

HIV/AIDS public health resource allocation policy and its optimization in the United States

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Abstract. With 38 million HIV-positive individuals living worldwide, HIV/AIDS is a fatal and rigorous threat to build up a global health society. It is critical to optimize the allocation of public health resources for improving the life quality of HIV/AIDS patients in the U.S. Meanwhile, the inevitable mission of confirming HIV diagnosis receive comprehensive care, reduce HIV disparities among marginalized populations, and implement effective prevention measures. This article analyzes the allocation of public health resources for HIV/AIDS in the United States, including key issues such as funding allocation, medical infrastructure, targeted interventions, and health equity. A thorough assessment of the affordability of HIV-related medical services and their interventions' efficacy is executed. At the same time, this article also focuses on the effectiveness of PrEP. Although PrEP has been proven to be effective, its promotion still faces problems such as insufficient awareness, financial barriers, limited access, and social stigma. To address these challenges, it is necessary to strengthen public education, train medical providers, reduce PrEP costs, expand access, and combat stigma through public awareness campaigns and legal protection. This comprehensive approach is consistent with a broader public health strategy aimed at slowing HIV transmission and achieving sustained viral suppression.

Keywords: Public health resource, HIV/AIDS, USA, PrEP.

1. Introduction

With almost 38 million HIV-positive individuals living throughout the globe, HIV/AIDS is still a major public health concern, according to UNAIDS. In recent years, the prevention and control of AIDS have been a major thrust of global health issues, particularly in developed countries, such as the U.S. Over time, the rationing of healthcare resources to address HIV/AIDS has been influenced by scientific advances, policy changes and societal perceptions of the disease. Optimizing the allocation of public health resources for HIV/AIDS is crucial for several reasons. First, effective resource allocation ensures that individuals living with HIV have access to comprehensive care, including ART, mental health services, and social support programs. Second, targeted resource allocation can help reduce HIV disparities among marginalized populations, such as racial and ethnic minorities, LGBTQ+ communities, and individuals with limited access to healthcare. Third, strategic resource allocation is essential for implementing prevention initiatives, such as Pre-Exposure Prophylaxis (PrEP) education and outreach, HIV testing campaigns, and harm reduction programs for injection drug users. By analyzing public health resource allocation for HIV/AIDS, this research aims to contribute to evidence-based

policymaking and programmatic decisions that maximize the impact of interventions and improve health outcomes for affected.

Optimizing the allocation of public health resources for HIV/AIDS is crucial for several reasons. First, effective resource allocation ensures that individuals living with HIV have access to comprehensive care, including ART, mental health services, and social support programs. Second, targeted resource allocation can help reduce HIV disparities among marginalized populations, such as racial and ethnic minorities, LGBTQ+ communities, and individuals with limited access to healthcare [1]. Third, strategic resource allocation is essential for implementing prevention initiatives, such as PrEP education and outreach, HIV testing campaigns, and harm reduction programs for injection drug users. By analyzing public health resource allocation for HIV/AIDS, this research aims to contribute to evidence-based policymaking and programmatic decisions that maximize the impact of interventions and improve health outcomes for affected populations.

This paper will examine the allocation of public health resources for HIV/AIDS in the United States, focusing on key areas such as funding distribution, Healthcare Infrastructure, Targeted Interventions, and health equity. This essay will analyze federal, state, and local budgets allocated to HIV/AIDS prevention, treatment, and research programs. Meanwhile, Assess the effectiveness and accessibility of HIV-related health-care services, including HIV testing sites, pediatric HIV care clinics, and peer education and counseling services for people living with HIV and AIDS. Evaluating the effectiveness of targeted interventions, such as PrEP initiatives, needle exchange programs, and community-based outreach efforts, in reducing HIV transmission and improving health outcomes. In the end, examining disparities in HIV/AIDS prevalence, diagnosis rates, and access to care among different demographic groups and geographic regions, and exploring strategies to address these disparities through resource allocation strategies.

By conducting a comprehensive analysis of public health resource allocation for HIV/AIDS, this research seeks to inform policymakers, public health officials, and advocacy groups about best practices and innovative approaches to enhance the effectiveness and equity of HIV/AIDS programs and services in the United States.

2. The “Ending the HIV Epidemic Initiative”

HIV prevention and control efforts in the United States are spread across multiple federal institutions, with the Centers for Disease Control and Prevention (CDC) and the National Institute of Allergy and Infectious Diseases (NIAID) as the principal lead institutions. Overall guidance for prevention and control efforts is provided by the National AIDS Strategy issued by the U.S. government, which sets specific goals, including reducing new infections, increasing testing and treatment coverage for high-risk groups, and eliminating health inequities. At the same time, The Department of Health and Human Services (HHS) and the Centers for Disease Control and Prevention (CDC) launched an organization called the End the HIV Epidemic Initiative in 2019, aims to reduce new HIV infections in the US by 90% by 2030 ("HIV Prevention in the United States") [2]. The Initiative's four primary objectives are to: promptly detect all HIV-positive individuals; treat HIV-positive individuals promptly and effectively to achieve long-term suppression of the virus; stop new HIV transmissions by using evidence-based control mechanisms like syringe service programs (SSPs) and PrEP; and act swiftly in the case of a potential HIV epidemic by providing individuals in need with the essential treatment and preventive programs.

Establishing that the agencies are able to diagnose HIV-positive individuals as soon as feasible is the first component of the mission. According to the research, "it is estimated that 40% of new HIV diagnoses are transmitted by those who are not aware of their HIV diagnosis, and that 15% of people with HIV in the United States are unaware they have HIV" (HIV Prevention in the United States: Mobilizing to End the Epidemic). This shows that some patients themselves do not take the initiative to undergo HIV testing because they do not perceive the potential risk of infection. So without regular or timely testing, patients will only find out after symptoms appear and seek medical attention. This oversight increases the probability of infecting others while the patient is infected with HIV but is not

detected, and the optimal treatment and control time is missed, which may make future treatment more difficult and costly.

3. Strategies to improve HIV testing and treatment efficiency

First of all, from the perspective of improving HIV testing technology, it is very important to improve the accuracy and convenience of testing. In particular, utilizing the most recent procedures and technology, Testing ought to be standard procedure in Federally Qualified Health Centers, STD clinics, hospital emergency rooms, and other establishments that deal with people who might not otherwise have access to healthcare. Meanwhile, "Implementing innovative technologies and programs, such as self-testing, to make testing more accessible". Except for this, the U.S. government and non-governmental organizations carry out publicity and education about AIDS through various channels, including conducting publicity activities in schools and communities, and using social media and traditional media for widespread dissemination. These publicity and education campaigns aim to raise public awareness of HIV, promote safe sexual practices and regular testing.

The second perspective CDC mentioned is that quick and effective medical care for HIV patients is needed to attain sustained suppression of the virus. As the primary remedy for infection with HIV, antiretroviral therapy (ART) can successfully block viral replication, lower virus loads, and enhance patients' quality of life and longevity through multiple forms of drug administration. "ART cannot cure HIV, but HIV medicines help people with HIV live longer, healthier lives". The U.S. healthcare system ensures that HIV-infected patients have timely access to ART, especially through the Affordable Care Act (ACA), which offers patients who are struggling financially financial support. Treatment as Prevention (TasP) is an additional tactic that "refers to taking HIV medication to prevent the sexual transmission of HIV." The TasP strategy emphasizes early initiation of ART treatment to diminish the viral load to lessen the probability of HIV transmission. Research has shown that maintaining viral load at undetectable levels is effective in stopping sexual transmission, and as a result, TasP has become an important component of HIV prevention and control in the United States [3]. CDC offers a variety of solutions in facilitating the implementation of these treatments. First, "CDC works with grantees, partners, and providers to provide immediate – ideally same-day – linkage to care for people with newly diagnosed HIV". For instance, in order to enable quick linking, all CBOs and health departments supported by the CDC are obliged to keep official connections with HIV healthcare professionals. Additionally, the goal of the CDC is to enhance the HIV connection and orientation services that STD clinic offer. These services offer a vital channel of contact with individuals who might gain advantage from prevention programs for HIV or who are living with HIV but wouldn't normally be involved in the medical system. STIs are linked to an increased risk of HIV acquisition because they can amplify HIV transmission and because sex is the same method by which HIV and other STIs can be spread.

The second strategy is to extend "Data to Care" initiatives run by the health department, which track and identify individuals who are not receiving care [4]. The Data to Care (D2C) strategy links people living with HIV to appropriate HIV care services by utilizing a variety of sources of patient data, including laboratory, pharmacy, health management information/surveillance, patient charts, and information about PLHIV who have not started or have stopped taking their medication. These innovative programs, which use constantly acquired HIV monitoring information and other medical records to detect and keep up in an anonymous way with individuals who have been diagnosed with HIV but lack access to care or who have consistently situated viral loads, were developed in partnership with the CDC and a few health department grantees.

The final tactic is to use evidence-based therapies, such as syringe service programs (SSPs) and PrEP, to stop new infections. For the PrEP, the CDC is trying to make PrEP more widely available and more widely utilized among the groups that stand to gain the most from it: Black and transgender women, individuals of color who identify as homosexual or bisexual. Improving access to PrEP is critical. Efforts should be made to work with pharmaceutical companies and health insurers to reduce the cost of PrEP, including co-pays and deductibles, and ensure that PrEP is covered under Medicaid and other public health programs in all states. Expanding the availability of PrEP through primary care providers, sexual

health clinics, and community health centers, along with establishing mobile clinics and telehealth services, can reach underserved and rural areas, making it easier for people to access PrEP without significant travel. Additionally, providing assistance with navigating insurance coverage and patient assistance programs can help reduce financial barriers. Policy and advocacy efforts are also vital. Advocacy for policies that support broader PrEP access, such as state and federal funding for PrEP programs, can significantly impact availability. Working with policymakers to address structural barriers, including those related to immigration status, housing instability, and healthcare access, is crucial. Encouraging state and local health departments to prioritize PrEP in their HIV prevention strategies, particularly in high-prevalence areas, and securing funding for community-based organizations to run PrEP programs tailored to their specific communities, are important steps.

4. Key issues to improve PrEP utilization

Despite the remarkable therapeutic effects of PrEP, its adoption and use in the United States face several challenges. Although the first PrEP antiretroviral being approved by the US Food and Drug Administration in 2012, less than 20% of those at high risk of HIV received a PrEP prescription in 2019 [5]. First, A significant barrier to PrEP utilization is the lack of awareness and education among both potential users and healthcare providers. The study about PrEP awareness showed the results that 14–18-year-old AMSM found that only 16% were aware of PrEP in 2015 [6]. It's undeniable that many people who are more likely to contract HIV are unaware of PrEP's effectiveness as a treatment. The research from John Hopkins that focuses on the issues of access of PrEP. The study shows an example that one young gay student, Brett Wargo knew that just using condoms wasn't enough to protect him against HIV. Wargo was a sophomore in 2014 when he first heard about PrEP, but he didn't know much about what it was, how it worked, or how to get it [7]. Additionally, some healthcare providers are not adequately informed about PrEP, leading to missed opportunities for patient education and prescription. Improving awareness and education about PrEP is essential. Public health campaigns should be tailored to reach high-risk populations, providing clear and accessible information about PrEP. Healthcare providers should receive comprehensive training on PrEP to ensure they can effectively educate and encourage eligible patients to consider this preventive measure.

The second issue is the cost and insurance barriers. The cost of PrEP can be prohibitive for many individuals. Although insurance may cover PrEP, high co-pays and deductibles can still pose financial barriers. The research focuses on the cost as a barrier to access PrEP in the U.S. showing that FAIR Health estimates that the cash cost of PrEP care for the initiation of PrEP is \$2666.90 for uninsured patients [8]. At the same time, coverage disparities remain between public and private plans, some states may still require patients to share costs for PrEP medications and related services. Those without insurance or with inadequate coverage may find it difficult to afford the medication. Even with assistance programs, the financial strain remains a significant deterrent. In terms of addressing the financial barriers associated with PrEP, policymakers should work to expand insurance coverage for PrEP, including reducing co-pays and deductibles. Increased funding for assistance programs that provide PrEP at low or no cost to uninsured and underinsured individuals is also necessary. Pharmaceutical companies could play a role by reducing the cost of PrEP medications.

The last barrier is social stigma and discrimination of HIV. The International Labor Organization's "Global HIV Discrimination in the Workplace" survey noted that the findings indicate that HIV discrimination exists not only in the United States, but in other countries as well. Across all 50 countries, about four in ten respondents say people living with HIV should not be allowed to work directly with others who do not have HIV (35.6%) or offer a conditional response of "it depends" (2.8%) [9]. Social stigma and discrimination associated with HIV and those who use PrEP can discourage people from seeking the medication. This stigma is particularly pronounced in conservative and less accepting communities. Fear of being judged or outed can prevent individuals from accessing PrEP, even if they are aware of its benefits. Efforts to combat stigma and discrimination are essential for increasing PrEP uptake [10]. Public awareness campaigns should aim to normalize PrEP use and reduce the stigma associated with HIV. Legal protections and anti-discrimination policies should be strengthened to

protect those seeking PrEP from harassment and discrimination. Support groups and community advocacy can also provide safe spaces for individuals to discuss their health without fear of judgment.

5. Conclusion

The Centers for Disease Control and Prevention and the U.S. Department of Health and Human Services' Ending the HIV Epidemic Initiative 2019 reaffirms their commitment to reducing the number of new HIV infections by 90 percent by 2030. However, despite the availability and proven effectiveness of PrEP, several barriers hinder its widespread adoption. Key issues include a lack of awareness and education among potential users and healthcare providers, financial and insurance barriers, limited access in underserved areas, and pervasive social stigma and discrimination. Addressing these challenges requires a multifaceted approach: enhancing public education through targeted campaigns, training healthcare providers, reducing the cost of PrEP through policy advocacy and partnerships with pharmaceutical companies, and expanding access via mobile clinics and telehealth services. Efforts must also focus on normalizing PrEP use and combating stigma through public awareness initiatives and strengthened legal protections. Improving adherence through counseling, support mechanisms, and innovations like long-acting injectable PrEP is essential. Additionally, integrating PrEP services within existing healthcare structures, such as Federally Qualified Health Centers and STD clinics, can improve routine access and utilization. By addressing these barriers, the U.S. can significantly enhance PrEP uptake among high-risk populations, consequently advancing the national objective of eliminating the HIV epidemic, including Black women, transgender women, persons in the South, and homosexual and bisexual men of color. This holistic approach not only ensures that those most in need can access and benefit from PrEP but also aligns with broader public health strategies to mitigate the spread of HIV, achieve sustained viral suppression, and ultimately, eliminate HIV-related health disparities. By leveraging comprehensive strategies and fostering inclusive healthcare environments, the U.S. can make substantial progress in the fight against HIV, moving closer to a future free of new HIV infections and ensuring equitable health outcomes for all.

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