



A review of current trends in HIV epidemiology, surveillance, and control in Nigeria

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Abstract

The HIV epidemic remains a public health challenge in Nigeria, with about 1.9 million people living with the virus in 2020. Despite progress in controlling the epidemic, challenges remain, including inadequate funding and limited access to prevention and treatment services for key populations. This article provides an overview of the HIV control system in Nigeria and the current state of the HIV control system in Nigeria. It provides recommendations for strengthening the response to the epidemic. Contributions of government agencies, international partners, and civil society organizations are required to reduce this epidemic. This article highlights the need to strengthen surveillance systems, increase access to testing and treatment, enhance prevention strategies, address stigma and discrimination, increase funding, and expand research and development. The impact of antiretroviral therapy on HIV management is also discussed. Over the last decade, Nigeria has made significant progress in controlling the HIV epidemic, with a decline in new infections and increased treatment coverage. However, more work is needed to achieve the 95-95-95 targets set by the joint united nations programme on HIV/acquired immunodeficiency syndrome for 2030, and a multi-pronged approach is required to address the social and structural determinants of health that drive the epidemic. By implementing the recommendations outlined in this article, Nigeria can make significant progress towards ending the HIV epidemic and improving the quality of life for those living with the virus.

Keywords: epidemics, epidemiology, HIV burden, Human Immunodeficiency virus, surveillance and sub-Saharan Africa

Introduction

The HIV has been a public health issue of concern for over 30 years since its first appearance in the 1980s. HIV is a virus that weakens the body's immune system, targeting particularly the CD4 + T cells, which are key drivers of the immune response of the body^[1]. If left to progress, it results in acquired immunodeficiency syndrome (AIDS) making it unable to fight against infections that may arise to attack the body^[2].

AIDS, on the other hand, refers to disease(s) evidenced by the rapid progression of HIV (NHS England, 2017). While there is no cure for the virus to date, there have been breakthroughs in research and science to strengthen better treatment regimens towards achieving viral suppression and improving quality of life^[3].

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Sponsorships or competing interests that may be relevant to content are disclosed at the end of this article.

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Annals of Medicine & Surgery (2023) 85:1790–1795

Received 21 December 2022; Accepted 24 March 2023

Published online 12 April 2023

<http://dx.doi.org/10.1097/MS9.0000000000000604>

HIGHLIGHTS

- The HIV is still a public health issue.
- Although Nigeria had the highest HIV burden in sub-Saharan Africa, statistics show that this burden has been reduced.
- Management protocols such as ‘three ones’ principles, 90-90-90 treatment plan and 95-95-95 targets have helped in ameliorating the HIV burden in Nigeria.
- Control measures still need to be reinforced to further reduce the burden and epidemic.

Nigeria has the largest HIV burden in Sub-Saharan Africa, with over 1.9 million people currently living with HIV^[4]. AIDS-related deaths in Nigeria have been estimated to be around 49 000 across all age groups in the year 2020 alone^[5]. The country adopts the Sentinel Surveillance System but has launched the Nigeria National Response Information Management System (NNRIMS) which serves as the disease monitoring and evaluation framework for the national HIV/AIDS response^[6].

Coordination of HIV response and control activities are performed by the National Agency for the Control of AIDS (NACA) using the ‘three ones’ principle agreed by Donors, developing countries and UN agencies. In alignment with the united nations programme on HIV/AIDS (UNAIDS) 90-90-90 treatment for all by the year 2020 target (now 95-95-95 targets by 2030), Nigeria has shown some remarkable progress which would be highlighted below.

However, challenges persist across key thematic areas under the control measures employed by the country. This paper seeks to review the available evidence, evaluate the effectiveness of

control measures and proffer recommendations across areas for development.

Epidemiology

HIV was first identified among men who have sex with men (MSM) in Europe and the United States of America at the time^[7] but is now dominant in the African continent, particularly Sub-Saharan Africa, with unprotected heterosexual intercourse as the main mode of transmission^[8].

Since its emergence in the 1980s, HIV/AIDS has infected about 79 million people worldwide^[9]. In 2020, ~1.5 million individuals were newly infected with the virus^[9]. Nigeria has the largest population in sub-Saharan Africa, with an estimated 206,139,589 people living in the country as of 2020^[10]. In 2018, Sub-Saharan Africa accounted for two-thirds (67%) of new infections globally^[11].

Worldwide, HIV is recognized to have two major types; HIV-1 and HIV-2, with various subtypes. HIV-1 is the major cause of the HIV epidemic in Nigeria, having subtypes A and G as the dominant subtypes in Southern and Northern Nigeria, respectively^[12].

In Nigeria, the HIV epidemic ranks as the second highest across the world, with over 1.9 million people currently living with HIV, with current evidence revealing incidence as 8.0 per 10 000 persons across both genders and age groups, and a current prevalence of 1.4% among adults aged 15–49 years^[4]. For HIV, drivers for incidence in the country are quite diverse, as key populations, (including MSM, people who inject drugs, and female sex workers) also contribute to the HIV epidemic due to their varying situations and sexual networks. Before now, the HIV prevalence was estimated at 2.8%; this shows a reduction over the years. The country consists of 36 states and 1 capital city (FCT). Figure 1 below displays the Nigerian Map showing rankings by states according to low (<1.0%), medium (between 1.0 and 1.9%) and high (>2.0%) prevalence^[13].

According to UNAIDS, AIDS-related deaths in Nigeria have been estimated to be around 49 000 across all age groups in the year 2020. The figure below displays deaths due to HIV/AIDS from 1990 till 2020, showing the number of lives taken by the ensuing epidemic^[14] Figures 2, 3).

HIV causes immunosuppression, which leads to opportunistic infections. These opportunistic infections continue to deteriorate the immune system, making it difficult for the body to ward off new infections^[15]. Tuberculosis is the most common opportunistic illness and a major cause of mortality with an estimated 21 deaths per 100 000 population resulting from HIV infection in Nigeria^[13].

The burden of the epidemic is overarching as children are not spared from the virus, which has made orphans of about 2.23 million children in the country, according to the 2014 Global AIDS Response Country Progress Report^[16].

Review of the evidence

Surveillance

According to the Centers for Disease Control and Prevention (CDC)^[17], “HIV surveillance is an ongoing process that collects, analyses data, and disseminates information about new and existing cases of HIV infection (including AIDS).” This is to

quantify the HIV burden and disseminate data to those responsible for an effective response towards preventing and controlling further disease incidence. Sentinel surveillance system, Nigeria National Response Information Management System, Nigeria Demographic Health Surveys (NDHS), National HIV and AIDS and Reproductive Health Surveys (NARHS), among others, have been useful in scaling up and monitoring HIV trends in the country^[6,16].

While a lot of data collection tools exists for monitoring and surveillance, there exists a lot of challenges in this system which can be addressed by:

- (1) Coordinating all the various data collection (routine and non-routine) sources into one national framework.
- (2) Inclusion of private sector contributions—private sector serves as an important source of HIV data and services, as the public frequently utilizes them.
- (3) Better dissemination of data for improved surveillance in the country’s HIV/AIDS response.

Control

The National Agency for the Control of AIDS (NACA) in Nigeria coordinates and supports the national response to HIV/AIDS, working in collaboration with other agencies, such as the Federal Ministry of Health, U.S. President’s Emergency Plan for AIDS Relief (PEPFAR), the Global Fund, and UNAIDS^[18]. The Three Ones principle, which includes an agreed HIV/AIDS action framework, a national AIDS coordinating authority with a broad-based multisector mandate, and a country-level monitoring and evaluation system, guides the country’s national response. In the last five to ten years, Nigeria has made significant progress in its HIV control system, with a decline in new HIV infections and an increase in the number of people receiving antiretroviral therapy. However, HIV/AIDS remains a significant public health challenge, particularly among key populations, and there is still a long way to go.

NACA is the primary agency responsible for coordinating and supporting the national response to HIV/AIDS in Nigeria. The agency works with other agencies such as the Federal Ministry of Health, PEPFAR, the Global Fund, and UNAIDS to develop and implement national policies and guidelines, monitor the epidemic, and mobilize resources for the response^[19]. The country has also designed the National HIV and AIDS Strategic Framework (NSF) 2017–2021, revised in 2019 to align with the Three Ones principle.

The Federal Ministry of Health provides healthcare services, including distributing antiretroviral therapy (ART) and other HIV-related medications. The ministry also oversees the developing and implementation of national policies and strategies for HIV prevention and control. PEPFAR, a U.S. government initiative, provides financial and technical support to countries worldwide to combat HIV/AIDS. The Global Fund to Fight AIDS, Tuberculosis, and Malaria is a partnership between governments, civil society organizations, and the private sector, which provides funding to countries to support the prevention and treatment of these diseases^[20]. UNAIDS offers technical support and guidance to countries to help them achieve the global targets for ending the HIV epidemic.

Over the last 5–10ten years, Nigeria has made significant progress in its HIV control system. According to UNAIDS, the number of new HIV infections in Nigeria declined by 21%

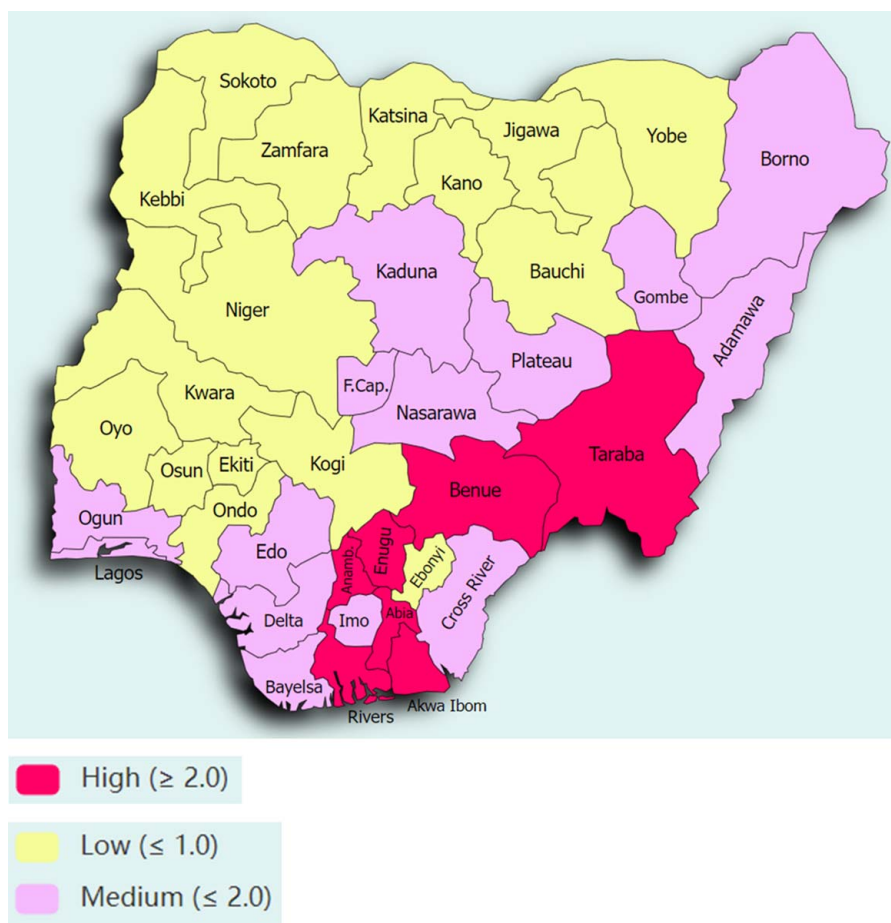


Figure 1. HIV prevalence displayed using the MAP of Nigeria (Created with paintmaps.com).

between 2010 and 2019, while the number of people living with HIV who received ART increased from 27% in 2010 to 54% in 2019^[21]. The government has also implemented various prevention strategies, including the distribution of condoms and other prevention methods and the promotion of HIV testing and counselling services^[20,21].

Evaluation of the effectiveness of control measures

For national HIV-level programming, targets have been set according to key thematic areas to be in harmony with the UNAIDS 90-90-90 by 2020, now 95-95-95 fast-track targets. These UNAIDS targets^[22] are highlighted below;

- (1) “95-95-95 for treatment: 95% of people living with HIV knowing their HIV status; 95% of people who know their status on treatment; and 95% of people on treatment with suppressed viral loads”
- (2) “Reduce the annual number of new HIV infections among adults to 200 000”;
- (3) “Achieving zero discrimination towards ending HIV/AIDS by 2030.”

These key thematic areas of national control measures in Nigeria include the following.

HIV prevention

Prevention of new infections is the country’s number one goal in the fight against the HIV/AIDS epidemic. Incidence rates have declined over the years^[23], yet research continues to emphasize the importance of scaling up HIV prevention programme across developing countries as one solid step in defeating the HIV epidemic^[24]. In 2007, Nigeria devised her first-ever National HIV/AIDS Prevention Plan (NPP), which focused on utilizing the ABC approach to the prevention of HIV. The ABC Approach entails Abstinence (from sex), Being faithful to one’s partner and Condom Use^[25].

Pre-exposure prophylaxis (PREP) and post-exposure prophylaxis are also components of this thematic area, although, in Nigeria, PREP is scarcely available to the general population, as it is mostly targeted at MARP (Most-at-risk-populations/ Key population (MSM, female sex workers, people who inject drugs), as they are the key drivers towards quelling the HIV/AIDS epidemic in Nigeria^[26].

HIV counselling and testing

HIV counselling and testing, also referred to as HIV testing services in recent times, continues to serve as a major instrument in the detection and control of the HIV/AIDS epidemic^[27]. Nigeria

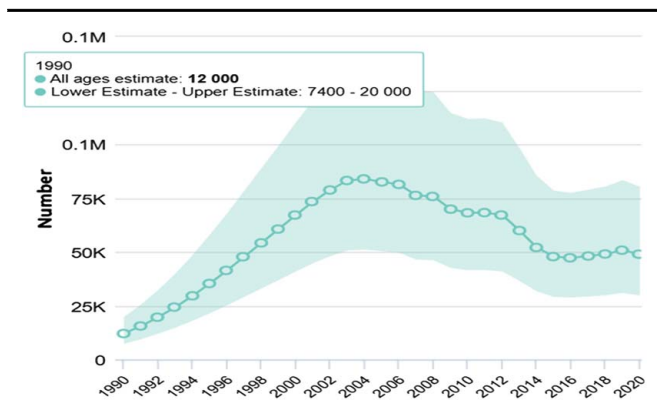


Figure 2. AIDS-related deaths in Nigeria from 1990–2020. AIDS, acquired immunodeficiency syndrome^[14].

adopts the provider-initiated testing and the Client-initiated testing approaches^[28]. Young people constitute a major segment of the Nigerian population and contribute over 40% to the incidence of the virus, yet they continue to face various critical barriers to accessing HIV testing^[29]. Some of these barriers include but are not limited to stigma/discrimination, ignorance about sources of HIV testing services, age of testing, and cultural/social norms, among others^[30]. Self-testing, among other novel approaches have been applied to increase the uptake of HIV testing as it is very critical to realizing the first UNAIDS 95 goal of ending the epidemic by the year 2030^[31].

Elimination of mother to child transmission of HIV

With the antenatal care (ANC) sentinel survey as one of the earliest tools for the data collection on HIV prevalence among pregnant women in Nigeria, there has been recorded progress and decline in the HIV prevalence over time^[32]. However, challenges still exist as not all pregnant women can access ANC services due to a variety of structural barriers, and even if they can access these ANC services at these specific health centres, HIV testing may not always be available or offered to them, ultimately deterring the progress of national targets set to halt HIV/AIDs across the nation^[33]. Elimination of mother to child transmission also constitutes the treatment component for pregnant women who test positive for HIV, yet research has shown that there is a gap in

linking positive pregnant women to HIV treatment, and this has a serious impact on attaining the second 95 target set by the UNAIDS^[34].

Treatment, adherence and support

Efforts by donors have increased the roll-out of antiretrovirals to various treatment facilities, thereby seeing an increase in national viral suppression rates to 42.3% across the country, yet gaps in knowledge, service delivery, and transportation continue to dissuade people living with HIV from accessing antiretroviral treatment^[35]. ART continues the HIV response by including care and support to ensure proper treatment adherence. However, the national antiretroviral programme continues to experience setbacks from drug shortage to non-adherence, thereby contributing to treatment failures and drug resistance in the population^[36].

Recommendations

The government, civil society organizations, and international partners must work together to achieve the 95-95-95 targets set by UNAIDS for 2030 and ultimately end the HIV epidemic in Nigeria. A multi-pronged approach is needed, which includes increasing access to testing and treatment, improving prevention efforts, addressing social and structural determinants of health, and ensuring the sustainability of the HIV response through adequate funding and adequate human resources for the effective implementation of HIV control measures as discussed below.

- (1) Strengthen surveillance system to improve data quality: The current Sentinel Surveillance System needs to be strengthened, and efforts should be made to expand data collection beyond antenatal clinics to include other key populations. This will provide more accurate data and enable targeted interventions to be developed and implemented. Accurate and reliable data is essential for effectively planning, implementing, and monitoring HIV control measures^[37]. Efforts should be made to improve the quality of data collected by strengthening data collection and reporting systems, using standardized tools, and providing adequate training to data collectors and managers.
- (2) Engage key populations: Key populations, such as men who have sex with men, people who inject drugs, and sex workers, are at a higher risk of HIV infection due to various factors, including stigma and discrimination. Efforts should be made to involve these populations in designing, implementing, and monitoring HIV control measures to ensure that their specific needs are addressed. Increased access to test should be made accessible to these groups.
- (3) Enhance prevention strategies: Prevention strategies should be enhanced to reduce the number of new infections. This can be achieved through education and awareness campaigns targeting key populations, promoting condoms and other preventive measures, and increasing access to PREP for those at high risk of infection.
- (4) Improve treatment coverage: Efforts should be made to improve treatment coverage, ensuring that all those living with HIV have access to ART and other necessary medications. This can be achieved by increasing funding for HIV treatment, strengthening healthcare systems, and expanding access to healthcare services. ART has revolutionized the management of HIV and has been shown to improve the

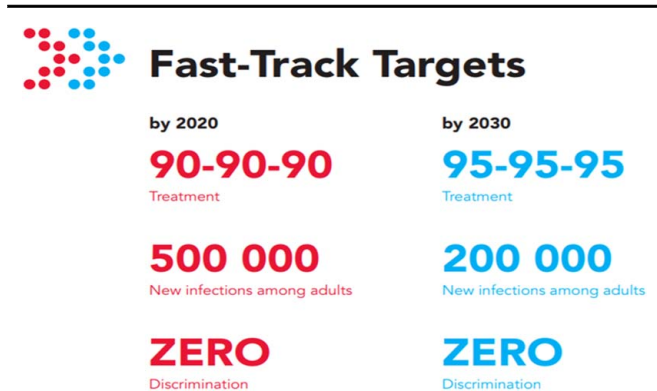


Figure 3. UNAIDS Fast track targets to end AIDS by 2030. AIDS, acquired immunodeficiency syndrome; UNAIDS, united nations programme on HIV/AIDS^[14].

quality of life and life expectancy of people living with HIV^[38]. ART reduces the viral load, improving the health of the person living with HIV, reducing the risk of transmitting the virus to others, and restoring and preserving the immune system. Early diagnosis and prompt ART initiation will facilitate a longer and healthier life for the concerned patient.

- (5) Address stigma and discrimination: Stigma and discrimination associated with HIV remain a significant challenge in Nigeria. Efforts should be made to address this issue by promoting education and awareness, providing support for those living with HIV, and enforcing laws and policies that protect the rights of people living with HIV.
- (6) Increase funding for HIV response: Funding for the HIV response in Nigeria needs to be increased to implement effective prevention and treatment programs. This can be achieved through increased government funding and partnerships with international organizations and donors.
- (7) Strengthen coordination and collaboration: Coordination and collaboration between government agencies, civil society organizations, and international partners must be strengthened to ensure effective HIV control measures. This can be achieved through regular meetings, information sharing, and joint planning and implementation of programs.
- (8) Strengthen community-based interventions: Community-based interventions are crucial in HIV prevention, treatment, and care, particularly in hard-to-reach areas. Efforts should be made to strengthen community-based interventions by providing adequate resources, training, and support to community health workers and other community-based organizations.
- (9) Expand research and development: Research and development into new treatment and prevention strategies should be expanded to ensure that Nigeria remains at the forefront of HIV control efforts. This can be achieved through increased funding for research, partnerships with academic institutions, and collaboration with international research organizations.
- (10) Health financing and sustainability: The COVID-19 pandemic has devastated the Nigerian healthcare system, including reduced HIV funding as resources were diverted to the pandemic response. To ensure the sustainability of the HIV response in Nigeria, the government should increase healthcare spending in the national budget, establish domestic funding for HIV response, and explore options for localizing the production of antiretrovirals and other HIV commodities in the country.
- (11) Collaboration, infrastructure, and policy: Nigeria has a good track record of working collaboratively with international partners and civil society organizations to fund its HIV response^[39,40]. The government should encourage public and private sector collaboration to boost human and technical infrastructure support for the national HIV response. Additionally, monitoring and HIV surveillance mechanisms should be improved and strengthened to ensure data quality in reporting. Enabling policies should also be implemented to eliminate barriers to ending HIV/AIDS in the country, including stigma and service barriers.

By implementing these recommendations, Nigeria can strengthen its HIV response and achieve the 95-95-95 targets set

by UNAIDS for 2030, ultimately reducing the burden of HIV and improving the quality of life for those living with the virus.

Conclusion

Examining the successful elimination of polio in Nigeria and Africa—a disease that has ravaged the country and continent at large for over 30 years, it has been evidenced that learning from public health responses from previous epidemics, implementation of novel interventions, intensification of evidence-based research efforts in policy and practice along with community participation/involvement will greatly enhance the success of HIV programming and ultimately curb the HIV epidemic in Nigeria. While the country has made significant strides in the last 5–10 years, there is still a long way to go. It is essential to continue improving access to prevention and treatment services, particularly for key populations, and to address issues of stigma and discrimination to end the HIV epidemic in Nigeria.

Ethics approval

Not applicable.

Consent to participate

Not applicable.

Source of funding

No funding was received for this research.

Author contribution

Both the authors wrote, revised and approved the manuscript.

Conflicts of interest disclosure

The authors declare no conflict of interest.

Research registration unique identifying number (UIN)

1. Name of the registry: Note applicable.
2. Unique Identifying number or registration ID: Not applicable.
3. Hyperlink to your specific registration (must be publicly accessible and will be checked): Not applicable.

Guarantor

Archibong Edem Bassey and Goshen David Miteu.

Availability of data and material

Not applicable.

Provenance and peer review

Not commissioned, externally peer-reviewed.

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