Differing Experiences with Pre-Exposure Prophylaxis in Boston Among Lesbian, Gay, Bisexual, and Transgender Specialists and Generalists in Primary Care: Implications for Scale-Up

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Abstract

The Centers for Disease Control and Prevention estimates that one in four sexually active men who have sex with men (MSM) could decrease their HIV risk by using HIV pre-exposure prophylaxis (PrEP). Because many MSM access healthcare from primary care providers (PCPs), these clinicians could play an important role in providing access to PrEP. Semistructured qualitative interviews were conducted with 31 PCPs in Boston, MA, to explore how they approach decisions about prescribing PrEP to MSM and their experiences with PrEP provision. Purposive sampling included 12 PCPs from an urban community health center specializing in the care of lesbian, gay, bisexual, and transgender persons (“LGBT specialists”) and 19 PCPs from a general academic medical center (“generalists”). Analyses utilized an inductive approach to identify emergent themes. Both groups of PCPs approached prescribing decisions about PrEP as a process of informed decision-making with patients. Providers would defer to patients’ preferences if they were unsure about the appropriateness of PrEP. LGBT specialists and generalists were at vastly different stages of adopting PrEP into practice. For LGBT specialists, PrEP was a disruptive innovation that rapidly became normative in practice. Generalists had limited experience with PrEP; however, they desired succinct decision-support tools to help them achieve proficiency, because they considered preventive medicine to be central to their professional role. As generalists vastly outnumber LGBT specialists in the United States, interventions to support PrEP provision by generalists could accelerate the scale-up of PrEP for MSM nationally, which could in turn decrease HIV incidence for this priority population.

Keywords: HIV, pre-exposure prophylaxis, primary care providers, men who have sex with men, qualitative research

Introduction

ABOUT 40,000 NEW HIV infections occur in the United States annually, and two-thirds of these are among men who have sex with men (MSM).¹ With HIV incidence increasing among MSM,² and with MSM being over 40 times more likely than other men to become infected with HIV,³ reducing the rate of new HIV infections among MSM remains one of the highest priorities in HIV prevention, as articulated in the National HIV/AIDS Strategy.⁴

Studies have demonstrated that HIV pre-exposure prophylaxis (PrEP), the use of antiretroviral medications by HIV-uninfected individuals at risk for acquiring HIV, is highly efficacious at preventing HIV transmission among MSM^{5–8} and other populations.^{9–11} Following the 2012 Food and Drug Administration (FDA) approval of a once-daily tablet containing the antiretroviral medications tenofovir disoproxil fumarate and emtricitabine for use as PrEP,¹² the Centers for Disease Control and Prevention (CDC) in 2014 recommended that providers consider PrEP as an option for

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persons at risk for acquiring HIV.¹³ CDC currently estimates that there are 1.2 million Americans who have indications for PrEP, including one in four sexually active MSM.¹⁴ However, only a small fraction of these MSM have been prescribed PrEP,^{15,16} suggesting a need to increase efforts to implement PrEP for MSM.

Primary care providers (PCPs) could play an important role in expanding access to PrEP for MSM, as these clinicians encounter at-risk MSM in their practices. However, studies suggest that few PCPs have prescribed PrEP to their patients, because of challenges with identifying candidates for PrEP, lack of training in PrEP provision, and practical barriers to prescribing PrEP (e.g., time, staffing, and insurance constraints).^{17–19} Among PCPs, provision of PrEP appears to be most common among clinicians who practice at centers that specialize in providing care to lesbian, gay, bisexual, and transgender (LGBT) persons.^{20,21} Because a minority of MSM nationally have access to LGBT specialists, increased primary care provision of PrEP will be needed to ensure widespread availability of PrEP for MSM.

Recent studies have examined the differences in the quality of HIV care and primary preventive care (e.g., lipid assessments and Pap smears for women) for persons living with HIV among HIV specialists and generalists. These studies have found that HIV specialists and generalists provide primary preventive care of similar quality, but that HIV specialists engage in more comprehensive HIV care than generalists.²² Currently, there appears to be a similar gap in the comprehensiveness of HIV preventive care among LGBT specialists, many of whom are also HIV specialists, and generalists in terms of adopting PrEP into their practices. To gain a greater understanding of ways to address this gap and the potential role for PCPs in implementing PrEP for MSM, this study utilized qualitative methodology to explore how PCPs approach decisions about whether or not to prescribe PrEP to MSM in their practices and to assess these providers' experiences with PrEP provision. Because the experiences and opinions of LGBT specialists and generalists may differ, this study explored the experiences of both types of providers to understand potential approaches to scaling up PrEP provision in primary care.

Methods

Study population

During September 2013–August 2014, semistructured qualitative interviews were conducted with PCPs in Boston, Massachusetts. Purposive sampling was utilized to recruit PCPs from a community health center specializing in the care of LGBT patients (“LGBT specialists”; $n = 12$) and from an academic medical center (“generalists”; $n = 19$). Participants provided written consent before interviews.

Data collection and analysis

Interview topics included knowledge, attitudes, prescribing experiences, and decision-making regarding PrEP. Each 60-min interview was audio recorded and transcribed verbatim. The goals of data analyses were to describe (1) how providers approach decisions about whether or not to prescribe PrEP to individual MSM, and (2) the range of provider experiences with PrEP. Analyses utilized inductive methods informed by grounded theory methodology.²³ Two investigators reviewed

transcripts for concepts relating to decision-making and experiences with PrEP. Concepts were categorized and organized into a codebook using Atlas.ti software. Illustrative sections of raw data were assigned to each category in the codebook. Coding discrepancies were resolved through discussion among coders. Iterative comparisons among codebook categories, raw data, and primary study objectives generated higher order themes, defined as patterns repeated in the data across multiple interviews, that are presented in this article.

Study procedures received Institutional Review Board approval at Beth Israel Deaconess Medical Center and Fenway Health.

Results

Participant characteristics

Among 31 providers interviewed, their median age was 39, 45% were female, and 77% were white. One-fourth of participants reported homosexual/gay or queer sexual orientation. Clinicians were generalists at the academic medical center (61%) or LGBT specialists at the community health center (39%). Nearly all participants were physicians (Table 1). LGBT specialists had more experience prescribing PrEP and providing clinical care to HIV-infected patients than did generalists (Table 2).

LGBT specialists and generalists: similar approaches to prescribing decisions, different experiences with PrEP

Analyses revealed some similarities between LGBT specialists and generalists in how providers approached decision-making for PrEP and similarities in several major areas of uncertainty with prescribing decisions. However, analyses revealed striking differences between these groups in terms of their knowledge and experiences with PrEP and its perceived impact on their clinical practice. Themes about decision-making processes and prescribing dilemmas that were common among providers from both groups are presented first. Subsequently, themes that are specific to each group of providers will be described, given important differences in the anticipated role of PrEP for LGBT specialists and generalists as suggested by the data.

A common approach to prescribing decisions: shared decision-making

LGBT specialists and generalists described a similar framework for how they have approached decisions about whether or not to prescribe PrEP to specific patients (if experienced with PrEP), or how they would approach these decisions (if inexperienced with PrEP). Clinicians conceptualized decision-making as a weighing of the risk of harms and benefits of PrEP for each patient, with strong consideration of patients' preferences, which thus resembled shared decision-making.

Harms were conceived as those to the individual, such as medication-related toxicities, and as public health effects, such as potential dissemination of drug-resistant HIV. Providers were aware that long-term safety data for PrEP are not available. Some providers interpreted this absence of data as cause for concern, while others perceived a lack of evidence of short-term harms as reassuring, so the risks assigned to PrEP use were variable. Providers estimated the benefits of

TABLE 1. SAMPLE CHARACTERISTICS

<i>Characteristic</i>	<i>Academic Medical Center (n=19) N (%)</i>	<i>Community Health Center (n=12) N (%)</i>	<i>Total (n=31) N (%)</i>
Age in years (median, IQR)	38 (34–48)	42 (34–52)	39 (35–51)
Female	9 (47)	5 (42)	14 (45)
Race/ethnicity			
White	16 (84)	9 (75)	24 (77)
Nonwhite ^a	3 (16)	3 (25)	7 (23)
Sexual orientation			
Heterosexual or straight	16 (84)	4 (33)	20 (65)
Homosexual or gay	1 (5)	7 (58)	8 (26)
Missing/declined	2 (11)	0	2 (7)
Other (queer)	0	1 (8)	1 (3)
Profession			
Physician (MD or DO)	18 (95)	9 (75)	27 (87)
Physician assistant	0	2 (17)	2 (7)
Advanced nurse practitioner	1 (5)	1 (8)	2 (7)
Years in practice			
<5 years	8 (42)	4 (33)	12 (39)
6–15 years	6 (32)	4 (33)	10 (32)
>15 years	5 (26)	4 (33)	9 (29)

^aNonwhite included Latino/a, Asian, Asian Latino/a, Asian white, and Other. Numbers may not total to 100% given rounding errors.

PrEP use based on patients' HIV risk behaviors as ascertained during sexual history discussions with patients. Risk behaviors considered most relevant included anal sex behaviors, use of condoms, and number of sexual partners. Ultimately, however, providers believed that patients' preferences, and how individual patients weigh the risk of harms and benefits of using PrEP, should be the primary determinant of whether or not PrEP is initiated.

When you actually get in the room with somebody who is worried about this kind of risk, then that decision [to use PrEP] really has to be one that weighs the preference and the kind of life outlook of the patient that you are talking to, and how they weigh the risks and benefits. [*Generalist, PrEP-experienced*]

I guess I would rather they opt out of [using PrEP] than me not give them an option for treatment [with PrEP]. [*LGBT-specialist, PrEP-experienced*]

TABLE 2. EXPERIENCE PRESCRIBING PRE-EXPOSURE PROPHYLAXIS AND DELIVERING CARE TO MEN WHO HAVE SEX WITH MEN AND HIV-INFECTED PATIENTS

<i>Practice experience</i>	<i>Academic Medical Center N (%) (n=19)</i>	<i>Community Health Center N (%) (n=12)</i>	<i>Total N (%) (n=31)</i>
Have prescribed PrEP	2 (11)	10 (83)	12 (39)
Number of HIV-uninfected MSM patients for primary care in average month			
0	0	0	0
1–10	9 (47)	2 (17)	11 (36)
11–19	10 (53)	0 (0)	10 (32)
20–49	0	3 (25)	3 (10)
>50	0	7 (58)	7 (23)
Number of HIV-infected patients for primary care in average month			
0	0	0	0
1–10	16 (84)	3 (25)	19 (61)
11–19	2 (11)	1 (8)	3 (10)
20–49	1 (5)	2 (17)	3 (10)
>50	0	6 (50)	6 (19)
Number of HIV-infected patients for HIV care in average month			
0	12 (63)	0	12 (39)
1–10	5 (26)	3 (25)	8 (26)
11–19	1 (5)	1 (8)	2 (7)
20–49	1 (5)	2 (17)	3 (10)
>50	0	6 (50)	6 (19)

Numbers may not total to 100% given rounding errors.

MSM, men who have sex with men; PrEP, pre-exposure prophylaxis.

Facilitators of PrEP prescription

Clinicians would prescribe PrEP to most patients who engaged in risky behaviors and were interested in using PrEP, given the serious consequences of HIV acquisition and the possibility of being blamed by patients who might become infected with HIV after being denied access to PrEP. Conversely, clinicians would generally not attempt to persuade patients to initiate PrEP if patients strongly opposed, as clinicians would not want to be blamed for adverse medication effects.

Because [PrEP] is not a benign procedure. If they come back with a pathological fracture in 3 years [as a consequence of using PrEP] and I'm just like, 'Oh, you should have done this, you definitely should do this,' I have some explaining to do. [LGBT-specialist, PrEP-experienced]

Providers would also be hesitant to persuade ambivalent patients to utilize PrEP, because they anticipated that this ambivalence might result in poor adherence.

If they don't have interest in it, then I don't think that it is something that I should fight them to do... They're probably not going to be compliant. [LGBT-specialist, PrEP-experienced]

For individuals at extremely high risk for HIV acquisition, however, providers would offer strong, unambiguous recommendations to initiate PrEP.

If I perceive they are very high risk, then I will strongly recommend... Like the crystal meth addict sex worker who refuses to use condoms and has had 2000 partners in the past month... If it's not that extreme of risk, then it is something that I will say, 'This is available.' [LGBT-specialist, PrEP-experienced]

Areas of uncertainty with decision-making for LGBT specialists and generalists

LGBT specialists and generalists articulated similar areas of uncertainty regarding prescribing decisions for PrEP. Dilemmas included decisions about providing PrEP when patients (1) report low-risk behaviors and request PrEP; (2) are at extremely high risk for HIV acquisition and are also anticipated to have poor adherence; and (3) do not follow monitoring recommendations while using PrEP.

Providers believed that prescribing PrEP to patients who request PrEP and report low-risk behaviors would be an inappropriate use of PrEP to treat unwarranted anxiety about HIV acquisition.

He was a very, very risk adverse person who was terrified of contracting HIV... Used condoms 100% of the time. And came to me asking if PrEP would be appropriate for him... This was probably a situation where the risks of the medication itself potentially outweighed the potential benefits. [Generalist, PrEP-inexperienced]

I think PrEP is not a medication without any side effects. It is not like giving somebody a daily multivitamin. And if someone is not at a risk for becoming HIV-positive, then why would I be adding a medication? If somebody does not have high blood pressure, why would I be talking to them about lisinopril? [LGBT-specialist, PrEP-experienced]

Despite clinicians' reservations about prescribing PrEP to patients reporting low-risk behaviors, there was consensus that clinicians would generally err on the side of prescribing PrEP to patients who requested PrEP, given providers' beliefs

that patients may underreport risky behaviors. The data suggested that deference to patients who requested PrEP was nearly universal; this patient-centered approach to decision-making was endorsed even among those providers who expressed that it would be suboptimal to prescribe PrEP to patients reporting few risk behaviors.

I would say, 'I really don't think you are at high risk and require this medication.' But at the end of the day, if it were to alleviate their concerns. Possibly there are some higher risk exposures that they just don't feel comfortable telling me. [LGBT-specialist, PrEP-experienced]

We all have our decision trees of higher risk compared to lower risk. But we've also all been surprised to find someone we consider lower risk to get infected. I try to remind myself that everybody who is having sex, and probably everybody who isn't telling me they are having sex, is at risk to have HIV. [Generalist, PrEP-inexperienced]

Concerns about substance use and medication adherence

Clinicians were uncertain about whether or not to recommend PrEP for individuals with psychosocial conditions predicting risky behaviors and also medication non-adherence, such as uncontrolled substance abuse. A recurrent theme was that patients who abused methamphetamine would have the highest risk of HIV acquisition and medication nonadherence.

The highest risk patients I have are often abusing crystal [methamphetamine]. And so, as much as I feel like they would be good candidates, I often get nervous, because I know that they can't be compliant. [LGBT-specialist, PrEP-experienced]

Some providers would recommend PrEP for patients using methamphetamine based on a belief that it would be unethical to withhold any protective intervention from patients facing extreme levels of risk.

Providers would be uncomfortable refilling medications for patients who initiated PrEP and did not adhere to monitoring recommendations, such as follow-up for clinical visits or laboratory testing. Despite this discomfort, however, providers who had prescribed PrEP had rarely discontinued PrEP for lack of follow-up, given a motivation to avoid patient blame and provider regret if patients subsequently acquired HIV. These clinicians were also reluctant to withhold PrEP given beliefs that patient autonomy should supersede provider judgments except in the most extreme cases of poor follow-up.

I've not yet taken anyone off of PrEP for lack of adherence... I worry about the guy who I take off PrEP who gets infected and comes back and says, 'See.' [LGBT-specialist, PrEP-experienced]

One person I stopped because they would not come back in... I begged them to come back in. [LGBT-specialist, PrEP-experienced]

Providers reported occasionally declining to refill a patient's PrEP medications as a way to ensure that patients would adhere to recommended monitoring protocols.

He did come in—because we didn't give the next refill. And he was negative again. [LGBT-specialist, PrEP-experienced]

One provider's narrative about how many medication refills to provide to a patient using PrEP suggested that providers may

vary in their willingness to diverge from recommended follow-up care and monitoring based on their perceptions of each patient's reliability:

He's one of those reliable guys so I'm comfortable giving him refills for a year. *[LGBT-specialist, PrEP-experienced]*

LGBT specialists: an evolution from skepticism to optimism

Despite similar approaches to decision-making regarding PrEP, LGBT specialists and generalists had markedly different experiences with PrEP. LGBT specialists had early awareness of PrEP because the first efficacy study of PrEP had recruited patients from their health center. These clinicians were initially skeptical that PrEP would benefit their patients, given concerns about potential medication-related toxicities, increases in sexual risk behaviors ("risk compensation"), adherence challenges, and high costs. When the research study concluded, however, some study participants sought PrEP from clinicians during routine care, which necessitated that providers confront prescribing decisions. Providers described their early prescribing experiences as surprisingly positive. Skepticism about PrEP thus evolved rapidly into optimism about its safety, feasibility, protective benefits, and patient acceptance which, in turn, motivated clinicians to recommend PrEP more often.

Before I actually had patients on it...I wasn't quite sure it would help at all. But the very first patient I put on it, I found it was very, very helpful for that patient. And I realized how valuable the PrEP treatment could be. *[LGBT-specialist, PrEP-experienced]*

I initially thought, 'Wow, that's a really expensive intervention compared to condoms or other behavioral types of modification.' But...it's tremendously evolved. It works really well, when people take it. Much better than any behavioral modification message has ever worked. It's safe. And it's definitely worth implementing. *[LGBT-specialist, PrEP-experienced]*

In addition to having positive prescribing experiences, LGBT specialists were motivated to prescribe PrEP because of perceptions that HIV remains a highly morbid infection despite the availability of effective treatments. The irreversible nature of HIV infection and beliefs that some patients would not adopt behavioral interventions were used as justifications for prescribing PrEP despite potential downsides. LGBT specialists also believed that any patient who relied on other methods of protection (e.g., condoms) might occasionally engage in uncharacteristically risky behaviors and thus could benefit from using PrEP. These beliefs were reinforced by experiences with individuals who had acquired HIV after one-time lapses from safe sex behaviors (e.g., consistent condom use).

Even if somebody has a really low risk...it takes *one time* to contract HIV...Getting other things that are not curable, like herpes or HPV, that's a downer. But it's not HIV. *[LGBT-specialist, PrEP-inexperienced]*

[The data on PrEP are] solid. For something that...you don't get a second chance on. *[LGBT-specialist, PrEP-experienced]*

LGBT specialists perceived that sexual health and HIV prevention were central aspects of their clinical role, because they provided care to many MSM. As these clinicians became increasingly optimistic about PrEP, they began to routinely incorporate PrEP into discussions about sexual health.

I feel like my approach is to make sure everyone knows it's available. *[LGBT-specialist, PrEP-experienced]*

Because of the effectiveness of the treatment, this is not something where we should be the gate keepers. And so by withholding that knowledge from patients until we felt they were risky enough, felt pretty obnoxious and unethical. So, that's what drove the idea to universally talk about it... *[LGBT-specialist, PrEP-experienced]*

Generalist PCPs: inexperienced with PrEP but motivated to become proficient

In contrast to LGBT specialists, generalists had limited knowledge of PrEP and had few, if any, experiences discussing or prescribing PrEP. Generalists knew basic information about the concept of PrEP, but they had encountered only superficial information about clinical studies of PrEP or indications for prescribing it. Some of their knowledge about PrEP had come from popular media sources instead of professional ones.

I haven't read the research studies to know how robust the evidence is. My sense, from dabbling in the New York Times, is that it is ready for us to really think about doing. *[Generalist, PrEP-inexperienced]*

Right now, I feel like I can't adequately describe the risks and benefits to someone to meaningfully contribute to [a discussion]. *[Generalist, PrEP-inexperienced]*

Generalists adopted a passive approach to PrEP provision, such that they relied on patient requests for PrEP instead of routinely assessing whether patients would benefit from its use.

I don't offer it to patients and I am waiting for patients to bring it up with me. And nobody really has. *[Generalist, PrEP-inexperienced]*

The experience of one clinician who had recently changed positions from a general primary care practice to become an LGBT specialist at the community health center illustrated the marked difference in the degree to which PrEP had entered clinical practice for LGBT specialists compared with generalists:

At my prior place, this was not at all on the radar, and so [PrEP] is new since arriving as a provider here. But I've actually had the opportunity to explore it with probably 10 or more patients since I've arrived. And it's certainly something that has become part of my counseling when people do STD testing... *[LGBT-specialist, PrEP-experienced]*

Generalists desired further training and/or supervision from expert colleagues before they would feel comfortable providing PrEP because of their limited experiences with prescribing antiretroviral medications. However, generalists considered preventive medicine to be a critical part of their professional purview, and a recurrent theme in the interviews was an interest in becoming proficient with PrEP so that they would not need to refer patients to specialist colleagues for PrEP. These clinicians perceived that such referrals would be onerous for patients and could weaken providers' relationships with patients. Some generalists expressed regret about their lack of knowledge of PrEP and indicated a responsibility to learn more about PrEP and to actively promote PrEP.

It's one of the things that I think I should be more aware of and know about and be more active about...I feel bad that I don't know more about it. *[Generalist, PrEP-inexperienced]*

A common theme was that competency with PrEP provision could be attained with brief trainings, clear-cut prescribing protocols, and a few supervised prescribing experiences. The succinct scope of the training process was conceived as analogous to other preventive medications, with which they were more familiar, such as emergency contraception.

As a primary care provider, I hope that it's my job to do a range of things that are important for health maintenance and prevention... In my mind, it's not something that's amenable to referring to a specialist for HIV. It's a conversation that I would be willing and happy to do... I think it would just have to come up and I would have to do it once or twice. I don't think I need a week long CME course about it. It's safe. Effective. Clear cut guidelines. Sort of like Plan B. [*Generalist, PrEP-inexperienced*]

I don't think it needs to be referred out because, 'I think you have risky sex so I want you to see this other doctor.' I think it seems to be something that's shared with a primary care patient who has the relationship and is talking about this. It saves the patient from having to see another doctor. [*Generalist, PrEP-inexperienced*]

Discussion

A major finding of this study is that LGBT specialists and generalist PCPs in the same city were at vastly different stages of adopting PrEP into clinical practice 2 years after FDA approval. The differential engagement of LGBT specialists and generalists at implementing PrEP has important implications for the scale-up of PrEP nationally, because most of the estimated 492,000 American MSM with indications for using PrEP¹⁴ will access primary care with generalists instead of LGBT specialists. Thus, a deeper understanding of ways to engage generalists in PrEP provision could facilitate wider and more equitable access to PrEP, particularly in areas with limited access to LGBT specialists, such as rural areas.²⁴

For LGBT specialists, PrEP was a positive "disruptive innovation"^{25,26} despite their initial skepticism about its benefits, and PrEP prescribing had become normative. Because these clinicians provided care to many at-risk MSM, PrEP had revolutionized their approach to preventive sexual healthcare. For generalists, in contrast, PrEP was a newsworthy development, but it had negligible impact on their clinical practice, in part, because they had rarely encountered patient requests requiring them to confront decisions about providing PrEP.

The finding that generalists have had limited experiences with PrEP is consistent with prior studies.^{17,18} However, generalists valued their role in providing all genres of preventive care to their patients, and they appeared to be primed to adopt PrEP into practice if provided with basic training and decision-support, consistent with PCP viewpoints about PrEP from a prior qualitative study.²⁷ These studies, therefore, suggest that there may be an opportunity to disseminate PrEP more widely, and potentially increase its impact on the HIV epidemic among MSM, by investing in succinct educational and decision-support interventions that are specifically tailored for generalists. These studies also suggest that efforts to engage generalists may be more successful if they are framed in a manner that conveys respect for generalists' expertise with preventive medicine, which may appeal to their self-identity as prevention experts. It is noteworthy, however, that generalists viewed preventative care as part of their clinical purview, but did not indicate an obligation to initiate discussions about PrEP, an evidence-based

preventive health measure. This suggests that PrEP may be regarded differently than most other evidence-based and guideline-endorsed preventive measures, in that many providers may place the burden on patients to request it, rather than feel an obligation to discuss and provide it themselves, which could also limit its uptake in primary care settings. As some of the study interviews occurred before the CDC formally recommended PrEP in 2014, additional studies of how providers perceive their obligation to introduce discussions about PrEP several years after the dissemination of normative guidelines are warranted.

Diffusion of Innovation Theory, which describes how medical innovations disseminate into clinical practice, can shed light on ways to support adoption of PrEP by generalists.²⁸ This theory suggests that a critical element for widespread implementation of medical innovations is for early adopters to communicate their success with new interventions to their less-experienced colleagues, ideally through social channels and personal interactions (e.g., one-on-one academic detailing).²⁹ When viewing the study findings through the lens of this theory, it suggests that generalists might be motivated to identify opportunities to prescribe PrEP if they are presented with information about the positive prescribing experiences of LGBT specialists. Thus, training interventions for generalists may be more effective if they incorporate clinical data and personal narratives from LGBT specialist colleagues to demonstrate the feasibility and value of prescribing PrEP in primary care.

Our findings suggest that generalists and LGBT specialists alike may benefit from advanced decision-support to address complex prescribing dilemmas for PrEP. Some of these dilemmas represent prescribing scenarios, in which a universal best approach may not exist, such as whether or not to prescribe PrEP to MSM who are at high risk for acquiring HIV and also for medication nonadherence (e.g., those with uncontrolled substance use disorders³⁰), or at what point to discontinue the provision of PrEP medications when patients do not adhere to recommended clinical monitoring. As clinicians in this study believed that patient preferences should be incorporated into prescribing decisions for PrEP, clinicians might benefit from, and may welcome and utilize, interventions to help them to engage patients in shared decision-making for PrEP.^{31,32} Clinical decision aids that integrate point-of-care HIV-risk screening tools^{33,34} and culturally tailored information about PrEP could be useful for this purpose. The application of shared decision-making to PrEP may resonate particularly well with primary care clinicians, as these clinicians may have experience with shared decision-making in other areas of preventive medicine, such as cardiology (e.g., use of statins for prevention of cardiovascular disease³⁵) and cancer screening (e.g., mammography for women in certain age groups³⁶).

PCPs in this study expressed positive attitudes and intentions toward prescribing PrEP, which is consistent with prior studies.^{17,27} However, even if these clinicians are motivated to prescribe PrEP, they may face practical barriers, such as limited time to engage in comprehensive HIV risk assessments^{18,37,38} and patient insurance and financial barriers to accessing PrEP,^{39,40} among others. In prior studies, clinicians have cited these practical limitations as important barriers to PrEP provision.^{19,41–44} Therefore, while clinicians express a preference for brief trainings about PrEP, these trainings may need to balance brevity with comprehensiveness to address the breadth of practical and structural barriers necessary to successfully provide PrEP.

This study design has limitations. Because the study was conducted at two centers in Boston, the findings are not representative of all LGBT specialists or generalists. However, the goal of purposive sampling in this study was not representativeness, but to compare experiences with PrEP among LGBT specialists and generalists, which was successfully achieved. Notably, we identified few negative attitudes toward PrEP or toward MSM among the providers in this sample. However, HIV-related stigma is still common among healthcare workers in the United States,^{45,46} and some providers may be less open to learning about or prescribing PrEP for MSM, such as those who live outside urban areas or in regions with more discriminatory climates for MSM.⁴⁷ Interventions to reduce HIV-related stigma among providers exist⁴⁶ and may be a useful component of trainings about PrEP for providers who are less willing and less interested in prescribing PrEP. CDC guidelines recommending PrEP as a prevention option were published in 2014,¹³ after some of the interviews for this study had been completed, and 2 years have passed since data collection was completed, so clinicians' prescribing experiences and intentions may have evolved since then; ongoing assessments of PCPs' experiences will be important to accurately gauge their practices, intentions, and training needs with PrEP.

In conclusion, LGBT specialists in this study had successfully incorporated PrEP provision for MSM into primary care, whereas generalists in the same locale had limited experience with PrEP. Generalists expressed interest, however, in becoming proficient in PrEP, given their self-perception as preventive medicine experts. Both types of providers articulated similar prescribing dilemmas that may be amenable to solutions based on shared decision-making, which could leverage PCPs' pre-existing expertise with this decision-making paradigm. If LGBT specialists' successful experiences with PrEP can be conveyed to generalists in a manner that motivates more generalists to prescribe PrEP, and if generalists are provided with resources to overcome practical challenges with prescribing PrEP, then the scale-up of PrEP for MSM could occur in a more rapid, effective, and equitable manner.

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