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Preferences for HIV pre-exposure prophylaxis (PrEP) information among men-who-have-sex-with-men (MSM) at community outreach settings

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Abstract

Community outreach efforts to increase HIV pre-exposure prophylaxis (PrEP) utilization by at risk men-who-have-sex-with-men (MSM) first need to elucidate preferences for learning about PrEP and linking to PrEP resources. In this pilot study, we observed that among MSM recruited through community outreach, HIV sexual risk-taking was significant, yet self-perceived PrEP knowledge was low and interest in learning more about PrEP was moderate. Most preferred learning about PrEP and being provided local PrEP clinic information through electronic media. However, receipt of PrEP information alone did not appear to motivate these men into presenting to a local clinic for PrEP evaluation.

Keywords

HIV prevention; pre-exposure prophylaxis (PrEP); men who have sex with men (MSM)

Introduction

Although HIV pre-exposure prophylaxis (PrEP) is recommended by the United States (US) Centers for Disease Control and Prevention (CDC) (Centers for Disease Control and Prevention, 2014) for men-who-have-sex-with-men (MSM) at “substantial risk” for

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acquiring HIV and “conditionally recommended” for MSM by the World Health Organization (World Health Organization, 2012), PrEP uptake continues to be low among MSM in the US (Eaton et al., 2014; Kirby & Thornber-Dunwell, 2014; D. S. Krakower, 2012; Rucinski, 2013) despite many US MSM who express interest in using PrEP (D. S. Krakower, 2012; Mimiaga, 2009; Tripathi, Whiteside, & Duffus, 2013). Possible reasons for low utilization among this higher HIV-risk population include little knowledge about PrEP (Al-Tayyib, Thrun, Haukoos, & Walls, 2014; Galindo, 2012; D. S. Krakower, 2012; Mehta et al., 2011; Rucinski, 2013), barriers to its acquisition and utilization (e.g., costs; concerns about adverse effects, medication use for HIV prevention, or toxicity; concerns about risk compensation; lack of access to healthcare or providers who prescribe PrEP; fears about asking for PrEP; healthcare provider concerns, lack of knowledge, or reluctance to prescribe PrEP) (Bauermeister, Meanley, Pingel, Soler, & Harper, 2013; Brooks et al., 2011; Brooks et al., 2012; Eaton et al., 2014; Golub, Gamarel, Rendina, Surace, & Lelutiu-Weinberger, 2013; Karris, Beekmann, Mehta, Anderson, & Polgreen, 2014; King et al., 2014; D. Krakower, Ware, Mitty, Maloney, & Mayer, 2014; Kubicek, Arauz-Cuadra, & Kipke, 2015; Mimiaga, 2009; Saberi, 2012; Tellalian, Maznavi, Bredeek, & Hardy, 2013; Tripathi et al., 2013; White, Mimiaga, Krakower, & Mayer, 2012), and inadequate outreach and dissemination of information and resources among higher at-risk MSM.

Now that the efficacy of PrEP has been established among MSM (Abdool Karim et al., 2010; Baeten, 2013; Grant et al., 2010; Jean-Michel Molina et al., 2015; Okwundu, Uthman, & Okoromah, 2012; Sheena McCormack & David Dunn, 2015; Thigpen et al., 2012), the focus appropriately shifts to implementing this HIV preventive measure among at-risk MSM. Although recent studies have examined PrEP knowledge and interest among MSM at social events (Eaton et al., 2014; Mantell et al., 2014), a logical next question in PrEP implementation is whether community outreach and engagement among MSM translates into actual PrEP utilization. Implementation across the US is proceeding on different fronts in clinical settings and community-based organizations, and also should be furthered through advocacy, public health projects and community outreach (Hosek, 2013). Implementation in the community can be guided by demonstration projects that examine how to translate the efficacy of PrEP into utilization and subsequent reduction in HIV incidence among higher risk populations (Dearing, Norton, & Larson, 2013). One aspect of optimizing implementation through community outreach is the identification of effective strategies to improve knowledge and increase dissemination of accurate information about PrEP to facilitate its uptake. However, the optimal methods for providing PrEP information and adequately reaching MSM who could benefit from PrEP are not yet known. A first step towards eliminating this knowledge gap is to learn how MSM would prefer to receive information about PrEP through community outreach and how they would like to be linked to venues that prescribe PrEP.

The primary objective of this pilot study was to evaluate, in the absence of any interventions, interest in learning more about PrEP and preferences in receiving information about PrEP among HIV-uninfected MSM at the 2014 Rhode Island Pride Festival in Providence, Rhode Island and at local gay bars and clubs. These interests and preferences were assessed among MSM who could be potentially PrEP eligible (no current or previous PrEP usage, not HIV infected) by HIV sexual risk (history of condomless anal sex in the past six months with any

male partner and with casual or exchange male partners). The secondary objectives were to assess the relationships between participant demographics and HIV sexual risk to self-perceived knowledge about PrEP, comfort in talking to their current healthcare provider about PrEP and interest in learning more about PrEP. In the absence of any interventions (except for provision of information), we also assessed how many of the MSM provided PrEP information and linkage-to-care resources through this community outreach presented for evaluation at a Providence PrEP clinic. Through addressing these objectives, the overall aim of this pilot study was to help inform future larger scale community outreach PrEP interventions among MSM at risk for HIV acquisition.

Materials and Methods

Study design, setting and population

This pilot study involved surveying MSM at MSM-centered social venues in Providence, Rhode Island through a confidential questionnaire. Participants were recruited at the Rhode Island Pride Festival in June 2014 and at five MSM-centered bars and nightclubs from June through September 2014. Eligible participants were (1) patrons of one of the study venues, (2) 18 years-old or older, (3) comfortable speaking and reading English, (4) self-identified as MSM, and (5) lived less than a two-hour drive from Providence. The distance from participant residence to Providence was relevant for the final portion of the study that examined presentation to the state's only designated PrEP clinic. The investigators' institutional review board approved the study.

Study protocol

Participants self-administered the study questionnaire on a tablet computer. The questionnaire, which was created by the study authors after reviewing recent PrEP studies, included questions about demographic characteristics, sexual behaviors and HIV sexual risk-taking behaviors (condomless anal sex, type of anal sex partners (main, casual or exchange), and number of condomless anal sex partners), HIV status, self-perceived knowledge of PrEP, PrEP use experience, sexual partners' PrEP use experience, interest in PrEP, level of comfort asking medical providers about PrEP, barriers to learning about PrEP, and preferred method for learning more about PrEP. A full copy of the questionnaire is available from the corresponding author. The questionnaire had a Flesch Reading Ease of 76.8 (fairly easy to read) and a Flesch–Kincaid Grade Level of 5.9 (sixth grade). Participants completed the questionnaire in approximately twenty minutes. They received a supply of condoms, lubricant and candy for completing the survey. Participants were offered either a paper brochure with more information on PrEP and a business card with a local PrEP clinic's contact info, or equivalent information via text message and/or email. They were also given the option of entering a lottery to win one of several gift cards.

Data analysis

Enrollment, recruitment, and study completion was summarized using Strengthening the Reporting of Observational studies in Epidemiology (STROBE) specifications (von Elm et al., 2008). Responses to the questions on participant demographics and sexual history were summarized for all participants. Responses to the questions about PrEP knowledge and

preferences questions by potentially PrEP-eligible participants (not HIV infected, not currently using PrEP, and never previously used PrEP) were stratified by HIV sexual risk, as follows: (1) all potentially PrEP-eligible participants; (2) potentially PrEP-eligible, and reported condomless anal sex with any male partner in the past six months; (3) potentially PrEP-eligible, and reported condomless anal sex with any casual or exchange male partner in the past six months (regardless of reported sex with a main male partner); and (4) potentially PrEP-eligible, but no reported condomless anal sex with any male partner in the past six months. The stratification was performed to assess PrEP knowledge and preferences by reported HIV sexual risk. Among all potentially PrEP-eligible participants, ordinal logistic regression models were created to examine how participant demographic characteristics and HIV sexual risk (history of condomless anal sex within the past six months, type of sexual partner, and number of condomless anal sexual partners) were related to self-perceived PrEP knowledge, comfort in talking with one's healthcare provider about PrEP, and interest in learning more about PrEP. Odds ratios (ORs) with corresponding 95% confidence intervals (CIs) were estimated. The proportional odds ratio assumption was satisfied, hence a single odds ratio was reported for each model. For all comparisons, an $\alpha=0.05$ level of significance was used.

Results

Participant recruitment, enrollment, characteristics and PrEP experience

Recruitment, enrollment, and completions for the study are summarized in Figure 1. Of the 289 men approached, 89 (30.8%) were from the gay pride event. Of the 209 participants, eighteen (8.6%) reported that a sexual partner informed them that he was using PrEP, as follows: four of the 25 HIV-infected participants, three of the six participants who ever or were currently using PrEP, and eleven of the 178 potentially PrEP-eligible participants (HIV uninfected and no current or prior PrEP use). Among the 184 participants who were not HIV infected, six (3.3%) were current or prior PrEP users. Of the six participants who had ever used PrEP, four had been prescribed it and two reported that someone else gave them their PrEP medications.

The majority of the potentially PrEP eligible ($n=178$) participants self-identified as non-Hispanic white, single/never married, and having private health care insurance (Table 1); most (61.7%) reported condomless anal sexual intercourse within the past six months, and 36.3% had condomless anal sex with casual partners or exchange partners during that time period (Table 2). Although the reported range was large, these participants generally reported more casual than main or exchange male sexual partners in the past six months.

PrEP knowledge and preferences among those potentially PrEP eligible

The results from the questionnaire about PrEP knowledge and preferences for all potentially PrEP-eligible participants stratified by HIV sexual risk are provided in Table 3. For all three groups, the majority indicated that they had low self-perceived knowledge about PrEP (not informed or only a little informed). Despite low self-perceived knowledge about PrEP, fewer than half were interested or very interested in learning more about it. Major barriers to learning more about PrEP were not knowing where to find more information, not having

enough time to search for information, and a belief of not being at risk for acquiring an HIV infection. However, most participants were comfortable or very comfortable with discussing PrEP with their current healthcare provider. Over half of participants preferred to learn more about PrEP through a website and would like to receive more information about PrEP through email rather than brochures or text messages. Responses were similar across HIV sexual risk strata.

Table 4 provides the results of the univariable ordinal logistic regression analyses examining the relationship of participant demographic characteristics and HIV sexual risk to self-perceived PrEP knowledge, comfort in talking to their current healthcare provider about PrEP, and interest in learning more about PrEP. As shown, there were no differences observed among participants in these relationships.

Of the 178 potentially PrEP-eligible participants, 168 (94.4%) agreed to receive information about PrEP as part of the study. Among these 168 MSM, one (0.6%) presented to the PrEP clinic for evaluation as of six months following the conclusion of study enrollment.

Discussion

Commensurate with other studies (Eaton et al., 2014; Kirby & Thornber-Dunwell, 2014; Krakower, 2012; Rucinski, 2013), few HIV-uninfected MSM interviewed at a Gay Pride event and at MSM-centered bars and clubs in this pilot community outreach study had ever used or currently were using PrEP. Despite low utilization of PrEP, low self-perceived knowledge of PrEP, and a high prevalence of condomless anal intercourse (particularly with casual and exchange male sexual partners), fewer than half of these participants were interested or very interested in learning more about PrEP. HIV sexual risk did not appear to be related to interest in PrEP. These findings indicate that much remains to be done to improve knowledge and interest about PrEP among MSM in community outreach settings.

On a hopeful note, the study findings also suggest strategies to engage MSM on the topic of PrEP on two fronts. In the healthcare setting, providers can feel reassured that their MSM patients generally are comfortable with discussing PrEP with them. Efforts to encourage healthcare providers to initiate these discussions with their MSM patients may further assist in increasing PrEP utilization. From a public health perspective, the study results indicate that PrEP community outreach efforts among MSM should focus on information dissemination through electronic options (e.g., text, email) rather than traditional paper brochures. An effort to produce accessible electronic media that is accessible, informative, engaging and can link individuals to providers who are offering PrEP potentially could increase utilization and uptake. Regression analyses did not reveal any apparent relationship between knowledge of PrEP, interest in PrEP, preferred method of outreach to learn more about PrEP and participant characteristics. This finding might suggest that messaging and outreach does not need to be framed to any sub-groups within the MSM community, but needs only to reach MSM in their preferred method of outreach. However, the small sample size in this pilot study might have prevented adequate sub-group analyses.

We were disappointed that the provision of electronic or written information only on how to access PrEP in the local area prompted only one study participant to present for a PrEP evaluation at the state's only PrEP clinic. It may be true that mere provision of information in the absence of any other intervention or incentive was not enough to influence behavior in PrEP uptake. Yet, because no follow up could be conducted for this anonymous survey, we cannot determine how many of these participants sought PrEP elsewhere (especially given the high stated comfort in asking their current medical provider about PrEP), and we do not know the reasons for their not presenting to the PrEP clinic. Future research should concentrate on how best to translate interest in PrEP information to presentation for PrEP evaluations in community outreach settings, such as interventions to encourage uptake, counseling approaches, ongoing contact after initial contact to facilitate linkage-to-care. Comparison to approaches to improve PrEP linkage-to-care other than community outreach also are needed.

Although not directly comparable to our piloted community outreach approach, other researchers have found low uptake of PrEP when it was offered to MSM. For MSM who reported condomless anal sex within the prior year and completed rapid HIV antibody and HIV nucleic acid amplification testing, King, et al. offered entry into a study that involved a follow-up referral to the San Diego's Gay Men's Health Clinic. (King et al., 2014) Of 416 MSM provided counseling and education on PrEP efficacy and offered study entry and referral, 14 consented to the study and received a follow-up referral to the clinic, but only two ultimately received PrEP. King, et al.'s study differs from our study in that in this community outreach endeavor, MSM were offered ways of receiving information (electronic media and/or brochures) and not counseling or education. It is unclear from King, et al.'s study how many MSM agreed to receive counseling and education; in our study almost all participants agreed to receive information.

Our study does have a number of limitations. Participant diversity was limited due to the venue-based sampling method. The findings therefore may not represent the opinions of the wider MSM community, and therefore its external validity might be limited. Due to the sample size we were not able to perform sub-analyses for individuals who reported experience with PrEP or those who were HIV infected. Future studies on the topic should increase the sample size to achieve representativeness, employ electronic outreach efforts, and examine the ability of different educational messages to effectively engage and educate PrEP eligible participants and their ability to link those individuals to care.

Based on our findings, we advocate for an increased effort to educate MSM in the community about HIV PrEP preferentially through electronic outlets. Primary care providers should feel comfortable addressing the topic with their patients, and public health efforts should focus on production of electronic educational media with an emphasis on linkage to care. Future studies should assess the efficacy of electronic media and outreach efforts to decrease deficiencies in knowledge and increase PrEP uptake. Design and testing of interventions to translate interest in learning more about PrEP to partaking in PrEP evaluations and utilization are needed.

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Figure 1. Eligibility assessment and enrollment

Key: MSM = men who have sex with men; HIV = human immunodeficiency virus; HIV+ = self-reported HIV infection; PrEP = pre-exposure prophylaxis

Table 1

Participant demographic characteristics

	Potentially PrEP-eligible participants
	<i>n=178</i>
Median age, years (IQR)	30 (24, 44)
	%
Gender	
Male	100.0
Transgender Male (FTM)	0.0
Transgender Female (MTF)	0.0
Ethnicity/Race	
White, non-Hispanic	74.7
White, Hispanic	7.3
Black/African-American, non-Hispanic	7.9
Black/African-American, Hispanic	2.8
Asian	0.6
Native Hawaiian/Other Pacific Islander	0.6
American Indian/Alaskan Native	0.0
Other	6.2
Health insurance status	
Private	70.8
Governmental	11.8
Both Private and Governmental	3.9
No insurance	11.2
Don't know/Refuse to answer	2.3
Partner status	
Married	4.5
Divorced	6.2
Widowed	0.6
Separated	1.7
Single/Never married	66.9
Unmarried couple/Domestic partnership	1.7
Have a partner	18.5
Don't know/Refuse to answer	0.0

Key: IQR = Interquartile Range; FTM = Female to Male; MTF = Male to Female; PrEP = pre-exposure prophylaxis

Table 2

Participant reported HIV sexual risk behaviors

		Potentially PrEP-eligible participants	
		<i>n=178</i>	
<i>Type of condomless anal sexual partners in past six months</i>		<i>%</i>	
Partner types		<i>n=178</i>	
Main sexual partners only		25.3	
Casual sexual partners only		12.4	
Exchange sexual partners only		0.0	
Main and casual sexual partners		14.6	
Main and exchange sexual partners		0.0	
Casual and exchange sexual partners		0.0	
Main, casual, and exchange partners		6.2	
No partners/No sex without condoms		39.9	
Sexual role		<i>n=107</i>	
Top only		33.6	
Bottom only		21.5	
Both		41.1	
No partners/No sex without condoms		3.7	
<i>Number of condomless anal sexual partners in past six months</i>		<i>n=107</i>	
		<i>n</i>	<i>x̄(SE)</i>
Main sexual partners	Top	56	3.1 (7.7)
	Bottom	47	3.4 (8.0)
		<i>n</i>	<i>x̄(SE)</i>
Casual sexual partners	Top	42	7.2 (11.9)
	Bottom	29	7.8 (13.6)
		<i>n</i>	<i>x̄(SE)</i>
Exchange sexual partners	Top	9	4.2 (6.2)
	Bottom	9	2.1 (3.4)

Key: $\bar{x}$ = mean; SE = standard deviation; PrEP = pre-exposure prophylaxis

Table 3

PrEP self-perceived knowledge and preferences stratified by reported HIV sexual risk

	<i>Potentially PrEP-eligible participants</i>			
	<u>All</u>	<u>Any past 6-month condomless sex</u>	<u>Past 6-month condomless sex with casual or exchange partners</u>	<u>No past 6-month condomless sex</u>
	<u>n=178</u>	<u>n=107</u>	<u>n=62</u>	<u>n=71</u>
	%	%	%	%
Self-perceived PrEP knowledge				
Not informed	37.6	33.6	35.5	43.6
A little informed	33.2	36.5	41.9	28.2
Informed	15.7	16.8	12.9	14.1
Well informed	7.3	6.5	3.3	8.5
Very well informed	6.2	6.5	6.4	5.6
Interest in PrEP				
Not at all interested	10.7	11.2	11.3	9.9
A little interested	21.9	23.4	22.6	19.7
Somewhat interested	20.2	17.8	17.7	23.9
Interested	24.7	24.3	19.4	25.4
Very interested	22.5	23.4	29.1	21.1
Comfort with asking current medical provider about PrEP				
Not comfortable at all	9.6	11.2	12.9	7.0
A little comfortable	14.0	16.8	20.9	9.9
Somewhat comfortable	16.3	15.9	14.5	16.9
Comfortable	28.1	28.9	22.6	26.8
Very comfortable	32.0	27.1	29.1	39.4
Most important barrier to learning more about PrEP				
Not enough time	23.0	28.1	29.1	15.5
Too embarrassed	6.2	4.7	6.5	8.5
Not enough interest	8.4	6.5	6.5	11.3
Don't think at risk for HIV infection	12.9	12.2	6.5	14.1
Not worried about HIV infection	8.4	6.5	4.8	11.3
Perceived cost	11.8	14.1	17.7	8.5
Don't know where to find more information	23.6	22.4	22.6	25.4
Privacy concerns	2.8	3.7	4.8	1.4
Preferred way to learn more about PrEP				
Written brochure	13.5	9.4	8.1	19.7
Website	50.6	52.3	58.1	47.9
Video	6.7	7.5	6.5	5.6
Physical place to find out more	9.6	9.4	6.5	9.9
Person I could call on the telephone	6.7	6.5	8.1	7.0

	<i>Potentially PrEP-eligible participants</i>			
	<u>All</u>	<u>Any past 6-month condomless sex</u>	<u>Past 6-month condomless sex with casual or exchange partners</u>	<u>No past 6-month condomless sex</u>
	<u><i>n</i>=178</u>	<u><i>n</i>=107</u>	<u><i>n</i>=62</u>	<u><i>n</i>=71</u>
	%	%	%	%
Person who could call me on the telephone	2.8	4.7	3.2	0.0
Person at a social venue	7.9	9.3	9.7	5.6
Not interested in learning more	2.3	0.9	0.0	4.2
Preferred way to receive information about PrEP				
Brochure	20.2	16.8	17.7	25.4
Text message	2.8	3.7	4.8	1.4
Email	51.1	51.4	43.6	50.7
Brochure and text message	1.1	1.9	3.2	0.0
Brochure and email	9.6	9.4	14.5	9.9
Text message and email	3.9	4.7	6.5	2.8
Brochure, text message, and email	5.6	8.4	8.1	1.4
I do not want PrEP information	5.6	3.7	1.6	8.5

Key: PrEP = Pre-exposure prophylaxis; HIV = human immunodeficiency virus

Table 4

Participant demographic characteristics and HIV sexual risk vs. PrEP self-perceived knowledge and preferences

Potential PrEP-eligible participants	Self-perceived knowledge about PrEP	Comfort in talking to current healthcare provider about PrEP	Interest in learning more about PrEP
<i>n=178</i>	OR (95% CI)	OR (95% CI)	OR (95% CI)
Age	0.99 (0.97–1.01)	1.01 (0.99–1.03)	0.99 (0.97–1.01)
Race			
White	Ref	Ref	Ref
Hispanic	2.28 (0.95–5.46)	1.96 (0.80–4.80)	1.17 (0.48–2.83)
Black	1.10 (0.39–3.12)	1.39 (0.53–3.67)	1.21 (0.44–3.30)
Other	1.13 (0.42–3.08)	0.42 (0.15–1.19)	1.07 (0.41–2.79)
Health insurance status			
Private	Ref	Ref	Ref
Governmental	0.66 (0.32–1.40)	1.08 (0.50–2.32)	1.52 (0.72–3.19)
No insurance/Other	1.40 (0.62–3.17)	2.10 (0.92–4.80)	2.18 (0.97–4.90)
Marital/partner status			
Single	Ref	Ref	Ref
Have Partner/Married	1.36 (0.69–2.67)	1.04 (0.54–2.00)	1.09 (0.57–2.07)
Other	1.44 (0.64–3.23)	1.19 (0.51–2.75)	1.18 (0.52–2.66)
Condomless sexual partner type			
No sex in past six months	Ref	Ref	Ref
Main only	1.70 (0.85–3.38)	0.68 (0.35–1.31)	0.85 (0.44–1.62)
Any casual or exchange	1.09 (0.58–2.02)	0.53 (0.28–0.98)	1.08 (0.59–2.00)
Number of condomless sexual partners	1.00 (0.98–1.03)	1.03 (1.00–1.07)	1.02 (0.99–1.05)

Key: Ref = reference group