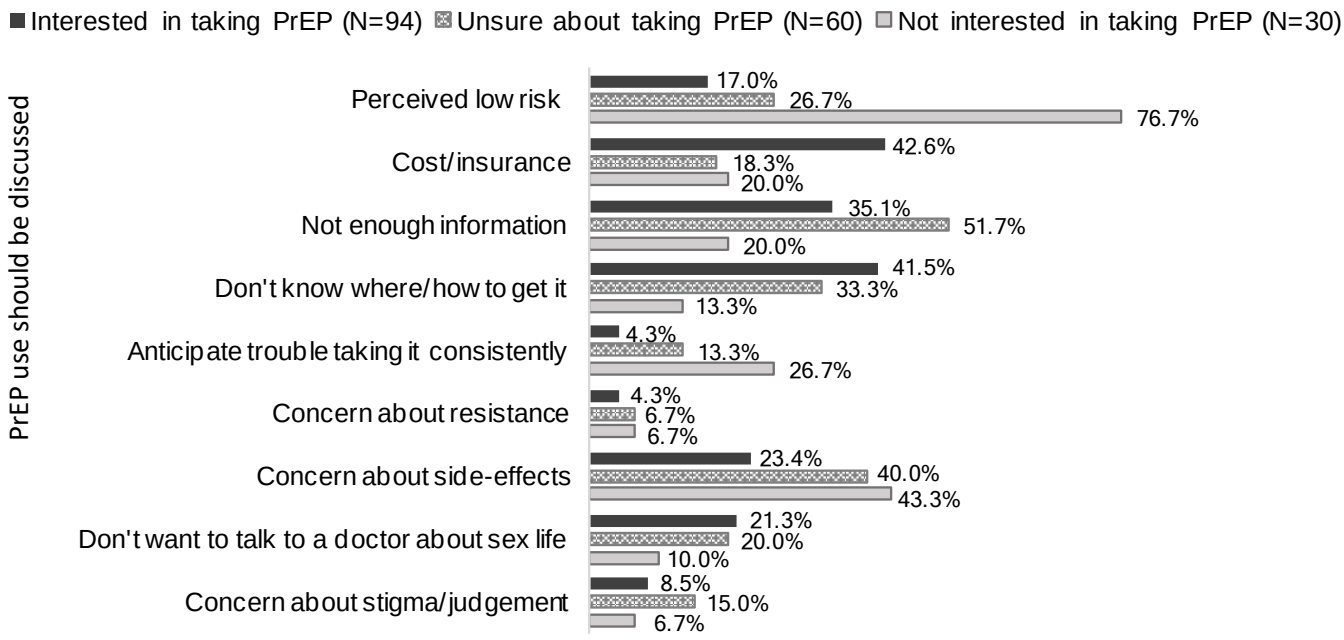


Figure 6: Barriers to PrEP uptake among respondents who had sex with men in the past 12 months and meet indications for PrEP being recommended[a] (top panel) or discussed[a] (bottom panel), by reported interest in starting PrEP (N=373)

[a] See Box 2 for detail on Washington PrEP guidelines

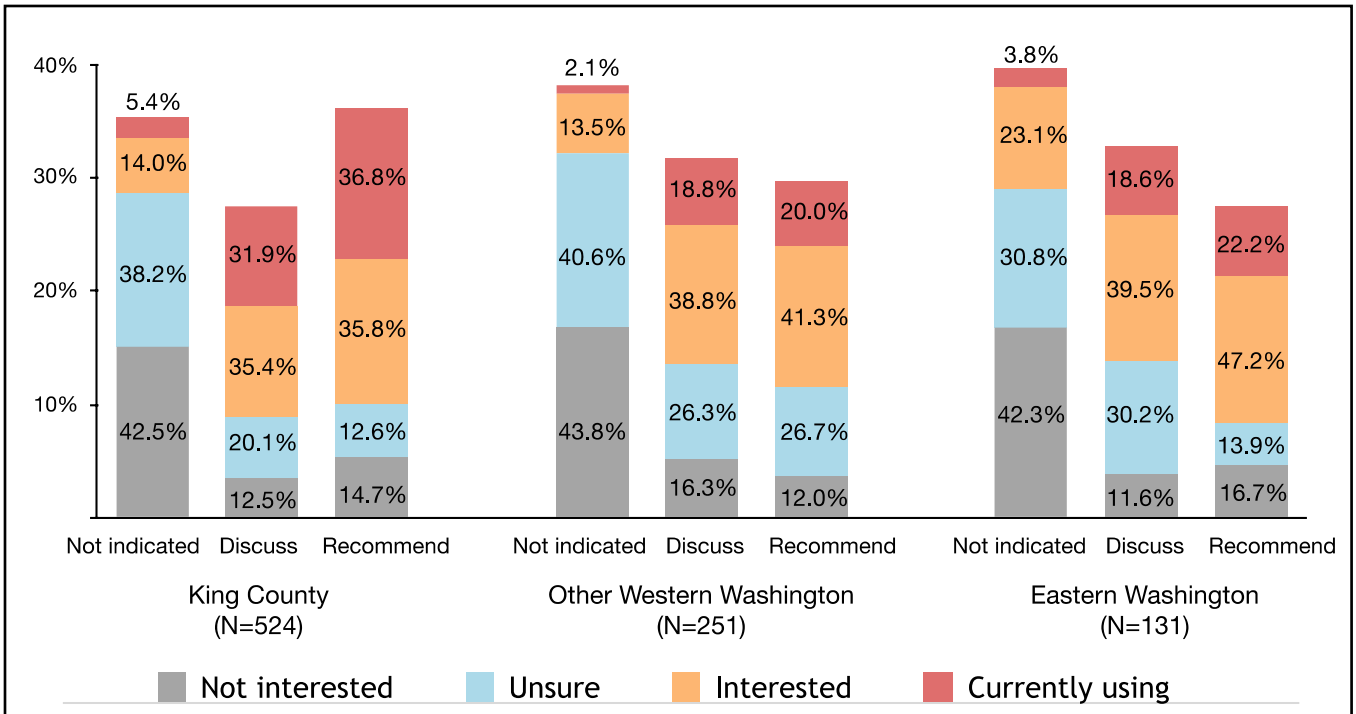


Figure 7: PrEP use and interest among respondents who had sex with men in the past 12 months by indications for PrEP[a] and region

The height of the columns indicates the percentage of all respondents in each region in each PrEP candidacy category. Percentages within the columns correspond to the percent of men in each PrEP candidacy category who expressed interest or reported use of PrEP.

[a]See Box 2 for detail on Washington PrEP guidelines

Table 5: PrEP awareness, interest, and use

	Men who had sex with men in the past 12 months (N=1080[a]) Column %	Men who last had sex with men >12 months ago (N=98[a]) Column %	p-value[b]
PrEP awareness	78.9%	55.1%	<0.001
Use of PrEP			<0.001
Never	77.0%	99.0%	
Current	18.5%	1.0%	
Past	4.4%	0.0%	
Interest in starting PrEP[c]			<0.001
No	30.4%	64.5%	
Unsure	33.5%	28.0%	
Yes	36.2%	7.5%	
Discussed PrEP with a health care provider in the past 12 months[d]	23.1%	0.0%	<0.001
Preferred PrEP provider[e]			
Regular doctor/provider	42.3%	36.4%	0.504
A clinic or provider that specializes in PrEP	39.1%	24.2%	0.088
A clinic or provider that specializes in LGBTQ health	39.9%	24.2%	0.073
A pharmacy	26.4%	27.3%	0.915
No preference	7.7%	21.2%	0.016[f]
≥90% PrEP adherence[i]	86.3%	100.0%	1.00[f]
Perceived effectiveness of PrEP			<0.001
Less than 75%	25.1%	34.0%	
75% to 89%	16.8%	18.1%	
90% or higher	50.6%	21.3%	
Unsure/Prefer not to answer	7.5%	26.6%	

Acronyms: Acronyms: PrEP, pre-exposure prophylaxis; IQR, interquartile range

[a]The number of respondents for each variable may vary due to survey drop-off and missing responses: 28 respondents chose not to answer one or more variables in this table (0-21 for any given variable); [b]Pearson χ^2 p-value unless otherwise specified; [c]Among respondents who have never used PrEP (N=813 sexually active and 93 not sexually active MSM); [d]Among respondents who had heard of PrEP and are not currently using it (N=649 sexually active and 52 not sexually active MSM); [e]Among respondents not currently using PrEP who reported interest in or said they were unsure about taking PrEP (N=594 sexually active and 33 not sexually active MSM); Categories are not mutually exclusive; [f]Fisher's exact p-value; [g]Among current PrEP users (N=197 sexually active and 1 not sexually active MSM). Corresponds to taking PrEP 27 or more out of the past 30 days

Table 6: PrEP awareness, interest, and use among respondents who had sex with men in the past 12 months by region

	King County (N=610[a]) Column %	Other Western WA (N=308[a]) Column %	Eastern WA (N=162[a]) Column %	p-value[b]
PrEP awareness	82.1%	76.6%	80.0%	0.004
Use of PrEP				<0.001
Never	72.6%	81.8%	84.6%	
Current	23.1%	12.3%	13.0%	
Past	4.3%	5.8%	2.5%	
Interest in starting PrEP[c]				0.598
No	30.7%	30.2%	29.8%	
Unsure	32.7%	36.7%	29.8%	
Yes	36.6%	33.1%	40.5%	
Discussed PrEP with a health care provider in the past 12 months[d]	24.7%	23.9%	15.2%	0.149
Preferred PrEP provider[e]				
Regular doctor/provider	47.0%	35.4%	39.4%	0.033
A clinic or provider that specializes in PrEP	41.1%	40.3%	29.8%	0.131
A clinic or provider that specializes in LGBTQ health	38.9%	48.1%	27.7%	0.004
A pharmacy	23.5%	28.2%	33.0%	0.153
No preference	5.3%	11.6%	8.5%	0.040
PrEP drug assistance program[f]				
Washington State Drug Assistance Program (PrEP DAP)	13.4%	8.1%	20.0%	0.425[g]
Gilead's Medication or Co-Pay Assistance Programs	62.7%	56.8%	20.0%	0.002
≥90% PrEP adherence[i]	86.3%	81.6%	95.0%	0.369
Perceived effectiveness of PrEP				<0.001
Less than 75%	22.3%	28.4%	29.9%	
75% to 89%	13.8%	21.8%	18.8%	
90% or higher	58.3%	40.5%	39.6%	
Unsure/Prefer not to answer	5.6%	9.3%	11.7%	

Acronyms: STI, sexually transmitted infection; CAS, condomless anal sex; PrEP, pre-exposure prophylaxis

[a]The number of respondents for each variable may vary due to survey drop-off and missing responses: 24 respondents chose not to answer one or more variables in this table (0-18 for any given variable); [b]Pearson χ^2 p-value for regional differences unless otherwise specified; [c]Among respondents who have never used PrEP (N=437 in King County, 245 in other western WA, 131 in eastern WA); [d]Among respondents who had heard of PrEP and are not currently using it (N=360 in King County, 197 in other western WA, 92 in eastern WA); [e]Among respondents not currently using PrEP who reported interest in or said they were unsure about taking PrEP (N=319 in King County, 181 in other western WA, 94 in eastern WA). Categories are not mutually exclusive; [f]Among current PrEP users (N=134 in King County, 37 in other western WA, 20 in eastern WA). Categories are not mutually exclusive; [g]Fisher's exact p-value for regional differences; [i]Among current PrEP users (N=139 in King County, 38 in other western WA, 20 in eastern WA). Corresponds to taking PrEP 27 or more out of the past 30 days

In bivariate analyses, current use of PrEP was associated with living in King County, age, identifying as gay or homosexual, higher education, higher income, and meeting indications for PrEP being recommended or discussed based on reported HIV risk behaviors (Table 7). In a multivariable model, age, having a 4-year college degree or higher, and PrEP candidacy were significantly associated with current use of PrEP. After adjusting for demographic behaviors and PrEP candidacy, region of residence was no longer significant. Race/ethnicity was not significant in unadjusted or adjusted analyses. An analysis of data from men who have sex with men participating in HIV partner services in King County found that non-White patients were significantly less likely to be using PrEP [11], and data from other surveys in the United States have indicated lower use of PrEP among Black and Hispanic men [12-14]. As such, the findings on PrEP use by race from this survey should be interpreted with caution, as the sample may not be representative.

Table 7: Correlates of current PrEP use among respondents who had sex with men in the past 12 months (N=852[a])

	Using PrEP		Unadjusted association[b]		Adjusted association[b]	
	n	%	RR (95% CI)	p-value	RR (95% CI)	p-value
Demographic characteristics						
Region of residence				<0.001		0.138
King County	123	25.1%	Reference		Reference	
Other western Washington	32	13.4%	0.54 (0.37, 0.77)		1.25 (0.83, 1.90)	
Eastern Washington	18	14.5%	0.58 (0.37, 0.91)		0.92 (0.56, 1.51)	
Age				<0.001		<0.001
16 to 24	18	7.2%	Reference		Reference	
25 to 34	70	25.4%	3.51 (2.15, 5.72)		2.82 (1.76, 4.52)	
35 to 44	44	33.1%	4.58 (2.76, 7.59)		3.35 (2.05, 5.48)	
45 to 54	29	28.2%	3.89 (2.27, 6.69)		2.77 (1.64, 4.68)	
55 and older	12	13.2%	1.82 (0.92, 3.64)		1.84 (0.95, 3.55)	
Race/ethnicity				0.734		0.762
White	125	21.2%	Reference		Reference	
Hispanic	26	17.4%	0.82 (0.56, 1.21)		0.88 (0.63, 1.22)	
Black	7	21.9%	1.03 (0.53, 2.02)		0.85 (0.45, 1.58)	
Other	15	18.3%	0.86 (0.53, 1.40)		0.86 (0.56, 1.32)	
Gay/homosexual identity	160	22.3%	2.30 (1.35, 3.92)	0.002	1.57 (0.96, 2.57)	0.070
Education				<0.001		0.002
High school or less	7	5.2%	Reference		Reference	
Some college/vocational school	41	14.9%	2.88 (1.33, 6.24)		1.75 (0.83, 3.69)	
4-year college or higher	125	28.3%	5.45 (2.61, 11.39)		2.66 (1.29, 5.46)	
Income				0.002		0.421
Less than $15,000	7	7.1%	Reference		Reference	
$15,000 to $29,999	13	12.6%	1.79 (0.74, 4.29)		1.76 (0.76, 4.04)	
$30,000 to $49,999	34	23.1%	3.27 (1.51, 7.08)		2.16 (1.03, 4.51)	
$50,000 to $99,999	59	22.6%	3.20 (1.51, 6.76)		2.03 (0.99, 4.16)	
$100,000 or more	54	27.3%	3.86 (1.82, 8.16)		2.17 (1.05, 4.50)	
I prefer not to answer	6	13.6%	1.93 (0.69, 5.41)		1.84 (0.72, 4.69)	
PrEP candidacy[c]				<0.001		<0.001
Not indicated	13	4.0%	Reference		Reference	
Discuss	69	27.2%	6.71 (3.80, 11.85)		7.81 (4.51, 13.54)	
Recommend	91	32.9%	8.11 (4.64, 14.18)		6.39 (3.65, 11.21)	

Acronyms: PrEP, pre-exposure prophylaxis

[a]This analysis is restricted to respondents who have never or are currently using PrEP and provided responses to all covariates; [b]Analyses conducted using log binomial regression; [c]See Box 2 for detail on Washington PrEP guidelines

Stigma and disclosure of sex with men

On a scale from 0 (not at all accepting) to 100 (very accepting), over a quarter of the sample (26% and 30% of men who were and were not sexually active with men in the past 12 months) reported that the people they regularly talk to and interact with are maximally accepting of LGBTQ individuals. The median scores were 90 and 89 for the two groups (Figure 8). When asked about acceptance of LGBTQ individuals more generally from people where respondents live, 21% of men who were and 25% of men who were not sexually active with men reported maximal acceptance, and the median scores were 85 and 89. Respondents from King County reported the highest acceptance on both scores and respondents from eastern Washington reported the lowest (Figure 9).

When asked to indicate which types of people respondents have told they have sex with men, 89% of sexually active MSM reported having told friends who are LGBTQ, 79% reported having told non-LGBTQ friends, 69% reported having told family members, 31% reported having told religious leaders, 43% reported having told neighbors, 64% reported having told co-workers or classmates, and 5% reported having told none of these types of people (Table 8). Men who last had sex with a man more than 12 months ago were significantly less likely to have told people in each of these groups that they have had sex with men.

Sexually active MSM living in eastern Washington were less likely than men in western Washington, including King county, to have told LGBTQ friends (82% vs. 90%; p=0.005) and co-workers or classmates (53% vs. 66%; p=0.007) that they have had sex with men (Table 9). Men in eastern Washington were also less likely than men in King County, but not significantly less likely than men in other counties in western Washington, to have told neighbors (31% vs. 46%; p=0.002) and more likely to have told none of the specified groups (8% vs. 3%; p=0.005). The percent of men who had told friends who are not LGBTQ (p=0.317), family members (p=0.193), and religious leaders (p=0.828) did not differ significantly by region.

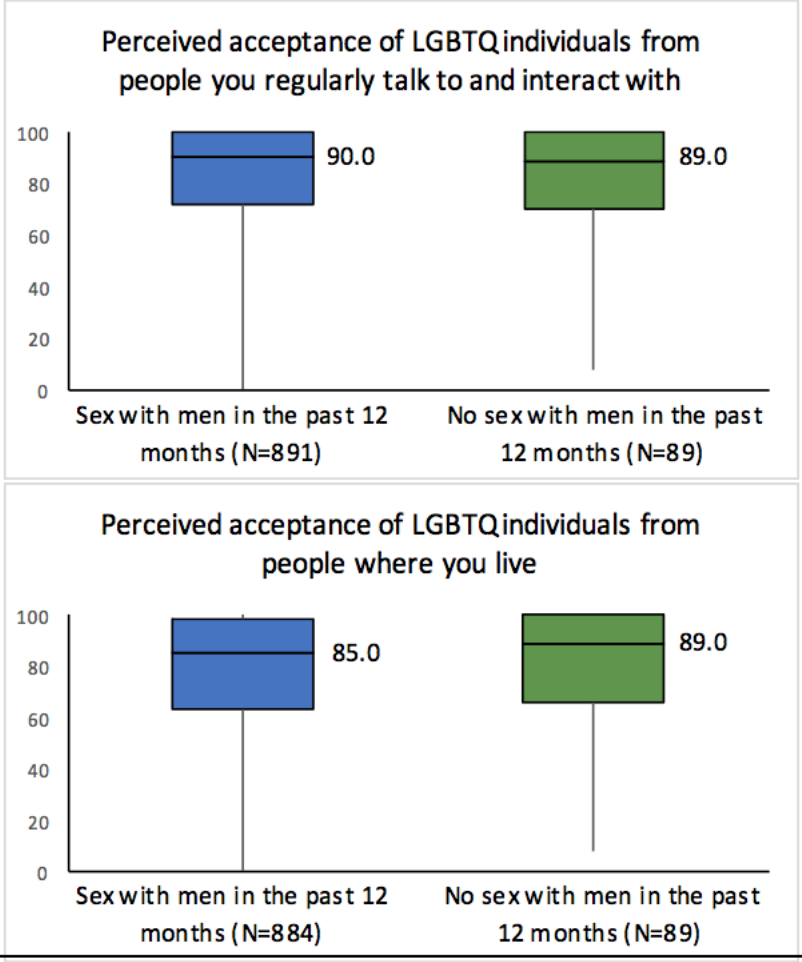


Figure 8: Perceived acceptance of LGBTQ individuals from people respondents regularly talk to and interact with (top) and from people where they live (bottom)

A score of 100 corresponds to "very accepting" and 0 corresponds to "not at all accepting." Median values are presented, the boxes outline the interquartile range, and the whiskers span the full range. Differences between men who did and did not have sex with men in the past 12 months were not statistically significant (Kruskal-Wallis p=0.640 for the top measure and p=0.770 for the bottom)

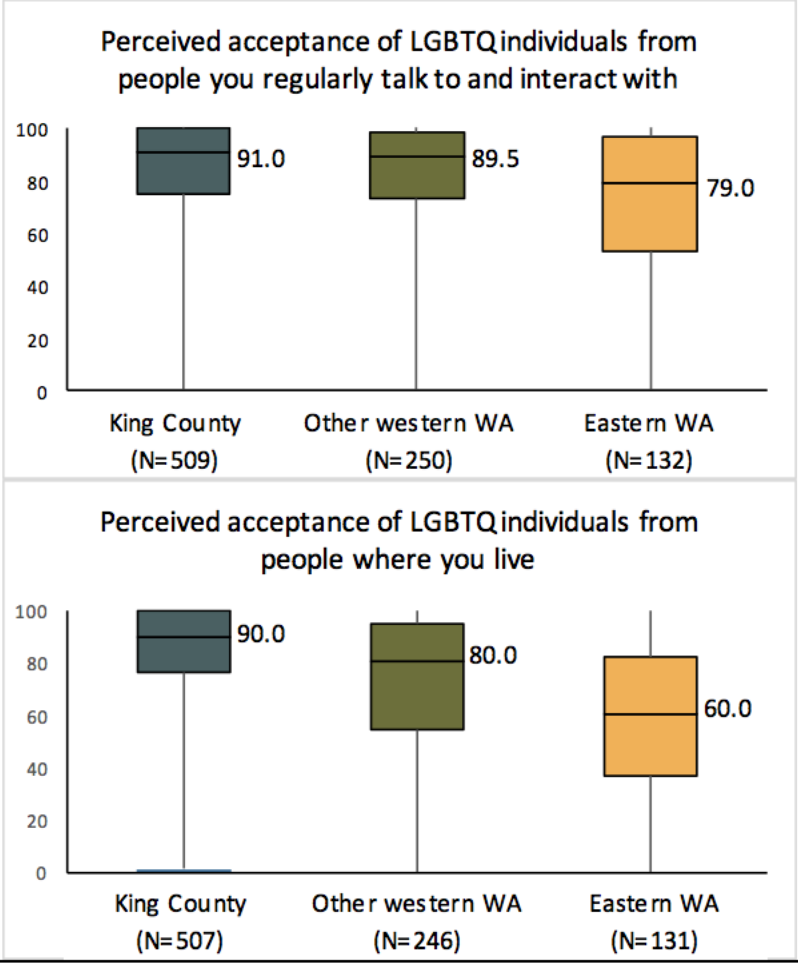


Figure 9: Perceived acceptance of LGBTQ individuals from people respondents who had sex with men in the past 12 months regularly talk to and interact with (top) and from people where they live (bottom)

A score of 100 corresponds to "very accepting" and 0 corresponds to "not at all accepting." Median values are presented, the boxes outline the interquartile range, and the whiskers span the full range. Regional differences on both measures were statistically significant (Kruskal-Wallis $p<0.001$)

Table 8: Groups respondents have told they have sex with men

	Men who had sex with men in the past 12 months (N=917) Column %	Men who last had sex with men >12 months ago (N=88) Column %	p-value[a]
LGBTQ friends	88.9%	64.8%	<0.001
Friends who are not LGBTQ	79.0%	50.0%	<0.001
Family members	69.5%	40.9%	<0.001
Religious leaders	31.0%	15.9%	0.003
Neighbors	42.7%	18.2%	<0.001
Co-workers or classmates	63.9%	25.0%	<0.001
None of the above	4.6%	26.1%	<0.001

Acronyms: LGBTQ, lesbian, gay, bisexual, transgender, and queer/questioning

[a] Pearson χ^2 p-value

Table 9: Groups respondents who had sex with men in the past 12 months have told they have sex with men, by region

	King County (N=532) Column %	Other Western WA (N=254) Column %	Eastern WA (N=131) Column %	p-value[a]
LGBTQ friends	90.0%	90.2%	81.7%	0.018
Friends who are not LGBTQ	80.6%	77.2%	75.6%	0.317
Family members	71.6%	67.7%	64.1%	0.193
Religious leaders	31.8%	29.9%	29.8%	0.828
Neighbors	46.4%	40.9%	31.3%	0.006
Co-workers or classmates	66.2%	64.6%	53.4%	0.024
None of the above	3.0%	5.9%	8.4%	0.015

Acronyms: LGBTQ, lesbian, gay, bisexual, transgender, and queer/questioning

[a] Pearson χ^2 p-value for regional differences

Limitations

The Washington HIV Prevention Project uses an online convenience sampling approach, from which the representativeness of the sample is unknown. It is possible that individuals who use the platforms on which ads were placed, clicked the ads, and completed the survey are different from those who did not in ways related to HIV prevention behaviors or use of PrEP. Comparison with an event-based sample of Washington MSM (the Seattle Pride Survey) suggests that the individuals who responded to this survey may be a higher risk subset of the population. Because of the small number of respondents who reported a non-Hispanic and non-White race/ethnicity, findings on differences by race/ethnicity should be interpreted with caution.

Conclusions

The findings from this survey suggest that awareness, interest, and use of PrEP are high among internet-using MSM in Washington. Nearly eight in ten men who had sex with men in the past 12 months were aware of PrEP, 23% reported ever having used PrEP, with 19% reporting current use of PrEP. Among sexually active MSM who had never used PrEP, 36% expressed interest in starting it. In comparison, previous surveys of MSM nationwide and in other states have reported PrEP use in the range of 8-15% [14-17]. While the differences in estimates may be partially attributable to increased uptake of PrEP over time, PrEP use appears to be relatively high among Washington MSM. Use of PrEP is particularly high among men for whom Washington guidelines indicate PrEP is recommended (31%) and those with whom it should be discussed (25%). However, the data suggest that many potential users face informational, financial, and structural barriers to PrEP initiation. Among PrEP candidates who expressed interest in PrEP, the top three barriers were:

- cost and insurance concerns,
- not knowing where or how to get PrEP, and
- not knowing enough about it.

This survey provides valuable information regarding the HIV prevention needs and risk behaviors of MSM living in Washington State. The data collected through this project are especially useful to inform public health programs targeting MSM living outside of King County, about whom information of this kind is more limited. By measuring PrEP-related awareness, interest, and use, this survey provides information necessary for monitoring and evaluation of PrEP across the state. This information supports programmatic decision-making, and is crucial for both strategic planning—establishing baselines and targets—and for assessing the effectiveness of PrEP as a public health intervention.

The data collected with this survey suggest a need for increased efforts to promote and facilitate HIV and STI testing, particularly among MSM living outside of King County. Awareness and use of PrEP were also lower among men living in other counties, though there were no differences by region in stated interest in PrEP among those who had never used it. Statewide, knowledge

of where to get PrEP or learn more about it were low, pointing to a need for improved messaging to communicate accurate information about PrEP and how to access PrEP resources. The majority of respondents visited a healthcare facility in the past 12 months, suggesting that engaging more providers to screen men for PrEP and connect those eligible to the appropriate clinics and financial assistance programs could increase uptake among those at high risk.

In addition to informing prevention program decisions in the near term, the data from the survey will be used to inform mathematical models to predict how PrEP will influence HIV transmission in the population over time. These models will examine how the impact of PrEP varies depending on who uses it and what levels of PrEP uptake are needed to substantially reduce HIV incidence. The results of the modeling efforts will help guide long-term public health planning and help optimize resources in an effort to meet the state's goal of reducing the rate of new HIV diagnoses by 50% from 2014 to 2020 [5].

The use of the internet for recruitment and data collection for this project represents a new development in the public health surveillance strategy in Washington. Traditionally, the primary sources of information on HIV prevention behaviors and experiences among MSM have been HIV surveillance data collected from diagnosed cases of HIV infection, data collected from clinic-based samples of men who come in for testing and treatment, or venue- and event-based samples, which have largely focused on King County residents. Internet-based recruitment is an alternative strategy to these in-person recruitment strategies that is growing in popularity, particularly for research with MSM [18]. Online-recruitment is efficient and low cost [19, 20], with the potential to recruit thousands of respondents in a short time frame [21]. This project collected complete data from 1,072 individuals over two months at a cost of approximately $21 per response.[3] While the representativeness of online samples is difficult to assess, this approach provides a valuable means to collect information that would otherwise be prohibitively costly or logistically challenging to obtain.

[3] Including the costs of developing the survey instrument, designing and placing advertisements, survey administration, and incentives for survey completion.

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