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Implementation strategies to screen, refer, and link women involved in the carceral system to PrEP for HIV-prevention

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Abstract

Purpose.—Women involved in the carceral system experience several conditions that increase their risk for HIV (e.g., high rates of substance use, psychiatric disorders, histories of victimization). The purpose of this study is to explore perspectives on potential strategies to connect women in the carceral system to PrEP services.

Design.—We conducted in-depth interviews with 27 women involved in the carceral system eligible for PrEP. Using vignettes, interviews explored attitudes, barriers, and facilitators towards PrEP screening, referral, and linkage facilitated via a carceral system stakeholder, an mHealth application, or providing PrEP service referrals during detention via a navigator.

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CONFLICTS OF INTEREST

The authors have no relevant financial or non-financial interests to disclose.

ETHICS APPROVAL

The study was approved by the Institutional Review Board at the University of California San Francisco.

CONSENT TO PARTICIPATE AND PUBLICATION

All participants provided verbal informed consent. Participants provided verbal informed consent regarding publishing their data in aggregate form.

CODE AVAILABILITY

The qualitative codebook may be made available upon request.

AVAILABILITY OF DATA AND MATERIAL

Data may be made available upon request. Due to the sensitive nature of this research and the possibility of identifying participants in the study, we are unable to make qualitative interview transcripts available in a public repository. Portions of translated transcripts (with any identifying information redacted) may be made available upon reasonable request. For additional information please contact the corresponding author.

Findings.—Most women were, on average, 41.3 years, from racial and ethnic minority groups (56% Black/African-American;19% Latinx). Inductive Thematic Analysis revealed carceral system involved women expressed mostly positive attitudes toward carceral system-based PrEP implementation. Younger women were more accepting of and interested in mHealth interventions. Implementation facilitators included leveraging relationships with trusted allies (e.g., “peers”) and existing systems collaborations. Recommended implementation strategies included providing HIV and PrEP-specific education and training for system stakeholders and addressing issues related to privacy, system mistrust, and stigma.

Originality.—Results provide a critical foundation for the implementation of interventions to improve PrEP access for women involved in the carceral system and have important implications for implementation strategies for all adults involved in the carceral system. Improving access to PrEP among this population may also support progress towards addressing national disparities in PrEP uptake; where women, Black, and Latinx populations have substantial unmet need.

Keywords

Carceral system; women’s health; PrEP; HIV-prevention

INTRODUCTION

Oral pre-exposure prophylaxis (PrEP), a fixed-dose combination of two antiretroviral drugs to prevent HIV, has been approved by the Federal Drug Administration since 2012 (Centers for Disease Control and Prevention, 2012). Despite being a powerful HIV-prevention tool (Anderson et al., 2012, McCormack et al., 2016, Choopanya et al., 2013) and being available for a decade, PrEP uptake in the United States (US) remains sub-optimal among cis- and transgender women (Siegler et al., 2018, Sevelius et al., 2020). In 2018 1.2 million Americans had an indication for PrEP (i.e., were identified as being at high risk for HIV acquisition), but PrEP coverage was three times as high among males (20.8%) than females (6.6%) (data on transgender women were unreported) (Harris et al., 2019). While data on PrEP coverage is limited for transgender women, a recent nationally representative study of transgender adults found that PrEP uptake among this population is low (3%) (Sevelius et al., 2020).

There are multilevel challenges to PrEP uptake for cis- and transgender women (Mayer et al., 2020). Known barriers to PrEP use for cisgender women include economic challenges (e.g., housing instability), stigma and discrimination related to substance use and sexual behavior, concerns related to medication cost and side effects, lack of social support, mistrust in the medical system, stigmatizing interactions in healthcare settings, and healthcare setting characteristics (e.g., long wait times, inconvenient hours of operation) (Velloza, 2020, Irungu, 2021, Sullivan et al., 2019, Auerbach et al., 2015, Dauria et al., 2021). In addition to the barriers to PrEP that transgender women share with cisgender women (i.e., lack of awareness, concerns about side effects), transgender women experience unique barriers to PrEP including inadequate access to PrEP in trans inclusive healthcare settings, insufficient supply of gender-affirming and transgender competent care, and placing a higher priority on hormone therapy (Bass et al., 2022, Golub et al., 2013, Harrison et al., 2022, Nieto et al., 2021).

Individuals involved in the carceral system (CS) are at a high risk of HIV with a rate of infection ranging from 3 to 15 times the estimated rate among individuals in the general population (Maruschak, 2012). Women involved in the CS are uniquely vulnerable to HIV infection (Dauria et al., 2021); those who are incarcerated have a higher prevalence of HIV infection than their male counterparts (1.9% versus 1.4%, respectively) (Maruschak, 2012, Abiona et al., 2009), and more than women living in the community without a history of CS involvement (National Minority AIDS Council, 2002). Women involved in the CS engage in behaviors (e.g., transactional sex work, i.e., exchanging sex for money or other material goods) (Noska et al., 2016) and experience conditions that increase their risk for HIV including high rates of sexually transmitted infections (STIs), psychiatric disorders, substance use, and sexual victimization (Conklin et al., 2000, Jordan et al., 1996, Staton et al., 2003). Moreover, individuals involved in the CS experience unique social and structural-level barriers to healthcare engagement, including poverty, racism, intersectional stigma, healthcare provider bias, and discrimination (Cloud et al., 2020, Dauria et al., 2021, Peterson et al., 2019).

Examining PrEP awareness and acceptability among CS-involved individuals is an emerging area of research (Dauria et al., 2021, Peterson et al., 2019, Ramsey et al., 2021, Rutledge et al., 2018, Feelemyer et al., 2021, Brinkley-Rubinstein et al., 2020). Recent work among women involved in the CS has found that while women are generally unaware of PrEP, they express positive attitudes toward PrEP uptake upon learning of the medication (Dauria et al., 2021, Zaller et al., 2020). While there is ongoing work in this area, there is a paucity of research aimed at identifying potential implementation strategies to connect women involved in the CS to PrEP services (Adams et al., 2021). The present qualitative study therefore explored perspectives on potential strategies to connect women in the CS to PrEP services.

METHODS

Setting.

This study was conducted in San Francisco, California, which has seen an increase in new HIV diagnoses among women from 2014 to 2020 (4.0% to 15.0%, respectively) (San Francisco Department of Public Health, 2020). Notably, most individuals newly diagnosed with HIV in San Francisco, California identify as being part of a racial and/or ethnic minority group (76.7%). A description of study methods is presented elsewhere (Dauria et al., 2021)..

Inclusion Criteria and Sampling

Eligible female-identifying adults (18 to 64 years) include those living in the community with recent involvement in the CS (3 years; i.e., had been detained in jail or prison or under community supervision) who endorsed 1 risk factor that would make them eligible for PrEP using Centers for Disease Control and Prevention criteria (i.e., condomless vaginal or anal sexual activity with a male partner; 4 sexual partners; transactional sex; having a STI diagnosis; injection drug use) (U.S.. Public Health Service, 2014). To capture a range of experiences related to behaviors that may elevate a women's risk for acquiring HIV, we used maximum variation methods to create a sample that varied with relation to recent

injection drug use (IDU; <6 months). Maximum variation seeks to identify key dimensions germane to the area of exploration and seek variation on those dimensions with the goal of developing detailed descriptions and shared patterns along these dimensions (Patton, 2002). We excluded individuals who were already taking PrEP (self-report), were HIV-positive (self-report), or were unable to speak English fluently.

Procedures

Data were collected between January and December 2017.—CS-involved women were recruited at community-based locations (e.g., resource centers for CS-involved women, harm reduction agencies). Prior to in-person interviews, participants were provided a written copy of the consent form and provided verbal consent. The semi-structured interview guide probed about attitudes, awareness, and interest in PrEP. Findings from this component of the interviews have been reported on elsewhere (Dauria et al., 2021). Interviews also included three vignettes of hypothetical PrEP referral and linkage interventions for CS-involved women (Table I). The investigative team (ED, MTS, KC) developed the vignettes to mirror existing referral and linkage strategies for other behavioral health services for this population (e.g., substance use treatment; Vignettes 1 and 3) and to elicit feedback on emergent approaches to refer, link, and deliver health services via mobile health (mHealth) strategies (i.e., those public health or health service-related activities that are supported by mobile devices like tablets, phones, or other personal digital devices; Vignette 2) (Park, 2016). Participants were asked to share their feedback about each proposed intervention and describe their perceived barriers and benefits from intervention participation. Participants completed a socio-demographic questionnaire following their interview and received a \$30 gift card for their study contribution.

Analytical strategy

Interviews were audio-recorded, transcribed, and de-identified prior to analysis. After transcription, study staff reviewed transcripts and developed an initial coding scheme for Inductive Thematic Analysis (Braun and Clarke, 2006). After revising the coding scheme to improve reliability and intercoder agreement, interview transcripts were independently coded by four trained coders. Each pair of coders met to review codes and resolve discrepancies which culminated in a master coded transcript for each interview. Coded data were reviewed with codes organized under major themes and subthemes. Illustrative excerpts were selected to convey identified themes using the respondents' words. Qualitative data were analyzed in Atlas.ti version 7.0 (Berlin, Germany).

Ethics Statement

The study was approved by the Institutional Review Board at the University of California San Francisco. All participants provided verbal informed consent.

RESULTS

Sample characteristics

Twenty-seven CS-involved women participated. Most were non-Hispanic (77.8%) and Black, African, or Haitian (55.6%), and 37.0% were aged 50 years or older (Table II).

A little more than half reported completing education post high school (55.6%), and the average household income was \$0 to \$9,999 (55.6%). In the past 6 months, CS-involved women had an average of 2.8 (SD=2.0) male sexual partners and 63.0% engaged in transactional sex. Roughly one-third identified as recently (< 6 months) engaging in IDU.

Qualitative Results

Participants generally expressed positive attitudes toward vignette content describing potential PrEP referral and linkage interventions.

Acceptability of receiving a referral to HIV-prevention services from CS staff.

—Most participants (both cis and trans gender women) were comfortable having probation officers or other CS-related staff refer them to HIV-prevention services, like PrEP. Most participants reported no preference as to which CS staff member referred them to HIV-prevention services because they reported not having a personal relationship with CS. For example, one participant communicated with their probation officer once a year, while another reported no direct or consistent communication with their probation officer. For a minority of participants open to CS referrals, it was important that the staff providing this type of information was someone with whom they had a trusting relationship.

For those that preferred not to speak with CS staff about PrEP, lack of trust was the most common reason. Perceived prevalence of HIV-related stigma among CS staff was also commonly reported. Participants perceived that CS staff carry stigmatizing attitudes about HIV and behaviors known to increase HIV-risk (e.g., IDU):

Educating the justice system about HIV would be a very good idea, because some of the deputies think they can catch it just by touching you... You can't catch HIV by kissing, touching, eating after somebody...there's a lot of stigma around HIV. ~ Multiracial transgender-woman, 43 years

Other reasons given for not wanting to speak with their probation officer about HIV-prevention included lack of consistent communication and a lack of compassion. Case managers, however, were identified as a group that participants would be receptive to receiving HIV-prevention information from. These participants had mixed perspectives on other stakeholders they would speak to, most notably, healthcare professionals. Several participants identified healthcare providers as being a better source for HIV-prevention referrals, while other participants mentioned experiencing stigmatizing interactions around HIV-prevention with providers who carried negative beliefs about risk behaviors, being CS-involved, or, of particular note, their history of IDU:

When I was like injecting drugs and stuff -- I've had doctors really look down [on me]. I mean obviously -- it's not healthy. It's not a good idea, but you know. I've been treated pretty badly. ~ Hispanic White woman, 34 years, IDU

Lastly, several participants noted they preferred engaging in these conversations with other female-identified individuals, as they were perceived to be more understanding related to how gender and power shaped HIV-risk.

I'd feel more comfortable [with a female], because as females, we don't really feel - especially if it's not our partner, someone you don't really know that well...it's kind of like - it's kind of an awkward topic to bring up. ~ Hispanic White woman, 22-years

Two participants maintained no gender preference, "because... something like that is already in a confidential type of predicament, so it wouldn't matter if that was a male or a female" (Black woman, 19 years).

Transgender women participants shared similar perceptions as their cisgender counterparts to receiving a referral to HIV-prevention services from CS staff; all preferred that the referral be provided from someone with whom they had an established relationship. The gender-identity of the person providing the referral was not of importance.

Leveraging mHealth to receive PrEP service information.—Almost all participants were receptive to using a mobile health application (mHealth) that delivered information on local health services, including PrEP. These participants noted that mHealth offered a platform through which to receive education about and increase accessibility to local health resources; one participant suggesting this would be "one stop shopping."

Participants offered mixed responses when asked if they would like for a mobile application to assist specifically with PrEP services appointment scheduling. Roughly one-third shared that it would be helpful if they could utilize mHealth to schedule appointments to address their forgetfulness and motivate them to utilize services. Participants perceived this to be more convenient and reliable than scheduling in-person or telephonically.

Among participants that were hesitant to engage with mHealth to schedule PrEP-related appointments, privacy concerns were identified as the primary barrier. Specifically, participants mentioned they would only engage with the technology if they were able to omit identifiers (e.g., name, address) and could share information about risk behaviors discreetly. One multiracial participant (51 years) highlighted their privacy-related concerns:

The more that a person can [use mHealth] discreetly, the more a person would be willing to do it... the more discretion that comes with it, the safer a person will feel in engaging.

All participants who expressed reluctance to using mHealth self-identified as being from a racial and/or ethnic minority group, with most being 50 years. In addition to privacy concerns, these participants noted a desire to keep active conversations about HIV-related risk behaviors within healthcare settings. This contrasts with being open to *receiving* PrEP-related information via mHealth technologies (see above).

Transgender women participants were also supportive of and interested in mHealth interventions. This interest, however, was limited to logistical coordination (e.g., PrEP service identification, appointment scheduling). Privacy concerns shaped participants' hesitancy to share personal information related to their risk behaviors into an mHealth platform. Underscoring this hesitancy, one transgender woman (43-years) stated:

[mHealth] won't be my friend, it won't be my family. It would just be me and the tablet... I wouldn't talk to them [mHealth] about my sex life.

There were no differences in perception of mHealth based on a participant's IDU status.

PrEP education and referral in detention.—Nearly all participants agreed that it would be a good idea for someone to begin providing them with information about PrEP while detained. Participants' acceptability was rooted in their perception that there is a greater access to women who are PrEP-eligible, and these early conversations can facilitate interest and adherence. Many explained that jail would be convenient place to acquire this information because they have time to think about their options given that jail disrupts stressors experienced in the community:

There's a lot of injecting population in jail and high risky sexual behavior is not—is not that unusual for a lot of populations—[they] go to jail a lot. I think that that's a good target demographic. Hearing about it in jail, that obviously gives you some time to think about it. ~Hispanic White woman, 34 years, IDU

Participants did not have privacy concerns related to engaging in these conversations in detention as they mentioned having had previous conversations with jail-based healthcare staff. There was variability in when participants wanted to receive PrEP information; ranging from during jail intake, to occurring as part of their reentry health exam, to providing the information after community reentry “because you'll be able to get it on your own” (White, Hispanic woman, 22-years), or a combined approach.

Participants were asked to share who they would prefer to speak to about PrEP during detention. Most shared preferring healthcare staff. Others mentioned that case managers or class facilitators would also be well-equipped to deliver this information. Two participants expressed that they would only be receptive to this information if it were presented by female-identifying staff. Several participants suggested having a peer (e.g., someone with a shared racial or ethnic background, or shared life experiences [e.g., life experience, risk behavior]) deliver HIV-prevention information and resources. One Asian woman (41-years) highlighted this when noting:

It would be even better because at least you're hearing [PrEP information] from somebody that's experienced, that went through it. That's very important. You can suggest something. You can't teach somebody when you don't know yourself what it's about.

DISCUSSION

This qualitative study is among the first to explore the acceptability of potential implementation strategies to connect women involved in the CS to community-based PrEP services. Of the three options discussed (i.e., interventions utilizing existing system staff, those incorporating mHealth, and those integrating peers) all were promising approaches. Findings suggest the context and setting characteristics in which these implementation strategies are delivered will determine successful implementation and uptake. Characteristics to pay particular attention include CS mistrust, and women's self-reported experiences

of discrimination in CS and public health settings based on their intersecting identities (e.g., CS-involvement, IDU). Additionally, systems-level training-needs (e.g., those related to HIV-risks for women, PrEP, CS impact on women's lives) need to be addressed for successful implementation.

Despite reporting pervasive mistrust in the carceral and public health systems, participants in this study were receptive to interventions involving these systems *if* they leveraged relationships with individuals with whom they had existing, trusting relationships (e.g., case manager) or the individuals were perceived to share lived experiences. Results related to women involved in the CS experiencing high levels of system mistrust is consistent with prior research with CS-involved individuals (Dauria et al., 2021, Peterson et al., 2019). Participant's interest in utilizing a peer, via a navigator model, to connect them to PrEP is one potential strategy that may address these concerns. Navigation interventions led by individuals who share personal characteristics, circumstances, or qualities with their clients (as suggested by participants), are ideal because they have demonstrated efficacy in building trust and reducing stigma and discrimination-related barriers to healthcare engagement, particularly among marginalized populations (Okeke et al., 2014, Tobias et al., 2010, Morgan et al., 2015). Peer navigation has been successful in increasing connections to care for HIV-positive populations including those who returning to the community from jail (Koester et al., 2014, Cunningham et al., 2018). To date the efficacy of peer-led PrEP interventions for adults involved in the CS is untested, however, there is ongoing work in this area (National Institutes of Health, 2021, Ramsey et al., 2019, Edwards et al., 2020). This includes work from this group, funded by the National Institutes on Drug Abuse (R34DA050480), aimed at developing and testing a peer-led navigation intervention for CS involved women at risk of HIV acquisition to reduce intersectional stigma and improve linkage to PrEP services.

Women involved in the CS, particularly younger women, reported a willingness to utilize mHealth strategies to support PrEP service referral and linkage. The ability to share information and be linked to needed services without being required to share sensitive information with an untrusted person makes mHealth an appealing modality to deliver intervention content and link individuals with stigmatized health services (like PrEP) (Mason et al., 2015, Heron and Smyth, 2010, Savic et al., 2013). mHealth approaches are efficacious in improving medication adherence among persons with HIV (Maloney et al., 2020), and in improving PrEP adherence, and offer a promising avenue for PrEP initiation with this population (Moore et al., 2018, Liu et al., 2019, Irungu et al., 2021). Studies on utilizing mHealth to support PrEP implementation are currently underway testing efficacy for men who have sex with men (MSM) and transgender women involved with the CS, however, to our knowledge no studies are centered on cisgender women with CS-involvement (Edwards et al., 2020). This area is particularly important in the context of the COVID-19 pandemic, which led to rapid transition to virtual service delivery. The rapid switch from in-person to virtual services did not allow for mHealth interventions to be tailored to the unique needs of populations. Findings suggests that PrEP mHealth interventions may be particularly acceptable for young adult populations. If mHealth strategies are considered for older CS-involved adults, their development and implementation should ensure that their privacy and confidentiality issues are addressed.

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Targeting content and communication channels is imperative to ensure that PrEP messaging is delivered to meet the audience's needs. For example, previous work on PrEP messaging with MSM has shown to be a poor fit for the needs of transgender women, who are often erroneously included with MSM in HIV-prevention communication. Transgender women are keenly aware of this and have noted that their needs, especially around how PrEP might affect hormone use or how its use may impact sex, are unique messages that would need to be used in PrEP communication (D'Avanzo et al., 2021, Bass et al., 2022). Similarly, transgender women's messaging needs are also different from cisgender women's messaging needs (Walters, 2021), indicating the importance of formative work to delineate these differences to inform intervention development. Besides getting the message right, identifying the appropriate communication channels for targeted PrEP messaging is equally important. Differences in how younger and older CS women embraced mHealth is important. While mHealth has become common in health promotion interventions and have been used with some populations to encourage use of and adherence to PrEP (Nelson, 2020), they also must be delivered to people with potentially different communication styles, health literacy levels, and skills (Aungst et al., 2014, Buller et al., 2012). Kreps notes that it is not just the use of mobile communication channels that make mHealth applications effective, it is the ability to match health promoting messages via these mobile technologies to the needs of the audience (Kreps, 2017); a challenging task with a heterogeneous population.

In December 2021, the FDA approved the first injectable treatment for HIV pre-exposure prevention (Apretude; cabotegravir extended-release injectable suspension) (Food and Drug Administration, 2021). This option replaces daily medication adherence with a schedule of two monthly injections for medication initiation, followed by injections given every two months. Previous results from our pilot work demonstrate that women involved in the CS expressed high interest in PrEP delivered via injection (Dauria et al., 2021). Results from the present study highlight important considerations related to the type, timing, and source of PrEP programming which can drive implementation strategies for Apretude among CS-involved women. Notably, future research exploring interventions integrating access to injectable PrEP for CS-involved women may focus on: 1) establishing protocols and standards for injectable PrEP implementation or linkage as part of pre-release planning and post-release support; 2) training CS clinicians or those who work with individuals who have had recent carceral contact, to assess and identify best practices for initiation and administration. Importantly, future research should explore the utility of leveraging mHealth and peer navigation strategies to support injectable medication uptake and adherence.

There are several limitations worth noting. Participating women were recruited based on referrals from agencies providing services to these women in a densely populated city; as a result, findings here may not be indicative of the experiences of CS-involved women who are a) less or not at all engaged with court-related services, or b) reside in non-urban settings where access to services may be scarce. The present study solicits feedback from participants on hypothetical vignettes. Notably, hypothetical responses to hypothetical vignettes may differ from *actual* responses to interventions implemented in the real world. Additionally, data from this study were also collected prior to the beginning of the COVID-19 pandemic, which has radically shifted our healthcare systems, including those related to HIV-prevention and treatment (Dawson, 2020, Armstrong, 2021, Young and

Schneider, 2020). While the pandemic forced rapid innovation in HIV-prevention service delivery (i.e., telehealth PrEP prescription and monitoring, multi-month PrEP prescribing), some evidence suggests that pandemic-related healthcare service closures may have placed certain groups at higher risk of HIV-acquisition (Stephenson, 2021). Given that data were collected prior to the emergence of COVID-19, our findings are unable to shed light on whether and how pandemic-related changes in an individuals' behavior known to elevate risk of HIV acquisition and service delivery systems may shape participants' acceptability and interest in PrEP program implementation. Research is needed to explore whether and how implementation strategies identified here are still perceived to be acceptable and feasible. Despite these limitations, this article makes key contributions to identifying acceptable and feasible points of intervention for HIV-prevention efforts tailored to this population. Further, these findings are timely in the context of the recent approval of Apretude.

CONCLUSION

Our findings provide a critical foundation for the development and implementation of interventions to improve PrEP access among cis- and transgender women involved in the CS and have important implications for implementation strategies for all adults involved in the CS. Importantly, women involved in the CS were open to several different approaches to being referred to PrEP for HIV-prevention, including those incorporating mHealth, existing system staff, and individuals identified as peers. Effective interventions should be multi-level; addressing individual-level barriers to care engagement and access and interpersonal and systems-level barriers. Intervention targets of particular importance would be those addressing the unique and pervasive experiences of stigma and discrimination experienced by this population when accessing health services. Improving access to PrEP among this population may also support progress towards addressing national disparities in PrEP uptake; where women, Black, and Latinx populations have substantial unmet need.

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REFERENCES

- ABIONA TC, BALOGUN JA, ADEFUYE AS & SLOAN PE 2009. Pre-incarceration HIV risk behaviours of male and female inmates. *Int J Prison Health*, 5, 59–70. [PubMed: 25759138]
- ADAMS JW, KHAN MR, BESSEY SE, FRIEDMAN SR, MCMAHON JM, LURIE MN, GALEA S, & MARSHALL BDL 2021. Preexposure prophylaxis strategies for African-American women affected by mass incarceration. *Aids*, 35, 453–462. [PubMed: 33170818]
- ANDERSON PL, GLIDDEN DV, LIU A, BUCHBINDER S, LAMA JR, VUANIRA JV, MCMAHAN V, BUSHMAN LR, CASAPIA M, MONTOYA-HERRERA O, VELOSO VG, MAYER KH, CHARİYALERTSAK S, SCHECHTER M, BEKKER LG, KALLAS EG, GRANT RM, IPREX

- STUDY TEAM, 2012. Emtricitabine-tenofovir concentrations and pre-exposure prophylaxis efficacy in men who have sex with men. *Science translational medicine*, 4, 151ra125–151ra125.
- ARMSTRONG WS, AGWU AL, BARRETTE EP, IGNACIO RB, CHANG JJ, COLASANTI JA, FLORIS-MOORE M, HADDAD M, MACLAREN L, WEDDLE A. 2021. Innovations in Human Immunodeficiency Virus (HIV) Care Delivery During the Coronavirus Disease 2019 (COVID-19) Pandemic: Policies to Strengthen the Ending the Epidemic Initiative-A Policy Paper of the Infectious Diseases Society of America and the HIV Medicine Association. *Clin Infect Dis*, 72, 9–14. [PubMed: 33035296]
- AUERBACH JD, KINSKY S, BROWN G. & CHARLES V. 2015. Knowledge, attitudes, and likelihood of pre-exposure prophylaxis (PrEP) use among US women at risk of acquiring HIV. *AIDS Patient Care STDS*, 29, 102–10. [PubMed: 25513954]
- AUNGST TD, CLAUSON KA, MISRA S, LEWIS TL, HUSAIN I. 2014. How to identify, assess and utilise mobile medical applications in clinical practice. *Int J Clin Pract*, 68, 155–62. [PubMed: 24460614]
- BASS SB, KELLY PJ, BRAJUHA J, GUTIERREZ-MOCK L, KOESTER K, D'AVANZO P, & SEVELIUS J. 2022. Exploring barriers and facilitators to PrEP use among transgender women in two urban areas: implications for messaging and communication. *BMC Public Health*, 22, 17. [PubMed: 34991548]
- BRAUN V. & CLARKE V. 2006. Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3, 77–101.
- BRINKLEY-RUBINSTEIN L, CROWLEY C, MONTGOMERY MC, PETERSON M, ZALLER N, MARTIN R, CLARKE J, DUBEY M, & CHAN PA 2020. Interest and Knowledge of HIV Pre-Exposure Prophylaxis in a Unified Jail and Prison Setting. *Journal of Correctional Health Care*, 26, 36–41. [PubMed: 32105164]
- BULLER DB, FLOYD AHL 2012. Internet-Based Interventions for Health Behavior Change. In: NOAR SM, N. G. H. (ed.) *eHealth Applications: Promising Strategies for Behavior Change*. Routledge.
- CENTERS FOR DISEASE CONTROL AND PREVENTION 2012. CDC Statement on FDA Approval of Drug for HIV Prevention.
- CHOOPANYA K, MARTIN M, SUNTHARASAMAI P, SANGKUM U, MOCK PA, LEETHOCHAWALIT M, CHIAMWONGPAET S, KITISIN P, NATRUJIROTE P, KITTIMUNKONG S, CHUACHOOWONG R, GVETADZE RJ, MCNICHOLL JM, PAXTON LA, CURLIN ME, HENDRIX CW, VANICHSENI S, & BANGKOK TENOFOVIR STUDY GROUP 2013. Antiretroviral prophylaxis for HIV infection in injecting drug users in Bangkok, Thailand (the Bangkok Tenofovir Study): a randomised, double-blind, placebo-controlled phase 3 trial. *The Lancet*, 381, 2083–2090.
- CLOUD DH, BASSETT MT, GRAVES J, FULLILOVE RE & BRINKLEY-RUBINSTEIN L. 2020. Documenting and Addressing the Health Impacts of Carceral Systems. *American journal of public health*, 110, S5–S5. [PubMed: 31967878]
- CONKLIN TJ, LINCOLN T. & TUTHILL RW 2000. Self-reported health and prior health behaviors of newly admitted correctional inmates. *Am J Public Health*, 90, 1939–41. [PubMed: 11111273]
- CUNNINGHAM WE, WEISS RE, NAKAZONO T, MALEK MA, SHOPTAW SJ, ETTNER SL, HARAWA NT 2018. Effectiveness of a Peer Navigation Intervention to Sustain Viral Suppression Among HIV-Positive Men and Transgender Women Released From Jail: The LINK LA Randomized Clinical Trial. *JAMA Intern Med*, 178, 542–553. [PubMed: 29532059]
- D'AVANZO PA, BASS SB, KELLY PJ, BRAJUHA J, GUTIERREZ-MOCK L, SEVELIUS J. 2021. Community Belonging and Attitudes Towards HIV Pre-Exposure Prophylaxis (PrEP) Among Transgender Women. *AIDS Behav*, 25, 2728–2742. [PubMed: 33575901]
- DAURIA EF, LEVINE A, HILL SV, TOLOU-SHAMS M. & CHRISTOPOULOS K. 2021. Multilevel Factors Shaping Awareness of and Attitudes Toward Pre-exposure Prophylaxis for HIV Prevention among Criminal Justice-Involved Women. *Arch Sex Behav*, 50, 1743–1754. [PubMed: 33236275]
- DAWSON L, KATES J. 2020. Delivering HIV Care and Prevention in the COVID Era: A National Survey of Ryan White Providers. Kaiser Family Foundation.

- EDWARDS GG, REBACK CJ, CUNNINGHAM WE, HILLIARD CL, MCWELLS C, MUKHERJEE S, WEISS RE, & HARAWA NT, 2020. Mobile-Enhanced Prevention Support Study for Men Who Have Sex With Men and Transgender Women Leaving Jail: Protocol for a Randomized Controlled Trial. *JMIR Res Protoc*, 9, e18106.
- FEELEMYER JP, KHAN MR, DYER TV, TURPIN RE, HUCKS-ORTIZ C, CLELAND CM, SCHEIDELL JD, HOFF L, MAYER KH, & BREWER RA 2021. Pre-Exposure Prophylaxis (PrEP) Awareness Among Black Men Who Have Sex with Men with a History of Criminal Justice Involvement in Six U.S. Cities: Findings from the HPTN 061 Study. *Archives of sexual behavior*, 50, 2943–2946. [PubMed: 34427848]
- FOOD AND DRUG ADMINISTRATION 2021. FDA Approves First Injectable Treatment for HIV Pre-Exposure Prevention. Drug Given Every Two Months Rather Than Daily Pill is Important Tool in Effort to End the HIV Epidemic.
- GOLUB SA, GAMAREL KE, RENDINA HJ, SURACE A. & LELUTIU-WEINBERGER CL 2013. From efficacy to effectiveness: facilitators and barriers to PrEP acceptability and motivations for adherence among MSM and transgender women in New York City. *AIDS Patient Care STDS*, 27, 248–54. [PubMed: 23565928]
- HARRIS N, JOHNSON A, HUANG Y, KERN D, FULTON P, SMITH DK, VALLEROY LA, HALL I. 2019. Vital Signs: Status of Human Immunodeficiency Virus Testing, Viral Suppression, and HIV Preexposure Prophylaxis — United States, 2013–2018. *MMWR. Morbidity and Mortality Weekly Report*, 68, 1117–1123. [PubMed: 31805031]
- HARRISON SE, PATON M, MUESSIG KE, VECCHIO AC, HANSON LA & HIGHTOW-WEIDMAN LB 2022. “Do I want PrEP or do I want a roof?”: Social determinants of health and HIV prevention in the southern United States. *AIDS Care*, 1–8.
- HERON KE & SMYTH JM 2010. Ecological momentary interventions: incorporating mobile technology into psychosocial and health behaviour treatments. *Br J Health Psychol*, 15, 1–39. [PubMed: 19646331]
- IRUNGU E, KHOZA N, VELLOZA J. 2021. Multi-level Interventions to Promote Oral Pre-exposure Prophylaxis Use Among Adolescent Girls and Young Women: a Review of Recent Research. *Curr HIV/AIDS Rep*, 18, 490–499. [PubMed: 34719745]
- JORDAN BK, SCHLENGER WE, FAIRBANK JA & CADDELL JM 1996. Prevalence of psychiatric disorders among incarcerated women. II. Convicted felons entering prison. *Arch Gen Psychiatry*, 53, 513–9. [PubMed: 8639034]
- KOESTER KA, MOREWITZ M, PEARSON C, WEEKS J, PACKARD R, ESTES M, TULSKY J, KANG-DUFOUR MS, & MYERS JJ 2014. Patient navigation facilitates medical and social services engagement among HIV-infected individuals leaving jail and returning to the community. *AIDS Patient Care STDS*, 28, 82–90. [PubMed: 24517539]
- KREPS GL 2017. The relevance of health literacy to mHealth. *Information Services & Use*, 37, 123–130.
- LIU AY, VITTINGHOFF E, VON FELTEN P, RIVET AMICO K, ANDERSON PL, LESTER R, ANDREW E, ESTES I, SERRANO P, BROTHERS J, BUCHBINDER S, HOSEK S, & FUCHS JD 2019. Randomized Controlled Trial of a Mobile Health Intervention to Promote Retention and Adherence to Preexposure Prophylaxis Among Young People at Risk for Human Immunodeficiency Virus: The EPIC Study. *Clin Infect Dis*, 68, 2010–2017. [PubMed: 30239620]
- MALONEY KM, BRATCHER A, WILKERSON R. & SULLIVAN PS 2020. Electronic and other new media technology interventions for HIV care and prevention: a systematic review. *Journal of the International AIDS Society*, 23, e25439.
- MARUSCHAK LM 2012. HIV in prisons, 2001–2010. *AIDS*, 20, 1–11.
- MASON M, OLA B, ZAHARAKIS N, ZHANG J. 2015. Text messaging interventions for adolescent and young adult substance use: a meta-analysis. *Prev Sci*, 16, 181–8. [PubMed: 24930386]
- MAYER KH, AGWU A. & MALEBRANCHE D. 2020. Barriers to the Wider Use of Pre-exposure Prophylaxis in the United States: A Narrative Review. *Advances in Therapy*, 37, 1778–1811. [PubMed: 32232664]
- MCCORMACK S, DUNN DT, DESAI M, DOLLING DI, GAFOS M, GILSON R, SULLIVAN AK, CLARKE A, REEVES I, SCHEMBRI G, MACKIE N, BOWMAN C, LACEY CJ, APEA V,

- BRADY M, FOX J, TAYLOR S, ANTONUCCI S, KHOO SH, ROONEY J, GILL ON 2016. Pre-exposure prophylaxis to prevent the acquisition of HIV-1 infection (PROUD): effectiveness results from the pilot phase of a pragmatic open-label randomised trial. *The Lancet*, 387, 53–60.
- MOORE DJ, JAIN S, DUBÉ MP, DAAR ES, SUN X, YOUNG J, CORADO K, ELLORIN E, MILAM J, COLLINS D, BLUMENTHAL J, BEST BM, ANDERSON P, HAUBRICH R, & MORRIS SR 2018. Randomized Controlled Trial of Daily Text Messages to Support Adherence to Preexposure Prophylaxis in Individuals at Risk for Human Immunodeficiency Virus: The TAPIR Study. *Clin Infect Dis*, 66, 1566–1572. [PubMed: 29228144]
- MORGAN K, LEE J. & SEBAR B. 2015. Community health workers: a bridge to healthcare for people who inject drugs. *Int J Drug Policy*, 26, 380–7. [PubMed: 25477284]
- NATIONAL INSTITUTES OF HEALTH. 2021. RePORTER: kINSHIP: peer navigators addressing INtersectional Stigma to improve HIV Prevention among criminal-justice involved women [Online]. Available: <https://reporter.nih.gov/project-details/9926752> [Accessed October 20, 2021].
- NATIONAL MINORITY AIDS COUNCIL. Women and HIV/AIDS in Prisons and Jails [Online]. Available: <https://www.nmac.org/wp-content/uploads/2012/08/women-and-hiv-aids-in-prisons-and-jail.pdf> [Accessed November 10, 2022].
- NELSON KM, PERRY NS, HORVATH KJ, SMITH LR 2020. A systematic review of mHealth interventions for HIV prevention and treatment among gay, bisexual, and other men who have sex with men. *Transl Behav Med*, 10, 1211–1220. [PubMed: 33044531]
- NIETO O, FEHRENBACHER AE, CABRAL A, LANDRIAN A. & BROOKS RA 2021. Barriers and motivators to pre-exposure prophylaxis uptake among Black and Latina transgender women in Los Angeles: perspectives of current PrEP users. *AIDS Care*, 33, 244–252. [PubMed: 32449399]
- NOSKA AJ, ROBERTS MB, SUFRIN C, STEIN LA, BECKWITH CG, RICH JD, DAURIA EF, & CLARKE JG 2016. History of Sex Exchange in Women with a History of Incarceration. *J Health Care Poor Underserved*, 27, 149–62. [PubMed: 27133516]
- OKEKE NL, OSTERMANN J. & THIELMAN NM 2014. Enhancing linkage and retention in HIV care: a review of interventions for highly resourced and resource-poor settings. *Curr HIV/AIDS Rep*, 11, 376–92. [PubMed: 25323298]
- PARK Y-T 2016. Emerging New Era of Mobile Health Technologies. *Healthcare informatics research*, 22, 253–254. [PubMed: 27895955]
- PATTON MQ 2002. *Qualitative Research and Evaluation Methods*, London, Sage Publications, Inc.
- PETERSON M, NOWOTNY K, DAURIA E, ARNOLD T. & BRINKLEY-RUBINSTEIN L. 2019. Institutional distrust among gay, bisexual, and other men who have sex with men as a barrier to accessing pre-exposure prophylaxis (PrEP). *AIDS Care*, 31, 364–369. [PubMed: 30227719]
- RAMSEY SE, AMES EG, BRINKLEY-RUBINSTEIN L, TEITELMAN AM, CLARKE J, KAPLAN C. 2019. Linking women experiencing incarceration to community-based HIV pre-exposure prophylaxis care: protocol of a pilot trial. *Addict Sci Clin Pract*, 14, 8. [PubMed: 30832717]
- RAMSEY SE, AMES EG, BRINKLEY-RUBINSTEIN L, TEITELMAN AM, CLARKE J, KAPLAN C, 2021. Linking Women Experiencing Incarceration to Community-Based HIV Pre-Exposure Prophylaxis Care: A Qualitative Study. *AIDS Educ Prev*, 33, 216–233. [PubMed: 34014108]
- RUTLEDGE R, MADDEN L, OGBUAGU O. & MEYER JP 2018. HIV Risk perception and eligibility for pre-exposure prophylaxis in women involved in the criminal justice system. *AIDS Care*, 30, 1282–1289. [PubMed: 29527934]
- SAN FRANCISCO DEPARTMENT OF PUBLIC HEALTH 2020. *HIV Epidemiology Annual Surveillance Report 2019*. San Francisco.
- SAVIC M, BEST D, RODDA S, LUBMAN DI 2013. Exploring the focus and experiences of smartphone applications for addiction recovery. *Journal of Addictive Diseases*, 32, 310–319. [PubMed: 24074196]
- SEVELIUS JM, POTEAT T, LUHUR WE, REISNER SL & MEYER IH 2020. HIV Testing and PrEP Use in a National Probability Sample of Sexually Active Transgender People in the United States. *JAIDS Journal of Acquired Immune Deficiency Syndromes*, 84.
- SIEGLER AJ, MOUHANNA F, GILER RM, WEISS K, PEMBLETON E, GUEST J, JONES J, CASTEL A, YEUNG H, KRAMER M, MCCALLISTER S, SULLIVAN PS 2018. The prevalence

- of pre-exposure prophylaxis use and the pre-exposure prophylaxis-to-need ratio in the fourth quarter of 2017, United States. *Ann Epidemiol*, 28, 841–849. [PubMed: 29983236]
- STATON M, LEUKEFELD C. & WEBSTER JM 2003. Substance use, health, and mental health: problems and service utilization among incarcerated women. *Int J Offender Ther Comp Criminol*, 47, 224–39. [PubMed: 12710367]
- STEPHENSON R, WALSH AR, CHAVANDUKA TMD, SALLABANK G, HORVATH KJ, CASTEL AD, BONAR EE, HIGHTOW-WEIDMAN L, BAUERMEISTER JA, SULLIVAN PS 2021. Widespread closure of HIV prevention and care services places youth at higher risk during the COVID-19 pandemic. *PLoS One*, 16, e0249740.
- SULLIVAN PS, MENA L, ELOPRE L. & SIEGLER AJ 2019. Implementation Strategies to Increase PrEP Uptake in the South. *Current HIV/AIDS reports*, 16, 259–269. [PubMed: 31177363]
- TOBIAS CR, RAJABIUN S, FRANKS J, GOLDENKRANZ SB, FINE DN, LOSCHER-HUDSON BS, COLSON PW, & COLEMAN SM 2010. Peer knowledge and roles in supporting access to care and treatment. *J Community Health*, 35, 609–17. [PubMed: 20300809]
- U.S.. PUBLIC HEALTH SERVICE. 2014. Preexposure prophylaxis for the prevention of HIV infection in the United States - 2014 clinical practice guidelines [Online]. Available: <http://www.cdc.gov/hiv/pdf/prepguidelines2014.pdf> [Accessed February 5, 2016].
- VELLOZA J, KHOZA N, SCORGIE F, CHITUKUTA M, MUTERO P, MUTITI K, MANGXILANA N, NOBULA L, BULTERYS MA, ATUJUNA M, HOSEK S, HEFFRON R, BEKKER LG, MGODI N, CHIRENJE M, CELUM C, DELANY-MORETLWE S, & HPTN 082 STUDY GROUP 2020. The influence of HIV-related stigma on PrEP disclosure and adherence among adolescent girls and young women in HPTN 082: a qualitative study. *J Int AIDS Soc*, 23, e25463.
- WALTERS SM, PLATT J, ANAKARAONYE A, GOLUB SA, CUNNINGHAM CO, NORTON BL, SEVELIUS JM, BLACKSTOCK OJ 2021. Considerations for the Design of Pre-exposure Prophylaxis (PrEP) Interventions for Women: Lessons Learned from the Implementation of a Novel PrEP Intervention. *AIDS Behav*, 25, 3987–3999. [PubMed: 34138377]
- YOUNG SD & SCHNEIDER J. 2020. Clinical Care, Research, and Telehealth Services in the Era of Social Distancing to Mitigate COVID-19. *AIDS and Behavior*, 24, 2000–2002. [PubMed: 32440971]
- ZALLER ND, NEHER TL, PRESLEY M, HORTON H, MARSHALL SA, ZIELINSKI MJ, & BRINKLEY-RUBINSTEIN L. 2020. Barriers to linking high-risk jail detainees to HIV pre-exposure prophylaxis. *PLoS One*, 15, e0231951.

Table I.

Vignettes Provided to Study Participants Proposing Hypothetical PrEP Referral and Linkage Interventions for Women Involved in the Carceral System.

Vignettes presented to women involved in the carceral system

As part of one of your meetings with your probation officer, they ask you if you would be interested in speaking with a healthcare provider about an HIV prevention medication, like PrEP.

As part of one of your meetings with your probation worker, they show you an application on a tablet or phone. In the application you are asked to fill out a few questions about your sexual and drug using behavior. After you answer the questions, the application shows you information about health services, like PrEP in your neighborhood.

Think about the last time you were in jail. As part of your time there, someone approaches you and provides you with information about PrEP and offers to connect you to PrEP services once you are back in the community. This person is called a patient navigator. The role of a patient navigator is to provide support to get connected to health services by overcoming any challenges they face.

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Table II:

Select Characteristics of Women Involved in the Carceral System (N=27)

<i>N</i>	Women Involved in the Carceral System	
	n, mean	(%, SD)
<i>N</i>	27	
Age	41.3	(11.8)
18–34		
35–44		
45–54		
55–64		
Gender		
Male	24	(88.9)
Female	0	(0.0)
Transgender	3	(11.1)
Race		
Black, African, or Haitian	15	(55.6)
White	11	(40.7)
Hispanic	6	(22.2)
Other	10	(37.0)
Level of education		
High school	6	(22.2)
High school diploma or equivalent	6	(22.2)
Some college, no degree	8	(29.6)
Trade school, vocational training, or Associate Degree	3	(11.1)
Bachelor's degree	3	(11.1)
Any graduate education	1	(3.7)
HIV-risk behaviors		
# of male sexual partners	2.8	(2.0)
Transactional sex partner	17	(63.0)
Injection drug use	10	(37.0)
Recent HIV testing	25	(92.3)