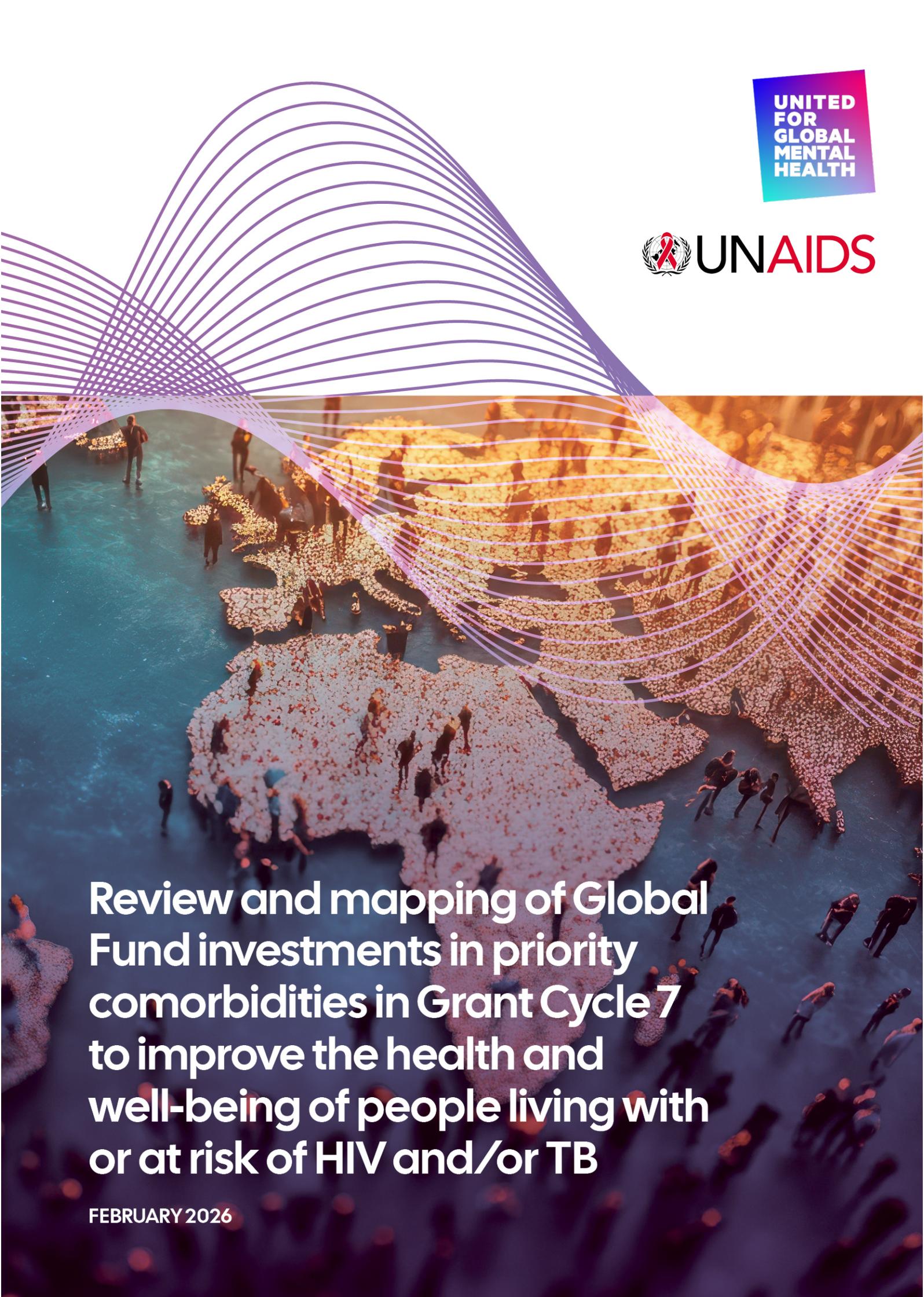




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HEALTH



UNAIDS



**Review and mapping of Global  
Fund investments in priority  
comorbidities in Grant Cycle 7  
to improve the health and  
well-being of people living with  
or at risk of HIV and/or TB**

FEBRUARY 2026

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## Preface

The dual epidemics of human immunodeficiency virus (HIV) and tuberculosis (TB) remain profound challenges to global health. Increasingly, they intersect with a growing burden of comorbidities, such as noncommunicable diseases, mental health conditions and substance use conditions. These comorbidities shape communities' HIV, TB and overall health outcomes, put extra strain on health systems, and affect the well-being of people across the globe.

This report reviews and maps the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund) investments in addressing these comorbidities in the current grant cycle. The report shows that the future of effective HIV and TB programming lies in the integration of comorbidity interventions—both into HIV and TB programmes and, importantly, into primary health care.

Many countries and implementing partners have already taken important steps to incorporate HIV- and TB-related comorbidities into their national responses. The commitments of countries, donors and implementing partners to integrated, person-centred health services are evident in differentiated, tiered service delivery across health facilities and communities.

They are also apparent in strengthened procurement and supply-chain systems; training for prevention, diagnosis and treatment; and community-led service delivery. Yet, despite the Global Fund investments in addressing HIV- and TB-related comorbidities for grant cycle 7, the demand for resources to tackle them still exceeds available funding.

At its core, this integration agenda is about people. Health systems must be more responsive to the full spectrum of people's needs across the whole of their lives. Health systems must reduce fragmentation and deliver care that is equitable, sustainable and grounded in local realities.

As this report demonstrates, momentum is building. The task ahead is to sustain and expand this momentum, finding creative solutions for the integration of health services and systems, particularly amid severe cuts in funding. By doing so, we can accelerate progress towards ending the HIV and TB epidemics, achieve universal health coverage, and strengthen health and community systems to meet the broader challenges of our time.

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## Abbreviations

AIDS	acquired immunodeficiency syndrome
CCM	country coordinating mechanism
COPD	chronic obstructive pulmonary disease
GC	grant cycle
Global Fund	Global Fund to Fight AIDS, Tuberculosis and Malaria
HIV	human immunodeficiency virus
HPV	human papillomavirus
PAAR	prioritized above allocation request
RCM	regional coordinating mechanism
RSSH	resilient and sustainable systems for health
TB	tuberculosis
UNAIDS	Joint United Nations Programme on HIV/AIDS
WHO	World Health Organization

# Executive summary

## **A critical moment for integrated, person-centred health services**

The global health landscape is undergoing a transformation. Historically, the focus of the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund) has been on human immunodeficiency virus (HIV), tuberculosis (TB) and malaria. But its 2023–2028 strategy, *Fighting Pandemics and Building a Healthier and More Equitable World*, reflects a growing consensus that the future of global health is the delivery of integrated, person-centred health services. The increasing burden of noncommunicable diseases (NCDs), cancers, mental health conditions and substance use conditions—particularly among people living with or affected by HIV and/or TB—requires a broader, more comprehensive response. Only then will it be possible to meet the needs of the growing number of people with multiple health concerns. Chronic inflammation, treatment side-effects and lifestyle factors put people living with HIV at heightened risk of developing NCDs. Many people living with HIV also face co-occurring conditions such as cervical and anorectal cancers, depression, anxiety and substance use conditions. People living with TB experience comparable syndemics, including undernutrition, diabetes, depression and substance use conditions. Health programmes need an integrated response to deal effectively with these co-occurring conditions and to maximize health outcomes.

## **Methodology**

To assess progress towards integrated, person-centred service delivery, the Joint United Nations Programme on HIV/AIDS (UNAIDS) and United for Global Mental Health, in collaboration with the Interagency Working Group on Mental Health Integration, reviewed and mapped Global Fund grant cycle 7 (GC7) investments addressing HIV- and TB-related priority comorbidities during the 2023–2025 allocation period. The review was performed from October 2024 to July 2025 and covered 103 countries with approved grant applications from GC7 windows 1–6.<sup>1</sup> It examined national prioritization and financing of comorbidity interventions for NCDs, cancers, mental health conditions and substance use conditions. The review mapped and analysed GC7 total funding for the applicant countries in windows 1–6 by comorbidity,

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<sup>1</sup> Applicants submit their funding requests for the 2023–2025 allocation period during windows within the three-year timeframe.

type of activity and implementation, and disaggregated the findings by allocation amount<sup>2</sup> and prioritized above allocation request (PAAR).<sup>3</sup>

A financial analysis calculated both absolute and percentage funding for comorbidity-related activities. A qualitative analysis explored implementation, coordination and partnership arrangements, technical support needs, and community engagement approaches.

Importantly, the study faced several limitations, including:

- insufficient detail in grant narratives;
- lack of disaggregated budget lines;
- severe restrictions in retrieving financing data.

This constrained the ability to quantify and compare funding for specific comorbidities.

## Country responses

The analysis found that 97% of countries incorporated at least one priority comorbidity into their GC7 funding requests. The total approved investments in priority comorbidities (allocation amount plus PAAR) were US\$ 554.7 million. The largest share targeted NCDs (46.5%), followed by substance use conditions (21.6%), cervical and anorectal cancers (18%), and mental health conditions (13.9%).

Demand from countries significantly exceeded the resources available. More than 89% (US\$ 493 million) of the total approved investments were placed in the PAAR, with only 11% in the allocation amount. Nevertheless, although the exact allocation figures for similar comorbidities in GC6 are unknown, the allocation for GC7 is understood to have increased, reaching US\$ 61.7 million.

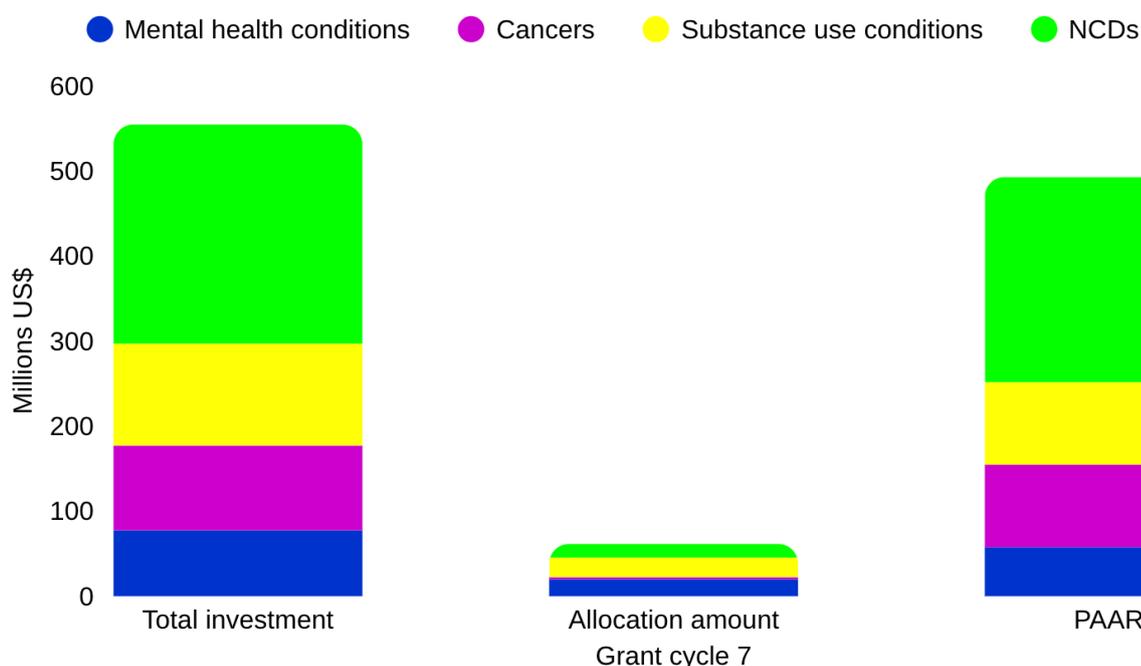
Substance use conditions received the highest allocation, at US\$ 22.9 million (37.2%), against a PAAR of US\$ 96.8 million. Mental health conditions received US\$ 19.8 million (32.1%), against a PAAR of US\$ 57.6 million. NCDs received US\$ 16.3 million (26.5%), against a substantially larger PAAR of US\$ 241.5 million. Cancers received the least, with only US\$ 2.6 million (4.3%), against a PAAR of US\$ 97.1 million.

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<sup>2</sup> The allocation amount is the funding ceiling that the Global Fund makes available to a country for a specific allocation period. It is based on a formula that considers disease burden, income level and other qualitative adjustments. It represents the core amount countries can plan to use in their grant applications.

<sup>3</sup> PAAR is a list of additional, costed interventions that a country proposes beyond the allocation amount. These interventions are technically reviewed and placed on a register of unfunded quality demand, and may be financed later if additional resources (e.g. portfolio optimization, savings or donor contributions) become available.

## GC7 investments in priority comorbidities, by category



The placement of most investments in the PAAR rather than the allocation amount shows countries have a far higher demand for integrating comorbidities into HIV and TB programming than the Global Fund core allocations can cover. This reflects strong prioritization by countries and a significant opportunity for reprogramming above the funding ceiling. Resource constraints, however, may limit how much of this demand can actually be financed.

### Investment patterns

The largest share of approved investments focused on procurement and supply-chain management (26.3%, US\$ 145.7 million). This was followed by training and capacity-building for health workers (25.8%, US\$ 143 million), critical to ensuring the availability of essential medicines and the provision of high-quality care. A moderate share of funding went to salaries and support for health workers (10.1%, US\$ 56 million); screening and diagnosis (9.2%, US\$ 50.8 million); prevention and health promotion (7.4%, US\$ 40.9 million); treatment, care and support (5.4%, US\$ 29.8 million); and harm reduction (4.2%, US\$ 23.1 million).

Programmatic priorities varied by condition:

- NCD initiatives concentrated on procurement, supply chains and workforce training.
- Cancer programmes emphasized salaries and screening.
- Mental health interventions prioritized screening and provider training.

- Programmes for substance use conditions focused on prevention and harm reduction.

Despite these allocations, several critical areas remained underfunded, including cancer treatment, care for survivors of gender-based violence, and community engagement in mental health.

A similar pattern was seen within the actual allocation amounts. The largest share was directed towards capacity-building for health-care providers (35%, US\$ 21.6 million), mostly for NCDs, followed by procurement and supply-chain management for substance use conditions (13.2%, US\$ 8.14 million). Community health and outreach (12.5%, US\$ 7.72 million), particularly for substance use conditions, received the third largest investment, followed by mental health and psychosocial support (11.3%, US\$ 6.99 million) and harm reduction (9.4%, US\$ 5.81 million). Overall, there was a strong emphasis on activities that addressed mental health conditions and substance use conditions in the allocation amount.

### **Gaps in monitoring and accountability**

The review identified a significant gap in the monitoring of comorbidity interventions. Except for programmes for substance use conditions supported by established harm-reduction metrics, most comorbid conditions lacked standardized indicators to assess coverage, quality and outcomes. Where indicators did exist, they primarily measured reach rather than outcomes or effectiveness. This data deficit makes it more difficult to demonstrate impact and secure sustained investment.

### **Community engagement and community-led service delivery are prioritized, but governance and equity gaps persist**

Countries and the Global Fund have shown commendable commitment to investing in community-led interventions within integrated service delivery. This recognizes the vital role communities play in person-centred, high-impact HIV, TB and broader health responses. Few grants prioritized community involvement in policy- and decision-making, however, and the engagement of key vulnerable populations was limited.<sup>4</sup>

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<sup>4</sup> UNAIDS considers gay men and other men who have sex with men, sex workers, transgender people, people who inject drugs, and people in prisons and other closed settings as the five main key populations that are particularly vulnerable to HIV and frequently lack adequate access to services. Key populations can also include women and gender diverse people who are also people who inject drugs, and/or are in prisons or other closed settings, and/or engage in sex work. In all countries, key populations also include people living with HIV. These populations often experience stigma and discrimination, including in the form of laws and policies, all of which act to reduce access to services and increase the risk of acquiring HIV. These people are among the

Only 26 countries made clear investments in community engagement for integrated services, highlighting the need for stronger, more intentional inclusion of affected communities in all aspects of health programming. Similarly, although 20% of comorbidity funding supported community-based interventions, these were largely service-delivery activities, with limited emphasis on participation in policymaking or governance.

## **Integration in practice and limitations**

Countries frequently proposed integrating priority NCD, cancer, mental health and substance use services into existing HIV and TB services, with joint efforts from government, civil society, communities and technical partners. Coordination was to be achieved through multistakeholder engagement, technical working groups, harmonized service delivery, joint training and supervision, and clearly defined partner roles to prevent duplication and enhance accountability. The specificity and depth of these coordination mechanisms varied widely across grants, with some outlining robust strategies and others offering only aspirational goals. The absence of deliberate engagement with primary health-care systems and providers represents a missed opportunity.

Technical assistance remains underutilized. Although 75 countries identified technical assistance needs—particularly in training, policy development and technical advisory support—only 31 included related budget lines, totalling US\$ 11.3 million of the total investment (only US\$ 3.73 million of the allocation amount).

## **Recommendations**

The GC7 experience underscores a critical moment in the HIV response. Demand for integrated, person-centred health services is strong, and countries are embedding comorbidity responses within HIV and TB programmes. Yet, this momentum coincides with funding cuts and competing demands on national health budgets. Without strategic intervention, fiscal constraints risk reversing progress and perpetuating fragmented care.

To address these challenges, the Global Fund and its partners should consider:

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groups most likely to be exposed to HIV. Their engagement is critical to a successful HIV response everywhere—they are key to the epidemic and key to the response. The term “vulnerable populations” may refer to other groups adversely affected by HIV due to social, economic, legal or structural factors, but these are not formally defined as key populations in UNAIDS guidance.

1. aligning fully with current global strategies and guidance, to integrate rights-based interventions for addressing comorbidities with HIV- and TB-focused services and systems, especially within primary health care, to enhance effectiveness, efficiency and sustainability;
2. protecting comorbidity services during GC7 reprogramming to prevent budget and activity cuts from undermining progress on integration;
3. planning proactively for GC8, embedding sustainable, integrated approaches into national health strategies and co-financing frameworks;
4. strengthening monitoring and accountability by developing standardized metrics for coverage, quality and outcomes, and updating the Global Fund performance framework;
5. embedding community engagement in decision-making, budgeting, performance monitoring and direct integrated service delivery; and
6. repositioning and co-investing in technical assistance as a strategic investment to design cost-effective, scalable and data-driven models of integrated, person-centred health services and systems that are equitable, accessible, available and free from stigma and discrimination.

### **From vision to sustainable reality**

GC7 has established there is a strong country demand for the delivery of integrated, person-centred health services beyond HIV, TB and malaria. It is vital to translate this vision into sustainable practice. HIV, TB and comorbidity services must be coordinated, be responsive to lived realities and local contexts, and be supported by resilient primary health care that can withstand the current fiscal pressures and then grow.

Integrating comorbidities into HIV and TB programming will improve HIV, TB and broader health outcomes, and strengthen health—including community health—systems. It will also maximize the efficiency of scarce resources, safeguarding progress towards universal health coverage.

## **Background**

### Epidemiology of priority comorbidities and intersection of HIV with noncommunicable diseases, cervical and anorectal cancers, mental health conditions and substance use conditions

#### *Noncommunicable diseases*

Noncommunicable disease (NCDs)—including hypertension, cardiovascular disease, diabetes, cancers and chronic respiratory disease—account for approximately 74% of global deaths, with the vast majority occurring in low- and middle-income countries (1).

Compared with the general population, people living with human immunodeficiency virus (HIV) are at increased risk of developing a range of NCDs, including hypertension, diabetes, cardiovascular diseases, cancers, chronic obstructive pulmonary disease and kidney disease (2–7). Studies consistently show a high and concerning prevalence of NCDs among people living with HIV in Africa—a large meta-analysis found the prevalence of hypertension to be approximately 25% (8), while the prevalence of diabetes is estimated to be around 8% (9), both figures representing a significant burden of comorbidity in this population.

Up to a quarter of all people living with HIV are estimated to be aged over 50 years (10). As the global population of people living with HIV grows and ages, the burden of NCDs among them is increasing dramatically (11–15). The intersection of HIV and NCDs is strongly influenced by:

- better rates of survival as a result of antiretroviral therapy;
- lifestyle factors;
- adverse events related to some antiretroviral medicines;
- chronic immune activation caused by HIV and conditions associated with ageing (16–18).

Cardiovascular disease is now one of the leading causes of non-AIDS-related morbidity and mortality among people living with HIV. Both HIV and NCDs require health systems that can deliver effective acute and chronic care and support treatment adherence. Comprehensive care that integrates HIV and NCD services reduces morbidity and mortality, enhances well-being and quality of life, and cuts the health-care costs associated with complications and hospitalization (19–21).

It is essential to strengthen NCD prevention, early detection and chronic care for people living with HIV. Preventing, detecting, treating and managing NCDs more effectively, especially in low- and middle-income countries, is a key long-term strategy for successful HIV care and treatment programmes. Chronic HIV care is an opportunity for assessing, monitoring and managing NCDs, including through primary health care.

In September 2025, the World Health Organization (WHO) released updated recommendations stating that hypertension and diabetes care should be integrated into HIV services. This is a change from the 2016 conditional recommendation on service integration to a strong recommendation because of the considerable additional evidence that has accumulated in recent years demonstrating the benefits of integration (22).

### *Cervical cancer*

Cervical cancer, a preventable and curable illness, is the fourth most commonly detected cancer among women worldwide. In 2022, there were 660 000 new cases of cervical cancer. In 2022, about 94% of the 350 000 deaths caused by cervical cancer occurred in low- and middle-income countries (23).

Women living with HIV have a six-fold higher risk of cervical cancer than women who are HIV-negative (24). Cervical cancer is classified as an “AIDS-defining condition” (25). This higher risk of cervical cancer among women with HIV is a result of:

- an increased chance of acquiring human papillomavirus (HPV) infection;
- a lower likelihood that pre-cancer lesions will regress;
- more rapid progression to cancer;
- higher rates of recurrence following treatment (26–28).

Antiretroviral therapy has led to a steep decline in AIDS-related mortality and increased life expectancy. At the end of 2023, an estimated 20.3 million women aged 15 years and older were living with HIV globally, representing 53% of all people living with HIV (29).

About 5% of all cases of cervical cancer are attributable to HIV. The proportion of women with cervical cancer who are living with HIV differs widely by region because of the varying prevalence of HIV. In areas with high HIV rates, the proportion of cervical cancer attributable to HIV is high—40% or more in nine high-prevalence countries, compared with less than 5% in 122 countries with lower HIV rates (24).

WHO suggests using the following strategy for cervical cancer prevention among women living with HIV: HPV-DNA detection in a “screen, triage and treat” approach starting at the age of 25 years, with regular screening every three to five years (30). All programmes should ensure:

- women living with HIV are offered cervical cancer screening as part of standard HIV care;
- women who have screened positive for cervical pre-cancer or cancer are treated or managed adequately;
- screening registries and call-and-recall efforts are made to encourage women to return for treatment and follow-up;
- strong links are established at all levels of the health system between HIV and cervical cancer services for cross-referral (30).

Implementing comprehensive, integrated services—including for cervical cancer, HIV, and sexual and reproductive health more broadly—that meet the needs of women living with HIV requires interventions that overcome barriers to service uptake, use and continued engagement (30).

### *Anorectal cancer*

Anorectal cancer is the fourth most common cancer among people living with HIV (31). Research shows that people living with HIV have a higher prevalence of oncogenic HPV types, are less likely to naturally clear the virus, and experience more rapid progression to cancer compared with people who are HIV-negative (31). Anal dysplasia, a precursor to anal cancer caused by HPV, is increasingly observed in men, particularly gay men and other men who have sex with men, and especially those living with HIV (32).

Globally, gay men and other men who have sex with men living with HIV have a 45- to 80-fold higher risk of developing anal cancer compared with the general male population (33). In South Africa, anal HPV infection has been reported in more than 70% of gay men and other men who have sex with men living with HIV, with high-grade anal intraepithelial neoplasia observed in 25–30% of these (34). A study in Thailand found an anal HPV prevalence rate of 85% among gay men and other men who have sex with men living with HIV and a high burden of anal dysplasia (35). In high-income countries, such as Australia and the United States of America, the incidence of anal cancer among gay men and other men who have sex with men living with HIV is estimated at 45–131 cases per 100 000 person-years, compared with less than two cases per 100 000 person-years in the general male population (36, 37).

These data underscore the need for targeted prevention, screening and early treatment interventions for HPV-related anal neoplasia among gay men and other men who have sex with men and people living with HIV.

### *Mental health conditions*

It is estimated that nearly one in every seven people (1.1 billion people globally) are living with a mental health condition (38). Mental health conditions are disproportionately common among people from key populations and people living with HIV (18). Some mental health conditions are associated with an increased risk of HIV, and some are linked with increased AIDS-related mortality (18). Mental health conditions can delay access to and decrease the effectiveness of HIV prevention, testing and care, and reduce adherence to HIV treatment and care. At the same time, treatment for common mental health conditions such as depression and anxiety can improve HIV prevention, treatment adherence and outcomes, especially when combined with adherence skills training (39).

Depression is common among people living with HIV, although prevalence rates vary across regions. A 2019 review found 36% of people living with HIV in Africa experience depressive disorders (40) and 15% have probable major depressive disorders (41); a global review found a 31% prevalence rate of depression in patients with HIV/AIDS (42). Depression rates as high as 80% have been reported among people living with HIV in Africa (43), although this varies by study. A 2024 global review reported a 31% prevalence of depression among people living with HIV (44). The 2023 People Living with HIV Stigma Index Global Report highlights that 84.8% of people living with HIV reported experiencing internalized stigma, which is a significant contributor to depression and other mental health problems (45). The burden of mental health conditions is disproportionately high among people from key populations and young people—groups already often at elevated risk of HIV (46, 47).

There has been intense analysis of the relationship between mental health conditions and antiretroviral therapy adherence. Research has clearly identified depression as one of the strongest predictors of poor adherence to antiretroviral therapy (48). Depression negatively impacts HIV treatment adherence and care, and it often goes unrecognized in clinical settings. A large meta-analysis found a significant association between depression and antiretroviral therapy non-adherence across 95 independent samples (49). It revealed that the likelihood of achieving good (above 80%) adherence was 42% lower among people with depressive symptoms (compared with people

without such symptoms) across 111 independent samples. This robust finding was consistent across low- and middle-income countries (50, 51).

Integrating mental health services into HIV care can improve access and efficiency (52), but challenges such as resource shortages and lack of funding persist. In low-income countries, up to 85% of people with severe mental health conditions lack treatment. WHO recommends integrating mental health services—including for depression, anxiety and harmful use of alcohol—into routine HIV services (22).

### *Substance use conditions*

People who use drugs may experience drug dependence, intoxication, withdrawal and overdose. Injecting drug use is associated with a range of conditions, including HIV, viral hepatitis, tuberculosis (TB), septicaemia and bacterial endocarditis. The Joint United Nations Programme on HIV/AIDS (UNAIDS), the United Nations Office on Drugs and Crime and WHO recommend a comprehensive package of HIV prevention, treatment and care for people who inject drugs. These interventions include:

- needle–syringe programmes;
- opioid agonist maintenance therapy;
- HIV testing and counselling;
- antiretroviral therapy;
- preventing and treating sexually transmitted infections;
- condom distribution programmes;
- preventing and treating viral hepatitis;
- preventing, diagnosing and treating TB (53).

UNAIDS and WHO updated this package to include naloxone distribution to manage opioid overdose, and measures to reduce the structural barriers facing people who use drugs and people from other key populations in accessing health services (54, 55). These interventions included revising legislation that criminalizes the possession and use of drugs, and addressing violence, stigma and discrimination in health-care and justice settings.

The link between injecting opioids and the spread of HIV is well established. Growing evidence shows a similar connection between HIV transmission and the use of other drugs such as amphetamine-like stimulants. A form of sexualized drug use—“chemsex”—increases the risk of HIV and sexually transmitted infections, including hepatitis C virus (56).

Among the most common conditions affecting people with HIV is harmful use of alcohol (57). In 2019, globally, an estimated 400 million people aged 15 years and over had harmful alcohol-use conditions, including approximately 209 million people with alcohol dependence (58). These conditions are linked with:

- a higher risk of depression and anxiety (59, 60);
- significantly impaired adherence to antiretroviral therapy, reducing the likelihood of viral suppression (61, 62);
- an increased risk of TB and accelerated HIV progression due to immune suppression and delayed access to care (63, 64).

Health outcomes can be improved and global HIV targets achieved by addressing harmful use of alcohol as part of HIV care. To improve antiretroviral therapy adherence among people living with HIV who have alcohol use-related conditions, WHO recommends community-based follow-up, longer antiretroviral therapy refill intervals, social support, and co-located services for substance use conditions.

Integrating rights-based HIV services with mental health, neurological and substance use services is the best way to improve health outcomes. This integrated approach—which should span prevention, screening, counselling and treatment—promotes effective, affordable, rights-based, person-centred and equitable care. HIV services should also be linked with broader psychosocial support systems—including social, legal, workplace and housing services—as part of a package of comprehensive care. This will help meet people’s holistic health needs and advance progress towards universal health coverage.

### Epidemiology of priority comorbidities and intersection of TB with NCDs, mental health conditions and substance use conditions

Globally, TB remains one of the world’s leading causes of death due to a single infectious agent (65). The main TB-related comorbidities and health-related risk factors are HIV, harmful use of alcohol, undernutrition, tobacco, diabetes mellitus, mental health conditions, silicosis and viral hepatitis (66). To end the TB epidemic, it is vital to address these risk factors and comorbidities. This should also involve structuring care around individual needs rather than specific diseases.

#### *Diabetes mellitus*

Diabetes mellitus is a significant risk factor for TB, with 15–20% of people living with TB also having diabetes (67). People with diabetes are three times more likely to have TB than people without diabetes (68) and are at higher risk of multidrug-resistant TB

(69). People with both TB and diabetes are twice as likely to die during TB treatment and have a four-fold risk of TB relapse after completing their treatment (70, 71). Diabetes increases the risk of TB-related mortality by 1.5–2.5 times (67). The prevalence of both TB and diabetes mellitus is 10–40% globally (72). In 2020, an estimated 369 000 cases of TB were attributable to diabetes, and in 2019 more than 15% of people living with TB were estimated to have diabetes, compared with 9.3% among the general adult population aged 20–79 years (73). This equates to about 1.5 million people with both TB and diabetes who required coordinated care and follow-up to optimize the management of both conditions. It is estimated that diabetes rates will increase globally by 50% between 2019 and 2045, with a median increase of 99% [69–151%] in countries with a high burden of TB (73 ). In 2011, the International Union Against Tuberculosis and Lung Disease and WHO published the Collaborative Framework for Care and Control of Tuberculosis and Diabetes (74). The Framework includes establishing mechanisms for collaboration, detection and management of TB among people with diabetes, and detection and management of diabetes among people living with TB.

### *Tobacco use*

Globally, an estimated 991 million people aged 15 years or over smoked tobacco in 2020 (28.9% of men, 5.2% of women) (75, 76). Tobacco use is disproportionately high among people from key populations affected by HIV and/or TB, particularly in low- and middle-income countries. In the 10 countries with the highest TB incidence—many of which also have high HIV rates—the median smoking prevalence is 35% [18–45%] among men and 2% [1–3%] among women (77). Tobacco use almost doubles the risk of developing TB. In 2023, approximately 700 000 new cases of TB were attributable to tobacco use (78).

Tobacco use remains a major yet under-recognized comorbidity among people living with HIV for whom smoking compounds the risk of TB infection and progression. Smoking has been associated with poorer antiretroviral therapy adherence and increased non-AIDS-related morbidity and mortality, including cardiovascular and respiratory complications (75, 79). In addition, tobacco use may contribute to systemic inflammation and immune suppression in people living with HIV, undermining treatment.

WHO recommends that tobacco screening and cessation support be integrated into HIV and TB care as part of routine service delivery (80).

### *Chronic obstructive pulmonary disease*

Chronic obstructive pulmonary disease (COPD) is a common comorbidity among people living with TB, with an estimated 10–30% also having COPD (81, 82). People with COPD are at higher risk (1.5–2.5 times) of developing TB, compared with the general population (83, 84). The coexistence of TB and COPD significantly increases mortality, with mortality rates being 1.2–2.2 times higher in people with both conditions compared with people with TB without COPD (83, 85).

### *Cardiovascular disease*

Cardiovascular disease is present in 5–15% of people living with TB (77, 86). A systematic review found that people living with TB were 1.5 times more likely to experience serious cardiovascular events compared with people without TB (87).

### *Undernutrition*

People with malnutrition are two to five times more likely to develop TB than people with adequate nutrition.<sup>5</sup> People with undernutrition are three times more likely to develop TB than people without undernutrition (88).<sup>6</sup> Undernutrition accounted for an estimated 1.9 million new episodes of TB in 2020, making it one of the most significant drivers of TB (77). Undernutrition is one of the most prevalent NCDs among people living with TB (20–50% of people diagnosed with TB). Undernutrition dramatically worsens TB outcomes, with comorbidity leading to a two to five times higher risk of mortality. The risk of TB and the severity of lung disease increase as body mass index decreases (89, 90). Undernutrition is likely to cause poorer TB treatment outcomes and TB-related deaths, with increased weight as a predictor of better treatment outcomes (91, 92).

Since 2013, WHO has recommended nutritional status assessment and counselling and co-management of TB and undernutrition (93). WHO also recommends screening for TB among people with undernutrition (94).

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<sup>5</sup> Malnutrition is a broad term that refers to deficiencies, excesses or imbalances in a person's intake of energy and nutrients. Undernutrition is a specific form of malnutrition characterized by insufficient intake of calories and protein, which can lead to underweight, stunting, or wasting. All undernutrition is malnutrition, but not all malnutrition is undernutrition, because malnutrition also includes overnutrition (excess) and micronutrient imbalances.

<sup>6</sup> In the context of NCDs, nutrition interventions typically focus on addressing unhealthy diets characterized by excessive intake of sugar, salt and unhealthy fats, which contribute to obesity, diabetes, cardiovascular diseases and other chronic conditions. In contrast, within the context of TB, the primary nutritional concern is undernutrition, which weakens the immune system, increases susceptibility to infections, and worsens disease outcomes. Undernutrition is both a risk factor for and a consequence of TB, requiring targeted nutritional assessment, counselling and support as part of comprehensive disease management.

### *Mental health conditions*

Mental health conditions such as depression, anxiety and post-traumatic stress disorder are observed in 10–30% of people living with TB (95–97). Having a mental health condition increases the risk of developing TB by 1.2–2.2 times. The comorbidity of a mental health condition and TB poses significant challenges for treatment and management, with a mortality risk 1.5–3.5 times higher in people with both conditions.

This comorbidity is detrimental to infection control practices and a person's capacity to adhere to their treatment. It can also increase the risk of poor TB treatment outcomes and low overall health-related quality of life (98, 99). Studies suggest that depression may independently increase the risk of developing TB (100–102). Several anti-TB medicines are associated with depression, anxiety or psychosis (98, 103, 104), which may lead to people stopping taking their medicines or taking additional psychopharmacological medicines. There is an increased risk of depression, anxiety or psychosis in people with multidrug-resistant TB (105, 106).

TB often affects people who are already socially vulnerable. TB-related stigma can intersect with and exacerbate other social stigmas related to poverty, mental health conditions, HIV coinfection, substance use conditions, incarceration or the use of social protection services (107). TB-related stigma and discrimination can damage the physical and mental health of people living with TB, even in people without a history of mental health conditions. Other issues created by TB diagnosis or treatment, such as loss of regular income, can worsen mental health conditions.

The prevention, early identification, monitoring and treatment of mental health conditions are essential to ensure alleviation of mental health conditions and positive TB treatment outcomes (108).

### *Substance use conditions*

People who use drugs have an elevated risk of TB infection and active TB disease, irrespective of their HIV status. TB is a leading cause of HIV-related mortality among people who inject drugs (109–111). People living with TB have a higher risk of developing drug-use conditions. These conditions are also associated with comorbidities such as HIV, viral hepatitis and mental health conditions (112).

People with drug-use conditions are more likely to have been in prison or other closed settings at least once (113), which increases their exposure and vulnerability to TB and

other communicable diseases. Criminalization, stigma and discrimination marginalize people, impeding their access to health care, including TB services (114, 115). This is exacerbated by the lack of prevention, treatment and care for drug use conditions, including opioid agonist maintenance therapy (116). Common comorbidities such as HIV, mental health conditions and viral hepatitis may further delay TB treatment for people who use drugs and require careful clinical management to minimize drug–drug interactions and optimize treatment adherence and success.

The harmful use of alcohol significantly increases the risk of developing TB (117), because it suppresses macrophage, impairs T-cell and immune function, increases oxidative stress, and reduces adherence to TB treatment (118, 119). Harmful use of alcohol is associated with malnutrition, which increases a person’s risk of TB (120). People with alcohol-use conditions have a two- to three-fold higher risk of TB infection compared with the general population, with use of alcohol accounting for nearly 10% of cases of TB globally (118). Harmful use of alcohol contributes to delayed TB diagnosis, higher rates of drug resistance, and poorer treatment outcomes (121, 122). Public health interventions targeting harmful use of alcohol could substantially reduce TB incidence, particularly in high-burden regions (123).

## **Rationale and purpose of the study**

Globally, there has been a series of collective actions to address HIV- and TB-comorbidities. There is growing recognition of the need for less fragmented and more comprehensive, integrated and person-centred health services that address people’s multiple health needs across their life course. This has translated into thinking beyond diseases and putting people and communities and their needs at the centre of health systems and HIV and TB responses.

The Global Fund’s bold and ambitious 2023–2028 strategy—Fighting Pandemics and Building a Healthier and More Equitable World—has taken a step in this direction, acknowledging its growing commitment to integrated, person-centred, high-quality health services and systems. The strategy specifically highlights the need for “people-centred services that consider individuals’ health needs holistically. Care is organized around the health needs and expectations of people and considers individuals as participants as well as beneficiaries of trusted health systems” (124).

The Global Fund strategy specifically notes that “integrated health services should be managed and delivered in a way that addresses the range of individuals’ health needs by ensuring that people receive a continuum of health promotion, disease prevention,

diagnosis, treatment, disease management, rehabilitation and palliative care services, at the different levels, providers and sites of care within the health system,” calling out the need to deliver “integrated services to prevent, identify and treat advanced HIV disease, comorbidities and coinfections” and “to improve the quality of TB services across the TB care cascade including through management of comorbidities” (124).

The strategy is aligned with:

- the UNAIDS Global AIDS Strategy 2021–2026 (125) and the 2025 global HIV targets;
- the WHO global health sector strategies on HIV, viral hepatitis and sexually transmitted infections for 2022–2030 (126);
- the 2021 WHO Consolidated Guidelines on HIV Prevention, Testing, Treatment, Service Delivery and Monitoring (127);
- the 2015 WHO End TB Strategy (128);
- the 2023 WHO Operational Handbook on TB (129).

In February 2023, the Global Fund issued a new guidance note on supporting health and longevity among people living with HIV (130). This note—along with other information notes on HIV, TB and resilient and sustainable systems for health (RSSH) (131, 132) and other guidance on specific areas of integrated person-centred services—has been used by applicants preparing HIV, TB, joint HIV/TB and RSSH funding requests for GC7. This guidance, which was available to far more countries in GC7 than in GC6, helped applicants identify the most significant comorbidities and relevant interventions for people living with or at risk of HIV and/or TB, such as interventions to promote antiretroviral therapy adherence and retention.

UNAIDS and United for Global Mental Health, in coordination with the Interagency Working Group on Mental Health Integration, conducted a mapping study to review approved investments to address HIV- and TB-related comorbidities in GC7 grant-recipient countries. The objectives of the study were to:

- understand the nature and focus of the prioritized and funded activities and the associated funding levels;
- identify countries’ articulated gaps and needs, including their technical support needs.

These data are essential for optimizing resource use and guiding future investments. The data will help to ensure integrated approaches for service delivery and systems meet the complex needs of people living with or at risk of HIV and/or TB, advancing

the Global Fund and country goals for integrated, person-centred health services and systems. Findings from the pre-reprogramming period of GC7 serve as a basis for assessing the current landscape of investments across HIV, TB and priority comorbidities. They will help to identify policy, programmatic and technical support needs and strengthen the case for optimizing co-investments to deliver integrated, person-centred services before the announced reprogramming exercise.

## Methodology

This study was conducted for all HIV, TB and RSSH grants for countries that submitted their funding requests in windows 1–6, approved by the Grants Approval Committee in GC7. Activities and funding were tracked for three priority groups of comorbidities:

- cervical and anorectal cancer (for HIV grants);
- mental health conditions and substance use conditions;
- selected NCDs.<sup>7</sup>

The study involved a detailed review of grant documents. It assessed the scope and scale of planned and approved activities related to addressing HIV- and TB-related comorbidities for people living with HIV and/or TB, and people at risk of these communicable diseases. It looked at:

- Global Fund funding levels;
- co-financing and sustainability mechanisms;
- partnerships and proposed community engagement approaches;
- performance targets and indicators;
- identified technical support needs.

The study also aimed to synthesize successes, challenges, gaps and lessons learned to inform grant implementation, resource and technical support mobilization, advocacy and other processes that address country needs. To guide this review, a standardized template was developed to extract and analyse information from the grant documents.

## Study questions

The study aimed to answer the following key questions:

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<sup>7</sup> The Global Fund guidance encourages countries to align NCD services with their epidemiological contexts and the WHO Package of Essential Noncommunicable Disease Interventions for primary care, focusing on cardiovascular diseases (including hypertension), chronic respiratory diseases, diabetes and early cancer diagnosis (133).

- How many countries applying for Global Fund grants in GC7 included priority comorbidities in their HIV, TB or RSSH grants?
- What specific activities were included in the grants related to these priority comorbidities?
- Which populations in addition to people living with HIV and/or TB (e.g. key and other vulnerable populations, if any) and which subgroups within those were the focus of the approved activities for comorbidities in the grants?
- What level of funding was allocated, to what activities, and to which implementers in the corresponding grant agreement? Were any co-financing or cost-sharing sources identified?
- What targets or indicators have been proposed for tracking and monitoring performance and results?
- What are the implementation, integration, coordination and partnership (e.g. across implementing partners or programmes) arrangements in the corresponding grant agreement?
- What technical support needs were identified and planned for in the grants?
- What kind of community engagement has been proposed for implementing the respective activities and interventions?

## Document selection

Data were collected from primary sources to help provide comprehensive and reliable findings. The primary sources included the following approved Global Fund grant application documents:

- approved funding requests;
- approved grant detailed budgets;
- approved grant performance frameworks;
- implementation arrangements maps.

## Grants review and data extraction

A structured data extraction template reflecting the key review questions was designed to capture qualitative and quantitative information across all areas of focus. The template included categories and subcategories to guide the data extraction (see Annex 1).

## Review process

A thorough desk review was conducted to extract relevant data from the identified primary sources using a structured data extraction template. Documents were

reviewed and searched using predefined keywords related to the study focus areas (priority NCDs, mental health conditions, substance use conditions, cervical and anorectal cancers) (Table 1). The keywords for each category were selected and refined during a pilot data extraction exercise that involved a review of selected grant documents before commencing the main study. Relevant sections of the grant documents were identified, highlighted and organized into structured Microsoft Excel® files for efficient sorting and filtering. Key information was manually extracted and summarized in the data extraction template, ensuring consistency and accuracy. This systematic approach prioritized relevance and attention to detail, resulting in a comprehensive dataset ready for further analysis and reporting.

Table 1. Predefined keywords related to priority comorbid NCDs, cervical and anorectal cancers, mental health conditions and substance use conditions

NCDs	Mental health conditions and substance use conditions	Cervical and anorectal cancers
Noncommunicable diseases NCDs	Mental health	Cervical cancer Cervical
Diabetes DM	Substance use conditions Alcohol use Drug use	Anal cancer Anal
Hypertension High blood pressure	Drop-in centres DIC	Cancer malignancies
Tobacco use	People who use drugs People who inject drugs Chemsex	
Cardiovascular disease CVD Heart disease	Overdose prevention and management Naloxone	HPV Human papillomavirus
Chronic respiratory diseases COPD	Drug and other substance use conditions	Cervical cancer screening Cervical cancer treatment Cervical pre-cancer treatment
Chronic obstructive pulmonary disease	Psychosocial support Stress Social assistance Emotional support	LEEP Thermocoagulation Thermal ablation
Chronic kidney disease	Anxiety Depression Post-traumatic stress disorder PTSD Severe mental illness	Pre-cancerous cervical lesions Pre-cancer
Renal disease	Opioid substitution therapy OST Medication-assisted treatment MAT clinics Needle-syringe programmes NSP Methadone substitution therapy	HPV screening

NCDs	Mental health conditions and substance use conditions	Cervical and anorectal cancers
	MST Harm reduction Opioid agonist maintenance treatment OAMT	
Liver disease	Drug and alcohol use/abuse	Visual inspection with acetic acid VIA
Malnutrition Undernutrition	Psychotherapy Counselling	Cancer
Nutritional disorders	Psychologists Psychiatric	Pap smear
Obesity	Harm reduction	
Dyslipidaemia Cholesterol HDL LDL Triglycerides	IDU, IDU kits	
	Pharmacological assistance in substance use treatment PAS	

The study involved a review of grant documents from countries—country coordinating mechanisms (CCMs) and regional coordinating mechanisms (RCMs)—across multiple application windows: window 1 (n = 18), window 2 (n = 39), window 3 (n = 15), window 4 (n = 6), window 5 (n = 19) and window 6 (n = 6).

### Quality assurance

To ensure the accuracy of data on GC7 investments in the priority comorbidities, a structured quality assurance process was implemented. The process began with dual data extraction, whereby a primary reviewer (lead consultant) collected information using a structured data extraction template, which was followed by an independent cross-check by a secondary reviewer (data analyst). Discrepancies were resolved through consensus, ensuring consistency in the dataset. This step minimized human error and enhanced data integrity before further validation.

The extracted data were verified against multiple data sources, including the approved funding requests, grant performance frameworks and detailed grant budgets. Triangulation across these documents helped to confirm the completeness and correctness of the records. Uncertainties such as missing details were documented transparently and shared with UNAIDS and United for Global Mental Health for further follow-up. Where applicable, additional data sources were provided from the Global Fund.

To ensure data integrity and maintain a transparent record of all modifications, the process incorporated robust version control through a secure collaborative data platform for centralized dataset management. This system was integrated with a workflow and task review tool to monitor task completion and systematically log all changes.

A technical advisory group conducted peer review of the report drafts to validate their alignment with global standards and terminology, and shared expert feedback and input.

## Quantitative data analysis

Following data extraction, all information was systematically organized in Excel files using a structured format based on key variables, including:

- unique data identifier
- country name and code
- grant type
- disease/condition component
- comorbidity inclusion status
- target populations
- funding allocations
- performance indicators
- implementation modalities.

The analysis used pivot tables and advanced filtering to conduct initial descriptive assessments to determine:

- the number of countries applying for Global Fund grants in GC7;
- the grants integrating comorbidities;
- the associated total investments disaggregated by allocation amount<sup>8</sup> and prioritized above allocation request (PAAR).<sup>9</sup>

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<sup>8</sup> The allocation amount is the funding ceiling that the Global Fund makes available to a country for a specific allocation period. It is based on a formula that considers disease burden, income level and other qualitative adjustments. It represents the core amount countries can plan to use in their grant applications (134).

<sup>9</sup> PAAR is a list of additional, costed interventions that a country proposes beyond the allocation amount. These interventions are technically reviewed and placed on a register of unfunded quality demand, and may be financed later if additional resources (e.g. portfolio optimization, savings or donor contributions) become available (135).

The Excel-based financial analysis included calculations of absolute values and percentage allocations for comorbidity-related activities. Comparative analysis across grants and countries further revealed which countries included and prioritized activities to address comorbidities in their funding applications.

For more comprehensive examination, the dataset was imported into SPSS. The software's multiple response set functionality captured the complete spectrum of comorbidity-related activities and the diversity of focus populations in each grant.

This analytical approach facilitated identification of cross-cutting patterns in comorbidity inclusion across different grants. The SPSS output generated specific metrics, including focus populations and comorbidities—particularly priority NCDs, cervical and anorectal cancers, mental health conditions and substance use conditions. It also highlighted institutions proposed by countries for implementing the grant-supported activities.

### Qualitative analysis

The study used qualitative content data analysis guided by Braun and Clarke's six-step thematic analysis framework to systematically identify, analyse and report patterns within textual data (136).

To improve the rigor and efficiency of the analysis, Nvivo 15 software was used to systematically examine grant documents, enabling advanced data management, coding and flexible thematic exploration.

This approach specifically addressed three key areas:

- implementation arrangements by analysing the partnership structures and coordination mechanisms described in grant documents;
- technical support needs by identifying recurring capacity gaps and planned assistance;
- community engagement by coding proposed community activities and participatory approaches.

The analysis used word-based techniques, such as identifying word repetitions and key indigenous terms, to uncover recurring themes and patterns across the dataset. This strengthened the qualitative analysis by systematically revealing patterns that might otherwise have required labour-intensive manual review.

## Data preparation and familiarization

The process began with the development of detailed transcripts for each grant recipient country, ensuring accurate and comprehensive documentation of qualitative insights.

These transcripts were imported into NVivo 15, which facilitated the systematic organization and retrieval of data. The consultants read and reread the transcripts to gain an in-depth understanding of the content. This immersion in the data was critical for identifying initial patterns and insights.

## Structured coding process

Using NVivo 15, a structured coding process was implemented to identify meaningful data segments. A deductive coding approach was used, whereby codes were initially developed based on preliminary data readings. These pre-established codes were then systematically applied to the dataset.

To increase transparency and facilitate pattern recognition, the coding framework was visualized through NVivo 15 hierarchy charts and matrix queries. These visualizations illustrated relationships between codes, highlighted recurring themes, and identified gaps in the data. For example, word-frequency clouds were generated to depict the dominance of specific themes, and cross-tabulation matrices compared code distributions across demographic subgroups (country, region, grant type, grant application window).

This integration of deductive coding with visual analytics strengthened the rigor and interpretability of the findings. Codes were continuously refined and expanded as the analysis progressed, capturing the depth and nuance of the qualitative data (see Annex 2).

## Theme development and refinement

The coded data were systematically reviewed to identify potential themes by grouping similar and recurring codes. The NVivo 15 visualization tools, such as word clouds and hierarchy charts, were used to identify broader patterns and relationships across variables.

This process ensured key qualitative insights were retained, while highlighting overarching themes. These themes were further refined and validated by cross-checking them against the raw data to ensure consistency, relevance and accuracy.

This iterative process involved revisiting transcripts and codes within NVivo 15 to confirm that the themes accurately represented the dataset.

### Illustrative excerpts and reporting

To support and illustrate each theme, powerful excerpts from the transcripts were selected and analysed. The NVivo 15 query and retrieval functions enabled the efficient extraction of relevant quotes and examples, ensuring the final report was grounded in the data. These excerpts were used to provide concrete evidence and context for the identified themes, enhancing the credibility and richness of the findings.

## Limitations of the study

### *GC7 window 1–6 focus*

The study was limited to funding requests submitted during GC7 application windows 1–6. These included window 1 (20 March 2023), window 2 (30 May 2023) and window 3 (21 August 2023) in 2023; and window 4 (5 February 2024), window 5 (29 April 2024) and window 6 (9 September 2024) in 2024. Funding requests submitted under window 7 (17 February 2025) were not included because they had not undergone technical review panel assessment when the process began.

### *Lack of health product information*

The absence of the health product management tool among the grant documents reviewed across GC7 windows 1–6 made it more difficult to accurately analyse the costing of health products within the proposed investments related to the priority comorbidities. The health product management tool can detail the quantities, unit costs and specifications of health products; its omission constrained efforts to quantify and map investments related to diagnostics, medicines and other essential commodities for priority comorbidities. This reduced the precision of the investment mapping exercise, particularly in understanding the scope and scale of health product support for priority comorbidities.

### *Insufficient detail*

The documents reviewed were primarily produced for purposes other than research, such as programming, reporting or administration (e.g. programme management, implementation and monitoring). As a result, they often lacked the detail required to fully address some of the research questions. This made it difficult to extract insights,

particularly in areas requiring nuanced or in-depth information. The following approaches were applied to mitigate this limitation:

- Triangulation of data sources: multiple data sources and documents were reviewed and compared, including grant proposals and budgets, performance frameworks, and Global Fund Technical Review Panel feedback. This triangulation helped piece together a more complete picture of how comorbidities were prioritized in GC7.
- Thematic coding of available data: thematic coding and qualitative analysis techniques were applied to extract and synthesize relevant information, and to identify patterns and gaps across different documents.
- Use of proxy indicators: in the absence of direct information on specific comorbidities, proxy indicators were used to infer the extent of investment and programming focus.
- Contextualization using other sources: findings from Global Fund documents were contextualized using country-specific epidemiological data, WHO guidelines or academic literature to enrich the analysis and help bridge evidence gaps.

### *Low retrievability*

During the study period, certain documents containing critical co-financing information were inaccessible or could not be retrieved. This restricted access to data on co-financing sources, limiting the ability to analyse and understand the extent to which countries invest domestic and other partner resources in interventions and activities addressing HIV- and TB-related comorbidities. This gap in retrievability constrained the study's capacity to provide a complete picture of domestic and other partners' financing patterns in comorbidity interventions.

### *Lump sum budgets for integrated or multiple activities*

One of the key limitations was the use of lump sum budgets for integrated or multiple activities within the Global Fund grants. The absence of disaggregated budget lines for specific comorbidity-related interventions made it challenging to accurately quantify the finances allocated to them. This meant it was difficult to assess the exact prioritization of comorbidities within the grants and to draw precise comparisons across countries or funding streams. To address these challenges, a qualitative and proportional attribution approach was adopted. Where exact disaggregation was not possible, investments were categorized based on the primary intended outcomes of the activity or the target population reached. In some cases, expert judgement and programmatic context were used to estimate the share of funding contributing to

each comorbidity. This allowed for a more nuanced understanding of the allocation, even in the absence of precise financial breakdowns.

### *Inconsistencies in terminology for comorbidities and activities*

The varied terminology for comorbidities and respective activities used by different applicants limited data extraction in several ways. There were notable inconsistencies in the terms used across application documents, including:

- variation in keywords and phrases used to describe the same comorbidity, intervention, activity or concept, which complicated data identification and summary;
- lack of standardized terminology, leading to inconsistencies in data classification and analysis.

The inconsistent use of terms related to mental health and psychosocial support was a challenge. Many applicants used these terms interchangeably or inconsistently. For example, some described psychosocial support as a standalone intervention, while others included it within a broader integrated mental health and psychosocial support service package, as a mitigation measure for a continuum of mental health comorbidities. These inconsistencies made it challenging to classify and quantify activities accurately.

To address this challenge, a standardized coding framework was applied during the data review process. This framework categorized mental health and psychosocial support activities based on their function and integration level, regardless of the terminology used by applicants. Mental health and psychosocial support was approached in the exercise as a cross-cutting mitigation measure for mental health conditions as comorbidities. Activities were classified according to whether they represented standalone psychosocial support, integrated mental health and psychosocial support interventions, or mental health services.

This meant interventions could be classified and quantified more consistently, despite the variability in language across submissions.

Mitigation measures for other data included developing standardized terminology, keywords and a codebook that facilitated data extraction and analysis, and using controlled vocabularies and ontologies to help standardize terminology and improve data integration.

Data integration challenges included:

- difficulty in merging datasets from different applicants, making it harder to analyse and draw conclusions;
- inconsistent data formats and structures that further complicated data integration and analysis—this was addressed by harmonizing data formats and structures to facilitate data integration and analysis.

### *Calculation of investments in the priority comorbidities*

Several factors limited the calculation of investments in the priority comorbidities. Many of the proposed activities were combined or grouped across multiple comorbidities and grant disease components (e.g. capacity-building, community outreach, gender-based violence interventions). As a result, these investments could not be attributed to a specific comorbidity or particular category of intervention, leading to an underestimation of funding for individual conditions or activities.

Several proposed activities were broader health system investments (e.g. procurement and supply-chain management, monitoring and evaluation, human resources for health) rather than targeted interventions for specific comorbidities. Consequently, these were not allocated exclusively to any single condition or a category of interventions or activities.

Due to the grouping of the proposed activities and budgeting, funding allocations were often presented as lump sums without disaggregation by comorbidity or type of activity, further complicating accurate attribution.

## **Findings**

### Quantitative findings

A total of 103 CCM/RCM applications were reviewed. The findings in this section are presented in response to the following key questions:

- How many countries applying for Global Fund grants in GC7 included priority comorbidities in their HIV, TB or RSSH grants?
- What specific activities were included in the grants related to these priority comorbidities?
- Which populations in addition to people living with HIV and/or TB (e.g. key and other vulnerable populations, if any) and which subgroups within those were the focus of the approved activities for comorbidities in the grants?

- What level of funding was allocated, to what activities and to which implementers in the corresponding grant agreement? Were any co-financing or cost-sharing sources identified?
- What targets or indicators were proposed for tracking and monitoring performance and results?

### Inclusion of priority comorbidities in GC7 grants

Of 103 CCM/RCM applications analysed in Figure 1, 100 (97%) included priority comorbidities in their HIV, TB or RSSH grants (Figure 6). This highlights a strong focus on prioritizing comorbidities as part of integrated, person-centred health services in country commitments and Global Fund investments.

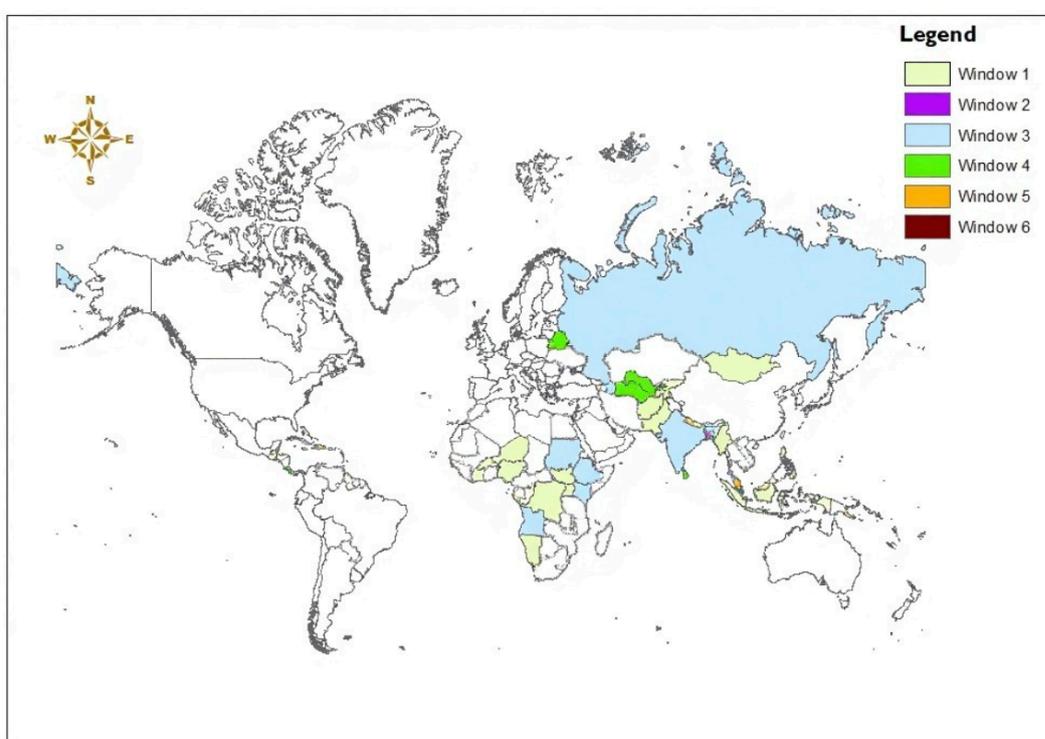


Figure 1. Countries analysed across windows 1–6

### Geographical and regional distribution

A total of 52 countries that have committed to and been approved by the Global Fund for investment in priority comorbidities were in Africa. The next most represented region was Europe, with 14 countries (Figure 2). Apart from the Americas and the Western Pacific, all other regions had every country integrating comorbidities into their HIV, TB or RSSH grants.

Fifty-three countries prioritized more than one comorbidity within their funding allocations. These countries are spread across all six WHO regions, with Africa having the highest representation. Nine countries (Kazakhstan, Malawi, Namibia, Nepal,

South Africa, Uganda, United Republic of Tanzania, Viet Nam, Zambia) prioritized all four comorbidities, and 27 countries prioritized only one comorbidity (see Annex 7).

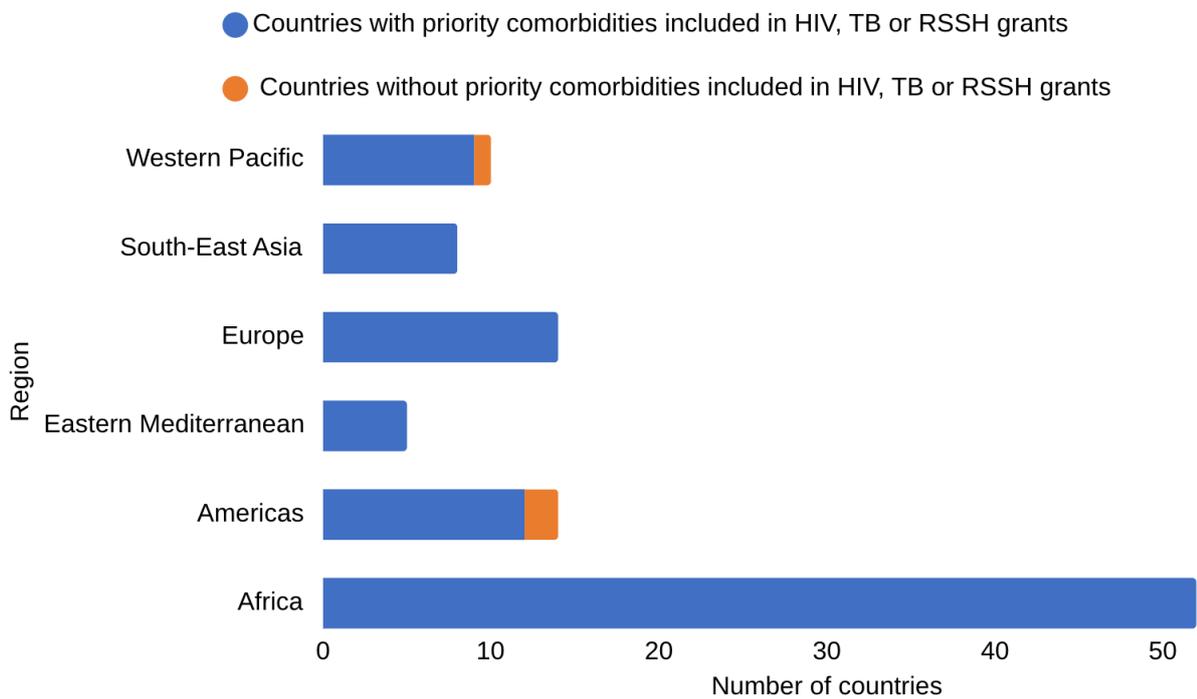


Figure 2. Applicants (CCMs/RCMs) that included priority comorbidities in their HIV, TB or RSSH grants, by WHO region (n=103 countries)

The investments for comorbidity-related activities revealed clear priorities, with the largest share allocated to Africa, followed by Europe. Windows 1–3 received the largest shares (Figures 3a and 3b).

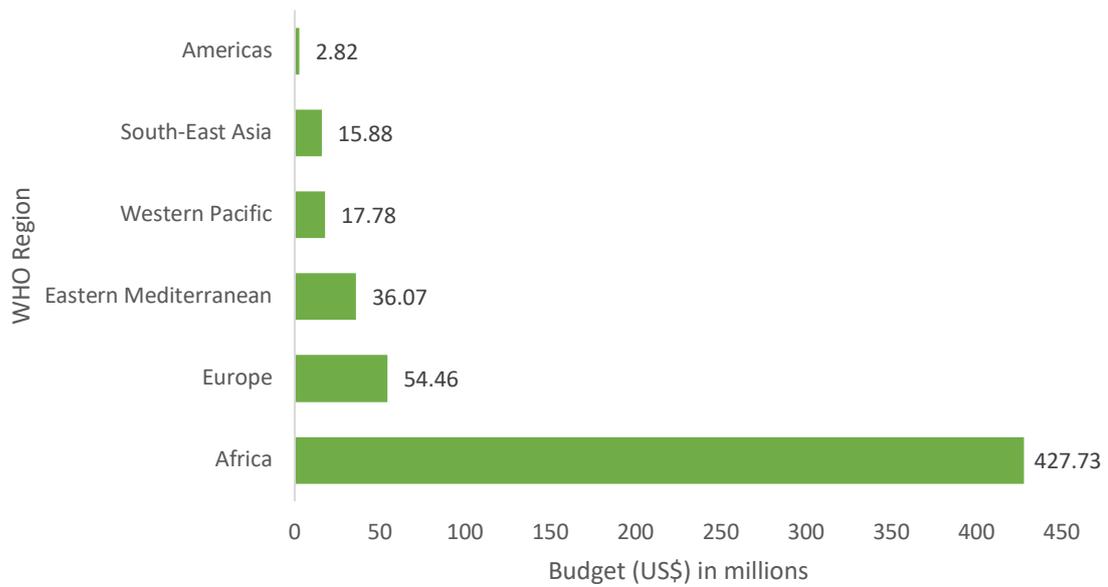


Figure 3a. Total investments for comorbidities by WHO region

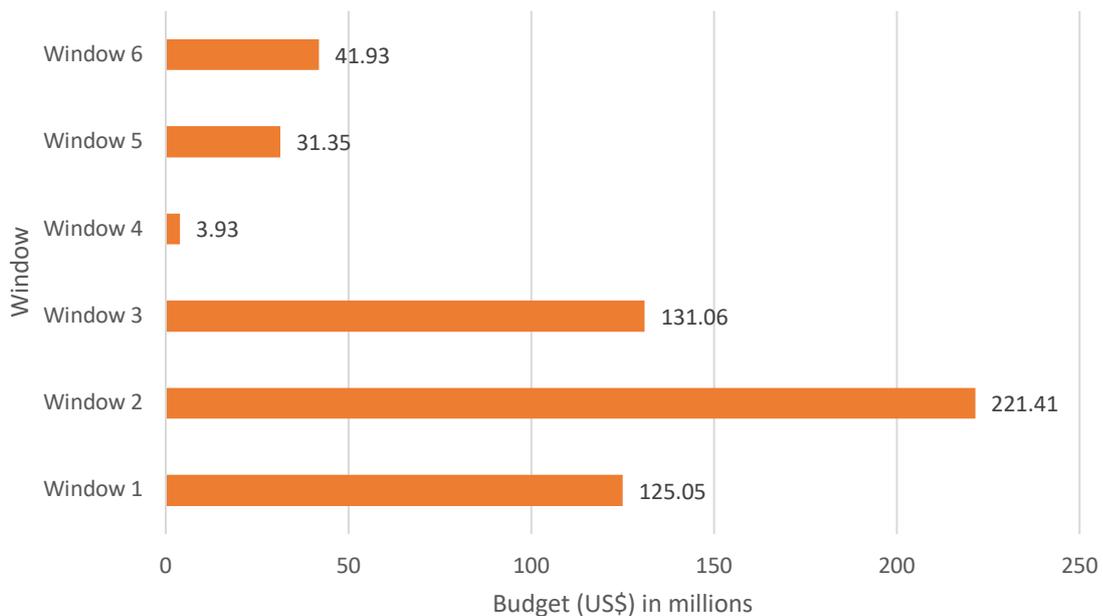


Figure 3b. Total investments for comorbidities by window

#### Investments in priority comorbidities

A total of US\$ 554 740 193 was approved across all priority comorbidities in GC7. Of this, management of NCDs received the most funding (46.5%, US\$ 257 856 831), followed by substance use conditions (21.6%, US\$ 119 742 227) and cervical, anorectal and other cancers (18.0%, US\$ 99 770 272) (Figure 4). Mental health conditions received the least funding (13.9%, US\$ 77 370 862).

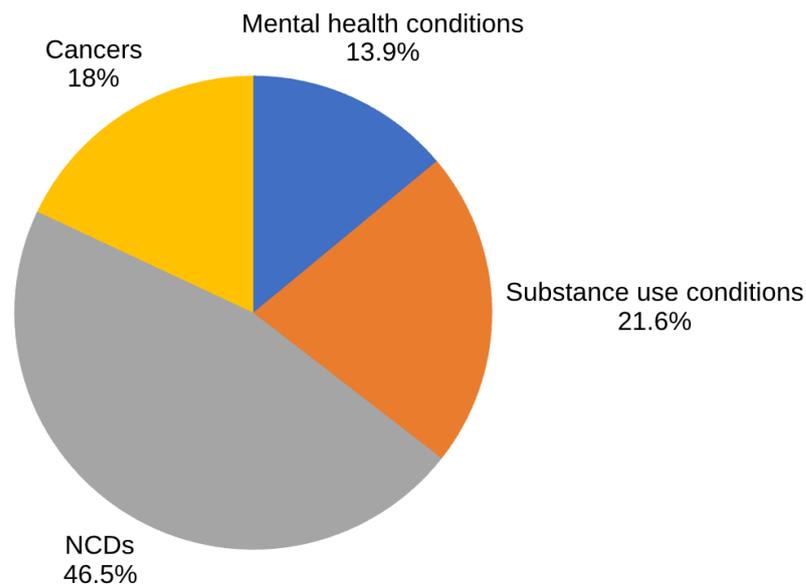


Figure 4. Commonly included comorbidities

Of the total approved investment of US\$ 554.7 million, US\$ 493.7 (89%) was included in the PAAR or unfunded quality demand budget, and over US\$ 61.7 (11%) was in the allocation amount. Approximately US\$ 19.8 million (32.1%) was in the allocation amount for mental health conditions, compared with a PAAR of US\$ 57.6 million. Cancers received only US\$ 2.6 million (4.3%) through the allocation amount, against a PAAR of US\$ 97.1 million. Substance use conditions had a relatively higher allocation amount of US\$ 22.9 million (37.2%) but still fell short of the US\$ 96.8 million requested in the PAAR. The most pronounced gap was in NCDs, with only US\$ 16.3 million (26.5%) in the allocation amount, against a PAAR of US\$ 241.5 million. Across all categories, PAAR figures significantly exceed actual allocation amounts, underscoring a major disparity in the prioritization of investments in these comorbidities (Figure 5).

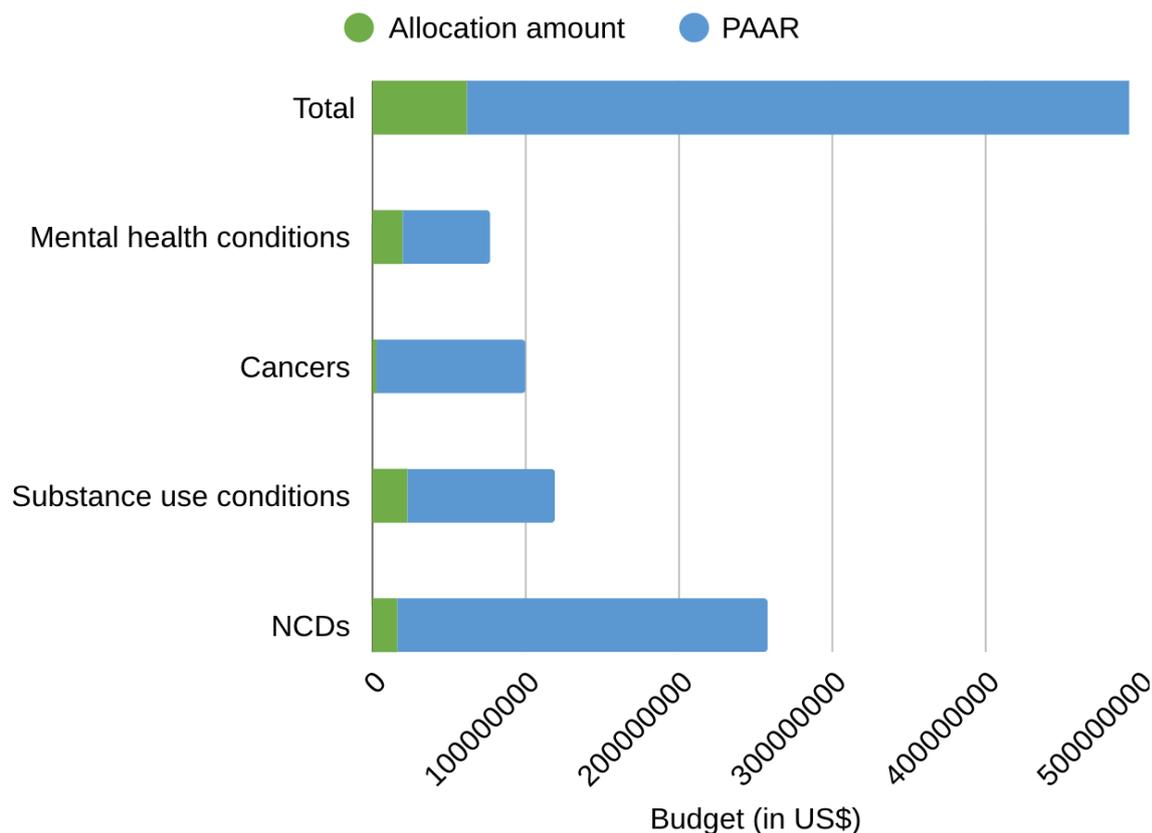


Figure 5. Total investments (allocation amount plus PAAR) for priority comorbidities

### Total investments for disease subcategories within the priority comorbidities

The category of substance use conditions was included without a specific subcategory at 100% (US\$ 119.7 million). Within the mental health category, mental health conditions (unspecified) were most frequently included (91.3%, US\$ 70.7 million), followed by the specific mention of depression (8.7%, US\$ 6.7 million).

Among NCDs, the most frequently included comorbidities were a broader category of NCDs (unspecified) (47.7%, US\$ 123 million), undernutrition (41%, US\$ 105.8 million),<sup>10</sup> hypertension (6.1%, US\$ 15.7 million), diabetes (1.4%, US\$ 3.6 million), chronic respiratory diseases (0.4%, US\$ 1.0 million), and other nutritional disorders (unspecified) (3.3%, US\$ 8.6 million).

<sup>10</sup> In the context of TB and HIV, the primary nutritional concern is undernutrition, which weakens the immune system, increases susceptibility to infections and worsens disease outcomes.

For cancers, cervical cancer (including HPV infection) was the most commonly included (95%, US\$ 94.8 million), followed by other cancers (liver and unspecified) (3.7%, US\$ 3.7 million) and anorectal cancer (1.3%, US\$ 1.3 million) (Figure 6).

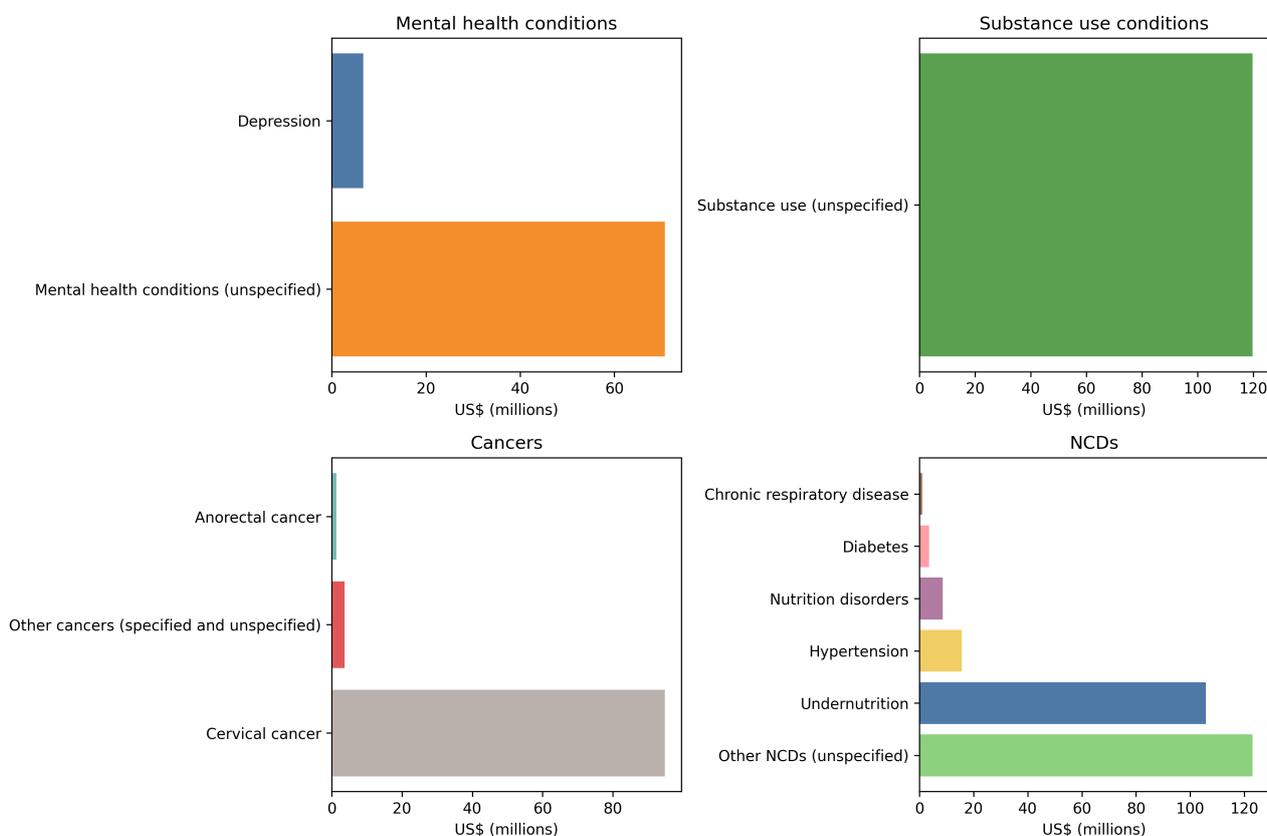


Figure 6. Investments by priority comorbidity group and specific comorbidity disease

Allocation amounts for disease subcategories within the priority comorbidities  
 Among the NCDs, hypertension received the highest allocation (US\$ 13.28 million, 81% of total allocation amount for NCDs). This was followed by other NCDs (unspecified) (US\$ 1.57, 10%), diabetes (US\$ 0.65 million, 4%), chronic respiratory diseases (US\$0.49 million, 3%), undernutrition (US\$ 0.32 million, 2%), and other nutrition disorders (unspecified) (US\$ 0.03 million, 0.2%).

Within cancers, cervical cancer received the highest allocation (US\$ 2.31 million, 87%), compared with anorectal cancer (US\$ 0.33 million, 13%).

Unspecified mental health conditions received the highest allocation (US\$ 13.09 million, 66%), compared with depression (US\$ 6.71 million, 34%).

Substance use conditions (unspecified) received a substantial US\$ 22.94 million, representing 100% of the allocation within this category.

Overall, the largest allocations were directed towards substance use conditions, hypertension and unspecified mental health conditions. Nutrition disorders, chronic respiratory diseases and undernutrition received the lowest allocations (Figure 7).

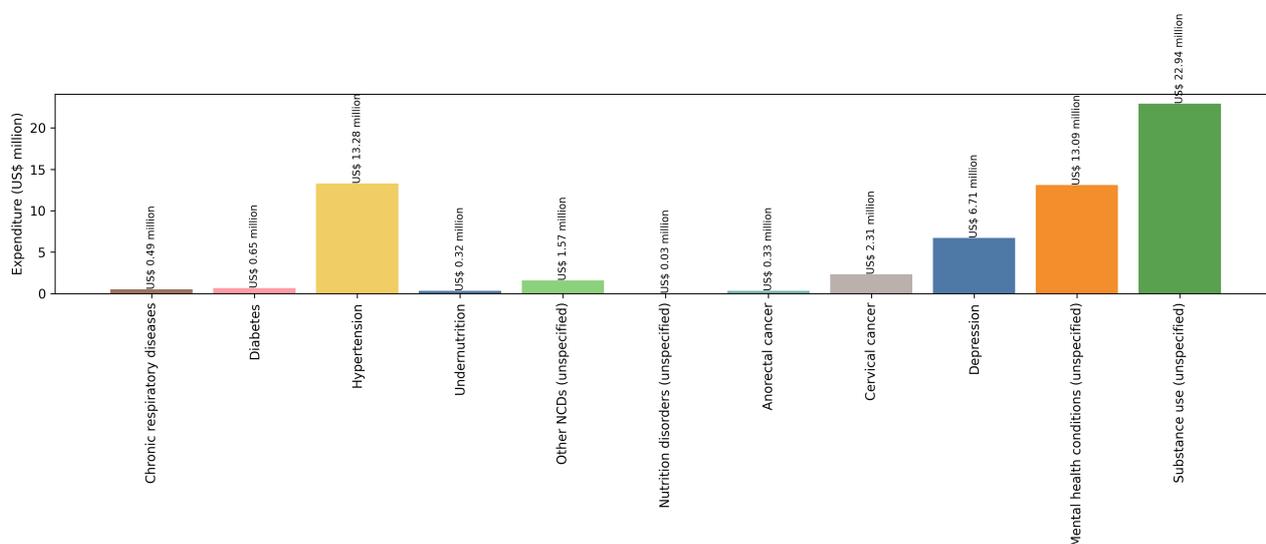


Figure 7. Funding allocation amounts by priority comorbidity group and specific comorbidity

Specific types of comorbidity-focused activities included in the Global Fund grants. The analysis of investments in comorbidity-related activities revealed clear prioritization. Procurement and supply-chain management systems—such as procurement and distribution of needles and syringes, opioid agonist maintenance therapy, naloxone for overdose management, dead-space syringes, cervical cancer screening equipment, diagnostic reagents for NCDs, and other harm reduction supplies—received the largest investment (26.3%, US\$ 145.7 million). Capacity-building (e.g. training, skills development) for health-care workers accounted for 25.8% (US\$ 143 million) of the total investment (Table 2).

Other critical activities received moderate investment:

- human resources for health—salaries, remuneration, certification, protection and wellness (10.1%, US\$ 56 million);
- screening and diagnosis (9.2%, US\$ 50.8 million);
- prevention and health promotion (7.4%, US\$ 40.9 million);
- treatment, care and support (5.4%, US\$ 29.8 million);
- harm reduction (4.2%, US\$ 23.1 million).

Mental health and psychosocial support, nutritional support, community engagement and empowerment, monitoring and evaluation, community health and outreach, advocacy, human rights, legal, regulatory and policy reforms, gender-based violence

and post-violence care. national guidelines, and development of standard operating procedures and protocols received the least investment (Table 2).

Dividing investments into specific categories of activities included disaggregating the data by type of comorbidity. The funding distribution across activities reflects distinct priorities for each comorbidity. NCD-related activities were heavily focused on procurement and supply-chain management (44.6%, US\$ 115.1 million) and capacity-building for health-care workers (42.4%, US\$ 108.9 million), indicating investments in health-care infrastructure and workforce training.

Investments in cancer-related activities focused mainly on human resources for health salaries, remuneration, certification, protection and wellness (48.2%, US\$ 48.1 million) and screening and diagnosis (30.2%, US\$ 30.1 million). Only 4.3% (US\$ 4.3 million) of investments in cancer-focused activities were directed towards treatment and support, despite acute needs in applicant countries.

Among activities related to mental health, a large portion of allocations went towards increasing the capacity of health-care workers (20.16%, US\$ 15.6 million), and screening and diagnosis (25.1%, US\$ 19.4 million).

For substance use conditions, more funding was allocated for harm reduction activities (19.4%, US\$ 22.9 million) and prevention and health promotion (27.8%, US\$ 33.3 million) than other activities.

The largest allocations for community engagement and empowerment were for addressing substance use conditions (US\$ 11.6 million, 9.70%), with almost none for cancers and none for NCDs. Funding for activities for gender-based violence and post-violence care constituted the second lowest investment within each of the comorbidity categories (Table 2).

Table 2. Total investment (allocation amount and PAAR) in comorbidity-related activities

Activity	NCDs (million US\$)	Cancers (million US\$)	Mental health conditions (million US\$)	Substance use conditions (million US\$)	Total budget (million US\$)
Procurement and supply-chain management systems	115.1 (44.64%)	3.53 (54%)	10.2 (13.25%)	16.8 (14.08%)	145.7 (26.27%)
Capacity-building (training, workshops)	108.9 (42.24%)	8.9 (9.01%)	15.5 (20.16%)	9.5 (7.97%)	143.1 (25.79%)
Human resources for health— salaries, remuneration,	—	48.1 (48.23%)	6.5 (8.44%)	1.4 (1.17%)	56.1 (10.10%)

Activity	NCDs (million US\$)	Cancers (million US\$)	Mental health conditions (million US\$)	Substance use conditions (million US\$)	Total budget (million US\$)
certification, protection, wellness					
Screening and diagnosis	1.05 (0.41%)	30.1 (30.21%)	19.4 (25.13%)	0.208 (0.17%)	50.8 (9.17%)
Prevention and health promotion	0.508 (0.20%)	4.5 (4.56%)	2.5 (3.32%)	33.3 (27.84%)	40.9 (7.38%)
Treatment, care and support	13.6 (5.30%)	4.2 (4.29%)	2.2 (2.95%)	9.6 (8.05%)	29.8 (5.38%)
Harm reduction	—	—	0.54 (0.07%)	22.9 (19.14%)	22.9 (4.14%)
Mental health and psychosocial support	—	—	13.7 (17.73%)	—	13.7 (2.47%)
Nutritional support	12.3 (4.81%)	—	0.387 (0.50%)	—	12.7 (2.30%)
Community engagement and empowerment	—	(0.009%)	0.209 (0.27%)	11.6 (9.70%)	11.8 (2.13%)
Monitoring and evaluation	5.6 (2.18%)	0.136 (0.14%)	1.7 (2.27%)	4.03 (3.37%)	11.5 (2.08%)
Community health and outreach	0.55 (0.21%)	—	2.3 (3%)	7.3 (6.12%)	10.2 (1.84%)
Advocacy	—	—	0.557 (0.72%)	1.3 (1.13%)	1.9 (0.35%)
Human rights, laws, regulations, policy reforms	0.30 (0.01%)	—	0.483 (0.62%)	1.1 (0.96%)	1.6 (0.30%)
Gender-based violence and post-violence care	—	0.15 (0.02%)	1.1 (1.49%)	0.96 (0.08%)	1.2 (0.23%)
Guidelines, standard operating procedures and protocols development	—	—	0.64 (0.08%)	0.241 (0.20%)	0.305 (0.06%)
Total	257.8	99.7	77.3	119.7	554.7

*Note: community engagement and empowerment activities focus on building collaborative partnerships and empowering communities to actively participate in decision-making, advocacy and accountability, including community-led monitoring. Community health and outreach emphasize delivering health services, education and resources directly to communities to improve health outcomes and access to care. Examples of mental health and psychosocial support packages of services and activities include counselling (individual and group therapy sessions to address mental health concerns); peer support groups (connecting individuals with other people who share similar experiences); community-based initiatives (programmes that provide social support, education and economic empowerment); and client referrals (for people who need specialized mental health-care services by a psychiatrist or psychotherapist at a specialist mental hospital or clinic).*

### Allocation amount by comorbidity-related activity

Table 3 summarizes the allocation amounts and percentage distribution across the four comorbidities for the same intervention categories. The allocation totalled US\$ 61.72 million. Of this, capacity-building activities for health-care providers received the highest investment (US\$ 21.62 million, 35.03% of total funding), with NCDs benefitting from the largest share (81.90%), followed by mental health conditions (34.96%), cancers (13.34%) and substance use conditions (4.23%).

Procurement and supply-chain management systems accounted for US\$ 8.14 million (13.19% of total funding), with notable emphasis on substance use conditions (27.36%) and mental health conditions (9.16%). Community health and outreach interventions received US\$ 7.72 million (12.51%), dominated by substance use conditions (31.32%) and mental health conditions (2.71%).

Investments in mental health and psychosocial support amounted to US\$ 6.99 million (11.32%). Harm reduction was significantly funded (US\$ 5.81 million, 9.42% of total funding, 25.35% of all funding for substance use conditions).

Monitoring and evaluation received US\$ 3.54 million (5.74%), mainly for NCDs (11.99%) and mental health conditions (4.07%). Screening and diagnosis accounted for US\$ 2.76 million (4.48%), with cancers taking the largest share (81.34%).

Other grant allocations included those for gender-based violence and post-violence care (US\$ 1 million, 1.62%); treatment, care and support (US\$ 0.83 million, 1.35%); human resources for health salaries and protection (US\$ 0.78 million, 1.26%); nutritional support (US\$ 0.63 million, 1.02%); and prevention and health promotion (US\$ 0.53 million, 0.85%).

Smaller allocations were recorded for advocacy, human rights and policy reforms, community engagement, and guidelines and protocol development, each constituting less than 1% of total funding.

Table 3. Allocation amount by comorbidity-related activities

Activity	NCDs (million US\$)	Cancers (million US\$)	Mental health conditions (million US\$)	Substance use conditions (million US\$)	Total budget (million US\$)
Capacity-building activities for health-care providers (training, workshops)	13.37 (81.90%)	0.352 (13.34%)	6.92 (34.96%)	0.969 (4.23%)	21.62 (35.03%)

Activity	NCDs (million US\$)	Cancers (million US\$)	Mental health conditions (million US\$)	Substance use conditions (million US\$)	Total budget (million US\$)
Procurement and supply-chain management systems	0.49 (0.30%)	—	1.81 (9.16%)	6.27 (27.36%)	8.13 (13.19%)
Community health and outreach	—	—	0.53 (2.71%)	7.18 (31.32%)	7.72 (12.51%)
Mental health and psychosocial support	—	—	6.98 (35.28%)	—	6.98 (11.32%)
Harm reduction	—	—	—	5.81 (25.35%)	5.81 (9.42%)
Monitoring and evaluation	1.95 (11.99%)	0.46 (1.78%)	0.806 (4.07%)	0.729 (3.18%)	3.54 (5.74%)
Screening and diagnosis	0.54 (81.34%)	2.15 (81.34%)	0.57 (0.29%)	0.12 (0.05%)	2.76 (4.48%)
Gender-based violence and post-violence care	—	—	1.001 (5.06%)	—	1.001 (1.62%)
Treatment, care and support	0.139 (0.86%)	—	0.452 (2.29%)	0.240 (1.05%)	0.832 (1.35%)
Human resources for health— salaries, remuneration, certification, protection, wellness	—	—	0.142 (0.72%)	0.638 (2.78%)	0.780 (1.26%)
Nutritional support	0.249 (1.53%)	—	0.382 (1.93%)	—	0.631 (1.02%)
Prevention and health promotion	0.16 (0.10%)	0.93 (3.54%)	0.33 (0.17%)	0.381 (1.66%)	0.525 (0.85%)
Advocacy	—	—	0.103 (0.52%)	0.415 (1.81%)	0.518 (0.84%)
Human rights, laws, regulations, policy reforms	—	—	0.289 (1.46%)	0.184 (0.81%)	0.474 (0.77%)
Community engagement and empowerment	—	—	0.209 (1.06%)	0.37 (0.16%)	0.247 (0.40%)
Guidelines, standard operating procedures and protocols development	—	—	0.64 (0.32%)	0.54 (0.24%)	0.118 (0.19%)
<b>Total</b>	<b>16.332</b>	<b>2.643</b>	<b>19.802</b>	<b>22.941</b>	<b>61.719</b>

There was a wide range of activities for addressing priority comorbidities by strengthening health systems and improving service delivery for people living with HIV and/or TB and people from vulnerable populations. Capacity-building included training health-care workers and other service providers, peer educators and community workers on the integrated management of HIV, TB, NCDs, mental health

conditions and harm reduction. Training and equipping community-based organization peer educators to deliver psychosocial support and referrals and training health-care providers to provide a comprehensive package of prevention interventions were proposed.<sup>11</sup> Supporting community organizations to offer cervical cancer screening and mental health and psychosocial support integrated with HIV and/or TB services was proposed. Additional activities included:

- mentoring and coaching of health workers;
- provision of psychosocial support and nutritional support;
- routine and community-based screening for NCDs, mental health conditions and cancer;
- integrated care for comorbidities through multidisciplinary teams.

Harm reduction services such as needle–syringe programmes, opioid agonist maintenance therapy, and overdose prevention and management were proposed alongside HIV prevention interventions, information, education, communication and behaviour change communication materials, and outreach. Guidelines, standard operating procedures and protocols to standardize care across HIV, TB, mental health conditions, NCDs, cervical and anorectal cancers, and harm reduction services were also included in the activities approved for funding allocations.

Community engagement, advocacy and activities for removing human rights barriers to accessing services<sup>12</sup> complement service delivery by fostering enabling environments. The review identified a series of approved activities that support counselling, treatment literacy and referrals delivered by community health workers and peer educators. It also found drop-in centres and support groups were proposed to offer safe spaces and mental health-care for local communities. Advocacy for legal

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<sup>11</sup> The comprehensive package of prevention interventions for people from key populations and people living with HIV and/or TB includes, as applicable, needle–syringe programmes for people who inject drugs; opioid agonist maintenance therapy and other medically assisted drug dependence treatment; overdose prevention and management; condoms and lubricants; HIV testing services and pre-exposure prophylaxis; HIV prevention communication, information and demand creation; community empowerment; sexual and reproductive health services, including for sexually transmitted infections, hepatitis and post-violence care; and removing human rights-related barriers to prevention.

<sup>12</sup> Activities related to removing human rights-related barriers to prevention, screening and response to sexual, physical, emotional and gender-based violence for people who use drugs and their sexual partners—for example, campaigns for the human rights of people who use drugs; access to justice and links to other services; documenting violence and other human rights violations and referral to redress and support; legal support, human rights and legal literacy and integrated legal empowerment of people who use drugs; community-led and other advocacy for legal and policy reforms, including decriminalization; assessment of the gender-responsiveness of prevention programmes; participation of people who use drugs in activities to sensitize or train law enforcement and health-care providers; and crisis prevention and response.

and policy reform to promote harm reduction, decriminalization of drug use, and the rights of people from key populations were approved for funding in GC7.

Other activities approved by the Global Fund in GC7 included:

- country monitoring and evaluation activities, using key performance indicators, service uptake assessments and digital adherence evaluation;
- human resources for health support for salaries, incentives and wellness programmes for health-care providers;
- activities to address gender-based violence, including post-violence care, legal aid and safe havens;
- nutritional support, procurement and supply-chain improvements;
- integration of sexual and reproductive health and rights, mental health conditions and NCD services to ensure holistic care and improved access to integrated services for people from underserved populations.

Annex 5 provides a description of the approved activities in GC7.

### Focus populations

Table 4 shows how priority comorbidity activities to address NCDs, cancers, mental health conditions and substance use conditions were funded by population. The funding is distributed unevenly, with the majority focused on three key populations:

- people living with HIV (32.33%, US \$179.3 million);
- health and social care workers (28.48%, US\$ 157.9 million);
- people who use drugs (20.68%, US\$114.7 million).

Together, these populations account for more than 80% of the total budget approved for comorbidities (US\$ 554.7 million). There were smaller allocations for other key and vulnerable populations (5.36%, US\$ 29.7 million), and adolescents and young people (3.5%, US\$ 19.4 million).

Further disaggregation of the Global Fund investments by priority comorbidity and by population revealed a distinct focus on particular populations. People living with HIV (45.6%, US\$ 117.6 million) and health and social care workers (37%, US\$ 95.5 million) were prioritized for investments in NCD-focused activities.

For cancers, a significant proportion of funding was directed towards health and social care workers (49.1%, US\$ 48.9 million) and people living with HIV (37.3%, US\$ 37.2 million).

Activities focused on mental health conditions mainly prioritized people living with HIV (31.6%, US\$ 24.5 million) and people who use drugs (13.5%, US\$ 10.5 million). Most of the approved funding for activities to address substance use conditions was for people who use drugs (86.9%, US\$ 104 million).

Table 4. Total investment (allocation amount and PAAR) by comorbidity and population

Population focused on by priority comorbidity-focused grants	NCDs (million US\$)	Cancers (million US\$)	Mental health conditions (million US\$)	Substance use conditions (million US\$)	Total budget (million US\$)
People living with HIV	117.6 (45.61%)	37.24 (37.33%)	24.48 (31.64%)	0.18 (<0.01%)	179.33 (32.33%)
People living with TB	15.9 (5.93%)	0.19 (0.20%)	1.44 (1.86%)	0.24 (0.20%)	17.17 (3.10%)
Health and social care workers	95.5 (37.05%)	48.95 (49.07%)	10.30 (13.31%)	3.18 (2.66%)	157.98 (28.48%)
People who use drugs	(<0.01%)	0.21 (0.21%)	10.48 (13.55%)	104.02 (86.88%)	114.72 (20.68%)
People in prisons and other closed settings	(<0.01%)	<0.01%	2.61 (3.38%)	0.35 (0.29%)	2.96 (0.54%)
People from other key and vulnerable populations <sup>a</sup>	0.36 (0.14%)	3.20 (3.21%)	16.30 (21.07%)	9.89 (8.26%)	29.76 (5.36%)
Adolescents and young people	(<0.01%)	8.84 (8.87%)	10.54 (13.63%)	(<0.01%)	19.39 (3.50%)
Pregnant women, mothers and families	1.27 (0.49%)	0.58 (0.59%)	0.80 (1.05%)	0.15 (0.13%)	2.82 (0.51%)
People with NCDs and other health conditions	1.8 (0.73%)	—	0.103 (0.13%)	0.19 (0.16%)	2.17 (0.39%)
People from marginalized and hard-to-reach groups <sup>b</sup>	0.999 (0.39%)	—	—	—	0.99 (0.18%)
Workers in informal and high-risk occupations <sup>c</sup>	(0.39%)	0.17 (0.02%)	0.23 (0.31%)	—	0.25 (0.05%)
Unspecified	24.9 (9.66%)	0.50 (0.50%)	0.20 (0.03%)	1.692 (1.36%)	27.04 (4.88%)
<b>Total</b>	<b>257.85</b>	<b>99.77</b>	<b>77.37</b>	<b>119.74</b>	<b>554.74</b>

<sup>a</sup> Key populations included sex workers, gay men and other men who have sex with men, and transgender people. Other vulnerable populations included adolescent girls and young women and their sexual partners, boys and men, orphans and vulnerable children, and people with disabilities.

<sup>b</sup> Marginalized and hard-to-reach groups included refugees, asylum seekers, other migrants and their spouses, urban poor people, people living in informal settlements, ex-miners, people from peri-mining and mining communities, pastoralists, men and elderly people.

<sup>c</sup> Workers in informal and high-risk occupations included factory workers, fisherfolk, informal-sector workers, long-distance truck drivers, miners and people from mining communities.

## Allocation by comorbidity and population

Allocation by population reveals two clear priorities:

- People living with HIV received US\$ 30.01 million (48.62%), with the largest amounts approved for NCDs (83.79%) and mental health conditions (74.41%).
- People who use drugs accounted for US\$ 24.85 million (40.26%), with an overwhelming 97.86% of funds for substance use conditions targeting this population (Table 5).

Other populations received significantly smaller grant allocations:

- pregnant women, mothers and families (US\$ 1.50 million, 2.43%);
- people from key and other vulnerable populations, other than people who use drugs and people in prisons and other closed settings (US\$ 1.40 million, 2.26%);
- adolescents and young people (US\$ 1.01 million; 1.64%);
- people living with TB (US\$ 0.93 million, 1.50%).

People with NCDs and other health conditions, people from marginalized and hard-to-reach groups, and health and social care workers together accounted for less than 3% of funding. People in prisons and other closed settings, people from informal or high-risk occupations, and people from unspecified groups each accounted for less than 0.5% of funding.

Table 5. Allocation amount by comorbidity and population

Population focused on by priority comorbidity-focused grants	NCDs (million US\$)	Cancers (million US\$)	Mental health conditions (million US\$)	Substance use conditions (million US\$)	Total budget (million US\$)
People living with HIV	13.68 (83.79%)	1.58 (60.05%)	14.7 (74.41%)	—	30.01 (48.62%)
People who use drugs	1.27 (7.78%)	—	2.39 (12.12%)	22.45 (97.86%)	24.85 (40.26%)
People in prisons and other closed settings	—	—	0.76 (0.38%)	0.77 (0.34%)	0.15 (0.25%)
People from key and other vulnerable populations	0.10 (0.64%)	0.33 (12.63%)	1.03 (5.22%)	0.30 (0.02%)	1.39 (2.26%)

Population focused on by priority comorbidity-focused grants	NCDs (million US\$)	Cancers (million US\$)	Mental health conditions (million US\$)	Substance use conditions (million US\$)	Total budget (million US\$)
Pregnant women, mothers and families	0.24 (0.15%)	—	0.23 (1.17%)	—	1.50(2.43%)
Adolescents and young people	—	0.51 (19.18%)	0.50 (2.54%)	—	1.01 (1.64%)
People living with TB	0.10 (0.64%)	0.19(7.48%)	0.62 (3.15%)	—	0.92 (1.50%)
People with NCDs and other health conditions	0.62 (3.82%)	—	—	0.19 (0.83%)	0.81 (1.32%)
People from marginalized and hard-to-reach groups	0.48 (2.98%)	—	—	—	0.49 (0.79%)
Health and social care workers	0.89 (0.55%)	—	0.18 (0.90%)	0.19 (0.85%)	0.46 (0.75%)
Workers in informal and high-risk occupations	—	0.17 (0.66%)	—	—	0.17 (0.03%)
Unspecified	0.49 (0.30%)	—	0.20 (0.10%)	0.24 (0.11%)	0.94 (0.15%)
Total	16.33	2.64	19.80	22.94	61.72

### Institutions supported to implement comorbidity-focused grants

The total investment allocated for institutions to support the implementation of comorbidity-focused activities was US\$ 123.4 million. Ministries of health and other ministries, departments and agencies received the largest share (77%, US\$ 94.6 million). This was followed by civil society organizations (21%, US\$ 26.4 million) and private health facilities (2%, US\$ 2.4 million).

Table 6. Total investment (allocation amount plus PAAR) by comorbidity and type of institution

Institution	NCDs (million US\$)	Cancers (million US\$)	Mental health conditions (million US\$)	Substance use conditions (million US\$)	Total budget (million US\$)
Ministries of health and other ministries, departments and agencies	94.31 (79%)	—	0.45 (2%)	0.209 (11%)	94.56 (77%)
Civil society organizations	22.47 (19%)	0.49 (100%)	1.79 (98%)	1.62 (86%)	26.40 (21%)
Private health facilities (profit-making and non- profit-making clinics)	2.37 (2%)	—	—	0.54 (3%)	2.42 (2%)
Total (million US\$)	119.16	0.49	1.84	1.88	123.39

#### Allocation amount by comorbidity and type of institution

Three main categories of institution received resources from the allocation. accounted for the largest share (US\$242391 48%), mainly for interventions focused on mental health (55%) and substance use conditions (71%). Ministries of health and other ministries, departments and agencies received US\$204863 (41%), inclusive of the entire allocation for NCD-related intervention. Private profit and no-profit health facilities received the smallest allocation (US\$54146 11%), primarily for substance use conditions (20%).

Table 7. Allocation amount by comorbidity and type of institution

Institution	NCDs (million US\$)	Cancers (million US\$)	Mental health conditions (million US\$)	Substance use conditions (million US\$)	Total budget (million US\$)
Civil society organizations	—	—	0.55 (55%)	0.186 (71%)	0.242 (48%)
Ministries of health and other ministries, departments and agencies	0.136 (100%)	—	0.45 (45%)	0.23 (9%)	0.204 (41%)
Health facilities (private profit-making and non-profit- making clinics)	—	—	—	0.54 (20%)	0.54 (11%)
Total (US\$)	0.136	—	0.100	0.956	0.986

**Targets and indicators for monitoring implementation and performance**  
Interventions related to drug use have a limited set of established key performance indicators (e.g. KP-1d, KP-4, KP-5, KP-8) in the grant documents. The review did not find indicators or key performance indicators for NCDs in the grant documents. Indicators for interventions addressing drug use were mainly limited to measuring service coverage or reach, rather than monitoring treatment outcomes, continuity of care or service quality. This has important implications for programmatic accountability and strategic prioritization.

Table 8 presents a list of indicators relevant for monitoring comorbidities and illustrates the imbalance in specificity and focus of the indicators. It highlights how the Global Fund performance monitoring framework focuses narrowly on use of drugs, while neglecting investment in equally significant areas of integrated, person-centred care.

This gap in the metrics reflects a broader systemic issue. The lack of relevant indicators in country funding requests and grant documents is not solely a result of in-country omission. It is also linked strongly to the absence of formal guidance, standardized key performance indicator templates, and clear expectations from the Global Fund Secretariat and its technical partners. This makes it more difficult for countries to integrate, budget for and monitor comorbidity interventions, and ensure services are person-centred and integrated. It undermines the visibility, strategic focus and ability to assess the impact of investments on comorbidities.

The findings related to the performance monitoring framework highlighted the following key points:

- **Indicator gaps and implications for programme design and accountability:** countries are increasingly recognizing the importance of integrating care for comorbid conditions within HIV and TB programmes, but the Global Fund performance framework does not reflect this shift adequately. Most indicators listed under comorbidities—particularly for NCDs, cancers and mental health conditions—do not clearly specify comorbidity-related outputs or outcomes. This lack of specificity makes it more difficult to track and evaluate the effectiveness and equity of integrated, person-centred health services.
- **Limited visibility and weak incentives:** the absence of dedicated indicators contributes to low visibility of comorbidity-focused interventions in grant monitoring and evaluation processes. Without the tools to track implementation or impact, the incentive to prioritize, invest in or measure the outcome of these services is weak. This can lead to the underreporting,

underfunding or even exclusion of critical comorbidity responses, despite their importance to improving clinical outcomes, retention in care and quality of life.

- Substance use conditions as a model: the relative wealth of indicators for use of drugs demonstrates how more targeted monitoring is feasible and valuable and incentivizes higher funding allocation by applicants. These indicators enable better tracking of coverage (e.g. KP-1d, KP-4) and continuity of care (e.g. KP-5), and show how similar approaches could be developed for other comorbidities.

Table 8. Comorbidities and their performance monitoring indicators in the Global Fund indicator frameworks and guidance notes for grant monitoring

Priority comorbidity	Indicators
Cervical and anorectal cancers	KP-1a : percentage of gay men and other men who have sex with men reached with HIV prevention programmes—defined package of services
	KP-1b: percentage of transgender people reached with HIV prevention programmes—defined package of services
	KP-1c: percentage of sex workers reached with HIV prevention programmes—defined package of services
NCDs and mental health conditions	KP-1a: percentage of gay men and other men who have sex with men reached with HIV prevention programmes—defined package of services
	KP-1b: percentage of transgender people reached with HIV prevention programmes—defined package of services
	KP-1c: percentage of sex workers reached with HIV prevention programmes—defined package of services
Drug use conditions	KP-4: number of needles and syringes distributed per person who injects drugs per year by needle-syringe programmes
	KP-8: percentage of people who inject drugs receiving opioid agonist maintenance therapy
	HIV O-6: percentage of people who inject drugs reporting using sterile injecting equipment the last time they injected
	KP-5: percentage of people receiving opioid agonist maintenance therapy who received treatment for at least six months
	Needle-syringe programmes for people who inject drugs
	KP-1d: percentage of people who inject drugs reached with HIV prevention programmes—defined package of services
	Opioid agonist maintenance therapy and other medically assisted drug dependence treatment for people who inject drugs
	Community mobilization and advocacy for human rights
	KP-1d: percentage of people who inject drugs reached with HIV prevention programmes—defined package of services
	HIV O-28d: percentage of people who inject drugs who report having experienced stigma and discrimination in the last six months

Priority	Indicators
comorbidity	HIV O-16d: percentage of people who inject drugs who avoid accessing health care because of stigma and discrimination
	Number of people in prisons and other closed settings reached with HIV prevention programmes—defined package of services

Source: Programmatic monitoring for grants. Geneva: Global Fund to Fight AIDS, Tuberculosis and Malaria (<https://resources.theglobalfund.org/en/grant-life-cycle/grant-implementation/programmatic-monitoring-for-grants>).

## Qualitative analysis

The qualitative analysis of the grant documents identified:

- implementation, integration, coordination and partnership arrangements;
- technical support needs;
- community engagement approaches.

The findings below are presented according to the following guiding questions:

- What are the implementation, integration, coordination and partnership (e.g. across implementing partners, programmes) arrangements in the corresponding grant agreement?
- What technical support needs were identified and planned for in the grants?
- What kind of community engagement has been proposed for implementing the respective activities and interventions?

### Integration, coordination and partnerships

The analysis of grant documents showed countries strongly emphasize integration and coordination as key strategies for delivering person-centred services, particularly for people living with, at risk of or affected by HIV and/or TB and associated comorbidities. Rather than detailing operational implementation arrangements, the focus was largely on how service delivery would be organized to maximize accessibility, efficiency and continuity of care.

Integration was US\$ 112.2 million (20.23%) of the total investment of US\$ 554.7 million, and US\$ 9.9 million (16.04%) of the total allocation amount of US\$ 61.72 million. It was frequently described in terms of embedding services for NCDs, mental health and psychosocial support within existing HIV and TB service delivery platforms. These included models such as:

- co-location of services;

- integrated service packages at the same facility (one-stop shops);
- shared training and supervision for health-care workers.

These approaches were intended to streamline service delivery, reduce fragmentation and improve service uptake by people from affected populations.

Coordination mechanisms were prominent, constituting US\$ 3.6 million (0.65%) of the total investment, and US\$ 0.38 million (0.62%) of the total allocation. Countries proposed collaborative planning and service delivery, involving government representatives, community structures, civil society organizations and technical partners. Such coordination aims to optimize resource use, strengthen referral pathways and enhance services.

The analysis identified notable gaps in partnerships—which accounted for US\$ 0.64 million (0.11%) of the total investment, and US\$ 0.38 million (0.6%) of the total allocation amount—particularly with academic institutions, the private sector or development partners.

Strengthening these partnerships could improve innovation, sustainability and resource mobilization for integrated HIV, TB and comorbidity programming. Many countries proposed integrated supervision, joint monitoring and coordinated reporting systems as part of their efforts to institutionalize integrated service delivery and respond holistically to the needs of people from vulnerable populations.

Illustrative examples of proposed integration of comorbidity-related services for mental health conditions and substance use conditions, NCDs and cervical cancer into existing HIV and TB service delivery platforms included:

- integrating mental health screening and psychosocial support into HIV testing and antiretroviral therapy services;
- including harm reduction interventions such as opioid agonist maintenance therapy and needle-syringe programmes within HIV prevention programmes for people who use drugs;
- offering cervical cancer screening and treatment as part of a defined package of HIV services for women living with HIV (e.g. elimination of vertical transmission), female sex workers and their clients;
- integrating screening and management of NCDs such as hypertension and diabetes in TB screening and treatment;
- updating monitoring and evaluation tools to track and report on priority comorbidities.

Coordination received attention, reflecting efforts to align interventions and leverage resources across stakeholders. Coordination efforts typically showed up in the following ways:

- Multistakeholder engagement mechanisms: many grants proposed the use of national or subnational coordinating bodies, technical working groups or interagency task teams that bring together government entities, communities, civil society organizations, United Nations agencies and other partners to harmonize planning and monitor integrated HIV and TB and comorbidity services.
- Harmonizing service delivery platforms: implementation plans often aimed to streamline service delivery by using existing HIV or TB infrastructure and platforms to deliver comorbidity-related services, reducing fragmentation and promoting person-centred care (e.g. using antiretroviral therapy clinics as entry points for mental health screening or NCD management).
- Joint supervision, training and reporting: coordination is reflected in efforts to harmonize capacity-building across programmes (e.g. integrated training for health workers on HIV, TB and comorbidities) and to align monitoring and reporting systems, although the latter remained a challenge due to indicator gaps.
- Resource optimization and role clarity: several grant documents emphasized clarifying roles and responsibilities across implementing partners (e.g. government, nongovernmental organizations, community organizations) to avoid duplication of effort, strengthen accountability, and ensure different components of care are delivered in a complementary and coherent way.

Despite these positive intentions, the depth and specificity of coordination strategies varied considerably across countries. Some grants articulated clear coordination structures and processes, but others referred to coordination as more aspirational, without concrete mechanisms or indicators for tracking effectiveness.

### Technical support needs identified and requested

The analysis of technical support needs identified in the grants revealed a clear prioritization of key areas in 75 of the 100 countries that included priority comorbidities in their HIV, TB or RSSH grants. Reflecting the strategic focus of the identified needs, these areas included:

- policy, protocol and guideline development;
- supply procurement and distribution;

- monitoring and evaluation systems strengthening;
- technical advisory services;
- training and capacity-building.

Among these, training and capacity-building emerged as the most frequently reported need, with more than 57 countries including related activities, totalling 94 instances. Côte d'Ivoire, Kenya, Lesotho, Malawi and the Philippines were among 11 countries that reported more than two notable activities in this area, with a strong focus on technical advisory services and training and capacity-building aimed at developing a competent health workforce.

Policy and guideline development was the second most frequently identified technical support need, recorded 67 times by 42 countries. It was particularly prominent in Lesotho (six times), Pakistan (four times), Indonesia (three times), Kenya (three times), Mongolia (three times), Sierra Leone (three times) and Uganda (three times).

Technical advisory work was a significant area of support, recorded 49 times by 34 countries. Notably, the Philippines (five times), Mongolia (four times) and Ukraine (three times) demonstrated a strong need for substantial technical expertise.

Strengthening monitoring and evaluation systems and procurement and supply-chain management systems were reported 31 times by 26 countries, and five times by five countries. They were important in specific contexts—for example, Côte d'Ivoire, Indonesia and Nigeria each reported a need for monitoring and evaluation systems strengthening, highlighting efforts to improve data use for decision-making. Afghanistan, the Democratic Republic of Congo, Nigeria, the Philippines and Uganda identified procurement-related support, emphasizing gaps in supply-chain systems necessary for consistent service delivery.

Summary analysis of Global Fund grants revealed that only 0.2% (US\$ 11.3 million) of the total US\$ 554.7 million investment to priority comorbidities was dedicated to technical support. From the total allocation amount of US\$ 61.72 million, only US\$ 3.73 million (6.04%) was allocated to technical assistance needs. The region with the highest proportion of countries indicating technical support needs was Africa, where 88% (46 of 52) of countries requested technical assistance support, followed by the Eastern Mediterranean (80%, four of five), the Western Pacific (75%, six of eight), the Americas (67%, eight of 12), Europe (43%, six of 14), and South-East Asia (37%, three of eight).

## Community engagement

Overall, the analysis of Global Fund grants revealed that approximately 21.6% (US\$ 119.8 million) of the total US\$ 554.7 million allocated to priority comorbidities was dedicated to activities focused on community engagement. From the total allocation amount of US\$ 61.72 million, only US\$ 9.04 million (14.6%) was allocated to such activities.

A strong emphasis was placed on direct service delivery, with 42 of 100 countries including related activities and capacity development of community-based organizations, which was noted in 32 countries. This reflects a strategic focus on strengthening community systems and responses to ensure interventions are implemented effectively. Notable gaps were observed in areas such as demand creation (26 countries), engagement in policy- and decision-making processes (15 countries), outreach (11 countries), and involvement of key and vulnerable populations (10 countries).

The most frequently reported community engagement activity was community-delivered services, recorded 60 times by 42 countries. This indicates direct service provision is being prioritized and highlights the involvement of communities in delivering care and support. Mali (five times), Uganda (five times) and Thailand (three times) stood out for their active support in this area.

Capacity development of community-based organizations was recorded 47 times by 32 countries—with Chad, Côte d'Ivoire, Mauritania, Namibia, Senegal and Thailand each reporting three occurrences—highlighting investments in strengthening local organizations to enhance and sustain service delivery. Activities related to community-led research and monitoring received less emphasis, but Belarus, Indonesia, South Africa and Ukraine included them in their strategies. Expanding such initiatives could enhance community ownership, improve evidence-based intervention design, and strengthen programme outcomes.

Demand creation activities were significant, recorded 37 times by 26 countries, with Ukraine (five times) and Chad (three times) being key contributors. Engagement in policy- and decision-making processes was lower, recorded 20 times by 15 countries. This points to a gap in involving communities in shaping the policies that affect them. Efforts to engage key and vulnerable populations were limited, recorded only 12 times by 10 countries. South Africa (two times), Thailand (two times) and multicountry HIV

programmes (two times) were among the few to integrate community voices into policy spaces. Outreach activities were relatively rare, recorded 20 times by 11 countries.

## Key insights

The following insights from the study highlight the major shifts, priorities, service and systems integration approaches, and gaps in investments in HIV- and TB-related comorbidities this review, and mapping study identified.

### 1. Increased demand for and investment in comorbidity integration

Compared with GC6, GC7 shows a sharp increase in country demand and Global Fund investment to address the growing burden of HIV- and TB-related comorbidities, such as priority NCDs, cancers, mental health conditions and substance use conditions. Of the 103 approved grant applications, 97% included at least one priority comorbidity, signalling widespread recognition of the need for integrated interventions to address HIV- and TB-related comorbidities. Approved investments (allocation amount plus PAAR) in GC7 totalled US\$ 554.7 million. The majority of this was for NCDs (46.4%, US\$ 257.3 million), followed by substance use conditions (21.6%, US\$ 119.7 million), cervical, anorectal and other cancers (18.0%, US\$ 99.8 million), and mental health conditions (14.0%, US\$ 77.4 million).

Demand significantly exceeded the resources available. More than 89% (US\$ 493 million) of the approved investments were placed in the PAAR, with only 11% in the allocation amount. Nevertheless, although the exact allocation figures for similar comorbidities in GC6 are unknown, the allocation for GC7 is understood to have increased, reaching US\$ 61.7 million (137). Substance use conditions received the highest allocation (US\$ 22.9 million, 37.2%), compared with a PAAR of US\$ 96.8 million. Mental health conditions followed (US\$ 19.8 million, 32.1%), against a PAAR of US\$ 57.6 million. NCDs were allocated US\$ 16.3 million (26.5%), against a substantially larger PAAR of US\$ 241.5 million. Cancers received the least (US\$ 2.6 million, 4.3%), against a PAAR of US\$ 97.1 million.

The fact that most investments end up in the PAAR rather than the allocation amount demonstrates that country demand for integrating comorbidities into HIV and TB programming is far greater than the Global Fund core allocations

can cover. Although countries clearly prioritize such investment, resource constraints may limit how much of this demand can actually be financed.

## **2. Regional allocation patterns align with syndemic disease burden**

Africa accounted for the highest share of comorbidity-related funding in grant documents, receiving 77.1% (US\$ 427.7 million) of total Global Fund investments. This was followed by Europe (9.8%, US\$ 54.4 million), the Eastern Mediterranean (6.5%, US\$ 36.1 million), the Western Pacific (3.2%, US\$ 17.8 million), South-East Asia (2.9%, US\$ 15.9 million) and the Americas (0.5%, US\$ 2.8 million). These patterns reflect the alignment of funding with regional disease burdens and a growing recognition of the syndemic nature of HIV, TB and related health conditions.

## **3. Integrated, person-centred approaches are reflected in programmatic priorities**

Countries and the Global Fund have shown a strong commitment to integrated, person-centred services by investing in a wide range of activities addressing priority comorbidities within HIV and TB programmes. Of the total approved investment in priority comorbidities in GC7, the largest share went to procurement and supply-chain management (26.3%, US\$ 145.7 million), followed by training and capacity-building for health workers (25.8%, US\$ 143 million). A moderate level of funding went to salaries and support for health workers (10.1%, US\$ 56 million), screening and diagnosis (9.2%, US\$ 50.8 million), prevention and health promotion (7.4%, US\$ 40.9 million), treatment, care and support (5.4%, US\$ 29.8 million) and harm reduction (4.2%, US\$ 23.1 million).

Funding priorities differed across comorbidities. For NCDs, the largest investments went to procurement and supply-chain management and training for health workers. Cancer-related funding focused primarily on supporting health worker salaries and screening efforts. Mental health resources were mainly directed towards screening and health worker capacity-building. For substance use conditions, funding was concentrated on prevention and harm reduction interventions. Some activities were notably underfunded, including gender-based violence care, community engagement in mental health, and treatment support for cancer.

Further analysis of the allocation amounts demonstrated a similar pattern. The highest levels of funding went towards capacity building for health-care providers (35%, US\$ 21.6 million), mostly for NCDs. This was followed by procurement and supply-chain management for substance use conditions (13.2%, US\$ 8.14 million), community health and outreach particularly for substance use conditions (12.5%, US \$7.72 million), mental health and psychosocial support (11.3%, US\$ 6.99 million) and harm reduction (9.4%, US\$ 5.81 million). Overall, there was a strong emphasis on activities that addressed mental health conditions and substance use conditions in the core allocation.

#### **4. Gaps in performance monitoring framework undermine visibility and accountability**

Despite strong commitment to integrated, person-centred health services, the Global Fund performance framework lacks robust indicators to effectively track service coverage, treatment access and health outcomes for most priority comorbidities. The notable exception is interventions for substance use conditions, where a well-developed set of metrics for harm reduction is directly linked to service uptake and programme performance. For other comorbidities, relevant indicators are often limited, indirect or inconsistently applied. Many are embedded within service packages targeting specific key populations, such as cervical and anorectal cancer screening for sex workers, transgender people, and gay men and other men who have sex with men; or mental health services within HIV prevention work for these groups. This reflects a critical gap in the Global Fund monitoring framework: the absence of standard or proxy indicators makes it difficult to measure the reach, quality and impact of comorbidity interventions. As a result, such interventions often receive less investment, have lower visibility in grant reporting, and are less easy to track or learn from, particularly for non-commodity interventions.

#### **5. Community engagement and community-led service delivery are prioritized, but governance and equity gaps persist**

The commitment of countries and the Global Fund to prioritize investments in community-led and community-engaged interventions, particularly in the context of integrated service delivery, is commendable and forward-looking.

The strong emphasis on supporting direct service delivery by community-led organizations and on building their capacity reflects a clear recognition of the

vital role communities play in driving person-centred, high-impact interventions—not only for HIV and TB, but across broader health challenges. These investments contribute to the development of integrated, resilient and sustainable health systems by promoting equity, improving outcomes and strengthening local ownership.

The findings also highlight a significant gap. Very few grants explicitly prioritized community involvement in policy- and decision-making processes, limiting the ability of communities to shape the design and governance of integrated services. Efforts to engage people from key and vulnerable populations were also limited, raising concerns about equity and inclusiveness. Only 26 countries included clear investments in community engagement and community-led integrated service delivery. This highlights the need to more intentionally include communities—especially those most affected—in every aspect of health programming.

## **6. Technical assistance needs are recognized but underused**

There is a critical need for countries to establish and strengthen systems and services for priority HIV- and TB-related comorbidities, such as NCDs, cancers, mental health conditions and substance use conditions. For investments in integrated services to be effective, they need robust technical support. The study identified five key priority areas of such support. Training and capacity-building were the most requested, reflecting a widespread need to strengthen the health workforce in managing comorbidities. This was followed by policy, protocol and guideline development, and technical advisory support, highlighting a strong demand for strategic frameworks and specialized expertise.

Monitoring and evaluation systems and procurement and supply-chain management were less frequently cited but are critical in specific contexts. Regionally, Africa had the highest level of investment in technical assistance, especially in training and policy development. Other regions offer opportunities for expanded support. The findings show that countries have identified areas of need, but they have not fully taken the opportunities available in GC7 to co-invest in the technical assistance necessary to properly address their specific needs and manage particular aspects of integrated services and systems. Although 75 countries expressed technical assistance needs, only 31 had

budgeted for technical assistance, accounting for US\$ 11.3 million of the total investment (US\$ 3.73 million from the allocation amount).

## **7. Coordination efforts are inconsistently operationalized and not sufficiently linked to primary health care**

Countries frequently proposed joint efforts from government, civil society, communities and technical partners to integrate services for priority NCDs, cancers, mental health conditions and substance use conditions into existing HIV and TB platforms.

Coordination efforts commonly included multistakeholder engagement through technical working groups, harmonized service delivery, joint training and supervision, and clarified partner roles to avoid duplication and improve accountability. The specificity and depth of these coordination mechanisms varied widely across grants, however, with some outlining robust strategies and others offering only aspirational goals. Notably, partnerships with external entities, such as private-sector providers or specialized care institutions, were underutilized, representing a missed opportunity for resource mobilization and service expansion. Coordination with primary health-care stakeholders was not highlighted explicitly or consistently in the findings, indicating a notable gap in implementation planning. Many grants focused on integration within HIV and TB service platforms and coordination between government representatives, community groups, civil society organizations and technical partners. The absence of deliberate engagement with existing primary health-care systems and providers represents a missed opportunity.

Strengthening partnerships with primary health care would help embed HIV, TB and comorbidity services within broader, more sustainable health systems, and move the world closer to achieving universal health coverage.

## **Recommendations**

Health and community systems must be reimagined to meet people's growing and increasingly complex needs. As the burden of HIV- and TB-related comorbidities rises, people increasingly require health services and other interventions that are comprehensive, continuous, and grounded in their lived realities and local context. Advancing integrated, person-centred health services and systems that align with national priorities, primary health-care strategies (including primary care,

multisectoral policies and community engagement) and universal health coverage goals is essential.

At the same time, countries are under pressure to sustain momentum in their HIV and TB responses, even as broader health needs intensify. In an era of shrinking health budgets and declining external development assistance, these pressures risk deepening health inequities and further fragmenting care. Without a deliberate shift towards more efficient, equitable and integrated models of service delivery, health systems will remain ill-equipped to respond to today's challenges, and people will continue to face significant barriers to the care they need.

While recognizing the progress made by countries and the Global Fund, the following recommendations are offered to accelerate the shift towards integrated, person-centred health services.

- **Align strategically with global strategies and guidance**

Despite growing inclusion in GC7 grants, comorbidities remain underfunded and poorly tracked. To close this gap, it is critical to protect and prioritize integrated, person-centred health services and other interventions.

HIV programmes should be aligned with the WHO 2025 recommendations (22, 138) to integrate services for NCDs (specifically diabetes and hypertension), mental health conditions (including depression, anxiety and harmful alcohol use), and antiretroviral therapy adherence support strategies. Evidence-based adherence interventions—such as counselling, addressing internalized stigma, reminders, peer or lay support, and education—must be scaled up to improve viral suppression and treatment outcomes.

Cervical cancer screening using HPV-DNA testing should be embedded, along with timely cervical pre-cancer and cancer treatment, into HIV care for women living with HIV, through a screen, triage and treat approach, as outlined in 2021 WHO guidance (139).

WHO guidance provides opportunities for service integration, especially within primary health care, to enhance efficiency and sustainability. Strengthening coordination across primary health care and programmes for communicable diseases, NCDs, and sexual and reproductive health, and across community groups, civil society and the private sector, facilitated through multistakeholder

platforms, is essential to ensure effective implementation. Coordination needs to be accompanied by communities sharing in decision-making, because key decisions about integrated programming must be made collaboratively, requiring trust between stakeholders and a willingness to be flexible or to compromise.

Building on the 2025 WHO policy brief on TB and primary health care (140), countries should integrate TB prevention, diagnosis and care with NCD and mental health services within primary health care. Managing comorbidities such as diabetes, depression and harmful alcohol use is essential for reducing mortality, improving quality of care, and accelerating progress towards ending the TB epidemic. Integrated service models should be person-centred, locally adapted, and supported by strong referral systems and multidisciplinary teams. Implementation should be guided by national primary health-care strategies, universal health coverage roadmaps, and national targets for specific diseases. It should also be backed by robust monitoring, financing—including by leveraging resources between various disease, primary health-care and broader public health programmes—and community engagement to ensure sustainability and equitable access.

- **Ensure comorbidities are not deprioritized in GC7 midcycle grant reprogramming**

The ongoing GC7 reprioritization process is unfolding at a time when countries face mounting pressure to sustain lifesaving HIV and TB services amid tightening financial constraints. Safeguarding lifesaving services is imperative, but it is equally important to acknowledge the significant impact that certain comorbidities have on outcomes across the HIV and TB care continuum, and on the overall well-being of affected communities across the life course. Neglecting these conditions compromises individual health and the overall effectiveness of programmes.

In the document GC7 Programmatic Reprioritization Approach, the Global Fund recommends deprioritizing the management of NCDs during the current financially challenging climate, and mental health is not explicitly mentioned (141). It is important to highlight that this guidance stands in contrast to the 2025 normative guidance. Rather than framing integration as competing with essential HIV and TB priorities, reprioritization can be a strategic opportunity to align, layer, link and deliver services more efficiently and holistically, without

compromising the gains made in HIV and TB. This requires thoughtful, evidence-based planning; identifying high-impact, cost-effective integration models that can be scaled up within existing platforms; and leveraging systems and resources across programmes.

This should involve countries preserving and expanding investments in scalable service models that link HIV and TB platforms with comorbidity services, such as through task-sharing or bundled service delivery within primary health-care and community settings. Lessons learned from the reprioritization process must be systematically documented and synthesized to guide future planning, including national universal health coverage strategies and domestic financing approaches. Critically, integration efforts should be informed by communities and frontline providers, which are best placed to identify practical, context-specific models that improve access and reduce service fragmentation.

By approaching reprioritization as a strategic transition rather than a trade-off, countries can safeguard essential HIV and TB services and lay the groundwork for more integrated, person-centred health service delivery in the next grant cycle and beyond.

- **Look ahead to GC8 to sustain and scale impact through integrated approaches and more strategic and accountable co-investments**

Although it is too early to determine the precise allocation for GC8, it will be essential to sustain and strategically scale up investments where they align with local priorities and context. A key focus should be on advancing the integration of services within the primary health-care framework, including all three components of primary health care. Such integration must extend beyond HIV, TB and malaria to include the priority comorbidities in order to deliver truly integrated, person-centred health services through non-health sectors.

Building on the GC7 experience, GC8 should strategically address the imbalance between allocation amounts and the PAAR by embedding priority comorbidities within core allocations. The PAAR should be reframed as a pipeline of catalytic, costed and implementation-ready investments. To achieve this, countries should receive clearer guidance and technical support to prioritize high-impact scalable activities aligned with current guidance in their allocation amounts.

Integration may involve difficult decisions about changes to implementation arrangements, with responsibilities for certain aspects of implementation shifting from one implementer to another or being shared.

To maximize the impact of GC8 investments, countries must clearly articulate the complementary domestic and external co-investments required to meet the full spectrum of health needs, particularly for people from key and vulnerable populations. Without such planning, the risk of fragmented service delivery and unmet needs remains high. Early and coordinated efforts to define these co-financing strategies will be critical to ensuring the effectiveness, sustainability and equity of Global Fund-supported programmes. This will also help protect PAAR investments during reprogramming to avoid reversals in integration. This approach will strengthen sustainability, improve accountability, and ensure integrated, person-centred health services are supported, even amid fiscal constraints.

- **Strengthen accountability for comorbidity monitoring**

Weak or absent metrics continue to obscure progress and limit accountability in comorbidity investments. Strengthening monitoring requires the development and integration of standard outcomes for NCDs, cancer, mental health conditions and substance use conditions into national health information systems, aligned with WHO recommendations such as the NCD Global Monitoring Framework (142) and the Mental Health Atlas 2024 (143).

The Global Fund performance framework should be updated for GC8 to include these indicators, with disaggregation by key and vulnerable populations and service type. In particular, the newly developed global HIV targets for 2030 may provide some guidance on monitoring a path towards more integrated services and systems to achieving the goal of ending AIDS as a public health threat alongside other priority comorbidities (144). Capacity-building for CCMs, principal recipients and subrecipients will be essential to define measurable targets aligned with national indicators and WHO guidance. Furthermore, Global Fund KPI S1 on integrated, person-centred, high-quality service delivery<sup>13</sup> could be refined to better capture comorbidity integration and outcomes.

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<sup>13</sup> Reported as a percentage of countries with improvement in scores for provision of integrated, person-centred, high-quality service delivery from latest baseline.

- **Elevate and institutionalize community engagement**

Although many grants support community engagement and community-led service delivery, few embed communities in policy- and decision-making processes. This must change. Mechanisms that promote meaningful participation—such as participatory planning, budgeting, community-led monitoring and regular community dialogues—should be embedded in grants and governance structures. Community engagement should not be viewed as an add-on. It is foundational to responsive, accountable and equitable health systems. Communities must be seen as co-creators in shaping policies, monitoring performance and ensuring services meet people’s needs.

- **Strengthen and reposition technical assistance for integrated service delivery**

Technical assistance remains a critical but underused lever for strengthening integration. Although many countries expressed clear needs for technical assistance during GC7, few fully used the available opportunities. Moving forward, technical assistance must be strengthened and capacitated with the right tools and information to ensure principles such as availability, accessibility, acceptability and quality can be mainstreamed into the design and delivery of integrated services. Technical assistance must be repositioned as a core strategic investment rather than an ancillary activity, and be proactively funded, planned and delivered to enable integrated, person-centred health services and systems.

Effective technical assistance must focus on the areas with the greatest potential for impact. This includes supporting countries to design integrated service-delivery models that co-locate, integrate, link or bundle HIV and TB services with care for priority comorbidities—or transition integrated service delivery towards a primary health-care-oriented health system—depending on local needs and context. It also involves building capacity for task-sharing among health workers, strengthening multidisciplinary team-based care, and harmonizing clinical protocols and operational guidelines. Critically, technical assistance should support the development of robust, integrated monitoring and evaluation systems that capture comorbidity data and track outcomes across the full continuum of care. Without robust technical assistance and systems that make progress visible, integration efforts will remain fragmented and underleveraged.

## Conclusion

Achieving truly integrated, person-centred health services requires more than technical solutions: it demands sustained partnership, strategic investment, and collective commitment at the national, regional and global levels. Leveraging these insights to improve programme implementation and health outcomes will be possible only through coordinated efforts that align funding, policy and technical support with local realities, while prioritizing equity and community engagement. Global solidarity is essential to ensure HIV and TB and related comorbidities are addressed holistically; innovations are scaled sustainably; and health systems are resilient in the face of evolving challenges. By uniting governments, civil society, communities and development partners around a shared vision, we can implement actionable strategies that strengthen health systems, enhance service delivery, and ultimately improve the lives of the people most affected.

## References

- 1 World health statistics 2023: monitoring health for the SDGs, Sustainable Development Goals. Geneva: World Health Organization; 2023  
(<https://www.who.int/data/gho/publications/world-health-statistics>).
- 2 Ye R, Zhang Y, Gu J. The prevalence of comorbidities and differences in noncommunicable diseases and nonrandom associations of comorbidities between HIV-infected and -uninfected individuals in Guangdong Province, China. BMC Public Health. 2025;25(1):761. <https://doi.org/10.1186/s12889-025-21780-x>.
- 3 Moyo-Chilufya M, Maluleke K, Kgarosi K, Muyoyeta M, Hongoro C, Musekiwa A. The burden of non-communicable diseases among people living with HIV in sub-Saharan Africa: a systematic review and meta-analysis. EClinicalMedicine. 2023;65:102255. <https://doi.org/10.1016/j.eclinm.2023.102255>.
- 4 Zhu S, Wang W, He J, Duan W, Ma X, Guan H, et al. Higher cardiovascular disease risks in people living with HIV: a systematic review and meta-analysis. J Glob Health. 2024;14:04078. <https://doi.org/10.7189/jogh.14.04078>.
- 5 Du M, Zhang S, Liu M, Liu J. Cardiovascular disease and its risk factors among people living with HIV: a systematic review and meta-analysis. J Infect Public Health. 2025;18(2):102654. <https://doi.org/10.1016/j.jiph.2025.102654>.
- 6 Leung JM. HIV and chronic lung disease. Curr Opin HIV AIDS. 2023;18(2):93–101. <https://doi.org/10.1097/COH.0000000000000777>.
- 7 Ssemasaazi AJ, Kalyesubula R, Manabe YC, Mbabazi P, Naikooba S, Ssekindi F, et al. Higher prevalence of kidney function impairment among older people living with HIV in Uganda. BMC Nephrol. 2024;25(1):321. <https://doi.org/10.1186/s12882-024-03761-1>.
- 8 Muddu M, Ssinabulya I, Kigozi SP, Ssenyonjo R, Ayebare F, Katwesigye R, et al. Hypertension care cascade at a large urban HIV clinic in Uganda: a mixed methods

- study using the Capability, Opportunity, Motivation for Behavior change (COM-B) model. *Implement Sci Commun*. 2021;2(1):121. <https://doi.org/10.1186/s43058-021-00223-9>.
- 9 Julius H, Basu D, Ricci E, Wing J, Basu JK, Pocaterra D, et al. The burden of metabolic diseases amongst HIV positive patients on HAART attending The Johannesburg Hospital. *Curr HIV Res*. 2011;9(4):247–252. <https://doi.org/10.2174/157016211796320360>.
- 10 Data 2021. Geneva: Joint United Nations Programme on HIV/AIDS; 2021 ([https://www.unaids.org/en/resources/documents/2021/2021\\_unaids\\_data](https://www.unaids.org/en/resources/documents/2021/2021_unaids_data)).
- 11 Kiplagat J, Tran DN, Barber T, Njuguna B, Vedanthan R, Triant VA, et al. How health systems can adapt to a population ageing with HIV and comorbid disease. *Lancet HIV*. 2022;9(4):e281–e292. [https://doi.org/10.1016/S2352-3018\(22\)00009-1](https://doi.org/10.1016/S2352-3018(22)00009-1).
- 12 Smit M, Brinkman K, Geerlings S, Smit C, Thyagarajan K, Sep D, et al. Future challenges for clinical care of an ageing population infected with HIV: a modelling study. *Lancet Infect Dis*. 2015;15(12):810–818. [https://doi.org/10.1016/S1473-3099\(15\)00056-0](https://doi.org/10.1016/S1473-3099(15)00056-0).
- 13 Haacker M, Bärnighausen T, Atun R. HIV and the growing health burden from noncommunicable diseases in Botswana: modelling study. *J Glob Health*. 2019;9(1):010428. <https://doi.org/10.7189/jogh.09.010428>.
- 14 Chang D, Esber AL, Dear NF, et al. Non-communicable diseases by age strata in people living with and without HIV in four African countries. *J Int AIDS Soc*. 2022;25(Suppl. 4):e25985. <https://doi.org/10.1002/jia2.25985>.
- 15 Woldesemayat EM, Petros W, Simachew Y, Tefera K, Tesfaye T, Vera JH. Incidence and predictors of non-communicable diseases among people with HIV at a specialised hospital in Hawassa, Ethiopia: a retrospective cohort study. *BMC Public Health*. 2025;25(1):1421. <https://doi.org/10.1186/s12889-025-21421-3>.
- 16 Reiss P. HIV, co-morbidity and ageing. *J Int AIDS Soc*. 2012;15(Suppl. 4). <https://doi.org/10.7448/IAS.15.6.18073>.
- 17 Negin J, Barnighausen T, Lundgren JD, Mills EJ. Aging with HIV in Africa: the challenges of living longer. *AIDS*. 2012;26(Suppl. 1):S1–S5. <https://doi.org/10.1097/QAD.0b013e3283560f54>.
- 18 Consolidated guidelines on HIV prevention, testing, treatment, service delivery and monitoring: recommendations for a public health approach. Geneva: World Health Organization; 2013 (<https://www.who.int/publications/i/item/9789240031593>).4
- 19 Hyle EP, Naidoo K, Su AE, El-Sadr WM, Freedberg KA. HIV, Tuberculosis, and noncommunicable diseases: what is known about the costs, effects, and cost-effectiveness of integrated care? *J Acquir Immune Defic Syndr*. 2014;67(Suppl. 1):S87–S95. <https://doi.org/10.1097/QAI.0000000000000254>.
- 20 McCombe G, Lim J, Hout MCV, Lazarus JV, Bachmann M, Jaffar S, et al. Integrating care for diabetes and hypertension with HIV care in sub-Saharan Africa: a scoping review. *Int J Integr Care*. 2022;22(1):6. <https://doi.org/10.5334/ijic.5839>.
- 21 Van Der Mannen JS, Heine M, Lalla-Edward ST, Ojji DB, Mocumbi AO, Klipstein-Grobusch K. Lessons learnt from HIV and noncommunicable disease healthcare integration in sub-Saharan Africa. *Global Heart*. 2024;19(1):85. <https://doi.org/10.5334/gh.1370>.

- 22 WHO guideline on HIV service delivery: updated guidance on the integration of diabetes, hypertension and mental health services, and interventions to support adherence to antiretroviral therapy. Geneva: World Health Organization; 2025 (<https://iris.who.int/server/api/core/bitstreams/f6e902a0-b37b-4340-8296-39d91f3321bb/content>).
- 23 Cervical cancer. Geneva: World Health Organization; 2024 (<https://www.who.int/news-room/fact-sheets/detail/cervical-cancer>).
- 24 Stelzle D, Tanaka LF, Lee KK, Khalil AI, Baussano I, Shah AS, et al. Estimates of the global burden of cervical cancer associated with HIV. *Lancet Glob Health*. 2021;9:e161–e169. [https://doi.org/10.1016/S2214-109X\(20\)30459-9](https://doi.org/10.1016/S2214-109X(20)30459-9).
- 25 WHO case definitions of HIV for surveillance and revised clinical staging and immunological classification of HIV-related disease in adults and children. Geneva: World Health Organization; 2007 (<https://iris.who.int/items/9efbe823-0f14-4ac3-a60a-352ae72f88d7>).
- 26 Liu G, Sharma M, Tan N, Barnabas RV. HIV-positive women have higher risk of human papilloma virus infection, precancerous lesions, and cervical cancer. *AIDS*. 2018;32:795–808. <https://doi.org/10.1097/QAD.0000000000001765>.
- 27 Massad LS, Xie X, Burk R, Keller MJ, Minkoff H, D'Souza G, et al. Long-term cumulative detection of human papillomavirus among HIV seropositive women. *AIDS*. 2014;28:2601. <https://doi.org/10.1097/QAD.0000000000000455>.
- 28 Debeaudrap P, Sobngwi J, Tebeu P-M, Clifford GM. Residual or recurrent precancerous lesions after treatment of cervical lesions in human immunodeficiency virus-infected women: a systematic review and meta-analysis of treatment failure. *Clin Infect Dis*. 2019;69:1555–1565. <https://doi.org/10.1093/cid/ciy1123>.
- 29 The path that ends AIDS: UNAIDS global AIDS update 2023. Geneva: Joint United Nations Programme on HIV/AIDS; 2023 (<https://www.unaids.org/en/resources/documents/2023/global-aids-update-2023>).
- 30 New WHO recommendations on screening and treatment to prevent cervical cancer among women living with HIV. Geneva: World Health Organization; 2021 (<https://www.who.int/publications/i/item/9789240030961>).
- 31 D'Souza G, Wiley DJ, Li X, Chmiel JS, Margolick JB, Weber K, et al. Incidence and epidemiology of anal cancer in the multicenter AIDS cohort study. *J Acquir Immune Defic Syndr*. 2008;48(4):491–499. <https://doi.org/10.1097/QAI.0b013e31817aebfe>.
- 32 Palefsky JM. Human papillomavirus infection in HIV-infected persons. *Top HIV Med*. 2007;15(4):130–133.
- 33 Machalek DA, Poynten M, Jin F, Fairley CK, Farnsworth A, Garland SM, et al. Anal human papillomavirus infection and associated neoplastic lesions in men who have sex with men: a systematic review and meta-analysis. *Lancet Oncol*. 2012;13(5):487–500. [https://doi.org/10.1016/S1470-2045\(12\)70080-3](https://doi.org/10.1016/S1470-2045(12)70080-3).
- 34 Gandra S, Azar A, Wessollosky M. Anal high-risk human papillomavirus infection and high-grade anal intraepithelial neoplasia detected in women and heterosexual men infected with human immunodeficiency virus. *HIV AIDS (Auckl)*. 2015;7:29–34. <https://doi.org/10.2147/HIV.S73880>.

- 35 Phanuphak N, Teeratakulpisarn N, Pankam T, Kerr SJ, Barisri J, Deesua A, et al. Anal human papillomavirus infection among Thai men who have sex with men with and without HIV infection: prevalence, incidence, and persistence. *J Acquir Immune Defic Syndr*. 2013;63(4):472–479. <https://doi.org/10.1097/QAI.0b013e3182918a5a>.
- 36 Goldstone S, Palefsky JM, Giuliano AR, et al. Prevalence of and risk factors for human papillomavirus (HPV) infection among HIV-seronegative men who have sex with men. *J Infect Dis*. 2011;203(1):66–74. <https://doi.org/10.1093/infdis/jiq016>.
- 37 Silverberg MJ, Lau B, Achenbach CJ, Jing Y, Althoff KN, D'Souza G, et al. Cumulative incidence of cancer among persons with HIV in North America: a cohort study. *Ann Intern Med*. 2015;163(7):507–518. <https://doi.org/10.7326/M14-2768>.
- 38 Mental disorders. Geneva: World Health Organization; 2025 (<https://www.who.int/news-room/fact-sheets/detail/mental-disorders>).
- 39 Bigna JJ, Tounouga DN, Kenne AM, et al. Epidemiology of depressive disorders in people living with HIV in Africa: a systematic review and meta-analysis—burden of depression in HIV in Africa. *Gen Hosp Psychiatry*. 2019;57:13–22. <https://doi.org/10.1016/j.genhosppsy.2018.10.005>.
- 40 Ayano G, Solomon M, Abraha M. Prevalence of depression among people living with HIV/AIDS in Africa: a systematic review and meta-analysis. *BMC Psychiatry*. 2023;23(1):1–10. <https://doi.org/10.1186/s12888-023-04567-9>.
- 41 Necho M, Tsehay M, Zenebe Y. Suicidal ideation, attempt, and its associated factors among HIV/AIDS patients in Africa: a systematic review and meta-analysis study. *Int J Ment Health Syst*. 2021;15(1):13. <https://doi.org/10.1186/s13033-021-00437-3>.
- 42 Rezaei S, Ahmadi S, Rahmati J, et al. Global prevalence of depression in HIV/AIDS: a systematic review and meta-analysis. *BMJ Support Palliat Care*. 2019;9(4):404–412. <https://doi.org/10.1136/bmjspcare-2019-001952>.
- 43 Molapo DM, Mokgalaboni K, Phoswa WN. Prevalence of depression among people living with HIV on antiretroviral therapy in Africa: a systematic review and meta-analysis. *Healthcare (Basel)*. 2025;13(1):85. <https://doi.org/10.3390/healthcare13010085>.
- 44 Ali U, Riaz U, Doyle H, Satti A, Mahmood N, Rasheed S, et al. Prevalence and predictors of depressive symptoms among people living with HIV in Pakistan: country-wide secondary data analysis from National Stigma Index Study. *PLOS Glob Public Health*. 2024;4(11):e0003882. <https://doi.org/10.1371/journal.pgph.0003882>.
- 45 People Living with HIV Stigma Index 2.0: global report 2023. Hear us out: measuring HIV-related stigma and discrimination. Amsterdam: Global Network of People Living with HIV; 2023 (<https://www.stigmaindex.org/wp-content/uploads/2023/11/PLHIV-Stigma-Index-Global-Report-2023-2.pdf>).
- 46 Plöderl M, Tremblay P. Mental health of sexual minorities: a systematic review. *Int Rev Psychiatry*. 2015;27(5):367–385. <https://doi.org/10.3109/09540261.2015.1083949>.
- 47 Ayano G, Demelash S, Abraha M, Tsegay L. The prevalence of depression among adolescent with HIV/AIDS: a systematic review and meta-analysis. *AIDS Res Ther*. 2021;18(1):23. <https://doi.org/10.1186/s12981-021-00351-1>.

- 48 Sin NL, DiMatteo MR. Depression treatment enhances adherence to antiretroviral therapy: a meta-analysis. *Ann Behav Med.* 2014;47(3):259–269. <https://doi.org/10.1007/s12160-013-9559-6>.
- 49 Gonzalez JS, Batchelder AW, Psaros C, Safren SA. Depression and HIV/AIDS treatment nonadherence: a review and meta-analysis. *J Acquir Immune Defic Syndr.* 2011;58(2):181–187. <https://doi.org/10.1097/QAI.0b013e31822d490a>.
- 50 Uthman OA, Magidson JF, Safren SA, Nachega JB. Depression and adherence to antiretroviral therapy in low-, middle- and high-income countries: a systematic review and meta-analysis. *Curr HIV/AIDS Rep.* 2014;11(3):291–307. <https://doi.org/10.1007/s11904-014-0220-1>.
- 51 Nakimuli-Mpungu E, Musisi S, Smith CM, et al. Mental health interventions for persons living with HIV in low- and middle-income countries: a systematic review. *J Int AIDS Soc.* 2021;24(Suppl. 2):e25722. <https://doi.org/10.1002/jia2.25722>.
- 52 Conteh NK, Latona A, Mahomed O. Mapping the effectiveness of integrating mental health in HIV programs: a scoping review. *BMC Health Serv Res.* 2023;23(1):396. <https://doi.org/10.1186/s12913-023-09359-x>.
- 53 World Health Organization, United Nations Office on Drugs and Crime, Joint United Nations Programme on HIV/AIDS. WHO, UNODC, UNAIDS technical guide for countries to set targets for universal access to HIV prevention, treatment and care for injecting drug users: 2012 revision. Geneva: World Health Organization; 2012 (<https://iris.who.int/server/api/core/bitstreams/19d2296b-0bd4-4412-9156-5033e427497e/content>).
- 54 Consolidated guidelines on HIV, viral hepatitis and STI prevention, diagnosis, treatment and care for key populations. Geneva: World Health Organization; 2022 (<https://www.who.int/publications/i/item/9789240052390>).
- 55 HIV and people who use drugs. Geneva: Joint United Nations Programme on HIV/AIDS; 2024 ([https://www.unaids.org/sites/default/files/media\\_asset/02-hiv-human-rights-factsheet-people-who-use-drugs\\_en.pdf](https://www.unaids.org/sites/default/files/media_asset/02-hiv-human-rights-factsheet-people-who-use-drugs_en.pdf)).
- 56 HIV prevention, treatment, care and support for people who use stimulant drugs. Vienna: United Nations Office on Drugs and Crime; 2019 (<https://www.unodc.org/unodc/en/hiv-aids/hiv-among-people-who-use-stimulant-drugs.html>).
- 57 Williams EC, McGinnis KA, Edelman EJ, Matson TE, Gordon AJ, Marshall BDL, et al. Level of alcohol use associated with HIV care continuum targets in a national U.S. sample of persons living with HIV receiving healthcare. *AIDS Behav.* 2019;23(1):140–151. <https://doi.org/10.1007/s10461-018-2210-6>.
- 58 Global status report on alcohol and health and treatment of substance use disorders. Geneva: World Health Organization; 2024 (<https://iris.who.int/bitstream/handle/10665/377960/9789240096745-eng.pdf>).
- 59 Chander G, Himelhoch S, Moore RD. Substance abuse and psychiatric disorders in HIV-positive patients: epidemiology and impact on antiretroviral therapy. *Drugs.* 2006;66(6):769–789. <https://doi.org/10.2165/00003495-200666060-00004>.

- 60 Kader R, Seedat S, Govender R, Koch R, Parry C. Hazardous and harmful use of alcohol and/or other drugs and health status among South African patients attending HIV clinics. *AIDS Behav.* 2014;18(3):525–534. <https://doi.org/10.1007/s10461-013-0587-9>.
- 61 Chander G, Lau B, Moore RD. Hazardous alcohol use: a risk factor for non-adherence and lack of suppression in HIV infection. *J Acquir Immune Defic Syndr.* 2006;43(2):168–173. <https://doi.org/10.1097/01.qai.0000243121.44659.a4>.
- 62 Hendershot CS, Stoner SA, Pantalone DW, Simoni JM. Alcohol use and antiretroviral adherence: review and meta-analysis. *J Acquir Immune Defic Syndr.* 2009;52(2):180–202. <https://doi.org/10.1097/QAI.0b013e3181b18b6e>.
- 63 Rehm J, Probst C, Shield KD, Shuper PA. Does alcohol use have a causal effect on HIV incidence and disease progression? A review of the evidence and a modeling strategy for quantifying the effect. *Popul Health Metr.* 2017;15(1):4. <https://doi.org/10.1186/s12963-017-0121-9>.
- 64 Shuper PA, Neuman M, Kanteres F, Baliunas D, Joharchi N, Rehm J. Causal considerations on alcohol and HIV/AIDS a systematic review. *Alcohol Alcohol.* 2010;45(2):159–166. <https://doi.org/10.1093/alcalc/agg091>.
- 65 Framework for collaborative action on tuberculosis and comorbidities. Geneva: World Health Organization; 2022 (<https://www.who.int/publications/i/item/9789240055056>).
- 66 Global tuberculosis report 2019. Geneva: World Health Organization; 2019 (<https://www.who.int/publications/i/item/global-tuberculosis-report-2019>).
- 67 Baker MA, Harries AD, Jeon CY, Hart JE, Kapur A, Lönnroth K, et al. The impact of diabetes on tuberculosis treatment outcomes: a systematic review. *BMC Med.* 2011;9:81. <https://doi.org/10.1186/1741-7015-9-81>.
- 68 Jeon CY, Murray MB. Diabetes mellitus increases the risk of active tuberculosis: a systematic review of 13 observational studies. *PLoS Med.* 2008;5:e152. <https://doi.org/10.1371/journal.pmed.0050152>.
- 69 Liu Q, Li W, Xue M, Chen Y, Du X, Wang C, et al. Diabetes mellitus and the risk of multidrug resistant tuberculosis: a meta-analysis. *Sci Rep.* 2017;7:1090. <https://doi.org/10.1038/s41598-017-01213-5>.
- 70 Van Crevel R, Critchley JA. The interaction of diabetes and tuberculosis: translating research to policy and practice. *Trop Med Infect Dis.* 2021;6(1):8. <https://doi.org/10.3390/tropicalmed6010008>.
- 71 Foe-Essomba JR, Kenmoe S, Tchatchouang S, Ebogo-Belobo JT, Mbaga DS, Kengne-Ndé C, et al. Diabetes mellitus and tuberculosis, a systematic review and meta-analysis with sensitivity analysis for studies comparable for confounders. *PLoS One.* 2021;16(12):e0261246. <https://doi.org/10.1371/journal.pone.0261246>.
- 72 Noubiap JJ, Nansseu JR, Nyaga UF, Nkeck JR, Endomba FT, Kaze AD, et al. Global prevalence of diabetes in active tuberculosis: a systematic review and meta-analysis of data from 2.3 million patients with tuberculosis. *Lancet Glob Health.* 2019;7:e448–e460. [https://doi.org/10.1016/S2214-109X\(18\)30487-X](https://doi.org/10.1016/S2214-109X(18)30487-X).

- 73 IDF diabetes atlas, 9th edition. Brussels: International Diabetes Federation; 2019 (<https://diabetesatlas.org/media/uploads/sites/3/2025/02/IDF-Atlas-9th-Edition-EN.pdf>).
- 74 World Health Organization, International Union Against Tuberculosis and Lung Disease. Collaborative framework for care and control of tuberculosis and diabetes. Geneva: World Health Organization; 2011 (<https://iris.who.int/items/d17f7ef5-980e-4b53-9f64-26687e6bf4f0>).
- 75 WHO framework convention on tobacco control. Geneva: World Health Organization ([https://www.who.int/europe/teams/tobacco/who-framework-convention-on-tobacco-control-\(who-fctc\)](https://www.who.int/europe/teams/tobacco/who-framework-convention-on-tobacco-control-(who-fctc))).
- 76 WHO report on the global tobacco epidemic, 2023: protect people from tobacco smoke. Geneva: World Health Organization; 2023 (<https://www.who.int/publications/i/item/9789240077164>).
- 77 Global tuberculosis report 2023. Geneva: World Health Organization; 2023 (<https://www.who.int/publications/i/item/9789240083851>).
- 78 WHO operational handbook on tuberculosis: module 6—tuberculosis and comorbidities, 3rd edition. Geneva: World Health Organization; 2025 ([https://www.who.int/publications/i/item/9789240103276?utm\\_source=chatgpt.com](https://www.who.int/publications/i/item/9789240103276?utm_source=chatgpt.com)).
- 79 Bates MN, Khalakdina A, Pai M, Chang L, Lessa F, Smith KR. Risk of tuberculosis from exposure to tobacco smoke: a systematic review and meta-analysis. *Arch Intern Med.* 2007;167(4):335–342. <https://doi.org/10.1001/archinte.167.4.335>.
- 80 Integrating tobacco control into tuberculosis and HIV responses Implementing the WHO Framework Convention on Tobacco Control to address co-morbidities. Geneva: World Health Organization; 2013 ([https://fctc.who.int/resources/publications/m/item/integrating-tobacco-control-into-tuberculosis-and-hiv-responses?utm\\_source=chatgpt.com](https://fctc.who.int/resources/publications/m/item/integrating-tobacco-control-into-tuberculosis-and-hiv-responses?utm_source=chatgpt.com)).
- 81 Magitta NF, Walker RW, Apte KK, Shimwela MD, Mwaiselage JD, Sanga AA, et al. Prevalence, risk factors and clinical correlates of COPD in a rural setting in Tanzania. *Eur Respir J.* 2018;51(2):1700182. <https://doi.org/10.1183/13993003.00182-2017>.
- 82 Fan H, Wu F, Liu J, Zeng W, Zheng S, Tian H, et al. Pulmonary tuberculosis as a risk factor for chronic obstructive pulmonary disease: a systematic review and meta-analysis. *Ann Transl Med.* 2021;9(5):390. <https://doi.org/10.21037/atm-20-4576>.
- 83 Inghammar M, Ekblom A, Engström G, Ljungberg B, Romanus V, Löfdahl CG, et al. COPD and the risk of tuberculosis: a population-based cohort study. *PLoS One.* 2010;5(4):e10138. <https://doi.org/10.1371/journal.pone.0010138>.
- 84 Joo DH, Kim MC, Sin S, Kang HR, Song JH, Kim HJ, et al. Incidence and risk factors of tuberculosis-associated chronic obstructive pulmonary disease. *Int J Chron Obstruct Pulmon Dis.* 2025;20:2091–2102. <https://doi.org/10.2147/COPD.S523732>.
- 85 Zavala MJ, Becker GL, Blount RJ. Interrelationships between tuberculosis and chronic obstructive pulmonary disease. *Curr Opin Pulm Med.* 2023;29(2):104–111. <https://doi.org/10.1097/MCP.0000000000000938>.

- 86 Shabil M, Bushi G, Beig MA, Rais MA, Ahmed M, Padhi BK. Cardiovascular manifestation in tuberculosis cases: a systematic review and meta-analysis. *Curr Probl Cardiol.* 2023;48(7):101666. <https://doi.org/10.1016/j.cpcardiol.2023.101666>.
- 87 Basham CA, Smith SJ, Romanowski K, Johnston JC. Cardiovascular morbidity and mortality among persons diagnosed with tuberculosis: a systematic review and meta-analysis. *PLoS One.* 2020;15(7):e0235821. <https://doi.org/10.1371/journal.pone.0235821>.
- 88 Franco JV, Bongaerts B, Metzendorf MI, Riso A, Guo Y, Peña Silva L, et al. Undernutrition as a risk factor for tuberculosis disease. *Cochrane Database Syst Rev.* 2024;6(6):CD015890. <https://doi.org/10.1002/14651858.CD015890.pub2>.
- 89 Lönnroth K, Williams BG, Cegielski P, Dye C. A consistent log-linear relationship between tuberculosis incidence and body mass index. *Int J Epidemiol.* 2010;39:1491–55. <https://doi.org/10.1093/ije/dyp308>.
- 90 Van Lettow M, Kumwenda JJ, Harries AD, Whalen CC, Taha TE, Kumwenda N et al. Malnutrition and the severity of lung disease in adults with pulmonary tuberculosis in Malawi. *Int J Tuberc Lung Dis.* 2004;8(2):211–217.
- 91 Sinha P, Lönnroth K, Bhargava A, Heysell SK, Sarkar S, Salgame P, et al. Food for thought: addressing undernutrition to end tuberculosis. *Lancet Infect Dis.* 2021;21(10):e318–e325. [https://doi.org/10.1016/S1473-3099\(20\)30792-1](https://doi.org/10.1016/S1473-3099(20)30792-1).
- 92 Waitt CJ, Squire SB. A systematic review of risk factors for death in adults during and after tuberculosis treatment. *Int J Tuberc Lung Dis.* 2011;15(7):871–885. <https://doi.org/10.5588/ijtld.10.0352>.
- 93 Guideline: nutritional care and support for patients with tuberculosis. Geneva: World Health Organization; 2013 (<https://iris.who.int/items/99a1d2aa-bde9-4652-9e00-98e1324b01c8>).
- 94 WHO consolidated guidelines on tuberculosis: module 6—tuberculosis and comorbidities. Geneva: World Health Organization; 2024.
- 95 Hayward SE, Deal A, Rustage K, Nellums LB, Sweetland AC, Boccia D, et al. The relationship between mental health and risk of active tuberculosis: a systematic review. *BMJ Open.* 2022;12(1):e048945. <https://doi.org/10.1136/bmjopen-2021-048945>.
- 96 Sweetland A, Oquendo M, Wickramaratne P, Weissman M, Wainberg M. Depression: a silent driver of the global tuberculosis epidemic. *World Psychiatry* 2014;13:325–326. <https://doi.org/10.1002/wps.20134>.
- 97 Duko B, Bedaso A, Ayano G. The prevalence of depression among patients with tuberculosis: a systematic review and meta-analysis. *Ann Gen Psychiatry.* 2020;19:1–11. <https://doi.org/10.1186/s12991-020-00281-8>.
- 98 Sweetland AC, Kritski A, Oquendo MA, Sublette ME, Norcini Pala A, Batista Silva LR, et al. Addressing the tuberculosis–depression syndemic to end the tuberculosis epidemic. *Int J Tuberc Lung Dis.* 2017;21(8):852–861. <https://doi.org/10.5588/ijtld.16.0584>.
- 99 Anye LC, Agbortabot Bissong ME, Njundah AL, Siewe Fodjo JN. Depression, anxiety and medication adherence among tuberculosis patients attending treatment centres in Fako Division, Cameroon: cross-sectional study. *BJPsych Open.* 2023;9(3):e65. <https://doi.org/10.1192/bjo.2023.42>.

- 100 Pachi A, Bratis D, Moussas G, Tselebis A. Psychiatric morbidity and other factors affecting treatment adherence in pulmonary tuberculosis patients. *Tuberc Res Treat*. 2013;2013:489865. <https://doi.org/10.1155/2013/489865>.
- 101 Lee G, Scuffell J, Galea JT, Shin SS, Magill E, Jaramillo E, et al. Impact of mental disorders on active TB treatment outcomes: a systematic review and meta-analysis. *Int J Tuberc Lung Dis*. 2020;24(12):1279–1284. <https://doi.org/10.5588/ijtld.20.0458>.
- 102 Oh KH, Choi H, Kim E, Kim HJ, Cho S. Depression and risk of tuberculosis: a nationwide population-based cohort study. *Int J Tuberc Lung Dis*. 2017;21(7):804–809. <https://doi.org/10.5588/ijtld.17.0038>.
- 103 Doherty AM, Kelly J, McDonald C, O'Dwyer AM, Keane J, Cooney J. A review of the interplay between tuberculosis and mental health. *Gen Hosp Psychiatry*. 2013;35:398–406. <https://doi.org/10.1016/j.genhosppsych.2013.03.018>.
- 104 Hwang TJ, Wares DF, Jafarov A, Jakubowiak W, Nunn P, Keshavjee S. Safety of cycloserine and terizidone for the treatment of drug-resistant tuberculosis: a meta-analysis. *Int J Tuberc Lung Dis*. 2013;17(10):1257–1266. <https://doi.org/10.5588/ijtld.12.0863>.
- 105 Vega P, Sweetland A, Acha J, Castillo H, Guerra D, Smith Fawzi MC, et al. Psychiatric issues in the management of patients with multidrug-resistant tuberculosis. *Int J Tuberc Lung Dis*. 2004;8(6):749–759.
- 106 Alene KA, Clements ACA, McBryde ES, Jaramillo E, Lönnroth K, Shaweno D, et al. Mental health disorders, social stressors, and health-related quality of life in patients with multidrug-resistant tuberculosis: a systematic review and meta-analysis. *J Infect*. 2018;77(5):357–367. <https://doi.org/10.1016/j.jinf.2018.07.007>.
- 107 Acha J, Sweetland A, Guerra D, Chalco K, Castillo H, Palacios E. Psychosocial support groups for patients with multidrug-resistant tuberculosis: five years of experience. *Glob Public Health*. 2007;2(4):404–417. <https://doi.org/10.1080/17441690701191610>.
- 108 WHO operational handbook on tuberculosis. Module 6: tuberculosis and comorbidities—mental health conditions. Geneva: Switzerland. World Health Organization; 2023 (<https://www.who.int/publications/i/item/9789240082557>).
- 109 Getahun H, Baddeley A, Raviglione M. Managing tuberculosis in people who use and inject illicit drugs. *Bull World Health Organ*. 2013;91(2):154–156. <https://doi.org/10.2471/BLT.13.117267>.
- 110 Deiss RG, Rodwell TC, Garfein RS. Tuberculosis and illicit drug use: review and update. *Clin Infect Dis*. 2009;48(1):72–82. <https://doi.org/10.1086/594126>.
- 111 Grenfell P, Baptista Leite R, Garfein R, de Lussigny S, Platt L, Rhodes T. Tuberculosis, injecting drug use and integrated HIV-TB care: a review of the literature. *Drug Alcohol Depend*. 2013;129(3):180–209. <https://doi.org/10.1016/j.drugalcdep.2012.11.013>.
- 112 Degenhardt L, Peacock A, Colledge S, Leung J, Grebely J, Vickerman P, et al. Global prevalence of injecting drug use and sociodemographic characteristics and prevalence of HIV, HBV, and HCV in people who inject drugs: a multistage systematic review. *Lancet Glob Health*. 2017;5(12):e1192–e1207. [https://doi.org/10.1016/S2214-109X\(17\)30375-3](https://doi.org/10.1016/S2214-109X(17)30375-3).

- 113 World drug report 2019: booklet 2—global overview of drug demand and supply. Vienna: United Nations Office on Drugs and Crime; 2019 ([https://wdr.unodc.org/wdr2019/prelaunch/WDR19\\_Booklet\\_2\\_DRUG\\_DEMAND.pdf](https://wdr.unodc.org/wdr2019/prelaunch/WDR19_Booklet_2_DRUG_DEMAND.pdf)).
- 114 Protecting human rights, ethics and equity for tuberculosis patients. Geneva: World Health Organization (<https://www.who.int/europe/health-topics/tuberculosis/protecting-human-rights-ethics-and-equity-for-tuberculosis-patients>).
- 115 Dolan K, Wirtz AL, Moazen B, Ndeffo-Mbah M, Galvani A, Kinner SA, et al. Global burden of HIV, viral hepatitis, and tuberculosis in prisoners and detainees. *Lancet*. 2016;388(10049):1089–1102. [https://doi.org/10.1016/S0140-6736\(16\)30466-4](https://doi.org/10.1016/S0140-6736(16)30466-4).
- 116 Citro B, Soltan V, Malar J, Katlholo T, Smyth C, Sari AH, et al. Building the evidence for a rights-based, people-centered, gender-transformative tuberculosis response: an analysis of the Stop TB Partnership community, rights, and gender tuberculosis assessment. *Health Hum Rights*. 2021;23(2):253–267.
- 117 Lönnroth K, Williams BG, Stadlin S, Jaramillo E, Dye C. Alcohol use as a risk factor for tuberculosis: a systematic review. *BMC Public Health*. 2008;8:289. <https://doi.org/10.1186/1471-2458-8-289>.
- 118 Rehm J, Samokhvalov AV, Neuman MG, Room R, Parry C, Lönnroth K, et al. The association between alcohol use, alcohol use disorders and tuberculosis (TB): a systematic review. *BMC Public Health*. 2009;9:450. <https://doi.org/10.1186/1471-2458-9-450>.
- 119 Szabo G, Saha B. Alcohol's effect on host defense. *Alcohol Res*. 2015;37(2):159–170.
- 120 Imtiaz S, Shield KD, Roerecke M, et al. Alcohol consumption as a risk factor for tuberculosis: meta-analyses and burden of disease. *Eur Respir J*. 2017;50(1):1700216. <https://doi.org/10.1183/13993003.00216-2017>.
- 121 Parry CD, Patra J, Rehm J. Alcohol consumption and non-communicable diseases: epidemiology and policy implications. *Addiction*. 2011;106(10):1718–1724. <https://doi.org/10.1111/j.1360-0443.2011.03605.x>.
- 122 Ferreira-Borges C, Rehm J, Dias S, et al. The impact of alcohol consumption on African people in 2012: an analysis of burden of disease. *Trop Med Int Health*. 2016;21(1):52–60. <https://doi.org/10.1111/tmi.12618>.
- 123 Implementing the End TB Strategy: the essentials. Geneva: World Health Organization; 2015 (<https://www.afro.who.int/sites/default/files/2017-06/eng.pdf>).
- 124 Fighting pandemics and building a healthier and more equitable world: Global Fund strategy (2023–2028). Geneva: Global Fund to Fight AIDS, Tuberculosis and Malaria; 2021 ([https://www.theglobalfund.org/media/11612/strategy\\_globalfund2023-2028\\_narrative\\_en.pdf](https://www.theglobalfund.org/media/11612/strategy_globalfund2023-2028_narrative_en.pdf)).
- 125 Global AIDS strategy 2021–2026: end inequalities, end AIDS. Geneva: Joint United Nations Programme on HIV/AIDS; 2021 (<https://www.unaids.org/en/resources/documents/2021/2021-2026-global-AIDS-strategy>).

- 126 Global health sector strategies on, respectively, HIV, viral hepatitis and sexually transmitted infections for the period 2022-2030. Geneva: World Health Organization; 2022 (<https://www.who.int/publications/i/item/9789240053779>).
- 127 Consolidated guidelines on HIV prevention, testing, treatment, service delivery and monitoring: recommendations for a public health approach. Geneva: World Health Organization; 2021 (<https://www.who.int/publications/i/item/9789240031593>).
- 128 The End TB Strategy: global strategy and targets for tuberculosis prevention, care and control after 2015. Geneva: World Health Organization; 2015 (<https://cdn.who.int/media/docs/default-source/documents/tuberculosis/end-tb-strategy-information-sheet8817f818-feaa-49ac-b26a-92c5b9dca034.pdf>).
- 129 WHO operational handbook on tuberculosis. Geneva: World Health Organization; 2023.
- 130 Guidance note: prioritization framework for supporting health and longevity among people living with HIV, allocation period 2023-2025. Geneva: Global Fund to Fight AIDS, Tuberculosis and Malaria; 2023.
- 131 Information note: resilient and sustainable systems for health (RSSH). Geneva: Global Fund to Fight AIDS, Tuberculosis and Malaria; 2022.
- 132 Information note: TB allocation period 2023–2025. Geneva: Global Fund to Fight AIDS, Tuberculosis and Malaria; 2022.
- 133 WHO package of essential noncommunicable (PEN) disease interventions for primary health care. Geneva: World Health Organization ([https://www.who.int/publications/i/item/who-package-of-essential-noncommunicable-\(pen\)-disease-interventions-for-primary-health-care](https://www.who.int/publications/i/item/who-package-of-essential-noncommunicable-(pen)-disease-interventions-for-primary-health-care)).
- 134 Allocation funding. Geneva: Global Fund to Fight AIDS, Tuberculosis and Malaria (<https://resources.theglobalfund.org/en/grant-life-cycle/applying-for-funding/sources-of-funding/allocation-funding/>).
- 135 Unfunded quality demand. Geneva: Global Fund to Fight AIDS, Tuberculosis and Malaria (<https://resources.theglobalfund.org/en/grant-life-cycle/grant-making/unfunded-quality-demand/>).
- 136 Braun V, Clarke V. Using thematic analysis in psychology. *Qualitative Qual Research Res in Psychology*. 2006 Jan;3(2):77–101. <https://doi.org/10.1191/1478088706qp0630a>.
- 137 Coinfections and comorbidities: high level summary of anticipated investments. Geneva: Global Fund to Fight AIDS, Tuberculosis and Malaria; 2024.
- 138 Overview of the WHO recommendations on HIV and sexually transmitted infection testing, prevention, treatment, care and service delivery. Geneva: World Health Organization; 2025 (<https://www.who.int/publications/i/item/B09471>).
- 139 WHO guideline for screening and treatment of cervical pre-cancer lesions for cervical cancer prevention, second edition. Geneva: World Health Organization; 2021 (<https://www.who.int/publications/i/item/9789240030824>).
- 140 Tuberculosis and primary health care: synergies and opportunities towards universal health coverage—policy brief. Geneva: World Health Organization; 2025 (<https://www.who.int/publications/i/item/9789240111295>).

- 141 GC7 programmatic reprioritization approach: protecting and enabling access to lifesaving services. Geneva: Global Fund to Fight AIDS, Tuberculosis and Malaria ([https://resources.theglobalfund.org/media/sveowiic/cr\\_gc7-programmatic-reprioritization-approach\\_summary\\_en.pdf](https://resources.theglobalfund.org/media/sveowiic/cr_gc7-programmatic-reprioritization-approach_summary_en.pdf)).
- 142 NCD global monitoring framework. Geneva: World Health Organization; 2025 (<https://www.who.int/teams/ncds/surveillance/monitoring-capacity/gmf>).
- 143 Mental health atlas 2024. Geneva: World Health Organization; 2025 (<https://www.who.int/publications/i/item/9789240114487>).
- 144 Global Task Team on 2030 HIV Targets: draft recommendations. Geneva: Joint United Nations Programme on HIV/AIDS; 2025 ([https://www.unaids.org/sites/default/files/2025-03/recommended\\_2030\\_HIV\\_targets\\_livedocument\\_en.pdf](https://www.unaids.org/sites/default/files/2025-03/recommended_2030_HIV_targets_livedocument_en.pdf)).

# Annexes

The following annexes can be fully accessed at <https://unitedgmh.org/review-and-mapping-of-global-fund-investments-in-priority-comorbidities-in-grant-cycle-7-to-improve-the-health-and-well-being-of-people-living-with-or-at-risk-of-hiv-and-or-tb-annexes/>

- Annex 1: Data extraction tool and comorbidity data extraction framework <https://unitedgmh.org/app/uploads/2026/02/1.-Data-Extraction-Tool.xlsx>
- Annex 2: Codebook structure for qualitative data <https://unitedgmh.org/app/uploads/2026/02/2-Terms-of-Reference.docx.pdf>
- Annex 3: Terms of reference <https://unitedgmh.org/app/uploads/2026/02/3-Detailed-Funding-Allocation-for-Comorbidity-Related-Activities.xlsx>
- Annex 4: Detailed funding allocation for comorbidity-related activities <https://unitedgmh.org/app/uploads/2026/02/4-Detailed-activities-included-in-the-grants.docx.pdf>
- Annex 5: Description of activities included in the grants <https://unitedgmh.org/app/uploads/2026/02/5-Activity-performance-monitoring-indicators.docx.pdf>
- Annex 6: Activity performance monitoring indicators <https://unitedgmh.org/app/uploads/2026/02/6-Funding-allocated-to-priority-comorbidities-by-country.xlsx>
- Annex 7: Funding allocated to priority comorbidities by country <https://unitedgmh.org/app/uploads/2026/02/7-Breakdown-of-Specific-Activities-by-priority-comorbidity-Category.docx.pdf>
- Annex 8: Breakdown of specific activities by priority comorbidity category <https://unitedgmh.org/app/uploads/2026/02/8-Country-Technical-Support-Needs-identified-in-the-Grants.docx.pdf>
- Annex 9: Country technical support needs identified in the grants <https://unitedgmh.org/app/uploads/2026/02/9-Technical-support-needs-identified-in-the-grants-by-country.xlsx>
- Annex 10: Technical support needs identified in the grants by country <https://unitedgmh.org/app/uploads/2026/02/10-Community-engagement-in-Comorbidity-Focused-Activities-by-Country.xlsx>
- Annex 11: Community engagement in comorbidity-focused activities by country <https://unitedgmh.org/app/uploads/2026/02/Summary-of-countries-whose-documents-were-reviewed.xlsx-Table.pdf>

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