Awareness, accessibility and uptake of pre-exposure prophylaxis (PrEP) among cisgender and transgender women at risk of HIV infection

Question

- What are the best practices to improve awareness of and access to PrEP for women at risk of HIV infection (via sexual partners and/or drug use)?
- What are the facilitators of and barriers to PrEP uptake among women at risk of HIV infection?

Key Take-Home Messages

- Women at risk of HIV are underrepresented in PrEP research (1–13). Despite women's increased willingness and interest in taking PrEP (4, 14–18), there is low awareness (19–21) and uptake (2, 4, 17, 18, 22–28) of PrEP. Research has identified various reasons why women at risk may decline PrEP, such as considering themselves to be at a low-risk of acquiring HIV, or concerns about PrEP side effects (29).
- The use of mobile technology (30) and social media (31–33) has been shown to improve PrEP awareness and increase PrEP knowledge among Black and transgender women.
- Improved access to PrEP can be achieved through the implementation of interventions targeting specific populations of women at risk of acquiring HIV (7, 8, 15). Examples include providing PrEP access through pairing screening and treatment of sexually transmitted infections (STIs) with mobile syringe exchange programs for women who inject drugs (15), and ensuring inclusion of PrEP services in gender-affirming programs for transgender women (7).

Rapid Response: Evidence into Action

The OHTN Rapid Response Service offers quick access to research evidence to help inform decision making, service delivery, and advocacy. In response to a question, the Rapid Response Team reviews the scientific and grey literature, consults with experts if required, and prepares a review summarizing the current evidence and its implications for policy and practice.

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- Access to inclusive, non-stigmatizing, affordable PrEP resources (1, 14, 34), as well as the understanding of one's individual HIV risk and the benefits of PrEP (4, 35), could be major facilitators of PrEP uptake.

- Limited PrEP awareness and understanding of one's HIV risk (4, 9, 23, 36–38), concerns about side effects (6, 35, 39, 40), stigma (4, 16, 22, 39), and cost (9, 37, 40, 41) are common barriers impacting PrEP uptake.

- Increasing awareness, accessibility, and uptake of PrEP among transgender women requires innovative and inclusive approaches that address their unique needs and social realities, such as complementary health priorities (e.g., hormone therapy, need of gender-affirming care and services), and social and structural factors (e.g., stigma, transphobia, discrimination) (37, 42).

The Issue and Why it's Important

Women at risk of HIV are confronted with multiple barriers throughout the HIV care continuum, including (but not limited to) stigma, discrimination, and oppression around their HIV status (24, 27, 28, 41, 43, 44). In Ontario, the following groups of women are disproportionately affected by HIV (43, 45–47):

- African, Black, and Caribbean women;
- Indigenous women;
- Transgender women;
- Women who use drugs;
- Women who experience violence; and
- Women who are incarcerated.

In 2020, the number of women living with HIV in Ontario was 4,288 (48). In 2021, 20% (n=97) of all 485 first-time HIV diagnoses in Ontario were among females (49). This does not include Ontario's limited data on testing and diagnoses among transgender and non-binary individuals (49). Of the 97 HIV diagnoses among females in 2021, 30% (n=29) were among African, Caribbean, or Black females, 20% (n=19) among females who use injection drugs, and 8% (n=8) among Indigenous females (49).

Pre-exposure prophylaxis (PrEP) is antiretroviral medication that is effective in reducing the risk of HIV infection in HIV-negative individuals (50). As in all other Canadian provinces and territories, PrEP is only available in pill form in Ontario (50). Long-acting

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injectable formulations of PrEP have been developed but are not yet approved for use in Canada (51). Currently, the following PrEP regimens are available in Canada:

- Daily tenofovir disoproxil/emtricitabine (TDF/FTC) is approved for use in all at-risk populations
- Daily tenofovir alafenamide/emtricitabine (TAF/FTC), containing a different formulation of tenofovir associated with less renal toxicity and a lower impact on bone mineral density relative to TDF (51–53), is approved for use in those with sexual exposures, excluding receptive vaginal intercourse
- On-demand TDF/FTC (2-1-1 PrEP, i.e. taking two pills 2–24 hours before sex, one pill 24 hours after the first dose, and one pill 24 hours after the second dose) is available only for gay, bisexual, and other men who have sex with men, and for transgender women (51), is prescribed off-label but not officially approved by Health Canada.

In Ontario, most of the costs of TDF/FTC PrEP regimen are covered for those eligible for the Ontario Drug Benefit Program, which includes youth (aged 24 and under), low-income seniors, and social assistance recipients; however, deductibles are required from individuals enrolled in the Trillium Drug Program or high-income seniors (54-57). In addition, private health insurance plans usually cover the cost of TDF/FTC in Canada (50). On the other hand, the TAF/FTC PrEP regimen is not covered by most public insurance plans in the country (50).

In 2021, just 2.6% (n=288) of 11,042 individuals given PrEP in Ontario were women (58). It is challenging to determine if PrEP uptake is successful among women due to HIV risk differences between women and men who have sex with men, and further research is needed to inform appropriate PrEP use among women (58). The highest rates of HIV have been consistently observed among gay, bisexual, and other men who have sex with men in Ontario, therefore HIV services, including PrEP, have primarily targeted this population (29, 49). PrEP use in Ontario continues to be dominated by males (58), and reductions in first-time HIV diagnoses among males in recent years have been attributed to PrEP and other HIV prevention efforts (29, 49). However, first-time diagnoses among cisgender and transgender women have not seen similar reductions (29, 49). It has been emphasized that current HIV prevention strategies, which often focus on gay, bisexual, and other men who have sex with men, need to be re-evaluated to better target women (29). The Canadian PrEP guideline was published in 2017 to provide PrEP use recommendations; while detailed, the PrEP guideline has limited information on women (59). Based on different risk categories and other criteria, this guideline provides recommendations on PrEP use for transgender women as well as for people who inject drugs

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and PrEP after heterosexual exposure (59).

Women at risk of HIV infection are underrepresented in PrEP research (1–13); furthermore, PrEP services for women around the world are limited (11). PrEP uptake among populations of women at risk of HIV infection, including women who use drugs (4, 25, 26), Black women (2, 24), and transgender women (2, 22, 23) continues to be low (2, 4, 22–28), despite studies showing women's increased willingness and interest in taking PrEP (4, 14-16). A 2020 study from Chicago surveyed 370 Black cisgender women and found that only 30.3% (n=112) had previously heard of PrEP, despite 70% of the women having access to a regular health care provider (19). Another recent study evaluating psychosocial determinants of PrEP uptake among Black cisgender women at increased risk for HIV in Washington, D.C. found that only 11.9% of respondents (n=35 of 294) had ever heard of PrEP (20).

Interventions to promote PrEP awareness and increase accessibility are critical in expanding PrEP to populations of women at risk of HIV (11, 19). This review will examine best practices to increase PrEP awareness and access, and will determine factors associated with the facilitation of and barriers to PrEP uptake among women at risk of HIV infection.

What We Found

Increasing PrEP awareness

A number of studies examine PrEP awareness and accessibility among women at risk of HIV infection. Most of these studies demonstrate that PrEP awareness among women is low, and many face barriers when accessing it; however, there appears to be limited research on strategies to increase PrEP awareness among women at risk of HIV infection.

A 2021 systematic review explored social media campaigns as a way of increasing PrEP awareness and uptake among young Black and Latine women and men who have sex with men (32). Eight articles were included in the review; women were among the study population in four of these studies, all of which focused on PrEP awareness as a primary outcome (32). These four studies examined different social media sites to improve PrEP perspectives among various populations (31, 33, 60, 61):

- The goal of the study published by Hill *et al.* (2018) was to examine Black women's perspectives by reviewing Facebook comments posted in response to an article about Black women's sexual health (32, 60). The article, which was posted on a page with approximately 200,000 followers at the time the study was conducted, discussed disparities in new HIV diagnoses among U.S. women and promoted daily

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oral PrEP for Black women (32, 60). Facebook comments were categorized based on their PrEP stance; comments favouring PrEP typically supported increasing PrEP awareness among Black women (32, 60). These comments promoted spreading the word to Black women, while others welcomed the introduction of PrEP after a lack of research in HIV prevention among Black women (32, 60). Themes among unfavourable comments were related to PrEP safety concerns, mistrust of government and the pharmaceutical industry, and support for other HIV prevention strategies (32, 60).

- Dehlin *et al.* (2019) evaluated a Chicago-based PrEP campaign, PrEP4Love, that uses health equity and sex-positivity approaches to spread information on PrEP among Black men and women, including transgender women (31, 32). Launched in February 2016, PrEP4Love measured the reach of the campaign through number of views on social media platforms (e.g. Facebook and Instagram), smart advertisements (i.e. advertisements served to individuals across web platforms based on their demographics and browsing history), and PrEP4Love website clicks (31, 32). Over 40 million views were generated over social media platforms; over 24,000 users clicked on PrEP4Love advertisements, while more than 32 million views were due to smart advertisements (advertising attached to word searches on search engines such as Google) (31, 32). Nearly 7 million and 1.7 million views were generated through Facebook and Instagram, respectively (31, 32). Advertisements that gained the most clicks included "HIV & AIDS Prevention" and "HIV Prevention Medication" (31, 32).

- Kecojevic *et al.* (2018) described the most widely-viewed YouTube videos on PrEP published up to October 2016 (32, 33). A total of 217 YouTube videos were analyzed and placed into the following categories: defines PrEP; describes how PrEP works; describes who can use PrEP; promotes PrEP as a safe option; discusses side effects; describes how to obtain PrEP; discusses cost of PrEP; and promotes PrEP use (32, 33). More than 2.3 million cumulative views were observed for all videos; one video published by the U.S. Centers for Disease Control and Prevention (CDC) garnered over 1.2 million views (32, 33). Overall, 83.4% (n=181) of videos promoted PrEP use, and 35.9% (n=78) of the videos described how to obtain PrEP (32, 33).

- McLaughlin *et al.* (2016) evaluated how PrEP information is represented on Twitter (32, 61). Of 1,435 Tweets collected, 744 English-language Tweets were context-analyzed to observe how various issues related to oral PrEP were communicated and identify the sources that disseminated the information (32, 61). Most PrEP-related Tweets

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discussed information on Truvada®, though PrEP-related information on Twitter covered a wide-range of issues including PrEP recipients, adherence concerns, and PrEP side effects (32, 61).

A 2020 study by Johnson *et al.* (2020) examined awareness of and the intention to use PrEP among African American women in Chicago (62). A cross-sectional survey was distributed to sexually active African American cisgender women of reproductive age attending a family planning clinic to evaluate their awareness of and interest in PrEP (62). Of the 109 women who completed the survey, 65% (n=70) of participants had not heard of PrEP prior to the survey (62). Of the participants, 83% (n=90) reported that the primary reason they were not currently taking PrEP was because they were unaware it was available to them (62); 74% of women mentioned they would "probably" or "definitely" take PrEP, with 31% reporting that they were "somewhat" to "very likely" to start PrEP in the next three months (62). Based on the results from the survey, the authors concluded that barriers to uptake may originate from a PrEP knowledge gaps rather than attitudes towards the HIV prevention medication (62).

Johnson *et al.* (2022) published another study evaluating an mHealth intervention application called In the Loop, used in family planning clinics in Chicago to promote PrEP and improve PrEP knowledge (30). Fifty sexually active, young Black women (aged 18-24) were enrolled in the study (30). Before using the mobile app, 60% (n=30) of participants had never heard of PrEP, and 88% (n=44) considered themselves as unlikely to be at risk of HIV infection (30). Based on scores calculated by the app, there was a significant increase in PrEP knowledge after women utilized the mHealth app; total mean scores improved from 2.8 to 4.9 immediately after using the app (30). In addition, 26% (n=13) of participants reported they were "very likely" to initiate PrEP in the next three months after using the application (30).

Enhancing PrEP accessibility

A 2022 study conducted in Ottawa implemented a nurse-led program: the creation of a partnership between a safer opioid supply program and an HIV PrEP program (SOS PrEP-RN [Registered Nurses]) (63). The goal of the study was to increase access to PrEP and provide enhanced PrEP services to people who use drugs, who typically had limited access to the HIV prevention medication (63). The two-part program included active-offer referrals by public health nurses and a PrEP clinic within a sexually transmitted infection (STI) clinic (63). Active-offer referrals involved nurses approaching patients with HIV risk factors and offering them PrEP (63). Nurses discussed PrEP with patients diagnosed with rectal gonorrhea, chlamydia, or a new diagnosis of infectious syphilis within 12 months (63). PrEP was also discussed with previous partner contacts of an individual recently diagnosed with HIV (63). Patients who agreed to the PrEP

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referral and chose to book an appointment at the PrEP-RN clinic for an appointment were booked to see a PrEP-RN nurse (63). The nurse-led PrEP clinic expanded to include people who use drugs enrolled in a safer opioid supply (SOS) program (63). Clients involved in the program were directly approached for recruitment; if they accepted, the intake process for PrEP began immediately (63). These participants obtained daily PrEP medication when presenting for daily medication they were receiving through the SOS program (63). From December 2020 to June 2021, 42 individuals were offered PrEP through the SOS PrEP-RN program, 55% (n=23) participated (63). Of the participants, 43% (n=10) identified as female, 22% (n=5) were Indigenous, and 96% (n=22) were experiencing homelessness (63). Seventeen percent (n=4) had never initiated PrEP, and 65% (n=15) continued to take PrEP (63). Among these 15 individuals, eight identified as female, and five were Indigenous (63). Overall, the SOS PrEP-RN program was able to expand PrEP access to a larger group of individuals at risk of HIV infection, including women who use drugs (63).

Similar to the SOS PrEP-RN study, a retrospective review of the nurse-led HIV prevention service, PrEP-RN, was conducted in Ottawa, focusing on the uptake of PrEP among cis- and transgender women from August 2018 to April 2022 (29). Post-exposure prophylaxis (PEP) was also explored in the study, but will not be discussed further as it is beyond the scope of this review (29). The PrEP HIV prevention efforts included targeted referrals and a nurse-run PrEP clinic, where patients who were identified as being at risk of HIV infection (based on objective risk data or population-based indicators, as determined by nurses) were offered PrEP (29). Overall, 1,866 PrEP referral offers were made within the study period, including 59 cis- and transgender women (3%) (29). Nearly 48% (n=28) of the women offered PrEP declined for various reasons: 35% (n=10) declined PrEP as they considered themselves to be at a low risk of acquiring HIV; 32% (n=9) were uninterested in PrEP; and 21% (n=6) were concerned of PrEP side effects or declined due to external life circumstances (i.e. housing insecurities, mental health challenges) (29). Of the 31 women who accepted a PrEP referral, 65% (n=20) accessed care through the PrEP-RN clinic, the remaining 35% (n=11) were referred to other health care centres in the city (29). Seventeen of the 20 women who accessed care through PrEP-RN met with a nurse: 59% (n=10) were seen by a PrEP-RN nurse at a safer opiate supply site, and 41% (n=7) were seen at the sexual health clinic (29). The authors highlighted how the highest PrEP engagement observed among women was through a safer opioid supply program (29).

Between 2015 and 2016, a study was conducted to describe PrEP eligibility, willingness to use PrEP, and the ability to access PrEP among people who inject drugs recruited from a program that paired screening and treatment of STIs with mobile syringe exchange program services in New Jersey (15). A total of 138 people who inject drugs were recruited from a mobile syringe exchange program and surveyed about their HIV risk behaviours, PrEP eligibility, willingness

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to take PrEP, and utilization of health care services (15). Participants were also screened for STIs (15). Of these participants, 47.1% (n=65) were women; 80.0% (n=52) were White, 6.2% (n=4) were Black non-Hispanic, and 4.6% (n=3) were Hispanic/Latine (15). Regarding sexual orientation, 66.2% (n=43) of women were straight, 29.2% (n=19) self-identified as bisexual, and 4.6% (n=3) self-identified as gay (15). Based on the survey results assessing PrEP accessibility, 47.7% (n=31) of women had an appointment with a health care provider within the last six months, and 35.3% (n=12) of 34 women were uninsured (15). The authors indicate that syringe exchange programs may be a viable access point to identify people who inject drugs who are eligible for PrEP (15). Women were more likely to be eligible for PrEP than men in this study, and one in four women (25%) screened for STIs yielded a positive result compared to one in ten men (10%) testing positive (15). Feeling embarrassed or anxious to talk about PrEP, limited engagement with health care providers, and a lack of health insurance were major barriers to participants accessing PrEP (15).

Klein *et al.* (2019) assessed access to PrEP among 30 transgender women and transfeminine nonbinary individuals (7). At the time of the study, 15 participants were taking PrEP, 15 were not (7). The interviews explored themes related to increasing PrEP interest, accessibility, and uptake (7), and identified strategies to improve PrEP services for these populations including: eliminating the practice of categorizing transgender women and transfeminine nonbinary individuals together with cisgender men who have sex with men; recognizing and supporting the factors associated with HIV risk among this population; ensuring sexual health programs that include PrEP are transgender-inclusive and gender-affirming; and identifying and implementing strategies to enhance community mobilization around PrEP (7).

Women who experience intimate partner violence (IPV) have been associated with increased risk of acquiring HIV (6). In the U.S., a 2009 study that used a nationally representative sample found that women who had experienced IPV within the last year were more than three times more likely to have a diagnosis of HIV than women who did not have that experience (6, 64). Braksmajer *et al.* (2016) explored possible benefits and drawbacks of PrEP use among women in the U.S. experiencing IPV and identified both advantages (i.e. sexual independence, dual protection against sexual and injection risk, facilitated connection to social services) and barriers (i.e. partner resistance, cost, stigma) (8). While the authors did not highlight any best practices, they did present strategies to consider when trying to increase PrEP access for women experiencing IPV (8), including: making PrEP more financially accessible so that women experiencing IPV could confidentially receive medical care that includes health insurance policies that ensure maximum privacy for dependents; and increasing the availability of medication assistance programs to women experiencing IPV who may not be able to access insurance due to fears of violence (8). Interventions focused on empowering

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women experiencing IPV may help them reduce their vulnerability to violent relationships and lead healthier lives (8).

Facilitators of PrEP Uptake

Many studies have highlighted women's willingness to use PrEP (4, 14–18), though uptake of PrEP among women at risk of HIV remains low (2, 4, 17, 18, 22–28), and identified facilitators of PrEP uptake among various populations of women at risk for HIV.

Facilitators of PrEP uptake: Women who use drugs

In a qualitative study, Tross *et al.* (2022) interviewed 16 women using outpatient substance use treatment and syringe service programs in New York City about facilitators of PrEP uptake (4). They identified the following facilitators: perceiving PrEP as effective against acquiring HIV when performing high-risk activities (i.e. substance use and/or transactional sex); PrEP being "effortless" protection (used with or without barrier methods during sex), with one woman explaining the comfort in knowing that PrEP is in their system if barrier methods fail; educating substance-involved women about the benefits of PrEP use, which may enhance positive perceptions and increase PrEP uptake; and the safeness and accessibility of PrEP (4). The authors recommended strategies for best PrEP implementation practices included tailored and venue-specific PrEP information and messaging, PrEP discussions with trusted health care providers, and on-site PrEP prescription dispensing in substance use treatment and harm reduction programs (4).

A syringe services program in Philadelphia implemented and evaluated PrEP among women who inject drugs, recruited from a drop-in program that provided resources and social support to women (65). Eligible women were offered 24 weeks of daily PrEP and completed surveys and clinical assessments at baseline, week 1, 2, 12 and 24 (65). Of 95 women included in the study, 70.8% (n=63) accepted a PrEP prescription in the first week (65). Frequent accessed to the syringe service program was associated with increased PrEP uptake (65). Authors highlighted how PrEP integration with syringe service programs is feasible and acceptable among women who inject drugs (65).

Facilitators of PrEP uptake: African, Black, and Caribbean women

A 2021 study interviewed 44 participants—all of whom were 18 years of age or older and heterosexual—in seven focus groups in North Carolina to understand Black women's perspectives of a salon-based intervention that promoted PrEP uptake (16). Questions focused on the women's relationships with their stylists and other salon customers, the acceptability of and preferences for this type of PrEP intervention, and medical mistrust (16). The types of relationships among Black women at the salon varied: some viewed

38. Braksmajer A, Leblanc NM, El-Bassel N, Urban MA, McMahon JM. Feasibility and acceptability of pre-exposure prophylaxis use among women in violent relationships. AIDS Care. 2019;31(4):475–80.

39. Crooks N, Singer RB, Smith A, Ott E, Donenberg G, Matthews AK, et al. Barriers to PrEP uptake among Black female adolescents and emerging adults. Preventive Medicine Reports. 2023;31:102062.

40. Ogunbajo A, Storholm ED, Ober AJ, Bogart LM, Reback CJ, Flynn R, et al. Multilevel barriers to HIV PrEP uptake and adherence among Black and Hispanic/Latinx transgender women in Southern California. AIDS & Behavior. 2021;25(7):2301–15.

41. Goparaju L, Praschan NC, Warren-Jeanpiere L, Experton LS, Young MA, Kassaye S. Stigma, partners, providers and costs: Potential barriers to PrEP uptake among US women. Journal of AIDS & Clinical Research. 2017;8(9).

42. Rhodes SD, Kuhns LM, Alexander J, Alonzo J, Bessler PA, Courtenay-Quirk C, et al. Evaluating locally developed interventions to promote PrEP among racially/ethnically diverse transgender women in the United States: A unique CDC initiative. AIDS Education & Prevention. 2021;33(4):345–60.

the salon as a space to build relationships with other customers, while others saw the salon only as a place to receive a service; some participants developed social networks with women that extended outside the salon, whereas others did not have any interest in developing and maintaining relationships with other women at the salon (16). However, these differences in salon relationship preferences did not stop women from having conversations about PrEP while others were in the salon (16). The majority of women interviewed were not aware of PrEP and expressed concern about the lack of PrEP knowledge within their communities (16). While a number of women highlighted that they only participated in salon conversations they were comfortable with, it did not necessarily mean that their lack of engagement indicated that they were not listening to the information being shared (16). Overall, the women recognized that PrEP knowledge was critical in improving their own and their community's health, and that sharing information may be empowering (16). The relationships between the women and their hair stylists also varied (16). Some had known their stylist for years, and knowing each other longer was an indicator of trust that could benefit information sharing (16). Many women trusted their hair stylist and were willing to discuss health care topics (16). Some women indicated that they have more trust in their stylist than in their health care providers (16). Conversely, some customers did not want to share personal information with their stylist (16). Overall, the women were not opposed to accepting information regarding PrEP from their stylist (16). The acceptability of a salon-based PrEP intervention increased if the women's stylists were perceived as well-informed about PrEP or had a certification in a health area (16).

A feasibility study protocol for a web-based salon intervention, published in 2022, described the implementation of a community-engagement approach with the goals of: improving knowledge, awareness, uptake, and trust of PrEP; and reducing PrEP stigma among Black women living in Southern U.S. (66). The three-component intervention includes: thorough training on PrEP knowledge and awareness delivered to the stylist; the creation of women-focused entertainment videos and modules that use culturally and socially relevant stories to highlight key messages of HIV, PrEP, and Black women's social contributors to health; and access to a PrEP navigator, an expert who could provide PrEP knowledge and help link participants to PrEP care (66). Data from this study have yet to be published (66).

Motivational interviewing was implemented as an intervention to increase PrEP uptake among Black women in Miami (14). Recruitment was carried out by circulating study information through community-based clinics and organizations or during community events (14). Interested women contacted study staff and were included if they met the criteria of "Recommended Indications for PrEP Use by Heterosexually Active Men and Women" of the CDC clinical practice guidelines (14, 67). Ten of the 56 Black women participated in two sessions, delivered by a Black female clinician, that included content

43. Women & HIV/AIDS Initiative. Populations most impacted. 2020. Available from: https://whai.ca/women-hiv-ontario/populations-most-impacted/ Accessed February 23, 2023.

44. Chittamuru D, Frye V, Koblin BA, Brawner B, Tieu HV, Davis A, et al. PrEP stigma, HIV stigma, and intention to use PrEP among women in New York City and Philadelphia. Stigma and Health. 2020;5(2):240–6.

45. Ontario HIV Epidemiology and Surveillance Initiative (OHESI). HIV diagnosis in Ontario, 2020. 2022. Available from: https://www.ohesi.ca/wp-content/uploads/2022/08/HIV-diagnoses-in-Ontario-2020-REPORT-FINAL-1.pdf Accessed May 29, 2023.

46. Women & HIV/AIDS Initiative (WHAI), Ontario HIV Epidemiology and Surveillance Initiative (OHESI). Women & HIV in Ontario. 2021. Available from: https://whai.ca/wp-content/uploads/2020/01/OHESI-WHAI-Women-and-HIV-in-Ontario-Fact-Sheet.pdf Accessed May 29, 2023.

47. Kouyoumdjian FG, Lamarche L, McCormack D, Rowe J, Kiefer L, Kroch A, et al. 90-90-90 for everyone?: Access to HIV care and treatment for people with HIV who experience imprisonment in Ontario, Canada. AIDS Care. 2020;32(9):1168–76.

on PrEP information, motivational interviewing strategies, and case management (14). The clinician created an affirming environment during the sessions to promote self-love, self-care, sex-positivity, and the use of PrEP as a tool to continue living with these mindsets/attitudes (14). Information was presented via handouts and videos featuring Black female health care and community members (14). The clinician also used motivational interviewing strategies to allow the women to reflect and voice their thoughts and opinions of PrEP, which were further explored (14). Barriers to PrEP were discussed, as were solutions and resources that could be used to overcome those barriers (14). Many common themes emerged from the sessions, including: the enhancement of positive PrEP perceptions; and the women's increased willingness to take care of their own sexual health, utilize PrEP, and promote PrEP use within their communities (14). The study also highlighted the importance of quick, easy access to PrEP (14). During follow-up, three of the participants who started PrEP talked about how they had to persevere in situations that made PrEP uptake and adherence difficult (14). For example, one had to leave three messages for a PrEP navigator after not receiving a callback; another waited for seven hours at a PrEP facility to receive the medication (14). Although these participants obtained PrEP, these types of situations could have deterred many women who wanted to obtain PrEP (14).

Facilitators of PrEP uptake: Transgender women

In two community-based clinical sites in Sacramento and Oakland, California, a peer-led PrEP demonstration project called the Trans Research-Informed Communities United in Mobilization for the Prevention of HIV (TRIUMPH) evaluated PrEP uptake, retention, and adherence among transgender people (34). The interventions included peer health education, clinical integration of PrEP with hormone therapy to promote PrEP knowledge and acceptability, and community mobilization (34). Each intervention is explained in more detail below (34).

- Extensively-trained peer health educators led all TRIUMPH activities and provided PrEP navigation, education, support to the participants (34). These educators also helped individuals find legal services for name changes and asylum procedures, mental health services, and transportation (34).

- Trans-specific PrEP and hormone drop-in clinics were available twice a week in the late afternoon or early evening (34). Peer health educators led group discussions to support health education services, and allow participants to share their own knowledge about PrEP services (34).

- Peer health educators conducted monthly social groups that promoted trans-specific health issues, including discussions about PrEP (34). The Oakland site is a primary care clinic that serves Latine communities in the city, so its

48. Ontario HIV Epidemiology and Surveillance Initiative (OHESI). A snapshot of HIV diagnoses and the HIV care cascade among women in Ontario. 2022. Available from: https://www.ohesi.ca/a-snapshot-of-hiv-diagnoses-and-the-hiv-care-cascade-among-women-in-ontario/ Accessed February 23, 2023.

49. Ontario HIV Epidemiology and Surveillance Initiative (OHESI). HIV testing and diagnosis trends in Ontario, 2021. 2022. Available from: https://www.ohesi.ca/trends-in-hiv-testing-and-diagnoses-in-ontario-in-2021/ Accessed May 30, 2023.

50. CATIE. Pre-exposure prophylaxis (PrEP). 2021. Available from: https://www.catie.ca/pre-exposure-prophylaxis-prep-0 Accessed February 28, 2023.

51. Hempel A, Biondi MJ, Baril J-G, Tan DH. Pre-exposure prophylaxis for HIV: Effective and underused. Canadian Medical Association Journal. 2022;194(34):E1164–E70.

52. Yacoub R, Nadkarni GN, Weikum D, Konstantinidis I, Boueilh A, Grant RM, et al. Elevations in serum creatinine with tenofovir-based HIV pre-exposure prophylaxis: A meta-analysis of randomized placebo-controlled trials. Journal of Acquired Immune Deficiency Syndromes. 2016;71(4):e115.

53. Pilkington V, Hill A, Hughes S, Nwokolo N, Pozniak A. How safe is TDF/FTC as PrEP? A systematic review and meta-analysis of the risk of adverse events in 13 randomised trials of PrEP. Journal of Virus Eradication. 2018;4(4):215–24.

monthly social group meetings included elements that were culturally relevant to the Latina participants (34).

- Community mobilization efforts consisted of peer-led, gender-affirming, sex-positive PrEP education and social marketing strategies that emphasized the need for transgender communities to mobilize to seek complete inclusion in society, gender affirmation, prevent HIV, and explore the benefits of PrEP (34). PrEP champions were also present at a number of TRIUMPH events to assist with community mobilization of PrEP use (34).

From October 2017 to March 2020, the TRIUMPH program enrolled 185 transgender and gender diverse participants; 68% (n=126) of the participants had a transfeminine identity and were classified as transgender women (34). Among transgender women, PrEP uptake was 91%; many participants who enrolled were Latine transgender women, which reflected the demographics of California and the Oakland TRIUMPH site (34). PrEP uptake was high in Oakland (78%) and Sacramento (98%) among all transgender communities, though the Sacramento clinical site's higher uptake numbers may be explained by lower dispensation barriers. The Sacramento site was able to dispense medication directly to participants, whereas the Oakland site operated with an on-site pharmacy (34). Increased levels of PrEP awareness and interest were observed in the Sacramento TRIUMPH site, which contributed to the difference in uptake numbers (34).

A 2016 study by Sevelius *et al.* (2016) focused on facilitators and barriers of PrEP acceptability and uptake among 30 transgender women in San Francisco (1). Qualitative data collected from three focus groups and nine individual interviews were used to evaluate the women's knowledge of, interest in, perceptions of, and concerns about PrEP (1). Factors that facilitate PrEP use including: access to a trans-competent PrEP provider (This was the most commonly identified facilitator of PrEP acceptability with many transwomen considering it a prerequisite in considering PrEP use); being able to incorporate PrEP-related monitoring into their regular hormone use appointments, which would greatly increase their willingness to take PrEP; clinics that were trans-informed (Participants reported avoiding clinics that were not trans-informed.); the ability to engage in and be protected during sex work without having to rely on their "date" to wear a condom (Even outside of sex work, the women felt they had less power to negotiate and engage in safer sex due to transphobia and social isolation, and that PrEP use could provide some protection in these situations) (1).

Two promising, locally-developed interventions are currently being implemented and evaluated through the CDC's Combination HIV Prevention for Transgender Women Project to promote PrEP among racially/ethnically diverse transgender women in the U.S. (42). These interventions were developed through community-

54. Yoong D, Kapler J, Akagi L, Chan S, Symes J, Kelly D, et al. Provincial/Territorial coverage of ARV drugs for HIV prevention across Canada: Pre-exposure prophylaxis (PrEP). 2022. Available from: https://hivclinic.ca/wp-content/uploads/2022/02/2022-Jan_ARV-access-for-PrEP.pdf Accessed August 8, 2023.

55. Ontario Ministry of Health. Get help with high prescription drug costs. 2023. Available from: https://www.ontario.ca/page/get-help-high-prescription-drug-costs Accessed August 8, 2023.

56. Ontario Ministry of Health. Get coverage for prescription drugs. 2023. Available from: https://www.ontario.ca/page/get-coverage-prescription-drugs#section-1 Accessed August 8, 2023.

57. Ontario Ministry of Health. Check medication coverage. 2023. Available from: https://www.ontario.ca/check-medication-coverage/ Accessed August 8, 2023.

58. Ontario HIV Epidemiology and Surveillance Initiative (OHESI). HIV pre-exposure prophylaxis (PrEP) in Ontario, 2021. 2023. Available from: https://www.ohtn.on.ca/wp-content/uploads/2023/04/OHTN-PrEP-report-2021-2023APR06.pdf Accessed May 29, 2023.

59. Tan DH, Hull MW, Yoong D, Tremblay C, O'Byrne P, Thomas R, et al. Canadian guideline on HIV pre-exposure prophylaxis and nonoccupational postexposure prophylaxis. Canadian Medical Association Journal. 2017;189(47):E1448–E58.

based participatory research partnerships (42).

- The first intervention, ChiCAS (Chicas Creando Acceso a la Salud [Girls Creating Access to Health]), was designed to promote PrEP uptake, condom use, and medically-supervised hormone therapy among Spanish-speaking transgender Latinas and is currently being implemented in North Carolina (42). It consists of two four-hour small group sessions led by three well-trained interventionists (42).

- The second intervention, TransLife Care, was designed to address the structural drivers of HIV risk through access to housing, employment, legal services, and medical services, which includes HIV prevention (e.g. PrEP) among racially/ethnically diverse urban transgender women (42). The TransLife Care program follows a patient-centered case management and service delivery model and is delivered through a one day per week drop-in "one-stop shop," known as TransSafe, hosted at two locations in Chicago (42). Linkages are made to the program's services TransWorks (employment), TransHousing (housing), TransLegal (legal), and TransHealth (medical) (42). The medical provider conducts a general health assessment, including assessing sexual health risks and needs for transgender care (including hormone therapy) and HIV prevention and treatment services (42). The provider makes referrals for any necessary continuing care, including PrEP initiation and care or HIV treatment services (42).

If found effective, these two interventions will be among the first to incorporate PrEP with transgender women, thereby contributing to the evidence-based resources that can be used to reduce HIV risk among this population (42).

Facilitators of PrEP uptake: Other populations of women at risk for HIV

Women involved in the criminal justice system experience conditions that increase their risk for HIV (35, 68); previous studies have found higher rates of HIV and STIs among this population (35, 69, 70). Dauria *et al.* (2021) examined multilevel factors that shaped awareness of and attitudes towards PrEP among criminal justice-involved women in California, and while the primary focus was not PrEP uptake, the study did identify facilitators of PrEP use (35). In 2017, 27 interviews were conducted with women involved in the criminal justice system who were at a high risk for HIV (35). Most were from racial and ethnic minority groups: 56% (n=15) were Black/African American; 22% (n=6) were American Indian/Native Hawaiian; and 19% were Latine (n= 5) (35). Many women reported having engaged in high-risk behaviour within the last 90 days: 63% (n=17) in transactional sex; 22% (n=6) had four or more sexual partners; and 37% (n=10) injected drugs (35). The various factors that promoted PrEP use

60. Hill BS, Patel VV, Haughton LJ, Blackstock OJ. Leveraging social media to explore black women's perspectives on HIV pre-exposure prophylaxis. The Journal of the Association of Nurses in AIDS Care. 2018;29(1):107.

61. McLaughlin ML, Hou J, Meng J, Hu C-W, An Z, Park M, et al. Propagation of information about preexposure prophylaxis (PrEP) for HIV prevention through Twitter. Health Communication. 2016;31(8):998–1007.

62. Johnson AK, Fletcher FE, Ott E, Wishart M, Friedman EE, Terlikowski J, et al. Awareness and intent to use pre-exposure prophylaxis (PrEP) among African American women in a family planning clinic. Journal of Racial & Ethnic Health Disparities. 2020;7(3):550–4.

63. Haines M, O'Byrne P. Nurse-led safer opioid supply and HIV pre-exposure prophylaxis: A novel pilot project. Therapeutic Advances in Infectious Disease. 2022;9:20499361221091418.

64. Sareen J, Pagura J, Grant B. Is intimate partner violence associated with HIV infection among women in the United States? General Hospital Psychiatry. 2009;31(3):274–8.

65. Roth AM, Tran NK, Felsher MA, Gadegbeku AB, Piecara B, Fox R, et al. Integrating HIV pre-exposure prophylaxis with community-based syringe services for women who inject drugs: Results from the Project SHE demonstration study. Journal of Acquired Immune Deficiency Syndromes. 2021;86(3):e61.

included: women perceiving themselves to be at risk for HIV; PrEP being an HIV prevention tool that women have control over without partner negotiation; and the availability of public health insurance (35). Overall, women involved in the criminal justice system had positive impressions of PrEP (35).

Barriers to PrEP uptake

Several barriers to PrEP uptake have been identified in the literature and will be discussed below.

Barriers to PrEP uptake: Women who use drugs

The previously mentioned study by Tross *et al.* (2022) also identified barriers to PrEP uptake experienced by women in substance use treatment and syringe service programs, including: low motivation to take PrEP due to perceiving themselves at low risk of HIV infection when not engaged in substance use and/or transactional sex activities; fear of stigma; and concerns about their ability to adhere to the PrEP regimen (4). Most women in the study identified active substance use as a major barrier that would interfere with PrEP use and adherence (4). As the authors explained: "The intersection of PrEP and substance use occurs by diminishing women's motivation to engage in health promoting behaviors, paradoxically at the moment when health promotion is most needed. Women's focus on acquiring drugs directly interferes with their willingness to prioritize adherence to PrEP." (4). The women interviewed in this study recommended promoting PrEP use among substance-involved women, including enhancing strategies targeting PrEP education, dispensing, and adherence (4).

Barriers to PrEP uptake: African, Black, and Caribbean women

One 2019 study surveyed 100 Black cisgender females (aged 13–24) from Chicago to determine barriers to PrEP uptake (39). The most commonly identified barrier was the possibility of side effects: 39% (n=39) of participants were concerned about fevers, vomiting, and pregnancy complications (39). Twelve percent (n=12) reported mistrust of the medical system as a barrier (39). Some participants considered PrEP to be understudied among Black female adolescents and young adults (39). The authors emphasized that medical mistrust within the Black community predates PrEP and is not a new barrier (39). Other barriers included: financial concerns (15%, n=15); lack of PrEP knowledge/misconceptions (9%, n=9); privacy concerns (4%, n=4); and stigma (2%, n=2) (39). Misconceptions and a lack of knowledge about PrEP side effects intersected with and were made worse by medical mistrust (39).

Young Black women (aged 14–24) across rural and urban communities in Alabama who either used PrEP in the past or met the criteria for PrEP use in the last year were interviewed to explore PrEP facilitators

66. Randolph SD, Johnson R, Johnson A, Keusch L. Using PrEP and Doing it for Ourselves (UPDOs protective styles), a web-based salon intervention to improve uptake of pre-exposure prophylaxis among Black women: Protocol for a pilot feasibility study. JMIR Research Protocols. 2022;11(8):e34556.

67. Centers for Disease Control and Prevention: U.S. Public Health Service. Preexposure prophylaxis for the prevention of HIV infection in the United States–2017 Update: A clinical practice guideline. 2018. Available from: https://www.cdc.gov/hiv/pdf/risk/prep/cdc-hiv-prep-guidelines-2017.pdf Accessed February 13, 2023.

68. Kouyoumdjian F, Leto D, John S, Henein H, Bondy S. A systematic review and meta-analysis of the prevalence of chlamydia, gonorrhoea and syphilis in incarcerated persons. International Journal of STD & AIDS. 2012;23(4):248–54.

69. Staton M, Leukefeld C, Webster JM. Substance use, health, and mental health: Problems and service utilization among incarcerated women. International Journal of Offender Therapy and Comparative Criminology. 2003;47(2):224–39.

70. Conklin TJ, Lincoln T, Tuthill RW. Self-reported health and prior health behaviors of newly admitted correctional inmates. American Journal of Public Health. 2000;90(12):1939.

and barriers (36). However, the study identified few facilitators and emphasized barriers to PrEP uptake (36). Of the 41 women eligible to be interviewed, 12 participated (36). Three primary themes regarding PrEP uptake emerged from the interviews (36):

- Sex-related stigma contributes to poor sexual health discussions with educators, health care providers, and parents. Participants highlighted that they had learned how to navigate their own sexual health due to a lack of health care providers and other advocates that provided sexual health advice (36). The authors noted that legislation in Alabama limits sexual health education in public settings, and most participants reported negative experiences with school-based sexual education that "…perpetuated heteronormative and outdated gender norms and potentially exacerbated gender-based violence"

- Intersecting stigmas related to race and gender affect Black women's care-seeking behaviours (36). Participants explained how they have been stereotyped, experienced racism, and needed to advocate for themselves due to health care providers not taking them seriously.

- Although many participants were aware of PrEP, they did not see it as an option for themselves. Reasons included a lack of discourse around HIV with health care providers, limited PrEP awareness, and a decreased perception of HIV risk.

The study examining Black women's perspectives of a salon-based PrEP uptake intervention (discussed earlier), also identified barriers (16). In particular, women were concerned about their privacy and experiencing stigma with PrEP use (16). They worried that others would gossip or learn private information about the women during private conversations related to PrEP at the salon (16). The women preferred discussing this information using alternate messaging (i.e. written materials, signs on the walls, a television monitor presenting health information) accessible at the salon (16).

In 2014, Goparaju *et al.* (2017) held four focus groups with HIV-negative women in the Washington, D.C. metropolitan area, which has a high prevalence of HIV infection (41). The objective was to understand the social and structural barriers to PrEP uptake that African American and Latina women face (41). A total of 20 women took part in the focus groups, including 16 African American participants (41). Women expressed concern that family and friends would question them for taking PrEP and think they are HIV-positive, and that male partners would react with hostility (41). Other barriers included: the stigma of using HIV-related medication; the cost of PrEP; and having to communicate with health care providers about sexual health and their need for PrEP (41). Women highlighted structural barriers that make PrEP unaffordable, including insurance restrictions and

71. Nakasone SE, Young I, Estcourt CS, Calliste J, Flowers P, Ridgway J, et al. Risk perception, safer sex practices and PrEP enthusiasm: Barriers and facilitators to oral HIV pre-exposure prophylaxis in Black African and Black Caribbean women in the UK. Sexually Transmitted Infections. 2020;96(5):349–54.

72. Felsher M, Szep Z, Krakower D, Martinez-Donate A, Tran N, Roth AM. "I don't need PrEP right now": A qualitative exploration of the barriers to PrEP care engagement through the application of the health belief model. AIDS Education & Prevention. 2018;30(5):369–81.

73. West R, Dunkley Y, Wang D, Skipper K, Worrall S, Evans A, et al. Attitudes and factors to PrEP uptake among HIV risk groups across London. 2019. Available from: https://prepster.info/wp-content/uploads/2019/10/PCP-poster-summary.pdf Accessed June 5, 2023. 25th BHIVA Annual Conference.

74. Wolton AJ. Trans:Mission, a community-led HIV testing initiative for trans people and their partners at a London sex-on-premises venue. HIV Nursing. 2018;18(2):24–9.

75. Baldwin A, Light B, Allison WE. Pre-exposure prophylaxis (PrEP) for HIV infection in cisgender and transgender women in the U.S.: A narrative review of the literature. Archives of Sexual Behavior. 2021;50(4):1713–28.

high financial costs associated with PrEP (41). Participants reported that they did not have trusting relationships with their health care providers, and that providers rarely asked about HIV risk behaviors (41). Additionally, the participants were concerned that disclosing any HIV risk behaviours would result in judgemental and negative responses from their health care providers (41).

Other literature highlighted similar barriers: a 2020 study described how Black African and Black Caribbean women in the UK believed that stigma would impact PrEP access and PrEP use, and many women were wary of being seen accessing sexual and reproductive health services at a sexual health clinic due to fears of negative reactions from community members (17, 71).

Barriers to PrEP uptake: Transgender women

A 2021 study looked at multilevel barriers to PrEP uptake and adherence among Black and Hispanic/Latine transgender women in two California cities (40). Researchers interviewed 30 Black and Hispanic/Latine transgender women who were prescribed PrEP after being enrolled in a PrEP demonstration project and ten health care providers who provide PrEP services to transgender women to examine their views on PrEP, and analyze barriers to PrEP uptake (40). They identified individual-, interpersonal-, community-, and structural-level barriers (40). Individual-level barriers included: the cost of PrEP, mental health challenges, substance use, and drug side effects (40). Some transgender women said they were concerned that using PrEP would affect their hormone therapy (40). The interpersonal-level barriers included intimate partner influence and poor communication between patients and their health care providers (40). Community-level barriers included: stigma, negative community opinions, and negative experiences in health care settings (40). For example, health care providers explained how misinformation, myths and medical mistrust among transgender women can dissuade individuals from PrEP use (40). Medical mistrust due to negative experiences (e.g., being misgendered, treated disrespectfully by health care staff) is prevalent among transgender communities and can also push people away from accessing health care (40). Structural-level barriers included: unemployment (e.g., a lack of stable employment, irregular work schedules), a lack of access to reliable transportation to clinics, and housing insecurities (40).

Pacifico de Carvalho *et al.* (2019) explored various factors of PrEP uptake among transgender women worldwide including: willingness to use, acceptability, and barriers and facilitators (37). This review found that: the willingness to use PrEP was predominantly high; PrEP facilitators included perceived reduction of HIV risk with PrEP, fear of HIV/AIDS, and reduced dependence on partners (37); and common barriers included concerns about side effects, cost, impact on hormone therapy, adherence, PrEP-related stigma, and interaction with health care workers (37). Note: only eight of the 17

76. Poteat T, Wirtz A, Malik M, Cooney E, Cannon C, Hardy WD, et al. A gap between willingness and uptake: Findings from mixed methods research on HIV prevention among Black and Latina transgender women. Journal of Acquired Immune Deficiency Syndromes. 2019;82(2):131–40.

77. Restar AJ, Kuhns L, Reisner SL, Ogunbajo A, Garofalo R, Mimiaga MJ. Acceptability of antiretroviral pre-exposure prophylaxis from a cohort of sexually experienced young transgender women in two U.S. cities. AIDS & Behavior. 2018;22(11):3649–57.

78. Dang M, Scheim AI, Teti M, Quinn KG, Zarwell M, Petroll AE, et al. Barriers and facilitators to HIV pre-exposure prophylaxis uptake, adherence, and persistence among transgender populations in the United States: A systematic review. AIDS Patient Care & STDs. 2022;36(6):236–48.

79. Horvath KJ, Todd K, Arayasirikul S, Cotta NW, Stephenson R. Underutilization of pre-exposure prophylaxis services among transgender and nonbinary youth: Findings from Project Moxie and TechStep. Transgender Health. 2019;4(1):217–21.

80. Wilson E, Chen Y-H, Pomart WA, Arayasirikul S. Awareness, interest, and HIV pre-exposure prophylaxis candidacy among young transwomen. AIDS Patient Care & STDs. 2016;30(4):147–50.

studies were conducted in high-income settings (37). Two of the studies that discussed PrEP uptake barriers among transgender women are described in detail below.

- Sevelius *et al.* (2016), previously mentioned in this review, found that a major barrier to PrEP uptake was the lack of trans-inclusive PrEP marketing; participants explained how the general perception is that PrEP is for white, gay men with high socioeconomic status (1, 37). PrEP was also seen as an HIV prevention option for financially stable individuals with a secure future, which was a sense of security that the participants did not share (1, 37). The women pointed out the obvious lack of trans-specific PrEP services and information given their resource-constrained lives (1, 37). Another major barrier to PrEP acceptability and uptake among transgender women was the concern that PrEP would negatively affect their hormone therapy (1, 37). Other barriers included: the burden of having to manage multiple medical appointments and medications; medical mistrust and avoidance of health care settings due to HIV-related stigma and transphobia; a lack of stability in the women's lives; and substance use affecting their ability to adhere and maintain to a PrEP regimen (1, 37).

- Wood *et al.* (2017) explored themes regarding attitudes towards PrEP among young transgender women living with and at risk of HIV infection (9, 37). Of the 25 participants, 28% (n=7) were currently using or intended to start using PrEP (9, 37). Reasons that the women were taking and adhering to PrEP included: maintaining their HIV-negative status; wanting to benefit and protect the transgender community (reported by 32% [n=8] of participants) (9, 37). Many participants identified cost as a key barrier. While PrEP can be covered by some programs and insurance plans, women who are not eligible may have to pay high out-of-pocket costs which can limit their access (9, 37). Some women reported that PrEP is not financially accessible due to their low socioeconomic status (9, 37). For many, their hormones were a higher financial priority than HIV prevention (9, 37). Others were concerned about PrEP-related stigma and the burden of having to adhere to a PrEP regimen (9, 37). Finally, some women did not perceive themselves as engaging in high-risk behaviours, which they felt did not warrant PrEP use (9, 37).

One U.S. study published more recently examined facilitators and barriers to PrEP use among transgender women in Philadelphia and Sacramento (22). A total of 34 participants participated in focus groups: 20 in Philadelphia, 14 in Sacramento (22). A total of 82% (n=28) participants identified as transwomen, 44% (n=15) were African American, 21% (n=7) were Latine, and 63% (n=20) had experienced homelessness (22). Of all the women, 76.5% (n=26) had never heard

81. Demart S, Gerard E. The construction of pre-exposure prophylaxis (PrEP) by prevention professionals as a tool for Black African migrant women ... or not? AIDS Education & Prevention. 2022;34(6):496–511.

82. Willie TC, Keene DE, Kershaw TS, Stockman JK. "You never know what could happen": Women's perspectives of pre-exposure prophylaxis in the context of recent intimate partner violence. Women's Health Issues. 2020;30(1):41–8.

of PrEP from their provider, though 70.6% (n=24) had heard of PrEP from a family member, friend, or community member (22). Overall, 33.3% (n=11) had used PrEP before (22). Common barriers included: concerns about the interaction between PrEP and hormone therapy; the burden of taking more medication; HIV stigma; and poor health care experiences (22).

Malone *et al.* (2021) assessed PrEP uptake among 1,293 sexually active transgender women (i.e. PrEP indicated) (23). Participants were recruited across six U.S. cities (Atlanta, Baltimore, Boston, Miami, New York City, and Washington, D.C.) (n=747) and through an online cohort (n=546) – of whom, 47% (n=611) met the criteria for PrEP (23). Researchers followed participants for two years to estimate HIV incidence, observe factors related to HIV acquisition and identify factors associated with self-perceived low to no HIV risk (23). Of the 504 participants for whom data on self-perceived HIV risk were available, 55% (n=277) perceived themselves as being at low or no risk for HIV infection (23). The authors note that some research has found that a lower perception of HIV susceptibility can be an important barrier in PrEP uptake (72), and highlighted the importance of addressing these factors (23). Factors associated with a lower perception of HIV risk included younger age (30 or less), greater educational levels (some college or more), and high social support (23).

A 2023 review exploring facilitators and barriers to PrEP uptake among cisgender and transgender women in the UK included 20 studies and seven conference abstracts (17). Whelan *et al.* (2023) highlighted a few facilitators observed throughout the literature (e.g., personal social networks, free PrEP), but the majority of results focused on barriers among various populations of cisgender and transgender women (17). One key barrier to PrEP uptake among transgender people was the possibility of potential interactions between PrEP and gender-affirming hormonal therapy (17, 73, 74). However, Whelan *et al.* (2023) highlighted one U.S. study which discussed how transgender women's concerns regarding the interaction between PrEP and gender-affirming therapy did influence PrEP uptake (17, 75). These interaction concerns have also been expressed by transgender women in a number of additional articles, and they affect PrEP uptake, willingness, and awareness (76-80). The authors noted that the data provided in the studies frequently did not separate transgender men from transgender women, making it more difficult to assess the key factors specific to transgender women (17, 73, 74).

Barriers to PrEP uptake: Other populations of women at risk of HIV

A Belgian study looked at the experience of Black African migrant women—a population that is absent from the PrEP eligibility criteria, despite being a key population affected by HIV (81). From interviews with HIV prevention professionals, the authors identified a number of factors contributing to migrant women's absence from the PrEP delivery system (81), including the lack of: experience with this population (migrant women are not the "target population" of many HIV prevention professionals); representation within the health system (migrant women may have had limited representation in PrEP delivery, daily prevention practices, and advocacy engagement within the health system); and PrEP knowledge among these women (81).

A study by Dauria *et al.* (2021) (previously discussed in the context of PrEP facilitators) also identified PrEP uptake barriers among women involved with the criminal justice system in California, such as: concerns about PrEP medication side effects, distrust in HIV prevention mechanisms, and a lack of local HIV prevention efforts (35).

As mentioned earlier in the review, women who experience IPV have a higher risk of HIV infection (6). Caplon *et al.* (2021) conducted interviews with PrEP eligible cisgender heterosexual women experiencing IPV, reproductive health providers, PrEP providers, and IPV service providers in the Northeast U.S. to identify PrEP uptake barriers among this population (6). The researchers found a consistent lack of PrEP knowledge among reproductive health providers, IPV service providers, and women experiencing IPV (6). Outside of PrEP providers, most providers felt unprepared to discuss PrEP or were concerned they would alienate the women by asking sensitive questions (6). Other barriers to PrEP uptake identified by both women and providers included: HIV and PrEP stigma, a lack of PrEP promotion to

women, cost, and transportation (6). In addition, women were concerned about PrEP side effects—a concern that was not voiced by providers (6).

Other studies also focused on PrEP uptake barriers among women experiencing IPV:

- Willie *et al.* (2020) interviewed 19 women living in Connecticut who reported physical and/or sexual IPV in the past six months (82), and analyzed women's perspectives and engagement in the PrEP care continuum when experiencing IPV in a relationship (82). Some participants identified relationship power struggles as a barrier to accessing PrEP (82). Many women shared experiences highlighting their lack of power during sexual decision making in their relationships (i.e. partners are controlling, unwilling to compromise) (82). Other barriers included: participants being concerned and/or fearful of their male partner's reaction to them showing interest in or using PrEP; and only using PrEP during times when participants perceived themselves as being at risk for HIV infection (82).

- A 2019 U.S. study interviewed 26 women experiencing IPV within the last six months to explore feasibility and acceptability of PrEP use (38). While more than half the women were interested in using PrEP, they identified multiple barriers (38). A third of the women were concerned about side effects, and almost 50% were worried about long-term health issues that may arise due to PrEP use (38). Many participants did not perceive themselves to be at risk of HIV infection even though most women were in non-monogamous relationships and had experienced partner infidelity that led to STI acquisition (38). Nearly half of the women said their partners would become angry if condom use was suggested; one woman reported that her attempts to refuse sex would often result in violence (38). Possible partner violence was another barrier identified throughout the interviews: one woman said the lack of autonomy she had due to IPV would deter her from PrEP use (38). One participant was offered PrEP due to IPV but did not accept due to the fear that her partner would discover her PrEP use (38). The women also did not prioritize HIV because of the IPV; HIV was considered a lower priority compared to the danger they faced in their relationships (38).

Factors That May Impact Local Applicability

Women comprise a heterogeneous group of people in terms of HIV acquisition risk, as heterosexual sex, drug use, intimate partner violence, involvement in criminal justice system, gender transition, and many other factors represent unique and complex challenges with a wide variety of impact on PrEP awareness, accessibility, and uptake. A majority of studies reviewed in this Rapid Response were conducted outside of Canada, primarily in the U.S. In addition, despite the disproportionate impact of HIV on Indigenous communities (including women), no research could be identified on PrEP among Indigenous women specifically. Because of these reasons, the findings of this review should be interpreted with caution as they may not be generalizable.

What We Did

We searched Ovid MEDLINE (including Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE® Daily and Ovid MEDLINE® <1946-Present>) using search terms HIV in titles or abstracts AND (PrEP or pre-exposure prophylaxis or preexposure prophylaxis) in titles or abstracts AND (women or female or trans or transgender) in titles or abstracts. Only studies from high-income countries were included. Searches were conducted on January 17, 2023 and results limited to English articles published from 2015 to present. Reference lists of identified articles were also searched. Google (grey literature) searches using different combinations of these terms were also conducted. The searches yielded 901 references from which 82 were included.