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# Learning from community-based HIV prevention to inform control and mitigation of the COVID-19 pandemic

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## ABSTRACT

The current COVID-19 pandemic and the likelihood of future viral pandemics demonstrate a need for strategic prevention campaigns that integrate biomedical, structural, and behavioral interventions within larger scale comprehensive public health initiatives. In Human Immunodeficiency Virus (HIV) prevention, community-based efforts have resulted in reductions in transmission rates, increases in testing, increases in biomedical prevention uptake, and increased engagement in secondary and tertiary prevention efforts. In this paper, we review three community-based strategies (health communication, accessible screening, and accessible prevention resources) that have demonstrated effectiveness in HIV prevention and offer recommendations for utilizing these strategies in the COVID-19 pandemic. For example, health communication strategies have positively influenced HIV testing behavior, sex communication, and condom use among HIV negative individuals and treatment initiation, treatment adherence, and retention in care among people living with HIV. In addition, studies have shown that improving accessibility of HIV screening and prevention resources in community venues such as schools, pharmacies, mobile-testing sites, churches, hair salons, and bars is useful for increasing the uptake of HIV testing, especially among disproportionately affected populations and those deemed hard to reach. Despite differences in modes of transmission, it is plausible that a synergistic multilevel response with emphasis on community-based efforts could lead to similar outcomes for the current COVID-19 pandemic and future viral pandemics. Community-based prevention strategies offer an opportunity to integrate, and bolster disconnected and siloed initiatives that achieve limited impacts independently.

## 1. Introduction

Over the past 40 years, the world has experienced an onslaught of viral pandemics, which have presented innumerable international public health challenges. These pandemics, including the current COVID-19 pandemic, have demonstrated that having the biomedical knowledge and tools to end a pandemic is necessary but insufficient. Ending a pandemic also requires addressing barriers that impede access to and engagement in biomedical and behavioral prevention interventions alongside wide scale intervention implementation and utilization.

The current COVID-19 pandemic and the likelihood of future viral pandemics demonstrate a need for strategic prevention campaigns that integrate biomedical, structural, and behavioral interventions within larger scale comprehensive public health initiatives (Eaton and Kalichman, 2020; Edelman et al., 2020). Decreasing viral transmission is

largely dependent on social and behavioral changes that can be bolstered through community-based prevention strategies (Gilmore et al., 2020; Pronyk et al., 2016). Such strategies can be utilized to weave together often disconnected initiatives that achieve limited impacts independently. The premise for leveraging community-based prevention efforts for mitigation of viral pandemics is based on the effectiveness of these strategies in Human Immunodeficiency Virus (HIV) prevention.

Community-based prevention ideally includes community members as part of the development, implementation, and evaluation of initiatives and programs but can also include activities located in community settings, developed without input from community members. Community-based HIV prevention efforts have resulted in reduced transmission rates, increased testing, increased biomedical prevention uptake, and increased engagement in secondary and tertiary prevention efforts (Gutierrez et al., 2010; Khumalo-Sakutukwa et al., 2008; Mutch et al., 2017; Rousseau et al., 2021). Despite differences in modes of

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transmission, it is plausible that a synergistic multilevel response with emphasis on community-based efforts could lead to similar outcomes for the current COVID-19 pandemic and future viral pandemics. In this paper, we review community-based strategies that have demonstrated effectiveness in HIV prevention and offer recommendations for utilizing these strategies in the COVID-19 pandemic.

## 2. Health communication

Health communication (e.g., marketing methods designed to influence positive health changes) can orchestrate a landscape ripe for promoting acceptability, accessibility, and positive change at multiple socioecological levels. Influencing and shaping beliefs, risk perceptions, attitudes, behaviors, interpersonal interactions, and cultural norms, health communication strategies have been strategically utilized to transmit health promotion messages that span the HIV prevention and care cascades (Tomori et al., 2014). For example, health communication strategies have positively influenced HIV testing behavior, sex communication, and condom use among HIV negative individuals and treatment initiation, treatment adherence, and retention in care among people living with HIV (Tomori et al., 2014).

These effective health communication strategies can also be useful in slowing the spread of COVID-19 (Mheidly and Fares, 2020). Some argue that sharing accurate information is currently the most effective way to reduce COVID-19 (The Lancet, 2020). Indeed, misinformation and associated disbelief in extant and potential harms from pandemics can negatively influence risk perceptions, attitudes toward prevention initiatives, and health behavior which can impede progress (Enders et al., 2020). Moreover, leveraging health communication strategies like empathetic communication that draw attention of the public, focus messages on concrete actions, and create guidance around managing misinformation are imperative for increasing adherence to public health guidelines and promoting behavior change needed to mitigate transmission (Habersaat et al., 2020; Mheidly and Fares, 2020).

Brazil's National STD and AIDS Program (NAP) is often spotlighted as a global exemplar for an integrated response to disease control via prevention, treatment, and care (Nunn et al., 2009). A key component of Brazil's responses to the epidemic has been its employment of successful and well-integrated health communication strategies, particularly during popular cultural events such as Carnival, an annual street festival that consistently draws attendees in the multi-millions. This strategy utilizes health communication to facilitate an integrated community-based approach to raise awareness of HIV, heighten risk perceptions, and encourage condom use and testing while simultaneously coordinating and ensuring easy access to and availability of prevention resources.

Following a similar model (and adapting as needed), other countries can capitalize on large social gatherings (e.g., concerts and festivals) and globally recognized social/cultural events (e.g., sports competitions) as an opportunity to bolster prevention activities by utilizing culturally tailored health messaging in community settings. Such strategies can help connect development of effective prevention strategies and actual widespread utilization. Public health practitioners should engage community members in the process of developing health messaging to ensure cultural relevancy. For example, the National Institutes of Health Community Engagement Alliance (NIH CEAL) and the COVID-19 Prevention Network (CoVPN) utilize community-based approaches to develop resources and toolkits to help mitigate the spread of COVID-19.

## 3. Accessible screening

Screening is necessary for pandemic mitigation as it is the first step to identifying positive cases, initiating treatment(s), and preventing transmission. Without adequate screening measures in place gaining control over a pandemic is virtually impossible. However, availability and accessibility of screening can be challenging for individuals,

especially marginalized social groups such as homeless individuals, undocumented migrants, and individuals with minoritized identities.

Community-based initiatives that bolster screening rates (e.g., mobile screening venues, testing promotion campaigns, and door to door outreach via community health workers) are increasingly being utilized across various viral pandemics (Coupland et al., 2019; Dave et al., 2019; Harris et al., 2018). Within HIV prevention, studies have shown that HIV screening in community venues such as schools, pharmacies, mobile-testing sites, churches, and bars is useful for increasing the uptake of HIV testing, especially among populations who experience high-risk for infection and those deemed hard to reach (Thornton et al., 2012).

Access is also essential for mitigating COVID-19, as increases in testing happen when testing is convenient and easily accessible. Effectively managing the pandemic requires access to free and affordable testing (Snowden and Graaf, 2021; Witters, 2020). However, getting tested has been a logistical nightmare for many, particularly in the United States (U.S.). To overcome this issue, in January 2022, the U.S. government began the process of distributing 500 million free at-home COVID test kits (The United States Government, 2022). Albeit a delayed response, leveraging infrastructure of the US Postal Service, this strategy was particularly useful in increasing screening accessibility.

In addition, identifying and capitalizing on locations that are frequented by community members (e.g., those mentioned previously) can be especially useful. For example, a study of a community COVID-19 testing program in London revealed that 82% of patients preferred community testing as opposed to hospital testing (Wallis et al., 2020). Relatedly, public health practitioners may consider applying this logic to existing community-led initiatives and high traffic events, including but not limited to religious events, health fairs, entertainment events, and digital and print media campaigns. Similar strategies have been utilized to slow the spread of COVID-19 by community health workers in the Navajo nation and other American Indian communities (Hostetter and Klein, 2020).

Building relationships with key community members and organizations that serve disproportionately affected populations (e.g., via community advisory boards) can be particularly useful for identifying community locations, high traffic events, and other important considerations related to accessibility. This approach can be especially important for communities who experience disparities, which are often communities experiencing medical mistrust associated with historical and contemporary abuse, deception, and mistreatment from researchers, physicians, and government officials (Jaiswal and Halkitis, 2019).

## 4. Accessible prevention resources

Accessibility to prevention resources is a challenge to controlling viral pandemics (Fisher et al., 2011; Gostin, 2009; Geiger et al., 2020; Mitchell et al., 2010; Rewar et al., 2015). Prevention resources are interventions or supplies that help prevent disease transmission (e.g., condoms for HIV prevention and masks, tests, and sanitizing stations for COVID prevention). Offering free prevention resources in convenient and easily accessible community-based locations (e.g., night clubs, shopping centers, community centers, barbershops, hair salons, homeless shelters, schools, universities) can increase their uptake and utilization (Faina & Lavazza; Sutton et al., 2010; Wang et al., 2018). Some of these venues, particularly barbershops and hair salons, can be useful for offering screening alongside health promotion programming (Garza et al., 2016). In addition, it may be useful to offer resources in indoor/outdoor living spaces and common encampments for homeless individuals and undocumented migrants (Farina and Lavazza, 2021). Community members have also suggested offering free resources in gas stations, corner stores, hotels, and clothing stores (Abrams et al., 2020). This distribution strategy, however, is not feasible with all resources – particularly those that are regulated and require a prescription.

For example, although there is currently no viable vaccine for HIV,

PrEP (Pre-Exposure Prophylaxis) can be prescribed and taken to reduce one's chance of contracting HIV. Although PrEP is up to 99% effective at preventing sexual transmission (Centers for Disease Control and Prevention (CDC), 2022), the prescription requisite can make it more challenging to access. Also, adherence (another potential challenge) determines the effectiveness of PrEP (Jones and Petrie, 2017). However, since oral PrEP became available in 2012, researchers have identified the following facilitators of adherence that can be employed in community-based settings: patient education (Karuga et al., 2016; Mack et al., 2014), motivational interviewing (Dale, 2020), counseling (Golub et al., 2013; Karuga et al., 2016), and community led workshops (Clark et al., 2021). Similar strategies may be useful in encouraging vaccination completion for COVID-19.

Of the three Emergency Use Authorization approved vaccines in the United States, two require three shots for the vaccine to be the most effective. In other words, vaccine series completion is essential for maximizing effectiveness. Measures that have been helpful in promoting COVID-19 vaccine uptake and completion include influence from one's social networks via encouragement, support, and behavioral modeling as well as vaccine accessibility (Hallgren et al., 2021). To facilitate vaccine uptake and series completion, it may be useful to consistently implement community-based strategies such as "Motivate, Activate, Vaccinate" (Marquez et al., 2021) and utilize community and religious leaders as vaccine ambassadors (CDC, 2021; Privor-Dumm and King, 2020). Increasing vaccine uptake can also be facilitated via mobile clinics (e.g., "Smart Pods"), which have been shown to safely deliver vaccines and, with the help of community health workers, reduce vaccine hesitancy (Petrova et al., 2021). Such strategies may be particularly useful in rural and medically underserved areas.

## 5. Increasing capacity of community based organizations to respond to pandemics

Due to their geographic locations, accessibility, and familiarity, community-based organizations (CBOs) are often best suited to implement prevention initiatives with community members. However, many community-based organizations are often under-resourced and lack infrastructure needed to provide support in controlling viral pandemics. This is an opportunity for researchers, public health professionals, and activists to work collaboratively with CBOs to identify their unique strengths and resource needs for facilitating health communication campaigns as well as offering screening and disseminating prevention resources. In addition, working with CBOs to identify and apply for relevant funding opportunities can allow for CBOs to hire more personnel, obtain supplies, and implement interventions needed to serve their communities. Also, researchers and public health professionals may consider opportunities for shared personnel (i.e., staff working for an academic or health institution that can have some time dedicated to working with/for a CBO). This can facilitate a mutually beneficial partnership that can benefit both the CBO and research/health promotion team as this can allow for a better understanding of the community's assets and needs and can also help facilitate greater ease in implementing interventions and initiatives. Strengthening CBO infrastructure in these ways can aid them in being better equipped for responding to pandemics.

## 6. Conclusion

In summary, utilizing community-based strategies can be effective in controlling the spread of COVID-19 (e.g., NIH CEAL and CoVPN). Thus, it is imperative for community-level approaches to be a core component of national responses. It is also necessary to acknowledge and address the potential for stigma to undermine prevention and intervention efforts. A common challenge in HIV prevention, stigma has also been shown to negatively impact screening attitudes and prevention behaviors during the COVID-19 pandemic, thereby creating barriers to

pandemic control even when screening, prevention, and treatment resources are readily available and accessible (Earnshaw et al., 2020; Embrett et al., 2022). By utilizing community-based participatory research approaches, researchers can work collaboratively with community members to implement community-driven solutions that can better facilitate effective health communication campaigns, screening initiatives, and dissemination of prevention resources that preemptively address the potential negative impact of stigma. Ignoring local and community level opinions, strengths, and needs leaves a missed opportunity for scientists to learn from community members to achieve an effective response to COVID-19. Community-based strategies have the potential to not only attenuate COVID-19 outcomes among populations experiencing health disparities, but also can be a source of solutions for future mitigation of viral epidemics.

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## Declaration of Competing Interest

The authors have no conflict of interest to report.

## Data availability

No data was used for the research described in the article.

## References

- Abrams, J.A., Odum, M., Tillett, E., Haley, D., Justman, J., Hodder, S., Frew, P.M., 2020. Strategies for increasing impact, engagement, and accessibility in HIV prevention programs: suggestions from women in urban high HIV burden countries in the Eastern United States (HPTN 064). *BMC Public Health* 20 (1), 1–16.
- CDC, 2021. 12 COVID-19 Vaccination Strategies for Your Community. Retrieved from. <https://www.cdc.gov/vaccines/covid-19/vaccinate-with-confidence/community.html>.
- Centers for Disease Control and Prevention (CDC), 2022. PrEP Effectiveness. Retrieved from. <https://www.cdc.gov/hiv/basics/prep/prep-effectiveness.html#:~:text=PrEP%20is%20highly%20effective%20for,74%25%20when%20taken%20as%20prescribed.>
- Clark, J., Reisner, S., Perez-Brumer, A., Huerta, L., Sanchez, H., Moriarty, K., Luque, M. M., Okochi, H., Salazar, X., Mimiaga, M., Sanchez, J., Gandhi, M., Mayer, K.H., Lama, J.R., 2021. TransPrEP: results from the pilot study of a social network-based intervention to support PrEP adherence among transgender women in Lima, Peru. *AIDS Behav.* 25 (6), 1873–1883. <https://doi.org/10.1007/s10461-020-03117-4>.
- Coupland, H., White, B., Bates, A., Park, J.N., Iversen, J., Maher, L., 2019. Engaging people who inject drugs in hepatitis C virus testing and prevention through community-based outreach, in Sydney, Australia. *Drug Alcohol Rev.* 38 (2), 177–184.
- Dale, S.K., 2020. Using motivational interviewing to increase PrEP uptake among Black women at risk for HIV: an open pilot trial of MI-PrEP. *J. Racial Ethn. Health Disparities* 7 (5), 913–927.
- Dave, S., Peter, T., Fogarty, C., Karatzas, N., Belinsky, N., Pant Pai, N., 2019. Which community-based HIV initiatives are effective in achieving UNAIDS 90-90-90 targets? A systematic review and meta-analysis of evidence (2007-2018). *PLoS One* 14 (7), e0219826.
- Earnshaw, V.A., Brousseau, N.M., Hill, E.C., Kalichman, S.C., Eaton, L.A., Fox, A.B., 2020. Anticipated stigma, stereotypes, and COVID-19 testing. *Stigma Health* 5 (4), 390–393.
- Eaton, L.A., Kalichman, S.C., 2020. Social and behavioral health responses to COVID-19: lessons learned from four decades of an HIV pandemic. *J. Behav. Med.* 43 (3), 341–345.
- Edelman, E.J., Aoun-Barakat, L., Villanueva, M., Friedland, G., 2020. Confronting another pandemic: lessons from HIV can inform our COVID-19 response. *AIDS Behav.* 24 (7), 1977–1979.
- Embrett, M., Sim, S.M., Caldwell, H.A., Boulos, L., Yu, Z., Agarwal, G., Tricco, A., 2022. Barriers to and strategies to address COVID-19 testing hesitancy: a rapid scoping review. *BMC Public Health* 22 (1), 1–10.
- Enders, A.M., Uscinski, J.E., Klofstad, C., Stoler, J., 2020. The different forms of COVID-19 misinformation and their consequences. *Harv. Kennedy School Misinform. Rev.* 1–21.
- Farina, M., Lavazza, A., 2021. Advocating for greater inclusion of marginalized and forgotten populations in COVID19 vaccine rollouts. *Int. J. Public Health* 66 (1604036), 1–8.

- Fisher, D., Hui, D.S., Gao, Z., Lee, C., Oh, M.D., Cao, B., Farrar, J., 2011. Pandemic response lessons from influenza H1N1 2009 in Asia. *Respirology* 16 (6), 876–882.
- Garza, M.A., Jackson, S., Assini-Meytin, L., Motley, D., Casper, E.T., Mathews, R., Thomas, S.B., 2016, October. Health Advocates In-Reach and Research (HAIR): Transforming Black barbershops and salons to promote colorectal cancer screening. In: APHA 2016 Annual Meeting & Expo (Oct. 29–Nov. 2, 2016). APHA.
- Geiger, D., Harborth, L., Mugyisha, A., 2020. Managing enduring public health emergencies such as COVID-19: lessons from Uganda Red Cross Society's Ebola virus disease response operation. *BMJ Leader*. <https://doi.org/10.1136/leader-2020-000243>.
- Gilmore, B., Ndejjo, R., Tchetchia, A., De Claro, V., Mago, E., Lopes, C., Bhattacharyya, S., 2020. Community engagement for COVID-19 prevention and control: a rapid evidence synthesis. *BMJ Glob. Health* 5 (10), 1–11.
- Golub, S.A., Gamarel, K.E., Rendina, H.J., Surace, A., Lelutiu-Weinberger, C.L., 2013. From efficacy to effectiveness: facilitators and barriers to PrEP acceptability and motivations for adherence among MSM and transgender women in New York City. *AIDS Patient Care STDs* 27 (4), 248–254. <https://doi.org/10.1089/apc.2012.0419>.
- Gostin, L.O., 2009. Influenza A (H1N1) and pandemic preparedness under the rule of international law. *JAMA* 301 (22), 2376–2378.
- Gutierrez, J.P., McPherson, S., Fakoya, A., Matheou, A., Bertozzi, S.M., 2010. Community-based prevention leads to an increase in condom use and a reduction in sexually transmitted infections (STIs) among men who have sex with men (MSM) and female sex workers (FSW): the Frontiers Prevention Project (FPP) evaluation results. *BMC Public Health* 10 (1), 1–12.
- Habersaat, K.B., Betsch, C., Danchin, M., Sunstein, C.R., Böhm, R., Falk, A., Butler, R., 2020. Ten considerations for effectively managing the COVID-19 transition. *Nat. Hum. Behav.* 4 (7), 677–687.
- Hallgren, E., Moore, R., Purvis, R.S., Hall, S., Willis, D.E., Reece, S., McElfish, P.A., 2021. Facilitators to vaccination among hesitant adopters. *Hum Vaccin Immunother* 1–8.
- Harris, A.M., Link-Gelles, R., Kim, K., Chandrasekar, E., Wang, S., Bannister, N., Pong, P., Chak, E., Chen Jr., M.S., Bowlus, C., Nelson, N.P., 2018. Community-based services to improve testing and linkage to care among non-U.S.-born persons with chronic hepatitis B virus infection - three U.S. programs, October 2014–September 2017. *MMWR Morb. Mortal. Wkly Rep.* 67 (19), 541–546. <https://doi.org/10.15585/mmwr.mm6719a2>.
- Hostetter, M., Klein, S., 2020. Learning from pandemic responses across Indian country. *Commonwealth Fund*. Retrieved January 20, 2023, from. <https://www.commonwealthfund.org/publications/2020/sep/learning-pandemic-responses-across-indian-country>.
- Jaiswal, J., Halkitis, P.N., 2019. Towards a more inclusive and dynamic understanding of medical mistrust informed by science. *Behav. Med.* 45 (2), 79–85.
- Jones, A.S., Petrie, K.J., 2017. I can see clearly now: using active visualisation to improve adherence to ART and PrEP. *AIDS Behav.* 21 (2), 335–340.
- Karuga, R.N., Njenga, S.N., Mulwa, R., Kilonzo, N., Bahati, P., O'reilly, K., Kiragu, M., 2016. "How I wish this thing was initiated 100 years ago!" willingness to take daily oral pre-exposure prophylaxis among men who have sex with men in Kenya. *PLoS One* 11 (4), e0151716.
- Khumalo-Sakutukwa, G., Morin, S.F., Fritz, K., Charlebois, E.D., van Rooyen, H., Chingono, A., Modiba, P., Mrumbi, K., Visrutaratna, S., Singh, B., Sweat, M., Celentano, D.D., Coates, T.J., NIMH Project Accept Study Team, 2008. Project Accept (HPTN 043): a community-based intervention to reduce HIV incidence in populations at risk for HIV in sub-Saharan Africa and Thailand. *J. Acquir. Immune Defic. Syndr.* 49 (4), 422–431. <https://doi.org/10.1097/QAI.0b013e31818a6cb5>.
- Lancet, The, 2020. COVID-19: fighting panic with information. *Lancet (London, England)* 395 (10224), 537.
- Mack, N., Odhiambo, J., Wong, C.M., Agot, K., 2014. Barriers and facilitators to pre-exposure prophylaxis (PrEP) eligibility screening and ongoing HIV testing among target populations in Bondo and Rarieda, Kenya: results of a consultation with community stakeholders. *BMC Health Serv. Res.* 14 (1), 1–12.
- Marquez, C., Kerkhoff, A.D., Naso, J., Contreras, M.G., Castellanos Diaz, E., Rojas, S., Havlir, D.V., 2021. A multi-component, community-based strategy to facilitate COVID-19 vaccine uptake among Latinx populations: from theory to practice. *PLoS One* 16 (9), e0257111.
- Mheidly, N., Fares, J., 2020. Leveraging media and health communication strategies to overcome the COVID-19 infodemic. *J. Public Health Policy* 41 (4), 410–420.
- Mitchell, A.E., Colvin, H.M., Palmer Beasley, R., 2010. Institute of Medicine recommendations for the prevention and control of hepatitis B and C. *Hepatology* 51 (3), 729–733.
- Mutch, A.J., Lui, C.W., Dean, J., Mao, L., Lemoire, J., Debattista, J., Fitzgerald, L., 2017. Increasing HIV testing among hard-to-reach groups: examination of RAPID, a community-based testing service in Queensland, Australia. *BMC Health Serv. Res.* 17 (1), 1–7.
- Nunn, A.S., da Fonseca, E.M., Bastos, F.I., Gruskin, S., 2009. AIDS treatment in Brazil: impacts and challenges. *Health Aff.* 28 (4), 1103–1113.
- Petrova, E., Farinholt, T., Joshi, T.P., Moreno, H., Al Mohajer, M., Patel, S.M., Anandasabapathy, S., 2021. A community-based management of COVID-19 in a mobile container unit. *Vaccines* 9 (11), 1362.
- Privor-Dumm, L., King, T., 2020. Community-based strategies to engage pastors can help address vaccine hesitancy and health disparities in black communities. *J. Health Commun.* 25 (10), 827–830.
- Pronyk, P., Rogers, B., Lee, S., Bhatnagar, A., Wolman, Y., Monasch, R., UNICEF Sierra Leone Ebola Response Team, 2016. The effect of community-based prevention and care on Ebola transmission in Sierra Leone. *Am. J. Public Health* 106 (4), 727–732.
- Rewar, S., Mirdha, D., Rewar, P., 2015. Treatment and prevention of pandemic H1N1 influenza. *Ann. Global Health* 81 (5), 645–653.
- Rousseau, E., Bekker, L.G., Julies, R.F., Celum, C., Morton, J., Johnson, R., O'Malley, G., 2021. A community-based mobile clinic model delivering PrEP for HIV prevention to adolescent girls and young women in Cape Town, South Africa. *BMC Health Serv. Res.* 21 (1), 1–10.
- Snowden, L.R., Graaf, G., 2021. COVID-19, social determinants past, present, and future, and African Americans' health. *J. Racial Ethn. Health Disparities* 8 (1), 12–20.
- Sutton, M., Anthony, M.N., Vila, C., McLellan-Lemal, E., Weidle, P.J., 2010. HIV testing and HIV/AIDS treatment services in rural counties in 10 southern states: service provider perspectives. *J. Rural. Health* 26 (3), 240–247.
- The United States Government, 2022. Fact Sheet: The Biden Administration to Begin Distributing at-Home, Rapid Covid-19 Tests to Americans for Free. The White House. Retrieved November 7, 2022, from. <https://www.whitehouse.gov/briefing-room/statements-releases/2022/01/14/fact-sheet-the-biden-administration-to-begin-distributing-at-home-rapid-covid-19-tests-to-americans-for-free/>.
- Thornton, A.C., Delpech, V., Kall, M.M., Nardone, A.H.I.V., 2012. HIV testing in community settings in resource-rich countries: a systematic review of the evidence. *HIV Med.* 13 (7), 416–426.
- Tomori, C., Risher, K., Limaye, R.J., Van Lith, L.M., Gibbs, S., Smelyanskaya, M., Celentano, D.D., 2014. A role for health communication in the continuum of HIV care, treatment, and prevention. *J. Acquir. Immune Defic. Syndr.* 66 (Suppl. 3), S306–S310. <https://doi.org/10.1097/QAI.0000000000000239>.
- Wallis, G., Siracusa, F., Blank, M., Painter, H., Sanchez, J., Salinas, K., Whittington, A., 2020. Experience of a novel community testing programme for COVID-19 in London: lessons learnt. *Clin. Med.* 20 (5), e165.
- Wang, T., Lurie, M., Govindasamy, D., Mathews, C., 2018. The effects of school-based condom availability programs (CAPs) on condom acquisition, use and sexual behavior: a systematic review. *AIDS Behav.* 22 (1), 308–320.
- Witters, D., 2020. In US, 14% with likely COVID-19 to avoid care due to cost: Gallup. Retrieved from. <https://news.gallup.com/poll/309224/avoid-care-likely-covid-due-cost.aspx>.