

IFMSA Policy Proposal HIV and AIDS Response

Proposed by Team of Officials
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POLICY STATEMENT

Introduction:

HIV may result in progressive degradation of a person's immune system and without intervention, HIV can lead to the fatal condition - AIDS. To date, no curative intervention exists for HIV. Nonetheless, life expectancy has greatly improved with Antiretroviral Therapy (ART), and public health efforts are now focusing on primary prevention and harm-reduction strategies. However, many socioeconomic barriers still limit access to ARTs and HIV screening, impairing the progress of the HIV response.

IFMSA position:

The IFMSA acknowledges the necessity for a coordinated multisectoral response in order to improve healthcare access and health outcomes for people living with HIV. The current gaps in HIV response and the existing inequalities in accessing HIV services are our great concern and, thus, a center point of our local, national and international actions. As stigma and discrimination continue to pose obstacles for people living with HIV and AIDS, especially key populations, we believe that these social factors should be adequately addressed in addition to medical, economic and logistical considerations. Moreover, the IFMSA emphasizes the role of community-led actions that are the crucial strategy in tackling the HIV pandemic.

Call to Action:

IFMSA calls Governments and Policymakers to:

- Invest the financial and human resources needed for research and development of national strategies to eradicate HIV and AIDS.
- Implement evidence-based prevention strategies, such as pre-exposure prophylaxis and harm reduction, and empower existing ones, including comprehensive sexuality education.
- Reduce inequalities and ensure equitable access to ART for all people living with HIV and AIDS.
- Ensure essential legislation that outlaws discrimination in work and healthcare systems is in place.
- Assess the local and regional needs of people living with HIV and AIDS and ensure democratic participation of key populations, priority populations, affected communities and social minorities in policy-making.
- Foster solutions and partnerships with organizations led by and for people living with HIV, civil society and community leaders, private sectors and academia.

IFMSA calls Non-governmental Organizations to:

- Establish, collaborate and maintain a good relationship with the government, communities and health care providers in achieving maximum HIV care.
- Organize community outreaches that aim for HIV testing, prevention and service delivery and maximize effort on re-engagement of lost to follow-up HIV patients (patients who no longer came to healthcare facilities for more than certain times) and low adherence to ART patients.
- Conduct research on effective prevention and treatment for people with HIV and AIDS such as treatment, vaccine and other prophylaxis methods that considerate factors of human rights, adherence, economy, social and health
- Engage in HIV populational and peer-to-peer education by collaborating with advocacy and community groups from a stigma-free, sex-positive and human rights-based approach.
- Advocate against laws that limit access to health services and work opportunities for people living with HIV and AIDS.
- Organize and participate in HIV and AIDS-related activities to raise general population awareness, equip communities with the skills and capacity needed to empower, show support and ensure that every community remains a safe space for people living with HIV and AIDS.

IFMSA calls civil society & community leaders to:

- Involve people living with HIV and key populations in the decision-making processes that affect their lives and allow them to voice their views on national strategies that will affect them.
- Meaningfully participate in decision making, monitoring, implementation, and reporting on the progress made on HIV and collaborate with different stakeholders.
- Directly participate in service delivery and respect the rights of people living with HIV by abstaining from applying punitive and discriminatory laws and ensuring that community-led HIV services are equitably distributed between people and are human-rights based.
- Collect local disaggregated data and conduct participatory community-led research to identify the issues and gaps and inform decision-makers.

IFMSA calls medical schools to:

- Expand the medical curriculum to include social determinants of health, human rights-based approaches and patient-centered care relating to people living with HIV and AIDS.
- Assess students' competencies and attitudes in addressing issues related to HIV and AIDS stigma and discrimination.
- Provide teaching moments for students and staff to advocate and educate peers on HIV and AIDS science and sociology.
- Ensure a safe on-campus environment for people living with HIV and AIDS by educating the academic community and affirming stigma-free strategies in internal policies.
- Provide faculty development programs that prepare current personnel, including medical, teaching and logistical staff, to address HIV and AIDS discrimination and stigma in a sensitive manner.
- Promote HIV community and advocacy groups by supporting lectures, seminars and activities related to the subject.

IFMSA calls healthcare providers to:

- Offer services free of stigma and discrimination towards people living with HIV and AIDS by avoiding discriminatory behavior both inside and outside the work environment.
- Be mindful of their attitude, approach and language regarding HIV and AIDS in clinical settings and in their personal lives.
- Advocate and implement campaigns against laws, and healthcare providers that limit access to health services and work opportunities for people living with HIV and AIDS.
- Include a multidisciplinary and intersectional approach when caring for people living with HIV and AIDS that adequately addresses their medical and social needs.
- Conduct HIV and AIDS research on numerous components, including but not limited to HIV and AIDS prevention, including vaccination, treatment, and discrimination.

IFMSA calls IFMSA NMOs, Members & Medical Students to:

- Advocate and actively take part in designing and implementing comprehensive medical education curricula that equip students with the required knowledge and skills to address HIV and AIDS.
- Plan and engage in activities and initiatives that aim to, among other means of prevention measures, dissipate misinformation, and end stigma and discrimination toward people living with HIV at all levels.
- To actively and continuously capacitate themselves on the medical and sociocultural aspects concerning HIV and AIDS, including stigma and discrimination, key populations and prevention.
- Encourage and participate in HIV and AIDS research, including but not limited to HIV and AIDS prevention, treatment and addressing stigma.
- Empower and communicate respectfully, sensitively and without prejudice with people living with HIV and AIDS at all times.

POSITION PAPER

Background

HIV (*human immunodeficiency virus*) is a virus that attacks white cells, resulting in the impairment of a person's immunological response. It can be contracted from bodily fluids (blood, pre-ejaculate, semen, vaginal fluid, breast milk) of a person living with HIV in contact with the individual's mucosal tissue or blood. The most common cause of infection is sexual intercourse without barrier contraception or without medication treating or preventing HIV, or through sharing injection drug equipment.

If treatment is not introduced, HIV can lead to AIDS (*acquired immunodeficiency syndrome*), which presents with opportunistic infections, among others. The human body cannot fight HIV infection itself and there is no effective cure. However, HIV can be managed by using ART (*Antiretroviral Therapy*), which suppresses the effects that HIV has on the immune system, improving life expectancy and life quality of people living with HIV and preventing transmission of HIV to their sexual partners. In addition, there are also effective prevention methods such as PrEP (pre-exposure prophylaxis) and PEP (*post-exposure prophylaxis*), consistent use of barrier contraception and harm reduction [1].

HIV-related stigma encompasses negative beliefs and attitudes towards people living with HIV, including their families and healthcare providers. Some of the key populations affected by HIV include MSM (Men who have Sex with other Men) individuals, people who inject drugs, people in prisons and other closed settings, sex workers and transgender people, who, in addition to the stigma attached to their other conditions and identities, are also experiencing amplified HIV discrimination. These marginalized groups are less likely to seek or receive medical attention, leading to unfavorable outcomes in infection control at the individual and societal levels [2].

HIV stigma and discrimination affect the social well-being and mental health of people living with HIV. Due to social structural oppression, they might apply to themselves the negative stereotypes about people living with HIV, a phenomenon called "internalized stigma" or "self-stigma". This results in people living with HIV developing a negative self-image, feelings of shame, fear of disclosure, isolation, and despair. These feelings can discourage people from seeking healthcare services, including getting tested and treated for HIV [3].

In 2020, 37.7 million people were estimated to be living with HIV. This includes 10.2 million of them not on ARV treatment, and 1.5 million new infections. The number of new infections has fallen by 31% to the lowest record since 2010 (from 2.1 million in 2010 to around 1.5 million new infections in 2020) [4]. However, this number is still far below the global target of fewer than 500,000 people newly infected by 2020 [5]. In 2020, there were around 6800 000 AIDS-related deaths, emphasizing that the deadly pandemic is ongoing.

People living with HIV were disproportionately affected by the COVID-19 pandemic, for example, encountering barriers in HIV prevention and treatment services. Restricted mobility and increased unemployment affected the stocking of medicines, prolonged waiting for appointments and the necessity to go to a further facility due to their transition to COVID-19 response. This hindered the continued access to antiretroviral (ARV) drugs and other HIV care services for people living with HIV [6]. They are also more likely to be denied access to the COVID-19 vaccines while being at higher risk of severe course of the disease. Key populations and their sexual partners account for 65% of new HIV infections but are largely left out of both HIV and COVID-19 responses [7].

Discussion

HIV in International frameworks

Human Rights for HIV:

Stigma and discrimination related to HIV still prevent millions from accessing testing, prevention and treatment services. Evidence suggests that this situation, especially in clinical settings, limits access to HIV testing and negatively affects the uptake of and adherence to antiretroviral therapy (ART). It might also lead to serostatus disclosure and retention in care. The human rights principles of non-discrimination, equality, participation, access to justice and accountability play an important role in achieving a significant response to HIV and AIDS. In 2016 at the High-Level Meeting on ending AIDS by 2030, it was noted upon the call for member states that “Using the language and power of human rights, people living with HIV and human rights defenders have secured important legal and judicial victories against HIV-related discrimination and human rights violations”. The statement additionally reaffirmed that access to medicines was increased as well as law changes and inclusion of human rights programs related to HIV as a result of the perseverance of the people living with HIV as well as human rights defenders. Five years later, during the 2021 United Nations General Assembly High-Level Meeting on AIDS, the Political Declaration on HIV and AIDS: Ending Inequalities and Getting on Track to End AIDS by 2030 was adopted. It further emphasized the human rights aspect of HIV&AIDS by drawing more attention to issues such as inequality, gender equity, community participation and a focus on the vulnerable populations' struggles with HIV&AIDS [8].

HIV and SDGs:

In 2015, the United Nations Member States came together to adopt the 2030 Sustainable Development Goals agenda, an effort that calls for collective action from countries all around the world to improve and foster an environment that is sustainable for all of humankind. HIV&AIDS over the years became an issue that transcends health into spheres such as social, economic, and others, with the response to it mirroring the same trajectory of dealing with all these different aspects. That said, people living with HIV often come from left-behind populations, with discrimination and stigma that translates into their marginalization and the quality of their life being affected by inequities, something that the Sustainable Development Goals work hard to remedy [9].

The issue of HIV&AIDS is explicitly tackled in the SDGs through the target 3.3 “By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases” and its indicator 3.3.1 “Number of new HIV infections per 1,000 uninfected population by sex, age and key populations”, with the custodian organization leading the effort being The Joint United Nations Programme on HIV/AIDS (UNAIDS) [10]. Aside from that, the United Nations system, including UNAIDS, works on addressing HIV&AIDS throughout the entire SDG agenda. The following 10 Goals are thought to be specifically relevant to the HIV&AIDS response:

1. Goal 1: end poverty
2. Goal 2: end hunger
3. Goal 3: ensure healthy lives
4. Goal 4: ensure quality education
5. Goal 5: achieve gender equality
6. Goal 8: promote economic growth
7. Goal 10: reduce inequality
8. Goal 11: make cities safe and resilient
9. Goal 16: promote peaceful and inclusive societies
10. Goal 17: strengthen means of implementation [9]

UNAIDS:

On July 26th, 1994, The Joint United Nations Programme on HIV and AIDS (UNAIDS) was established by an ECOSOC resolution, with its official launch in January 1996. UNAIDS is currently serving as the main custodian for global action on HIV&AIDS by offering efforts that include coordination, advocacy, strategic planning, technical support and much more.

With a vision of “zero new HIV infections, zero discrimination and zero AIDS-related deaths” and a principle of leaving no one behind that relates back to the SDGs, UNAIDS has had many astonishing milestones when it comes to the global HIV&AIDS response, with the approval of many documentations and reports, such as the Declaration of Commitment on HIV and AIDS and the Political Declaration on HIV and AIDS. A crowning achievement would be the 2016 High-Level Meeting on Ending AIDS at the United Nations General Assembly, where Member States came together and agreed to put an end to the public health threat that is HIV&AIDS by 2030 through the Fast-Track commitments, which are detailed in the 2016 United Nations Political Declaration on Ending AIDS [11]. After that, in 2021, the United Nations Political Declaration on HIV and AIDS: Ending Inequalities and Getting on Track to End AIDS by 2030 was adopted [11]. In it, member states agreed to recommit to reducing annual HIV infections, achieve the 95–95–95 testing, treatment and viral suppression targets, tackle gender-based and gender-related issues concerning HIV&AIDS, and improve access to treatment and protection against pandemics, among others [12].

Another groundbreaking achievement for UNAIDS was the launch of the “Treatment for all: 90–90–90” Initiative, where by a 2020 deadline, UNAIDS set out to provide treatment for 30 million people that 90% of people living with HIV know their HIV status, 90% of people who know their HIV-positive status are accessing treatment and 90% of people on treatment have suppressed viral loads [13].

Global Health Sector Strategies (GHSS) on HIV, Hepatitis, and STIs

The Seventy-Fifth World Health Assembly approved the implementation of the new Global Health Sector Strategies (GHSS) on HIV, viral hepatitis and sexually transmitted infections for the period 2022-2030, or for the next 8 years. These documents guide the work of the Department of Global HIV, Hepatitis and Sexually Transmitted Infections Programmes (WHO/HHS) [14].

The strategies are all built on a common structure that utilizes a people-centered approach and a framework for universal healthcare coverage that follows five common directions:

1. Information for focused action
2. Interventions for impact
3. Delivering for equity
4. Financing for sustainability
5. Innovation for acceleration [15].

A key aim of these global health strategies is to restore momentum in the responses to these diseases that had been negatively impacted during the COVID-19 pandemic. The strategies call for a collaborative and integrated approach and “emphasize the need for coordinated action to strengthen health and community systems, ensure strong linkages among health and community system actors, and expand collaboration within and across systems and sectors.” [16]. Actions to identify and manage future outbreaks of HIV, viral hepatitis and sexually transmitted infections

The strategies also call for a more precise focus to reach key populations for each disease and interventions to address inequities. Furthermore, the strategies support “efforts to address the stigma, discrimination, inequalities, and criminalization of key populations which exacerbate the risk of infection and prevent many people from accessing essential services.” [16].

Worldwide statistics

In 2020, 37.7 million people were estimated to be living with HIV. This includes 10.2 million of them not on ARV treatment, 1.5 million new infections, and 680.000 deaths related to AIDS. The number of new infections has fallen by 31% to the lowest record since 2010 (from 2.1 million in 2010 to around 1.5 million new infections in 2020). However, this number is still far below the global target of fewer than 500.000 people newly infected by 2020.

At the deadline of the 90-90-90 target, at least eight countries had fully achieved the targets (90% of all people living with HIV will know their HIV status, 90% of all people with diagnosed HIV infection will receive sustained antiretroviral therapy, 90% of all people receiving antiretroviral therapy will have viral suppression). Eastern and Southern Africa nearly achieved the targets, and 74% of the population in Western and Central Europe and North America had suppressed viral loads.

Globally, these targets are not achieved. At the end of 2020, around 84% of people living with HIV knew their HIV status, 87% of people living with HIV status were accessing antiretroviral therapy, and 90% of people on treatment were virally suppressed. Despite only seeming like a small gap, it adds up to more than one quarter (27%) of the global population of people living with HIV are not on treatment, and one-third (33%) have unsuppressed viral loads. These gaps are even more significant within subpopulations, including children, young people and men [17].

Key populations and their partners worldwide are recorded as 65% of the total population (93% outside Sub-Saharan Africa) [17] and 62% of new infections in every region of the world. These populations are also marginalized in access to healthcare services due to stigma, inequalities, criminalization and other socio-structural barriers [5].

New infections in children decreased by 54% from 2010 to 2020. This is mainly because of the increasing provision of ART to pregnant and breastfeeding individuals living with HIV. However, there are gaps in Western and Central Africa that cause more than 2/5 of children living with HIV to be left undiagnosed. Since 2019, the global progress on children living with HIV has also declined, causing 800.000 children living with HIV (aged 0 to 14 years) to not be on ART and only 60% to have suppressed viral loads in 2020. The declining global progress has also impacted adolescents living with HIV (aged 10 - 19 years) only 54% of the 1.7 million, or 940,000, receiving ART in 2020. [18]

Gender inequality has increased the risk of HIV infection for women and girls. This also can lead to reducing access and adherence to ART for women living with HIV. These impacts are most visible in sub-Saharan Africa, where women aged 15 to 24 years accounted for 25% of HIV infection in 2020, despite only representing just 10% of the total population. Outside of sub-Saharan Africa, men and boys accounted for 58% of HIV infections in 2020, partly because the number of men is more than women in vulnerable populations globally. Across nearly all regions, men are less likely to access HIV services, and men living with HIV consistently fare worse than women across the HIV testing and treatment continuum. However, it is important to consider a possible alteration in trends as the years go by: we might see more women with a lack of access to HIV care [17,19].

Treatment and prevention methods

Antiretroviral therapy

There is no therapy available to cure someone living with HIV completely. But there is an effective treatment named antiretroviral therapy (ART). The ART works by combining three medicines that have been shown to reduce AIDS-related illness and death. The main goal of ART is to achieve viral suppression. If ART is started immediately and taken regularly, it will result in the quality and increase the lifespan of a person living with HIV to the same as that of an uninfected person by suppressing the reproduction of HIV in the body (resulting

decreasing amount of HIV in the body) and increasing the number of CD4+ cells (resulting in regain function of the immune system and preventing new and opportunistic infection) [20][21].

The combination of 3 antiretroviral medicines is crucial. If the patient takes only one drug, HIV will build up resistance to the medicine over time. If two or more ARV are taken together, the resistance rate will be reduced. When someone living with HIV is on effective antiretroviral therapy, they will reach suppressed levels of HIV viral load, so they are no longer infectious [20].

The patient's willingness and commitment to adhere to lifelong therapy are the main things in the success of ART. Current recommendations state that ART is indicated for all people living with HIV, regardless of their WHO clinical stage, CD4+ cell count, age, and reproductive status. [22] This recommendation, later called the "treat-all policy", has been adopted by more than 120 low- and middle-income countries. Resulting in 26 million people living with HIV globally have reached ART coverage. This indication was considered to be cost-effective, feasible, equitable and acceptable [21][23].

People living with HIV should be encouraged to start ART immediately and should be supported in making an informed choice regarding when to initiate ART and what ART drug regimen to use. The primary principle on initiation of ART is the principle of providing people-centered care. People-centered care means that this treatment is focused and organized based on health needs, people and communities' preferences and expectations, upholds patients' dignity and should promote the patients' and families' support and engagement to play an active role in their own care through informed decision-making. The choice to accept or decline ART is absolutely dependent on the person or their caregiver's decision. Adequate support for ART as community and peer support, adherence support, and mental health or substance use assistance should be provided [23].

Prevention Methods

HIV prevention programs encompass a mix of evidence-based approaches as biomedical, behavioral, social, structural and systems-level interventions. This mixed approach aims to meet the individual and community needs to have the best impact on reducing the number of people newly infected. The prevention programs need to reflect on their epidemiology and populations to address the risks and underlying vulnerability [21][23].

Substance use-related HIV prevention and treatment seem to have only slight progress [21]. Behavioral intervention such as using new disposable or sterilized needles and syringes or substitution therapy can prevent HIV infection [20]. It remains necessary to address the systems-level approach to harm reduction and access to medication for substance use disorder, including for persons who inject drugs. This includes substance use and HIV care and intensive public health efforts [21].

HIV transmission can be prevented through implementing some behaviors such as reducing the number of sexual partners, non-penetrative sex, consistent and correct use of condoms, taking antiretroviral therapy and keeping viral load undetected by people living with HIV, taking pre-exposure prophylaxis (PrEP) by people who are not infected with HIV and Voluntary Medical Male Circumcision [20].

A significant decrease in new HIV infections can be achieved with strong political commitment, addressing structural barriers, having a strategic target to resource, and integration of prevention programs and community-led activities. Information and education as a general educational campaign, also an intervention to service access barriers can increase ART uptake and adherence as well as HIV testing [21][23]. In 2016, WHO recommended interventions and services for key populations to:

1. Support legislation, policy, and financial commitment, including decriminalization of sex work, same-sex sexual contacts, gender identity and expression and drug use.

2. Address systemic stigma and discrimination, including making health services available, accessible and acceptable.
3. Community empowerment, including involving key populations in the design, implementation, and evaluation of health services
4. Addressing violence and discrimination against people from key populations by implementing and enforcing anti-discrimination and protective laws [23].

Harm Reduction

While no official definition exists for it, harm reduction can be defined as policies and public health initiatives encompassing activities, intended to minimize the negative physical and social impact incurred by human behaviors. [24] Harm reduction utilizes a human rights and justice-based approach. It involves providing unconditional support to people, including key populations, without coercing them into or requiring them to stop drug use. [25] It is grounded in the recognition that not all persons who use drugs are able or willing to stop using drugs.[26]

Harm reduction is built on the fundamental principles of trust, inclusivity, non-judgmental attitudes, flexibility to adapt to clients' needs, and the involvement of the community of people who use drugs in their planning and evaluation. In addition, these services should also respect other rights such as privacy, bodily integrity, dignity, due process and freedom from arbitrary detention.

According to UNAIDS, harm reduction programs are recommended to deliver a comprehensive set of services that provide healthcare, information, and products. These services include needle–syringe programs, drug dependence treatment, HIV testing and counseling and antiretroviral therapy, prevention and treatment of sexually transmitted infections (STIs), condom programs, targeted information and education, and diagnosis, treatment and prevention of viral hepatitis and tuberculosis. [26] However, research shows that most programs only focus on specific harm reduction strategies, such as syringe exchange, rather than on the harm reduction philosophy as a whole. Therefore, extending this philosophy to other health risk behaviors and making them more inclusive of a wider healthcare audience would further decrease rates of HIV transmission [27], [28], [29], [30].

Research on syringe exchange programs demonstrates that they are cost-effective in not only reducing HIV transmission but also in increasing exchange users' access to other medical and social support services.[27] In addition, there is strong evidence that needle and syringe substitution is effective, reducing the risk of HIV acquisition by 54% on average among people who inject drugs [31]. Furthermore, data from a harm reduction policy implemented in Vancouver demonstrated that these programs can also promote drug injection cessation among people who inject drugs [27].

As of 2021, 87 countries provided needle and syringe programs (NSPs), while 86 provided opioid agonist therapy (OAT). In addition, there is a wide variation among regions in terms of harm reduction implementation. NSPs and OAT are available in most countries in Eurasia, North America and Western Europe. However, these core harm reduction services are severely lacking in the majority of countries in other regions, such as Asia, Latin America and the Caribbean, the Middle East and North Africa (MENA), and sub-Saharan Africa [32][33].

Numerous factors have hindered the provision and implementation of harm reduction services. One main factor is a strict drug policy environment. Those strongly opposed to harm reduction typically argue that NSPs and OAT enable drug use and undermine drug treatment efforts. [34] In addition, even where harm reduction services are available, there is often insufficient coverage and quality, or a lack of access to these services. Significant geographical gaps and an uneven distribution of services exist, with rural communities being particularly underserved. In addition to that, there are sub-groups of people who use drugs that experience

barriers in access because harm reduction services aren't inclusive of their needs. These groups include MSM, people who use stimulants and/or non-injecting methods, people experiencing homelessness, and women who inject drugs [32].

Pre-exposure prophylaxis

Pre-exposure Prophylaxis (PrEP) is defined as the use of ART by people who are not infected with HIV to prevent HIV acquisition in a person's body. Acquisition of HIV while taking PrEP with optimal dosing and adherence has rarely been reported. This acquisition is primarily due to transmitted drug-resistant HIV. The majority of people who are not infected with HIV and who take PrEP as prescribed will gain protection from its use [21]. Nevertheless, PrEP should be integrated within HIV services and couldn't be used as a replacement for other HIV prevention interventions, such as comprehensive condom programming and harm reduction [23][35].

Several types of PrEP include daily oral PrEP, long-acting injectable PrEP and vaginal ring. There is much evidence that shows PrEP benefits. There is proven evidence that increasing PrEP provision affected new HIV infections reduction in Australia, decreased HIV diagnoses in the USA during 2012-2016 and reduced HIV infections in people at higher risk of HIV by 74% with taking PrEP through the SEARCH study [17].

People that could have benefited from taking PrEP as key populations may face legal and social challenges in accessing health services [23][36]. Like ART, the choice to accept or decline PrEP is absolutely dependent on the individual [35]. Early initiation of ART and PrEP are recommended. Health services are expected to facilitate the identification of people recently infected with HIV. Patients in their social and sexual networks should be offered HIV services such as testing, treatment and prevention. Community-based organizations should be involved in delivering PrEP services by integrating peer and lay providers into their services. Especially communities that work with priority and key populations [23].

PrEP access for key populations is an important and effective prevention tool for HIV [21].

Post-exposure prophylaxis

Post-exposure prophylaxis (PEP) is a series of treatments consisting of counseling, laboratory tests, and medication after a possible exposure to HIV to prevent virus acquisition in someone's body [20][37].

Treatments of PEP must be initiated within hours of possible HIV exposure and must last for approximately four weeks. Research studies suggest that taking PEP medication as soon as possible (ideally within 2 hours and not later than 72 hours following potential exposure) will bring benefits in preventing HIV infection [20].

There are numerous reports about the efficacy of PEP in the prevention of HIV acquisition. Data from an evidence review conducted by the Centers for Disease Control and Prevention (CDC) in 2016 demonstrated that from 1535 men who took PEP, 48 acquired HIV and 1487 men tested negative. However, 40 of the transmissions that occurred were attributed to ongoing risk behavior after completing the course of PEP, while 8 were considered as potential PEP failures. This is equivalent to 5.2 transmissions per 1000 PEP users, or 0.5%. [38]

Preference for PEP regimen is by using three ART drugs, but two drugs are already effective [23]. PEP use is only for emergency situations and is not applied to people frequently exposed to HIV. PEP is indicated to people who may be exposed for the last 72 hours:

1. During sexual intercourse (such as condom break with a partner of unknown HIV status or partner living with HIV who is not virally suppressed)
2. Through shared equipment used to inject drugs
3. Experiencing sexual assault [37].

For individuals who are indicated for PEP but are not able to access services within 72 hours, healthcare providers should analyze each situation and make the necessary arrangements and adjustments so measures are individualized and adequate to each patient. Although there are no requirements for HIV testing, it may be provided if an exposed person chooses to do the test [23].

Progress on vaccine

Despite the effectiveness of current treatment and prevention, the existence of an effective vaccine is still needed as the management of ART needs long-term medication and a lifetime intervention in the midst of human behavior complexities and long-term funding. The biggest challenge in developing an effective HIV vaccine has been the high rate of mutation and recombination during viral replication. Another challenge in developing a universal vaccine is the fact that 10-20% of people living with HIV in several parts of Africa are infected with two or more viral variants. Lack of understanding of the correlates of immune protection, lack of appropriate animal models, and limited investments by the pharmaceutical industry also become another obstacle in HIV vaccine development [39].

So far, most clinical trials of HIV preventive vaccines result in no efficacy. The decline of HIV incidence and increasing HIV prevention efforts such as PrEP has complicated the landscape of vaccine testing by necessitating very large, more complex and expensive vaccine trial designs. Only a few regimens of HIV vaccines have been tested in phase 2b clinical trials. More than 100 HIV vaccine concepts are being clinically tested as a result of strong advocacy that aims to accelerate the development of vaccines by rapid evaluation of vaccine candidates in small human studies and showing promising candidates to efficacy trials. Despite many setbacks in the development, there is one unexpected success of the RV144 trial in Thailand that shows 31,2% vaccine-induced protection against virus acquisition by 42 months after the final vaccination [21][39].

The development of the Covid vaccine has also impacted progress on the HIV vaccine. Initially, the Covid 19 pandemic led to numerous study investigators shortening, pausing or postponing their trials. Others cited the inability to remotely follow up with participants as a reason, which has affected the publication of study results. [40] However, scientists have acquired new data from Covid vaccine research and development that can potentially further progress on the HIV vaccine. The successful development of an mRNA Covid vaccine by Moderna has encouraged the pharmaceutical company to conduct a clinical trial for an mRNA HIV vaccine, in partnership with the International AIDS Vaccine Initiative (IAVI). The trial is currently in Phase 1, involving 56 HIV-negative adult volunteers [41][42].

Key populations & Priority populations

According to UNAIDS, Key populations are groups of people who are more likely to be exposed to HIV or transmit it and whose engagement is critical to a successful HIV response. In every country, key populations include people living with HIV. The four main key population groups in most settings and considered by UNAIDS are gay men and men who have sex with men, sex workers and their clients, transgender people and people who inject drugs. Also, some agencies use the 'key population' term to refer to populations other than the four listed above, such as prisoners and other incarcerated people. These are mainly vulnerable and disproportionately affected by HIV than other groups, in part due to marginalization and other factors such as discrimination, stigma, violence, human rights violations, criminalization, and social exclusion- all contributing to a lack of access to health services. However, each country should define its specific key populations according to their epidemic and response based on the epidemiological and social context [43] [44].

According to UNAIDS, priority populations are groups of people in a specific geographical context (country or location) that are important for the HIV response because they are at increased risk of acquiring HIV or disadvantaged when living with HIV due to a range of societal, structural or personal circumstances. Besides

people living with HIV and the globally defined key populations, countries may identify other priority populations for their national responses if there is clear local evidence for increased risk of acquiring HIV, dying from AIDS or experiencing different adverse HIV-related health outcomes. These populations may include adolescent girls, young women and their male partners in locations with high HIV incidence, sexual partners of key populations, people on the move, people with disabilities, indigenous peoples, mine workers, and others in specific countries. However, in most settings, key populations and people living with HIV are the most crucial priority populations for achieving global targets [43].

According to SRA report 2020, Key populations and their sexual partners account for 62% of new adult HIV infections globally. They also experience a higher prevalence of coinfections such as STIs, TB, and viral hepatitis. While there has been some progress in adequately addressing key populations and their needs, legal and structural barriers, stigma and discrimination still hinder access to services [45].

Men who have sex with other men (MSM)

The term MSM refers to a man of any age who engages in sexual or romantic intercourse with other men. As the words “men” and “sex” vary through time and cultures, the term MSM encompasses various sexual orientations and gender identities, involving people who identify as homosexual, bisexual, transgender, and heterosexual. The HIV epidemic disproportionately affects MSM. In 2019, men who have sex with men’s risk of acquiring HIV was 26 times higher than the rest of the adult male population. In 2019, 23% of new HIV infections were among MSM. This figure rises to more than 40% in western and central Europe, North America, Latin America, Asia, and the Pacific. Less than half of men who have sex with men could access at least two HIV prevention services in 26 of 38 reporting countries in the past three months. MSM are at heightened risk of stigma, discrimination, and violence compared with the rest of the population. Violence is often perpetrated due to their sexuality [46].

Transgender and other gender-diverse people

The terms Transgender and gender diverse describe a broad spectrum of gender identities for whose gender identity differs from the sex assigned at birth. Gender identity presents on a spectrum, and people may not identify as completely man or completely woman; they may identify as non-binary. Transphobia is prejudice against Transgender and gender-diverse people due to their actual or perceived gender identity or expression. In 2019, Transgender and gender-diverse people’s risk of acquiring HIV was 13 times higher than the rest of the adult population. In contrast, their access to HIV services is lower than the rest of the population. According to UNAIDS, In six of the 13 countries' reports in recent years, less than half of transgender women were able to access multiple HIV prevention services. Transgender and gender-diverse people face high levels of stigma, discrimination and violence. These with criminalization are compound to render Transgender and gender-diverse people invisible, with extreme forms of discrimination leading to the negation of the existence of gender-diverse persons. These factors, in turn, have led to a severe lack of data on Transgender and gender-diverse people and their health [47].

Sex Workers

Sex workers are defined as “female, male and transgender adults (18 years of age and above) who receive money or goods in exchange for sexual services, either regularly or occasionally”. Sex work must be consensual and take place between adults. In 2019, female sex workers’ risk of acquiring HIV was 30 times greater than the general female population. In 2019, sex workers of all genders had around 8% of new adult HIV infections globally. 32.8% of sex workers do not know their HIV status. In 16 of the 30 countries, less than half of female sex workers could access at least two HIV prevention services. According to UNAIDS, “Intersecting forms of structural and societal stigma and discrimination, including punitive laws, policies, and practices create significant inequalities and prevent sex workers from being able to protect their health, safety, and well-being. Countries should implement evidence-informed responses to HIV and sex work that reduce inequalities and protect and promote human rights and public health” [48].

People who inject drugs

People who use drugs are among the susceptible groups at the highest risk of acquiring HIV, accounting for 10% of all new HIV infections in 2019, and more than 1 million live with HIV. Yet, they are marginalized and unable to access health and social services. In 2019, the risk of HIV was 29 times higher than the rest of the population for people who inject drugs. In 10 of the 14 reporting countries, less than half of men who inject drugs could access at least two HIV prevention services. A 2019 systematic review found that repressive drug use policies were associated with HIV infection, needle sharing, and avoidance of harm reduction programs. Moreover, decriminalization of drug use is associated with a significant decline in HIV new infections in people who inject drugs [49].

People in prisons and other closed settings

There are around 11 million people held in prison. Prisons and other closed settings have a high prevalence of HIV, hepatitis B and C, and TB infections. People in prison are 7.2 times more likely than adults in the general population to be living with HIV. This risk is imputable to overcrowding, poor nutrition, limited access to health care and ARTs, unsafe injecting practices, condomless sex, and unsanitary tattooing. Because of the illegality of sex work, drug use, and same-sex behavior in many countries, many people from other key populations also populate prisons. In addition, settings with forced gender segregation are important contexts for sexual activity between males not linked to homosexual identification. According to recent data reported to UNAIDS, on average, 4.2% of people in prisons live with HIV globally. According to UNAIDS data, “Women in prison are five times more likely to be living with HIV than other women.” Prisons and other closed settings are often neglected in countries’ responses to HIV. Without discrimination, people in prison have the right to the highest possible health standards and accessible health services, including HIV and TB. These services should be equal to available services in the community [50].

Migrants and mobile populations (MMPs)

“Migrant and mobile populations” is an umbrella term for diverse groups with differentiated needs and inequalities. According to The UNAIDS 2021-2026 Strategy: END INEQUALITIES. END AIDS, “conflict, disasters, and displacement deplete health services, isolate communities, and increase vulnerabilities, particularly among refugees, internally displaced persons, vulnerable migrants, and key populations.” Migrant and mobile populations, many of whom are humanitarian concern populations, often struggle to access HIV services. They are often disproportionately affected by HIV. Many countries facing ongoing humanitarian emergencies have weak health systems and governance, with poor delivery of basic HIV services. Women, girls, and boys are particularly vulnerable groups in the population movement. According to the “HIV and Migrants in Europe” study, Post-migration HIV acquisition: 30-40% and Migrants have less access to HIV prevention, treatment, and care continuum than nationals. Although some progress has been evident in addressing migration, mobile populations, and HIV-associated issues, progress has been slowed due to the shortage of reliable strategic information for policy and programmatic responses. There is an urgent need to focus global action on the intersections between migration and HIV, including the collection of strategic information to guide effective actions and the engagement of migrant, refugee, crisis-affected, and other mobile populations as key partners in the AIDS response [43] [51].

Adolescents and young people

Adolescents and young people represent a rising portion of people living with HIV globally. According to UNICEF data, in 2020, about 1.75 million adolescents (people aged 10 to 19) were living with HIV worldwide. They account for about 5% of all people living with HIV and about 11% of new adult HIV infections [52]. In 2020, young people (aged 15–24) made up 16% of the world’s population but accounted for 27% of new HIV infections. Although young people have a disproportionate HIV burden, they constantly face age-based discrimination and marginalization from sexual and reproductive health and rights, HIV services, and harm reduction [53].

In sub-Saharan Africa, high rates of HIV acquisition persist among adolescent girls and young women. They stem from multiple vulnerabilities such as harmful social norms and practices, sexual and gender-based violence, lack of access to education or completion of secondary school, poverty and age-disparate sex. While the priority populations for prevention efforts vary across local and community settings, the Strategy calls for focused efforts to reduce inequalities and close prevention gaps for key populations and adolescent girls and young women in locations with high HIV incidence.

Adolescents and young people living with HIV are in particular need of tailored services that address their physical and mental health and well-being, supporting them as they transition to adult health services. Poor access to treatment experienced by young men compromises their own health and well-being, and it contributes to high levels of new infections among adolescent girls and young women. Stigma, discrimination, gender inequalities, age-of-consent and punitive laws, policies, and a failure to address basic human needs restrict many young people's ability or willingness to access testing and treatment services or remain engaged in care [43].

Children living with HIV

Children are left behind. According to The UNAIDS 2021-2026 Strategy, Only 53% of children 0–14 years living with HIV have access to HIV treatment. Moreover, one of the most considerable disparities in the HIV response is the failure to meet the needs of children living with or at risk of HIV. Of all children living with HIV, only 37% were virally suppressed in 2019 compared to 60% of adults. The progress and adoption of optimum child-friendly HIV treatment lag far behind adults, leading to poorer health results. Although children accounted for 5% of people living with HIV in 2019, they represented 14% of all AIDS-related deaths. Passing through childhood, adolescence, and early adulthood, children living with HIV often lack the psychosocial support, good parenting, and prevention services to stay in HIV care.

Reduction in children acquiring HIV is one of the most significant achievements of the HIV response. Yet, in 2019, there were 150 000 new HIV infections among children—far from the global 2020 target of 20 000. Many concerns call for urgent attention to accelerate progress to end vertical HIV transmission and pediatric AIDS [43].

Barriers to accessing HIV services

According to the WHO, HIV services include a comprehensive package of HIV testing, prevention, treatment, and care services for key populations, people living with HIV (PLHIV) and their partners, and families and caregivers [54].

The barriers to access to these services are multidimensional and include individual, societal, health-system, and policy factors.

Policy barriers:

Punitive and restrictive laws are counterproductive and undermine global efforts to access HIV services and end AIDS by 2030.

According to HIV global policy report in 2020, all the countries have at least one law criminalizing same-sex sexual relations, sex work, drug use, or HIV exposure or transmission. These laws deter people from seeking HIV services because of fear of exclusion and punishment [55].

Despite the recommendations to remove HIV travel restriction laws, there are still 46 countries that impose restrictions on the entry, stay or residence of people living with HIV. These limitations prevent migrants from going to services or adhering to their treatment due to the fear of deportation [56].

Some other laws undermine bodily autonomy, privacy, and confidentiality. In fact, 100 countries oblige adolescents to have parental or guardian approval before accessing HIV services and 5 countries reported to UNAIDS in 2019 that their laws require spousal consent for married women to access SRHR services [4,57]. Other laws prevent access to HIV prevention services. As of 2020, only 130 countries reported to WHO Global HIV Programme that they have adopted WHO recommendations on oral PrEP in their national guidelines. However, the adoption of recommendations does not necessarily equate to their implementation, and large-scale implementation is often a long process [58][59].

Availability-related barriers:

The biggest threat to HIV treatment and prevention is the closure of facilities and the disruption in the supply chain of medicines. In crises and humanitarian settings, new undiagnosed cases increase and key populations and people living with HIV can't get their treatment [60,61].

Accessibility barriers:

People in rural areas are more likely not to seek HIV services since they need to travel long distances [62]. Furthermore, according to UNAIDS, in sub-Saharan Africa, there is an increased risk of HIV infection of 1.48 times in men with disabilities and 2.21 times in women with disabilities compared with men without disabilities. These inequities are explained by the non-inclusion of people living with disabilities in prevention strategies, communication difficulties with healthcare providers, and the lack of disability-inclusive services that make people with disabilities struggle to reach the services and benefit from them [63].

Affordability barriers:

HIV affects those of lower socioeconomic status at a disproportionately high rate, usually secondary to limited access to healthcare resources such as clinics and prevention programs. The WHO report showed that income, level of education, and employment/occupational status were significantly and positively associated with the level of adherence and access to HIV services [62]. HIV prevention is also impacted by a financial barrier, with few reporting that PrEP was free or affordable in their countries. [64]

Gender norms:

Disparities in access to HIV services stem from harmful gender norms and gender inequalities. Gender-based violence exacerbates women's vulnerability to HIV and hinders their access to HIV services. Intimate partner violence, inequitable laws, and harmful traditional practices reinforce unequal gender power dynamics by limiting women's choices, opportunities, and access to information, health, social services, education, and employment [62].

Moreover, in some countries, men are less likely to access ART and even those who access treatment do not adhere to it. This is explained by non-health-seeking habits influenced by patriarchy and harmful conceptions of masculinity [65,66].

HIV stigma:

Community-level stigma exacerbates the vulnerability of marginalized social groups in the face of HIV. These groups are at risk for loss of income and livelihood, poor care within the health sector, withdrawal of caregiving at home, poor social and emotional health due to harassment and ill-treatment, and high-risk behaviors. Besides community stigma, people living with HIV can experience internalized stigma, which is a form of self-judgment and personal endorsement of negative attitudes associated with HIV. It is related to feelings of shame, guilt, and fear that prevent people from disclosing their status and seeking healthcare [3,62]. Both community stigma and internalized stigmas prevent key populations from accessing HIV prevention, such as pre- and post-exposure prophylaxis. A study conducted in Subsaharan Africa about PEP use found that over 60% of MSM felt uncomfortable seeking health services, including PEP, from public

hospitals. [64] Another study conducted in Mexico found that the reach of a pre-exposure prophylaxis program was only 10% among male sex workers and transgender women. [67] Stigma also prevents key populations from accessing information about HIV prevention, with the Sub-Saharan Africa study demonstrating that knowledge on PEP was relatively low, at 59%. [64]

HIV and health

Physical

People living with HIV may have other health conditions, some of which may be pre-existing conditions that increase the risk of getting HIV. There are also common co-infections that may affect PLHIV, including hepatitis B and hepatitis C, Tuberculosis and other opportunistic infections.

Even with ART resulting in controlled HIV, chronic inflammation can still present. As a result, PLHIV have an increased risk for other non-communicable diseases such as cardiovascular disease, kidney disease, diabetes, low bone mineral density (BMD), liver disease, cognitive disorders as well as some types of cancer [68] [69].

HIV medications can also cause side effects that can affect the individual's physical well-being and daily life, such as nausea and fatigue. Some medicines can also result in increased cholesterol levels, thus increasing the risk of cardiovascular disease.[70]

PrEP

PrEP has revolutionized HIV prevention but it also brings its users some side effects, depending on the formulation and active principle, that can range from nausea, flatulence, rash or headaches. However, those are uncommon and can resolve after one month of medicating [71].

PEP

PEP has been associated with a considerable number of side effects. They can include headaches, diarrhea, nausea and vomiting, fatigue and insomnia. These side effects can also disappear during treatment but are a major cause of withdrawal from it. Healthcare professionals should address these issues and provide proper medication to manage these symptoms [72].

Opportunistic Infections (OI)

As the CD4+ count decreases, in case of ART failure or non-adherence, there is a need to invest in screening and prophylaxis against certain OI. However, when it comes to Tuberculosis, all individuals, with no regard for the CD4+ count, should be screened for latent Tuberculosis and therapy for it should be administered in case of a positive result. At the same time, infections such as Coccidioidomycosis should be screened when the CD4+ count is below 250 cells per microliter; Pneumocystosis should be pharmacologically prevented below 200 cells per microliter; Histoplasmosis should be pharmacologically prevented below 150 cells per microliter, in hyperendemic areas; Toxoplasmosis should be pharmacologically prevented below 100 cells per microliter, in *T. gondii* IgG positive patients, as well as Cryptococcus; *Mycobacterium avium complex* infections should be pharmacologically prevented below 50 cells per microliter [73].

Mental Health

Key populations and other vulnerable groups are at an increased risk of mental health conditions, as these are driven by the same structural inequalities that increase the risk for HIV infection. These include poverty, violence and discrimination and result in increased risks of both HIV and mental health conditions.[74] People living with HIV (PLHIV) also go through many negative experiences such as discrimination, stigma and other traumatic events, which also increase the risk of mental health disorders.[75] A critical period where these two intersect is adolescence, known for being sensitive due to the formative neuropsychological and social development that takes place. These young key populations have increased rates of depression, suicidal

thoughts and intent, and traumatic stress [74]. In individuals infected with HIV-1, depressive symptoms are the most common type of mental health disorders found. These may be due to the above-mentioned reasons and present as side-effects of ART [75].

PLWHA have a higher likelihood of developing mental disorders due to the constant and prolonged activation of the immune system with neuronal dysfunction causing subclinical cognitive impairment. In combination with these brain alterations, ART therapy can also lead to levels of neurotoxicity [76].

PLWHA are more prone to developing a range of diseases that can vary from distress to severe mental illness. There is a need to integrate mental health services in healthcare for PLWHA, both in screening for mental disorders and treatment of those [77].

Stigma

To first understand how HIV stigma affects health, it is essential to understand what stigma is in the context of health. According to Link and Phelan, stigma has five components: the first includes the distinguishing and labeling of human differences by individuals; the second consists of the linking of labeled individuals to undesirable characteristics by dominant cultures or societal norms, resulting in stereotyping; the third component involves the separation of the two groups by placing individuals in distinct categories; the fourth component involves discrimination and the loss of status of these individuals, resulting in unequal outcomes. Finally, this process is dependent on access to social, economic and political power. Additionally, there is recently also considered to be an added component of individual negative emotional reaction to the stigma [78].

Stigma in the context of health is stigma related to having a certain health condition, such as HIV&AIDS. In health care, stigma results in the maltreatment of patients through the denial of care by healthcare workers, providing substandard care, abuse (verbal or physical), or increasing wait times and passing patients to more inexperienced colleagues [79]. As a result, stigma can act as a critical barrier to access to [quality] health care. Also, within the healthcare system itself, stigmatization of working conditions can affect the well-being of healthcare workers if they themselves are living with HIV&AIDS [79]. Across different countries, the stigmas in health facilities have commonalities in terms of drivers, manifestations and consequences. Drivers are especially considered to be similar and can range from negative beliefs and attitudes to institutional procedures and practices that guide the provision of health care in countries.[79] Research on HIV stigma in health care primarily focuses on the interpersonal and intrapersonal stigma (thus a behavioral approach) as opposed to structural and institutional stigma, reflecting the interventions for stigma reduction as individual-based and highlighting the need for more structural interventions [80].

Effect of the COVID-19 pandemic on HIV and AIDS response

The COVID-19 pandemic shocked health systems worldwide, with many still trying to regroup and recover to this day. The effects of the pandemic can be observed in many aspects of health and health systems, including the HIV and AIDS response. For instance, in the initial months of the pandemic in 2020, 85% of HIV programs reported disruption to service delivery.[81] Many reasons can be argued for these effects, but the shift of focus and prioritization of the COVID-19 response remains the most prominent [82].

The HIV pandemic control approach consists of four pillars: Prevention, Diagnosis, Treatment and Outbreak Control, all four of which have been somewhat impacted by COVID-19.[83] The access to HIV testing (whether in-person or self-testing) has been affected due to the quarantine and COVID-19 measures set into place across the world, with the rates of accessibility corresponding to the level of stringency of the applied measures. This subsequently affected the monitoring and reporting of new cases.[84] Furthermore, access to antiretroviral therapy (ART) was also affected, whether it was the initiation of treatment for newly diagnosed individuals or the continuum of care for those already on it.[85] Accessibility to preventive measures such as

pre-exposure prophylaxis and condoms, among others, was impacted as well, with the inability to reach providers and the lack of a remote refill option being one of the main reasons [84].

In addition, other social aspects that relate to health outcomes such as food security[86], proper housing[87], susceptibility to substance use[88] and others often disproportionately affect people living with HIV, all of which have been made worse by the onset of COVID-19 and its repercussions. Going further, the adverse socioeconomic impacts of COVID-19 have had sizable effects on the people living with HIV. For example, a survey of 13,562 people in 138 countries showed that COVID-19 is having a devastating impact on the LGBTQIA+ community, with almost half of the participants facing economic difficulty and being unable to meet their basic needs [89].

In another aspect, people living with HIV are particularly more vulnerable to mental illness [90], and the COVID-19 pandemic contributed to worsening that situation in factors such as stigma, social isolation, coping, emotional distress and substance use [91].

To conclude, the COVID-19 pandemic has had numerous disrupting effects on HIV&AIDS-related care across all of its different components and has presented a real challenge to the progress made by different initiatives and entities through unsettling health systems, social conditions, and economies of countries worldwide [83][92][93].

Global AIDS Strategy 2021-2026

The Global AIDS Strategy 2021-2026 was developed by the UNAIDS with the focus on ending AIDS as a threat to public health by 2030 through minimizing and eliminating inequalities as well as centralizing individuals in the process. The development process includes the results of the UNAIDS Fast-Track Strategy 2016-2021 - formed around the need to accelerate our progress, account for shifting geographies of poverty, wealth and influence and ensure no groups are left behind [94]. It also consisted of consultations with more than 10000 stakeholders from more than 160 countries and an extensive review of available evidence with regard to HIV&AIDS [19]. With the theme of “*End Inequality. End AIDS.*”, the Strategy highlights and addresses the major role inequalities play in the disparities in HIV&AIDS response seen around the globe. Still today, structural inequalities influence both HIV and poverty, creating a complex shared relationship in which populations disproportionately affected by poverty and the associated limitations are also disproportionately affected by HIV&AIDS and response measures. Sexual health issues - such as HIV infections, unintended pregnancies and sexual violence - are also shown to stem from the same structural drivers as HIV. These drivers include but are not limited to (gender) inequality, poverty, gender-based violence, as well as the social marginalization of vulnerable groups and criminalization of behaviors such as drug use, same-sex relations and sex work [95][96]. These structural inequalities are not only drivers on a national level but also on an international level, with the intersection thereof shaping the HIV epidemic across countries from both Global South and Global North [97].

The Strategy utilizes an inequalities lens to close the gaps inhibiting progress toward ending AIDS. The inequalities lens analyzes the HIV response and troubleshoots its ineffective components while identifying additional or modified actions needed to achieve better and more equal outcomes. There are several key principles that underpin the inequalities lens in the Strategy:

- I. Prioritize actions that will reduce HIV-related health outcome inequalities and disparities
- II. Prioritize actions that may be difficult, such as addressing intersecting structural and social inequalities
- III. Act holistically to address the cultural, epidemiological, legal, and socioeconomic determinants of HIV.
- IV. Recognize that tailored HIV responses are important in tackling the intersecting inequalities that drive the AIDS epidemic

V. Measure success in reducing inequalities [19]

The Strategy and Sustainable Development Goals have a synergistic relationship, where progress towards at least 10 SDGs contributes to the end goal of ending AIDS and improvements in HIV response in turn also contributes to progress towards the same SDGs. According to the Strategy, the relevant SDGs are: SDG 1, SDG 2, SDG 3, SDG 4, SDG 5, SDG 8, SDG 10, SDG 11, SDG 16 and SDG 17 [19].

In order to end AIDS as a threat to public health by 2030, a 90% reduction in both new infections and AIDS-related deaths is required compared to the 2010 baseline. The achievement of the goals as written in the Strategy would improve HIV response such that by 2030, all countries (and all populations) are back on course to end AIDS as a public health threat and working towards the vision of the three zeroes: 1) zero new HIV infections 2) zero AIDS-related deaths and 3) zero HIV-related discrimination.

Additionally, the original 90-90-90 testing and treatment targets (as mentioned earlier) have now been adapted to the 95-95-95 testing and treatment targets to be achieved in all subpopulations and age groups. They have similar targets and commitments: 95% of all individuals in a given subpopulation living with HIV know their status, 95% of those who live with HIV and know their status are on antiretroviral therapy and lastly that 95% of those on antiretroviral therapy have suppressed viral loads [19].

Three core strategic priorities have been outlined to reduce inequalities and thus improve HIV response. These are, as stated in the Strategy:

- 1) Maximize equitable and equal access to HIV services and solutions
- 2) Break down barriers to achieving HIV outcomes
- 3) Fully resource and sustain efficient HIV responses and integrate them into systems for health, social protection, humanitarian settings and pandemic responses [19].

Paired with these strategic priorities are five cross-cutting issues that are important to be enforced across all areas of the Strategy in order to ensure thorough execution to achieve the goals. These issues encompass the following fields:

- 1) Leadership, country ownership and advocacy: National governments must collaborate with organizations led by and for people living with HIV, affected communities, key populations, and other priority groups, well as with the private sector, academia, civil society organizations, and international partners.
- 2) Partnerships, multisectorality and collaboration: The Strategy prioritizes engaging, ascending and maximizing the contributions of all partners in every component of the HIV response. In addition, it promotes partnerships between the HIV response and other global and local movements for human rights, non-discrimination gender, ending violence against women, economic justice, and many other movements.
- 3) Data, science, research and innovation: The Strategy calls for improved collection, analysis and use of data to better guide AIDS responses. It emphasizes the importance of rights-based biomedical advances occurring as part of inclusive, community-led approaches. The Strategy also calls for investing in developing an HIV vaccine and a cure.
- 4) Human rights, gender equality and reduction of stigma and discrimination: The Strategy recommends that all governments reduce inequalities and ensure equal enjoyment of rights, including the right to health, as outlined by the Declaration of Human Rights. It emphasizes on the importance of utilizing a human rights-based approach in the HIV response, to ensure that the intersecting forms of HIV-related stigma and discrimination are addressed.
- 5) Cities, urbanization and human settlements: The Strategy recognizes the importance of cities and human settlements, and calls on all partners to utilize them to address human rights issues, inequalities and social exclusion, and protect against risks and vulnerabilities.

In order to achieve the goals set out in the Strategy, two tactics are essential to ensure an HIV response that is sufficiently resourced: 1) there is efficient and effective resource use in order to reduce costs associated with the necessary rapid expansion of the HIV response 2) funding from (inter)national sources are mobilized to support ready and equitable access for all populations to a comprehensive range of HIV programs and services. With the development of the epidemic, the resource-allocation of both regions and income groupings has changed, with BRICS countries (Brazil, Russian Federation, India, China, South Africa) and three MINT countries (Mexico, Indonesia, Nigeria and Türkiye) representing 50% of the total resource-needs globally. The disease burden and populations of countries and regions also have a significant influence on the resource needs, along with the unit costs associated with different areas. For example, Eastern and Southern Africa have the largest per capita resource needs due to the high HIV prevalence (28% of total estimated resource needs by 2025). Asia and the Pacific region accounts for 32% of total estimated resource needs due to the much larger population and higher unit costs, albeit with a lower disease burden [19].

Successful response strategies

Intersectoral interventions:

In order to have effective interventions, a holistic approach to the HIV response is needed and an intersectoral collaboration is essential.

WHO recommends:

- Addressing social determinants
- Applying the life course-approach
- Involving and enabling civil society
- Organizing the process [98,99]

Successful intersectoral interventions:

Public finance intervention

The AIDS Levy fund was established in 1999 and is administered by the Zimbabwe national state. This solution has improved the country's ownership and created a sustainable HIV financing system. The AIDS Levy fund collected funds from employers who contribute 3% of their income. The revenues were allocated 50% to HIV ART, 10% to prevention, 6% to monitoring and evaluation, and 6% to creating an enabling environment [100].

Health intervention: Multimonth dispensing

Multimonth dispensing is a differentiated service delivery that provides patients with several months of ART at one time and reduces the need for monthly visits to take medicine. It is an effective solution to transport barriers, travel restrictions, and lock-downs. It has been recommended by the WHO since 2016 [101,102].

Education intervention: Peer-to-peer education

Peer-to-peer education proved effective in knowledge increase and attitudinal and behavioral change, especially among vulnerable populations. Evidence shows that it increases condom use and HIV testing and promotes safer sex [103].

Innovation and technology intervention

Digital HIV solutions helped close HIV services access gaps and increased treatment uptake and adherence, especially among key populations. They made it easier for people to make informed decisions and better control their health. However, these interventions can exacerbate inequalities [104,105]. This is why the rights based-approach and ethical use of digital technologies are needed when developing these interventions [106].

Digital health, the role of community activities in HIV management

The development of new digital technologies has been creating opportunities to promote prevention and treatment when it comes to HIV. Nowadays, there is increasing access to Internet services, translating into more cost-effective digital interventions in which we can reach key populations easily. These types of interventions can vary from text-message notifications for HIV testing and counseling to ART treatment monitor.

Presently, most interventions on digital health focus on medication adherence. Despite this being a good strategy, there is a lack of effort for other medication problems, such as initiation, monitoring and counseling. At the same time, there is also a lack of targeting all key populations, with a focus on MSM and a disregard for IDU and sex workers.

One focal point is youth. Since they are at the central point of technology use, they are a target population for digital health and HIV literacy [107]. That being said, it is important to focus on digital health since it can provide us with useful HIV services, namely when it comes to surveillance through different digital platforms to increase HIV monitoring and allow for a real-time behavior tracker of key populations, prevention, testing, PrEP awareness, clinical intervention and assist mental health services [108]. However, it is important to consider that not all countries and vulnerable populations have easy access to the Internet connection, so other strategies and measures should be developed.

Community-led interventions:

Communities are the backbone of the HIV response. Evidence shows that their interventions have contributed to tremendous progress towards the decline of HIV cases and AIDS-related deaths and reducing inequalities since the beginning of the epidemic.

The 2021-2025 strategy and the political declaration of 2021 acknowledge the vital role of communities to end AIDS in 2030. They committed to achieving the following targets:

By 2025, community-led organizations deliver

- 30% of testing and treatment services, with a focus on HIV testing, linkage to treatment, adherence and retention support, and treatment literacy
- 80% of HIV prevention services for populations at high risk of HIV infection, including for women within those populations
- 60% of programs support the achievement of societal enablers [109]

However, the current programs focus on community-based interventions and communities are excluded from the decision making and the actual amount of funding has decreased during the last years.

This was explained by the lack of trust and the broadness of the term community-led. Thus, in 2019, recognizing the challenges in monitoring progress towards the commitments. The UNAIDS secretariat held consultations with community experts to define the terms.

Community-led organizations, groups, and networks, irrespective of their legal status, are entities for which the majority of governance, leadership, staff, spokespeople, membership, and volunteers, reflect and represent the experiences, perspectives, and voices of their constituencies and who have transparent mechanisms of accountability to their constituencies. Community-led organizations, groups, and networks are self-determining, autonomous, and not influenced by government, commercial, or donor agendas.

Not all community-based organizations are community-led.

Community-led responses are actions and strategies that seek to improve the health and human rights of their constituencies, that are specifically informed and implemented by and for communities themselves and the organizations, groups, and networks that represent them. Community-led responses are determined by

and respond to the needs and aspirations of their constituents. Community-led responses include advocacy, campaigning, and holding decision-makers accountable; monitoring of policies, practices, and service delivery; participatory research; education and information sharing; service delivery; capacity building, and funding of community-led organizations, groups, and networks.

Community-led responses can take place at global, regional, national, sub-national, and grassroots levels and can be implemented virtually or in person. Not all initiatives that take place in communities are community-led. Besides setting definitions, later in 2021, an accountability mechanism for community-led interventions was clarified in the technical guidance for monitoring community-led interventions [99].

Successful community-led response: COVID19 pandemic

Despite the hardships, communities are constantly engaged in the HIV response and ready to reduce inequalities and bridge the gap.

According to a survey done by UNAIDS that included 225 community-led organizations from 72 countries, during the pandemic, many community-led organizations shifted their work online, ensured the continuity of the ART distribution, provided self-testing kits, and supported survivors of gender-based violence. They also contributed to the pandemic response and tailored their work to key populations' needs, providing food packages, masks, and sanitizers.

The support of the governments and the inclusion of communities in the decision-making depends on the country. However, the majority were excluded from the pandemic response, which explains the failure of the national covid response to address the needs of the people living with HIV [110].

Government-led interventions:

Portugal

Since 2017, the Portuguese population has been given access to PrEP. Vulnerable groups only need to be referred by their primary healthcare physician to an infectiology appointment (to be evaluated in the next 30 days, maximum). Before starting PrEP, an STI screening, including HIV, is performed and health education is encouraged. Besides that, PrEP is only prescribed for 3 months to ensure a trimestral HIV screening as well as an evaluation of the adherence, risk behaviors and increased health literacy when it comes to HIV, AIDS and safer sex practices [111].

South Africa

From 2016 on, South Africa has implemented a phased project to reduce the incidence of HIV through testing, prevention and treatment. They have integrated testing and PrEP into prevention measures as well as in primary healthcare centers. There is a strong emphasis on using PrEP in combination with condoms and frequent STI screenings [112].

Brazil

Since 1996, the Brazilian Government made access to ART for PLWHA free and universal. There have been joint interventions with different bodies and the Brazilian National AIDS Programme was created in order to advocate and potentiate prevention, treatment and adherence [113]. Besides that, nonoccupational PEP was introduced in healthcare services in 2009 and PrEP is available to all vulnerable populations for HIV infection [114].

Egypt

In 1986, Egypt's Ministry of Health and Population created the first institutions to deal with and monitor the HIV epidemic. Since 2000, they have implemented preventive and surveillance measures to track the incidence and prevalence of HIV and AIDS. Besides that, a reporting program was created and implemented

in several governorates. These strategies are in parallel with intersectional ones with different castors such as education and NGOs. Egypt also created an HIV hotline that provides information on HIV and sexual health [115].

Thailand

Since the late eighties, Thailand has been on the frontline when it comes to HIV prevention. The National AIDS Programme was created in 1987 and the Government created an integrated surveillance system with several assessments of high-risk groups and behavioral patterns to provide evaluations and resource allocation. Since the beginning, it was notoriously the support from the government, financially speaking, to control the HIV epidemic. Prevention campaigns for the usage of condoms as well as vertical transmission lead to a decrease in HIV infections yearly and the transmission rate [116].

IFMSA Contribution to HIV and AIDS Response

From the term 2018-19 to 2020-21, 94 activities (on a local and national level) have addressed the topic of HIV and AIDS, targeting medical students, healthcare professionals, the general population and PLWHA. Most of them focused on Education (46 activities) and Capacity Building (10 activities) with many of them being reported as Campaign moments (40 activities).

In total, more than 150000 people benefited from the IFMSA and their NMOs activities in the last 3 terms. Within that same timeframe, 4 activities (on a regional and international level) have also addressed HIV and AIDS, contributing to the impact generated by local and national activities. International efforts by IFMSA include the annual WAD online campaign and the release of the HIV Education and Advocacy Training (HEAT) Manual. The annual WAD online campaign runs from late November to early December and is published on social media platforms. In addition, the policy document “HIV and AIDS Response”, submitted by three NMOs, was adopted for the first time. The IFMSA works with UNAIDS through the partnership with The PACT [117–119].

REFERENCES

1. What Are HIV and AIDS? [Internet]. HIV.gov. [cited 2022 Jun 21]. Available from: <https://www.hiv.gov/hiv-basics/overview/about-hiv-and-aids/what-are-hiv-and-aids>
2. World Health Organization. Consolidated guidelines on HIV prevention, diagnosis, treatment and care for key populations – 2016 update [Internet]. 2016. Available from: <https://apps.who.int/iris/bitstream/handle/10665/246200/9789241511124-eng.pdf;jsessionid=A1CDD6F3746A7A05918A7115CBFAD5BC?sequence=1>
3. Facts about HIV Stigma [Internet]. Center for Disease Control and Prevention. 2022 [cited 2022 Jun 21]. Available from: <https://www.cdc.gov/hiv/basics/hiv-stigma/index.html#:~:text=What%20is%20HIV%20stigma%3F,believed%20to%20be%20socially%20unacceptable.>
4. UNAIDS. Confronting inequalities — Lessons for pandemic responses from 40 years of AIDS [Internet]. 2021 [cited 2022 Jun 21]. Available from: https://www.unaids.org/sites/default/files/media_asset/2021-global-aids-update_en.pdf
5. World Health Organization. Global progress report on HIV, viral hepatitis and sexually transmitted infections, 2021. Accountability for the global health sector strategies 2016–2021: actions for impact [Internet]. 2021 [cited 2022 Jun 21]. Available from: <https://www.who.int/publications-detail-redirect/9789240027077>
6. Bilon XJ. Leaving No One Behind: Treatment and Care Concerns of People Living with HIV in the Time of COVID-19 - A Philippine Situationer [Internet]. UNDP & UNAIDS; 2021 [cited 2022 Jun 21]. Available from: <https://reliefweb.int/report/philippines/leaving-no-one-behind-treatment-and-care-concerns-people-living-hiv-time-covid-19>
7. UNAIDS report shows that people living with HIV face a double jeopardy, HIV and COVID-19, while key populations and children continue to be left behind in access to HIV services [Internet]. UNAIDS. 2021 [cited 2022 Jun 21].

Available from:

https://www.unaids.org/en/resources/presscentre/pressreleaseandstatementarchive/2021/july/20210714_global-aids-update

8. UNAIDS. United Nations High-Level Meeting on AIDS [Internet]. [cited 2022 Jun 22]. Available from: https://www.unaids.org/en/resources/presscentre/pressreleaseandstatementarchive/2021/june/20210614_PR_HLM_closes
9. UNAIDS. AIDS AND THE SUSTAINABLE DEVELOPMENT GOALS [Internet]. [cited 2022 Jun 22]. Available from: https://www.unaids.org/en/AIDS_SDGs
10. Number of New HIV Infections [Internet]. Global SDG Indicator Platform. 2018 [cited 2022 Jun 22]. Available from: <https://sdg.tracking-progress.org/indicator/number-of-new-hiv-infections/>
11. United Nations. POLITICAL DECLARATION ON HIV AND AIDS: ENDING INEQUALITIES AND GETTING ON TRACK TO END AIDS BY 2030 [Internet]. 2021 Jun [cited 2022 Jun 22]. Available from: https://www.unaids.org/sites/default/files/media_asset/2021_political-declaration-on-hiv-and-aids_en.pdf
12. World Health Organization. New HIV/AIDS political declaration seeks to end inequalities and get on track to end AIDS by 2030 [Internet]. [cited 2022 Jun 22]. Available from: <https://www.who.int/news/item/11-06-2021-new-hiv-aids-political-declaration-seeks-to-end-inequalities-and-get-on-track-to-end-aids-by-2030>
13. UNAIDS. 90-90-90: Treatment for all [Internet]. [cited 2022 Jun 22]. Available from: <https://www.unaids.org/en/resources/909090>
14. World Health Organization. Developing global health sector strategies on HIV, viral hepatitis and STIs 2022-2030 [Internet]. [cited 2022 Jun 22]. Available from: <https://www.who.int/teams/global-hiv-hepatitis-and-stis-programmes/strategies/global-health-sector-strategies/developing-ghss-2022-2030>
15. World Health Organization. Global Health Sector Strategies 2022-2030 [Internet]. [cited 2022 Jun 22]. Available from: <https://www.who.int/teams/global-hiv-hepatitis-and-stis-programmes/strategies/global-health-sector-strategies>
16. World Health Organization. Global health sector strategies on, respectively, HIV, viral hepatitis and sexually transmitted infections for the period 2022-2030 [Internet]. 2022 Jun [cited 2022 Jun 22]. Available from: https://cdn.who.int/media/docs/default-source/hq-hiv-hepatitis-and-stis-library/full-final-who-ghss-hiv-vh-sti_1-june2022.pdf?sfvrsn=7c074b36_9
17. UNAIDS. 2021 UNAIDS Global AIDS Update - Confronting inequalities - Lessons for pandemic responses from 40 years of AIDS [Internet]. 2021 [cited 2022 Jun 22]. Available from: <https://www.unaids.org/en/resources/documents/2021/2021-global-aids-update>
18. Adolescent HIV treatment [Internet]. UNICEF DATA. 2021 [cited 2022 Jun 29]. Available from: <https://data.unicef.org/topic/hivaids/adolescent-hiv-treatment/>
19. UNAIDS. Global AIDS Strategy 2021-2026 [Internet]. 2021 [cited 2022 Jun 20]. Available from: https://www.unaids.org/sites/default/files/media_asset/global-AIDS-strategy-2021-2026_en.pdf
20. UNAIDS. HIV and AIDS - Basic facts [Internet]. [cited 2022 Jun 22]. Available from: <https://www.unaids.org/en/frequently-asked-questions-about-hiv-and-aids>
21. David. Hardy W, David Hardy W. Fundamentals of HIV Medicine 2021: CME Edition. Oxford University Press, editor. Oxford University Press; 2021. 568 p.
22. World Health Organization (WHO). Consolidated guidelines on HIV prevention, testing, treatment, service delivery and monitoring: recommendations for a public health approach [Internet]. 2021 Jul. Available from: <https://www.who.int/publications/i/item/9789240031593>
23. Programmes STI. Consolidated guidelines on HIV prevention, testing, treatment, service delivery and monitoring: recommendations for a public health approach [Internet]. World Health Organization; 2021 [cited 2022 Jun 22]. Available from: <https://www.who.int/publications/i/item/9789240031593>
24. Drug-Related Harm Reduction [Internet]. World Health Organization - Regional Office for the Eastern Mediterranean. [cited 2022 Jun 24]. Available from: <http://www.emro.who.int/asd/health-topics/drug-related-harm-reduction.html>

25. What is harm reduction? [Internet]. Harm Reduction International. [cited 2022 Jun 24]. Available from: <https://www.hri.global/what-is-harm-reduction>
26. UNAIDS. Health, Rights, and Drugs: Harm Reduction, Decriminalization, and Zero Discrimination for People Who Use Drugs [Internet]. 2019 [cited 2022 Jun 24]. Available from: https://www.unaids.org/sites/default/files/media_asset/JC2954_UNAIDS_drugs_report_2019_en.pdf
27. Hawk M, Coulter RWS, Egan JE, Fisk S, Reuel Friedman M, Tula M, et al. Harm reduction principles for healthcare settings. *Harm Reduct J.* 2017 Oct 24;14(1):1–9.
28. Germany: taking a human-rights based approach to injecting drug use [Internet]. UNAIDS. 2018 [cited 2022 Jul 16]. Available from: https://www.unaids.org/en/resources/presscentre/featurestories/2018/october/20181015_germany
29. National Institute on Drug Abuse. Opioid substitution treatment in Spain: 20 years of experience in harm reduction programs [Internet]. National Institute on Drug Abuse. 2015 [cited 2022 Jul 16]. Available from: <https://nida.nih.gov/international/abstracts/opioid-substitution-treatment-in-spain-20-years-experience-in-harm-reductio-on-programs>
30. Fuertes R, Belo E, Merendeiro C, Curado A, Gautier D, Neto A, et al. Lisbon's COVID 19 response: harm reduction interventions for people who use alcohol and other drugs in emergency shelters. *Harm Reduct J.* 2021 Jan 25;18(1):1–4.
31. The cost-effectiveness of harm reduction. *International Journal of Drug Policy.* 2015 Feb 1;26:S5–11.
32. Harm Reduction International. The Global State of Harm Reduction 2020 [Internet]. 2020 [cited 2022 Jun 24]. Report No.: 7. Available from: https://www.hri.global/files/2021/03/04/Global_State_HRI_2020_BOOK_FA_Web.pdf
33. Global State of Harm Reduction - 2021 Update [Internet]. Harm Reduction International. 2021 [cited 2022 Jun 24]. Available from: <https://www.hri.global/global-state-of-harm-reduction-2021>
34. Ti L, Kerr T. The impact of harm reduction on HIV and illicit drug use. *Harm Reduct J.* 2014 Feb 21;11(1):1–3.
35. Programmes STI. CONSOLIDATED HIV STRATEGIC INFORMATION GUIDELINES: DRIVING IMPACT THROUGH PROGRAMME MONITORING AND MANAGEMENT [Internet]. World Health Organization; 2020 [cited 2022 Jun 22]. Available from: <https://www.who.int/publications/i/item/9789240000735>
36. Programmes STI. Consolidated HIV strategic information guidelines [Internet]. World Health Organization; 2020 [cited 2022 Jun 22]. Available from: <https://www.who.int/publications/i/item/9789240000735>
37. What Is PEP? [Internet]. HIV.gov. Available from: <https://www.hiv.gov/hiv-basics/hiv-prevention/using-hiv-medication-to-reduce-risk/post-exposure-prophylaxis>
38. Dominguez KL, Smith DK, Thomas V, Crepez N, Lang K, Heneine W, et al. Updated guidelines for antiretroviral postexposure prophylaxis after sexual, injection drug use, or other nonoccupational exposure to HIV—United States, 2016. Centers for Disease Control and Prevention [Internet]. [cited 2022 Jun 24]; Available from: <https://stacks.cdc.gov/view/cdc/38856>
39. Ng'uni T, Chasara C, Ndhlovu ZM. Major Scientific Hurdles in HIV Vaccine Development: Historical Perspective and Future Directions. *Front Immunol.* 2020 Oct 28;11:590780.
40. Cairns G. HIV prevention trials paused during coronavirus crisis [Internet]. *aidsmap.com.* 2020 [cited 2022 Jun 25]. Available from: <https://www.aidsmap.com/news/apr-2020/hiv-prevention-trials-paused-during-coronavirus-crisis>
41. IAVI. IAVI and Moderna launch first-in-Africa clinical trial of mRNA HIV vaccine development program. 2022 May 18 [cited 2022 Jun 25]; Available from: <https://www.iavi.org/news-resources/press-releases/2022/iavi-and-moderna-launch-first-in-africa-clinical-trial-of-mrna-hiv-vaccine-development-program>
42. Weis J. Moderna Launches First Ever HIV Vaccine Clinical Trial. 2022 Feb 10 [cited 2022 Jun 25]; Available from: <https://salud-america.org/moderna-launches-first-ever-hiv-vaccine-clinical-trial/>
43. UNAIDS. Global AIDS Strategy 2021-2026 [Internet]. UNAIDS; 2021 Mar [cited 2022 Jun 23]. Available from: https://www.unaids.org/sites/default/files/media_asset/global-AIDS-strategy-2021-2026_en.pdf
44. Key Populations: Achieving Equitable Access To End AIDS [Internet]. USAID. 2022 [cited 2022 Jun 23]. Available from: <https://www.usaid.gov/global-health/health-areas/hiv-and-aids/technical-areas/key-populations>

45. UNAIDS. SRA 4: HIV prevention and key populations [Internet]. 2021 Jun [cited 2022 Jun 23]. Available from: https://open.unaids.org/sites/default/files/documents/SRA4_SRA%20report_2020.pdf
46. UNAIDS. HIV and Gay Men and Other Men Who Have Sex with Men [Internet]. 2021 Jan [cited 2022 Jun 23]. Available from: https://www.unaids.org/sites/default/files/media_asset/03-hiv-human-rights-factsheet-gay-men_en.pdf
47. UNAIDS. HIV and Transgender and other Gender-Diverse People [Internet]. 2021 Jan [cited 2022 Jun 23]. Available from: https://www.unaids.org/sites/default/files/media_asset/04-hiv-human-rights-factsheet-transgender-gender-diverse_en.pdf
48. UNAIDS. HIV and Sex Work [Internet]. 2021 Jan [cited 2022 Jun 23]. Available from: https://www.unaids.org/sites/default/files/media_asset/05-hiv-human-rights-factsheet-sex-work_en.pdf
49. UNAIDS. HIV and People Who Use Drugs [Internet]. 2021 Jan [cited 2022 Jun 23]. Available from: https://www.unaids.org/sites/default/files/media_asset/02-hiv-human-rights-factsheet-people-who-use-drugs_en.pdf
50. UNAIDS. HIV and People in Prisons and Other Closed Settings [Internet]. 2021 Jan [cited 2022 Jun 23]. Available from: https://www.unaids.org/sites/default/files/media_asset/06-hiv-human-rights-factsheet-prisons_en.pdf
51. UNAIDS. Update on implementation of the HIV response for migrant and mobile populations [Internet]. 2021 Jul [cited 2022 Jun 23]. Available from: https://www.unaids.org/sites/default/files/media_asset/PCB48_Presentation_Update_Migrant_Mobile_Populations.pdf
52. UNICEF. HIV and AIDS in Adolescents [Internet]. UNICEF DATA. 2019 [cited 2022 Jun 23]. Available from: <https://data.unicef.org/topic/hiv-aids/>
53. Young people's monitoring of progress towards 2025 targets begins second phase [Internet]. UNAIDS. 2022 [cited 2022 Jun 23]. Available from: https://www.unaids.org/en/resources/presscentre/featurestories/2022/april/20220406_young-people
54. Global HIV Programme: Service delivery, adherence and retention [Internet]. World Health Organization. [cited 2022 Jun 21]. Available from: <https://www.who.int/teams/global-hiv-hepatitis-and-stis-programmes/hiv/treatment/service-delivery-adherence-retention>
55. HIV Policy Lab. Global HIV Policy Report: Findings from the HIV Policy Lab [Internet]. 2022 [cited 2022 Jun 21]. Available from: <https://www.hivpolicylab.org/documents/reports/2021GlobalReport/Global%20HIV%20Policy%20Report%20-%20Findings%20from%20the%20HIV%20Policy%20Lab%20%5BHighRes%5D.pdf>
56. Travel restrictions [Internet]. UNAIDS. 2021 [cited 2022 Jun 21]. Available from: <https://www.unaids.org/en/keywords/travel-restrictions>
57. Parental consent is required in the majority of countries worldwide [Internet]. UNAIDS. 2019 [cited 2022 Jun 21]. Available from: https://www.unaids.org/en/resources/presscentre/featurestories/2019/april/20190415_gow_parental-consent
58. Global State of PrEP [Internet]. [cited 2022 Jun 25]. Available from: <https://www.who.int/groups/global-prep-network/global-state-of-prep>
59. Global data shows increasing PrEP use and widespread adoption of WHO PrEP recommendations [Internet]. [cited 2022 Jun 25]. Available from: <https://www.who.int/news-room/feature-stories/detail/global-data-shows-increasing-prep-use-and-widespread-adoption-of-who-prep-recommendations>
60. War in Ukraine [Internet]. UNAIDS. [cited 2022 Jun 21]. Available from: <https://www.unaids.org/en/War-Ukraine-special>
61. Global HIV, Hepatitis and STI Programmes World Health Organization. Disruption in HIV, Hepatitis and STI services due to COVID-19 [Internet]. 2020 [cited 2022 Jun 21]. Available from: https://www.who.int/docs/default-source/hiv-hq/disruption-hiv-hepatitis-sti-services-due-to-covid19.pdf?sfvrsn=5f78b742_8
62. World Health Organization. State of inequality: HIV, tuberculosis and malaria [Internet]. 2021 Dec [cited 2022 Jun 21]. Available from: <https://www.who.int/publications/i/item/9789240039445>

63. UNAIDS. Disability and HIV [Internet]. 2017 [cited 2022 Jun 21]. Available from: https://www.unaids.org/sites/default/files/media_asset/JC2905_disability-and-HIV_en.pdf
64. Isano S, Wong R, Logan J, El-Halabi S, El-Khatib Z. Barriers to post exposure prophylaxis use among men who have sex with men in sub-Saharan Africa: An online cross-sectional survey. *Preventive Medicine Reports* [Internet]. 2020 Sep [cited 2022 Jun 25];19. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7240716/>
65. van den Berg W, Peacock D, and Pascoe L, STT de BH. The HIV Blind Spot: Men and HIV Testing, Treatment and Care in Sub-Saharan Africa. *IDS Bulletin*. 2014;45:53–60.
66. IPPF and UNFPA. Global Sexual and Reproductive Health Package for Men and Adolescent Boys [Internet]. 2017 [cited 2022 Jun 21]. Available from: <https://www.unfpa.org/publications/global-sexual-and-reproductive-health-package-men-and-adolescent-boys>
67. Kadiamada-Ibarra H, Hawley NL, Sosa-Rubí SG, Wilson-Barthes M, Franco RR, Galárraga O. Barriers and facilitators to pre-exposure prophylaxis uptake among male sex workers in Mexico: an application of the RE-AIM framework. *BMC Public Health*. 2021 Nov 27;21(1):1–12.
68. Other Health Issues of Special Concern for People Living with HIV [Internet]. HIV.gov. 2022 [cited 2022 Jun 23]. Available from: <https://www.hiv.gov/hiv-basics/staying-in-hiv-care/other-related-health-issues/other-health-issues-of-special-concern-for-people-living-with-hiv>
69. McComsey GA, Tebas P, Shane E, Yin MT, Turner Overton E, Huang JS, et al. Bone Disease in HIV Infection: A Practical Review and Recommendations for HIV Care Providers. *Clinical Infectious Diseases*. 2010 Oct 10;51(8):937.
70. HIV Medicines and Side Effects [Internet]. HIVinfo. 2021 [cited 2022 Jun 23]. Available from: <https://hivinfo.nih.gov/understanding-hiv/fact-sheets/hiv-medicines-and-side-effects>
71. Center for Disease Control and Prevention: US Public Health Service. PREEXPOSURE PROPHYLAXIS FOR THE PREVENTION OF HIV INFECTION IN THE UNITED STATES – 2017 UPDATE [Internet]. [cited 2022 Jun 23]. Available from: <https://www.cdc.gov/hiv/pdf/risk/prep/cdc-hiv-prep-guidelines-2017.pdf>
72. Kuhar DT, Henderson DK, Struble KA, Heneine W, Thomas V, Cheever LW, et al. Updated US Public Health Service guidelines for the management of occupational exposures to human immunodeficiency virus and recommendations for postexposure prophylaxis. *Infection control and hospital epidemiology: the official journal of the Society of Hospital Epidemiologists of America*. 2013 Sep;34(9):875–92.
73. Overview of prevention of opportunistic infections in patients with HIV [Internet]. UpToDate. [cited 2022 Jun 23]. Available from: <https://www.uptodate.com/contents/overview-of-prevention-of-opportunistic-infections-in-patients-with-hiv#H458951808>
74. Collins PY, Vellozo J, Concepcion T, Oseso L, Chwastiak L, Kemp CG, et al. Intervening for HIV prevention and mental health: a review of global literature. *Journal of the International AIDS Society* [Internet]. 2021 Jun [cited 2022 Jun 23];24(Suppl 2). Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8222838/>
75. Memiah P, Nkinda L, Majigo M, Humwa F, Haile ZT, Muthoka K, et al. Mental health symptoms and inflammatory markers among HIV infected patients in Tanzania. *BMC Public Health* [Internet]. 2021 Aug [cited 2022 Jun 23];21. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8193867/>
76. Nosik M, Lavrov V, Svitich O. HIV Infection and Related Mental Disorders. *Brain sciences* [Internet]. 2021 Feb 17;11(2). Available from: <http://dx.doi.org/10.3390/brainsci11020248>
77. Remien RH, Stirratt MJ, Nguyen N, Robbins RN, Pala AN, Mellins CA. Mental health and HIV/AIDS: the need for an integrated response. *AIDS*. 2019 Jul 15;33(9):1411–20.
78. Martin M, Andersen, Somogy Varga, Anna P. Folker. On the definition of stigma. *Journal of Evaluation in Clinical Practice*. 2022 Apr;1–7.
79. Nyblade L, Stockton MA, Giger K, Bond V, Ekstrand ML, Mc Lean R, et al. Stigma in health facilities: why it matters and how we can change it. *BMC Medicine* [Internet]. 2019 [cited 2022 Jun 20];17. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6376713/>
80. Jackson-Best F, Edwards N. Stigma and intersectionality: a systematic review of systematic reviews across HIV/AIDS, mental illness, and physical disability. *BMC Public Health* [Internet]. 2018 [cited 2022 Jun 23];18. Available

from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6062983/>

81. Global Fund Survey: Majority of HIV, TB and Malaria Programs Face Disruptions as a Result of COVID-19 [Internet]. The Global Fund. 2020 [cited 2022 Jun 23]. Available from: <https://www.theglobalfund.org/en/covid-19/news/2020-06-17-global-fund-survey-majority-of-hiv-tb-and-malaria-programs-face-disruptions-as-a-result-of-covid-19>
82. Qin A, Wee SL. "No Way Out": In China, Coronavirus Takes Toll on Other Patients. The New York Times [Internet]. 2020 Mar 3 [cited 2022 Jun 23]; Available from: <https://www.nytimes.com/2020/03/03/world/asia/china-coronavirus-cancer.html>
83. Lillian B. Brown, Matthew A. Spinelli, Monica Gandhi. The interplay between HIV and COVID-19: summary of the data and responses to date. Current Opinion in HIV and AIDS [Internet]. 2021 Jan [cited 2022 Jun 23];16(1). Available from: <http://centroestudosemilioribas.org.br/upload/artigo/The%20interplay%20between%20HIV%20and%20COVID.pdf>
84. Rao A, Rucinski K, Jarrett BA, Ackerman B, Wallach S, Marcus J, et al. Perceived Interruptions to HIV Prevention and Treatment Services Associated With COVID-19 for Gay, Bisexual, and Other Men Who Have Sex With Men in 20 Countries. J Acquir Immune Defic Syndr [Internet]. 2021 May 1 [cited 2022 Jun 23];87(1). Available from: <https://pubmed.ncbi.nlm.nih.gov/33443963/>
85. Tang HJYZ. Maintaining HIV care during the COVID-19 pandemic. The Lancet HIV [Internet]. 2020 May;7(5). Available from: [https://www.thelancet.com/journals/lanhiv/article/PIIS2352-3018\(20\)30105-3/fulltext](https://www.thelancet.com/journals/lanhiv/article/PIIS2352-3018(20)30105-3/fulltext)
86. The Lancet Hiv. The syndemic threat of food insecurity and HIV. The Lancet HIV [Internet]. 2020 Feb [cited 2022 Jun 23];7(2). Available from: <https://pubmed.ncbi.nlm.nih.gov/32027852/>
87. Stanic A, Rybin D, Cannata F, Hohl C, Brody J, Gaeta J, et al. The impact of the housing status on clinical outcomes and health care utilization among individuals living with HIV. AIDS Care [Internet]. 2021 Jan [cited 2022 Jun 23];33(1). Available from: <https://pubmed.ncbi.nlm.nih.gov/31766866/>
88. Bositis CM, St Louis J. HIV and Substance Use Disorder: Role of the HIV Physician. Infect Dis Clin North Am [Internet]. 2019 Sep [cited 2022 Jun 23];33(3). Available from: <https://pubmed.ncbi.nlm.nih.gov/31255382/>
89. AIDS 2020: Virtual opens with focus on impact of COVID-19 on global HIV response [Internet]. AIDS 2020. [cited 2022 Jun 23]. Available from: <https://www.aids2020.org/aids-2020-virtual-opens-with-focus-on-impact-of-covid-19-on-global-hiv-response/>
90. Gostin LO. A Tale of Two Diseases: Mental Illness and HIV/AIDS. Milbank Q. 2015 Dec;93(4):687.
91. Kalichman SC, El-Krab R. Social and Behavioral Impacts of COVID-19 on People Living with HIV: Review of the First Year of Research. Curr HIV/AIDS Rep. 2021 Nov 26;19(1):54–75.
92. ReliefWeb. The impact of COVID-19 on HIV, TB and malaria services and systems for health: A snapshot from 502 health facilities across Africa and Asia. 2021 Apr [cited 2022 Jun 23]; Available from: <https://reliefweb.int/report/world/impact-covid-19-hiv-tb-and-malaria-services-and-systems-health-snapshot-502-health>
93. Congressional Research Service. [Global Economic Effects of COVID-19] [Internet]. United States Congress; 2021 Nov [cited 2022 Jun 23]. Available from: <https://sgp.fas.org/crs/row/R46270.pdf>
94. UNAIDS. On the Fast-Track to end AIDS [Internet]. [cited 2022 Jun 22]. Available from: https://www.unaids.org/sites/default/files/media_asset/20151027_UNAIDS_PCB37_15_18_EN_rev1.pdf
95. Gleeson HS, Oliveras Rodriguez CA, Hatane L, Hart D 't. Ending AIDS by 2030: the importance of an interlinked approach and meaningful youth leadership. Journal of the International AIDS Society [Internet]. 2018 Feb;21 Suppl 1. Available from: <http://dx.doi.org/10.1002/jia2.25061>
96. World Health Organization. A Framework for Priority Linkages [Internet]. 2005 Oct [cited 2022 Jun 22]. Available from: http://apps.who.int/iris/bitstream/handle/10665/69851/WHO_HIV_2005.05_eng.pdf;jsessionid=2EC31B7C25C500CC7D0A76CE12062C97?sequence=1
97. Parker R. The global HIV/AIDS pandemic, structural inequalities, and the politics of international health. American Journal of Public Health. 2002 Mar;92(3):343–6.

98. World Health Organization. Regional Office for Europe. Intersectoral collaboration to end HIV, tuberculosis and viral hepatitis in Europe and central Asia: a framework for action to implement the United Nations Common Position [Internet]. 2021 Feb [cited 2022 Jun 21]. Available from: <https://apps.who.int/iris/handle/10665/334255>
99. UNAIDS. Progress Report on Barriers to Effective Funding of Community-Led Responses By International and Private Funders As Well As Better Understanding of Challenges Faced by National Governments in Allocating Funding to Communities' Responses [Internet]. 2019 [cited 2022 Jun 21]. Available from: https://www.unaids.org/sites/default/files/media_asset/25112019_UNAIDS_PCB45_Community-led-Response_EN.pdf
100. Zimbabwe: AIDS levy generates new resources for treatment [Internet]. UNAIDS. 2012 [cited 2022 Jun 21]. Available from: <https://www.unaids.org/en/resources/presscentre/featurestories/2012/february/20120221zimbabwe>
101. Pebody R. COVID-19 pandemic has speeded up the implementation of multi-month dispensing [Internet]. [aidsmap.com](https://www.aidsmap.com). 2020 [cited 2022 Jun 21]. Available from: <https://www.aidsmap.com/news/jul-2020/covid-19-pandemic-has-speeded-implementation-multi-month-dispensing>
102. Hoffman RM, Moyo C, Balakasi KT, Siwale Z, Hubbard J, Bardon A, et al. Multimonth dispensing of up to 6 months of antiretroviral therapy in Malawi and Zambia (INTERVAL): a cluster-randomised, non-blinded, non-inferiority trial. *The Lancet Global health* [Internet]. 2021 May [cited 2022 Jun 21];9(5). Available from: <https://pubmed.ncbi.nlm.nih.gov/33865471/>
103. He J, Wang Y, Du Z, Liao J, He N, Hao Y. Peer education for HIV prevention among high-risk groups: a systematic review and meta-analysis. *BMC Infectious Diseases*. 2020 May 12;20(1):1–20.
104. Veronese V, Ryan KE, Hughes C, Lim MSC, Pedrana A, Stoové M. Using Digital Communication Technology to Increase HIV Testing Among Men Who Have Sex With Men and Transgender Women: Systematic Review and Meta-Analysis. *Journal of Medical Internet Research*. 2020 Jul 28;22(7):e14230.
105. Winskell K, Sabben G, Akelo V, Ondeng'e K, Odero I, Mudhune V. A smartphone game to prevent HIV among young Kenyans: local perceptions of mechanisms of effect. *Health Educ Res* [Internet]. 2020 Jun 1 [cited 2022 Jun 21];35(3). Available from: <https://pubmed.ncbi.nlm.nih.gov/32441759/>
106. UNDP. Guidance on the rights-based and ethical use of digital technologies in HIV and health programmes [Internet]. 2021 [cited 2022 Jun 21]. Available from: <https://www.undp.org/publications/guidance-rights-based-and-ethical-use-digital-technologies-hiv-and-health-programmes>
107. Simoni JM, Kutner BA, Horvath KJ. Opportunities and Challenges of Digital Technology for HIV Treatment and Prevention. *Current HIV/AIDS reports*. 2015 Dec;12(4):437–40.
108. Cao B, Bao H, Opong E, Feng S, Smith KM, Tucker JD, et al. Digital health for sexually transmitted infection and HIV services: a global scoping review. *Current Opinion in Infectious Diseases*. 2020 Feb;33(1):44–50.
109. United Nations. Political Declaration on HIV and AIDS: Ending Inequalities and Getting on Track to End AIDS by 2030. In: Implementation of the Declaration of Commitment on HIV/AIDS and the political declarations on HIV/AIDS [Internet]. 2021 [cited 2022 Jun 21]. (A/75/L.95). Available from: https://cdn.who.int/media/docs/default-source/hq-hiv-hepatitis-and-stis-library/2021_06_07_unga_political-declaration-on-hiv-aids.pdf?sfvrsn=94cce9ee_3
110. UNAIDS. Holding the line: communities as first responders to COVID-19 and emerging health threats [Internet]. 2021 [cited 2022 Jun 21]. Available from: https://www.unaids.org/sites/default/files/media_asset/holding-the-line-communities-first-responders_en.pdf
111. Departamento da Qualidade na Saúde. Profilaxia de Pré-exposição da Infecção por VIH no Adulto [Internet]. 2018 [cited 2022 Jun 21]. Available from: https://normas.dgs.min-saude.pt/wp-content/uploads/2019/09/profilaxia-de-pre_exposicao-da-infecao-por-vih-no-adulto.pdf
112. South African National Department of Health. National Policy on HIV Pre-exposure Prophylaxis (PrEP) and Test and Treat (T&T) [Internet]. 2016 [cited 2022 Jun 21]. Available from: [https://sahivsoc.org/Files/PREP%20and%20TT%20Policy%20-%20Final%20Draft%20-%2005%20May%202016%20\(HIV%20news\).pdf](https://sahivsoc.org/Files/PREP%20and%20TT%20Policy%20-%20Final%20Draft%20-%2005%20May%202016%20(HIV%20news).pdf)
113. Galvão J. Access to antiretroviral drugs in Brazil [Internet]. 2002. Available from:

<https://www.thelancet.com/pb-assets/Lancet/extras/01art9038web.pdf>

114. Luz PM, Benzaken A, Alencar TM de, Pimenta C, Veloso VG, Grinsztejn B. PrEP adopted by the Brazilian national health system: What is the size of the demand? *Medicine*. 2018 May;97(1S Suppl 1):S75–7.
115. Shawky S, Soliman C, Kassak KM, Oraby D, El-Khoury D, Kabore I. HIV surveillance and epidemic profile in the Middle East and North Africa. *J Acquir Immune Defic Syndr*. 2009 Jul 1;51 Suppl 3:S83–95.
116. Siraprapasiri T, Ongwangdee S, Benjarattanaporn P, Peerapatanapokin W, Sharma M. The impact of Thailand's public health response to the HIV epidemic 1984-2015: understanding the ingredients of success. *Journal of virus eradication*. 2016 Nov 28;2(Suppl 4):7–14.
117. International Federation of Medical Students' Associations. Programs Annual Impact Report 2019-2020 [Internet]. [cited 2022 Jul 19]. Available from: https://drive.google.com/file/d/1WbpDLWsr99H_fPxNORdqZNPJ-b7GSnf/view
118. International Federation of Medical Students' Associations. Programs Annual Impact Report 2018-2019 [Internet]. [cited 2022 Jul 19]. Available from: https://drive.google.com/file/d/1xnMd_KCuT55e3RJbu77LmqvByUWNQBUC/view
119. International Federation of Medical Students' Associations. Programs Annual Impact Report 2020-2021 [Internet]. [cited 2022 Jul 19]. Available from: <https://drive.google.com/file/d/1e4V60TimzxsSjPLrkTEpJDewE74I52T6/view>