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"Support Your Client at the Space That They're in": HIV Pre-Exposure Prophylaxis (PrEP) Prescribers' Perspectives on PrEP-Related Risk Compensation

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Abstract

Despite the demonstrated effectiveness of HIV pre-exposure prophylaxis (PrEP) and evidence that most PrEP users do not engage in risk compensation (i.e., increased risk behavior due to a perceived decrease in HIV susceptibility), some healthcare providers report patient risk compensation to be a deterrent to prescribing PrEP. Overcoming this barrier is essential to supporting PrEP access and uptake among people at risk for HIV. To inform such efforts, this qualitative study explored PrEP-related risk compensation attitudes among providers with firsthand experience prescribing PrEP. US-based PrEP providers ($n = 18$), most of whom were HIV specialists, were recruited through direct outreach and referral from colleagues and other participants. Individual 90-min semistructured interviews were conducted by phone or in person from September 2014 through February 2015, transcribed, and thematically analyzed. Three attitudinal themes emerged: (1) providers' role is to support patients in making informed decisions, (2) risk behavior while taking PrEP does not fully offset PrEP's protective benefit (i.e., PrEP confers net protection, even with added behavioral risk), and (3) PrEP-related risk compensation is unduly stigmatized within and beyond the healthcare community. Participants were critical of other healthcare providers' negative judgment of patients and reluctance to prescribe PrEP due to anticipated risk compensation. Several providers also acknowledged an evolution in their thinking from initial ambivalence toward greater acceptance of PrEP and PrEP-related behavior change. PrEP providers' insights about risk compensation may help to address unsubstantiated concerns about PrEP-related risk compensation and challenge the acceptability of withholding PrEP on these grounds.

Keywords: HIV, pre-exposure prophylaxis, healthcare providers, risk compensation, behavioral disinhibition, condom attitudes

Introduction

The persistence of the US HIV incidence at 40,000+ new infections annually[1] suggests that condoms and other traditional prevention methods alone will not significantly curtail the epidemic. HIV pre-exposure prophylaxis (PrEP), i.e., antiretroviral medication taken by HIV-uninfected individuals before sex or shared needle use to prevent HIV acquisition, is a relatively new and highly effective prevention strategy. Daily oral tenofovir disoproxil fumarate with

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emtricitabine (Truvada®), approved by the US Food and Drug Administration for prevention since 2012, has proven to be a well-tolerated and acceptable form of protection for diverse populations and has been shown to reduce the risk of infection by over 90% when taken as prescribed (see Mayer and Ramjee[2] for review). The US Public Health Service has published comprehensive clinical guidelines to support healthcare providers in identifying PrEP candidates, prescribing the once-daily regimen, and providing follow-up care.[3]

Despite the immense promise that PrEP offers and federal guidance supporting its provision,[3,4] uptake has been limited: Fewer than 100,000 Americans are estimated to be taking PrEP[5] even though over 1.2 million are at significant risk for HIV and indicated for PrEP.[6] Healthcare providers play a pivotal role in determining PrEP uptake. Since PrEP is a prescription-based medication, providers may function as gatekeepers or conduits for potential PrEP candidates. Recent survey research with healthcare providers has generally indicated moderate-to-high awareness of PrEP, but low levels of PrEP prescription.[7] Although awareness and prescription are both on the rise, the former continues to be much more prevalent than the latter. For example, in a national sample of primary care providers surveyed in 2015, 66% were aware of PrEP, but only 7% had prescribed it.[8] Understanding and addressing barriers to prescription that account for this gap between awareness and adoption into clinical practice are essential to ensuring PrEP access for people at risk for HIV.

Existing survey research with US healthcare providers has identified multiple potential barriers to PrEP provision, with concern about patient risk compensation (sometimes called ''behavioral disinhibition'') being prominent among them.[9–14] In this context, risk compensation refers to an increase in risk-taking behavior due to a perceived decrease in susceptibility to HIV while taking PrEP.[15,16] Some providers have expressed reluctance to offer PrEP for fear of patients decreasing their use of condoms, increasing their number of sexual partners, or otherwise adjusting their behavior in a way that enhances their sexual health risk in response to PrEP initiation.

To date, research has not demonstrated an overall pattern of risk compensation among the majority of PrEP users. In clinical studies, self-reported risk behavior has typically remained stable or decreased on average (see Fonner et al.[17] for review). However, in select open-label studies, more condomless sex over time[18] or in comparison with a deferred control group[19] has been reported. In less controlled clinical settings, early data suggest that most people have continued their prior condom and partnering practices after initiating PrEP, but that some have increased their risk-taking and others have decreased it.[20–22] Collectively, these findings suggest variability in the way people respond to PrEP use, with increased risk behavior being less common but nonetheless evident for a subgroup of PrEP users.

Importantly, increased risk behavior while taking PrEP has not been linked to higher rates of actual HIV acquisition. In a sample of 657 PrEP patients in a San Francisco-based clinical care setting, 41% of a subset surveyed reported decreasing their condom use after initiating PrEP and yet none of the 657 seroconverted while taking PrEP,[22] suggesting that PrEP may more than offset increases in risk behavior accompanying its use. Consistent with this notion, a modeling study comparing the protective effects of PrEP and condoms independently and in combination for black men who have sex with men (MSM) estimated that a man who initiated PrEP would maintain or increase his level of protection against HIV, even if he reduced or discontinued his condom use altogether, as long as he was fully adherent to his PrEP regimen.[23] To our knowledge, only one case of breakthrough HIV transmission has been documented among adherent oral PrEP (Truvada) users in the United States[24] and only two worldwide.[24,25]

With respect to other sexually transmitted infections (STIs), a consistent pattern of change in incident infections accompanying PrEP use has not been established. For example, increased incidence in select STIs (rectal chlamydia and urethral gonorrhea) over time was documented among PrEP users in one clinical care setting,[26] but stable or fluctuating STI rates have been documented in other clinical research and care settings.[20,27,28] In addition, changes in incidence of STI diagnoses accompanying PrEP uptake are not always attributable to risk compensation. For example, more frequent STI screening as part of PrEP follow-up regimens, screening of more at-risk individuals drawn into healthcare by PrEP, and population trends predating PrEP could all contribute to co-occurring increases in PrEP uptake and STI diagnoses. Moreover, PrEP follow-up visits provide the opportunity for regular screening and immediate treatment for STIs that may otherwise persist undiagnosed.

In summary, evidence to date does not link PrEP-related risk compensation to adverse sexual health outcomes. Concern about sexual risk compensation nonetheless remains a deterrent to PrEP provision among some healthcare providers and thus an obstacle to PrEP access. Addressing misconceptions that are inconsistent with medical evidence would help to encourage adoption into clinical practice. The current interview-based qualitative study sought to explore early-adopting PrEP providers' attitudes surrounding PrEP-related risk compensation to help inform this effort. Early-adopting providers are an understudied asset as they have contemplated and ultimately rejected risk compensation as a barrier to PrEP provision in their own clinical practice and are uniquely positioned to influence their peers. Qualitative interviewing afforded the opportunity to gain a nuanced understanding of early-adopting providers' perspectives to help advance the discourse on this topic and effectively address unsubstantiated risk compensation concerns among other providers.

Methods

Study methods have been reported previously.[29]

Participants

Twenty-eight English-speaking, US-based healthcare providers with PrEP prescribing experience and/or expertise were invited to participate in the study through email or in-person outreach by the principal investigator (PI: SKC), email outreach by colleagues, or email referral from other participants. Six providers were unresponsive to the original invitation and 2 of the 22 providers who expressed initial interest canceled their interview appointments and did not respond to follow-up inquiries. Of the 20 providers ultimately interviewed, 2 with expert knowledge were excluded from the current analysis because they had no direct experience prescribing PrEP in a clinical practice or research setting. The final sample included 18 providers who had previously

prescribed PrEP to one or more patients. Recruitment was halted when data saturation was reached for main themes.

Procedure

Interviews were conducted by the PI in person or by phone from September 2014 through February 2015 and lasted ~60–90 min [M (SD) = 81 (10.4)]. Verbal informed consent was obtained at the outset of all interviews. Interviews were semistructured, following a thematically organized guide that included lead questions and follow-up prompts. Primary themes included the following: PrEP experience, PrEP attitudes and prescribing intentions, patient/provider communication about sex, equitable provision of PrEP, and training experiences and recommendations. Specific prompts were used to generate discussion about risk compensation attitudes as needed. In addition to the interview, participants completed a brief questionnaire assessing their sociodemographic characteristics, medical background, and prior clinical experience with PrEP. Participants were offered a $100 gift card as compensation for participation. All study procedures were approved by Yale University's institutional review board before inception.

Analysis

Interviews were audio-recorded and transcribed verbatim. Transcripts and field notes were imported into NVivo 10 to support textual data management and analysis. Analysis was guided by the framework method, a systematic approach to organizing and elucidating themes from textual data, which has been specifically recommended for use within multidisciplinary health research. The framework method encompasses seven stages: transcription, familiarization with data, coding, development of a working analytic framework, framework application, data charting, and interpretation.[30]

The PI drafted an initial analytic framework containing codes, or descriptive labels used to define concepts, which were organized into broader conceptual categories. The framework was subsequently refined through an iterative process, during which she and two co-authors (AIE and LAGH) independently coded transcripts (i.e., applied codes to textual data) and then reconvened to discuss, revise, and add new codes. This process allowed for identification and documentation of newly emergent themes. The final multilevel framework was used by AIE and LAGH to code all transcripts, with 20% overlap (double-coding) of transcripts to ensure consistency in code application. Coded text was reviewed by the PI, employing NVivo's matrix coding/query functions, and charted in an Excel spreadsheet. This allowed for systematic identification of themes and points of divergence across interviews, as well as selection of illustrative quotes. In the Results section that follows, quotes are presented with participant identification number and total number of PrEP patients (Pts.) in brackets.

Reflexivity was sought at every stage of the research process. The PI and coauthors entered into the research with background knowledge about PrEP and a shared belief that it should be accessible to people at risk for HIV. At the beginning of all interviews, the PI informed providers of her academic position, that she was not a medical provider, and that she had no ties to the pharmaceutical manufacturer of Truvada. The PI sought to pose interview questions in an unbiased manner. To monitor this, an interviewer bias code was included in the analytic framework for coders to apply to any interview questions in the transcripts that they perceived to have been worded in a non-neutral manner and to have potentially influenced participant responses. In the rare instances that this code was applied, responses were reviewed and excluded as appropriate.

Results

Sample characteristics

Participants ranged in age from 31 to 53 years [M (SD) = 43 (8.3)] and largely identified as male (72%) and non-Hispanic (88%). The racial composition was predominantly Asian (33%) and white (39%) and nearly half (44%) of participants identified as sexual minorities. The sample primarily comprised medical doctors (94%), most of whom identified as HIV and infectious disease specialists (77%). University-affiliated medical centers (50%) and hospitals (33%) were the most commonly reported practice settings. The majority of participants practiced in the northeastern United States (67%) or southern United States (22%). All had clinical experience with multiple groups highly impacted by HIV (PrEP priority populations) and nearly all had provided care to HIV-infected patients (94%). Additional participant characteristics are presented in Table 1.

PrEP experience

Most participants (94%) had prescribed PrEP as part of their clinical practice (median = 6 patients, range = 2–56), and a substantial minority (39%) had prescribed it as part of a research study (median = 145 patients, range = 1–300). As described elsewhere,[29] participants found most patients' self-reported condom behavior to remain stable before and after PrEP initiation, particularly among those who had an established pattern of either consistent use or consistent nonuse—as opposed to inconsistent use—before PrEP initiation. Nonetheless, participants reported both increases and decreases in risk behavior among subsets of their patients.

Attitudes about risk compensation

Three primary themes emerged with respect to PrEP providers' perspectives on PrEP-related risk compensation: (1) providers' role is to support patients in making informed decisions, (2) risk behavior while taking PrEP does not fully offset PrEP's protective benefit, and (3) PrEP-related risk compensation is unduly stigmatized within and beyond the healthcare community.

Providers' role is to support patients in making informed decisions.

Participants perceived their role as providers to be supporting their patients in making informed choices about their sexual health, including choices about sexual behavior and behavior change with PrEP. They stressed the importance of encouraging concomitant use of condoms with PrEP and educating patients about the benefits of combination prevention, particularly protection against other STIs. However, they also recognized that patients may not always comply with such recommendations and valued a patient-centered approach to care, according to which providers "*support [their] client at the space that they're in*" [P1/150

Table 1. Characteristics of Pre-Exposure Prophylaxis Provider Sample (N=18)

	n (%)
Age (years)	
30–39	7 (38.9)
40–49	5 (27.8)
50–59	6 (33.3)
Ethnicity[a]	
Latino/Hispanic	2 (11.8)
Non-Latino/Hispanic	15 (88.2)
Race	
Asian	6 (33.3)
Black/African American	2 (11.1)
White	7 (38.9)
Other	3 (16.7)
Gender	
Female	4 (22.2)
Male	13 (72.2)
Nonbinary	1 (5.6)
Sexual orientation	
Gay/lesbian	8 (44.4)
Heterosexual	10 (55.6)
Education (highest degree)	
Medical doctor (MD or MD/PhD)	17 (94.4)
Other	1 (5.6)
Practice setting[b]	
Community health center	3 (16.7)
Hospital	6 (33.3)
Private practice	1 (5.6)
University/academic	9 (50.0)
Geographic location	
Midwest	1 (5.6)
Northeast	12 (66.7)
South	4 (22.2)
West	1 (5.6)
Medical role (MDs only)[a]	
HIV/infectious disease (ID) specialist only	13 (76.5)
Primary care provider only	1 (5.9)
Both HIV/ID specialist and primary care provider	3 (17.6)
Clinical experience with high-incidence groups[b]	
Men who have sex with men	18 (100.0)
People who exchange sex for $, drugs, etc.	17 (94.4)
People who inject drugs	18 (100.0)
Transgender women	18 (100.0)
HIV treatment experience	
≥1 HIV$^+$ patients	17 (94.4)
0 HIV$^+$ patients	1 (5.6)
Context of prior PrEP prescription[b]	
Clinical practice	17 (94.4)
Research	7 (38.9)
Comfort prescribing PrEP	
Comfortable	4 (22.2)
Very comfortable	14 (77.7)

[a]n=17 for these variables.
[b]Categories not mutually exclusive.
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PrEP, pre-exposure prophylaxis.

Pts.]. Referencing a patient who reported increasing his number of sexual partners since initiating PrEP, one provider [P18/4 Pts.] said,

> *The increase in sexual partners, certainly, is a concern… but… it's obviously a choice. And it's an informed choice… I think my role here is to actually keep him as protected as he can be, given the choices that he's making.*

Expressing a similar perspective, another provider [P7/47 Pts.] stated,

> *When I talk about whether taking PrEP may change people's behavior… as a provider it's not my business. My job, as a provider, is making sure that I use the methods that I have available to minimize negative outcomes… so I spend less time into trying to change people in society, but to give them information so they can make better decisions when they are in x, y, z situations.*

Thus, providers respected patients' behavioral autonomy and regarded themselves as informants rather than authorities in this realm.

Participants' assertions about their duty to educate patients about safer sex were commonly paired with expressions of sympathy for patients' reported challenges around condom use:

> *Condoms are… fantastic when they're used for HIV prevention, but at the end of the day they're a piece of latex that may– that people may find unpleasurable… I will bring [condoms] up and I'll give them the education, but if they say, ''That's really not gonna fit with my sexual health,'' then I won't sort of drive it… We just need to be realistic about the way that we approach patients because not listening to them when they say that condoms are not going to fit with their paradigm of sexual health is just really detrimental and will not be good for the patient-doctor relationship.* [P4/4 Pts.]

Consistent with participants' perceived need for a patient-centered approach was recognition of the limited knowledge and control that they had relative to patients' decision-making outside of healthcare visits. As one participant [P8/20 Pts.] stated, ''*You can tell somebody that they should do something, but if they're not on board with doing it, they're not gonna do it… they have to be an owner in the process*.'' Several participants acknowledged that patients possessed important insights about their own sexual behavior that providers inevitably lacked. Advocating for a patient-centered approach on these grounds, one provider [P1/150 Pts.] said,

> *We're never gonna know every single thing in a patient's life. You're just not… You don't have the time, unless you are strapping on a camera with this individual and you're gonna have someone go through the last week in this individual's life to see everything that they've done. You don't have that, so let him or her be their own driver of their own health. And give them the power to do that.*

Beyond time constraints impeding providers' access to comprehensive knowledge of patients' risk behavior, participants commonly acknowledged the potential limitations of patient self-report. ''*There's always this thing about seeing a doctor and saying the right thing in front of them… they don't want you to think of them in a negative way*'' [P16/5 Pts.]. Thus, multiple providers accepted their knowledge as incomplete and endorsed the belief that ''*people know what's best for themselves*'' [P5/56 Pts.].

Risk behavior while taking PrEP does not fully offset PrEP's protective benefit. Many of the participants were not overly concerned about PrEP-related risk compensation because they did not consider patient risk behavior—such as condomless sex—to fully negate the protective benefit of PrEP against HIV; this could be because they did not perceive risk behavior while taking PrEP to reflect a change from behavior before taking PrEP or because they perceived PrEP to confer net protection even with increased risk due to behavior change. In other words, providers perceived no or only partial ''compensation'' to actually be occurring.

For many of their PrEP patients, participants believed that risk behavior accompanying PrEP reflected an extension of an existing pattern. ''*I don't think people really change their behaviors. The people who are not using condoms with PrEP never used condoms without PrEP*'' [P3/202 Pts.]. Several participants alluded to a risk ceiling effect, or the impossibility of increasing risk (e.g., by lowering condom use) due to behavior already being maximally risky (e.g., no condom use), operating among many patients. ''*I actually think true risk compensation–I am skeptical if this exists… I don't think there is risk compensation, I just don't think they are using condoms in the first place*'' [P13/8 Pts.]. Providers endorsing this belief repeatedly referenced assumptions that patients underreport risk behavior, suggesting that this ceiling effect may sometimes apply even to patients reporting condom use or other safety measures.

Several providers also expressed confidence that even if patients did increase their risk behavior, the high level of protection against HIV that PrEP afforded when taken as prescribed would more than offset that increase. One provider [P17/2 Pts.] stated,

> *My sense is that this is such an effective medication that even if there is [increased risk behavior], it's not something that I need to necessarily be concerned about. I mean, if he's having one sexual partner now and as a result of being on this medication… he has more sexual partners, I feel like he'll be protected.*

Reflecting on the notion of compensation, contrasts were also drawn between the effectiveness of PrEP and that of condoms, with one provider [P5/56 Pts.] making the point,

> *How effective is condom use? If you look at the Cochrane System database, it's about 80% for heterosexuals. That's just to say that condoms are nowhere near 99% effective… the data from PrEP is showing that the more–you know, if you take it every day, it's really effective. It may be close to 100% effective; if not, certainly over 90%. So now you have this medication you can take every day that appears, possibly, certainly as effective, if not more effective, than condoms. So there's no way that I would ever not give PrEP out to someone, even if their condom use went to zero.*

Although discussion of sexual risk compensation largely focused on HIV-specific risk/benefit, additional risks such as other STIs and benefits such as greater receptivity to serodiscordant partnering were sometimes raised. One provider [P15/6 Pts.] speculated,

> *If I had an individual who was so worried about acquiring HIV and were considering engaging in behavior that may put them at risk for HIV, in that context I think I would be willing to prescribe PrEP if that would be the final thing that would encourage them to go out there. Because, you know, we're all human beings with all in-built need for intimacy, relationships of whatever kind, and I think that if PrEP makes people take that extra step, that would be fine.*

For this provider and select others, the benefit of reduced anxiety and greater intimacy more than offset the risk associated with behavior change accompanying PrEP use.

PrEP-related risk compensation is unduly stigmatized within and beyond the healthcare community. Providers raised the issue that risk compensation in the context of PrEP seemed to be judged more harshly than risk compensation in other health domains. One provider [P11/15 Pts.], crediting his colleague with the analogy, illustrated this point by saying,

> *You should just view it like you view treating high cholesterol. You know, sometimes people who are taking statin drugs might eat steaks now and then because they feel like they can 'cause they're on this drug… Of course it's going to lead to some risk compensation… People can be overly judgmental about it [for PrEP].*

Providers recognized harsher judgment of PrEP-related risk compensation occurring even within the domain of sexual health. As one provider [P14/4 Pts.] stated,

> *I think women do this quite frequently… once they start taking birth control, they stop using condoms. But we don't really stigmatize or think negatively of that patient when they modify their behavior in that sense… As a healthcare provider, I think we need to also not stigmatize individuals [taking PrEP] because they increase their risk.*

Another provider [P7/47 Pts.] directly connected PrEP-related risk compensation stigma to heterosexism, suggesting that MSM were judged even more harshly than other PrEP users:

> *Very often, prescribers probably would have less of an issue giving HIV PrEP to a woman who is married to an HIV-positive man, than they would be to give to a gay man… There are prejudices about gay men taking this medication so they can do whatever they want. When I'm giving it to a woman who is married to an HIV-positive man, then you're protecting her from getting this infection.*

Multiple participants were critical of other providers' stigmatizing responses to requests for PrEP as described by their patients based on earlier experiences, including assumptions about or reactions to risk compensation. One provider [P9/325 Pts.] explained, ''*The biggest clinical challenges for me have been supply side. What I mean by that is primary care doctors or primary care providers or even other HIV specialists who are not supportive of PrEP use and shaming patients*.'' Reinforcing this point, he recounted,

> *Today I saw someone who saw a primary doctor also in my health system here, that otherwise the patient had a long-standing and very positive therapeutic relationship with, and when he approached the provider about PrEP, the first thing [the provider] said was, ''You want me to give you a pill so you can go out and fuck.''*

A few providers expressed the view that PrEP provision was a professional obligation, even in the context of condom nonuse. Denial of PrEP because of condom nonuse was described as unfair and unethical and perceived to reflect personal values rather than sound clinical judgment.

Evolving attitudes

Of note, multiple providers reported that their own personal attitudes toward PrEP and PrEP-related risk compensation had evolved over time. As described by one provider [P2/147 Pts.],

> *I initially was more against the concept of PrEP because my initial assumption would be it would allow patients to think that they didn't need to use other forms of barrier protection… but when I–as I was practicing and seeing how many newly-infected, HIV-positive young men and women I was seeing, I also realized that regardless of what their sexual risk-taking behavior is, regardless of whether they're using barrier protection or not, anything that we know might reduce the risk of transmission has a role at this point.*

Discussion

This study illuminates the perspectives of current PrEP providers on risk compensation related to PrEP use. Primary themes that emerged include the view that (1) providers' role is to support patients in making informed decisions, (2) risk behavior while taking PrEP does not fully offset PrEP's protective benefit, and (3) risk compensation related to PrEP is unduly stigmatized within and beyond the healthcare community. For some, such views represented an evolution in their thinking from initial ambivalence toward greater acceptance of PrEP and PrEP-related behavior change.

The American Medical Association's 2017 Code of Medical Ethics[31] stipulates "*The health and well-being of patients depends on a collaborative effort between patient and physician in a mutually respectful alliance… Physicians can best contribute to a mutually respectful alliance with patients by serving as their patients' advocates,*" a patient-centered philosophy embraced by other health professions as well.[32,33] Consistent with these principles, providers in our study approached PrEP provision as a shared decision with their patients and respected patients' autonomy over their health and sexual choices. They recognized their knowledge of patients' sexual behavior to be incomplete, which they attributed in part to social desirability limiting patients' self-disclosure. This made patients' participation in PrEP decision-making particularly important given the medically relevant information that they alone possessed. Participants perceived their role as providers to be ensuring that patients made informed health decisions, which included assurance that patients were fully aware of the risks associated with forgoing condom use while taking PrEP. Providers strongly encouraged concomitant condom use with PrEP but also expressed understanding of reported condom-related challenges such as associated loss of pleasure.

Providers in our study conveyed skepticism that risk compensation was occurring and offsetting PrEP's protective benefit. One reason for this was that they perceived risk behavior accompanying PrEP use to be the continuation of a pre-existing pattern of condomless sex for many patients, which is consistent with some PrEP users' self-reports of condomless sex both pre- and post-PrEP initiation.[21] Another reason for such skepticism was the belief that PrEP provided net protective benefit even in the face of increased risk behavior, consistent with reports of sustained sero-negative status among PrEP users reporting reduced use of condoms.[20,22] Among the diverse motivations for forgoing condoms that have been reported,[34,35] some PrEP candidates have expressed the perception that PrEP's high degree of efficacy circumvents the need for other forms of HIV protection[34]; however, others have asserted the importance of using PrEP as an adjunct to condoms and other prevention strategies, not a replacement.[36] Thus, patients may enact different condom preferences along with PrEP use, and some patients, such as those in violent relationships, may have limited autonomy over their condom use to begin with.[37] Reassurance that if taken as prescribed, PrEP will likely confer a net gain in HIV protection regardless of condom practices may help assuage providers' fear of doing more harm than good by prescribing PrEP to their patients.

As public awareness about PrEP increases and more at-risk individuals actively seek out PrEP from their healthcare providers, there is an urgent need to prepare providers to respond appropriately. This includes not only enhancing providers' comfort and competence prescribing PrEP or referring patients elsewhere for PrEP care but also educating providers about reacting to patient inquiries in a sensitive and professional way. Just as some providers in this study described initial ambivalence about PrEP and evolving attitudes related to risk compensation, PrEP-naïve providers may have similar reservations when first introduced to PrEP. If these PrEP-naïve providers first learn about PrEP via patient request within the context of a medical visit, they may react negatively without the time and information to appropriately moderate their responses. Participants shared multiple anecdotes of their PrEP patients encountering shaming and discouragement when initially seeking PrEP from other providers. PrEP refusal is not uncommon: Patel et al.[38] surveyed over one hundred individuals seeking PrEP at an infectious disease specialty clinic and found that of those who reported having a primary care provider, nearly half had requested and been denied a PrEP prescription from their primary care provider before seeking PrEP at the specialty clinic. Fortunately, the patients referenced by providers in our study and those surveyed in the study by Patel et al.[38] were ultimately successful in their pursuit of PrEP. However, a single negative experience requesting PrEP from a provider may deter patients from seeking PrEP elsewhere, potentially yielding long-term harm by undermining patients' efforts to protect their health. Qualitative research with sexually active black and Latino MSM has documented this adverse impact of provider discouragement and suggested it to be particularly forceful when patient–provider rapport has already been established.[39] Thus, PrEP training throughout the healthcare system is critical to ensuring that at-risk individuals' efforts to access PrEP are not undercut at any point within the institution responsible for facilitating such access.

Although the efficacy of daily oral PrEP is high, PrEP does not eliminate the risk of HIV entirely[24,25] and does not protect against pregnancy and other STIs, so risk compensation may indeed increase the likelihood of unwanted outcomes and patients should be counseled to this end. However, as with other health decisions, patients will weigh these risks against the potential benefits of reducing their condom use or increasing their number of sexual partners according to their values and priorities. Their weighting may or may not match providers' preferences. Encouraging providers to consider PrEP-related risk compensation in the context of preventive medicine more broadly may help to cultivate tolerance of

increased risk behavior. As the providers in this study pointed out, risk compensation is common and—to some extent—expected relative to other preventive medications (e.g., statins and oral contraception). Behavior change is not regarded as an acceptable reason to withhold or discontinue these medications and PrEP should not be an exception. To withhold PrEP due to anticipated or actual changes in a patient's condom use or partnering practices would constitute an imposition of the provider's personal values and preferences rather than an evidence-based clinical decision.

Providers in this study described selective stigmatization of PrEP-related risk compensation not only relative to other health conditions but also across social groups. The potential impact of prejudice on clinical judgment surrounding PrEP is corroborated by previous survey research with medical students: when presented with a hypothetical medical scenario about a PrEP-seeking patient, heterosexism (based on participants' self-reported attitudes toward gay men) and patient race were related to assumptions about the patient's likelihood of engaging in sexual risk compensation, which, in turn, affected willingness to prescribe PrEP to that patient.[40,41] These findings are especially concerning given the epidemiology of HIV and its disparate impact on sexual and racial minorities,[1] as well as early indications of disproportionately low PrEP uptake among social groups at high risk for HIV who happen to also be highly vulnerable to stereotyping and judgment around their sexual behavior (e.g., black Americans, people under 25 years of age[42]). Previous research with providers suggests that prejudice may operate on an unconscious level—even among providers who consider themselves unbiased—and may impact clinical decision-making.[43,44] Integrating concrete, empirically based strategies for mitigating such impact into provider-targeted PrEP trainings may help to proactively combat the impact of prejudice on clinical judgment and consequent disparities in PrEP access.[45]

It is important to recognize that the conclusions presented in the current study were drawn from a select group of providers at a given point in history. Most providers were HIV/infectious disease specialists practicing in the northeastern and southern United States and were recruited through specific professional networks. Our participants may be considered early adopters, that is, among the first clinicians in their communities to prescribe PrEP. Consequently, their perspectives are not intended to represent the views of all PrEP providers as PrEP becomes more widely prescribed. Likewise, these views are not intended to generalize to the broader population of providers with prescription licenses. The participants in this study were selected because they had already decided to prescribe PrEP in their practices, meaning that they were not among the group of providers for whom risk compensation concerns deterred PrEP prescription. They were therefore expected to hold more accepting and supportive views regarding patients' risk behavior than other providers, which was among the reasons they were targeted. Additionally, this study took place during an early phase of PrEP rollout when data were limited and extant data suggested minimal risk compensation to be occurring and minimal adverse consequences to be associated with its occurrence. Behavior change accompanying PrEP use outside of clinical trials is currently under study and PrEP providers' perspectives on risk compensation may change as new information becomes available.

A recent review of healthcare providers' preparedness to implement PrEP concluded that PrEP provision remained limited to a few early adopters and that these individuals may be key to facilitating broader uptake among their peers.[7] Enhancing the visibility of early adopters' PrEP activities and emphasizing successful outcomes may help to establish PrEP as a standard option among the HIV prevention services routinely offered at health centers. Beyond shaping behavioral norms, early adopters may also have the potential to cultivate *attitudinal* norms and challenge unfounded assumptions that impede some providers' adoption of PrEP into clinical practice. Integrating current PrEP providers' perspectives on PrEP-related risk compensation into training initiatives may help other providers to overcome ideological hurdles to PrEP provision, thereby supporting broader PrEP implementation and access in accordance with medical evidence.

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