Long, full, healthy lives:

Delivering on the commitment to integrated **NCD** care for people living with **HIV** by 2025

NCD Alliance

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About NCD Alliance

The NCD Alliance (NCDA) is a registered non-governmental organisation (NGO) based in Geneva, Switzerland, dedicated to supporting a world free from preventable suffering, disability and death caused by noncommunicable diseases (NCDs). Founded in 2009, NCDA brings together a unique network of over 300 members in more than 80 countries into a respected, united and credible global civil society movement.

www.ncdalliance.org

About Equal International

Equal International is a leading inclusive development consultancy focused on addressing the needs of marginalised communities through research, strategy, technical support and evaluation. Equal International is a pioneering agency promoting thought-leadership, inclusive development and multi-stakeholder co-creation processes focused on positive change and achieving impact for those most at risk of being left behind.

www.equalinternational.org

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SECTION ONE:
INTRODUCTION

About this report

This report is timely and complements the NCD Alliance's September 2021 report *'From Siloes to Synergies'*[1] that provides a strong rationale for integrating NCDs into global health initiatives. This new publication follows on from the adoption – for the first time - of a specific government commitment to noncommunicable diseases (NCDs) and HIV integration at the June 2021 United Nations General Assembly (UNGA) High-Level Meeting on AIDS.

In the Political Declaration on HIV/AIDS,[2] Member States pledged, among other things, full coverage of NCD services for 90% of people living with, at risk of, and affected by HIV by 2025. Specifically, the target commits governments to: *"Investing in robust, resilient, equitable and publicly-funded systems for health and social protection systems that* ***provide 90 per cent of people living with, at risk of and affected by HIV with people-centered and context-specific integrated services for HIV*** *and other communicable diseases, noncommunicable diseases, sexual and reproductive health care and gender-based violence, mental health, palliative care, treatment of alcohol dependence and drug use, legal services and other services they need for their overall health and well-being by 2025".*

The adoption of this worldwide commitment offers an unprecedented opportunity to build on the successes, experiences, and lessons from the HIV response, as NCD screening, diagnosis, treatment and care are of great relevance to people living with HIV (PLHIV). This is due to increased risks of NCD comorbidities and rising prevalence of NCDs among PLHIV, who are now living longer due to antiretroviral treatment (ART).

In some countries, more than half of PLHIV are also living with NCDs. The number of people living with chronic comorbidities is rising rapidly, therefore integration of NCD diagnosis and care is critical and increasingly important for Universal Health Coverage (UHC) and for the health and quality of life of PLHIV worldwide.

This report considers how the COVID-19 response and existing strategies for the integration of HIV services into primary health care (PHC) can provide tangible options for the scale-up of NCD/HIV integration that responds to and meets the needs of PLHIV and NCDs. This paves the way towards achieving the 90% target included in the June 2021 Political Declaration.

The pandemic response provides a critical window of opportunity to scale up the integration of NCD prevention, treatment, care and support into HIV services for PLHIV as part of the world's ambition to 'build back better and fairer'.[3] COVID-19 has severely impacted PLHIV and people living with NCDs who are at a significantly higher risk of complications. A WHO study found that PLHIV have a 30% greater risk of developing severe or fatal COVID-19 than people who are HIV negative.[4] The pandemic has also caused significant disruptions to essential health services, increasing the vulnerability of people living with chronic conditions to the devastating consequences of the disease as a result of the triple burden of HIV, NCDs and COVID-19.

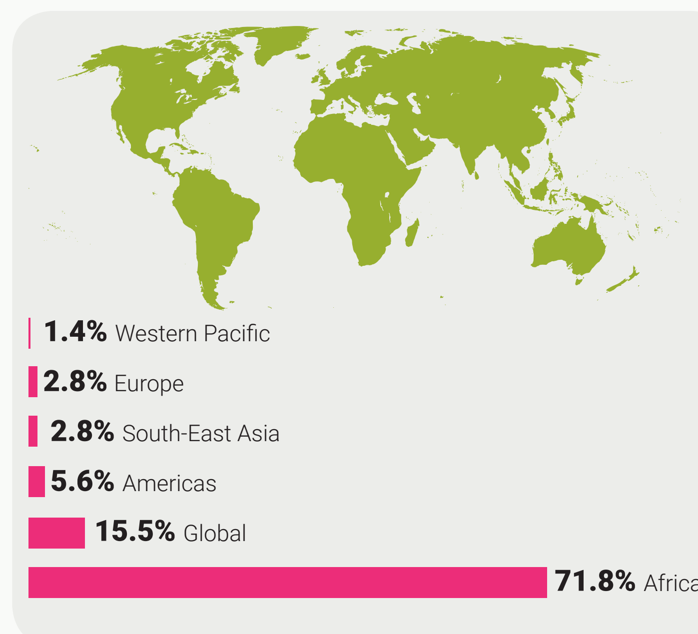
The global COVID-19 crisis has therefore unleashed an unprecedented push for models of differentiated service delivery (DSD) for and driven by PLHIV, including multi-month dispensing and the use of telemedicine and online services to replace in-person visits and to streamline access to HIV services. The post-pandemic agenda must now tap into synergies in services centred around *people* rather than single diseases[5] such as HIV, by refocusing efforts on UHC, which the NCD-HIV integration agenda is a critical part of. The emphasis of service integration within the UHC agenda provides an important impetus for increasing the ability of PLHIV on long-term treatment to access care for other health needs, including NCDs, and by doing so, reverse the current trend on NCD-HIV related morbidity and mortality.

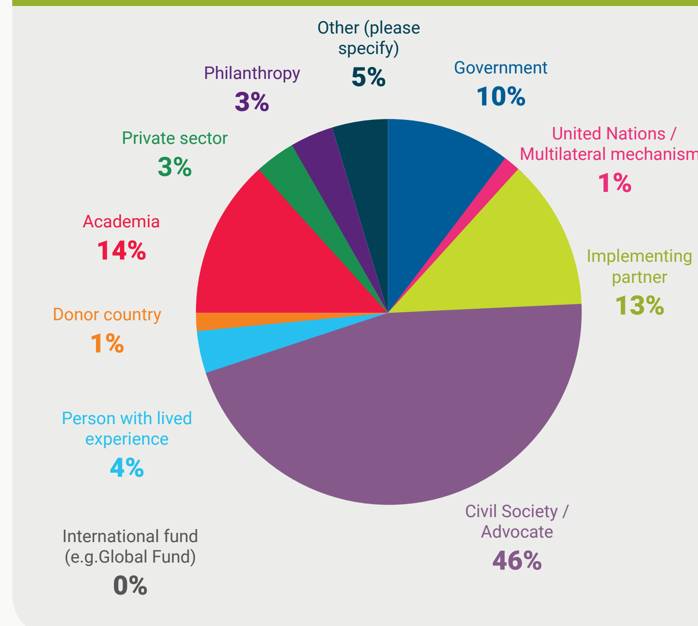
Report Methodology

This report was developed using an online survey based on an initial literature review and the report's Terms of Reference. The survey was shared with selected stakeholders as well as through NCD Alliance networks. Sixty-six people answered the survey, partially or entirely. The survey respondents' geographic focus was Africa (71.8%), Global (15.5%), Americas (5.6%), South-East Asia (2.8%), Europe (2.8%), and Western Pacific (1.4%).

The researchers also conducted follow-up interventions and key informant interviews to explore some of the research questions and responses in the online survey and generate potential case studies.

Finally, a literature review was conducted based on the key issues and guidance provided by the NCD Alliance.





NCDs and HIV: The Syndemic

Today, 37.7 million people are living with HIV.[6] The rate of new HIV infections has been cut by more than half; 16.6 million deaths have been averted. For those with access to ART, HIV has essentially become a chronic manageable condition, including in low- and middle-income countries (LMICs). Of the almost 38 million living with HIV, 27.5 million have access to life-saving ART.[7] The scale-up of treatment access has stabilised the HIV epidemic and significantly increased life expectancy for PLHIV.

Although global HIV testing, prevention and treatment targets have not yet been achieved, hard-won successes have turned the disease into a chronic condition for many.

> *"I am able to get free antiretrovirals. However, whenever I get an infection, I have to pay for the treatment separately, which is costly.*
>
> *I am disclosing this not because I want pity, but to remind you that health care can be expensive".*
>
> *Salome Agallo, Lived experience of cancer and HIV, Kenya*

What are NCDs?

NCDs are diseases that are not transmissible from person-to-person, and include cardiovascular disease, diabetes, chronic respiratory disease, cancers, and mental health conditions.

NCDs accounted for 74% of deaths globally in 2019. Worldwide, 7 of the 10 leading causes of death are NCDs.

Each year, 15 million people aged 30–69 die from an NCD, and 86% of premature NCD deaths occur in LMICs.

Four out of five people living with an NCD live in LMICs. NCDs are a major cause of poverty and a barrier to economic and social development.

Most NCDs are preventable as they are driven largely by five modifiable risk factors: tobacco use, alcohol use, unhealthy diet, physical inactivity, and air pollution.

These gains are now being threatened by the growing burden of NCDs that disproportionately affect PLHIV,[8] especially in LMICs.

Although limited, some of the available country data and modelling estimates provide an alarming picture of the increasing threat of NCDs for PLHIV. A 2019 modelling study found that 62% of PLHIV in Kenya had one or more NCDs, compared to 51% of adults without HIV.[9] The study found that hypertension and high cholesterol are the main NCD drivers, with cardiovascular disease (CVD) and cancers the leading causes of death. It further projects that the NCD burden will increase substantially by 2035, with 71% of PLHIV expected to suffer from one or more NCDs, versus 56% in adults without HIV.

Projections for Zimbabwe have also highlighted the disproportionate burden of NCDs among PLHIV versus adults without HIV. They show that the proportion of PLHIV with at least one key NCD in 2035 will increase by 26% in PLHIV, against 6% in people without HIV. PLHIV of adult age will also be twice as likely to suffer from at least one key NCD in 2035 compared to adults without HIV.[10]

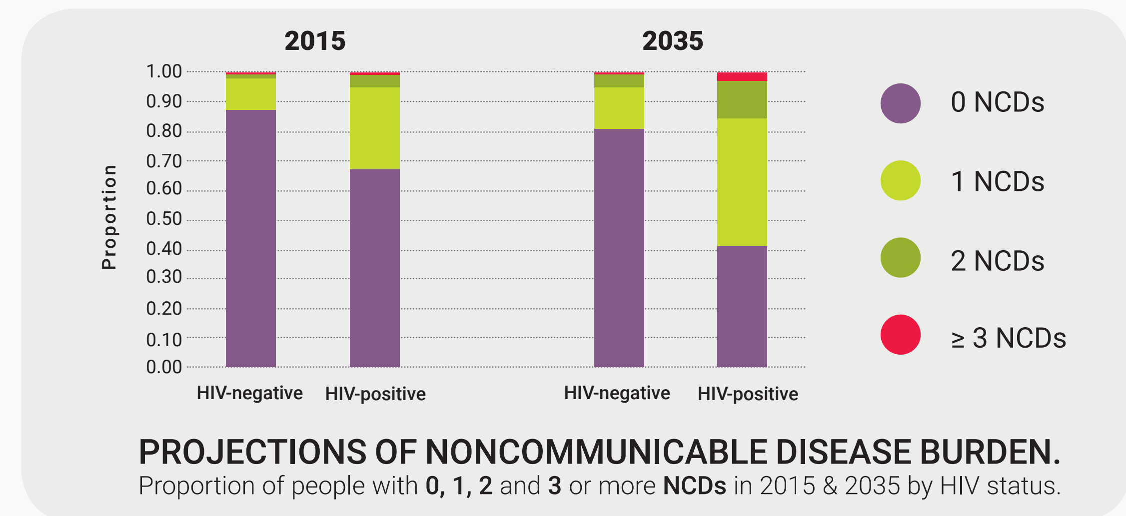


Figure 1: Projections of the burden of NCDs in Zimbabwe – the proportion of adults with 0–3 or more NCDs in 2015 and 2035 by HIV status[11]

Authors of the 2019 Kenya modelling study found that their results were similar to data reported in other LMICs and high-income countries (HICs), but the comparison is difficult due to the number and type of NCDs in each setting:

"Modelling studies from Botswana, Italy, the Netherlands, the USA and Zimbabwe all forecast rapid ageing of PLHIV paralleled by a growing burden of NCDs. In Italy and the USA, an estimated 89% of PLHIV will suffer from ≥1 NCD in 2035, compared to 59% in Zimbabwe and 62% in Kenya. Despite a large overlap in the NCDs included in each of these studies (e.g. hypertension, diabetes, CVD, cancers), they each include a different number and type of NCDs, making it hard to make a direct comparison."[12]

Four main NCDs account for the most significant number of comorbidities among PLHIV in LMICs: CVD, depression, diabetes, and cancer.[13] In some countries, half the people accessing HIV treatment are also living with NCDs,[14] including in South Africa, which continues to bear the largest burden of HIV.

The rising life expectancy of PLHIV and the resultant greying of the HIV epidemic are important drivers of the rising prevalence of NCDs among PLHIV. Some NCDs are also related to the direct effect of HIV on inflammatory and coagulation markers, and the impact of some antiretroviral drugs on CVD risk factors such as lipodystrophy, dyslipidemia, and insulin resistance. Conversely, several opportunistic illnesses associated with HIV are NCDs, including HIV-associated lymphoma, cervical cancer, chronic conditions related to hepatitis and others. The risk of NCDs in PLHIV is compounded by NCD risk factors such as tobacco and alcohol use, unhealthy diet and physical inactivity.[15] In LMICs, the risk of NCDs among PLHIV is further compounded by lack of access to NCD prevention, treatment and care.

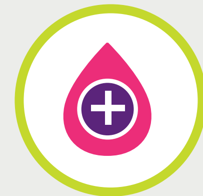
KEY FACTS ABOUT THE LINKAGES BETWEEN NCDs AND HIV

CARDIOVASCULAR DISEASE

CVD is a significant cause of morbidity among PLHIV, including - in some settings - among those under 40.[16] **The risk of CVDs is increased by up to 50% among PLHIV** due to a combination of factors, including HIV infection itself, ART and HIV-induced metabolic effects.[17]

DEPRESSION

PLHIV are twice as likely to experience depression than people without HIV. Depression is one of the most prevalent mental health comorbidities in people living with HIV in LMICs and high-income countries, although there is a higher prevalence rate of depression in LMICs.[18]



DIABETES

PLHIV are more likely to have Type 2 diabetes than people without HIV. Some ART may increase the risk of Type 2 diabetes in PLHIV[19]

CANCER

PLHIV are at higher risk of certain cancers than individuals without HIV, including lymphoma, cervical cancer, and Kaposi's sarcoma.

STATISTICS

A 2019 systematic review reported the prevalence of **depression among people living with HIV globally as**
31%[20]

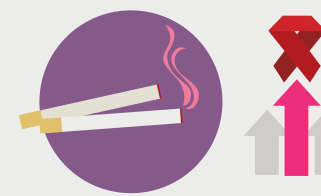
PLHIV have nearly a **two-fold increased risk of CVD** compared with HIV negative individuals.[21]

Women living with HIV have nearly a **six-fold increased risk** for cervical cancer.[22]

Cardiovascular disease is now one of the **leading causes** of non-AIDS-related morbidity and mortality in **PLHIV.**[23]

The global burden of CVD among PLHIV has tripled over the past two decades, the large majority being in **sub- Saharan Africa** and the **Asia Pacific** region.[24]

86% **of premature NCD deaths** occur in **LMICs.**[25]



The prevalence of tobacco smoking is significantly higher among HIV-positive men and women than HIV-negative men and women, respectively. This is the case in almost all world regions.[26]

The combination of both HIV and NCDs causes significant and multiple challenges to accessing NCD prevention, treatment and care. A 2021 study[27] showed that the main barriers to PLHIV accessing NCD care included financial hardship, polypharmacy burden and adherence, mental, physical and psychological factors, such as mobility issues and stigma and discrimination associated with having HIV and chronic conditions; HIV-related risk behaviours or being part of marginalised populations. However, "fragmented and uncoordinated HIV care and chronic care and HIV being beyond generalists' scope of practice were the most commonly mentioned reasons for why PLHIV do not continuously seek health-care for NCDs."[28]

> "*There is a lot of stigma associated with cancer at the community level, where cancer is linked to personal behavioural practices.*"
>
> Advocate/civil society, Kenya

HIV, NCDs and Gender

The main drivers of the HIV epidemic are heavily influenced by gender inequality and compelled by harmful social and gender norms. Women's and girls' lack of socio-economic empowerment heavily impacts their vulnerability to HIV infection due to gender-based violence and poor or restricted access to sexual and reproductive health information and services. Globally, in 2020, 53% of all PLHIV were women and girls.[29] Overall, HIV prevalence tends to be higher in women across sub-Saharan Africa, where six in seven new HIV infections in 2020 were among adolescent girls aged 15–19 years, and 63% of all new HIV infections occurred mainly as a result of heterosexual intercourse or transactional sex.[30]

Women living with HIV are more vulnerable to specific NCDs due to social, economic and cultural factors that impair their ability to access prevention, screening and treatment, including poverty, illiteracy, and limited agency to make decisions for themselves. These factors also impact on women's access to information, education resources and services.[31] These barriers mirror women's HIV infection vulnerability factors.

Where a woman lives greatly affects her risk of dying from cervical cancer. Cervical cancer is a preventable and curable condition where screening, diagnosis and treatment are accessible, yet it kills 266,000 women each year;[32] 88% of these deaths are in LMICs.

Cervical cancer is also the most common type of cancer among women living with HIV, who are disproportionately affected by the condition compared to women without HIV. Women living with HIV have a six-fold increased risk of cervical cancer compared to women without HIV, and a staggering 85% per cent of women with cervical cancer and HIV live in sub-Saharan Africa.[33] This means that, whilst women living with HIV with access to treatment in LMICs are no longer dying of HIV, they die of preventable and treatable cervical cancer. The integration of NCD care into HIV services must therefore address the gendered nature of combined HIV and NCD risks.

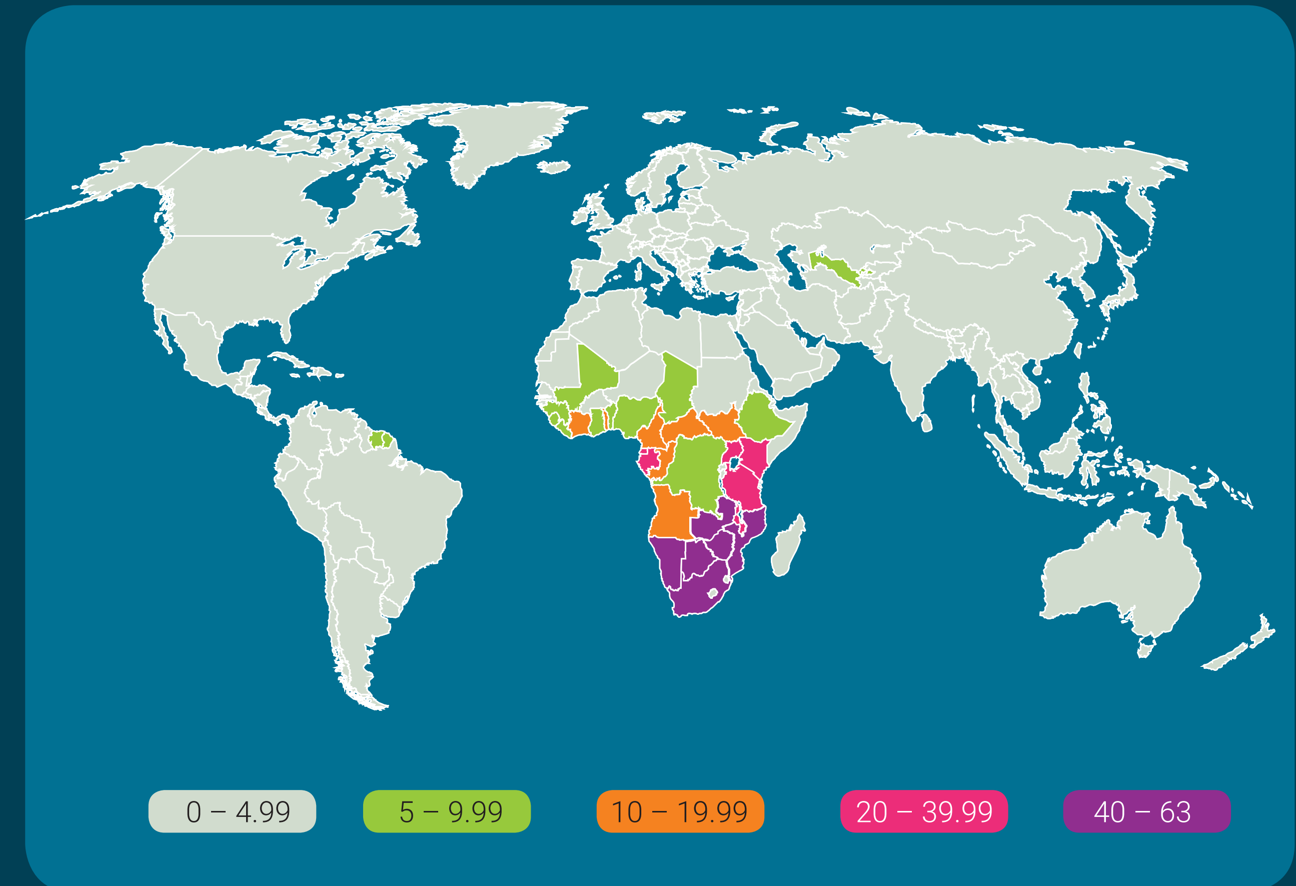


Figure 2: Population attributable fraction of women with cervical cancer living with HIV, 2018.[34]

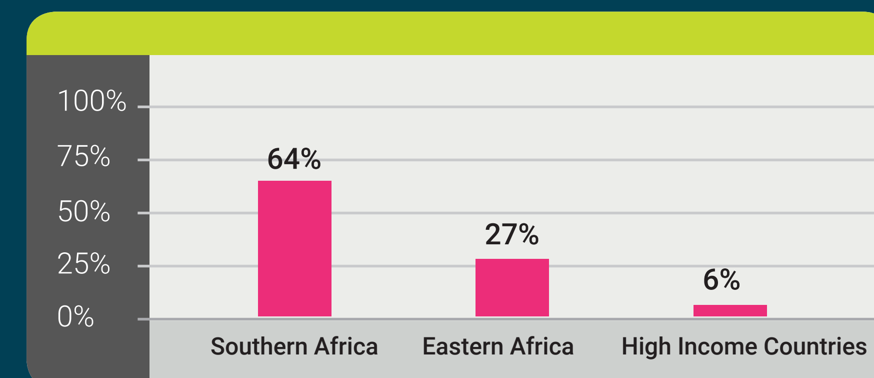


Figure 3: % of women with cervical cancer living with HIV (based on data available)[35]

Key policy frameworks and commitments aimed at NCD and HIV integration

There are multiple policy frameworks and political commitments on the integration of HIV and NCD service delivery, the importance of access to prevention, testing and treatment for both HIV and NCDs, and UNAIDS's decade-long work on the linkages between HIV and NCDs.[36]

These have been driven and advocated for by PLHIV, including through organisations such as GNP+, StopAids, Frontline Aids, Y+ Global, as well as UNAIDS. For example, UNAIDS began publishing materials with a focus on chronic care integration in 2011. Since then, there has been a series of key policy commitments in the decade leading to the UN HLM on HIV/AIDS in June 2021.[37]

PLHIV in particular have relentlessly championed their agenda, building political understanding and awareness of HIV, forming constituencies of support, fostering greater leadership and action, and meaningfully participating in processes and initiatives that concern them.

Image: © Shutterstock

Table 1: Key global policy frameworks and commitments on NCDs and HIV integration

Framework	Commitment
2011 UNGA Political Declaration on the Prevention and Control of NCDs	Member States "Note with concern the possible linkages between non-communicable diseases and some communicable diseases, such as HIV/AIDS, call for the integration, as appropriate, of responses to HIV/AIDS and non-communicable diseases, and in this regard call for attention to be given to people living with HIV/AIDS, especially in countries with a high prevalence of HIV/AIDS, in accordance with national priorities." (Article 27)
WHO Global Action Plan for the Prevention and Control of NCDs 2013–2020[38]	"[i]ntegrating non-communicable disease programmes or palliative care with HIV care programmes would bring mutual benefits since both cater to long-term care and support as a part of the programme and because non-communicable diseases can be a side-effect of long-term treatment of HIV infection and AIDS."
UNAIDS Strategy 2016–2021	The strategy calls for a more substantial commitment towards integrating HIV and NCDs, including mental illness and drug dependency.
2016 UNGA Political Declaration on HIV and AIDS on the Fast-Track to Accelerate the Fight against HIV and to End the AIDS Epidemic by 2030	Member States "Emphasise the continued importance, particularly given the 2015 World Health Organization guidelines recommending that antiretroviral therapy be initiated for everyone living with HIV at any CD4 cell count, of a more integrated and systemic approach to addressing people's access to quality, people-centred health-care services in a more holistic manner (…) strengthening of local, national and international health and social protection systems, including (…) integrated responses to address non-communicable diseases and HIV and AIDS (…)" "Emphasise that to guarantee the sustainability of HIV prevention, treatment, care and support services, information and education, which are mutually reinforcing; these should be integrated with national health systems and services to address co-infections and comorbidities, in particular tuberculosis, substance use and mental disorders, as well as sexual and reproductive health care services, including prevention, screening and treatment for viral hepatitis and cervical cancer."
2021 UNGA Political Declaration on HIV and AIDS: Ending Inequalities and Getting on Track to End AIDS by 2030	"Investing in robust, resilient, equitable and publicly-funded systems for health and social protection systems that provide 90 per cent of people living with, at risk of and affected by HIV with people-centred and context-specific integrated services for HIV and other communicable diseases, non-communicable diseases, sexual and reproductive health care and gender-based violence, mental health, palliative care, treatment of alcohol dependence and drug use, legal services and other services they need for their overall health and well-being by 2025."
UNAIDS Global AIDS Strategy 2021–2026 - End Inequalities. End AIDS.	"The Strategy should be implemented as a comprehensive package, but it requires differentiated responses that meet the needs of people, communities and countries in all their diversity, and that sustain progress in the HIV response The Strategy is designed to be implemented as a comprehensive package, with equal importance given to biomedical interventions, enabling environments, community-led responses and the strengthening and resilience of systems for health. The Strategy seeks to ensure progress is sustained and enhanced with respect to the care, quality of life and well-being of people living with HIV across the life course. It also aims to strengthen links to integrated services, such as those for other communicable diseases, sexual and reproductive health, mental health and noncommunicable diseases."

Global Fund strategy narrative 2023–2028 (Board decision, 8 November 2021)[39]	Describing what is new about this strategy: "Much more emphasis on integrated, people-centered services, rising above disease silos to build RSSH [resilient and sustainable systems for health] that protect people from multiple pathogens, address their holistic needs and underpin health and well-being for all." Under the objective 'to End AIDS': "Integrate services to prevent, identify, and treat advanced HIV disease, comorbidities, and coinfections. This includes promoting HIV service integration with those for (...) NCDs, and mental health (...) with care pathways adapted for ageing populations." Under the objective 'Maximizing People-centered Integrated Systems for Health to Deliver Impact, Resilience and Sustainability': "Deliver integrated, people-centered quality services (IPCQS). [IPCQS] are not delivered only around a disease but organized in a way that considers individuals' health needs holistically, by placing people and communities at the center of services." "Program resources in a way that promotes IPCQS and enhances partnerships to ensure effective and efficient service delivery, including by integrating [HIV, tuberculosis and Malaria (HTM)] service provision into PHC, as well as with other relevant services such as (...) NCDs, (...) mental health, relevant chronic care services (...)This will be supported by promoting the use of care cascade analyses, supporting differentiated approaches to service integration (...). Empowering individuals and communities to more meaningfully engage in the design, delivery, and monitoring of health services will be critical to effectively deliver IPCQS. Expectations will be set for Global Fund investments to be used in support of IPCQS throughout grant lifecycle entry points, including country dialogue, funding requests, grant-making, operational guidance, and other relevant tools and processes." Under the objective 'Maximizing the Engagement and Leadership of Most Affected Communities to Leave No One Behind': "Expand partnerships with communities living with and affected by emerging and related health areas to support more inclusive, responsive and effective systems for health." • "Proactively engage people living with disabilities and the mental health community at national, regional and global levels to ensure that Global Fund-supported and national programs become more responsive and accessible to people living with disabilities and mental health (...) and give greater attention to the numerous intersectionalities between these communities and those affected by the three diseases (...), including efforts to prevent and address disabilities associated with HTM disease and its treatment." • "Increase alignment with patient-led advocacy groups across relevant health sectors (...), including with groups focused on (...) NCDs, mental health, (...) and long COVID."

The NCD Funding Gap

Despite these commitments and frameworks, NCDs remain underfunded at the global, regional, and national levels,[40] including in the context of the HIV-NCD syndemic. Programmes and funding focusing on meeting the NCD care needs of PLHIV remain vastly insufficient globally and across multilaterals and bilateral donors.

The cost of treatment for HIV has been progressively lowered by international negotiations and strategic purchasing, and is largely covered by international programme support (out-of-pocket spending stands at less than 5% of total health spending for HIV). However, treatment and care for NCDs remains comparatively expensive and the costs are heavily borne out-of-pocket by patients in LMICs.[41] As a result, every year, an estimated 100 million people are pushed into poverty because they have to pay directly for health services.[42] The cost of NCD care is often devastating to families and communities.

> *"I had a scenario where a patient of a heart condition had a child who also had a heart condition, they also tested positive (for) HIV. (...) she said ...since I cannot afford the treatment, and we are both sick am going to kill this child and myself (...) we need special trained people who can handle these scenarios."*
>
> Uganda NCD Alliance, 2017

Disease-specific funding initiatives, such as the Global Fund, have compounded vertical programming, and NCDs have traditionally been considered as "secondary". Despite the role of NCDs in delaying, and potentially reversing decades of progress on HIV, and the need to integrate NCDs within the HIV response, the focus on NCDs remains limited. Comparatively few donors are funding NCD prevention and care, despite these now being the largest drivers of premature death and disability worldwide – perhaps as they are not seen as amenable to disease eradication orientation like HIV and some other communicable diseases.

Only 2% of global health funding was directed to NCDs in 2017.[43] In 2019, of US$41 billion total development assistance for health (DAH), only US $730 million was allocated to NCDs.[44] The focus was on HIV, and NCDs was secondary. Bilateral mechanisms also only spend a small proportion of health funding portfolios on NCDs. In 2019, NCDs only received 0.48% (US) 1.66% (UK), 1.% (France), 1.6% (Canada), and 1.4% (Germany) of funding from health portfolios.[45]

COVID-19 is exacerbating this trend. Whilst 75% of countries reported significant disruptions to NCD services in early 2020,[46] and 50% were still experiencing severe disruptions early in 2021,[47] DAH for NCDs declined in 2020. To date, NCDs have been mostly left out of the response to COVID-19 and pandemic preparedness dialogues.[48]

"Countries need to look at which NCDs are creating more of a burden (....) It is difficult to track financing for NCDs because they are often a sub-component under health system strengthening."

Donor government

"There is a need to advocate for donor funding, for generic and low-cost medicine, and that people paying for HIV services also pay for NCDs."

Academic, Global

"A question to consider is why the international community does not invest in NCDs; is it because NCDs are a slow-motion crisis?"

Academic, Global

Image: © Canva stock

NCDs risk reversing decades of progress on HIV

NCDs are now one the most significant health threats for people living with HIV, undermining decades of hard-won progress on tackling the epidemic, and leading to premature mortality. People living with HIV and one or more NCDs also face daily challenges that severely impact their well-being.

There is an urgent need to shift the framing and positioning of HIV – as an isolated disease and a disease of the young – towards strengthening the integration of NCDs into HIV service-delivery strategies. Doing so would respond to the changing and ageing face of HIV and meet the growing NCD needs of PLHIV, especially in LMICs where the majority of PLHIV live but lack access to NCD services on par with their counterparts in high-income countries.[49]

Benefits of NCD-HIV Integration

- A diagonal or horizontal HIV/NCD service-delivery platform is more affordable and sustainable in LMICs, leveraging existing primarily vertical platforms for HIV for the delivery of integrated NCD and HIV services for PLHIV.
- A 'one-stop-shop' for HIV and NCD services saves time and transportation costs for clients; avoiding multiple appointments and multiple prescriptions.
- Better management of financial resources due to less duplication and improved cost efficiency of limited health workforce and service infrastructure.
- Improved communication and education for HIV patients on NCD risks, prevention, and treatment.
- Transferrable lessons to support integration of NCD care packages into UHC platforms.
- Improved prospects for long-term health system sustainability.

SECTION TWO:

INTEGRATING NCD PREVENTION, TREATMENT AND CARE WITH HIV STRATEGIES - ENABLERS OF SUCCESS AND CHALLENGES

> *"Differentiated service delivery (DSD)—a "patient-centred approach that simplifies and adapts HIV services across the cascade to serve the needs of people living with HIV (PLHIV) better and reduce unnecessary burdens on the health system—has emerged as a core tenet of HIV programs in resource-limited settings. Practically speaking, DSD is operationalised by adjusting the frequency of visits, the location of service delivery, the cadre of health care worker, and the package of services according to the needs of different groups of PLHIV."*[50]

Leveraging HIV service delivery strategies is key to meeting the needs of PLHIV with NCDs

HIV and NCD care share similarities in their screening, diagnosis, treatment and management. They include regular and ongoing appointment attendance, adherence to medications, test requirements, self-management of medications and healthy behaviours,[51] and community engagement. As a result, HIV programmatic strategies (e.g. community engagement, patient education, counselling, task shifting, community and peer support, multi-disciplinary care teams, home-based care); tools (e.g. standardised and simple testing, registers, electronic medical records), and systems (e.g. drug supply management and procurement, monitoring and evaluation, referrals, decentralisation of services)[52] that are already well-established and scaled up, offer the most direct and immediate opportunities for the NCD care of PLHIV, moving from an HIV-focused "DSD1.0" to a "patient-centred DSD 2.0."[53] That includes providing NCD services for PLHIV and adapting the initial DSD1.0 to reflect the changing face and needs of PLHIV. However, it should be seen as an intermediate step, heading towards full integration, especially PHC, as stated in the WHO's Consolidated guidelines on clinical and service delivery for HIV prevention, treatment, and care.[54]

The guidelines also emphasise the opportunity provided by chronic HIV care for "assessing, monitoring, and managing NCDs, especially through primary care. Integrating interventions such as nutrition assessment, dietary counselling and support, smoking cessation, exercise promotion, blood pressure monitoring and – when available – cholesterol management as part of HIV care can help to reduce the risks of noncommunicable diseases among people living with HIV and improve HIV treatment outcomes".

NCD and HIV Integration:
A critical stepping stone towards integration for all

As the WHO consolidated guidelines indicate, realisation of full integration and care for all people living with chronic conditions at the primary care level is an essential goal. WHO's framework for a Package of Essential NCD (PEN) Interventions for PHC in low resource settings observes, "In developed countries, launching NCD specific responses within health systems has contributed considerably to declining NCD trends. Such a response is also urgently needed in LMIC to curb the steadily rising NCD epidemic. It is also part of the solution to strengthening equity and efficiency of health systems." - the goal must be to achieve this for the general population, including PLHIV.[55]

> *"Recognising the anticipated impact of NCDs on PLHIV, it becomes critically important to pursue models of integrated screening, prevention and care for PLHIV with or at risk of NCDs. These can capitalise on the platform already established for HIV through adoption of a public health approach to tackle NCDs, heeding the lessons learned from HIV and building on the systems and partnerships already established in many countries in [sub-Saharan Africa]."*[56]

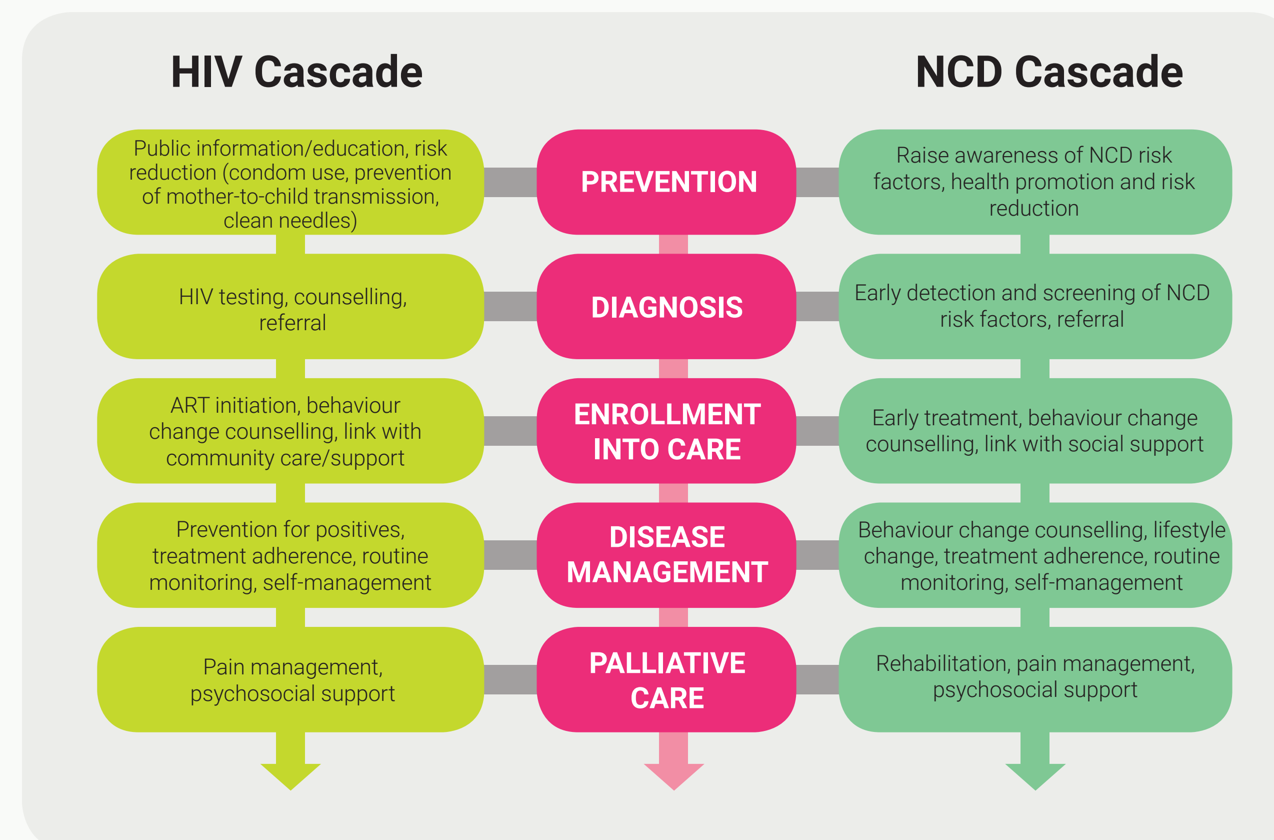


Figure 4: Chronic care of HIV and NCDs – Cascade Model (FHI 360)[57]

The existence of well-developed facility and community-based delivery systems for HIV provides a unique opportunity for the integration of NCD prevention, treatment and care using a combination of vertical, horizontal, or more diagonal approaches, based on the context as well as HIV and NCD burden, types of NCDs, resources and existing systems.

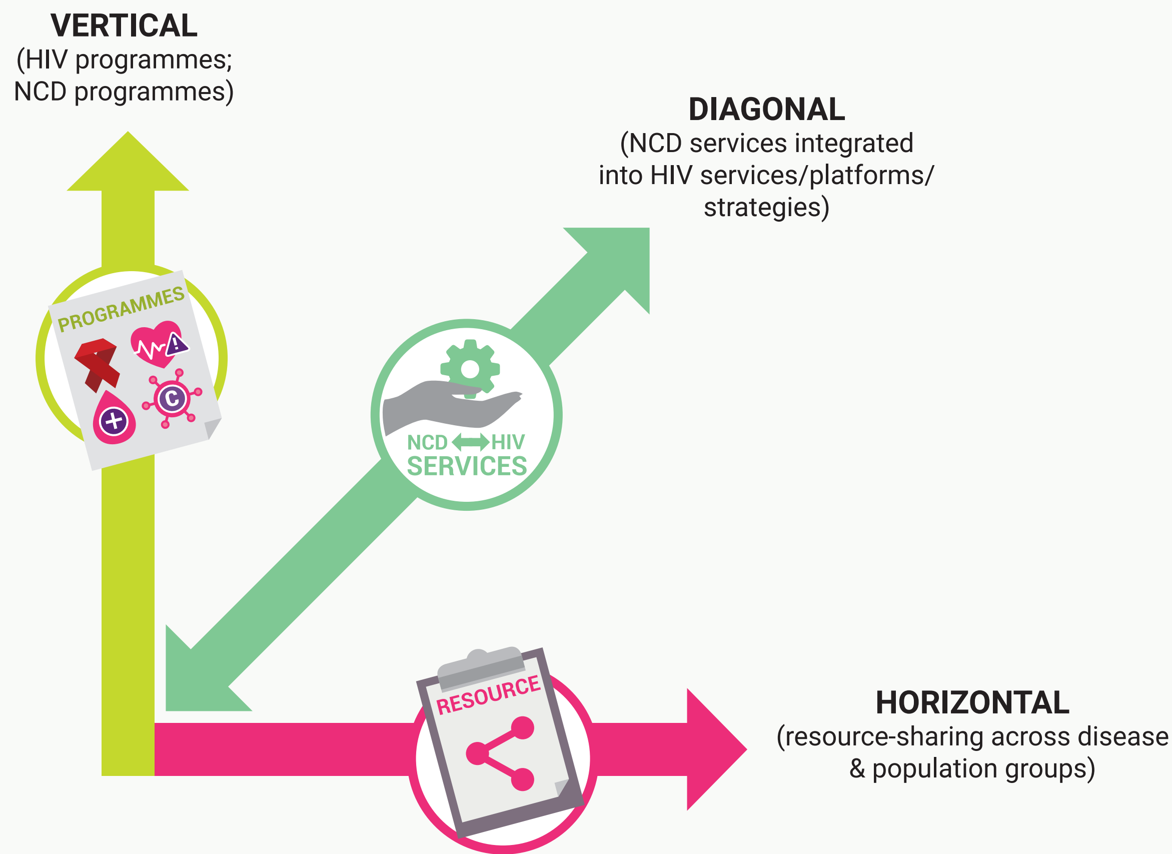


Figure 5: Service delivery approaches

> *"With prevalence of NCDs and risk factors of cardiovascular diseases being higher among PLHIV, this would be a missed opportunity if someone coming into a health facility regularly is not screened and treated for NCDs."*
> Academic, Global

> *"Integration reduces stigma among People Living with HIV."*
> Academic, Global

Country Examples

The examples below are not exhaustive of policy and programmatic models of HIV care that can support NCD care integration. However, they provide an instructive overview of the diversity and context-specific approaches that have demonstrated the feasibility and acceptability of integration.

- In South Africa, in 2010, the Ministry of Health announced plans for a unified health testing campaign aiming to test 15 million people for HIV infection, elevated blood pressure and blood sugar level. At the time of its announcement, this was the largest combined HIV and noncommunicable disease diagnosis programme in the world.[58]
- In Zambia, FHI 360 developed a chronic HIV care checklist for patients receiving HIV counselling and testing, prevention of mother-to-child transmission and ART, facilitating the identification of NCDs among PLHIV.[59]
- Integrated multi-disease campaigns conducted in Lesotho and Uganda[60] that included CVD screening and HIV testing have shown the feasibility of integrated screening for both HIV and NCDs in community-based HIV programmes.[61]
- In Kenya, ICAP at Columbia piloted integrated multi-disease screening for HIV, NCDs and NCD risk factors, increasing uptake of HIV testing for men.[62]
- Cardiovascular disease and HIV integration pilot services have been successfully delivered in Kenya, Nigeria, and Zambia since 2012, and found to be feasible and acceptable, with CVD integration implemented within the context of an HIV chronic care model.
- In Malawi, integrated cervical cancer and HIV screening was established as a national programme in 2007, and active screening of cervical cancer was included in the HIV Clinical Treatment Guidelines in 2011.[63]
- Whilst Kenya does not have a comprehensive and overarching HIV and NCD integration policy,[64] routine screening for diabetes is included in PLHIV care, and ART guidelines incorporate NCD and mental health screening and management as components of the 'Standard Package of Care' for PLHIV.[65]
- In Eswatini, the Ministry of Health guidelines recommend routine screening and management of adult PLHIV for CVD risk factors (CVDRF). A pilot screening for CVDRF was integrated into HIV services, enabling CVD prevention for PLHIV. The study found that the prevalence of risk factors in PLHIV of at least 40 years was high and that CVDRF screening was feasible.[66]
- In Vietnam, FHI 360 and the Van Don District Hospital piloted a programme integrating mental health screening and services into HIV palliative care and treatment services. Counsellors assessed PLHIV that had been screened and referred for mental health services to determine the degree of their anxiety or depression and develop a treatment plan. PEPFAR-supported government clinics across the country have adopted a simplified version of the assessment and support used in the pilot.[67]

- In Cambodia, a pilot project demonstrated the effectiveness of providing services for HIV, diabetes and hypertension in the same clinic, in which stigma associated with HIV infection did not prove to be a major obstacle. Co-located NCD services for individuals enrolled in HIV care and treatment have been advocated by people who noted the large and growing numbers of adults and children who are already engaged in HIV promotion, prevention and continuous chronic care, who are returning regularly for services.[68]
- In the US and Denmark, mental health services have been integrated into HIV services for PLHIV, increasing resilience through enhanced coping strategies and leading to improved mental health and virologic and immunologic outcomes.[69]

Image: Copyright free, credit of 'People living with HIV' Shutterstock/ViiV Partnership

Global Examples

Globally, a combination of guidelines,[70] systematic reporting on the links between HIV and NCDs (cervical cancer specifically), a focused research agenda,[71] and a community of practice (CoP) provide positive and promising examples of coordinated, aligned and evidence-building actions that can help advance the NCD/HIV integration agenda. For example:

- The International Association of Providers of AIDS Care (IAPAC) *Protocols for the Integrated Management of HIV and Noncommunicable Diseases* manual[72] addresses the screening, prevention, and control of common NCDs among PLHIV in resource-limited settings. The protocols' target audiences are health care workers and facility managers providing prevention, care and treatment services for PLHIV through HIV and primary health care clinics.
- UNAIDS collects, analyses and tracks country reports on the Global AIDS Monitoring and National Composite Policy Index indicators for cervical cancer screening among women living with HIV and integrated cervical cancer-HIV policies and services.
- The HIV Coverage, Quality, and Impact Network (CQUIN)[73] includes a CoP focused on HIV/NCD service integration. The CoP currently includes 13 country teams, including ministries of health, national networks of PLHIV, donors and implementing partners, and focuses on exchange of best practices, resources and tools related to the scale-up of integrated HIV/NCD services.[74] The Differentiated HIV and NCDs CoP provides an important platform to inspire, motivate and foster understanding, capacity building and technical assistance, and a critical forum to move the agenda forward by scaling up pilot initiatives.

The integration of NCD care into HIV service delivery strategies for PLHIV: Enablers of success

Online survey and interview respondents highlighted the wide range of enablers conducive to the integration of NCD care and HIV services. Policies and guidelines on NCD-HIV integration, human resource capacity, and community/PLHIV acceptance were the most common enablers identified by 18 out of 48 respondents. In addition, respondents mentioned political will, existing HIV tools, processes and referrals, and recognition of the ageing of the PLHIV population.

The literature review highlighted the valuable role of decades of HIV advocacy and community mobilisation in securing change. The lessons from the successes of HIV offer an opportunity for PLHIV with and at risk of NCDs to demand integrated NCD-HIV services and to drive greater action by national governments and donors.[75] The active role of PLHIV in their own care and in ensuring accountability has been groundbreaking and can serve as a model. This focus on community engagement is indispensable to deliver on commitments to PHC and UHC. The broader community of people living with chronic health conditions must be included to demand, co-design and monitor progress towards integrated services – as is acknowledged in the newly adopted Global Fund strategy (2023–2028).

The literature review mentions additional enablers of success, including better coordination and collaboration mechanisms, flexible funding, trained and incentivised health workers to facilitate and champion integration, and – most importantly – ensuring meaningful consultation and involvement of people living with HIV and NCDs in planning, delivery, and monitoring of integrated services.

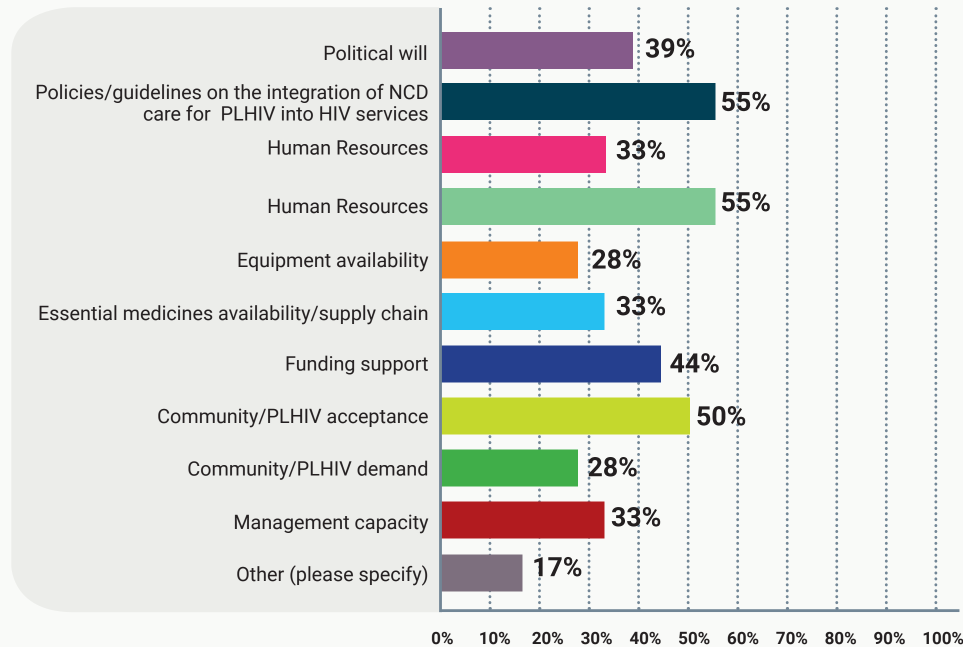


Figure 6: Key enablers of NCD care integration for PLHIV identified in online survey

> *"All partners should advocate for data information systems to serve multiple purposes, to monitor both HIV and NCDs in a harmonised way."*
> UN, Global

> *"Enablers facilitating integration include new WHO guidelines on NCDs, and recognition of ageing among PLHIV."*
> Implementer, Africa

> *"The government needs to play a role in domestic resource mobilisation for NCDs, similarly to how we fought for HIV drugs."*
> PLHIV and NCD Advocate

> *"The approach of having champions at community level could be scaled up in the context of HIV and NCDs."*
> Civil society/Advocate, Africa

> *"Training that is holistic for health care providers."*
> Implementer, Global

Engaging HIV and NCD communities to step up action and accountability

The **Global Charter on Meaningful Involvement of People Living with NCDs**[76] mobilises organisations and institutions around a shared understanding of meaningful involvement, fundamental principles for placing people living with NCDs and communities at the centre of the NCD response, and core strategies to make meaningful involvement a reality.

When policies, programmes and services are co-designed with communities they are more likely to be relevant, appropriate, scalable, and sustainable. By ensuring that they are focused on people, not diseases, they can effectively respond to the needs and realities of those they are meant to serve and leave no-one behind.

The involvement and meaningful participation of people living with both HIV and NCDs and communities affected must be the cornerstone of NCD-HIV integration efforts, and more broadly PHC and UHC's goal of 'Health for All'. The HIV community became a powerful influencing force to be reckoned with, winning battles that seemed unwinnable, not least, turning HIV/AIDS into a chronic condition. Communities and people living with chronic conditions have a critical role to play in breaking the artificial siloes between HIV and NCDs. People living with and affected by HIV, as they continue to drive HIV response efforts, must engage and work together with the NCD community to foster greater political leadership on NCD-HIV integration, using a bold, decisive and coordinated approach.

Image: © Canva stock

Factors hindering integrated care for people living with HIV and NCDs

However, context-specific factors and challenges hinder integration, as highlighted in our online survey, interviews and literature review. Online survey respondents identified as the main challenges: lack of political will and funding, insufficient human resources capacity and availability, insufficient equipment, lack of integration guidelines and policies on HIV and NCDs, inadequate NCD supply chains, and lack of monitoring and evaluation systems capable of routinely capturing key NCD indicators for PLHIV. On a practical level, PLHIV in most countries receive free HIV services, but have to pay out-of-pocket for NCD services, preventing integration and leading to siloed service delivery, and driving people living with NCDs, and especially those with multiple chronic conditions, into poverty.

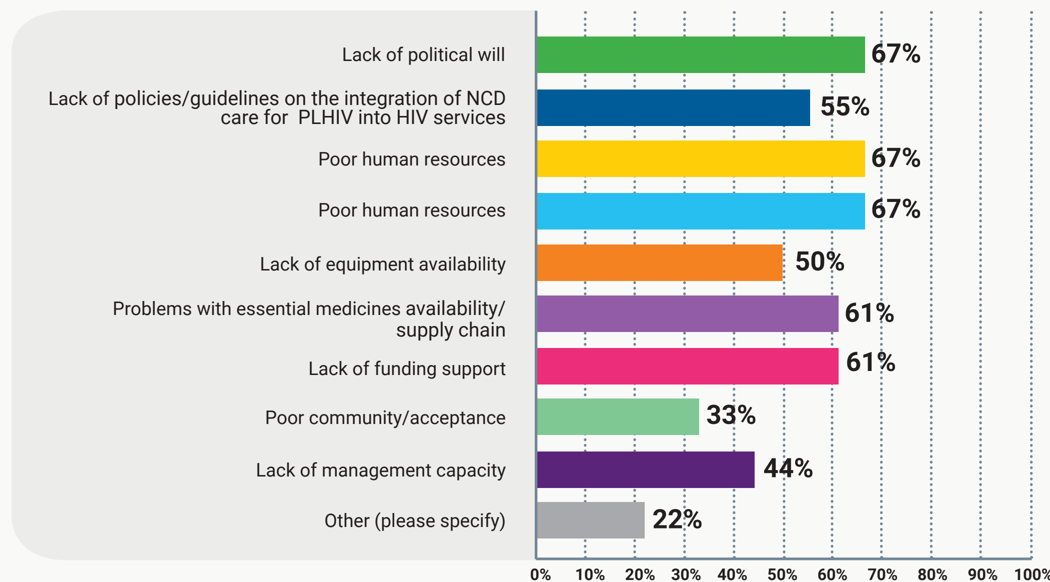


Figure 7: Key integration challenges identified in online survey

Interview respondents and the literature review also highlighted additional systemic and evidence-related barriers to integration. These included lack of understanding or recognition of the HIV and NCD syndemic due to lack of data on the prevalence of NCDs among PLHIV;[77] insufficient evidence on the cost-effectiveness of NCD care integration into HIV services;[78] limited data on the effects of integrated HIV and NCD models of care on long-term patient outcomes,[79] especially in LMICs; staff shortages[80] and the cost of NCD drugs to the patient when HIV treatment is free.

Other key challenges flagged by the research include the lack of participation of PLHIV and those living with both HIV and NCDs, and of civil society organisations, as well as lack of increased funding and technical capacity for integration, with the need for more flexibility in funding to integrate NCD screening, diagnosis and care into programmes and services to address the linkages with HIV and other NCDs. For example, in 2015, the Global Fund recognised common co-infections and co-morbidities of HIV/AIDS, TB and malaria, and invited countries to request financial support to maximise the impact of investments in the three diseases, including for health systems strengthening. However, integration was not widely promoted or supported with technical expertise and there has been limited awareness and take up of the opportunity.[81]

In addition, global and national HIV and NCDs institutional arrangements are fragmented and operate in siloes, from local (i.e. health facilities), to national (i.e. ministries), to global (i.e. WHO),[82] funding, policy and programmes are heavily siloed, with a focus on vertical approaches. Governance structures and lack of integration at the organisational level can make it difficult to change established patterns and get the necessary support for more integration and to overcome fragmentation.[83]

The UNAIDS 2020 Technical Consultation on HIV integration with other health services[84] highlighted the importance of context specificity when considering integration, including context-specific enablers and drawbacks, and the importance of considering the perspectives, needs and preferences of clients, service users and health care providers:

"Essentially, users and clients of services prefer quality integrated, people-centred service delivery that is more convenient, has greater continuity, takes less travel time, with less need to see multiple providers. Health care workers generally also prefer integrated service delivery, if given adequate training, support and resources, leading to greater job satisfaction and broader skills development."

> *"There is still a need for evidence to support scaling up."* Academic, Global

> *"If there are no resources for NCD testing and treatment, how can these services be integrated into HIV programs? One plus zero is still one."* Academic, Global

> *"The complex question is who is going to pay for [NCD care]?"* Academic, Global

> *"The integration of NCDs into HIV care is not transparent and does not include civil society."* Advocate/PLHIV, South Africa

> *"There is little systematic data on any integration programmes, and there is no policy. Mostly it is window dressing."* Advocate/PLHIV, South Africa

> *"In our country, these initiatives are not shared openly to civil society, meaning they are still conducted by government without full participation of the public and the affected communities or society."* Patient Advocate, Eswatini

> *"While governments are interested in scaling up the integration of NCDs, there is still a need for evidence to support scaling up."* Academic, Global

Case study: Estimating the cost-effectiveness of integrating NCDs into treatment for PLHIV in Uganda[85]

A recent study has provided encouraging results on the financial and health benefits of integrating screening and treatment for hypertension, high cholesterol, and diabetes mellitus into HIV care and treatment in Uganda for older PLHIV. This presents opportunities for similar models in the broader region. The research identified potential benefits of NCD integration into existing ART clinics in Uganda:

- A decrease in the 10-year CVD risk in PLHIV, supporting and reinforcing current findings.
- Cost-effective, averting around $1,400 to $8,800 per Disability Adjusted Life Years by targeting older age groups. (The study further recommended targeting all adults living with HIV aged 45 and over.)
- Would amount to about 2.4% of national expenditure for HIV/AIDS and would present cost-effectiveness comparable to other standalone interventions to address NCDs in LMICs.
- Could be effective in other sub-Saharan African countries with similar CVD risk profiles and treatment costs for NCDs, using local NCD prevalence data, which may differ from Uganda.

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THE DATA GAP

Our research highlighted the significant data gap on the double HIV and NCD burden and the prevalence of PLHIV with NCDs.

- 75% of the survey's respondents said their organisation does not collect data on the prevalence of people living with both HIV and NCDs, and nearly 58% were also not aware of any organisations collecting the same type of data.
- 89% of the survey's respondents were not aware of any other statistics on the prevalence of people living with both NCDs and HIV.

> *"There is no data on NCDs and HIV, including data on ART in Malawi, there is a reliance on global data when it comes to NCDs and HIV due to lack of local data."*
> PLHIV/Advocate, Malawi

> *"Data is always a national focus, but there is little recording (...) There is a need for national systems to take this on, but this is not currently the case."*
> UN, Global

> *"All partners should advocate for data information systems to serve multiple purposes, to monitor both HIV and NCDs in a harmonised way."*
> UN, Global

Our research found that only a few countries have the systems in place to collect data on the NCD needs of PLHIV; therefore, data is patchy or relies on modelling studies. A study notes that "[I]ntegrated care for NCDs in HIV treatment settings will require country-specific estimates on the proportion of PLHIV who need access to NCD services, which can be achieved via increased screening during routine HIV care."[86]

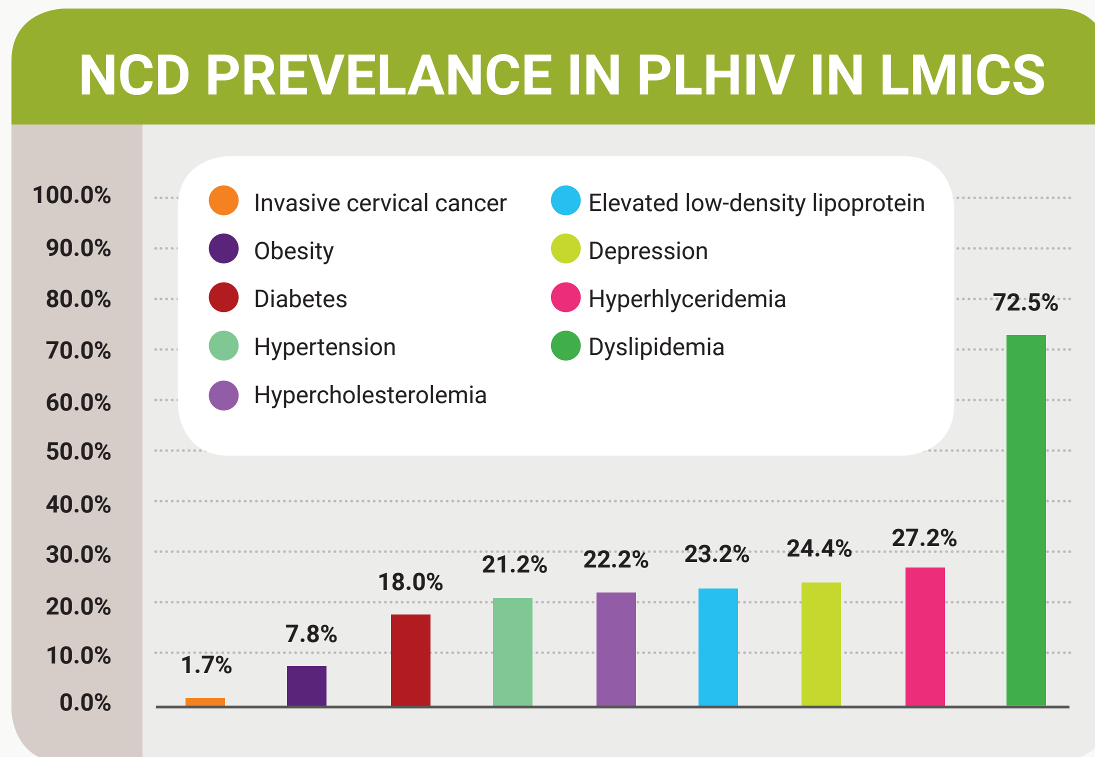


Figure 8: NCD prevalence in PLHIV in LMICs[87]

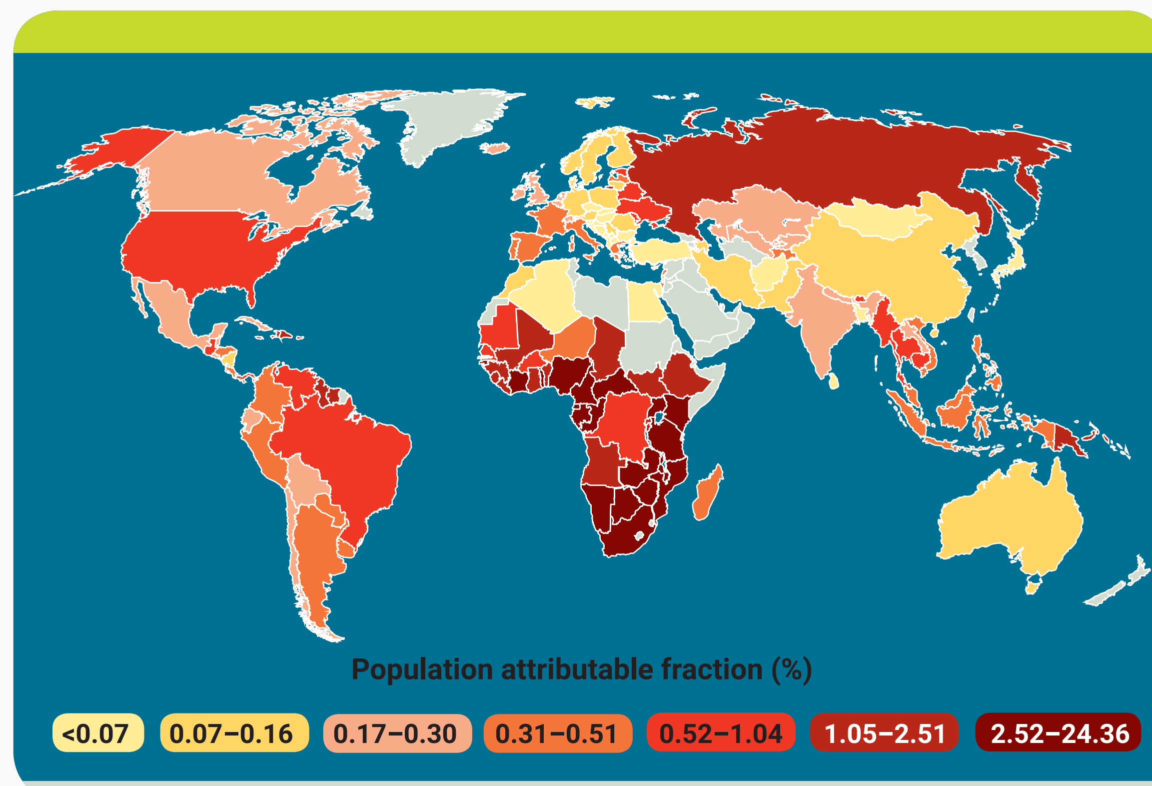


Figure 9: Global burden of cardiovascular disease attributable to HIV infection (2018)[88]

SECTION THREE:

SCALING UP PROMISING STRATEGIES TO MEET THE NCD CARE NEEDS OF PLHIV

> *"Overall, clients appreciated integration and multi-disease services being community-based, especially considering the burden of travelling to health clinics in rural areas. People also reported that the roving health camps were very popular and appreciated. They also experienced them as less stigmatising and appreciated that it was not just HIV but a more comprehensive screening service."*
>
> Implementer, South Africa

In this section, several approaches to improving integration are highlighted, drawn from examples identified via the survey and interviews with expert respondents. Different models of integration are discussed, including integration of NCD diagnosis and care into vertical HIV programmes. Vertical integration can be seen as a first step to more systemic (diagonal or horizontal) integration of care for all with chronic conditions, which should ultimately extend beyond PLHIV across whole populations to achieve UHC. There are currently precious few examples where this has been rolled out. This aspect should be a focus for further research, data gathering, resource mobilisation, and technical implementation support: How can LMIC health systems evolve to provide UHC for all, to meet the needs of increasing numbers of people living with multiple chronic conditions, both communicable and noncommunicable?

The integration of cervical cancer screening into HIV services is one of the most successful vertical approaches to NCD-HIV integration and has been effectively scaled up beyond PLHIV to the general population in some places. As part of our research, we have identified four other specific strategies that should be considered for scaling up NCD prevention, treatment and care for PLHIV using existing a diagonal approach to NCD-HIV integration. They are: task shifting and sharing; strengthening, digitalising and integrating health system capacities; supply chain improvement; and multi-prescription dispensing.[89] However, it should be noted that the feasibility of the strategies presented below will vary depending on the context.

> *"There is no single method that is the magic model – in some cases the size of the facility impacts on what is possible, where in larger facilities with more resources, there may be tendencies for fewer collaborations, but in smaller facilities where people are used to doing everything and caring for their communities, there is more room for integration to figure out how to integrate and avoid siloes."*
>
> Implementer, South Africa

Strategy one: Task shifting and sharing

Task shifting has been widely used in the context of HIV and consists of "the rational redistribution of tasks among health workforce teams. Specific tasks are moved, where appropriate, from highly qualified health workers to health workers who have fewer qualifications to make more efficient use of the available human resources for health".[90] Although initially, task shifting primarily consisted of shifting some aspects of care delivery from doctors to nurses and other non-physician health care workers (e.g. midwives), it has evolved. It now increasingly includes community health workers (CHWs) – including PLHIV – in LMICs, which has led to the substantial expansion of access to HIV services, including in under-serviced areas,[91] and has become a cornerstone of the HIV response.[92]

> "*Task shifting used to be a challenge, but countries are moving towards task shifting.*" Implementer, Africa

> "*99% of HIV care is provided by AMPATH provider assistant-clinical-officers (all Ministry of Health facilities, public sector systems).*" Implementer, South Africa

> "*Task shifting is important and would ensure that services reach those who need services the most.*" PLHIV/Advocate, Malawi

> "*Nurses can support with managing the health needs of patients, freeing up limited capacity at local facilities.*" Private sector, Global

> "*All HIV patients are seen at lower levels, where there's only a nurse and no doctors.*" Implementer, South Africa

Several factors provide a strong rationale for integrating NCD prevention, screening and treatment for PLHIV into existing HIV task-shifting set-ups.

- The target groups are similar: PLHIV and HCWs, including at the community level, as well as community champions and educators, will have established a strong relationship with the patient. They will also know the patients' history, treatment, and vulnerability factors.
- PLHIV, who are instrumental in HIV care in LMICs, can also play a key role as NCD champions and educators through their lived experiences.

- The structures and processes needed, including decentralised and community-based and -led services, are in place and have proven highly effective in the context of HIV.
- Task shifting, including to CHWs, can increase access to care and reduce health costs for patients (and health systems in LMICs),[93] which is particularly important for PLHIV with NCDs since, in most countries, NCD services are not free and costs are often paid out-of-pocket by the patient.
- COVID-19 has further encouraged task shifting of HIV clinical services from hospitals to local communities. This has led to additional services, such as the availability of home-testing HIV kits and HIV care rendered by local doctors to maintain the continuity of care for PLHIV.[94]
- As noted by UNAIDS, "the approach of task shifting/sharing must continue and be further complemented by the strengthening of community health workers and decentralisation of services."[95]

In Zambia, following pilot research that revealed a very high rate of treatable high-risk cervical cancer among HIV-infected Zambian women newly on ART, the innovative Cervical Cancer Prevention Programme (CCPPZ) was launched. As part of this programme, cervical cancer screening clinics were located in public sector health clinics and surgical centres that also delivered HIV care and treatment. It was reported that task shifting (from doctors to nurses) was essential for the wider roll-out and scale-up of CCPPZ. A decade after launching, the programme was operational in 33 health facilities across Zambia's ten provinces. It had expanded from serving solely HIV-infected women, to providing cervical cancer screening for women with unknown HIV status, as well as all women in the catchment area, and had screened over 200,000 women.[96]

The role of CHWs is also a critical element in task-shifting and CHWs have been extensively used in HIV. CHWs deliver multiple HIV services, including HIV promotion and education, prevention, testing, treatment, care and clinical management support, providing counselling and making referrals to other services. Investment in training of non-physician CHWs has proven effective for delivery of chronic care, for example, in Rwanda, India, and with Village Health Volunteers in Thailand,[97] especially as they are known and therefore are trusted in the community and have easy access to patients. They also incur lower resource costs[98] and are familiar with local context issues. More however needs to be done to recognise their role formally in the health systems, invest in building their capacity to provide services for PLHIV and NCDs, and to provide adequate supervision and mentoring.

There is still little evidence of the overall benefits and limitations of expanding HIV task shifting and sharing to NCD prevention, treatment and care for PLHIV. Some challenges and lessons learned that have emerged from existing studies should be considered in health workforce development and planning. They include HCWs' lack of familiarity and experience with NCDs, which will require significant training and supervision, as well as adequate support, mentorship and means of referral. Investments are required to avoid considerable capacity gaps or even complex situations of malpractice.[99] However, the available evidence provides encouraging results for scaling up task shifting and sharing to deliver HIV and NCD care to PLHIV.

Strategy two: Digitalising and integrating health system capacities

With advancements in digital technology, the culture of mobile communications and digital technology is gradually being adopted in LMICs, including in the delivery of HIV services. Types of digital technology interventions for HIV care engagement have prioritised (1) use of mobile devices, including phones, smartphones and tablets; (2) use of the internet, for example, electronic medical records and Web 2.0 initiatives, and (3) use of electronic information and telecommunications technologies to support long-distance care.[100] Digital technology has been successfully used in the context of HIV, for example, to deliver ART to individual homes. A recent systemic review highlighted the importance of digital technologies in improving ART adherence. It also highlighted promising results (at a small-scale, however), such as the positive impact of using digital technologies for emotional support, information, and helpful reminders for PLHIV, as well as for laboratory processes and notifications. Artificial intelligence has also been used to manage HIV care.[101]

> *"AMPATH started its HIV programmes with an open-source medical records system (MRS) based on an open MRS platform, and worked with Partners in Health to develop the system (...) This has evolved into point-of-care systems, where clinicians are interacting with the system in real-time and capturing information from patients."*
>
> Implementer, South Africa

> *"Digital technologies would be ideal to explore, especially because a lot of people have access to digital media."*
>
> PLHIV/Advocate, Malawi

COVID-19 has led to an unprecedented rise in the need for and use of digital health services across all disciplines, including HIV and NCDs. This has created further opportunities for translating pandemic-control measures to integrate NCD care into existing or new HIV-specific digital health strategies for PLHIV.[102] For example, in Kenya and Nigeria, COVID-19 has catalysed rapid progress in telemedicine, including online video consultations with health professionals; home monitoring of blood glucose and blood pressure, which can be relayed to health professionals; electronic prescriptions for local collection or delivery, and electronic scheduling of tests for COVID-19 as well as NCDs and other conditions.[103]

As highlighted by the NCD Alliance in its *Global NCD Agenda for Resilience and Recovery from COVID-19*, "[S]ignificant leaps have been made during the pandemic towards the use of digital telehealth tools in health care, including those to support CHWs provide appropriate care, and those to assist patients with self-management of chronic conditions."[104]

> "*Using* electronic medical records *technology – a system which also facilitates triaging of patients, from consultation with a clinician, nutritionist, up to the lab services – reduces the wait time for patients.*"
>
> Nutritional Officer, HIV Care & Treatment, Kenya

As well as digitalising health systems capacities, several initiatives have described the importance of sharing and integrating health records, with an emphasis on keeping tools as simple as possible and integrated with health record-keeping systems.[105] Evidence shows that co-located HIV and NCD clinics have benefited from the introduction and use of shared digital health platforms. These have supported both information-sharing and referrals between services, across disease specialities, and across different levels of health care provision and expertise.[106] For example, the Kenyan Ministry of Health's collaboration with AMPATH to institute an electronic medical records-based, co-located care system for HIV and NCDs was considered a key enabler for more effective care delivery.[107]

In 2015, Partners in Health and Malawi's Ministry of Health launched their Integrated Chronic Care Clinic (IC3) in the Neno District, providing care on the same day, at the same clinic, to patients diagnosed with both HIV and an NCD. The IC3 model integrates HIV care with treatment for NCDs. The IC3 model includes integrated electronic medical records for HIV and NCDs, allowing real-time patient tracking and detection of missed clinic visits and longitudinal clinical information for patients with HIV and NCDs who are hospitalised.

Image: © Shutterstock

> *“If someone is due for their viral load, a pop-up message will be received by the clinician during a consultation to say the patient is due for their viral load or the patient has had high blood pressure compared to the last visit. This has allowed for task shifting, and some of this work is happening in NCDs as well, where a nurse may be managing someone with hypertension at dispensary level; the system can be programmed to show that the patient needs a referral.”*
> Implementer, South Africa

Despite these successes, further information is needed to understand the effectiveness, acceptability, adoption, accessibility, costs and sustainability of information management systems, including digital platforms, and how they can be rolled out across various health practice areas and local contexts. Concerns around data privacy and the digital gap, especially for women and hard-to-reach groups, must also be considered. However, key enablers of success for scaling up digital health in LMICs have been identified[108] and should inform policy and programmes concerning combined HIV and NCD care delivery for PLHIV:

- The digitalisation of health must lead to tangible outcomes identified with PLHIV from the onset, and provide benefits to address an unmet need – in this case, NCD needs of PLHIV.
- All relevant stakeholders at the community level – the health care sector and PLHIV – must be involved, trained and motivated to drive the use of digital technologies successfully.
- Simplicity, interoperability, and adaptability must drive digital health strategies.
- The digitalisation of HIV and NCD care for PLHIV must be supported and sustained by an enabling policy environment that fosters cross-sectoral and multi-stakeholder (including private sector) coordination.
- The extrinsic ecosystem needed to scale up digitalisation should also be considered,[109] including ‘repurposing’ or reconfiguring tools and processes devised during the pandemic towards NCD-integration. For example, in Bangladesh, district health information software used to monitor COVID-19 has also been customised to track the cervical cancer screening programme.[110]

New and scaled-up digital health strategies that have resulted from COVID-19 have shifted the attention towards building the sustainability of this model of care. Exploring the benefits of this approach to improve HIV and NCD care for PLHIV should be considered as a result. The Industry Liaison Forum of the International AIDS Society has prioritised a set of digital technological innovations,[111] based on advances made during COVID-19, which provide opportunities for the integration of NCD-related care for PLHIV as part of integration strategies, and should be explored.

Strategy three: Supply chain partnerships

COVID-19 has emphasised the fundamental weaknesses in supply chains globally, but LMICs have been most severely affected. The pandemic has led to shortages in drugs and equipment for life-saving services, and disrupted the distribution of the COVID-19 vaccine. It is also threatening to unravel transformative progress on HIV,[112] Especially in LMICs, where governments have invested in supply chains to meet the needs of PLHIV, including improving essential storage facilities and creating better transport mechanisms and information technology infrastructure.[113] One of the challenges of NCD care for PLHIV remains the lack of reliable supply chains for NCD commodities.[114] In many LMICs, the demand for NCD drugs significantly outweighs supply.[115]

> *“Supply chain remains an issue in most countries in Africa and affects the scale-up of initiatives.”* Implementer, Africa

> *“The rest of the countries without digitised systems, like Eswatini, have parallel systems, that is, systems for NCDs and for HIV. They are encouraged to find a way of merging the systems before they start scaling up, as this would also improve with planning ahead and with supply chain requirements to meet their services.”*
> Implementer, Africa

> *“We have worked with the Ministry of Health and their pharmacies, but also with facility-level leadership to develop a Fund Pharmacy Model. This is a model of a pharmacy in the facility that is jointly owned and managed by facility leadership, AMPATH and the Ministry of Health. It serves as an alternative to the Ministry of Health pharmacies, where certain medication may not be available. While prices are slightly higher than government-owned pharmacy prices – this is not to compete with the government – they are affordable for patients and lower than private-sector pharmacies (…). This has helped increase availability of drugs like anti-depressants.”* Implementer, Global

> *“There is a central government supply chain, and through partnerships with other organisations, drugs are delivered on time.”* Nutrition Officer, HIV Care and Treatment

> *“Through a pilot study, there was support for health facilities to strengthen medical supply for NCDs.”* Academic, Global

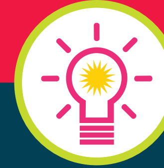
COVID-19 has led to adaptation strategies across HICs and LMICs to mitigate the negative impact of the pandemic on health service delivery. This includes greater coordination among relevant actors in the supply chains to facilitate the distribution of drugs to patients. Significant improvement in the delivery of NCD commodities for PLHIV can be secured by adapting HIV commodity supply chains to avoid duplication, reduce costs, and build on the highly decentralised distribution system used for HIV, using existing electronic platforms and equipment. A study found that "[g]lobal HIV initiatives have already made significant headway across many of the resource mobilisation and utilisation challenges. With marginal additional investment from other initiatives, LMICs can maximise the return on their investments in the supply chain to further their NCD goals."[116] This point was emphasised in NCD Alliance's research on the COVID-19 recovery agenda, with experts pointing out that there is no international entity with any remit/mandate for NCD supply chains, unlike the Global Fund and PEPFAR for HIV for example.

As part of community-based HIV service delivery, the role of pharmacies has been recognised as an important element in strengthening access to HIV diagnostics and medicine. The role of pharmacies in NCDs has also been highlighted, including by the International Pharmaceutical Federation in its 2019 Statement of Policy,[117]

COVID-19 has also led to the use of community/local-based facilities, including pharmacies, for testing and vaccinations. A 2021 study on the use of community pharmacies for ART refill in Nigeria found that this model of differentiated care was feasible and acceptable for clients and providers. It also showed excellent clinical outcomes in retention and viral suppression, and some clients were also able and willing to contribute to the costs of their HIV care.[118] A previous study in the same country also supported this model and recommended its scale-up in all 36 states in Nigeria.[119]

At the broader community level, adaptive strategies to combat COVID-19 disruptions have included using community members to deliver ART to PLHIV. A pilot in the Central-African Republic showed that treatment intake was much more regular, and PLHIV had a rate of 75% viral suppression.[120] Similar results were found in Nigeria, where community-based HIV service delivery was scaled up during COVID-19. Key adapted strategies included:

- Modifying HIV testing to intensify focus on community-based testing, including through partnerships with community-based organisations to ensure outreach team access and effectiveness.
- Expansion of ART distribution through community refill sites.[121]



COVID-19 innovation: Using the private sector to deliver HIV treatment[122]

In Jakarta, Indonesia, during the pandemic, patients turned to private ride-share-based delivery services to access HIV treatment. This reduced the frequency of clinic visits and ensured continuity of treatment at a time when the Government's social restriction measures impacted the capacity of health facility staff to deliver care. It has also led to challenges in securing the supply chain for ART and laboratory supply for HIV testing. The ride-share-based service consists of ART home delivery, saving costs for patients by reducing transportation and time away from work associated with clinical visits. Initial results of this innovative strategy suggest that the system may also reduce administration and consultation time and costs for health care. As a result, Jakarta's authorities have made home delivery a lasting component of Jakarta's differentiated response to HIV beyond COVID-19. Ride-share-based services have also been mobilised to create a dedicated viral load specimen transport system called Jak Transporter. In Jakarta, eight Jak Transporters provide daily specimen transport services for viral load sample collection and delivery to geographic clusters of health facilities and private laboratories, unlocking systems barriers – like lack of point-of-care testing options – that had stymied viral load testing coverage and associated progress towards HIV epidemic control goals. The transporters have moved an average of more than 1,500 specimens monthly since early 2020, helping 74% of people living with HIV at 60 of Jakarta's HIV facilities test their viral loads and move towards viral load suppression during the COVID-19 lockdown.

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Civil society organisations have also mobilised similar home delivery models for people living with NCDs, e.g. medication for people undergoing cancer treatment, and insulin for people living with diabetes. This has helped with concerns over visiting health facilities and lack of availability of public transport during the pandemic. Resources are needed to support such innovations to 'stick' beyond the duration of the pandemic, as these bring multiple benefits to people living with chronic conditions, in terms of health, safety, well-being and economic empowerment.

Strategy four: Multi-month dispensing

One of the common adaptation strategies adopted or scaled up during COVID-19, especially in LMICs, has been multi-month dispensing of drugs for stable patients,[123] including ART and NCDs. Both formal and informal approaches have been adapted as well as individual or collective (e.g. community ART, clubs). For PLHIV with NCDs, alignment/synchronisation of drug dispensing for both conditions is also critical.

In PEPFAR-supported programmes in sub-Saharan Africa, multi-month dispensing of ART was expanded during the pandemic. Data from seven countries – October 2019 to May 2021 – show that most clients were receiving extended ART refills (three or more months) by the end of the study period.[124] Similarly, multi-month dispensing for ART was scaled up in Zambia due to COVID-19, which led to fewer treatment interruptions.

Even before COVID-19, in Eswatini, the government led efforts to integrate screening and management of hypertension and other NCDs into HIV treatment programmes, including through a facility-based group model ('club') for people living with both HIV and NCDs. This enabled easy refills of both NCDs and HIV treatment, as well as psychosocial and peer support.

Respondents confirmed that providing multi-month prescriptions is a strong integration strategy that was successfully implemented during COVID-19. Positive factors of multi-month prescriptions of HIV and NCD treatment for PLHIV include:

- Decongestion of facilities and reduction of human resources requirements, especially when combined with task sharing.[125]
- Diversity of approaches (formal/informal; individual/collective) can be discussed with patients and adopted based on existing structures such as 'adherence clubs' and community adherence groups.
- Successful examples and patients' satisfaction and acceptability of the model, in particular, because it saves time, prevents unnecessary queues in the clinic, and enables them to get health education and group support while they collect their medication.[126]
- Less treatment interruption and increased adherence to treatment.[127]

The critical potential challenges associated with multi-month dispensing for people living with both HIV and NCDs include the cost of NCD drugs and the fact that most PLHIV still pay out-of-pocket for NCD medications; concerns about stock-outs, and the lack of policy allowing this practice.[128] Yet, our research found that multi-month dispensing of HIV and NCD treatment for people living with both conditions is a feasible and effective integration mode, especially given the positive outcomes of its scale-up during the pandemic. Regarding the cost, one of the interview respondents emphasised that even if the patient's financial situation means that they can only pay for one month at a time, multi-month dispensing mechanisms mean that at their next visit to the facility, PLHIV can bypass consultation and receive a refill at the pharmacy. While one UN agency interview respondent felt that authorities' fear of stock-outs was a potential deterrent to scaling-up multi-month prescription and dispensing, they suggested that planning and procurement would make it possible to provide multi-month prescriptions, and reiterated the need to strengthen procurement on both supply and payments to improve delivery.

These strategies would need to be tailored to become scalable, and based on the burden of HIV and NCDs among PLHIV, existing HIV platforms and infrastructure, and characteristics of the national health system in each country. However, one common element that needs to be considered is the critical importance of funding for NCD testing and treatment services, and community participation for improved access to information and services for NCD care for PLHIV. In addition, our research found that civil society organisations and PLHIV are not currently meaningfully engaged in government policy and programming.

> *"The integration of NCDs into HIV care is not transparent and does not include civil society."* Advocate/PLHIV

> *"Involvement of civil society members, and structures that allow individuals or organisations to provide their own personal care for their lives is the way integration will be effective and clear to all."* Patient Aadvocate/Youth Mentor, Eswatini

> *"The community can be empowered through Community ART Groups by sensitising them on the NCD risk factors and how to do NCD self-risk assessment. This can be a useful intervention in the NCD prevention strategy."* Government, Kenya

> *"In our country [HIV and NCD integration initiatives] are not shared openly to civil society, meaning they are still conducted by government without full participation of the public and the affected communities or society. That's why I am unable to fully have correct information about the initiative. The structure didn't involve the people living with NCDs or HIV. Plus, the formation of this was under wraps meaning there was no formal agreement or discussion prior to the implementation process – just a 'given' program to adapt not be involved or be part of."* Patient Advocate

"There is a need to identify community champions who will be responsible to relay the information to their members, which will, in turn, increase the participation of more members in this programme. More issues will be tackled through this system within the community, thus improving access to information delivery. This can be door-to-door, thus improving the integrated opportunities."

PLHIV Advocate, Malawi

Progress towards implementation of 2021 Political Declaration on HIV/AIDS – Target 67 on Universal health coverage and integration

The adoption of the NCD and HIV political commitment on care integration offers an unprecedented opportunity for the NCD and HIV communities to work collaboratively, including by developing indicators for monitoring and accountability.[129] However, our research found that very little has been done to implement the commitment to date, highlighting the lack of awareness of the target. In the online survey, 18 out of 41 people said their organisation does not have, or is not developing, indicators to monitor the access of people living with, at risk of and affected by HIV to integrated services for NCDs, mental health and psychosocial support, palliative care, and treatment of alcohol dependence and drug use; 11 out of 41 said they were not sure if their organisation has, or is developing, indicators.

Some interview respondents highlighted progress on the development of indicators on PLHIV with NCDs, including:

- STOP AIDS Alliance is developing monitoring and evaluation tools and is currently mapping tools used to demonstrate how integration is enhancing outcomes for individuals.
- Malawi Integrated Chronic Care Clinic has a large set of indicators for the clinic, which apply to people with NCDs, both with and without HIV.
- UNAIDS highlighted that there is a team currently developing indicators on monitoring NCD and HIV integrated services.

Improved data collection and surveillance, including through indicators on HIV and NCDs, access to integrated services, and monitoring the gap in providing NCD care and treatment to PLHIV, are critical to inform models of NCD services for PLHIV across varied epidemiological contexts. These efforts are also essential to preserve the long, hard wins and substantial investments countries have made to prevent HIV deaths and turn HIV into a chronic and manageable disease.[130]

SECTION FOUR:
CONCLUSION AND RECOMMENDATIONS

It took decades to turn HIV/AIDS from a deadly infection into a manageable and chronic condition for most PLHIV who have access to ART. The needs of PLHIV are still significant, but they are also changing. Those who have driven progress, commitments, action, investments, and resources for HIV must now adapt, rethink and re-imagine what care looks like for PLHIV with or at risk of NCDs. Attention needs to focus on the alarming projections about the prevalence of NCDs among PLHIV and associated co-morbidities.

As the world continues to deal with COVID-19 and move towards thinking about what a post-pandemic approach should look like, we are learning from the failures, as well as innovations and adaptations that have emerged globally as a result of the pandemic. All concerned actors, across constituencies, and with the meaningful engagement of communities, must seize the opportunity to formulate a compelling agenda for the HIV-NCD syndemic. The 2021 Political Declaration on HIV/AIDS and the broader UHC agenda provide fundamental frameworks to move forward with a clear, outcome-orientated HIV-NCD integration agenda.

NCD-HIV integration for PLHIV should be seen as a stepping stone towards UHC that ensures NCD care for all who need it, not an end in itself.

Image: © Canva stock

Overall recommendation

Governments – with the support of UNAIDS, WHO, global health donors, and key constituencies, including civil society, HIV and NCD advocates and champions, and the private sector, – must coordinate and drive a common agenda for NCD-HIV integration towards achieving the 90% target.

Key recommendations

Donors and multilaterals

- Invest in research and increase data collection on quality of life for PLHIV and other target population groups, including prevalence of other health conditions, such as NCDs, and access to care.
- Ensure meaningful engagement of PLHIV who also live with other chronic conditions to understand their full health care needs to improve quality of life and barriers to access, including in accountability for progress towards PHC and UHC.
- Include and/or enhance NCD indicators in existing and new HIV surveillance initiatives, including integrated biological and behavioral surveillance surveys, population-based HIV impact assessments, demographic health surveys, and others.
- Increase the evidence on what works to meet the NCD needs of PLHIV, with a primary focus on countries with the most significant HIV burden.
- Incorporate NCDs into HIV programmes and funding, including mandatory consideration that PHC includes NCD services, as a means of developing more resilient and sustainable health systems.
- Include and monitor indicators and targets for integrated HIV-NCD service delivery in funding mechanisms.
- Include the NCD-HIV syndemic as a key priority in COVID-19 recovery plans and the 'building back better' agenda.
- Increase access to NCD medications (such as those included in the WHO PEN for PHC in low-resource settings),[131] by enhancing existing HIV supply chains, subsidising NCD treatment to reduce or eliminate out-of-pocket costs, and include NCD medications and commodities in UHC planning.
- Foster partnerships across constituencies, including the private sector.

National governments

- Extend PHC across all population groups, building sustainable and resilient PHC that meets all people's needs across the continuum of care.
- Design and implement UHC that addresses the growing burden of multi-morbidities and considers the practical needs of people living with more than one chronic condition.
- Include essential NCD medicines and products in UHC benefit packages to reduce catastrophic financial expenditure, and include NCD essential medicines and products (WHO PEN), including disease preventing vaccines, such as human papillomavirus and hepatitis B, in national essential medicines drug lists and national drug procurement systems.
- Meaningfully engage with NCD and HIV stakeholders and constituencies to develop, implement, and monitor progress towards a country-led agenda for addressing the HIV-NCD syndemic, leveraging HIV platforms and based on context-driven strategies.
- Build on COVID-19 adaptation strategies and community engagement during the pandemic to scale-up and introduce task shifting, community-based service delivery, coordinated multi-month dispensing of HIV and NCD medications, and digital health and health information systems.
- Advance the evidence base on equitable, impactful, cost-effective and gender-sensitive integration strategies to meet the growing NCD prevention, treatment and care needs of PLHIV.
- Update national HIV guidelines to include detailed guidance on prevention, testing and treatment of NCDs among PLHIV; include current, evidence-based simplified and streamlined algorithms for NCD management.
- Add a streamlined set of NCD-specific indicators (including risk factors, e.g. tobacco use) to national HIV monitoring and evaluation systems.
- Enhance national pre-service and in-service training curricula to bolster the capacity of the health workforce to identify and treat NCDs and NCD risk factors among PLHIV.
- Integrate common NCD comorbidities into HIV-focused funding proposals (e.g. Global Fund), according to local needs, offering technical support to Country Coordinating Mechanisms (e.g. via WHO or the UN Inter-Agency Taskforce on NCDs).
- Explore partnerships, including with existing community and private sector actors (e.g. pharmacies) and global agencies, UN, multilateral agencies, to strengthen supply chains for NCD commodities using existing HIV mechanisms.

HIV and NCD advocates and civil society

Bridge the gap between HIV and NCDs using existing networks, campaigns, and other civil society-led advocacy and accountability initiatives, and ensure the engagement of older people and women living with HIV and NCDs.

Advocate to ensure that people living with both HIV and NCDs (and other chronic conditions) are meaningfully engaged and able to participate in national and global policy and funding discussions.

- Amplify the voices and lived experiences of people living with HIV and NCDs in policy and advocacy fora
- Develop contextually-appropriate, person-centered information and education materials about NCDs and NCD risk factors for PLHIV, as well as mobilise communities living with HIV and NCDs to demand integrated and user-friendly services
- Include HIV/NCD indicators in community-led monitoring initiatives
- Use existing HIV funding and programme platforms to advocate for increased investment in primary healthcare, including HIV-NCD care integration for PLHIV
- Seek technical support via County Coordinating Mechanisms, WHO, UN Inter-agency Taskforce on NCDs and NCD researchers and experts.

References

1 NCD Alliance and The George Institute for Global Health, 2021. *From Siloes to Synergies: Integrating non-communicable disease prevention and care into global health initiatives and universal health coverage*. Geneva: NCD Alliance. Available at: https://ncdalliance.org/sites/default/files/resource_files/NCD_%20LEVERAGING_GLOBAL_HEALTH_WINS_8_09_FINAL.pdf

2 Political Declaration on HIV and AIDS: Ending Inequalities and Getting on Track to End AIDS by 2030, 09 June 2021. Available at: https://www.unaids.org/en/resources/documents/2021/2021_political-declaration-on-hiv-and-aids

3 NCD Alliance, 2021. *A Global NCD Agenda for Resilience and Recovery from COVID-19*. Geneva: NCD Alliance. Available at: https://ncdalliance.org/sites/default/files/NCDA Resilience and Recovery.pdf

4 Bertagnolio S., Thwin S.S., Silva R., Ford N., Baggaley R., Vitoria M., Jassat W., Doherty M., and Diaz J. Clinical characteristics and prognostic factors in people living with HIV hospitalised with COVID-19: findings from the WHO Global Clinical Platform, IAS e-poster, July 2021. Available at: https://theprogramme.ias2021.org/PAGMaterial/PPT/3307_4871/IAS_2021_e_poster_3.pdf https://theprogramme.ias2021.org/Abstract/Abstract/2498.

5 Dain K., Opinion: *NCDs and building back fairer from COVID-19 — if not now, when?* [online]. Devex, 17 May 2021, https://www.devex.com/news/opinion-ncds-and-building-back-fairer-from-covid-19-if-not-now-when-99901

6 Joint United Nations Programme on HIV/AIDS (UNAIDS), 2021. *Global HIV & AIDS statistics — Fact sheet* [online]. Available at: https://www.unaids.org/en/resources/fact-sheet

7 Ibid

8 Patel P. et al., 2018. Non-communicable diseases among HIV-infected persons in low-income and middle-income countries: a systematic review and meta-analysis. *AIDS*, 32 Suppl 1:S5–s20. DOI: 10.1097/QAD.0000000000001888 See also: Mendenhall E., Kohrt B.A., Norris S.A. Ndetei D. and Prabhakaran D., 2017. Non-communicable disease syndemics: poverty, depression, and diabetes among low-income populations. *Lancet*, Mar 4, pp. 389:951–963. DOI: 0.1016/S0140-6736(17)30402-6

9 Smit M., Perez-Guzman P., Mutai K., Cassidy R., Kibachio J., Kilono N and Hallett T., 2019. Mapping the current and future noncommunicable disease burden in Kenya by HIV status: A modelling study. *Clinical Infectious Dis*eases [e-journal] 71(8), pp. 1864–1873. DOI: https://doi.org/10.1093/cid/ciz1103

10 HIV Learning Network, Dr Kambale, H N., 2020. *DSD for People Living with HIV and NCDs, Presentation, HIV Learning Network, 8 December 2020*. [pdf]. Available at: https://cquin.icap.columbia.edu/wp-content/uploads/2020/12/DSDM-for-HIV-NCDs-integration_Final.pdf, referencing Smit, M., Olney, J., Ford, N., Vitoria M., Gregson S., Vassall A. and Hallett T., 2018. The growing burden of noncommunicable disease among persons living with HIV in Zimbabwe. *AIDS*, 32 (6), pp. 773-782 DOI: 10.1097/QAD.0000000000001754

11 Ibid.

12 Haacker M., Bärnighausen T. and Atun R., 2019. HIV and the growing health burden from non-communicable diseases in Botswana: modelling study. *Journal of Global Health*, 9(1). DOI: 10.7189/jogh.09.010428

13 Supra 8. See: NCD Alliance, Improving quality of life for communities living with HIV/AIDS, TB and Malaria, Briefing Note, 2020, Available at: https://ncdalliance.org/resources/improving-quality-of-life-for-communities-living-with-hivaids-tb-and-malaria

14 Ibid.

15 UNAIDS, UN Interagency Task Force on NCDs, 2009. *Responding to the challenge of non-communicable diseases*. [pdf]. Available at: https://www.unaids.org/sites/default/files/media_asset/responding-to-the-challenge-of-non-communicable-diseases_en.pdf

16 AIDSmap, 2021. *Large UK study identifies increased cardiovascular risk in people living with HIV, including younger people.*[online]. Available at: https://www.aidsmap.com/news/jul-2021/large-uk-study-identifies-increased-cardiovascular-risk-people-living-hiv-including

17 Vos A., Tempelman H., Devillé W., Barth R., Wensing A., Kretzschmar M., Klipstein-Grobusch K., Hoepelman A., Tesselaar K., Aitken S., Madzivhandila M., Uiterwaal C., Venter F., Coutinho R. and Grobbee D., 2017. HIV and risk of cardiovascular disease in sub-Saharan Africa: Rationale and design of the Ndlovu Cohort Study, *European Journal of Preventive Cardiology*, [online], 24(10) pp. 1043–1050. DOI– https://doi.org/10.1177/2047487317702039

18 Rezaei, S., Ahmadi S., Rahmati J., Hosseinifard H. and Afsaneh D., 2019. Global prevalence of depression in HIV/AIDS: a systematic review and meta-analysis. *BMJ Supportive & Palliative Care*, 9(4) pp. 404-412. DOI:10.1136/bmjspcare-2019-001952

19 AIDSmap, 2021. *Type 2 diabetes and HIV*. [online]. Available at: https://www.aidsmap.com/about-hiv/type-2-diabetes-and-hiv

20 Supra 18.

21 Supra 8.

22 Aidsmap, Women with HIV have sixfold increase in risk of cervical cancer, 30 December 2020. Available at: https://www.aidsmap.com/news/dec-2020/women-hiv-have-sixfold-increase-risk-cervical-cancer

23 Bijker, R., Jiamsakul, A., Uy, E., Kumarasamy, N., Ditango, R., Chaiwarith, R ., Wong W.W. Avihingsanon, A., Sun, L.P., Yunihastuti, E., Pujari S., Cuong D., Merati T., Kantipong, P., Nguyen K.V., Kamarulzaman, A., Zhang, F., Lee M.P. Choi J. Y., Tanuma J., Ng O.T., Sim B., Ross J, and Kiertiburanakul, S, 2019. Cardiovascular disease-related mortality and factors associated with cardiovascular events in the TREAT Asia HIV Observational Database (TAHOD). *HIV Medicine* [ejournal] 20(3), pp. 183_191. DOI: 10.1111/hiv.12687.

24 Shah A.S.V., Stelzle D., Lee K.K., Beck E.J., Alam S., Clifford S., Longnecker C.T. Strachen F., Bagchi S., Whitely W., Rajagopalan S., Kottilil S., Nair H., Newby D.E. McAlliaster D. A. and Mills N.L. 2018. Global Burden of Atherosclerotic Cardiovascular Disease in People Living With HIV: Systematic Review and Meta-Analysis. *Circulation* [ejournal] 138(11), pp.1100–12. DOI: 10.1161/circulationaha.117.033369 [published Online First: 2018/07/04]

25 NCD Alliance, 2017. *Why NCDs*. [online]. Available at: https://ncdalliance.org/why-ncds/NCDs

26 Johnston P., Wright S., Orr M., Pearce F., Stevens J., Hubbard R. and Collini P. 2021. Worldwide relative smoking prevalence among people living with and without HIV. AIDS, 35(6) pp 957-970. DOI: 10.1097/QAD.0000000000002815

27 Yang Z., Zhu Z., Lizarondo L., Zing W., Han S., Hu H. and Bei W. 2021. Experience of chronic non-communicable disease in people living with HIV: a systematic review and meta-aggregation of qualitative studies, *BMC Public Health,* 21, Article number: 1651. DOI: https://doi.org/10.1186/s12889-021-11698-5

28 Ibid.

29 UNAIDS, 2021. *Global HIV & AIDS statistics — Fact sheet*. [online]. Available at: https://www.unaids.org/en/resources/fact-sheet

30 UNICEF, July 2020. *Gender and HIV/AIDS*. [online]. Available at: https://data.unicef.org/topic/gender/gender-and-hiv-aids/

31 NCD Alliance, n.d. *A Call to Action, Women and Non-Communicable Diseases*. Available at: https://ncdalliance.org/sites/default/files/resource_files/Women%20and%20NCDs%20infographic_WEB_fv.pdf. See also WHO, *Communicable Diseases: A priority for women's health and development*, 2021, https://www.who.int/pmnch/topics/maternal/2011_women_ncd_report.pdfhttps://ncdalliance.org/sites/default/files/resource_files/Women%20and%20NCDs%20infographic_WEB_fv.pdf

32 LaVigne A., Triedman S., Randall T., Trimble E. and Viswanathan A. 2017. Cervical cancer in low and middle-income countries: Addressing barriers to radiotherapy delivery. *Gynecologic Oncology Reports,* 22 pp. 16-20. DOI:10.1016/j.gore.2017.08.004

33 WHO, 16 November 2021. *WHO releases new estimates of the global burden of cervical cancer associated with HIV*. [online]. ttps://www.who.int/news/item/16-11-2020-who-releases-new-estimates-of-the-global-burden-of-cervical-cancer-associated-with-hiv

34 Stelzle D., Tanaka L.F., Lee K.K., Khalil A.I., Baussano I. and Shah A. 2020. Estimates of the global burden of cervical cancer associated with HIV. *The Lancet Global Health* [ejournal] 9(2) E161–E169. DOI: 10.1016/S2214-109X(20)30459-9.

35 Ibid.

36 For example, in 2011, UNAIDS published a report: *Chronic care of HIV and non-communicable diseases: How to leverage the HIV experience on HIV and NCDs*. Available at: https://www.unaids.org/en/resources/documents/2011/20110526_JC2145_Chronic_care_of_HIV. UNAIDS also joined the UN Interagency Task Force on NCDs in 2013, and in 2015 the Cervical Cancer Action's Coalition five-year initiative.

37 UNAIDS 2011. Chronic care of HIV and noncommunicable diseases [pdf]. Geneva: UNAIDS. Available at: https://www.unaids.org/sites/default/files/media_asset/20110526_JC2145_Chronic_care_of_HIV_0.pdf

38 Ibid.

39 Global Fund, Approval of the Global Fund Strategy Narrative, November 2021. Available at: https://www.theglobalfund.org/media/11492/bm46_03-strategy-narrative_report_en.pdf

40 Ibid.

41 Haakenstad A. 2019. Out-of-Pocket Payments for Noncommunicable Disease Care: A Threat and Opportunity for Universal Health Coverage. Doctoral dissertation. *Harvard T.H. Chan School of Public Health. Available at: https://dash.harvard.edu/handle/1/41594096*

42 WHO n.d. Untitled *Executive Summary*. Available at: https://www.who.int/nmh/publications/ncd_report_summary_en.pdf?ua=1

43 Luna F. and Luyckx V.A. 2020. Why have Non-communicable Diseases been Left Behind? *Asian Bioeth Rev*., 12(1), pp. 5–25. DOI: 10.1007/s41649-020-00112-8. PMID: 33717328; PMCID: PMC7747415.

44 Source: Financing Global Health, Viz Hub, https://vizhub.healthdata.org/fgh/

45 Jailobaeva K., Falconer J., Loffreda, G. et al. An analysis of policy and funding priorities of global actors regarding non-communicable disease in low-and middle-income countries. *Global Health* 17, 68 (2021). DOI: https://doi.org/10.1186/s12992-021-00713-4

46 WHO, 2020. *Pulse survey on continuity of essential health services during the COVID-19 pandemic: interim report, 27 August 2020*. Available at: https://www.who.int/publications/i/item/WHO-2019-nCoV-EHS_continuity-survey-2020.1

47 WHO, 2021. *Second round of the national pulse survey on continuity of essential health services during the COVID-19 pandemic: January–March 2021*. Available at: https://www.who.int/publications/i/item/WHO-2019-nCoV-EHS-continuity-survey-2021.1

48 Think Global Health, 2021. *Non-communicable Diseases Kill Slowly in Normal Times and Quickly in COVID-19 Times*. [online]. Available at: https://www.thinkglobalhealth.org/article/noncommunicable-diseases-kill-slowly-normal-times-and-quickly-covid-19-times

49 Bliss K. E. 2019. *The Changing Face of HIV: Addressing Health Needs Across the Life Course*. Washington, DC: Center for Strategic & International Studies. Available at: https://www.csis.org/analysis/changing-face-hiv-addressing-health-needs-across-life-course. See also Namagembe, L. 2018. *Patients stranded as cancer machine breaks down again*. Daily Monitor, August 31, 2018, https://www.monitor.co.ug/News/National/Patients-stranded-cancer-machine-breaks-down-again/688334- 4736900-579ewv/index.html. See also Adebamowo, C.A. et al., 2014. Challenges in the Detection, Prevention and Treatment of HIV-Associated Malignancies in Low- and Middle-Income Countries in Africa. *Journal of Acquired Immune Deficiency Syndrome,* 67, S17-S26. https://www.ncbi.nlm.nih.gov/pubmed/25117957.

50 Ehrenkranz P., Grimsrud A., Holmes C., Preko, P. and Rabkin M., 2021. Expanding the Vision for Differentiated Service Delivery: A Call for More Inclusive and Truly Patient-Centered Care for People Living With HIV. *Journal of Acquired Immune Deficiency Syndrome (JAIDS)* [ejournal] 86(2) pp.147-152. DOI: 10.1097/QAI.0000000000002549

51 UNAIDS, 2011. *Chronic care for HIV and non-communicable diseases*: How to leverage the HIV experience. Geneva: UNAIDS. Available at: https://www.unaids.org/sites/default/files/media_asset/20110526_JC2145_Chronic_care_of_HIV_0.pdf

52 Supra 50.

53 Ibid.

54 WHO 2021. *WHO publishes new clinical and service delivery recommendations for HIV prevention, treatment and care* [online]. Available at: https://www.who.int/news/item/17-03-2021-who-publishes-new-clinical-recommendations-on-hiv-prevention-infant-diagnosis-antiretroviral-therapy-initiation-and-monitoring

55 WHO n.d. *Integration of NCDs into primary health care* [pdf]. Available at: https://www.who.int/ncds/management/Integration_of_NCDs_into_primary_health_care.pdf

56 El-Sadr W. and Goosby E., 2018. Building on the HIV platform, *AIDS* [ejournal], 32 Suppl 1: SS1-S3. DOI: 10.1097/QAD.0000000000001886dr

57 FHI 360, 2014.*Integration of HIV and non-communicable disease care (factsheet)*. Available at: https://www.fhi360.org/resource/integration-hiv-and-noncommunicable-disease-care-fact-sheet

58 UN AIDS 2011. *Chronic care of HIV and noncommunicable diseases How to leverage the HIV experience*. Geneva: UNAIDS. Available at: https://www.unaids.org/sites/default/files/media_asset/20110526_JC2145_Chronic_care_of_HIV_0.pdf

59 Supra 37.

60 Chamie G., et al., 2014. Uptake of community-based HIV testing during a multi-disease health campaign in rural Uganda. *PLoS One*, 9(1):e84317. DOI: 10.1371/journal.pone.0084317. PMID: 24392124; PMCID: PMC3879307.]

61 Referenced in WHO's new Consolidated guidelines, supra, 54.

62 Aksam R., 06 November 2018. *Reaching Men with Multi-Disease Testing* [Presentation]. Available at: https://cquin.icap.columbia.edu/wp-content/uploads/2018/11/1.-Aksam_CQUIN-Session-7_FINAL.pdf

63 Matanje Mwagomba B. et al., 2018. Opportunities and challenges for evidence-informed HIV-noncommunicable disease integrated care policies and programs. *AIDS*, 32, Suppl 1: S21-S32, DOI: 10.1097/QAD.0000000000001885

64 Adeyemi O, Lyons M, Njim T, et al., 2021, Integration of non-communicable disease and HIV/AIDS management: a review of healthcare policies and plans in East Africa. BMJ Global Health 2021;6:e004669. Available at: https://gh.bmj.com/content/6/5/e004669.citation-tools

65 Ministry of Health National AIDS and STI Control Programme (NASCOP), 2016. *Guidelines on Use of Antiretroviral Drugs for Treating and Preventing HIV Infection in Kenya*. Available at: https://www.prepwatch.org/wp-content/uploads/2016/08/Guidelines-on-ARV-for-Treating-Preventing-HIV-Infections-in-Kenya.pdf

66 Rabkin M. et al., 2018. Integrating cardiovascular disease factor screening into HIV services in Swaziland: lessons from an implementation science study [pdf]. AIDS, 32, Suppl 1: S43–46. Available at: https://cquin.icap.columbia.edu/wp-content/uploads/2020/01/Rabkin-et-al.-Integrating-CVDRF-screening-in-Swaziland.pdf

67 Supra 37.

68 WHO GCM/NCD. 2018. Working Group on the Inclusion of NCDs in other Programmatic Areas (Working Group 3.1, 2016–2017) [pdf]. Geneva: World Health Organization. Available at: https://apps.who.int/iris/bitstream/handle/10665/312271/WHO-NMH-NMA-GCM-18.11-eng.pdf?sequence=1&isAllowed=y

69 As referenced in UNAIDS, Technical consultation on HIV integration with other health services: 2025 target setting, and 2020–2030 resource needs and impact estimation, Meeting Report, March 2020. Available at: https://www.unaids.org/sites/default/files/2025targets-IntegrationMeeting_Rio_March2020_en.pdf

70 For example, the International Association of Providers of AIDS Care (IAPAC) 2018. *Protocols for the Integrated Management of HIV and Noncommunicable Diseases manual addresses the screening, prevention and control of common NCDs among PLHIV in resource-limited settings*. The protocols' target audiences are health care workers and facility managers providing prevention, care and treatment services for PLHIV through HIV and primary health care clinics.

71 NIH, Fogarty International Center. *HIV/NCD Integrated Care Project (2014–2021). Research to guide practice: Enhancing HIV/AIDS platforms to address NCDs in low-resource settings* [online]. Available at: https://www.fic.nih.gov/About/Staff/Policy-Planning-Evaluation/Pages/pepfar-ncd-project.aspx

72 International Association of Providers of AIDS CARE (IAPAC), 2018. *Protocols for the Integrated Management of HIV and Noncommunicable Diseases* [pdf]. Available at: https://www.iapac.org/guidance/recommendations/iapac-protocols-for-the-integrated-management-of-hiv-and-noncommunicable-diseases/

73 The HIV Coverage, Quality, and Impact Network (CQUIN) is a DSD learning network funded by the Bill & Melinda Gates Foundation and led by ICAP at Columbia University. CQUIN supports learning and collaboration through webinars, workshops, meetings, and south-to-south exchanges between its 21 member countries (Burundi, Cameroon, Côte d'Ivoire, DRC, Eswatini, Ethiopia, Ghana, Kenya, Liberia, Malawi, Mauritania, Mozambique, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Tanzania, Uganda, Zambia, and Zimbabwe)

74 Other CoP stakeholders and participants include Resolve to Save Lives, the International AIDS Society's Differentiated Service Delivery Project PATH and AMPATH.

75 Palma A. et al., 2016. Can the Success of HIV Scale-Up Advance the Global Chronic NCD Agenda? *Global Heart*, 11(4), pp. 403-408. doi:10.1016/j.gheart.2016.10.012

76 NCD Alliance, 2021. *Global Charter on Meaningful Involvement of People Living with NCDs* [pdf]. Available at: https://ncdalliance.org/what-we-do/capacity-development/our-views-our-voices/global-charter-on-meaningful-involvement-of-people-living-with-ncds

77 Dunstan A., Mutave R., Otieno Oyugi J. and Achia T. 2020. Tackling an emerging epidemic: the burden of non-communicable diseases among people living with HIV/AIDS in sub-Saharan Africa. *The Pan African Medical Journal*, 36, Article No. 271. DOI:10.11604/pamj.2020.36.271.22810. See also: Matanje B., Ameh S., Bongomin P. et al. 2018. Opportunities and challenges for evidence-informed HIV-noncommunicable disease integrated care policies and programs. *AIDS*, 32, Suppl 1: S21-S32. DOI: 10.1097/QAD.0000000000001885

78 Matanje B., Ameh S., Bongomin P. et al. 2018. Opportunities and challenges for evidence-informed HIV-noncommunicable disease integrated care policies and programs. *AIDS*, 32, Suppl 1: S21-S32. DOI: 10.1097/QAD.0000000000001885. See also: Nugent R. et al., 2018. Costs and cost-effectiveness of HIV/noncommunicable disease integration in Africa: from theory to practice. *AIDS*, 32 Suppl 1: S83-S92. doi:10.1097/QAD.0000000000001884

79 Gausi B., Otiku P., Jacob N. and Oni T. 2021. Patient outcomes in integrated HIV and non-communicable disease models of care: a scoping review. Journal of Global Health Reports. DOI:10.29392/001c.27094

80 Supra 66.

81 NCD Alliance Briefing Note, 2020. *Improving quality of life for communities living with HIV/AIDS, TB and Malaria* [pdf]. Available at: https://ncdalliance.org/sites/default/files/resource_files/NCD%20Alliance%20Briefing%20Note_Global%20Fund%20Strategy%202023-2028_FINAL%5B1%5D.pdf

82 The New Humanitarian, 2011. *HIV/AIDS and chronic diseases - learning from each other* [online]. Available at: https://www.thenewhumanitarian.org/plusnews-hivaids-radio/2011/09/20/hivaids-and-chronic-diseases-learning-each-other

83 Supra 1.

84 Supra 69.

85 Sando D., et al., 2020. Cost-effectiveness analysis of integrating screening and treatment of selected non-communicable diseases into HIV/AIDS treatment in Uganda. *Journal of the International AIDS Society*, 23 Suppl 1: : e25507. DOI:10.1002/jia2.25507

86 Kintu A. et al., 2020. Integrating care for non-communicable diseases into routine HIV services: key considerations for policy design in sub-Saharan Africa. *Journal of the International AIDS Society*, 23 Suppl:e25508. DOI:10.1002/jia2.25508

87 Patel P., Rose C.E., Collins P.Y. et al., 2018. Non-communicable diseases among HIV-infected persons in low-income and middle-income countries: a systematic review and meta-analysis. *AIDS*, 32 Suppl 1:S5–s20. DOI: 10.1097/QAD.0000000000001888

88 Anoop S. et al., 2018. Global Burden of Atherosclerotic Cardiovascular Disease in People Living With HIV: Systematic Review and Meta-Analysis. *Circulation*, 138(11) 1100-1112. DOI:10.1161/CIRCULATIONAHA.117.033369. Data based on national estimates of prevalence and cardiovascular burden are available for 154 countries. The highest population attributable fraction is observed in sub-Saharan Africa. HIV accounts for more than 15% of the CVD burden in Swaziland, Botswana, Lesotho and South Africa.

89 Achwoka D., Mutave R., Oyugi J.O. and Achia T. 2020. Tackling an emerging epidemic: the burden of non-communicable diseases among people living with HIV/AIDS in sub-Saharan Africa. *The Pan African medical journal,* 36 (271). DOI:10.11604/pamj.2020.36.271.22810 https://pubmed.ncbi.nlm.nih.gov/33088400/

90 WHO, 2008. *Task Shifting Global Recommendations and Guidelines*. [pdf]. Available at: https://www.unaids.org/sites/default/files/media_asset/ttr_taskshifting_en_0.pdf

91 Busza J. et al., 2020. The role of community health workers in improving HIV treatment outcomes in children: lessons learned from the ZENITH trial in Zimbabwe, *Health Policy and Planning*, 33(3), pp. 328–334, DOI, https://doi.org/10.1093/heapol/czx187

92 UNAIDS, 2020. *UNAIDS urges governments to ensure that HIV service providers from community-led organisations are recognised as essential service providers in the context of COVID-19*. Geneva: UNAIDS. Available at: https://www.unaids.org/en/resources/presscentre/pressreleaseandstatementarchive/2020/may/20200518_community-led-organizations-essential-service-providers-covid19

93 Seidman G. and Atun R., 2017. Does task shifting yield cost savings and improve efficiency for health systems? A systematic review of evidence from low-income and middle-income countries. *Human Resources for Health*, 15(29)

94 Shah I. and Delia Pereira N.M. 2020. HIV services in times of COVID-19. *The Indian Journal of Medical Research*, 152(6), pp. 533-534. DOI:10.4103/ijmr.IJMR_4901_20

95 UNAIDS, 2021. *Five questions about the HIV response in the Gambia*. Geneva: UNAIDS. Available at: https://www.unaids.org/en/resources/presscentre/featurestories/2021/october/five-questions-gambia

96 Groesbeck P., et al.2015. Population-Level Scale-Up of Cervical Cancer Prevention Services in a Low-Resource Setting: Development, Implementation, and Evaluation of the Cervical Cancer Prevention Program in Zambia. PLOS ONE. 10. e0122169. 10.1371/journal.pone.0122169.

97 Supra 3.

98 Torpey K.E. et al., 2008. Adherence Support Workers: A Way to Address Human Resource Constraints in Antiretroviral Treatment Programs in the Public Health Setting in Zambia. *PLoS ONE3*: e2204. DOI: https://doi.org/10.1371/journal.pone.0002204

99 Miriam R., de Pinho H., Michaels-Strasser S., Naitore D., Rawat A. and Topp S.M., 2018. Strengthening the health workforce to support integration of HIV and noncommunicable disease services in sub-Saharan Africa. AIDS, 32, S47–S54. DOI: 10.1097/QAD.0000000000001895

100 Jongbloed K. et al., 2015. Recent Evidence for Emerging Digital Technologies to Support Global HIV Engagement in Care, *Current HIV/AIDS Reports*, 12(4), pp. 451-61. DOI:10.1007/s11904-015-0291-7

101 Revell A.D. et al., 2017. The application of artificial intelligence to predict response to different HIV therapies, without a genotype: new models for therapy optimisation in resource-limited settings. *Curr HIV/AIDS Rep*, 12(4), pp. 451–61. DOI: 10.1007/s11904-015-0291-7

102 Basu P., et al., Leveraging vertical COVID-19 investments to improve monitoring of cancer screening programme – A case study from Bangladesh, *Preventive Medicine*. 2021. Volume 151, https://doi.org/10.1016/j.ypmed.2021.106624.

103 Supra 3.

104 Supra 3.

105 Allen L.N., Nicholson B.D., Yeung B.Y. and Goiana-da-Silva F. 2020. Implementation of non-communicable disease policies: a geopolitical analysis of 151 countries. *The Lancet Global Health*, 8(1), E50–E58. DOI: https://doi.org/10.1016/S2214-109X(19)30446-2

106 Lê G., Morgan R., Bestall J., Featherstone I., Veale T. and Ensor T. 2016. Can service integration work for universal health coverage? Evidence from around the globe. *Health Policy*, 120(4), pp. 406–19. DOI: 10.1016/j.healthpol.2016.02.007

107 Odafe S. et al., 2013. Integrating cervical cancer screening with HIV care in a district hospital in Abuja, Nigeria. *Niger Med J*, 54(3), pp. 176–84. DOI: 10.4103/0300-1652.114590

108 Labrique A.B., Wadhwani C., Williams K.A. et al., 2018. Best practices in scaling digital health in low and middle-income countries. *Global Health* 14, 103. DOI: https://doi.org/10.1186/s12992-018-0424-z

109 Ibid.

110 Supra 3.

111 International AIDS Society. *Advances from COVID-19: Innovative digital technologies to deliver HIV prevention and treatment Policy brief: June 2021*. [pdf]. Available at: https://www.iasociety.org/Portals/0/Files/IAS-ILF-Policy-Brief-28062021final.pdf

112 Institute of Medicine (US), 2013. *Committee on the outcome and impact evaluation of global HIV/AIDS programs implemented under the Lantos-Hyde Act of 2008. Evaluation of PEPFAR*. Washington DC: The National Academies Press

113 Pastakia S. D. et al., 2018. Building reliable supply chains for non-communicable disease commodities: lessons learned from HIV and evidence needs. *AIDS*, 32, Suppl 1: S55-S61. DOI:10.1097/QAD.0000000000001878

114 Ibid.

115 Mattke S. et al., 2011. Improving access to medicines for non-communicable diseases in the developing world. Santa Monica, CA: Corporation R. Available at: https://wwwrandorg/pubs/occasional_papers/OP349html.

116 Supra, 113.

117 International Pharmaceutical Federation 2019. *FIP Statement of Policy – The role of pharmacists in non-communicable diseases*. Available at: https://www.fip.org/file/4338

118 Asieba O. et al., 2021. Antiretroviral therapy in community pharmacies - Implementation and outcomes of a differentiated drug delivery model in Nigeria. *Research in Social & AdministrativePpharmacy*, 17(5), pp. 842-849. DOI:10.1016/j.sapharm.2020.06.025

119 Avong Y K., et al., 2018. Integrating community pharmacy into community based antiretroviral therapy program: A pilot implementation in Abuja, Nigeria. *PloS one*, 13(1): e0190286. DOI:10.1371/journal.pone.0190286

120 UNAIDS, 2021. *Adapting to keep people living with HIV taking their treatment in the Central African Republic*. [online].Available at: https://www.unaids.org/en/resources/presscentre/featurestories/2021/october/20211031_treatment-central-african-republic

121 WHO, 2021. *Nigeria's early adoption of Differentiated Services Delivery model buffers effect of COVID-19 pandemic among People Living with HIV*. Abuja: WHO. Available at: https://www.afro.who.int/news/nigerias-early-adoption-differentiated-services-delivery-model-buffers-effect-covid-19

122 Differentiated Service Delivery. 2021. *Spotlight on DSD in Southeast Asia: Providing HIV services during COVID-19 through private-sector engagement in Jakarta, Indonesia* [online]. Available at: https://differentiatedservicedelivery.org/Resources/Resource-Library/Newsletter-perspective-piece-by-C-Francis-and-M-Cassell-EpiC

123 AIDSmap, 2020. *COVID-19 pandemic has speeded up the implementation of multi-month dispensing* [online]. Available at: https://www.aidsmap.com/news/jul-2020/covid-19-pandemic-has-speeded-implementation-multi-month-dispensing

124 Reidy W. et al. *Expansion of multi-month dispensing of HIV antiretroviral medication in sub-Saharan Africa in the COVID-19 er.* Available at: https://theprogramme.ias2021.org/Abstract/Abstract/966

125 USAID, 2019. Human Resources for Health in 2030, *Expanding multi-month dispensing (MMD) for ART reduces HRH requirements by two thirds for greater treatment adherence and retention* [pdf]. Available at: https://hrh2030program.org/wp-content/uploads/2018/12/Increasing-ART-adherence-and-retention-by-expanding-multi-month-dispensing_Final_16-Dec-2019.pdf

126 See, for example, Enables E, Edwards J.K., Baert S., Etienne W., Khabala K. and Bygrave H., 2016. They just come, pick and go. The Acceptability of Integrated Medication Adherence Clubs for HIV and Non-Communicable Disease (NCD) Patients in Kibera, Kenya. *PLoS ONE*, 11(10): e0164634. DOI: https://doi.org/10.1371/journal.pone.0164634

127 Parrish C., et al., 2021. Estimating the effect of increasing dispensing intervals on retention in care for people with HIV in Haiti. *EClinicalMedicine*, 38 101039. DOI:10.1016/j.eclinm.2021.101039; see also: Kim, Maria H.; Wanless, Richard S.; Caviness, Alison Chantal; et al., 2018. Multimonth Prescription of Antiretroviral Therapy Among Children and Adolescents: Experiences from the Baylor International Pediatric AIDS Initiative in 6 African Countries. *JAIDS Journal of Acquired Immune Deficiency Syndromes*, 78:S71-S80.

128 Aidsmap, Multi-month supplies of HIV medications – recommended during lockdowns – are not authorised in many countries, 12 May 2020, Available at: https://www.aidsmap.com/news/may-2020/multi-month-supplies-hiv-medications-recommended-during-lockdowns-are-not-authorised

129 NCD Alliance, 2021. *UN Declaration on HIV and AIDS commits to 90% of people living with HIV accessing care for NCDs and mental health, Press Release*. Available at: https://ncdalliance.org/news-events/news/un-hlm-hiv-aids-ncds-mentalhealth

130 Patel P., Sabin K. and Godfrey-Faussett P., 2018. Approaches to Improve the Surveillance, Monitoring, and Management of Noncommunicable Diseases in HIV-Infected Persons: Viewpoint, *JMIR Public Health Surveill*, 4(4):e10989 DOI: 10.2196/10989

131 Integration of NCDs into Primary Health Care, n.d. *Conceptual Framework. Strengthening health system equity and efficiency through integration of NDCs into primary health care* [pdf]. Available at: https://www.who.int/ncds/management/Integration_of_NCDs_into_primary_health_care.pdf

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