Social and structural determinants of health influencing HIV risk and participation across the HIV care cascade

Questions

- What are the social and structural determinants of health associated with/ contributing to increased risk of HIV?
- What are the social and structural determinants of health acting as barriers to the HIV care cascade?

Key Take-Home Messages

- Social and structural factors can shape HIV vulnerability, acquisition, and transmission risk among individuals and across populations (1, 2).
- Social and economic disenfranchisement of neighbourhoods (i.e. neighbourhood disadvantage) is one of the most robust correlates of HIV risk (3). It negatively impacts participation across all stages of the HIV care cascade (4).
- There is a multifaceted and interrelated range of social and structural factors exacerbating the HIV epidemic that impact participation across the HIV care cascade; housing instability (5–9) and stigma (4, 6, 7, 10, 11) are common barriers.
- HIV stigma and discrimination in health care settings create major barriers to HIV prevention, care, and treatment adherence, particularly among marginalized populations. Addressing these issues through targeted interventions and policy changes is crucial for improving health outcomes (12–14).

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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- Health care providers should consider housing instability as a critical factor in managing HIV prevention and treatment, especially for people who use drugs (15–17). Stable housing is a critical factor in improving HIV care outcomes. Interventions such as the "Housing First" approach have improved housing stability, health outcomes, and viral load suppression among people experiencing homelessness (18–20).

The Issue and Why it's Important

Since the onset of the HIV epidemic, Ontario has acknowledged that certain populations—defined by demographic characteristics (including country of birth and race/ethnicity), behaviour or social/systemic factors—have been disproportionately affected by HIV (21). To decrease transmission and improve health outcomes, Ontario's HIV response has targeted these key or priority population groups (21). Key populations for HIV in Ontario include: gay, bisexual and other men who have sex with men, including trans men; African, Caribbean and Black communities; Indigenous peoples; people who inject drugs or share drug equipment; and women (i.e., cis and trans women, including women from the above populations, and other women who face systemic and social inequities, and are more likely to be exposed to HIV through a sexual or drug using partner) (21, 22). In 2022, approximately 72% of positive HIV tests belonged to at least one key population group (21). Additionally, modelling based on 2020 data from the Public Health Agency of Canada estimated that of the 23,380 people living with HIV in Ontario, the majority belonged to at least one of the five key population groups (23).

Additionally, social and structural determinants of health have been acknowledged as significant drivers of the HIV epidemic—especially among but not limited to—key population groups (21, 24). Social determinants of health refer to the conditions in which people are born, grow, live, work, and age; this includes factors like education, employment, social support, and gender (25). Structural determinants are the broader societal, economic, ecological, and political contexts that influence the aforementioned conditions and, consequently, impact overall population health and well-being (25).

The diverse experiences of populations affected by HIV, shaped by social and structural factors, continue to influence an individual's HIV risk, engagement with the HIV care cascade or continuum (i.e. testing, linkage to care, treatment/receiving care, retention in care, and achieving and maintaining viral suppression) and health outcomes (21, 26). Individuals within key populations and groups who remain unaware of their HIV status, underserved, or neglected (i.e., individuals whose experiences are shaped by social and structural factors as named above) often experience overlapping epidemics, also known as "syndemics" (27). Syndemics occur when two or more diseases or health conditions interact within a population, driven by the impact of social and structural factors and inequities; this

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can lead to an increased burden of disease and ongoing health disparities (28). For example, one editorial review highlighting the current trends in the epidemiology of HIV among people who inject drugs in the U.S. identified four HIV outbreaks driven by underlying socioeconomic factors like homelessness and poverty (29). The findings underscore the need to identify evidence-based interventions that also address the underlying socio-structural drivers of HIV and related syndemics (29).

A common strategy observed in effective health interventions is applying a "syndemic lens": this refers to addressing both the medical conditions and nonmedical (i.e. social and structural) determinants of health (e.g. socioeconomic factors and stigma) (30, 31). It is important to not solely focus on biomedical interventions as solutions to adequately stop HIV transmissions (32–34), but rather call for a building of public health and social service safety nets that meet the needs of people at the intersection of multiple vulnerabilities (35). Additionally, there remains a need to apply an approach that combines the biomedical, behavioural, and social/structural interventions to reduce risk of acquiring HIV and improve outcomes across the HIV care cascade (36). In turn, this holistic strategy may mitigate the barriers created by social and structural factors, which affect peoples' ability to stay engaged in the HIV prevention and care cascade (30, 31).

A holistic approach is utilized in Ontario's "HIV Action Plan to 2030" (37). This plan outlined three HIV-related priorities to achieve by 2030: reduce the number of new HIV infections in Ontario, reach the 11% of people living with HIV in Ontario who are undiagnosed and link them to testing and treatment, and reach the 13% of people in Ontario who are diagnosed with HIV but not on treatment to provide the supports they need to improve their health (37). One of the four stated goals is "to reduce stigma, discrimination, and other barriers to optimal health, including social determinants of health", which recognizes the need to address the negative impact of nonmedical factors that influence participation in the HIV care cascade (37). These factors (e.g. housing instability, poverty, employment and stigma/discrimination) may cause some individuals to be more vulnerable to HIV infection and in turn affect their ability to access timely HIV prevention, testing, care, treatment and support services in their community (37). In response, the action plan outlines working through regional service networks to address these social determinants of health (37). The strategy places a strong emphasis on health equity, ensuring that vulnerable populations receive tailored support and resources to overcome these barriers and improve their access to essential HIV services (37). This approach seeks to reduce disparities and create an inclusive environment where all individuals, regardless of their socio-economic status, can receive the care they need (37).

To deliver HIV prevention and treatment to those who need it while ensuring no one is left behind (37), there is a critical need to

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mitigate the harmful social and structural determinants (38) that act as barriers to participation across the HIV care cascade. This review focuses on summarizing the literature on the social and structural determinants of health associated with the increased risks of HIV and the ways these factors may act as barriers to participation across the HIV care cascade.

What We Found

Due to the growing interest of nonmedical factors influencing health and disease, there is a growing body of review papers focused on identifying social and structural factors influencing HIV risk (3, 39, 40) and their role as barriers to participation across the HIV care cascade, including testing (11, 41, 42), linkage to care (5), receiving HIV care (6, 43), adhering to treatment (7, 9, 10), and achieving and maintaining viral load suppression (8, 44).

Overview of social and structural determinants of health

Social and structural determinants of health contributing to HIV risk

Social and structural factors shape HIV vulnerability, acquisition and transmission risk across individuals and populations (1, 2). Key populations and vulnerable groups have an increased risk of HIV infection, influenced and shaped by their behaviour and how they react with their environment (1). Namely, individuals are at an increased risk of acquiring HIV infection if what they are doing, or what they might do if placed in a vulnerable situation, is associated with a high risk of HIV transmission (1). Individuals are in a state of vulnerability if their living conditions are prone to shifting factors, which would place them at risk of contracting HIV (1).

The compounded role of social and structural determinants of health, especially among vulnerable groups and key populations who are at an increased risk of HIV, is documented in the literature (3, 39, 40). One theoretical framework suggests that violence against women plays a significant role in creating a physiological environment conductive to HIV infection via the stress-immune dysregulation pathway (39). Additionally, real-world data have demonstrated evidence of the direct and indirect impacts of structural factors (e.g. violence, stigma, criminalization, poor working conditions) on increasing the risk of HIV and other sexually transmitted and bloodborne infections (STBBIs) among sex workers in high-income countries (40). Furthermore, risks of HIV and other STBBIs are exacerbated by individual-level factors, including mental health issues, substance use, and unprotected sex (40).

A 2021 systematic review examining the relationship between

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neighbourhood-level factors (e.g. poverty) and HIV vulnerability (via sexual behaviours and substance use) in the U.S. found that neighbourhood disadvantage was one of the most robust correlates of HIV vulnerability/risk (3). Neighbourhood disadvantage was found to be a robust correlate in the sense that its effects were not attenuated when other factors such as social support were taken into account when examining its association with HIV risk (3, 45). Neighbourhood disadvantage refers to neighbourhoods characterized by factors such as high rates of poverty, crime, and abandoned buildings, where HIV is more concentrated (3). Behavioural HIV risk, particularly for marginalized groups, is accelerated by the effect of neighbourhood factors such as socioeconomic status, social disorder, and access to health-promoting resources (3, 4). Although it is important to focus on HIV risk behaviours, focusing exclusively on prevention behaviours does not fully clarify the role of neighbourhoods in influencing the HIV epidemic in the U.S. (3, 4). The researchers highlight that the neighbourhood influences on HIV vulnerability are the consequences of systemic laws and policies that maintain racialized inequities, such as residential segregation and inequitable urban housing policies (3). Thus, moving forward, a multi-level, neighbourhood-based approach to undo these injustices is necessary to stop new HIV infections (3).

Social and structural determinants of health acting as barriers to participation across the HIV care cascade

Across all stages of the HIV care cascade

Identifying social and structural barriers to participation across the HIV care cascade is critical for developing a multidisciplinary action plan (46) to improve HIV services, health outcomes, and quality of life (47), while addressing HIV inequalities (4, 48). Additionally, these barriers may be targeted by behavioural and social interventions to promote optimal HIV prevention and care continuum outcomes (48). Reporting on the trends of behavioural and social intervention research in the U.S. between 2020–2021, a review found that interventions at the individual- and population-level have made strides to reduce HIV transmission risk and disease progression by addressing mental health, substance use, stigma, peer and romantic relationships, and structural vulnerabilities (48).

The need to address social and structural barriers is also recognized across the HIV research continuum (49). For example, a 2024 position paper published in *The Lancet HIV* introduced a framework for intersectional, equity-informed, data-driven approach to advance research for HIV, women, and gender diverse people across their lifespan (49). This framework recognizes the need for all women to receive evidence-based HIV prevention, treatment, and care across their lifespan tailored to their unique needs, circumstances, and goals (49). Moreover, this multidisciplinary approach recognizes

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the intersectionality of several factors influencing the health of women across the HIV research continuum such as biological (e.g. age), population (e.g. pregnant and lactating people), structural (e.g. intimate partner violence), social (e.g. substance use) and context specific (e.g. multimorbidity) contributing to HIV prevention, care and outcomes (49).

Research studying how specific locations affect people's health has uncovered the regional inequalities in who participates across the HIV prevention and care cascade (3, 4, 50). These differences highlight how social factors (like income, education, and social support) and location (where people live) may act as a barrier in accessing or staying engaged with HIV prevention, treatment or care services (3, 4). A 2024 systematic review of 44 articles focused on identifying neighbourhood factors that impact participation in the HIV care cascade in the U.S. reported three key study findings (4). Firstly, the researchers found a relationship between care cascade participation and neighbourhood quality; however, not all 36 studies reviewed supported this position (4). Secondly, neighbourhood disadvantage was generally associated with decreased care cascade participation, including HIV testing, care linkage, care engagement and retention, adherence, and viral suppression (4). Lastly, five key neighbourhood factors (socioeconomic status, segregation, social disorder, stigma, and care access) were associated with decreased care cascade participation (4). Furthermore, the researchers noted that some studies showed that HIV care cascade outcomes vary across neighbourhoods based on individuals' race and economic standing (4). For instance, African Americans in disadvantaged areas were less likely to be engaged in care compared to Whites (51), while certain economic factors, like car ownership and access to public transportation (52), were found to positively affect care linkage and viral suppression in high-poverty area zip codes (4).

Testing

HIV testing is influenced by various social and structural factors impeding peoples' ability to receive prompt and timely testing, thereby leaving many people living with HIV unaware and unlinked with care (11, 41, 42). Barriers to testing may arise from social and structural factors that inhibit access to these services, demonstrated by experiences among vulnerable groups such as with migrant women (41), Latino/Hispanic men who have sex with men (11), and Black men who have sex with men (42). A systematic review based on data from 12 papers reported several sociocultural and structural factors influencing late HIV diagnoses among migrant women living in Europe in 2011-2021 (41). The researchers reported a mixture of sociocultural and structural factors acting as barriers to HIV testing (41). Sociocultural barriers included language and communication challenges, stigma, and lack of community testing opportunities (41). Structural factors included poverty, poor living conditions, unclear legal rights, administrative barriers to health care access and lack of testing opportunities (41). The barriers varied by resident country,

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health care system, and country/region of origin (41).

Men who have sex with men report challenges with accessing health care services (11) and report suboptimal HIV testing uptake (42). Among Hispanic/Latino gay, bisexual and other men who have sex with men in the United States, a systematic review comprised of eight unique studies found that having higher education than a high school diploma, health insurance and access to health services, and visiting a health care provider in the past 12 months were some social determinants associated with HIV testing (11). Additionally, limited proficiency in English was associated with reduced odds (OR =0.77, 95% CI=0.60, 0.99) of HIV testing among Hispanic/Latino gay, bisexual and other men who have sex with men (11).

A meta-analysis looking at data from over 42,000 Black men who have sex with men in the U.S. found that while most of them (88.2%) had tested for HIV at least once in their lifetime, fewer had been tested recently (63.4% in past six months) or tested frequently (every three to six months, 42.2%) (42). Additionally, Black men who have sex with men with a lower annual income (≤ USD 20,000 per year), or those who had ever been homeless were more likely to report lower rates of HIV testing, both over their lifetime and in the past year (42).

Linkage to care

One systematic review of 29 studies focused on evaluating barriers and facilitators to linkage to HIV care to inform hepatitis C virus linkage to care strategies for people released from prison (5). Researchers found that the barriers to linkage to HIV care after release from prison were unstable housing, younger age (i.e. <30 years of age), HIV-related stigma, poor provider attitudes, and the lack of transportation and post-release reintegration assistance (5). Authors suggest these findings underscore the importance of using a multi-pronged approach to address several individual-level social, provider-level, and system-level barriers, and may be an appropriate starting point for developing hepatitis C virus linkage to care strategies (5).

Treatment (receiving care)

Syndemics, through the interplay of social and structural determinants of health, create significant obstacles to receiving HIV care (6, 43), adhering to treatment (7, 9, 10), and ultimately achieving and maintaining viral load suppression (8, 44).

A 2024 systematic review of 45 studies, focusing on people living with HIV and co-occurring mental health conditions, found that stigma towards mental health conditions continues to act as a barrier to accessing HIV treatment, which in turn negatively impacts HIV treatment outcomes (6). Furthermore, housing instability and poverty appear to impact mental health and therefore

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impact HIV-related outcomes (6). This review emphasized the mutually reinforcing syndemic effects of co-occurring conditions, namely HIV and mental health (6). It underscores the importance of addressing stigma and social determinants of health in HIV treatment, while integrating mental health services into HIV care to improve outcomes for people living with both HIV and mental health conditions (6). Similarly, another review aimed to identify factors that influence adherence to antiretroviral treatment among people living with HIV who use drugs (43). The researchers found that adherence to antiretroviral treatment among people living with HIV who use drugs varied widely (from 19.3 to 83.9%), and was influenced by factors such as stigma, motivation, active drug use, treatment accessibility, side effects, and routine integration, emphasizing the need for regular assessment of adherence throughout treatment for this specific population (43).

Retention in care

People living with HIV may face numerous individual, social, and structural barriers to optimal antiretroviral adherence (7, 9, 10). A scoping review exploring barriers to antiretroviral therapy adherence among pregnant women in low-, middle- and high-income countries identified eight barriers to retention in care: severe antiretroviral therapy adverse effects, doubts about antiretroviral efficacy, low socio-economic status, cultural and religious beliefs, unsupportive partners, non-disclosure of HIV status, stigma and discrimination, and domestic violence (7). Only one article in the review was conducted in a high-income country (U.S.) (7). This U.S. study surveyed 45 women living with HIV in Atlanta, Georgia to identify barriers to antiretroviral therapy adherence during pregnancy and access patient knowledge of HIV transmission during pregnancy (53). Three individual barriers to antiretroviral adherence were identified in this study: severe antiretroviral therapy adverse effects, doubts about antiretroviral efficacy, and low socio-economic status (7, 53). Majority (75%) of participants reported daily antiretroviral therapy adherence (53). “Forgetting” was the most frequent reason (57%) for missed HIV pills (53). However, other reasons for missed HIV pills were due to side effects (i.e. severe antiretroviral therapy adverse effects) and lack of affordability (i.e. low socio-economic status) (7, 53). Additionally, some mothers thought their HIV medication could be harmful to themselves and their babies (i.e. doubts about antiretroviral efficacy) (7, 53).

Among men who have sex with men, various factors were found to hinder adherence to antiretroviral treatment (10). A 2020 scoping review identified stigma, violence, depression, and substance use as key challenges to antiretroviral therapy adherence among men who have sex with men in the U.S. (10). Black men who have sex with men are severely impacted by these factors (10). The authors of the review noted that despite high rates of HIV among men who have sex with men in the U.S., there is a lack of research on the many contributors to poor antiretroviral therapy adherence among this

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population (10).

Similarly, socially disadvantaged groups (e.g. persons who use drugs, sex workers, homeless individuals), also labeled as “hard-to-reach” by public health and medical researchers, are another population group disproportionately affected by HIV and may face challenges with treatment adherence (9). Hard-to-reach patients are often disengaged from treatment, often missing appointments and not following prescribed medical regimens (9). As a result, antiretroviral therapy becomes ineffective and leads to treatment failure (54). A meta-analysis of 29 observational studies explored the association between hard-to-reach status and optimal antiretroviral therapy adherence among people living with HIV (9). Findings showed that hard-to-reach status resulted in a 45% reduction in the odds of achieving optimal ART adherence compared to odds in the general population (OR=0.55, 95% CI: 0.49–0.62) (9).

Achieving and maintaining viral suppression

A 2022 systematic review and meta-analysis exploring associations between social determinants and HIV treatment outcomes (viral suppression and treatment adherence) in high-income countries found that a social gradient of health persists across the HIV care cascade, where individuals in disadvantaged socio-economic positions experience poorer access to care and worse health outcomes. (8). Although measurement and definition of social determinants of health varied across studies, the review found that people living with HIV who reported material deprivation (which includes measures of deprivation, employment, education, food security, housing, income, poverty/deprivation, socioeconomic status/position and social class) were less likely to be virally suppressed or adherent to antiretroviral therapy (8). For example, people experiencing unstable housing had reduced odds (adjusted OR=0.49; 95% CI 0.34, 0.69) of being virally suppressed (8). Another review, focusing on cisgender women living with HIV in the U.S., reported that substance use, financial constraint, lack of health insurance, HIV treatment regimen, and intimate partner violence were the most common factors negatively associated with viral suppression among this population group (44).

Common barriers influencing HIV risk and acting as barriers to participation across the HIV care cascade

HIV stigma and discrimination in the health care setting

HIV stigma is a significant barrier to improving health outcomes (12, 13), achieving equity in HIV services (55) and participation across the HIV care cascade (14, 56) for people living with HIV in high-income countries as it undermines HIV testing, linkage to care, treatment adherence and viral load suppression (57). A literature review by

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Perger *et al.* (2024) reaffirmed that HIV-related stigma remains a significant barrier to antiretroviral adherence, engagement and retention in HIV care, and transitioning to adult HIV care (56). Likewise, a scoping review of 47 studies examining stigma and HIV-related outcomes among men who have sex with men in the U.S. found that stigma remains a formidable barrier to engaging in HIV prevention and treatment among both people at-risk (people not living with HIV) and people living with HIV (14). On a similar note, Nawfal *et al.* (2024) conducted a systematic review of mostly U.S.-based studies (n=24 of 27) and reported that most studies suggested that internalized stigma, perceived community stigma, and fear of disclosure were important barriers to antiretroviral therapy adherence and retention in care among women living with HIV (58). Additionally, this review found that HIV-related stigma experienced within the health care setting was as a factor impacting health care utilization (58).

Reducing stigma and HIV-related discrimination (59) in the health care setting may be a focus for targeted interventions (60). For example, a systematic review reported that trust, confidentiality, and stigma concerns were identified as a factor influencing the successful implementation of strategies to reach persons not routinely testing for HIV in the U.S. (61).

A realist systematic review identified three types of intervention strategies to reduce HIV and sexual stigma among men who have sex with men (62). These three strategies included: education and counselling, training for health care providers and peer support for linkage and retention to care, and advocacy for policy changes (62). Despite the commitment of public health authorities to reduce HIV-stigma and discrimination, there have been few recent interventions targeting HIV stigma and discrimination (12). A 2024 scoping review reported that only three interventions to reduce stigma against people with HIV in U.S. health care settings were evaluated within the past five years (12). The need to prioritize HIV-related stigma research (63) may lead to developing new evidence-based interventions to reduce HIV-stigma in the health care setting (64). However, the real-world implementation of this strategy is challenged by a lack of common definition and standardization of measurement tools (12, 65).

HIV-related stigma is closely linked with medical mistrust and HIV health literacy (13). A 2022 U.S.-based systematic review of 17 studies found that HIV-related stigma, self-efficacy, and patient trust in providers mediate the relationship between health literacy and antiretroviral adherence and HIV care retention (13). Similarly, a systematic review of 17 studies found that the evidence from the literature supports medical mistrust as a barrier to participation across the HIV prevention and care cascade (66).

Navigating sexual health services may be particularly challenging for minority populations (67). Racial and ethnic minorities may

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face additional barriers to HIV prevention and care services due to intersectional stigma (13, 55), discrimination and systematic racism (68),which can further worsen these challenges (13). A 2022 systematic review highlights the interplay of intersectional stigma among Black women with respect to navigating sexual health care services (67). The authors found that Black women were less likely to discuss or feel comfortable discussing their sexual health with health care providers (67). Furthermore, stigma to accessing testing and sexual risk behaviour was a factor associated with an increased risk of a sexually transmitted infection (67). The impact of intersectional stigma may be increasingly felt within the U.S. South, as this region bears a disproportionate HIV burden in the country, with higher incidence rates and greater impact on racial, ethnic and sexual minorities (69) who are at the interface of multiple barriers rooted in structural racism (68). A review by Bowleg *et al.* (2022) found several barriers to HIV prevention rooted in structural racism; this included incarceration, housing instability, police discrimination, health service utilization, and community violence (68). In light of these findings, the authors stress the importance in addressing structural racism as a crucial step to effectively ending the HIV epidemic in the U.S. (68).

Homelessness and unstable housing

The lack of stable, secure, and adequate housing is a significant barrier to participation across the HIV care cascade (70). This includes consistent and appropriate HIV medical care, access and adherence to antiretroviral therapy, sustained viral suppression, and risk of forward transmission (70).

Within the scientific literature, research has focused on the “syndemic” overlap of drug use and homelessness, and how this interplay exacerbates risk of HIV transmission and leave people living with HIV disengaged in care and treatment (17, 29). For example, homelessness and unstable housing are associated with increased risk of HIV acquisition among people who inject drugs (71). Additionally, homelessness has been identified as an underlying driver of HIV outbreaks characterized by high proportion of injection drug use (29).

There exists a complex relationship between drug use behaviour and stable housing (15–17). A 2020 systematic review and meta-analysis of 14 studies found that homelessness (OR, 1.89; 95% CI, 1.27–2.51) has a positive association with the lending of used syringes among people who inject drugs (15), a potential risk exposure for HIV transmission (15). A *Lancet Global Health* systematic review estimated that about a quarter (24.8%) of people who inject drugs globally had experienced recent homelessness or unstable housing (16). Furthermore, the researchers found that globally, an estimated 15.2% of people who inject drugs are living with HIV (16). To better inform HIV prevention services, a systematic review of 20 studies found that homelessness is a predisposing factor to antiretroviral

47. Ghiasvand H, Higgs P, Noroozi M, Ghaedamini Harouni G, Hemmat M, Ahounbar E, et al. Social and demographical determinants of quality of life in people who live with HIV/AIDS infection: Evidence from a meta-analysis. Biodemography & Social Biology. 2020;65(1):57–72.
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adherence in persons who inject drugs in the U.S. and Canada (17).

Saha *et al.* (2020) conducted a systematic review and meta-analysis estimating the proportions of people experiencing homelessness who completed testing and linkage to care for viral bloodborne infections (HIV, hepatitis B and hepatitis C) (72). Based on HIV screening data from 17 studies included in the review, the researchers estimated that 72% of people experiencing homelessness who were reached were recruited, 64% received valid results, 4% tested positive, 2% were given results, and 1% were referred and attend follow-up (72). Notably, of those who tested positive for HIV, 25% were referred to treatment and attended follow-up treatments (72). The findings highlight that a very large proportion of the targeted population (i.e. persons experiencing homelessness) who were reached for HIV care were lost in the follow-up care cascade steps and never received treatment (72).

Similar to other social and structural determinants of health relating to participation in the HIV care cascade, interventions addressing housing stability may be implemented to meet the needs of this vulnerable group (18–20). Strategies may include addressing housing instability as part a singular intervention (19) or as part of a multi-component holistic health care plan (18, 20). A synthetic review of key studies examined clinic-based interventions (e.g. case management, patient navigation, financial incentives and the use of mobile technology) to inform implementation of clinic-based programs that improve care outcomes among persons living with HIV who experience homelessness and unstable housing (19). The researchers found that these aforementioned clinic-based interventions had mixed results and were limited by the failure to address multi-modal barriers to care (19).

Interventions that integrate a more holistic action plan may address the shortcomings of an unimodular approach (18, 20). Chaminuka *et al.* (2024) conducted a systematic review which compiled evidence from 2012–2023 on the impact of housing of older adults living with HIV in North America and found that stable housing, food, and health care services access and availability are critical elements to incorporate in a holistic health care plan for this population (20).

Peng *et al.* (2020) conducted a systematic review to examine and evaluate the impact of different community health programs (18). The review compared the effects of Treatment First and Housing First on housing stability, health outcomes, and health care utilization among persons with disabilities experiencing homelessness (18). Treatment first is the standard approach whereby homeless people are required to be "housing ready" (i.e. in psychiatric treatment and not using substances) before and while receiving permanent housing (18). In contrast, the more recent "Housing first" approach provides permanent housing, health, mental health, and other supportive services without clients needing to be housing ready (18). When compared to Treatment First, Housing First clients living

52. Goswami ND, Schmitz MM, Sanchez T, Dasgupta S, Sullivan P, Cooper H, et al. Understanding local spatial variation along the care continuum: The potential impact of transportation vulnerability on HIV linkage to care and viral suppression in high-poverty areas, Atlanta, Georgia. Journal of Acquired Immune Deficiency Syndromes. 2016;72(1):65–72.

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55. Tan RKJ, Tang W, Tucker JD. Public health services and intersectional stigma: A social sciences perspective with implications for HIV service design and delivery. Current Opinion in HIV & AIDS. 2023;18(1):18-26.

56. Perger T, Davtyan M, Foster C, Evangeli M, Berman C, Kacanek D, et al. Impact of HIV-related stigma on antiretroviral therapy adherence, engagement and retention in HIV care, and transition to adult HIV care in pediatric and young adult populations living with HIV: A literature review. AIDS & Behavior. 2024;25:25.

with HIV had 63% greater housing stability, 38% less homelessness, and reduced their viral load by 22% (18).

Housing (18–20), stigma (14, 56) and other social and structural determinants will continue to act as a driver in HIV risk and challenge participation across the HIV care cascade. Despite this, ongoing efforts to recognize and incorporate interventions (12, 18–20, 60) to address these factors will be important to reach the Joint United Nations Programme on HIV/AIDS 95-95-95 HIV testing, treatment and viral suppression target goals for the year 2025 (73).

Factors That May Impact Local Applicability

Most of the studies and research included in the reviews were conducted in the U.S., which may limit the applicability of the findings to other regions. Within the literature, there is a wide array of social and structural factors linked to increased HIV risk and influencing participation in the HIV care cascade across different regional settings and populations. While these findings may help inform strategies to target specific barriers, it is also important to consider local epidemiology, health care system's organization and design, and resource limitations when developing interventions or action plans.

What We Did

We searched Medline (including Epub Ahead of Print, In-Process & Other Non-Indexed Citations) using text terms (determinant* or mental health or substance use* or drug use* or homeless* or housing or income or poverty or who use* drug* or who inject drug* or addition* or trauma or abuse or crime and violence or incarcerat* or stigma* and discriminat* or food insecurity or employment or unemploy*) AND HIV. Studies from low- and middle-income countries were excluded. Searches were limited to review articles (government publications or guidelines or meta analyses or reviews or scientific integrity reviews or systematic reviews). Searches were conducted on October 29, 2024 and results limited to articles published from 2019 to present in English. Reference lists of identified articles were also searched. Google (grey literature) searches using different combinations of these terms were also conducted. The searches yielded 1,294 references from which 73 were included.

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