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Provider Comfort with Prescribing HIV Pre-Exposure Prophylaxis to Adolescents

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Abstract

In the United States, Black and Latinx youth remain disproportionately affected by HIV. Oral antiretroviral pre-exposure prophylaxis (PrEP) is a proven effective HIV prevention strategy. PrEP is approved for use in people younger than the age of 18 years, but little is known about provider comfort and preparedness with prescribing it to adolescents. In this study, physicians provide their perspectives on the facilitators and barriers to PrEP access among adolescents. Focus groups ($n = 23$) were conducted with pediatric and family practitioners practicing in an urban community hospital setting to assess PrEP awareness and receptivity to use among adolescents. Most providers were unfamiliar with clinical guidelines for PrEP use, especially in determining adolescent candidates for PrEP use, including appropriate dosing regimen and follow-up procedures. Overall, providers had low intent on prescribing PrEP, citing concerns about consent, medication adherence, and appropriateness of primary care providers in prescribing and managing adolescent PrEP use. Strategies that will address provider education and comfort in prescribing PrEP to adolescents are required to increase PrEP access and uptake among communities disproportionally affected by HIV.

Keywords: HIV, pre-exposure prophylaxis (PrEP), adolescent, provider, focus groups

Introduction

In the United States, the risk for HIV infection among adolescents remains a major public health problem. Approximately 21% of new HIV diagnoses are represented among youth aged 13–24 years.[1] Although the HIV epidemic is stabilizing for many groups, adolescents, young men who have sex with men (YMSM), Black, Latinx, and other minority populations continue to have a higher burden of disease. In 2019, of new HIV infections in YMSM aged 13–24 years, 51% occurred in Black, 30% Latinx, and 14% White youth.[2]

For almost three decades, HIV prevention interventions have targeted adolescent sexual risk behaviors with mixed results regarding intervention effectiveness. Comprehensive approaches to HIV prevention are still needed.[3,4] pre-exposure prophylaxis (PrEP) with tenofovir/emtricitabine (TDF/FTC) combination, when taken as prescribed, reduces the risk of HIV acquisition up to 99%.[5–10]

On May 16, 2018, the US Food and Drug Administration (FDA) approved the use of TDF/FTC for HIV prophylaxis in adolescents younger than the age of 18 years.[11] Yet, prescriptions given to Black and Latinx YMSM and other young people more broadly remain low.[12] Previous studies show that pediatric/adolescent primary care providers (referred to as PCPs, hence forward) do not feel comfortable prescribing PrEP to their patients due to concerns about: confidentiality, ability of minors to understand risks and benefits of PrEP, adherence, parental autonomy, and PrEP costs.[13,14] In addition, it has been suggested that the implementation of physician education about PrEP, patient educational materials, and adolescent clinical guidelines for its use could serve

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as PCPs facilitating factors for prescribing PrEP in youths.[15] However, these facilitating factors have not been examined empirically. Because there has been limited empirical documentation of providers' factors in PrEP prescription, the goal of the present analysis is to document PCP's knowledge and awareness of PrEP, willingness to prescribe it and facilitators to use PrEP for prevention of HIV, especially in Black and Latinx YMSM who currently share a greater burden of infection. In this article, we presented the qualitative findings from PCPs from *Who's on Board,* a community-based mixed-methods study on PrEP utilization in adolescents, which took place from 2017 to 2019, in New York City.

Methods

Recruitment and sample

We recruited PCPs through four hospital affiliated adolescent health centers in Bronx, New York, a predominantly Black and Latinx community with disproportionately high rates of sexually transmitted infections (STIs) and HIV.[16] The Medical Director of the adolescent health centers announced the *Who's on Board* focus groups during monthly staff physician meetings. Those interested in participating were able to sign up during the meetings. PCPs provided their name and email address to be contacted later with the date, time, and location of the focus group. To be eligible for the focus groups, PCPs must have self-reported with the following: (1) being a licensed medical doctor; (2) served in New York City and surrounding metro area over the past year, and (3) identify as an adolescent health care provider or HIV specialist. Twenty-three PCPs were recruited to participate in the focus groups.

Focus group procedures

We conducted three focus groups with 6–8 PCPs per group. The moderator, a pediatrician and coinvestigator on this study, had previous training in focus group moderation and led each group. A pediatric resident served as the notetaker during each group. Focus group questions covered five topics: (1) PCPs PrEP knowledge (PrEP clinical guidelines and follow-up care); (2) barriers and facilitators to sexual and reproductive health counseling, HIV prevention, and PrEP use with adolescents; (3) receptivity and readiness to prescribing PrEP; and, (4) clinical and structural barriers and facilitators to PrEP uptake among adolescents. Focus groups lasted for $\sim$90 min and were audio-recorded. PCPs provided written consent before attending the focus groups. These focus groups were conducted in-person, before the onset of the COVID-19 pandemic in New York. We provided light refreshments and $45 gift cards as incentives. The procedures of this study were approved by the Yale University and SBH Health System Institutional Review Boards.

Data analysis

Focus group audio recordings were transcribed verbatim. We used deductive and inductive reasoning to identify concepts and themes in the data.[17] Our research team began coding data by labeling segments to define the content. We conducted open coding that consisted of line-by-line coding to identify physicians' concerns, assumptions, and processes for care with high-risk adolescent patients.[18,19] As additional focus group data were collected, we used the constant comparative method to compare data with data and codes with data to detect similarities and differences.[20] Most significant and frequent codes were used to form categories and additional codes were delimited to these categories.[21] Coding categories and delimited codes were then used to construct a data coding tree, which was reconciled by the research team. Transcripts and the coding tree were downloaded into NVivo 11, a qualitative analysis software, and all transcripts were coded using the coding tree. We selected one transcript to check for interrater reliability and reconcile coding differences; coding then resumed for each transcript. We used matrix queries to compare and contrast categories and codes.

Results

A total of 23 PCPs participated in the 3 focus group sessions. PCPs were trained in either pediatrics or family medicine. At the moment of the focus groups, all the PCPs were practicing in a district or neighborhood setting that is disproportionately affected by high rates of HIV and STIs. The average age was 33.5 years, the majority of participants were female (65%), and pediatricians (74%) (Table 1). The average time of years in medical practice was six (range, 1–22 years). In the following sections, we present the recurrent themes identified through the content analysis of the focus group data.

Limited PrEP knowledge for adolescent patients

At the time of the focus groups, in 2017, a year before the FDA approval of PrEP use for adolescents, the majority of PCPs were not familiar with PrEP use in adolescents. PCPs were also not aware of the indication for use, laboratory assessment needed, side effects profile, or insurance coverage options. When questioned about who should be prescribed PrEP, PCPs responded:

Men who have sex with men, injecting drug users, or a person who is married to a person who is HIV positive

Most PCPs agreed that their level of PrEP knowledge was directly proportional to their readiness to prescribe PrEP. In other words, lack of PrEP knowledge was one of the reasons for their low frequency of prescribing PrEP to their adolescent patients. The lack of knowledge about PrEP insurance coverage, medication adherence data, and ongoing medical follow-up needed were deterrents identified by the PCPs for prescribing PrEP. Overall, PCPs expressed low intentions to prescribe PrEP to adolescents due to the lack of information.

Table 1. Focus Group Composition ($n = 23$)

Gender	Female: 65% Male: 35%
Age	Average: 33.5 Low: 26 High: 52
Race/ethnicity	30% Asian/Pacific Islander 35% Latinx 4% Black 30% White
Field of practice	Pediatrics: 74% Family practice: 26%

Expectations of low adolescent PrEP adherence

Most of the PCPs expressed being concerned about adolescents' willingness and capability of taking a daily medication. Participants agreed that this concern abated if the adolescents were older. PCPs also expressed that frequent contact with the adolescent patients and having different modes of administration (e.g., injectable) could mitigate some of the adherence concerns. For example, one of the PCPs stated:

> *I have no problem with my high-risk adolescents taking it. I think a pound of prevention is worth an ounce of cure and I think if you educate them and you bring them back, if you're concerned about their compliance if you bring them back enough times and express your concerns and express the risk to them, I think you can definitely have a patient that's complying with it, and they're involved in their own healthcare in the prevention of STD's that relate to them; and if you get them involved in and it's not just you telling them, then you can definitely have higher success in compliance.*

Rather than daily medication, the PCPs in the focus groups expressed that long-acting formulations of PrEP, such as those used for oral contraceptives for pregnancy prevention, can be a useful tool to ensure PrEP adherence among adolescents.

> *For me, it doesn't change my desire or my proactivity in offering PrEP in whatever percentage [compliance] is because at the end of the day, I want to offer whatever I have. But do I think having a Depo presentation will be obviously better for compliance.*

The above view was unanimously supported by all PCPs in the focus groups.

Expectations of unintended consequences that increase health risks for adolescents

Several PCPs expressed concerns about PrEP providing a false sense of security to their adolescent patients, who are at a psychosocial developmental stage that is already prone to low-risk perception and heightened sense of invulnerability to illness. A participant expressed:

> *I'm afraid that sometimes if you give them something like this, they may think that it gives them free liberty to do whatever they want without being cautious and using protection, and maybe think that it's a false sense of security. […] I hate to talk about PrEP as OCP (oral contraceptive pills), but if you're reminded of OCP, it seems like you're encouraging them to have free sex.*

The notion of encouraging condomless sex or unprotected sex practices or providing a false sense of security to adolescent patients were consistent concerns about prescribing PrEP to their adolescent patients.

Readiness to PrEP prescription

There was no consensus on readiness to prescribe PrEP to adolescent patients. Focus group participants were split among feeling ready, undecided, conflicted, and/or not ready to prescribe PrEP to adolescents. Factors contributing to PCPs' readiness were (1) support from other providers, (2) lack of specific data on adolescent PrEP usage, and (3) the need for more education about PrEP.

> *So for me, it would be easier if I know who is already prescribing it.'' ''If I was concerned like in a similar case to my colleague, maybe I might have called someone that might have a little expertise… I would have to call a friend for support.*

At the time of the focus groups, most participants were unfamiliar with (1) PrEP clinical guidelines for adolescent patients, (2) determining candidates for PrEP, and (3) follow-up recommended procedures.

> *I think maybe with at least until it becomes more of a mainstream I think providing a lot more support in terms of teaching and going through some of the things that you have expressed right now in terms of screening and the specific guidelines, so more training on guidelines.*

Some PCPs believed that infectious disease physicians, and not PCPs, should be primary prescribers for PrEP. However, some participants also stated that with more training, PrEP provisions should be the responsibility of PCPs.

PrEP prescription means discussing adolescent's sexuality

Focus group participants highlighted poor patient-doctor communication about sexuality and sexual behaviors with adolescent patients as a barrier to adolescent PrEP, as illustrated by the following quote:

> *I'm not very good at taking a sexual history and I tell you that straight off. I mean I don't ask half the questions that I'm supposed to ask. I probably feel more comfortable giving out the GAPS assessment to an adolescent they can fill it out and then bring it back to me. When they do bring it back to me, then I am just surprised of all the things they check off and I didn't think they were gonna check off on a GAPS assessment. I mean I don't think we take as good a sexual history as we think we do.*

Across the three focus groups, PCPs agree on the need to become more comfortable discussing sexuality and sexual behaviors with adolescents to confidently prescribe PrEP to adolescents.

Patient's gender, sexual orientation, and age as factors in discussing or not PrEP

Most PCPs agreed that they were more likely to discuss PrEP with adolescent male patients who self-identified as gay, or reported same-sex behaviors with multiple and/or older partners. ''It's [YMSM] such a higher risk community.'' They also agreed that they were less likely to discuss PrEP with female adolescent patients, unless the patient expressed having multiple sexual partners. Other reasons for discussing PrEP included of patients reporting multiple sexual partners, older sexual partners, or other high-risk behaviors. Yet, PCPs express skepticism on what constitutes having multiple sexual partners.

> *I'm a little torn because since they're- like I don't know what multiple sexual partners mean for an adolescent. Like since they're starting sex so young is more than one or multiple or I don't know what's the threshold.*

PCPs agreed that age matters in their decision to discuss sexual risks with adolescent patients, for example one participant expressed:

I think age would also be a concern of mine. I feel more comfortable discussing sexual activity or high-risk behaviors in those who are at least in high school or like 15, 16, than I would with a 12-year-old. Even though it's approved in 12-year-olds, for me, my level of comfort isn't as high with the lower age group.

All PCPs expressed increased comfort in having discussions about sex and HIV prevention with older adolescents (>15 years of age), than younger ones.

Parental consent, patient privacy, and stigma as PrEP prescription concerns

Moral and ethical conflicts emerged during the focus group discussion, specifically parental consent and patient privacy and confidentiality. PCPs used the term ''mixed feelings'' about the idea of prescribing PrEP without parental consent. Yet, most participants agreed that parental consent is not required.

I think it's more beneficial without parental consent 'cause I feel like they would be more willing to be in a situation where they would feel more comfortable to ask for PrEP. So if parental consent was a determinant in whether or not they could take it or ask for it, I feel there would be decrease number of those who would.

Participants also acknowledged that there are instances where it would be beneficial to not seek parental consent.

I don't think you should need parental consent when it comes to, you know, protection of your body and your sexual health, especially in the men who have sex with men cause a lot of young adolescents might not be at that stage or might not have relationships with their parents to go seeking consent for that. It's hard enough to tell your parents, mom, dad, I'm gay, but then when you have to come to them and put it in their face, by the way, I need to be on this pill because of the sexual acts that you are not comfortable with me doing, that's a whole other can of worms.

Furthermore, a few participants voiced concerns about managing any adverse effects without parental knowledge, as the following quote illustrates:

The only issue would be if they end up having any of the side effects and someone end up having liver failure or kidney failure because of the drugs that you were prescribing to him, and they parents, they don't know about it.

With regard to protecting their adolescent patients' confidentiality and dignity, PCPs were concerned that adolescents taking PrEP may be subjected to increased stigma, as illustrated by the following quotes:

Taking these pills even with friends or parents, because they will kind of judge them.
I think it's more widely accepted for girls to take OCP's than it is to take something like this that's preventing HIV.

All participants were comfortable with prescribing birth control pills, another form of prevention requiring daily use. However, most of them viewed prescribing PrEP differently from prescribing oral contraceptives, as there is more stigma associated with HIV.

Discussion

Our study findings support the importance of increasing PCPs' PrEP knowledge. The study was conducted relatively recent to the US FDA approval of PrEP for adolescent use. In summary, most PCPs were unfamiliar with all PrEP clinical guidelines and follow-up procedures; and expressed low intentionality to prescribe PrEP to adolescent patients. In this section, we discussed the major concerns by PCPs on PrEP prescription and their implications for HIV prevention care services.

Expectations of low adolescent PrEP adherence

The first reason for low intentionality to prescribe PrEP to adolescents seems centered around PCPs' concern about adolescents adhering to the regimen of taking a daily pill, keeping the medicine in a secure area, and having frequent office visits and laboratory testing. Adherence to PrEP will undoubtedly be an issue with adolescents.[22] However, the advent of newer administration modalities, some currently in clinical trials (i.e., long-acting injectable PrEP) may facilitate medication adherence. In a cohort of adults, Black and Latinx MSM preferred long-acting injectable and subdermal preparations over daily oral pills.[23] Furthermore, increasing frequent points of contact between PCPs and adolescents might increase PrEP adherence as it does with adult patients.[24] In a study of PrEP adherence among adult patients, the medication adherence rate was significantly higher among those seen in monthly PCP visits versus those attending to quarterly visits.[24,25] Health services intervention research is needed to develop multilevel (organizational, provider, parents, adolescents) interventions that can take place in multiple clinical settings through multiple modalities addressing the range of social-ecological factors to increase PrEP intake and retention. Implementing PrEP programs in settings that support adolescents can be key to prevention efforts. School-based health centers are a safe space where adolescents can receive convenient and confidential care. They currently provide comprehensive reproductive health services resulting in more contraception use and fewer pregnancies[26]; it has the potential to do the same for HIV prevention. The juvenile justice system also can serve as locus for intervention; they provide supervision to adolescents who report high rates of HIV/STI risk behaviors.[27] For example, adolescents in these settings can be seen every 2–3 months for injected-PrEP. This will ensure regular contact and adherence; it can also potentially prevent the long-tail problem, where after stopping injectable PrEP use, there might not be enough medication to stop HIV transmission but enough to cause drug resistance if exposed to HIV.

Expectations of unintended consequences that increase health risks for adolescents

Another concern by PCPs on prescribing PrEP to adolescents was the unintended consequences of the act of receiving a PrEP prescription itself for the adolescent, specifically increasing a false sense of security regarding the protection against sexually transmitted infections or unintended pregnancy; and potentially stigmatizing further adolescents, with regard to the potential perceived permission to engage in unsafe, condomless sexual practices. The available literature does not support this concern for adolescents. For example, in a longitudinal study on PrEP utilization and sexual risk among adolescents, PrEP usage was not statistically associated with increments in the number of sexual partners or

the rate of condomless sex.[24,28] It should be noted that, however, in an adult MSM cohort, men in partnerships where both partners used PrEP were less likely to use condoms during anal intercourse as compared to those where neither used PrEP;[29] this highlights the need for further research in adolescents.

Parental consent, patient privacy, and stigma as PrEP prescription concerns

With regard to stigmatizing adolescents further through PrEP prescription, the study findings suggest that PCPs were concerned with sectors within their adolescent population that are already heavily stigmatize for their same-sex sexuality (e.g., gay or bisexual identified youth), nonconforming sexual lifestyles (e.g., nonmonogamous adolescents), premarital sexual activity (for those living in sexually conservative households, for example), or their race or ethnicity (for example, Black and Latinx adolescents are heavily sexualized in the United States).[30,31] In their view, PrEP carries the additional social stigma of being at risk or misconception of potentially being HIV positive.[32] Our study participants are not alone in this concern. Multiple studies have voiced similar HIV and intersectional stigma-related concerns as a barrier to PrEP uptake.[33] Home expulsion, threats, verbal abuse, and parental, sexual partner, and peer rejections have been documented with the unintended and intended disclosure of taking PrEP.[24,28] Young Black MSM have also expressed that targeted PrEP messaging can be stigmatizing.[34] In training PCPs, we must consider the importance of addressing provider's stigma-related concerns as well as designing strategies in the patient-provider communication to prevent or ameliorate negative social consequences of disclosure of PrEP intake for adolescent patients. Further studies are needed to ascertain adolescents' experience with stigma and PrEP and discuss ways to overcome this stigma.

Privacy concerns remain a barrier to PrEP. In New York State, where study participants practice, adolescent can consent to HIV prevention care but this does not apply to many other states across the country. Providers need to know the laws in regions where they practice.

PrEP knowledge, readiness to prescribe PrEP, and discussing adolescent's sexuality

Another concern for PCPs was their discomfort in taking a comprehensive sexual history. Our findings suggest that PCPs need further training on sexual history taking, risk assessment, having sex while taking PrEP, and comprehensive sexual history guides. The 5P model is a good example that can assist PCPs conducting sexual history assessments.[35] The 5P model elicits detailed information on partners, sexual practices, and contraceptive usage. A systematic approach to sexual history taking can help providers who do not feel comfortable asking sensitive questions. Using interviewing models such as the 5P can assist PCPs determine which adolescent patients should be started on the PrEP regimen. Other tools available to PCPs have been validated and are now available.[36] Finally, provider's comfort with discussing adolescent sexual history might be increased through participating in webinars on best practices from experienced providers on taking the adolescent sexual history. These educational resources can increase providers' knowledge and readiness to initiate PrEP.

Patient's gender, sexual orientation, and age as factors in discussing or not PrEP

Taken together, our findings also suggest a provider's bias on PrEP prescription that merits discussion. In the focus groups, PCPs acknowledged biases in whom they would recommend for PrEP usage. PCPs explicitly stated that they were more comfortable speaking with older MSM than younger MSM or adolescent cis-gender women or other adolescent groups. This type of prescription bias has implications for the containment of local HIV epidemics. For example, in 2016, 22% of all the new HIV diagnoses among youth, 13–19 years old, in New York City were females.[16] This statistic suggests that adolescent women might be an underrepresented and underappreciated risk group for PCPs. There is a need for increasing providers' awareness of young women adolescent sexual and HIV risks, and the introduction of PrEP as a biomedical HIV prevention tool for them. This also highlights the importance of making clinical decisions based on a comprehensive understanding of HIV (sexual and nonsexual) risk behaviors, the risk behaviors of adolescent patients' sexual partners, and co-risk factors such as substance misuse.

Our study had a few limitations. Sample size of 23 limits the ability to make generalized comments about all providers who provide HIV care for adolescents. The PCPs in the study practice in an urban community in the Bronx and thus our findings might not apply to those working in other medical and geographical settings. However, including both pediatric and family practitioners is a strength of the study, but future work should examine differences in other types of providers (i.e., nurse practitioners and physician assistants). We also did not further examine how structural disadvantages such as poverty and racism and other social determinants of health affect providers' views on prescribing PrEP.[37]

In this study, we examined knowledge and attitudes among pediatrics and family practice providers about PrEP use in adolescents. The age group, 13–24 years, has the highest rate of HIV transmission.[38] With almost a quarter of new HIV infection occurring in the adolescent and young adult populations, providers who care for them have an opportunity to stem the spread of the HIV epidemic. Initiating oral PrEP has the potential to have a significant impact on adolescent HIV incidence. Strategies that will address provider education and comfortability in prescribing biomedical HIV prevention among adolescents are required for PrEP uptake. Thus, understanding the attitudes and beliefs of providers can better inform future interventions to increase PrEP usage in high-risk adolescents. Movement toward combined biomedical HIV prevention interventions has prompted the current research, in which we plan to gain a better understanding about knowledge and receptivity to biomedical prevention interventions, particularly the use of PrEP among adolescents.

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Ethical Approval

All authors approved the article for submission. All procedures performed in studies involving human participants

were in accordance with the ethical standards of the Institutional and/or National Research Committee and with the Declaration of Helsinki 1964 and its later amendments or comparable ethical standards.

Consent

Informed consent was obtained from all individual participants included in the study.

Author Disclosure Statement

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