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Pre-Exposure Prophylaxis Care Cascade Among Men Who Have Sex with Men Engaging in Partner Notification Services at a Sexually Transmitted Infections Clinic

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Abstract

Partner notification services (PNS) offers opportunities to discuss HIV pre-exposure prophylaxis (PrEP) and provide referrals. We evaluated the PrEP care cascade among men who have sex with men (MSM) engaging in PNS within a sexually transmitted infections clinic. Among 121 MSM eligible for PrEP during PNS, 21% subsequently initiated PrEP.

Short Summary

We evaluated the integration of HIV pre-exposure prophylaxis (PrEP) education and referral into a partner notification services program within a sexually transmitted infections clinic and characterized the PrEP care cascade.

Keywords

partner notification services; sexually transmitted infections; pre-exposure prophylaxis; HIV; LGBTQ health

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Authors' Contributions

Conceptualization: T.E.B. and P.A.C.; data curation: A.A., J.T., and C.L.G.; formal analysis: D.L.L.B., J.T., and C.L.G.; funding acquisition: J.B., J.K., and P.A.C.; investigation: K.C., L.C.C., and P.A.C.; methodology: P.A.C.; project administration: K.C., A.A., S.N., J.B., and J.K.; supervision: S.N. and P.A.C.; validation: D.L.L.B.; visualization: D.L.L.B. and K.C.; writing—original draft: D.L.L.B.; writing—reviewing and editing: D.L.L.B., K.C., S.N., L.C.C., J.T., T.E.B., J.B., J.K., A.M.-W., and P.A.C.

Author Disclosure Statement

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Disclaimer

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The HIV epidemic continues to disproportionately impact gay, bisexual, and other men who have sex with men (MSM) in the United States.¹ HIV pre-exposure prophylaxis (PrEP) is one approach to HIV prevention and is effective in preventing transmission.² However, PrEP uptake has been suboptimal in the United States. Of the estimated 1.2 million people with indications to take PrEP in 2021, only 30% were prescribed the medication.³ Engaging populations at high risk of HIV in PrEP care is still needed.

MSM diagnosed with sexually transmitted infections (STIs), and specifically syphilis and gonorrhea, are a priority for PrEP because of an increased risk of HIV.^{2,4} A study among men in New York City found a high rate of HIV following a syphilis diagnosis,⁵ and a significant number of MSM diagnosed with syphilis were coinfecting with HIV.⁶ Partner notification services (PNS) is an approach that could be used to engage these groups in PrEP care^{7,8} and involves interviewing people diagnosed with STIs and reaching out to their sexual partners. Interviews with MSM who are newly diagnosed with syphilis or gonorrhea offer an opportunity to link to PrEP care.

Previous studies have evaluated PrEP implementation in PNS by public health departments.⁷ These studies found that integrating HIV interventions, including PrEP referrals, into PNS added minimal time/cost to their existing responsibilities.¹⁰ In this study, we evaluated outcomes associated with implementation in a PNS program at an STI clinic, including assessing the PrEP care cascade and identifying factors associated with PrEP interest.

The study reviewed data from the Rhode Island STI Clinic (at The Miriam Hospital Immunology Center). We included cases of gonorrhea/syphilis among MSM in the clinic diagnosed between January 1, 2019, and December 31, 2021. When a patient at the clinic tested positive for gonorrhea/syphilis, a staff member trained in PNS, which included previous health department and public health training, would obtain consent to conduct a voluntary interview. If the patient did not consent to be interviewed by clinic staff, the patient was informed that the Rhode Island Department of Health would conduct standard outreach. Information collected during the interview included demographics, medical history of HIV/STIs, sexual behaviors, and information about partners and potential dates/types of exposure. Staff also discussed PrEP, including use, knowledge, and interest, and provided education and referrals for a PrEP appointment at the clinic if interested.

Each step was described for HIV PrEP care cascade for PNS interviews conducted among MSM, including if the patient expressed interest in PrEP, made a PrEP appointment at the clinic, attended their first appointment, and had at least one follow-up appointment. As individuals could be interviewed more than once during this period, we used only the first interview for each individual for all analyses of demographics and reported sexual behaviors. Demographics included age, race, and ethnicity. Sexual behaviors analyzed included sexual partners in the past year, condom use (always, sometimes, never), lifetime history of injection drug use, incarceration, prior STI, sex with anonymous partners, meeting partners on phone/internet applications, sex while intoxicated/on drugs, and exchanging sex for drugs/money. We used Chi-squared and Fisher's exact tests to compare index patient characteristics between patients who expressed or did not express interest in PrEP, using the first interview for each individual. For each variable that was significant in bivariate

analysis, we fit separate multivariate logistic regression models adjusted for age, race, and ethnicity of the patient.

In total, 341 MSM tested positive for gonorrhea/syphilis at the clinic between January 1, 2019, and December 31, 2021 (56% tested positive for gonorrhea only, 37% tested positive for syphilis only, and 7% were coinfecting). PNS interviews were offered to all MSM patients with a positive STI test result who scheduled a follow-up appointment for treatment. The interviews were conducted during this treatment appointment. For patients who were treated empirically, we attempted to call after a positive result. Those who we were not able to reach were referred to the health department.

Staff completed 233 (68%) PNS interviews, in which 20 individuals were interviewed twice by the staff because of a positive test, and their first PNS interviews are included for the analysis of demographics/sexual behaviors in Table 1. Each interview took staff members approximately 15–20 min to complete, dependent upon how many partner names were provided by the patient. Among 121 interviews with patients who were not currently taking PrEP/not HIV positive, 50 (41%) expressed interest, 38 (31%) scheduled a PrEP appointment at the STI clinic, 26 (21%) attended the appointment, and 18 (15%) attended at least one follow-up appointment. Among 213 interviews, 42% were for index patients aged 25–34 years old. Sixty-nine percent identified as White, 17% identified as Black or African American, and 33% identified as Hispanic or Latino. Fifty-four percent of patients reported having five or more sexual partners in the past year, and 6% reported a history of injection drug use. Educational background information was not collected. However, insurance status information for patients was collected to evaluate socioeconomic status among interviewed individuals.

Bivariate analyses found that having more than five sexual partners in the past year (60% vs. 39%, $p < .05$), history of injection drug use (14% vs. 0%, $p < .05$), and sex with anonymous partners (76% vs. 53%, $p < .05$) were associated with interest in PrEP. Age, race, and ethnicity were not associated with interest in PrEP in bivariate analyses. Fitting separate logistic regression models, adjusted for index patient age, race, and ethnicity, we found that the odds of expressing interest in PrEP among those with five or more sexual partners in the past year were six times that of those reporting between 0 and 4 partners [odds ratio (OR) = 6.32, 95% confidence interval (CI): 1.54, 25.98], and the odds of expressing interest in PrEP among those who reported ever having sex with anonymous partners were eight times that of those who did not (OR = 8.06, 95% CI: 1.87, 34.73).

MSM with STI diagnoses, especially gonorrhea/syphilis, are at risk of HIV infection and should be engaged in PrEP care. In this program, PrEP discussions were incorporated as part of the PNS interviews with index patients, including providing education, asking about interest in taking PrEP, and scheduling a PrEP appointment. Findings are consistent with a few previous studies of PrEP implementation in PNS programs. A previous study out of Washington State found that integrating PrEP referrals as part of PNS was feasible and effective for increasing uptake and that a PrEP referral was offered to 73% of high-risk MSM who were not currently on PrEP in a PNS program, and 54% accepted the referral.¹⁰ Another study out of Mississippi found that although integrating PrEP referrals and HIV

prevention education into PNS added extra time per interview, the increase in time and cost was relatively low and accepted by the staff⁹. This program was successful in engaging STI clinic patients at highest risk of HIV in conversations about PrEP and linking them to care, as among all interviews for patients who were eligible for and not currently taking PrEP, 41% expressed interest, and 21% attended an initial appointment. We found that MSM who engaged in risky sexual behaviors were more likely to be interested in PrEP. This information suggests that future interventions are needed to protect MSM at high risk of HIV infection and reduce HIV incidence among this population.

Challenges encountered include the COVID-19 pandemic, during which the clinic shifted from walk-in to appointment-only visits, resulting in fewer visits. Many interviews were conducted over the phone rather than in-person, which may have impacted effectiveness of interviews. As the staff were required to use clinic telephones for interviews conducted over the phone, voicemail responsiveness was a potential barrier to successful outreach. Future opportunities to have PNS-dedicated staff present in-person for clinic hours may provide opportunities for succession. In addition, PNS programs have been significantly affected by the COVID-19 pandemic, which led to challenges such as less in-person services. In the future, PNS programs could potentially adapt by utilizing resources such as telehealth meetings, which would allow the patient to still be seen and interviewed by disease intervention specialists. Additional challenges include the difficulty of utilizing PrEP in the PNS program, as out of all 121 interviews with patients who were not currently taking PrEP and were not HIV positive, only 41% of participants expressed interest in PrEP medication, highlighting the need for exploration in future studies.

Limitations include the fact that the current study focused on MSM owing to the focus of the clinic and the program on this population. However, other populations, including cisgender heterosexual women, are also adversely affected by STIs⁶ and should be included in future studies. In addition, another limitation was that chlamydia, and in particular, rectal chlamydia, was not included for PNS interviews in our study. This is because, in our state, as with most other states, health departments generally do not perform partner notification on individuals with chlamydia owing to the significantly high number of chlamydia cases. Cases of gonorrhea and syphilis are generally prioritized because of morbidity. Furthermore, we did not collect data about PrEP linkage in patients who were not interviewed.

Findings show that integrating PrEP education and linkage to PrEP care into PNS index patient interviews in the STI clinic setting could be an effective method to engage MSM at high risk of HIV in PrEP care. Leveraging PNS to promote engagement in PrEP could be a critical strategy in prevention, and novel approaches are needed to improve PrEP outcomes. Other lessons learned in this program include the importance of community-based outreach and integration of health department PNS programs with partners to increase awareness and acceptability of partner notification. Building trust and relationships with the community is important to facilitate PNS. Identifying community-based organizations including clinics to foster these relationships should be a priority.

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Table 1.

Characteristics of PNS Interviews Among MSM and Analysis Comparing Interest in PrEP Among Patients Not HIV+ and Not Currently Taking PrEP^a

Characteristic	Total patient interviews (n = 213)			Expressed interest in PrEP (n = 45)			Did not express interest in PrEP (n = 67)			Bivariate analysis	Logistic regression
	n	% ^b	n	% ^b	n	% ^b	n	% ^b	p value ^c	AOR (95% CI) ^d	
Age (years)											
18–24	45	21.1	14	31.1	15	22.4			.08		
25–34	90	42.3	14	31.1	34	50.7					
35–44	39	18.3	8	17.8	13	19.4					
45+	39	18.3	9	20.0	5	7.5					
Race ^e									.91		
White	118	69.0	24	68.6	32	64.0					
Black or African American	29	17.0	4	11.4	9	18.0					
Asian	10	5.8	3	8.6	5	10.0					
Other	5	2.9	2	5.7	2	4.0					
More than one race	9	5.3	2	5.7	2	4.0					
Ethnicity ^f									.49		
Hispanic or Latino	56	33.1	12	30.8	20	37.7					
Not Hispanic or Latino	113	66.9	27	69.2	33	62.3					
Total sexual partners in past 12 months ^g									.04		
0–4 partners	91	46.4	17	40.5	40	60.6				Reference	
5+ partners	105	53.6	25	59.5	26	39.4				6.32 (1.54, 25.98)	
Lifetime behavioral history (ever/never)											
Injection drug use ^h	11	5.7	6	13.6	0	0.0			.003		
History of incarceration ⁱ	6	3.2	3	6.7	1	1.6			.30		
Prior STI ^j	142	69.3	32	74.4	40	60.6			.14		
Sex with anonymous partners ^h	117	60.6	34	75.6	35	53.0			.02	8.06 (1.87, 34.73)	
Met partners on internet/phone application ^k	149	78.8	38	88.4	48	72.7			.05		

Characteristic	Total patient interviews (n = 213)		Expressed interest in PrEP (n = 45)		Did not express interest in PrEP (n = 67)		Bivariate analysis p value ^c	Logistic regression AOR (95% CI) ^d
	n	% ^b	n	% ^b	n	% ^b		
Sex while intoxicated ^f	89	46.6	23	52.3	30	45.5	.48	
Sex while high on drugs ^m	54	28.4	14	31.8	11	16.9	.07	
Exchanged sex for drugs/money ^l	6	3.1	3	6.8	1	1.5	.30	
Frequency of condom use ⁿ							.12	
Always	13	7.0	6	14.0	5	7.7		
Sometimes	131	70.1	33	76.7	45	69.2		
Never	43	23.0	4	9.3	15	23.1		

Bold numbers indicate significant *p*-values.

^aData presented in this table represent only the first PNS interview for each unique individual.

^b% among non-missing responses.

^cChi-squared test *p* value reported, or Fisher's exact test used for variables with small cell counts.

^dModel 1 included number of sexual partners in the past 12 months, adjusted for age, race, and ethnicity; *n* = 60 included after removing unknown/declined to respond. Model 2 included sex with anonymous partner (ever), adjusted for age, race, and ethnicity; *n* = 63 included after removing unknown/declined to respond.

^eExcludes 42 unknown/declined to respond.

^fExcludes 44 unknown/declined to respond.

^gExcludes 17 unknown/declined to respond.

^hExcludes 20 unknown/declined to respond.

ⁱExcludes 28 unknown/declined to respond.

^jExcludes 8 unknown/declined to respond.

^kExcludes 24 unknown/declined to respond.

^lExcludes 22 unknown/declined to respond.

^mExcludes 23 unknown/declined to respond.

ⁿExcludes 26 unknown/declined to respond.

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Table Summary

Table 1 encompasses the results of the study, where 20 individuals were interviewed twice by staff because of a positive test. First-time PNS interviews for analyses of demographics/sexual behaviors are included. Among 213 interviews, 42% were for index patients aged 25–34 years old. Sixty-nine percent identified as White, 17% identified as Black or African American, and 33% identified as Hispanic or Latino. Fifty-four percent of patients reported having five or more sexual partners in the past year, and 6% reported a history of injection drug use. More than five sexual partners in the past year (60% vs. 39%, $p < .05$), history of injection drug use (14% vs. 0%, $p < .05$), and sex with anonymous partners (76% vs. 53%, $p < .05$) were associated with interest in PrEP. Age, race, and ethnicity were not associated with interest in PrEP. It was found that the odds of expressing interest in PrEP among those with five or more sexual partners in the past year were six times that of those who did not (OR = 8.06, 95% CI: 1.87, 34.73). AOR, adjusted odds ratio; CI, confidence interval; MSM, men who have sex with men; OR, odds ratio; PNS, partner notification services; PrEP, pre-exposure prophylaxis; STI, sexually transmitted infections.