Barriers and Facilitators to Community-Level HIV Testing and Case Finding in Rural and Minority U.S. Populations

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Abstract

Background: Despite significant progress in HIV prevention and treatment, there are still significant gaps in terms of the diagnosis and uptake of testing among the rural and minority populations of the U.S. The weaknesses of social, structural, and healthcare services still restrict the accessibility of community-based testing programs, which leads to late diagnosis and persistent infection.

Objective: This review will unify the recent peer-reviewed evidence (2020-present) on the barriers and facilitators that affect community-level HIV testing and case finding in rural and minority communities in the United States.

Methodology: We combine both the results of the qualitative and quantitative studies to explain the emerging trends in the behavioral, structural, and policy-level factors influencing testing uptake, as opposed to using a systematic review guideline.

Findings: The major barriers that have been discovered are healthcare stigma, lack of privacy, absence of culturally competent providers, transportation issues, and disjointed service delivery. Peer-driven outreach, mobile testing units, telehealth expansion, and HIV self-testing programs are some of the facilitators. Nonetheless, there are still ongoing gaps in the approach to intersecting stigmas in the community of Black, Latinx, and Indigenous people.

Conclusion: The new tendencies emphasize the necessity of multilevel interventions with the combination of digital outreach, peer navigation, and locally led programs. The next initiative to bring policy innovation and culturally responsive practices together should support access to equitable HIV testing among rural and minority U.S. populations.

Keywords: HIV testing; community-based interventions; rural health disparities; minority health; stigma; public health equity; United States

Introduction

Although some HIV prevention and treatment progress has been made over the past 40 years, there remains a consistent disparity in HIV testing and diagnosis in the United States, especially among rural and minority populations. The U.S. Department of Health and Human Services launched an initiative named Ending the HIV Epidemic (EHE), with the goal of halving new diagnoses by 2025, but the testing coverage is uneven according to demographics and geographic lines (Sullivan et al., 2024). Testing is the pathway to care and prevention, and, nonetheless, rural Americans have lower HIV testing rates, increased late diagnosis rates, and poor access to preventive services (Marshall et al., 2023). The racial and ethnic minority, especially the Black, Latinx, and Indigenous communities, are still over-represented. An example is that the black population of the United States is only 13 percent of the total population, yet over 40 percent of newly diagnosed HIV cases. These inequalities are enhanced in the rural areas where testing is limited by poverty, health care inequalities, and stigma. The COVID-19 crisis also interrupted the usual system of HIV testing and identification of cases, unleashing a vulnerable system of healthcare among marginalized populations and increasing disparities in early diagnosis (Sullivan et al., 2024). This has seen the community-based testing programs, which have been successfully used in large urban areas in the past, not adequately scaled to rural areas, and the country has major geographic and social gaps in its response to HIV.

The health effects of these inequalities on the population are dramatic. Reasoned testing is a key instrument of national control of the HIV infection because early diagnosis of HIV facilitates the suppression of the virus and eliminates subsequent transmission. Nevertheless, the social ecology of rural America indicates specific obstacles: absence of anonymity in small populations, travel distance to the testing locations, and insufficient confidentiality in the healthcare systems (Clausen et al., 2023). Minority groups, in the meantime, have to deal with systemic racism, provider bias, and socioeconomic exclusion that undermine confidence in healthcare providers and impede participation in testing and prevention programs. New arguments highlight that geography overlaps with social identity, forming multidimensional obstacles that can only be countered with multiple measures (Matthews et al., 2025). Therefore, the detailed description of the barriers and facilitators is the key to establishing fair and community-based programs on HIV testing and case detection.

Within the last five years, there have been a number of new tactics aimed at the minimization of testing inequity. Among them are telehealth-based HIV services, mail-in self-testing kits, peer-led outreach, and clinics that come to individuals, the mobile testing clinic (Jones et al., 2022; Marshall et al., 2023). However, with the promise comes the low uptake because of the infrastructural and sociocultural barriers. As an example, rural communities and sexual/gender minorities have one of the most predictive variables in distance to testing providers (Clausen et al., 2023). The potential of telehealth is compromised by digital inequities, which are the lack of access to broadband, technology illiteracy, and high costs. In addition, the stigma and fear of being disclosed are structural and still keep people away from community-based programs (Goldstein, 2025).

At the provider level, the studies show that there is a reluctance among clinicians to make HIV testing a routine in rural and minority serving clinics. Although national guidelines endorse opt-out testing, only a small percentage of primary care physicians will always act on them because of the perceived time limitations, reimbursements received, or fear of offending a patient (Bagchi and Davis, 2020). This policy/practice disparity creates an even greater testing gap.

Past studies have determined some of the determinants of differences in HIV testing, but there are three major gaps in knowledge. Fragmented knowledge exists regarding the interaction of contextual factors with predominant studies on single-level factors, individual, social, or structural factors, but not the interactions of these factors. There is an urgent need to have a multilevel approach which should consider the combination of social stigma with institutional and infrastructural barriers. Also, rural and minority subpopulation evidence is limited because the results of urban or national studies are frequently generalized to the rural communities, neglecting the distinct community dynamics within such areas as the Deep South, Appalachia, and Tribal lands (Marshall et al., 2023).

Although the barriers have been extensively covered, the literature does not feature facilitators such as technology-enabled and peer-led interventions to the required extent (Jones et al., 2022). In addition, little literature has related such results to the larger policy framework, including the EHE initiative or national telehealth expansions, which creates a gap between research knowledge and practice.

The narrative review is a critical synthesis and interpretation of recent studies (2020-present) on barriers and facilitators to community-level HIV testing and case finding among rural and minority populations in the United States. It is a trend-based interpretive approach, unlike a systematic summary that caters to behavioral, structural, and technological views. The review particularly analyzes barriers at multiple levels that impede HIV testing and case detection in a range of rural and minority settings, new facilitators of equitable access to HIV testing, including digital, community-based, culturally adapted interventions, and future research directions and policy priorities that support national elimination of HIV by 2030. It seeks to inform a recalibrated, community-based approach to reach HIV testing equity in the U.S. by reconciling evidence on the part of the public health, behavioral science, and implementation research.

Emerging Trends and Thematic Analysis

This section synthesizes key developments (2020-2025) that influences community-level HIV testing and case identification among rural and minority citizens of the U.S. Thematic analysis identifies four themes of change related which include Expansion of low-barrier HIV testing innovations (telehealth, self-testing, and mobile outreach); Emergence of culturally responsive and peer-led strategies; Persistent stigma, mistrust, and structural inequity as ongoing challenges; and the growing influence of digital and policy-level transformations is reshaping access and equity.

Theme 1: Low-Barrier Testing Innovations; Telehealth, Self-Testing, and Hybrid Models

Telehealth-Enabled HIV Services

Telehealth has emerged as a game-changer in terms of proliferating HIV testing throughout underserved regions since the COVID-19 pandemic. Clinics have not been accessible in all rural areas, and testing has been facilitated through remote consultations, mail delivery of test kits, and virtual follow-ups. Clausen et al. (2023) found that distance to HIV testing service providers remained one of the barriers to the uptake of these services among the sexual and gender minority populations in rural areas in the southern United States, and telehealth and home-based testing services effectively increased uptake of these services. Similarly, Marshall et al. (2023) discovered that follow-up through telehealth enhanced the rate of engagement in HIV care among the rural Arkansas HIV patients. Nevertheless, there are still digital inequities: the lack of broadband, affordability, and low digital literacy hinder their equal usage. Studies indicate that the benefits of telehealth are never equally distributed, minority and older populations in the rural setting are unlikely to use virtual services as a result of technological and cultural factors.

HIV Self-Testing (HIVST) and Hybrid Testing Models

The growth of self-testing of HIV at home has transformed the scenario of testing greatly. Mail-out programs that send oral-fluid or dried blood spot kits have demonstrated as effective means of improving privacy and convenience, which are major facilitators in stigmatized situations. However, there are still issues of precision and usability. The study in South Carolina (ALL-IN) showed that unassisted self-tests gave false results in approximately 32 percent of the cases, and the accuracy increased significantly when the community or telemedicine support was delivered (Meyer et al., 2025). These results indicate that, despite the fact that self-testing helps to reduce geographic barriers (Beecroft et al., 2024), it creates additional issues in interpretation and follow-up. The combination of remote guidance, peer navigation, and linkage-to-care protocols (hybrid models) is progressively considered as the best practice.

Mobile and Community Testing Units

Mobile outreach programs, particularly in the rural Deep South, have redefined access by integrating testing into existing community hubs such as churches, barber shops, and local festivals (Matthews et al., 2025). These interventions reduce logistical barriers while normalizing testing within trusted social networks. Nonetheless, sustainability remains uncertain, with many programs reliant on short-term grants.

Theme 2: Culturally Responsive and Peer-Led Community Engagement

Cultural Competence and Trust Building

The competency in cultural competence based on knowledge of community norms, languages, and values remains central to enhancing the uptake of HIV testing. The rural minority groups (Black and Latinx, in particular) tend to distrust healthcare facilities because of the history of exploitation and discrimination (Bagchi and Davis, 2020). Community-based interventions born alongside trusted local agents like barbers, pastors, and peer navigators have proven to be more successful in normalizing testing behavior. Murray et al. (2017) discovered that Black males living in rural Florida were more likely to take part in the testing process when contacted in culturally sensitive, peer-based networks that focused on confidentiality and solidarity.

Peer Navigation and Lived-Experience Models

Recent evidence highlights the role of peer-led interventions relying on lived experiences to decrease stigma and increase the connection to care. Peer navigators tend to become cultural brokers, which will help build trust and compliance. As an illustration, peer involvement was cited by rural Arkansan HIV-positive people as a key contributor to continuing to participate in testing and treatment services (Marshall et al., 2023). These models are also supportive of community empowerment, but have a problem with scalability, financing, and integration into the formal healthcare systems. The standardization of peer navigator training and measures makes it harder to evaluate programs.

Theme 3: Enduring Stigma, Mistrust, and Structural Inequities

The Role of Stigma in Limiting Testing Uptake

The stigma is one of the core predictors of testing behavior in rural and minority environments. Small communities have the interpersonal visibility associated with the fear of outing when testing occurs, which discourages participation. The combination of overlapping stigmas based on race, sexuality, and HIV status further worsens this dynamic to contribute to a lack of trust in care systems (Goldstein, 2025).

Structural Barriers and Policy Gaps

The structural barriers, such as the underfunding of the infrastructure of rural healthcare and the bias of clinicians, continue to exist as systemic inequities. According to Bagchi and Davis (2020), less than half of clinicians in minority-serving or rural locations regularly provided HIV testing even when recommended by the CDC to screen on an opt-out basis. This gap is maintained by provider discomfort and inadequate reimbursement mechanisms. Fragments in policy only deepen differences: even some of the states still need to provide written consent to test HIV, and uneven Medicaid reimbursement does not support the implementation of point-of-care or self-testing innovations (Daoud et al., 2025). Such institutional restrictions overlap with the stigma at an individual level, forming a cascading effect of exclusion at a multilevel, which constrains equitable testing coverage.

COVID-19 and the Amplification of Inequities

The pandemic increased the already existing inequalities as it interrupted testing services and shifted resources to the HIV programs. Sullivan et al. (2024) reported the reduction in the number of HIV tests and the subsequent delay in case detection in 2020-2022, especially in minorities and rural communities. Although emergency telehealth expansion updated some of the effects, recovery has been imbalanced, and it discloses the weaknesses of decentralized care systems.

Theme 4: Digital Equity, Policy Transformation, and Future Directions

Integrating Digital Health with Public Health Infrastructure

Digital innovation is increasingly recognized as a cornerstone of HIV testing equity. Smartphone-based health apps and online ordering platforms have facilitated private and accessible testing options. High interest among rural sexual and gender minority groups in mobile health (mHealth) applications for HIV prevention and testing. However, digital exclusion, driven by income, literacy, and broadband gaps, limits these tools' reach. Bridging this digital divide will require federal and state-level broadband investment and culturally adapted digital literacy programs (Jones et al., 2022).

Policy Reform and Cross-Sector Collaboration

Recent policy discussions emphasize multi-sectoral collaboration between public health, technology firms, and community-based organizations. The 2025 HIV National Strategic Plan calls for integrated models that align federal funding with localized interventions. Pilot programs integrating HIV testing into food assistance centers and community pharmacies have shown promise for expanding reach and normalizing testing behavior in rural minority regions (Alohan et al., 2025; Assoumou et al., 2024). Also, recent advances in point-of-care diagnostics and combined self-testing for HIV and sexually transmitted infections (STIs) may revolutionize case finding if accompanied by robust telehealth counseling frameworks (Martin et al., 2025; Watson et al., 2025). Yet regulatory challenges around test approval and reimbursement persist, slowing national implementation (NACCHO, 2025).

Synthesis and Conceptual Framework

Table 1 (below) conceptualizes the multi-level determinants of HIV testing in rural and minority U.S. populations, integrating findings across the reviewed literature.

Level	**Barriers**	**Facilitators**	**Representative Studies (2020–2025)**
Individual	Fear, stigma, digital illiteracy	Privacy through self-testing; mHealth apps	Clausen et al., 2023; Jones et al., 2022
Interpersonal	Lack of trust; fear of disclosure	Peer support; community advocates	Marshall et al., 2023
Structural	Limited clinics; clinician bias; policy inconsistency	Mobile testing; telehealth	Matthews et al., 2025; Bagchi & Davis, 2020
Technological	Poor broadband access	Hybrid digital–community models	Meyer et al., 2025

Source: Author's Construct, 2025.

Future Directions and Research Gaps

Although there has been an increase in evidence in favor of community-based, telehealth-enabled, and self-testing methods of HIV detection, a substantial amount of knowledge gaps has been observed in awareness and application of equitable HIV testing systems in rural and minority U.S. populations (Beecroft et al., 2024). Although recent studies reveal the potential of self-testing and digital interventions, most evidence is still disjointed, contextualized, and underpowered. As an example, Meyer et al. (2025) showed that assisted self-testing is a significantly better method to enhance accuracy, but the processes that facilitate sustained participation, including adherence to the follow-up, counseling, and treatment linkage, are not well comprehended. Additionally, the majority of research does not provide any disaggregated data about subgroups such as Indigenous peoples, migrant farmworkers, and multiracial youth in rural territories, and these communities are underrepresented in the national HIV surveillance and implementation research. The other question that is yet to be resolved is how the overlapping social stigmas, in relation to race, sexuality, substance use, and poverty, how they can influence the very phenomena of testing and the attitudes towards HIV self-testing technologies. Despite the enlightenment of qualitative research on the effect of the stigma on testing uptake (Marshall et al., 2023), very few studies have used a quantitative method to find the causal pathways of stigma or interventions specifically aimed to reduce its effects. Further, longitudinal and implementation science literature is limited. The majority of the interventions are pilot-scale, short-term, and confined to one geographic area, which reduces their ability to be generalized. This limits our capacity to measure sustainability, scalability, and cost-effectiveness, which are important factors to be considered to inform national HIV elimination policies.

Future research should incorporate multilevel and intersectional frameworks to transcend the unitary level, and its interactions include structural, cultural, and behavioral levels. As an illustration, the investigators are supposed to analyze the correlation between rurality and stigma and structural factors such as access to healthcare, insurance access, and access to the internet. Intersectionality-driven methods can help to shed light on the effect of several marginalized identities, including being Black, rural, low-income, and LGBTQ+, all of which potentially contribute to restrictions on HIV testing. These models will be further strengthened by the use of the theories of medical sociology and critical race studies. Strict testing of digital and hybrid testing models on a scale is needed as well, since telehealth and self-testing have unprecedented reach and need testing in real-life environments. Although feasibility is confirmed nowadays, the implementation outcomes, such as fidelity, adoption, and sustainability, comparative effectiveness of hybrid and traditional models, and long-term behavioral effects, including repeat testing and linkage-to-care adherence, should be the priorities of research. New evidence also supports the usefulness of incorporating HIV testing into more comprehensive digital health systems that include tele-PrEP, sexual health screening, and mental health counseling into integrated systems (Clausen et al., 2023; Bonett et al., 2024). Forming stronger partnerships with the community by using participatory research will make the interventions co-designed, co-owned, and culturally grounded. Peer-led models have been successful in establishing trust hence, research ought to examine the economic and psychosocial advantages of using peers as navigators or educators, how these programs can be maintained after the grant funding, and how to incorporate peers into existing public health systems without bureaucratising the work roles of peers. Collaborations between academic researchers, local organizations, and public health agencies will be critical towards promoting equity-based implementation. The broadening of measurement and data equity requires the modernization of the HIV surveillance to capture the rural and minority settings (Kamitani, 2024). Most counties in the southern U.S. do not have timely or granular HIV information, which conceals inequalities. Future research ought to develop geospatial and community-level measures of testing coverage; include real-time surveillance instruments that combine data about mobile testing, pharmacy, and online services; and standardize measures of stigma, trust, and digital inclusion. Under-testing micro-geographies that might be detected by big data analytics and artificial intelligence would be done ethically and inclusively. Lastly, it is important to research policy and economic determinants. Although federal programs, such as Ending the HIV Epidemic (EHE), are set to minimize new infections by 75% by 2025, studies have not determined the impact of state-level Medicaid policies, insurance expansion, and reimbursement structures on rural testing uptake (Habel et al., 2022). Interstate comparative policy reviews will be used to assess how various legal and economic systems affect the equity of HIV testing.

The increasing use of digital resources to conduct HIV tests brings about ethical and practical questions that revolve around digital equity and access (Habel et al., 2022). Telehealth and self-testing also assume access to smartphones, the internet, and literacy, which are not evenly distributed among racial and socioeconomic lines, which could create disparities unless deliberate design is employed to include all and everyone. The public health systems should consider universal design, such as a multilingual interface, offline features, and privacy rights of the low-literate users. Cybersecurity and confidentiality are additional problems as telehealth and online diagnostics gain more and more followers, especially among the people who are suspicious of institutional care. The future work ought to focus on understanding the perceptions of communities regarding the use of data, the decentralized data storage patterns, and how the transparency and consent systems contribute to establishing user confidence. Mistrust would be addressed by the use of ethical frameworks based on community data sovereignty, in which local organizations own their data (Watson et al., 2025). One of the core issues in translation is implementation and policy translation since even the most promising community-based interventions do not tend to scale to larger scales, because of fragmented funding, bureaucratic delays, or cross-sector coordination. Researchers are required to collaborate with policymakers early, by instituting implementation evaluation in the existing programs and communicating their results using easily accessible and policy-focused channels. The cost-effectiveness modeling should also be a priority of translational science to inform the public health investments and portray the fiscal sustainability of the community-based and hybrid testing interventions.

Conclusion

This review highlights how the underlying causes of the ongoing disparities in community-level HIV testing and case detection among rural and minority populations in the United States of America have multilevel determinants, which encompass individual stigma, structural barriers, and fragmentation of policies. Although important steps have been made in increasing access to HIV testing with telehealth, and HIV self-testing and mobile outreach, such technologies are yet to turn into complete equity in diagnosis or care access. Since 2020, research indicates that there is a steady trend: rural areas and minorities are still pushed to the periphery through distance, distrust, and digital exclusion. These barriers have been proposed to be disrupted by telehealth and self-testing. To illustrate this point, in the United States, remote HIV testing integration had an immense effect of reducing testing disruption in multiple regions during the COVID-19 pandemic, which serves to indicate the power of technology in maintaining access to testing in times of public health emergencies. In the same way, digital HIV self-testing, as a scalable model, is a critical innovation in decentralizing diagnosis, but the accuracy, counseling, and distributional equity issues are raised. However, these developments are accompanied by persistent issues.

The stigma of community, provider prejudice, and lack of reimbursement policy still hinder improvement. Systemic inequities in the U.S. South and in Indigenous and Latinx rural areas are structural manifestations of systemic underinvestment in infrastructure and broadband connectivity in rural areas.

Although HIV testing and prevention systems are being transformed by several disruptive trends, they are redefining these systems. The move towards telehealth as a part of the HIV care continuum has altered patient-health system interaction fundamentally. The success of tele-PrEP models in digital navigation and enhancing access among sexual and gender minorities in rural settings. Likewise, hybrid telehealth interventions, including mail-in-based tests, telehealth visits, and pharmacy-based counseling, are reaching out to high-resource areas. There is also an acceleration in the institutionalization of self-testing in the health systems of people. The process of the testing agencies implementing at-home test distribution into the current frameworks of HIV prevention, which was facilitated by training and tele-counseling guidelines. The hybrid model will give the community members their privacy and still be linked-to-care. Equity programs are being pushed along by policy-based structural reform. It is a significant paradigm shift, which is based on the urban-centric strategies for the regionalization of HIV prevention and care. Collectively, these patterns indicate a shift toward individualized, technology-enhanced, and community-based HIV testing systems. There is an unprecedented possibility of bridging geographic distances with the convergence of telehealth and digital diagnostics, as long as it is deployed in a balanced and ethical manner.

To the policymakers, it is important to invest in digital and health infrastructure, including broadband expansion and rural healthcare capacity, as well as normalizing regulatory frameworks on HIV testing consent, Medicaid reimbursement, and telehealth licensing to ensure equal access. Policies must also promote the collaboration of a joint venture between faith-based organizations, local advocates, and public health organizations to strengthen culturally sensitive outreach. To the healthcare and industry leaders, it is best to integrate equity into the design of the self-testing kits and digital health tools by embracing user-centered, multilingual, and accessible frameworks so as to avoid systemic exclusion. It is vital to keep the quality and safety level as high as possible by working together with test manufacturers and telehealth providers, incorporating AI-assisted counseling, real-time verification, and data security storage. Lastly, training and workforce diversity can be scaled through an expansion of peer navigators and community health workers in the context of HIV testing programs and will result in the creation of trust and expansion of the influence of clinical innovations.

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