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Increasing providers' PrEP prescription for Black cisgender women: A qualitative study to improve provider knowledge and competency via PrEP training

Nikki Kasal[1], Samantha Devlin[2], Amy K Johnson[3], Alicia Dawdani[2], Ososese E Enaholo[3], Geoffroy Liegeon[2], Maria Pyra[4], Lisa R Hirschhorn[4], Sadia Haider[5], Kelly Ducheny[6], Jodi Simon[7] and Jessica P Ridgway[2]

Abstract

Background: Awareness and uptake of human immunodeficiency virus (HIV) pre-exposure prophylaxis (PrEP) remains low among Black/African American cisgender women, partly due to low self-reported PrEP knowledge and comfort among primary care providers. Ensuring providers are trained on PrEP is crucial, as increased PrEP knowledge is associated with higher rates of PrEP prescription.

Objective: We aimed to develop a PrEP training for providers to improve their self-efficacy in discussing and prescribing PrEP for Black women, with the ultimate goal of increasing PrEP awareness and utilization among Black women.

Design: In this qualitative study, we conducted focus groups with medical providers at three federally qualified health centers in the Southern and Midwestern United States to identify themes informing the development of a provider PrEP training.

Methods: Providers were asked for input on content/design of PrEP training. Transcripts underwent rapid qualitative analysis using the Stanford Lightning Report Method. Themes were identified and presented under the domains of the Consolidated Framework for Implementation Research.

Results: Ten providers completed four focus groups. Themes included the individual characteristics of providers (low comfort initiating PrEP discussions, particularly among White providers) and the outer setting of client attitudes (perceptions of potential provider bias/racism, varying levels of concern about HIV acquisition). Opportunities were identified to maximize the benefit of training design (e.g., developing case scenarios to enhance providers' cultural competency with Black women and PrEP knowledge).

Conclusion: This comprehensive PrEP training features both didactic material and interactive role-plays to equip providers with the clinical knowledge for prescribing PrEP while building their competency discussing PrEP with Black women. This training is particularly important for providers who have racial or gender discordance with Black women and express lower comfort discussing PrEP with these clients. Provider training could lead to minimizing racial- and gender-based inequities in PrEP use.

[1]The University of Chicago Pritzker School of Medicine, Chicago, IL, USA
[2]Section of Infectious Diseases and Global Health, Department of Medicine, University of Chicago, Chicago, IL, USA
[3]The Potocsnak Family Division of Adolescent and Young Adult Medicine, Ann & Robert H. Lurie Children's Hospital of Chicago, Chicago, IL, USA
[4]Department of Medical Social Sciences, Feinberg School of Medicine, Northwestern University, Chicago, IL, USA
[5]Division of Family Planning, Rush University, Chicago, IL, USA
[6]Howard Brown Health, Chicago, IL, USA
[7]AllianceChicago, Chicago, IL, USA

Corresponding author:
Nikki Kasal, The University of Chicago Pritzker School of Medicine, 924 East 57th Street #104, Chicago, IL 60637, USA.
Email: nikki.kasal@uchicagomedicine.org

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Plain language summary

Increasing the use of pre-exposure prophylaxis (PrEP) among Black women: a study to improve provider knowledge through PrEP training

Why was the study done? Use of pre-exposure prophylaxis (PrEP), a medication that can prevent the transmission of human immunodeficiency virus (HIV), is low among Black/African American women. Part of the reason why is because primary care providers (PCPs) report lower knowledge about PrEP and lower comfort talking about PrEP with clients. Making sure PCPs are trained on PrEP could help increase PrEP use among Black women. What did the researchers do? The research team held focus groups, during which they asked medical providers at federally qualified health centers (FQHCs) in the Southern and Midwestern United States questions about their experiences with discussing PrEP and what information should be included in a training about PrEP for providers to make sure the training would be helpful for them. What did the researchers find? A total of ten providers completed four focus groups. Important points mentioned in the focus groups included low comfort among providers when bringing up PrEP to clients, especially among White providers, as well as different levels of concern about HIV and feelings of potential provider bias/racism among clients. These points helped the researchers design a PrEP training that addresses providers' needs (such as creating case scenarios that help providers practice discussing PrEP with Black women and answering common questions about PrEP). What do the findings mean? A PrEP training for providers should have both information about prescribing PrEP and interactive role-plays to build providers' PrEP knowledge while improving their confidence and skill in talking about PrEP with Black women. This training is particularly important for providers who are a different race or gender than Black women and express lower rates of comfort discussing PrEP with these clients. Provider training could eventually lead to higher PrEP use among Black women.

Keywords

pre-exposure prophylaxis, Black/African American, providers, training, women

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Introduction

Human immunodeficiency virus (HIV) continues to disproportionately affect Black/African American cisgender women (hereafter referred to as Black women). In 2021, Black women accounted for 57% of women living with diagnosed HIV infection in the United States, despite comprising 14% of its female population.[1,2] In fact, recent estimates show that 1 in 54 Black women may be diagnosed with HIV in their lifetime if transmission rates are unchanged, compared with 1 in 941 White women.[3] These data underscore the importance of prioritizing Black women when discussing HIV prevention and care.

In 2021, the Centers for Disease Control and Prevention (CDC) released updated clinical practice guidelines for the use of pre-exposure prophylaxis (PrEP) to prevent HIV.[4] These guidelines recommend providers offer PrEP counseling to all sexually active clients, though a client may be specifically indicated for PrEP if they have a partner living with HIV, use condoms inconsistently during intercourse, have been diagnosed with a sexually transmitted infection (STI) in the past 6 months, or inject drugs intravenously.[4]

Despite CDC estimates that while nearly a quarter of a million U.S. persons assigned female at birth were indicated for PrEP in 2022, only about 15% of this population actually received a PrEP prescription, compared to the 41% of PrEP-indicated persons assigned male at birth who received a prescription in the same year.[5] Furthermore, only 13% of Black individuals of all genders who were indicated for PrEP received a prescription in 2022, compared to 94% of White individuals.[5] These data illustrate that while PrEP coverage may have grown since its initial approval for HIV prevention in 2012, it is still not adequately reaching demographics significantly impacted by HIV.[5]

Prior work has described a number of socio-structural barriers to PrEP initiation and adherence that contribute to the disparity in PrEP access among Black women in the United States, including a lack of PrEP awareness, stigma surrounding HIV and sexual health, and race- and gender-based discrimination.[6–9] For instance, a lack of culturally tailored PrEP marketing material limits widespread awareness of PrEP among Black women.[6] Short interactions and limited rapport with healthcare providers have also been shown to dissuade women from open discussions about their sexual health.[7] Factors such as medical mistrust and provider bias may further impact client–provider communication and limit PrEP uptake among Black women.[8,9]

In addition to client-level and system-level barriers, a key contributing factor to the disparity in PrEP access among Black women is a lack of medical provider knowledge and confidence with prescribing PrEP. Although studies have shown that Black women would prefer to receive information about PrEP from trusted primary care

providers (PCPs),[6] PCPs have reported lower familiarity with PrEP prescribing, comfort discussing sexual behavior, and frequency discussing PrEP with clients compared to HIV specialists or infectious disease physicians.[10] In particular, providers report less comfort with and lower frequency of initiating PrEP discussions with cisgender women compared to men who have sex with men (MSM).[11] Lower provider PrEP knowledge has also been associated with lower odds of having prescribed PrEP by PCPs.[12] In fact, a national web-based survey of U.S. PCPs found that only about 16% of respondents reported having prescribed PrEP in 2020.[13] However, higher PrEP knowledge among providers is also associated with increased rates of PrEP prescription and greater future intent to prescribe PrEP.[14] Furthermore, previous work supports the success of culturally tailored trainings in increasing the effectiveness of providers in delivering HIV prevention services to specific client populations, such as cisgender women and Black MSM.[15–17] Therefore, a culturally tailored educational training designed to increase providers' PrEP knowledge and self-efficacy could support efforts to increase rates of providers prescribing PrEP for Black women, particularly among providers who are not Black women themselves.

Studies among Black women have shown that experiences of racial- and gender-related discrimination with healthcare providers is a significant barrier to preventive healthcare, including PrEP access.[18] Research on PrEP awareness, uptake, and persistence among Black women indicates that Black women often perceive their race as a factor contributing to a lack of rapport with their provider and may express discomfort with medical suggestions coming from White providers.[19] Consequently, there is a significant burden on Black female providers to address sexual health matters and HIV prevention/PrEP with Black women.[20] Considering the sociopolitical context of the United States in which a majority of physicians and medical students identify as White, there is a great need for better training to increase provider understanding of the structural determinants underlying barriers to PrEP use among Black women. This training can therefore support improved communication with Black women among non-Black providers while efforts continue to diversify the healthcare workforce.[9,21,22]

Through qualitative focus groups with providers, this study worked to optimize the material, design, and delivery format of a PrEP educational training to address providers' self-reported training needs. In doing so, we aimed to maximize both training benefit and acceptability among providers and, subsequently, improve awareness and prescription of PrEP among Black women.

Methods

The POWER Up (PrEP Optimization among Women to Enhance Retention and Uptake) study aims to increase PrEP uptake among Black women in federally qualified health centers (FQHCs) through a combination of five implementation strategies: electronic medical record optimization, PrEP clinical champions, client education, provider training, and PrEP navigation.[23] To optimize both content and design of the provider training strategy, we conducted focus group discussions with providers at three FQHCs in the Southern and Midwestern United States and utilized a content analysis approach to identify factors informing training development.

Focus groups were conducted from August 2022 to February 2023 with medical providers at three healthcare organizations: one in the Midwest (Illinois) and two in the South (Florida and North Carolina). Though the organizations range in number of individual healthcare centers and available PrEP services, all are FQHCs, community-based organizations that provide affordable primary care to predominantly underserved populations. Participants were eligible to participate if they (1) had the ability to prescribe PrEP, (2) were aged 18 years or older, (3) were currently employed at one of the participating healthcare organizations, and (4) were able to speak and understand English. Exclusion criteria included inability to prescribe PrEP, being aged under 18, not being currently employed at one of the healthcare organizations, and/or inability to speak and understand English. Participants were recruited via convenience sampling through text messages, emails, phone calls, and flyers posted in the FQHCs and were screened for eligibility prior to enrollment. Participants were offered $50 for completion of the focus group and a demographic survey.

Focus groups were facilitated by either a research coordinator (MS degree, cisgender woman, Black/African American) or an associate research professor (PhD and MSW degrees, cisgender woman, White). Field notes were taken during and after the focus groups by another research coordinator (MS degree, cisgender woman, Hispanic/Latina White). All three researchers were female and had extensive experience in qualitative research, including studies focused on sexual health and PrEP use in women. Researchers reported their interest in improving PrEP accessibility, awareness, and use among Black women to all participants prior to eligibility screening and enrollment.

A semi-structured interview guide was developed using the Consolidated Framework for Implementation Research (CFIR), a framework that organizes constructs under five domains of potential influences on implementation.[24] Providers were asked about previous experiences with PrEP training (or lack thereof), their input on the content and design of provider education regarding PrEP, and feedback on preliminary visuals and case scenarios (e.g., CDC flowchart for assessing PrEP candidacy and need for prescription; "Patient reports having multiple sexual partners and recent STI diagnosis but is HIV negative. You treat her symptoms. What do you do next?"). Examples of questions from the guide and their applicable CFIR domains may be

referenced in Appendix Table 1. The full guide is available in the supplemental material. Focus groups were conducted remotely via Zoom. Discussions lasted 45–60 min and were audio recorded and professionally transcribed. Transcripts were not returned to participants for comment and/or correction, but their responses were summarized and repeated back to them for feedback and clarity during the focus group. Transcripts were uploaded for analysis to Dedoose, a cloud-based qualitative analysis platform.[25] After the focus group, participants were invited to complete a brief demographic survey using REDCap software.

Quantitative demographic data were analyzed using descriptive statistics. Functionally, qualitative data were analyzed using a rapid content analysis approach via the Stanford Lightning Report Method (SLRM).[26] The SLRM applies the analytic structure of Plus ("what works"), Delta ("what needs to be changed"), and Insights (participant or evaluator insights, ideas, and recommendations) to dynamic implementation evaluation. For thematic analysis, all coders ($N=3$) reviewed and revised preliminary codes used to develop a codebook based on implementation science determinants outlined in the CFIR, with distinct definitions for each code. The CFIR consists of five domains: intervention characteristics (aspects of an intervention that may affect implementation success, such as relative advantage, adaptability, complexity, and design quality), individual characteristics (the roles applicable to the project), inner setting (the setting in which the intervention is implemented), outer setting (the setting in which the Inner Setting exists, including local attitudes, policies, and laws), and process (the activities and strategies used to implement the intervention).[24]

Next, the codebook was applied by the primary coder to a subset of transcripts, and a secondary coder coded excerpts selected at random using the Dedoose test feature and achieved reliability measured by Cohen's kappa coefficient at >0.80. Most divergences occurred due to omission and upon review were quickly rectified to 100% agreement. Codes were then applied to all transcripts by the primary coder and were reviewed by the two secondary coders for consensus of code application. If consensus was unable to be reached regarding the application of a specific code(s), the primary coder made the final determination. Data saturation was determined when there was a high prevalence of codes applied to distinct themes and no emergence of new themes.

For this analysis, subcodes based on the CFIR framework were developed to identify themes informing the design of the provider training. These subcodes included training content, format, suggestions for how to tailor the material to the needs of both providers and clients, and recommendations for improving intervention uptake among each FQHC's providers. Representative quotes were selected to highlight salient themes. Consolidated Criteria for Reporting Qualitative Research (COREQ) guidelines were followed when preparing the manuscript. The COREQ checklist is available in the supplemental material.

Table 1. Demographics of focus groups participants ($N=10$).

Characteristics	Providers, *n* (%)
Geographic location	
Florida	3 (30)
North Carolina	2 (20)
Illinois	5 (50)
Race[a]	
Black/African American	5 (50)
White	5 (50)
Gender[b]	
Cisgender female	9 (90)
Non-binary/queer	1 (10)
Ethnicity	
Hispanic/Latino	0 (0)
Non-Hispanic/Latino	10 (100)
Job title[c]	
Physician	9 (90)
Pediatrician	1 (10)
Family medicine physician	2 (20)
Delivering family physician, HIV specialist	1 (10)
Physician: no specialty specified	3 (30)
Site medical director	2 (20)
Family nurse practitioner	1 (10)

HIV: human immunodeficiency virus.
[a]Black/African American, White, Asian/Asian American/Pacific Islander, Middle Eastern/Arab American, Native American/American Indian/Alaska Native/Indigenous, and Other. Self-reported.
[b]Cisgender female, cisgender male, transgender female, transgender male, non-binary/queer, and other.
[c]Self-reported via free text response.

Results

Ten medical providers representing three FQHCs across three states completed focus groups (Table 1). All participants had the ability to prescribe PrEP and were active care providers at the time of the focus group. Below we present emergent subthemes informing the design of the provider PrEP training as organized under the CFIR domains, the characterizations of which may be referenced in Appendix Table 1. As most participants reported limited or no previous experience with PrEP training, the majority of subthemes identified are derived from "Insights" under the SLRM, which include recommendations for the content and development of a novel PrEP training for providers. Although the interview guide specifically asked about recommendations to increase PrEP prescription for Black women, some providers referenced women in general in their responses, indicating the potential applicability of certain training aspects to women of all races.

Training content (CFIR: intervention characteristics)

Providers' suggestions of topics to include in the training informed the content of the intervention itself: in particular, the adaptability of the content based on local factors and

resources. Multiple participants recommended addressing HIV risk factors and the epidemiology of emerging HIV infections in their FQHC's geographic area, particularly among Black women, in order to help providers understand the scope of the issue and recognize clients with potential indications for PrEP [SLRM: Insights].

When asked about types of PrEP available in their respective FQHC, one participant stated injectable PrEP (long-acting cabotegravir) was not currently being prescribed, with no plan to implement it in the future. However, participants at this FQHC acknowledged that including material on injectable PrEP in the didactic portion of the training was "good to have just for completeness" (North Carolina) [SLRM: Insights].

Additionally, participants suggested including material relating to the management of clients upon PrEP initiation. This included both didactic content such as client monitoring, frequency of lab testing, and re-evaluation of need for PrEP, as well as interactive scenarios to offer providers a chance to practice discussing common questions, such as side effects or safety of PrEP during pregnancy and breastfeeding, with all women who are starting or interested in starting PrEP [SLRM: Insights].

> "I definitely think that we are often faced with questions about the side effects. . .maybe going over the side effects in office. . .will be beneficial because that way the patient can kind of already anticipate what the plan might be in the event that X were to happen. . ." (North Carolina)

Addressing provider needs (CFIR: individual characteristics)

When discussing the individual characteristics of the providers who would receive the training, participants reported several perceived ways in which providers' existing knowledge and attitudes created unmet training needs [SLRM: Delta]. A recurrent theme, echoed in other domains of the CFIR, was the importance of equipping providers with knowledge of "what a high-risk patient is" (Illinois). By recognizing "that it is important to bring up PrEP when people. . .come in with an STI" (Illinois) or other PrEP indications, providers can ensure they are discussing it with clients most likely to benefit [SLRM: Insights]. However, participants also mentioned that PrEP should be discussed with all women as a "preventive tool in their toolbox just like. . .birth control and condoms" (Illinois) [SLRM: Insights].

> ". . .Thinking about how to start a conversation even when a patient doesn't appear to be especially high risk that lets them know this [PrEP] is something available for them. . . [is an important skillset]." (Illinois)

Another common theme was providers' discomfort with initiating conversations about PrEP with women: for instance, challenges around discussing sensitive topics such as sexual health. Providers' race as an individual characteristic also impacted comfort level, as non-Black providers felt they lacked the cultural sensitivity to appropriately engage Black women in a discussion about PrEP because they "cannot understand. . .their lifetime of experience" (Illinois) [SLRM: Insights].

> "I think what's been challenging for me. . .approaching Black cisgender women is just like how to approach the topic [PrEP], like how to bring it up. . ." (Illinois)

An area of consensus among participants was the utility of interactive role-plays to address barriers relating to providers' existing knowledge and attitudes and build their self-efficacy in discussing PrEP. Though providers agreed on the benefit of role-plays in navigating PrEP discussions with all women, some mentioned they may help White providers practice initiating these discussions with Black women specifically [SLRM: Insights].

> "As a White provider. . .It can be intimidating to have these conversations and I think a dry run or practice run throughs and then giving feedback from someone would be really helpful and then would make providers more likely to feel comfortable or to initiate that conversation [about PrEP with a Black woman] in the future." (Illinois)

Addressing client needs (CFIR: outer setting)

A key aspect of the outer setting was the way in which the demographics and attitudes of the population of clients served by each FQHC informed the training design. Multiple participants mentioned that FQHC providers need to be prepared to engage in conversations about PrEP with a client population that includes a variety of different ages, races/ethnicities, sexualities, levels of PrEP awareness, and concern about HIV acquisition [SLRM: Delta]. For instance, one participant suggested that pediatricians at their location should be prepared to discuss the insurance details and regulations surrounding PrEP prescribing for adolescents [SLRM: Insights]. Another participant mentioned how clients may feel singled out by providers in conversations about HIV based on race or other identifying characteristics: in particular, clients who have racial discordance with their provider, particularly Black women seeing non-Black providers. Participants suggested addressing this perceived provider bias by developing a "culturally sensitive and appropriate [script] to help patients assess their risk. . .without offending them" (Illinois) [SLRM: Delta].

> "I am a White provider, and so that could be challenging at times because I have had patients who—when I've even just mentioned screening them for HIV that they felt like, because of their race and presentation that I chose to target them. So, maybe better ways to phrase it so that it comes off as neutral as it should be for patients because that's what's going to build that bridge to help get people the access and continuity of care." (North Carolina)

Multiple participants also mentioned how client attitudes toward PrEP and HIV, particularly in the instance of clients who do not consider themselves to be at risk for HIV acquisition, can dissuade providers from engaging these clients in PrEP discussions [SLRM: Delta]. These clients include sexually active individuals with a prior history of STIs, as well as those "who have long-term partners with HIV or who their partners may be high-risk" (North Carolina) but who did not themselves engage in high-risk sexual behaviors [SLRM: Insights].

> "What we frequently see [is]. . .a 25-year-old heterosexual female has been to your office with a confirmed STD. . . tested positive for chlamydia then gonorrhea and then something else over the last six months. . .that's the type of patient we were seeing that we need to be having that discussion [about PrEP] with." (Florida)

Participants agreed that providers need to be prepared to respond to varying levels of HIV stigma and concern among women of all races when educating them about PrEP [SLRM: Insights].

> "I definitely think. . .ensuring that we're informed adequately, informing patients of their risk. . .So ensuring that that's really reiterated, because oftentimes, at least what I seem to face when it comes to educating patients isn't so much the stigma with the younger patients, it's more just getting them to understand that there is a risk." (North Carolina)

Optimizing FQHC infrastructure and training delivery (CFIR: inner setting, process)

When framing the inner setting as the resources, staff, and climate of the implementing FQHC, participants shared a number of suggestions about how their FQHC could support uptake of the training intervention among its providers. They proposed that offering an incentive to undergo the training, such as continuing medical education (CME)/maintenance of certificate (MOC) credit or protected time to complete the training, would encourage providers to participate [SLRM: Insights].

> ". . .with how busy we are and how much we have going on, it's hard to get providers to do training if there's no credit or like compensation involved. So, I think it would be very important that they could get CME or MOC credit for doing the training because I think they would be much more likely to do it or complete it if that were the case. . ." (Illinois)

Another theme that emerged was the utility of offering post-training support in order to encourage providers' continued engagement with the material. Suggestions included sharing regular updates along with changes in PrEP guidelines, identifying points of contact at the FQHC for emergent questions or concerns, and creating pocket reference guides to allow providers to revisit material as needed [SLRM: Insights].

> "I think if you could provide quick, almost like pocket resource guides for quick reference, a quick reference guide if questions come up. . .If you're not doing it very frequently [engaging with a client on the PrEP care continuum], let me look and see what I need to do on this follow up. . ." (Florida)

The majority of participants agreed all PCPs at their respective locations should receive PrEP training. They indicated that though family medicine providers may have the most experience with PrEP prescribing, other specialties that provide primary care, such as obstetrics and gynecology and pediatrics, can serve as entry pathways for introducing PrEP to women and adolescents, respectively [SLRM: Insights].

> ". . .I think probably our family providers. . .are the most experienced and comfortable with PrEP in general. But I think that. . .when we don't include our pediatric colleagues who see adolescent women and when we don't include our OB colleagues who do a huge amount of reproductive and sexual health for women, we are missing a big opportunity." (Illinois)

Discussion

Using the CFIR, we identified factors informing the training needs of FQHC providers (individual characteristics), the perceptions and attitudes of their client populations as determined from the providers' perspectives (outer setting), and the climate of the FQHC themselves (inner setting). Participants cited varying degrees of client HIV concern, attitudes toward PrEP/HIV, and potential perceptions of provider bias among clients as barriers to providers in initiating PrEP discussions. In addition, White providers specifically reported difficulty initiating conversations about PrEP with Black women in a culturally sensitive manner, indicating a potential undue burden among Black female providers to address HIV prevention and sexual health issues among their Black women clients. Participants also discussed how their FQHC can support uptake of provider PrEP training through training incentives and post-training support.

Several of the PrEP training needs identified by providers were consistent with previous findings. These include the ability to identify particular PrEP indications among clients while still being comfortable counseling all sexually active clients on PrEP,[27] familiarity with PrEP prescribing guidelines,[27,28] and ability to approach the topic of sexual health with clients.[28,29] We found that anticipated client attitudes or low concern about HIV dissuaded providers from initiating PrEP discussions; other work has identified anticipated judgment from providers as a factor preventing Black women from asking their provider about PrEP.[30] Moreover, White providers across all locations

specifically mentioned being uncomfortable discussing PrEP with Black women. Indeed, studies have shown the negative influence of providers' race, gender, and age biases on PrEP decision-making.[31] A study of medical students' biases demonstrated that Black clients were rated as more likely than White clients to engage in increased unprotected sex if prescribed PrEP, which, in turn, was associated with reduced willingness to prescribe PrEP to the client.[32] Another study testing models predicting providers' willingness to discuss and prescribe PrEP contingent on their racial attitudes found that racial biases manifested in unwillingness to discuss PrEP with Black women, based on the expectation that Black women would have lower PrEP adherence than White women.[33] Our findings, in conjunction with previous research, demonstrate the importance of understanding the ways that racial bias affects client–provider communication and of improving that communication for increased PrEP uptake among Black women. Furthermore, this low comfort level was only reported by White providers, highlighting a potentially unreasonable burden on the part of Black female providers to address sexual health matters and PrEP with Black female clients.

A key theme was the utility of a culturally sensitive script and interactive role-plays to boost providers' self-efficacy in engaging Black women in a discussion about PrEP. To address this, we developed a series of open-ended, neutral prompts to minimize potential bias perceived by clients, as well as prompts to address common client concerns and PrEP misinformation. We also included a variety of case scenarios to offer providers the opportunity to practice discussing PrEP with women with different levels of concern about HIV and goals of care, such as a client who is looking to conceive and has a partner living with HIV. Importantly, while providers acknowledged that the ability to recognize PrEP indications in clients would help them ensure they are discussing PrEP with those most likely to benefit from it, PrEP should have a place in every discussion about sexual health as a preventive tool similar to condoms or birth control. Given that women prefer their provider to intentionally initiate conversations about PrEP and related risk rather than placing the burden of inquiry on the woman, normalizing PrEP in sexual health conversations is crucial to encouraging its uptake.[34] Therefore, the language in the training material encourages a discussion that frames PrEP as an empowering health tool for women, rather than as a risk-based conversation. Providers are given prompts to help them integrate PrEP into existing discussions about sexual health (i.e., "I'm glad we've had some time to talk about your sexual health. I'm trying to let all my women patients know about PrEP and how HIV prevention can support their sexual health.").

Our findings indicate that a comprehensive, culturally tailored PrEP training for providers at FQHCs should include a combination of didactic and interactive material. The didactic portion of the training will educate providers on the impact of HIV on Black women and equip them with the knowledge necessary for prescribing PrEP to cisgender women. This includes information on epidemiology of HIV infections, PrEP indications, side effects, maintenance of therapy, and PrEP during pregnancy and breastfeeding. The interactive portion, consisting of role-plays and culturally sensitive prompts, will give providers an opportunity to practice navigating PrEP discussions with Black women and build self-efficacy around these conversations. A comparison of participants' suggestions and the corresponding components in the final POWER Up provider training, which has been approved for CME credit by the Center for CME at the University of Chicago, may be referenced in Appendix Table 2. We recommend that healthcare centers utilize these components as a guiding framework in the development and roll-out of their own PrEP training for providers. Through a stepped-wedge cluster randomized trial, the 1-h live training will be delivered at each FQHC participating in the POWER Up study with the support of site leadership to optimize participation at each site. We will assess the effectiveness and acceptability of this training in future studies, with the goal of dissemination for use in other FQHCs. Based on findings, we will provide solutions to address any gaps in the training.

Though the POWER Up study represents one of the first implementation science studies aiming to increase PrEP awareness and initiation for Black women specifically, previous work supports the success of a similarly structured provider PrEP training. Sales et al., piloted a 1.5-h PrEP informational training in 2019 for providers at safety net family planning clinics that included material on HIV epidemiology, risk assessment and PrEP counseling, and interactive case scenarios.[17] The authors reported an increase in provider PrEP knowledge and confidence in identifying PrEP-indicated clients post-training. In addition, the majority of women with HIV risk indicators received PrEP education from providers during their visits.[17] These findings support the effectiveness of a training consisting of a combination of didactic and interactive material in increasing PrEP knowledge and self-efficacy among providers at FQHCs.

+++This work must be considered in light of its limitations. First, this study relied on convenience sampling to recruit participants, meaning the perspectives of individuals who decided to take part in the study may have been different from those who decided not to take part. To reduce the likelihood of volunteer bias, the research team ensured the anonymity of participants and offered flexible interview times. Although the sample size was relatively small, data saturation as defined by no emergence of new themes was achieved. Second, while the focus group sample had an equal number of participants who identified as Black/African American and White, it lacked representation among other races and ethnicities and the majority

were cisgender female. Therefore, findings may not represent the full range of provider perspectives, especially cisgender male providers who may face additional barriers to speaking about PrEP with Black women. Importantly, this study's focus on provider perspectives alone means it may not accurately represent what clients, particularly Black women, may want providers to know when approaching them about or discussing PrEP. Additional input from site leadership/management would also improve insight into acceptability among non-provider FQHC staff, while inclusion of more registered nurses and advance practice providers would increase understanding of training needs among non-physician providers. Lastly, the study was conducted within FQHCs in the Southern and Midwestern United States, potentially limiting transferability to other healthcare settings and geographic locations.

Conclusion

A disproportionately high burden of HIV among Black women in the United States makes it vital to improve PrEP awareness and uptake among this population. Improving PrEP knowledge and comfort among providers, particularly among White providers who may lack the necessary skills to engage in culturally competent conversations about sexual health and HIV prevention, is a key strategy for increasing access to PrEP for Black women. We identified a combination of factors that informed the development of a comprehensive PrEP provider training, including provider comfort initiating PrEP discussions, varying degrees of HIV concern among clients, and the need for a supportive implementing climate. The final training will be implemented at participating FQHCs and evaluated through both provider- and client-level outcomes, with the goal of minimizing the burden on Black female providers to address the PrEP needs of Black women. The training will be disseminated for adaptation and use in other healthcare centers nationwide.

Declarations

Ethics approval and consent to participate

This study was approved by the Institutional Review Board at the University of Chicago (IRB21-0971). Verbal informed consent to participate was obtained from all participants, as the study posed no more than minimal risk to participants and the participants were adults and not considered a vulnerable population.

Consent for publication

Not applicable.

Author contributions

Nikki Kasal: Formal analysis; Writing – original draft.
Samantha Devlin: Formal analysis; Investigation; Methodology; Project administration; Validation; Writing – review & editing.
Amy K Johnson: Conceptualization; Formal analysis; Funding acquisition; Investigation; Methodology; Project administration; Resources; Validation; Writing – review & editing.
Alicia Dawdani: Formal analysis; Investigation; Validation; Writing – review & editing.
Ososese E. Enaholo: Investigation; Methodology; Writing – review & editing.
Geoffroy Liegeon: Methodology; Writing – review & editing.
Maria Pyra: Methodology; Writing – review & editing.
Lisa R Hirschhorn: Methodology; Writing – review & editing.
Sadia Haider: Methodology; Writing – review & editing.
Kelly Ducheny: Methodology; Writing – review & editing.
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ORCID iD

Nikki Kasal https://orcid.org/0009-0008-0521-7715

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Appendix

Table 1. Characterization of CFIR domains and sub-domains and their applicable semi-structured interview guide prompts and emergent themes.

CFIR domain	CFIR sub-domain(s)	Example of interview guide question/prompt	Related themes
Intervention characteristics	Design; adaptability	Our project focuses specifically on improving PrEP uptake among Black cisgender women. In thinking about our community of focus, what topics should be included in PrEP training for providers? What is available in your clinic? [in reference to new discoveries in PrEP or new medications]	Training content suggestions, particularly those informed by local factors and the FQHCs available resources
Individual characteristics	Knowledge; self-efficacy	We want to know more about how familiar you are with PrEP and what kind of training you've had on the topic. Now I want to go over some of the content of the existing provider training. I'm interested in your feedback on how we can adapt the content to best serve clinicians at your site	Training needs of providers as informed by their current knowledge and attitudes regarding PrEP
Outer setting	Patient needs	Next, I'd like to describe some case scenarios and hear your feedback on them. [Are there] scenarios you would like to review that have not been presented?	Training needs of providers as informed by the demographics and perspectives of their FQHCs client population
Inner setting	Climate	We are exploring the option of offering CME or MOC credit. What are your thoughts on this format? What type of ongoing feedback or support do you recommend we provide after the training?	Strategies to optimize uptake and acceptability of training at implementing FQHC as informed by its resources, staff, and climate
Process	Engaging; executing	Who should be trained? How often should training be offered? In thinking about your specific clinic environment, how should the training be offered? (modality, in person versus remote)	Strategies to maximize uptake and impact of training through the implementation process (e.g., identifying training recipients, method of training administration)

PrEP: pre-exposure prophylaxis; FQHC: federally qualified health center; CFIR: Consolidated Framework for Implementation Research; CMR: continuing medical education; MOC: maintenance of certificate.

Table 2. Proposed PrEP training curriculum design aspects as informed by provider suggestions obtained from focus group discussions.

Training area	Provider suggestion	Proposed training curriculum design aspect
Didactic content	HIV epidemiology	Material on HIV prevalence and PrEP-to-need ratio (PNR; the ratio of number of PrEP users to new HIV diagnoses in a given year) among cisgender women, with an emphasis on Black women, nationwide and within FQHC region
	PrEP indications	Flowchart to assess indications for PrEP in clients, as seen in the CDC 2021 Updated Clinical Practice Guidelines[4]
	Maintenance following PrEP initiation for cisgender women	Table illustrating recommended laboratory testing and frequency for clients taking PrEP Guidelines for PrEP during pregnancy and breastfeeding
Interactive content	Culturally sensitive PrEP script to minimize perceived provider bias, particularly among Black women	Open-ended, neutral prompts for initiating PrEP discussions, for example: • "There is a medication that can reduce the chance of getting HIV by 99% if taken every day. Would you be open to hearing a little more about that?" • "People's sex lives can be very private. I respect that. I'm not making any assumptions about you or a partner. Instead, I like to tell women about PrEP so they can decide if it's something that has a place in their lives." Prompts to address common concerns and misinformation about PrEP, for example: • "PrEP can be helpful for any sexually active woman. It isn't just for people who have multiple partners or are in a relationship with someone who is living with HIV. It's an extra protection against HIV that can be private and discreet. It's all about each woman making their own choice about their body (about their safety and the safety of their baby)." • "I really appreciate how hard you are working to keep your baby and your body safe. The research we have shows that PrEP is safe for women planning to get pregnant, women who are pregnant, and women who are breast feeding. Babies that are born to moms using PrEP or nursing when they use PrEP don't show any side effects."
	Training providers to navigate conversations with clients with varying attitudes toward PrEP/HIV and concerns about HIV acquisition	Role-play scenarios featuring clients with varying goals of care and attitudes toward PrEP/HIV, for example: • "You are meeting with a new patient who is married and wants a prescription for birth control. *Provider*: I'm glad we've had some time to talk about your sexual health. I'm trying to let all my women patients know about PrEP and how HIV prevention can support their sexual health. *Patient*: How dare you! I've just met you and I don't like what you're implying." • "A patient has a partner living with HIV who often disengages from care. The patient mentions she wants to have children. What would you recommend?"
Support from integrating center	Training incentive (e.g., CME/MOC credit)	The training has been approved for CME credit by the Center for CME at the University of Chicago.

HIV: human immunodeficiency virus; PrEP: pre-exposure prophylaxis; FQHC: federally qualified health center; CDC: Centers for Disease Control and Prevention; CME: continuing medical education; MOC: maintenance of certificate.