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

World Health Organization

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Abbreviations

AIDS	acquired immunodeficiency syndrome
ART	antiretroviral therapy
CI	confidence interval
DSD	differentiated service delivery
GAD	general anxiety disorder
GDG	Guideline Development Group
GRADE	Grading of Recommendations Assessment Development and Evaluation
HIV	human immunodeficiency virus
LMICs	low- and middle-income countries
mhGAP	mental health Gap Action Programme
NCDs	noncommunicable diseases
OR	odds ratio
PEN	WHO package of essential noncommunicable disease interventions
PEPFAR	United States President's Emergency Plan for AIDS Relief
PICO	population intervention comparator outcome
PHC	primary health care
PRISMA	Preferred Reporting Items for Systematic reviews and Meta-Analyses
SMS	short message service
UN	United Nations
UNAIDS	Joint United Nations Programme on HIV/AIDS
WHO	World Health Organization

Definition of key terms

A public health approach	A public health approach addresses the health needs of a population or the collective health status of people rather than focusing primarily on managing individual cases. This approach aims to ensure the widest possible access to high-quality services and medicines at the population level, based on simplified and standardized approaches, and to strike a balance between implementing the best-proven standard of care and what is feasible on a large scale in resource-limited settings. In the context of HIV treatment, this includes simplified treatment regimens that work across populations, free care at the point of service, decentralized and integrated services with task-sharing, and simplified approaches to clinical monitoring.
Adherence	Adherence is the extent to which a person's behaviour – such as taking medication, following a diet and/or changing lifestyle – aligns with the recommendations agreed upon with a health care provider.
Age groups	The following definitions for adults, adolescents, children and infants are used in these guidelines for the purpose of implementing recommendations for specific age groups. It is acknowledged that countries may have other definitions under national laws. • An adult is a person older than 19 years of age. • An adolescent is a person 10–19 years of age inclusive. • A child is a person one year to less than 10 years of age. • An infant is a child less than one year of age.
ART (antiretroviral therapy)	ART refers to a combination of ARV drugs used to treat HIV infection.
ARV (antiretroviral)	ARV drugs refer to the medicines used to treat or prevent HIV.
Community health worker	A community health worker is a member of the community who is trained to carry out functions related to delivering health care, health promotion and linking the community with the health system, but who does not necessarily have a formal professional or paraprofessional certificate.
Differentiated service delivery	Differentiated service delivery is an approach that simplifies and adapts HIV services to better serve the needs of people living with HIV and to optimize the available resources in health systems.
Enhanced adherence support	Enhanced adherence support is a structured approach that provides additional, tailored support to individuals who are not adhering well to treatment, and which aims to identify and address barriers to adherence through counselling, education and follow-up.
HIV	HIV refers to the human immunodeficiency virus. There are two types of HIV: HIV-1 and HIV-2. The vast majority of HIV infections globally are HIV-1.

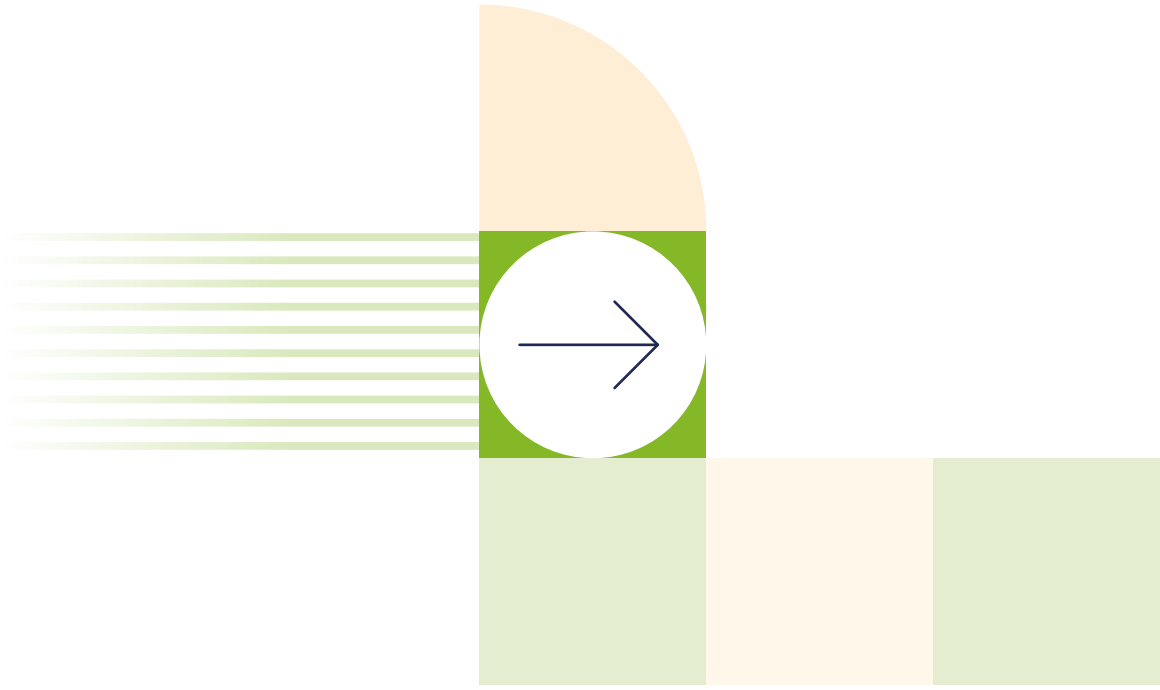
Integrated service delivery	Integrated health services are health services that are managed and delivered in a way that ensures people receive a continuum of health promotion, disease prevention, diagnosis, treatment, disease management, rehabilitation and palliative care services at the different levels and sites of care within the health system and according to their needs throughout the life-course. For the purposes of this guideline, the level of integration can vary from close collaboration between HIV and other services to fully integrated chronic disease management
Key populations	Key populations are groups that have a high risk and disproportionate burden of HIV in all epidemic settings. They frequently face legal and social challenges that increase their vulnerability to HIV, including barriers to accessing HIV prevention, diagnosis, treatment and other health and social services. Key populations include men who have sex with men, people who inject drugs, people in prisons and other closed settings, sex workers and trans and gender diverse people.
Lay provider	A lay provider is any person who performs functions related to health care delivery and has been trained to deliver specific services but does not possess a formal professional or paraprofessional certificate or tertiary degree.
Nonphysician clinician	A nonphysician clinician (or health care worker) is a professional health care worker who is able to offer many of the diagnostic and clinical functions of a physician but is not trained as a physician. These types of health care workers are often known or as health officers, clinical officers, physician assistants, nurse practitioners or nurse clinicians and are an important cadre for HIV care and treatment in some countries.
Nurse	A nurse is someone who has been authorized to practise as a nurse or trained in basic nursing skills such as registered nurses, clinical nurse specialists, licensed nurses, auxiliary nurses, dental nurses and primary care nurses.
Person-centred care	Person-centred care is an approach to care that consciously adopts the perspectives of individuals, caregivers, families and communities as participants in, and beneficiaries of, trusted health systems organized around the comprehensive needs of people rather than individual diseases, and respects social preferences.
Point-of-care testing	Point-of-care testing is conducted at the site at which clinical care is being provided, with results being returned to the person being tested or caregiver on the same day as sample collection and testing in order to enable clinical decisions to be made in a timely manner.
Rapid ART initiation	Initiation of ART within seven days of HIV diagnosis.
Retention	Retention in care refers to the percentage of adults and children living with HIV and receiving ART during a specified follow-up period (12, 24, 36 months, etc.).
Task-sharing	Task-sharing is the rational redistribution of tasks between cadres of health care workers with longer training and other cadres with shorter training such as lay providers, while providing ongoing supervision and support.
Viral suppression	There are three key categories for HIV viral load measurements: unsuppressed (>1000 copies/mL), suppressed (detected but ≤1000 copies/mL) and undetectable (viral load not detected by test used)

Executive summary

Widespread access to effective antiretroviral therapy has made HIV a chronic condition for millions of people around the world. Optimization of health benefits, however, may require additional services that support the health of the whole person. As people living with HIV live longer, there is a need to pay attention to detecting and managing noncommunicable diseases, in particular diabetes and hypertension. Support for mental health and alcohol and substance use disorders is essential to improve engagement in care, quality of life and other important HIV outcomes. Additional support and counselling for adherence to antiretroviral medications may be an even more important part of chronic care.

These guidelines provide new and updated recommendations to support these long-term health needs, the aim of which is to encourage continued improvements in sustained access to antiretroviral therapy and support services for people living with HIV over the life course. Service integration reduces fragmented health care delivery and promotes access to a continuum of care that is aligned with people's lifelong needs, thereby contributing to improved access to needed and varied services and better engagement with care.

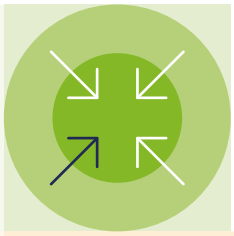
WHO would like to thank the many individuals who contributed to the development of these guidelines, including individuals working for Ministries of Health, agencies and implementers, health care providers, researchers and representatives from affected communities.



Summary of new and updated recommendations

	Recommendation
Updated* recommendation (from 2016)	Diabetes and hypertension care should be integrated with HIV services *(Strong recommendation, moderate certainty evidence for blood pressure control / very low certainty evidence for diabetes control)*
New recommendation	Mental health care for depression, anxiety and alcohol use disorders should be integrated with HIV services. *(Strong recommendation, moderate certainty evidence for depression/ low certainty evidence for anxiety and alcohol use disorder)*
Updated recommendation (from 2016)	Adherence support interventions should be provided to people on antiretroviral therapy (ART) *(Strong recommendation, moderate certainty evidence)* The following interventions have demonstrated effectiveness in improving adherence and virological suppression: • Counselling *(moderate certainty evidence)* • Reminders *(moderate certainty evidence)* • Tailored support from peers, other lay persons or health workers *(moderate certainty evidence)* • Education *(low certainty evidence)*

* Previously a conditional recommendation based on very low certainty evidence



01

Introduction

1. Introduction

Almost 40.8 million people are estimated to be living with HIV, of whom over 31.6 million were on antiretroviral therapy (ART) as of the end of 2024 *(1)*. Optimal use of ART is central to preventing illness and onward HIV transmission. People living with HIV who start treatment early in their infection and are adherent to treatment can expect a near normal life expectancy *(2,3)*. However, sustained adherence to treatment is a challenge for a broad range of individual, interpersonal, community, and structural reasons *(4)*.

Mortality owing to noncommunicable diseases (NCDs) claimed at least 43 million lives in 2021, equivalent to 75% of non-pandemic-related deaths globally. Cardiovascular diseases and diabetes are two of the top four NCDs which account for 80% of all premature NCD deaths *(5)*. In addition, there is an increasing burden of mental health conditions. In 2019, 970 million people globally were living with a mental health disorder, with anxiety and depression the most common *(6)*.

Simplified service delivery approaches have been promoted as an important way to increase access to care and support long-term delivery of care. Simplified approaches include task-sharing, decentralization, differentiated service delivery and integration of HIV services with other important services for people living with HIV.

These guidelines provide new and updated guidance on interventions to support adherence to treatment and integrated service delivery, and explore the following three questions.

- Should diabetes and hypertension care be integrated with HIV services (compared to non-integrated care) for people living with HIV?
- Should mental health care be integrated with HIV services (compared to non-integrated care) for people living with HIV?
- What adherence support interventions (compared to standard care) should be provided for people living with HIV receiving ART?

Note: separate WHO guidelines are available for the screening and treatment of cervical cancer, including among women living with HIV *(7)*.

Purpose

The purpose of these updated guidelines is to support integrated HIV service delivery, promote long-term adherence to antiretroviral therapy, and improve the overall health and quality of life of people living with HIV. In line with WHO's commitment to person-centred care, these guidelines reflect updated evidence and the broader needs of individuals affected by HIV.

Advances in antiretroviral therapy have enabled many individuals living with HIV to reach older age. However, the ageing process in this population is often described as accelerated and accentuated, with some experiencing age-related conditions earlier than expected.

There is a high prevalence of diabetes, hypertension and mental health conditions such as anxiety and depression among people living with HIV *(8)*. These conditions share common, modifiable risk factors, including physical inactivity, substance use, unhealthy diets, sleep disturbances and chronic stress.

The guidelines provide recommendations supporting integration of services for diabetes, hypertension and mental health conditions (depression and anxiety) with HIV services. Integrated service provision is critical to supporting expanded access to a broad range of essential services. In recent years a growing body of evidence has emerged in support of integrated delivery of HIV, NCDs and mental health services. This expanded evidence base supports a broader and more robust approach to integration with the end-goal being the improvement of treatment outcomes, mental health and the overall well-being of people living with HIV.

Integrated services are built on the foundation of successful HIV treatment. Optimal adherence to ART remains a persistent challenge *(9)*. Since the previous WHO recommendation was developed in 2016 *(10)* over 100 trials have evaluated interventions to support adherence. Furthermore, changes in recommended treatment regimens with fewer adverse events and simplified dosing justify a reassessment of adherence-support approaches. These guidelines synthesize emerging evidence to inform scalable interventions that support treatment continuity, reduce mortality and transmission, and enhance engagement with care.

Scope and target audience

Scope

In 2016, WHO issued a strong recommendation on interventions to support adherence and a conditional recommendation on the assessment and management of depression *(11)*. In 2021, WHO issued a recommendation on the integration of HIV, diabetes and hypertension screening and/or care; this was a conditional recommendation based on low certainty evidence *(12)*. Since the issuing of these recommendations there has been an improved understanding of the challenges faced by people living with HIV over the life course, and new evidence has emerged to inform intervention approaches.

Key areas for updating the HIV service delivery guidelines were identified through a recent survey of programme managers in high HIV-burden countries. They include interventions to support adherence to antiretrovirals; integration of HIV, diabetes and hypertension care; and integration of HIV and mental health care. The information presented in this document is supported by the latest available evidence and aligned with the goal of achieving universal health coverage and improved health outcomes for all.

Target audience

These guidelines are intended for policy-makers and programme managers involved in the implementation and adaptation of WHO guidelines into national HIV or communicable disease programmes, or integration into primary health care services including NCDs and mental health care.

These guidelines will also be of interest to doctors, nurses and other health care workers, particularly those working in primary care services that are often the first point of contact for people seeking care. These guidelines will also be of interest to community- and faith-based organizations, advocates, civil society organizations, and international and bilateral agencies and organizations that provide technical and financial resources to programmes that support people living with HIV.

Guiding principles

The following principles were established to guide the implementation of the recommendations:

- implementation of the guidelines should contribute to realizing the Sustainable Development Goals by achieving key global and national HIV goals; and
- guidelines ought to be based on a public health approach in line with the continuum of HIV prevention, care and treatment.

Implementation of the guidelines should be:

- accompanied by efforts to promote and protect the human rights of people who need HIV services, including ensuring informed consent, preventing stigma and discrimination in the provision of services, and promoting gender equity and respectful care;
- informed by the local context, including HIV epidemiology and prevalence of other comorbidities, values and preferences of providers and beneficiaries, feasibility and acceptability, availability of resources, organization and capacity of the health system, and anticipated cost-effectiveness; and
- consistent with Good Practice to promote people-centred care and communication, including ongoing training, mentoring, supportive supervision and monitoring of health workers, to improve the relationships between patients and health care providers.

Methods for developing these guidelines

These guidelines were developed in accordance with procedures established by the WHO Guidelines Review Committee *(3)*. The recommendations were developed following the GRADE (Grading of Recommendations Assessment, Development and Evaluation) approach to reviewing evidence and formulating recommendations. Consistent with previous WHO guidelines, these guidelines are based on a public health approach that considers feasibility and effectiveness across a variety of settings.

All external contributors to the guidelines, including members of the Guideline Development Group (GDG) and the External Review Group, completed a WHO declaration of interests form in accordance with WHO policy for experts. The WHO Guideline Steering Group reviewed the declaration of interest forms and the results of the web-based search for each member of the GDG: a management plan was agreed and recorded for each individual and presented at the guidelines meeting (Web Annex A).

The systematic reviews and evidence-to-decision tables were shared in advance and presented at the meetings with discussions facilitated by the methodologist. For the new formulation of recommendations, the GDG met virtually on 8–10 April 2025.

The full methods for developing these guidelines are detailed in Section 8 and supporting Web Annexes are available as follows:

Web Annex A: Summary of declarations of interest

Web Annex B: Systematic review abstracts and GRADE evidence profiles

Web Annex C: Client preferences survey

Web Annex D: Evidence-to-decision summary of judgements

02

Integration of HIV, diabetes and hypertension care

2. Integration of HIV, diabetes and hypertension care

Recommendation (updated 2025)

Diabetes and hypertension care should be integrated with HIV services
Strong recommendation, moderate certainty evidence for blood pressure control / very low certainty evidence for diabetes control

Background

High blood pressure is a leading risk factor for attributable deaths, accounting for an estimated 10.8 million avoidable deaths in 2019 *(14)*. The number of people living with hypertension has doubled between 1990 and 2019 from 650 million to 1.3 billion *(15)*. In low-income countries, only 26% of adults with hypertension were receiving treatment compared with 58% in high-income countries *(16)*. The latest global estimates for diabetes suggest there are now 828 million people living with diabetes with the greatest increases being in low- and middle-income countries (LMICs) *(17)*. In 2022, nearly 450 million adults aged 30 and older remained untreated (59% of those with diabetes); 90% of these individuals lived in LMICs *(17)*.

With the successful scale-up of HIV treatment programmes, more people living with HIV are aging and increasingly developing NCDs. In 2021, among people accessing HIV services in PEPFAR-supported countries, 3.6 million or 21% were older adults – defined as 50 years or older. The age structure of people living with HIV continues to shift rapidly: this figure is projected to reach nearly 10 million by 2040 *(18)*. Studies assessing HIV cohorts in sub-Saharan Africa estimate a 5–10% prevalence of diabetes and 20–25% prevalence of hypertension among people living with HIV *(19–21)*. These age-related epidemiological trends affecting people living with HIV and NCDs globally mean that considerations about integrated care are urgent issues.

WHO guidelines published in 2021 conditionally recommended the integration of diabetes and hypertension care with HIV services. Since then, considerable evidence has become available further supporting the integration of HIV, hypertension and diabetes services urged in this revised recommendation.

Benefits and harms

A systematic review and meta-analysis conducted for these guidelines incorporated evidence from 18 randomized and observational studies *(25)*. Most of the included studies were conducted among adults in sub-Saharan Africa. The extent of integration[1] varied across studies – from integration of both diabetes and hypertension screening and care into existing HIV services to a chronic disease integrated approach which included individuals with any one condition or a combination of HIV, diabetes and hypertension. Outcomes assessed included ART adherence, HIV viral suppression, and control of diabetes and blood pressure. Integration effects were variable, most probably because of contextual heterogeneity related to differences in the integration approaches studied, degree of integration, populations, settings and study design, as well as large differences in the level of NCD treatment coverage and effectiveness of the standard of care.

Viral suppression was consistently high (>90%) *(26, 27)* and the overall pooled estimate for viral suppression was 98% (95% CI: 91–99%). Adherence varied across studies: the overall proportion adherent to ART was 89% (95% CI: 79–94%). Evidence from comparative studies was limited, but comparative studies in the review reported improved blood pressure control in integrated arms compared to non-integrated standard of care. Four studies, including three observational studies and one cluster randomized controlled trial, reported on the effect of integrated care settings against an unintegrated comparator arm on blood pressure as an outcome. There was substantial statistical heterogeneity across all analyses of blood pressure control, which can be explained by differences in study design and intervention type. Blood pressure control rates varied widely, with odds ratios for improved control ranging from 1.3 to 26.5 (46 more per 1000 to 634 more per 1000 achieving control) *(28, 29)*. Studies using a pre-post design showed the strongest effect, with pooled odds ratios of 5.7 (0.7–48.2), translating into an absolute difference of 395 more per 1000 (from 88 fewer to 578 more) for blood pressure control after compared with before integration, indicating a significant improvement in blood pressure control post-integration. The data on diabetes control was far more limited than for hypertension: the overall proportion of individuals achieving diabetes control was 40% (95% CI: 31–50%).

While there is stronger evidence supporting the integration of hypertension services compared to diabetes, the GDG emphasized that these two common NCDs should be considered together in practice, given their shared risk factors and frequent co-occurrence *(30)*. Effects on population health are anticipated to be large, especially in regions with a high prevalence of HIV. As populations age and NCDs become more prevalent, they will account for a larger proportion of disability-adjusted life years. The studies were not designed to evaluate harms and none was reported. Given the nature of the integration interventions, the GDG judged important harms to be very unlikely.

Feasibility, cost and cost-effectiveness

Most studies included in the review were considered to be highly pragmatic (as assessed by the PRECIS-2 tool, which assesses the real-world applicability of the interventions tested in the study). As demonstrated by the 18 studies included in the systematic review, both integration of diabetes and hypertension into existing HIV clinics and the implementation of a chronic disease clinic including HIV, diabetes and hypertension for both people living with and not living with HIV were shown to be feasible *(25)*.

Integrated dispensing of medicines is one form of integrated care. South Africa, home to 7.7 million people living with HIV, has implemented the Central Chronic Medicines Dispensing and Distribution (CCMDD) service providing medicines for ART only, diabetes and hypertension only, and all three since 2014. By mid-2024, 3.3 million people were receiving their medication refills through CCMDD. This provides an example of a national differentiated service delivery model that integrates the management of HIV, diabetes and hypertension, including integrated medication refills *(31)*.

[1] Integration can range from minimal collaboration to full collaboration in an integrated practice.

Studies from South Africa, United Republic of Tanzania and Ethiopia have also highlighted barriers to implementation including lack of staff capacity, unclear guidelines on the delivery of integrated care, lack of equipment, lack of reliable medication supply and lack of support *(32-34)*. Five essential items for effective integrated care for chronic conditions were identified in an international multi-stakeholder Delphi consensus study:

- improved data collection and surveillance of diabetes and hypertension among people living with HIV *(35)*;
- strengthened drug procurement systems;
- availability of equipment and access to diagnostics;
- health education; and
- enhanced continuity of care.

Costs have been itemized for both the chronic disease model *(36)* and the integration of diabetes and hypertension into existing HIV clinics *(37)*. Integration providing a chronic disease model for people living with and not living with HIV, which included HIV, diabetes and blood pressure control services, demonstrated significant cost savings from both the health system and patient perspective *(33)*.

The INTE-Africa trial, conducted in Uganda and United Republic of Tanzania, reported mean service costs per month of managing two conditions for a single participant. Costs were US$ 39.11 (95% CI: 34.00–44.30) for HIV and diabetes, US$ 32.20 (95% CI: 30.40–34.10) for HIV and hypertension, and US$ 22.70 (95% CI: 21.90–23.40) for diabetes and hypertension. These costs were 34.40% (95% CI: 17.90–41.90%) lower than managing any two conditions separately. The cost of managing an individual with all three conditions was 48.80% (95% CI: 42.10–55.30%) lower than managing these conditions separately. Out-of-pocket healthcare expenditure per participant per visit was US$ 7.33 (95% CI: 3.70–15.86). This constituted 23.40% (95% CI: 9.90–54.30) of the total monthly service expenditure per patient and 11.70% (95% CI: 7.30–22.10) of their individual total household income. The investigators concluded that integration of HIV services with diabetes and hypertension control reduces both health service and household costs substantially *(36)*.

Values and preferences

In a 2025 WHO survey conducted among people living with HIV *(38)*, 57% of respondents agreed that diabetes and hypertension care should be offered in the same clinic which they visit for their HIV care. The same survey showed that 64% of respondents preferred integrated care among other options when asked what type of support they would like to receive to be able to re-engage with care and treatment. Respondents indicated that integration was preferred due to stigma and discrimination experienced in non-HIV clinic settings.

A scoping review to assess beneficiary perspectives of integrated HIV, diabetes and hypertension care (the majority of respondents were from sub-Saharan Africa) were mostly positive; these included a reduction of stigma, travel and treatment costs *(39)*. In a multi-stakeholder experience of integrated care in the United Republic of Tanzania the integrated model was viewed positively because of benefits to both client and health system. These included improved quality of care, efficient use of limited resources, cost- and time-saving, reduced duplication of services and fostering of early detection for undiagnosed conditions. Challenges observed included costs for diabetes and hypertension care and inconsistent availability of medications *(40)*.

Equity and acceptability

Adopting an integrated approach to services may increase access to routine diabetes and hypertension care among people living with HIV: this implies that equity will be increased, assuming that integrated care is available and accessible to all who can benefit from it.

Rationale for the recommendation

The GDG recommended changing 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. These include, importantly, evidence of potentially large increases in rates of improvement in blood pressure control. The absence of reported or likely harm was an important consideration, as were the estimated cost savings for both health systems and clients. The GDG further noted the potential for cost-savings, high acceptability and feasibility, and the potentially positive impact on equity (including decreased stigma and discrimination).

03

Integration of HIV and mental health care

3. Integration of HIV and mental health care

Recommendation (new 2025)

Mental health care for depression, anxiety and alcohol use disorders should be integrated with HIV services
(Strong recommendation, moderate certainty evidence for depression/ low certainty evidence for anxiety and alcohol use disorder)

Background

Mental health and alcohol use disorders are common comorbidities among people living with HIV in LMICs, where service delivery is often fragmented. Integrated care models, delivering mental health, alcohol use and HIV services, offer the potential of improved outcomes across the HIV and mental health care continuum.

A high prevalence of mental health conditions has been reported among people living with HIV: one recent systematic review reported a pooled prevalence of 31% (95% CI: 28–34%) for depression, 29% (24–34%) for anxiety, 20% (17–24%) for suicidal ideation, 20% (13–28%) for post-traumatic stress disorder, and 44% (31–56%) for psychological distress *(41)*. Other systematic reviews have confirmed a similarly high prevalence of depression *(42)* and anxiety *(43)*, with rates higher in resource-limited settings; among adolescents in sub-Saharan Africa, the burden of depression and anxiety is substantial and appears to be significantly higher when compared with HIV-negative peers, particularly for depression *(44)*. Alcohol-use disorder is common among people with HIV, and is associated with suboptimal medication adherence, unsafe sexual behaviour and poor mental health status; studies have reported a prevalence of alcohol-use disorder of at least 20% among people with HIV, with a higher prevalence among men *(45)*. HIV-related stigma is associated with anxiety, depression and suicidal ideation: people living with HIV diagnosed with anxiety were 1.9 times more likely to report HIV-related stigma, while those diagnosed with depression were 1.6 times more likely *(46)*. Gender-based violence is an additional risk factor for both HIV and poor mental health. The double stigma associated with a diagnosis of both HIV and mental health conditions is an important consideration. Poor mental health status is associated with worse HIV care outcomes: individuals without depression are 30% more likely to achieve HIV viral suppression or undetectable viral load compared to individuals with depression (OR 1.3; 95% CI: 1.2–1.5) *(47)*.

WHO guidelines published in 2016 conditionally recommended the assessment and management of depression as part of the package of HIV care for all individuals living with HIV *(11)*. In 2021, WHO issued a strong recommendation that psychosocial interventions should be provided to all adolescents and young adults living with HIV *(12)*. Since then, considerable evidence has become available supporting the integration of HIV and mental health care beyond depression.

Benefits and harms

A systematic review and meta-analysis incorporated evidence from 46 studies (41 on mental disorders, four on alcohol use and one on alcohol and other substance use) across all age groups *(48)*. Eligible studies included randomized and non-randomized trials examining integrated HIV and mental health or alcohol use interventions in LMICs. While integration approaches vary between studies, the degree of integration evaluated by all studies consisted as a minimum of standardized care provision for all clients in the same setting where both HIV and mental health care were located.

Evidence from randomized trials provide evidence that integration may improve retention in HIV care (OR 2.0, 95% CI: 0.9–4.7) *(49, 50)* and viral suppression (OR 1.6, 95% CI: 0.8–3.2) *(49, 51–54)*. Integration leads to a large reduction in moderate-to-severe depression (OR 0.5, 95% CI: 0.3–0.7) *(52, 54–58)*, and may reduce anxiety (mean change in general anxiety disorder (GAD-7) score -3.2, 95% CI: -6.9 to 0.5) *(59–62)* and alcohol use (mean change in alcohol use disorder identification score -5.8, 95% CI: -7.8 to -3.7) *(63, 64)*. These findings were supported using a range of measurement scales and findings from nonrandomized studies. The certainty of the evidence was downgraded because of contextual heterogeneity related to differences in the integration approaches evaluated, level of integration, populations, settings, study design and other factors, including standard of care comparisons. Studies that showed greater effectiveness of integrated interventions were typically conducted among patients who exhibited some level of depression or clinically meaningful depression (having a noticeable impact on symptoms, functioning or quality of life), and when the standard of care arm had no form of integration (as opposed to enhanced usual care or other forms of coordinated care).

The GDG consider that these effects are expected to be large in terms of overall population health, especially in regions with a high prevalence of HIV due to its association with mental health-related comorbidities; especially depression, anxiety and alcohol use. No harms were reported by the studies reviewed for these guidelines and were not expected due to the nature of the integration interventions. Although it is important to consider the potential for adverse drug-drug interactions when antidepressant medications are used, such harms could be mitigated by more integrated approaches to screening and care.

Feasibility, cost and cost-effectiveness

Most of the studies included in the review were considered to be highly pragmatic, supporting feasibility. Nevertheless, feasibility is likely to vary depending on the approach taken to integrate services, costs, availability of training and resources, and other local factors.

Adding mental health screening and care to HIV care would probably result in additional costs/burdens from the perspective of the HIV clinic but could lead to a reduction in overall health care costs due to increased efficiency and fewer clinic visits. Costs are likely to vary depending on the context and the integration approach adopted, as well as the intensity of management and other factors, including out-of-pocket and other expenses. There may be a need to invest in task-sharing models of care involving community members and peers or the training of routine care providers; these upfront investments need to be considered in the context of long-term cost savings derived from task-sharing, as well costs averted owing to the desirable effects of the intervention.

Several studies have found that integration of mental health care into HIV care can be cost-effective. A study from South Africa assessing task-shared, cognitive behavioural therapy for people living with HIV with diagnosed depression concluded that the intervention could improve life expectancy and be cost-effective *(65)*. Another study of group support psychotherapy delivered by trained lay health workers for depression treatment among people with HIV in Uganda concluded that the intervention was very cost-effective (incremental cost-effectiveness ratio of US$ 13 per disability-adjusted life-year averted) *(53)*.

In 2021, WHO published a menu of cost-effective interventions for mental health care in both the general population and individuals. While not specific to people with HIV, this document provides information on the annual cost of implementation of various interventions, including basic psychosocial support and medication, the corresponding health impact and the average cost-effectiveness ratio *(66)*. A global return on investment analysis (not including substance use disorder or other comorbidities) concluded that there are substantial expected returns on investment in terms of extra years of healthy life leading to increased economic productivity *(67)*. Further research is needed to generate insight into resource requirements and costs. Nevertheless, given the moderate certainty of evidence of the desirable effects of integration and the lack of evidence to suggest any undesirable effects, balanced against the need to invest in task-shared, integrated care models, it is plausible that the benefits of integration would outweigh the investment costs.

Values and preferences

In a 2025 survey *(35)* conducted among communities of people living with HIV in support of these guidelines, 58% of respondents agreed and strongly agreed that mental health care should be offered in the same clinic in which antiretrovirals are provided. While 43% of respondents agreed and strongly agreed that stigma was not an important consideration for offering integrated mental health care, 44% responded that integration could reduce stigma and discrimination.

Equity and acceptability

People living with HIV are more likely to receive quality care for comorbid conditions if an integrated approach is taken. This assumes that interventions are available to all who are likely to benefit from them. There are also likely to be improved anticipated health outcomes for people with mental health conditions.

A study from Uganda found that integrating depression management into routine HIV care is acceptable among key stakeholders; however, the technical and operational feasibility of integration requires changes at both the organizational and client levels *(68)*. There is also indirect evidence that integrating mental health counselling into chronic disease services at the primary health care level in South Africa is highly acceptable among health care workers, with differing views about which model to adopt *(69)*.

Rationale for the recommendation

The GDG decided to make a strong recommendation for mental health integration, based on the moderate certainty evidence of benefit for people with depression, with an anticipated large benefit in terms of overall population health and lack of reported or likely harms. The GDG also noted the potential for cost-savings, high feasibility and acceptability, and the positive impact on equity. Although feasibility may vary depending on the local context and the integration approach utilized, studies demonstrate successful mental health integration can be achieved in LMICs.

04

Integration of HIV, diabetes, hypertension and mental health care: implementation considerations and research gaps

4. Integration of HIV, diabetes, hypertension and mental health care: implementation considerations and research gaps

The following WHO resources are available to support integration of HIV, diabetes, hypertension and mental health care *(70–73)*, and include:

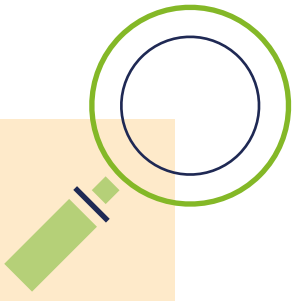
- integration of noncommunicable diseases into HIV service packages *(70)*;
- integration of prevention and control of noncommunicable diseases in HIV/AIDS, tuberculosis and sexual and reproductive health programmes *(71)*;
- integration of mental health and HIV interventions: key considerations *(72)*; and
- mental health Gap Action Programme (mhGAP) operations manual *(73)*.

The decision to integrate diabetes and hypertension care into existing HIV programmes or to establish separate chronic disease clinics should be guided by factors such as the relative prevalence of conditions, context, human resources and the capacity of current services. In some settings, a combination of both approaches may be appropriate. As noncommunicable diseases become increasingly prevalent, the chronic disease clinic model may offer a more effective and sustainable alternative to vertical programmes. It is important that all users of care services have access to care and treatment for diabetes, hypertension and mental health care irrespective of their HIV status.

The GDG identified several key implementation considerations with respect to service delivery, access to medications and equipment, monitoring and evaluation, community engagement, policy environment, and financing and sustainability.

Service delivery

Which services are provided? Management of NCDs and mental health conditions includes screening, detecting and treating these diseases, as well as providing access to palliative and rehabilitation services care for people in need. Guidelines exist for specific conditions that specify which medication is prescribed, which monitoring investigations are performed and what kind of psychosocial support ought to be provided. WHO clinical guidelines for the management of diabetes, hypertension and mental health conditions are available *(23, 74–76)*.



Who provides the services? Capacity-building for health care workers to diagnose and manage diabetes, hypertension and mental health conditions may be needed; this should include ongoing supervision. Assessment of the need and opportunity for task-sharing to nonphysician health care workers should also be considered, including supervision and support across diseases. WHO hypertension guidelines strongly supports task-sharing to trained nonphysician health care workers and generally supports the integration of NCD care into primary care *(74)*. WHO's mhGAP also strongly supports the provision of mental health care at primary care and through trained nonphysician clinicians *(77)*.

Where are services provided? Integrated services should be decentralized to primary care and the community. Opportunities for out-of-facility services should be considered, in particular for medication-refill provision for both ART and the management of noncommunicable diseases. Integrated service delivery should also be considered in prisons and other places of detention.

When are services provided? Services for diabetes and hypertension may also be differentiated based on whether the client is established on treatment. A clear definition for considering when a person is established on treatment for diabetes and hypertension should be included in national guidelines. Clinical visits for all conditions may be aligned and reduced to three- to six-monthly among established patients *(74)*; and multi-month dispensing should be the goal as for ART *(78)*. If medication availability or costs prohibit multi-month dispensing, multi-month prescribing should still be preferred. There is little evidence to support differentiated service models for depression, including identifying individuals who may need closer contact/review and ongoing mental health care.

Are medication and equipment available? Forecasting, procurement and supply chain systems for diabetes, hypertension and mental health medications should be strengthened to enable access and multi-month dispensing where appropriate, both in HIV and primary care services.

Disease prevention

Preventing noncommunicable diseases, including diabetes and hypertension, requires reducing the exposure of individuals and populations to common modifiable risk factors, while strengthening their capacity to make healthier choices and adopt lifestyle patterns that promote good health. The regular interaction between care providers at the ART clinic and people living with HIV presents a valuable opportunity to promote healthy lifestyles from an early age and throughout the life course. By incorporating health education, early intervention and lifestyle counselling into its services, the clinic can strengthen overall disease prevention, management and control.

While deaths from noncommunicable diseases mainly occur in adulthood, exposure to risk factors begins in childhood and builds up throughout life, underpinning the importance of legislative and regulatory measures, as appropriate, and health promotion interventions to prevent tobacco use, physical inactivity, unhealthy diet, obesity and harmful use of alcohol, as well as to protect children from the adverse impacts of marketing *(79)*. The WHO package of essential noncommunicable (PEN) disease interventions for primary health care emphasizes counselling as a way to promote the adoption of healthy behaviours and reduce exposure to major risk factors *(75)*.

WHO guidelines on physical activity and sedentary behaviour provide evidence-based public health recommendations on the amount of physical activity (frequency, intensity and duration) required to offer significant health benefits and mitigate health risks *(80)*. These guidelines note the importance of physical activity in protecting against incident hypertension and type-2 diabetes and in reducing symptoms of anxiety and depression.

Consuming a healthy diet throughout a person's life helps prevent malnutrition in all its forms as well as a range of diet-related noncommunicable diseases and conditions, including diabetes, heart disease, stroke and cancer *(81)*. WHO has also published guidelines to support smoking cessation as a key approach to preventing and controlling NCDs *(82, 83)*.

Monitoring and evaluation

Existing cohort monitoring tools for HIV, including electronic medical records, may be adapted to integrate ongoing diabetes and hypertension outcomes into chronic disease follow-up. If integrated, such cohort databases should be used for appointment setting, tracing and supporting re-engagement in care for all patients with HIV, diabetes, hypertension and mental health conditions. Analysis of retention and outcomes should also be used for quality improvement activities.

Community engagement

Communities representing people living with HIV, diabetes, hypertension and mental health conditions should be engaged in care delivery design and management; attention should be given to minimizing community stigma while maintaining client privacy and dignity. Opportunities for community engagement in the development and delivery of community-based care, including adherence support and the use of health literacy tools for different chronic conditions, should be considered *(84, 85)*.

Financing and sustainability

In some settings, medications for the management of diabetes, hypertension and mental health conditions need to be paid for by the recipient of care. Inclusion in national strategies and budgeting of commodities across chronic conditions within health financing and country health insurance plans would facilitate integration of these services. As demonstrated in the costing studies, integration may be cost-saving for the health system and possibly also for clients. Efficiency can be further improved by adopting task-sharing and differentiated service delivery approaches.

Policy environment

Policies to enable task-sharing and decentralization of HIV care are now widespread and have supported the scale-up of antiretroviral therapy. Similar policies for the diagnosis and management of diabetes, hypertension and mental health conditions, while supported by WHO guidelines, may not be in place at the national level *(74, 77)*.

Pharmacy policy may also need adaptation to allow specific diabetes, hypertension and mental health medication to be available at lower-level facilities.

Legal environment

For people who use drugs and other substances, it is important to assess and address legal and policy barriers to harm reduction services in order to allow substance use care to be integrated into primary care settings.

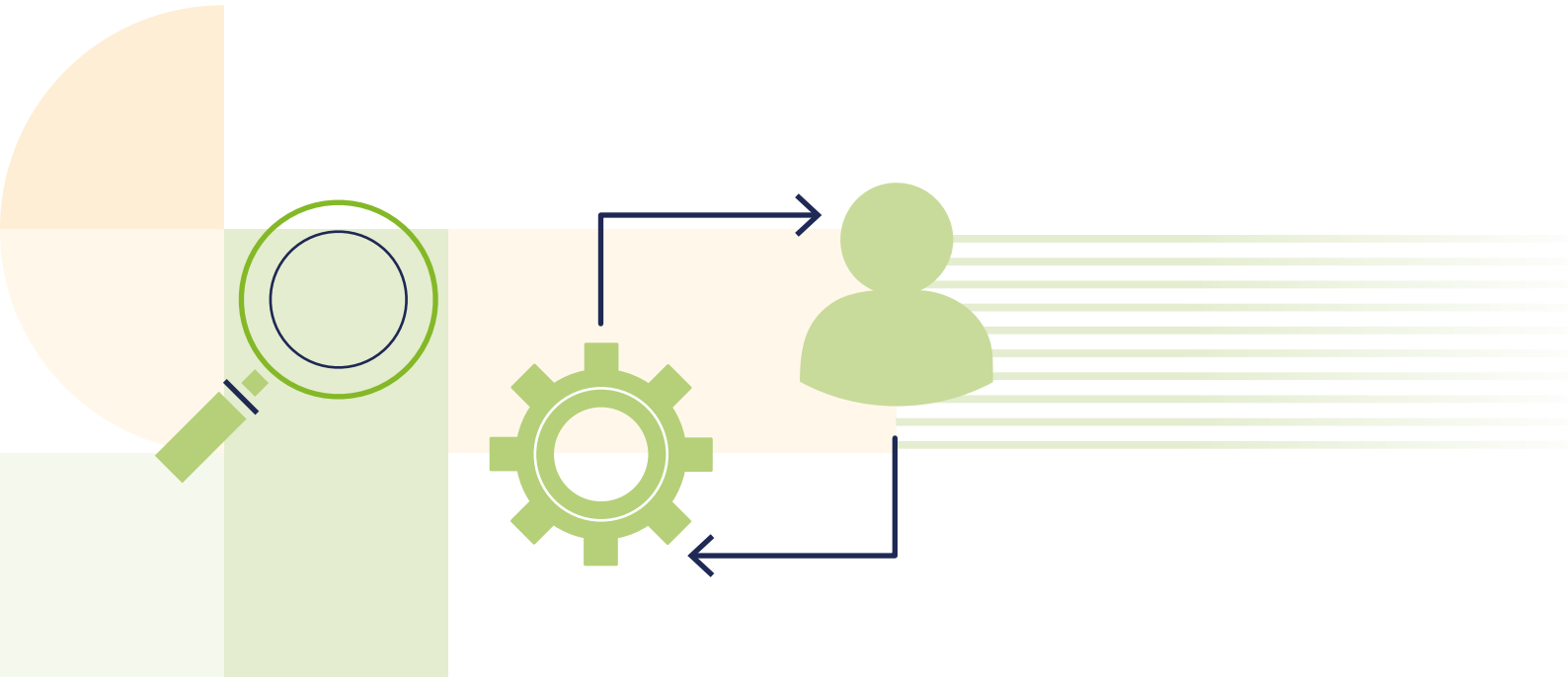
Research gaps

A significant portion of the research underpinning these guidelines was carried out in sub-Saharan Africa. Moving forwards, implementation science will play a key role in identifying the most effective models for integrating services across diverse contexts, including generalized HIV epidemic settings versus concentrated epidemics. Multiple services can be delivered in a digitally integrated approach or through an application even when clinics and service providers for each service are physically distant. Digitally-integrated HIV and NCD service delivery is an important overarching area of research.

There are important scientific questions about how to achieve integrated services based on outcomes indicating the extent and nature of combined service delivery. Once a policy to advance integrated services has been formulated, the matter of how to address the process (whether through facilitation, task-shifting, process design, etc.) becomes an important scientific question. There are several implementation science research networks which will be reporting on these questions in the coming months and years.

The following guideline-related research questions were identified by the GDG:

- What is the impact of integrating diabetes care and mental health care on HIV clinical outcomes? Most published evidence to date has focused on services integrating hypertension and HIV.
- What are the clinical outcomes and cost-effectiveness of integrating diabetes and hypertension care into existing differentiated service delivery models which reduce the intensity of clinical visits, extend medication refill duration, decentralize and enable task-sharing of care?
- What are the effective approaches for integrating substance use/harm reduction services (beyond alcohol use), in particular stimulant/psychoactive substance use?
- What are the most effective service delivery models for key populations at higher risk of poor mental health, including sex workers, men who have sex with men, transgender individuals and people who inject drugs?
- How can mental health care be differentiated, considering some of the complexities specific to mental health care (such as the need to monitor suicidality, time-limited treatment for many mental health conditions)?
- What kinds of treatment literacy and psychosocial interventions for diabetes, hypertension and mental health care can be delivered in an integrated setting and by which health care worker cadre?
- Which metrics and tools are most effective for monitoring and evaluating integration effectiveness?
- Which differentiated care models are effective for the provision of mental health care?
- What are the preferred approaches for supporting the mental health needs of children and adolescents?
- How can services be digitally integrated and delivered?



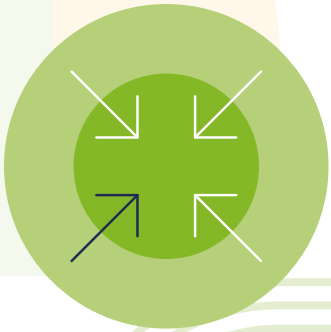
05

Primary health care and HIV: integration and convergent actions

5. Primary health care and HIV: integration and convergent actions

In 2023 WHO published Primary health care and HIV: convergent actions: policy considerations for decision-makers *(86)*. This publication helps decision-makers consider and optimize synergies between existing and future assets and investments intended for both primary health care (PHC) and disease-specific responses, including HIV. PHC is the key mechanism for achieving universal health coverage. The PHC approach aims to maximize the level and distribution of health and well-being through three components: (1) primary care and essential public health functions as the core of integrated health services; (2) multisectoral policy and action; and (3) empowered people and communities.

HIV care is already delivered within primary care in the majority of high burden settings. PHC and disease-specific stakeholders should work together to plan a locally responsive strategy to deliver quality, person-centred, integrated services which include HIV care, management of other chronic diseases and mental health care within primary care. Further support can be found through the Universal Health Coverage Partnership, one of WHO's largest platforms for international cooperation on universal health coverage and PHC *(87)*.



06

Adherence support

6. Adherence support

Recommendation (updated 2025)

Adherence support interventions should be provided to people on ART
Strong recommendation, moderate certainty evidence

The following interventions have demonstrated benefit:

- counselling *(moderate certainty evidence)*
- reminders *(moderate certainty evidence)*
- peer and other support *(moderate certainty evidence)*
- education *(low certainty evidence)*

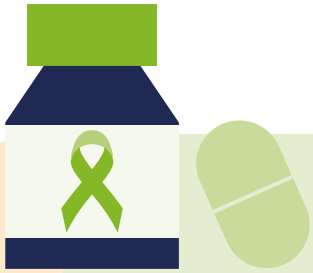
Background

Suboptimal adherence to medications is a global challenge, leading to disease progression, poor health outcomes and increased health care costs. In HIV care, suboptimal adherence also has public health risks, including an increased risk of disease transmission due to viral non-suppression and development of drug resistance, making future treatment more complicated and costly. People on ART face multiple barriers to sustained lifelong adherence – these factors have been categorized as individual, interpersonal, community-based and structural barriers *(4)*.

In 2016, WHO issued a strong recommendation that adherence support interventions should be provided to people on ART *(88)*. This recommendation further indicates that the following interventions (all supported by moderate certainty evidence) are beneficial in improving adherence and viral suppression:

- peer counsellors;
- mobile phone text messages (SMS);
- reminder devices;
- cognitive-behavioural therapy;
- behavioural skills training and medication adherence training; and
- fixed-dose combinations and once-daily regimens.

WHO further recommends that enhanced adherence support should be provided to all individuals with an initial high viral load (>1000 copies/mL) before conducting a second viral load test *(88)*. (Some national guidelines, including those of South Africa, recommend providing enhanced adherence support at a lower threshold of more than 50 copies/mL *(89)*).



These interventions remain valid as recommended ways to improve adherence and prevent unnecessary ART regimen switches. Nevertheless there were several reasons why it was considered important to update the evidence review in support of adherence interventions. Firstly, uptake and implementation of these adherence support interventions since their recommendation in 2016 have been variable, reflecting differing resource availability. Secondly, since 2016, the standard antiretroviral therapy has evolved, with most individuals now receiving a once-daily fixed-dose combination of tenofovir, lamivudine and dolutegravir. Thirdly, service delivery models of HIV treatment have also evolved, with many people receiving care and support through differentiated service delivery (DSD) models, with less frequent clinical visits and longer drug refills. DSD models support self-management approaches and underscore the importance of high levels of adherence between clinical interactions. Lastly, with a shift in the communications interface used (from pagers and mobiles to apps and SMS), it is important to differentiate interventions based on communication software rather than device: for example, an app can act as a reminder or provide access to a supporter.

Benefits and harms

This guideline update is based on an evaluation of the published evidence over the last 10 years on ways to improve adherence as part of a public health approach to ART delivery. The focus was on adherence interventions not yet incorporated into routine HIV care (such as once-daily fixed-dose combination ART) and reflecting evolving approaches to enhance adherence. A systematic review and network meta-analysis incorporated evidence from 164 randomized trials on the following ART adherence interventions: reminders (interventions that involved using cues to take medications, including SMS, apps, multimedia and other tools on different devices), peer and other supporters (interventions that involved the use of an individual chosen by a clinic or client to support treatment adherence including peer-based support, home visits, treatment assistants and medication managers), client education (including treatment literacy), counselling and complex interventions including three or more interventions *(48)*. Interventions were categorized in this way to better reflect underlying approaches and to be more inclusive of support strategies that are feasible in settings with limited resources.

Around half the evidence came from studies conducted in LMICs but evidence on all interventions was available in all contexts. The general population included adults living with HIV regardless of prior treatment experience, women, men who have sex with men, people living with TB co-infection, youth and adolescents; the latter were also analysed as a separate population, as were persons with mental health conditions, people who use alcohol and other substances and persons with prior adherence issues. Of note, substance users included people who use drugs, inject drugs and those with alcohol use. While attention was given to other key populations during the review, no studies were found to focus on other key populations (e.g. sex workers) for the purpose of informing adherence interventions.

All interventions probably improved adherence over 48 weeks, with the strongest improvement seen for reminders and supporters. Similar effects were seen for viral suppression, with further evidence supporting counselling. Adherence interventions probably improved adherence and viral suppression in the general adult population relative to standard of care (a single session reviewing the importance of adherence at start of study). Reminders (OR 1.6, 95% CI: 1.2–2.3), counselling (OR 1.3, 95% CI: 1.0–1.7) and supporters (peer and other types of support) (OR 1.3, 95% CI: 1.1–1.7) all demonstrated statically significant improvements, with reminders causing large improvements in viral suppression. Education alone may not improve adherence (OR 1.1, 95% CI: 0.8–1.7), although education offers additional benefits, including increased confidence in clients' ability to manage their health *(48)*.

There were fewer studies in the review among youth and adolescents, but the available evidence suggested that reminders were an effective intervention with respect to viral suppression (OR 2.9, 95% CI: 1.6–5.6). For individuals who have adherence challenges, supporters (OR 4.8, 95% CI: 2.0–12.2) and counselling (OR 1.8, 95% CI: 1.0–3.5) may improve adherence. The evidence base was more limited for people with mental health issues and people who use substances. For people with mental health conditions, supporters showed the greatest benefit in terms of viral suppression (OR 2.4, 95% CI: 1.3–4.2); for people who use substances there was a trend towards improved adherence with supporters (OR 1.7, 95% CI: 0.8–3.4).

Mortality was low across all the studies and not associated with any particular intervention. Although these studies were not designed to address other harms, serious harms were not expected given the nature of the interventions and not reported.

Feasibility, cost and cost-effectiveness

Feasibility is likely to vary depending on the type and intensity of adherence support provided as well as the context/setting in which support is provided. Counselling and education have been effectively taken up by numerous national programmes, demonstrating their feasibility for integration into routine service delivery. Several barriers to implementing adherence interventions have been reported, including insufficient training and compensation for lay health workers and risks of unintentional HIV status disclosure *(70)*.

Decisions regarding the delivery workforce for adherence interventions – whether based on existing health staff or by introducing new roles – should be guided by the local context and other resources that can be leveraged. Providing adherence support for medication across multiple chronic diseases such as HIV, diabetes and hypertension, may offer opportunities for efficiency *(91)*.

The evidence on the cost-effectiveness of adherence support interventions is limited but suggests that providing such support can be cost-effective. However, as with feasibility, cost-effectiveness will vary depending on the specific type and intensity of adherence support and the specific context or setting.

Counselling is usually provided after an HIV diagnosis is made, as part of ART initiation and in the first months on treatment. Importantly, in 2021, WHO issued a Good Practice Statement relating to the offer of same-day ART initiation that includes providing tailored patient education, counselling and support to improve update, treatment adherence and retention *(12)*. Additional counselling interventions may then be targeted to individuals with unsuppressed viral loads or who report specific adherence challenges.

Costs for counselling depend on the cadre providing the care and frequency of interventions, which will vary between settings. Counsellors or supporters employed specifically for HIV counselling are cadres that may not be included in existing national health care workforce budgets. Counselling and education can be delivered by existing staff. Inclusion of information, education and communication materials may need to accompany counselling and education interventions.

The costs of reminders will vary according to the frequency and complexity of the systems (e.g. one- versus two-way systems). SMS systems often depend on client-level electronic medical records/data systems that need maintenance. Associated costs include establishing and maintaining electronic patient records, the design of the reminder interface, and the direct costs of providing the SMS or other reminder intervention. It is possible to leverage the resources needed for reminders for pill-taking for other interventions such as education, reminders for clinical visits, adherence counselling, etc. Access may be limited by phone ownership, network availability and privacy considerations. Consent is essential to avoid unintended disclosure.

A global systematic review which assessed the cost-effectiveness of ART adherence interventions concluded that counselling and smartphone-based interventions were cost-effective *(92)*. A study from Kenya found that SMS interventions were cost-effective and likely to increase the efficiency of ART programmes by improving HIV treatment outcomes at relatively low costs *(93)*. Evidence on the cost-effectiveness of adherence support interventions is limited but suggests that providing such support can be cost-effective.

Values and preferences

Findings from the values and preferences survey *(38)* indicate that about half of the respondents agreed or strongly agreed that they should receive support from health care workers on treatment literacy, adherence planning and goal setting; 58% stated that health care workers involved them in identifying barriers to adherence and potential solutions. The preferred location for adherence support may vary by context; in some settings clinic-based support may be favoured due to lower stigma and improved access *(94)*. A study from South Africa, Uganda and Zimbabwe found that offering a range of adherence support interventions enhanced adherence to antiretroviral drugs for HIV prevention, providing indirect support for this approach for antiretroviral therapy *(95)*.

Equity and acceptability

Adherence support interventions can improve adherence and HIV outcomes in persons with adherence challenges, who may also be more likely to face challenges related to other health and social needs that contribute to decreased adherence. Therefore, providing adherence support could have positive impacts on equity, assuming that the interventions are available to all persons who could benefit from them. Equity may be enhanced by considering the utility of adherence support interventions across a broader population in the context of integrated services.

Based on the systematic review of interventions conducted for this guideline, 28 studies reported on acceptability *(48)*. Across a variety of treatments, including reminders (SMS and mobile applications), education, counselling and others, acceptability and satisfaction were high (mostly above 85%).

A values and preferences survey *(38)* was carried out to assess preferences for the different adherence interventions; of the 229 responses received 51% were from male respondents: 39% of respondents stated that counselling and treatment literacy were highly preferable adherence interventions; 41% stated a preference for treatment literacy. Preferences for peer support and reminders were mixed with only 7% and 5%, respectively, stating them as preferable interventions. The survey was not specifically aimed at specific populations such as adolescents, pregnant women or key populations for which significant evidence has accrued concerning the role of peer supporters. Respondents placed a strong value on receiving accurate information and stressed the importance of client-provider interaction to support adherence, encouraging clients to set their own treatment goals, and identifying challenges and continuous follow-up.

Peer adherence supporters have been reported to be acceptable for adolescents, pregnant women *(96–100)* and key populations *(104, 105)*. Reminders have been demonstrated to be acceptable to people living with HIV in a number of countries including China *(106)*, Kenya *(107)*, Ethiopia *(108)* and South Africa *(109)*. SMS interventions have also been reported as acceptable in key populations *(110, 111)*, adolescents *(112–116)* and pregnant women *(117)*.

Rationale for the recommendation

The GDG decided to make a strong recommendation considering the moderate certainty evidence of benefit across a range of interventions, lack of reported or likely harms, the potential for cost-savings, high acceptability including the value of personalized, goal-oriented support across diverse populations and the potential positive impact on equity. Feasibility is likely to depend on the context and available resources; however, given that a number of adherence approaches are supported by evidence, the choice of adherence support can be tailored according to available resources.

Implementation considerations

Ensuring continuity of HIV treatment through supportive systems

Reliable access to HIV care and a consistent supply of antiretroviral medications are essential for sustaining treatment adherence. Economic constraints are a significant barrier to adherence, and community-based support can play a critical role in helping individuals navigate and manage their treatment effectively.

Targeted and timely adherence support

To maximize impact, adherence support strategies should be directed towards individuals most at risk of poor adherence. Health care providers are encouraged to adopt a triaged approach – identifying those at risk and tailoring interventions to address their specific barriers. The initial months following diagnosis and treatment initiation are particularly critical, as disengagement from care is more likely during this period; early and targeted support during this period can improve long-term treatment outcomes *(118)*. Adherence strategies should be responsive to changes in clients' needs and barriers and should therefore be reassessed during normal clinical appointments.

Personalized and differentiated adherence support

Adherence interventions are enhancements to the standard of care and their application should aim to address expressed adherence barriers. Consideration should be given to combining or sequencing adherence interventions which have been adapted in terms of duration and intensity to suit the needs and preferences of the individual. Family members can be engaged to provide adherence support where consent is present. Further evidence and examples of peer support models for adolescents living with HIV can be found in the WHO Technical Brief on adolescent-friendly health services *(119)*.

Health system and provider support

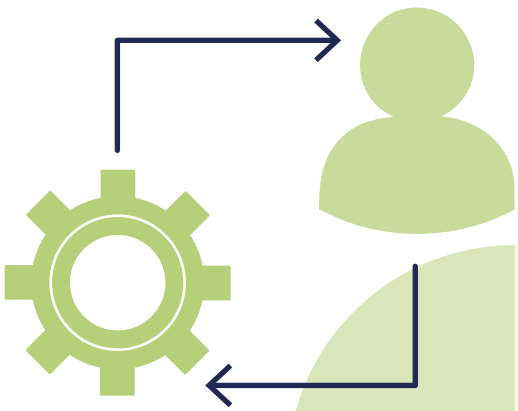
Health provider training and capacity building should be provided in key areas including person-centred approaches, stigma reduction, identifying adherence barriers and setting adherence goals. Opportunities for task-sharing across existing cadres and involving peers are an important part of adherence support but depend on policy and funding. Adherence support systems can be leveraged across comorbid conditions, including diabetes, hypertension and mental health, to improve efficiency and continuity of care.

Digital and technological tools

Digital adherence tools should be leveraged to provide education and literacy where feasible. The use of digital tools must be accompanied by strong data protection measures and clear informed consent processes to prevent unintended disclosure of HIV status. WHO guidelines on emerging digital health interventions provide evidence-based recommendations for various digital health interventions, including SMS-based strategies *(120)*. Certain groups may face challenges in accessing digital technologies, in particular children and elderly people living with HIV: this highlights the importance of offering alternative options for adherence support *(121)*.

Promoting self-management and empowerment

Fostering self-care and building capacity for self-management should be supported through simplified tools, education and empowerment strategies – particularly where health system capacity is limited.



Research gaps

Cost-effectiveness of adherence interventions

What is the cost-effectiveness of specific adherence interventions for people living with HIV, including the costs of training, supervision and human resources? How do the costs and scalability of digital reminder systems compare to traditional adherence interventions in resource-limited settings?

Tailored interventions for vulnerable populations

How can adherence interventions be tailored to effectively support underserved populations, such as children, adolescents, pregnant women, migrants, indigenous population and people who use drugs? What are the unique barriers to treatment adherence faced by specific high-vulnerability groups, and how can interventions be optimized to address these?

Education versus counselling interventions

What is the comparative effectiveness of education versus counselling interventions in improving treatment adherence among people living with HIV? Which delivery modalities, frequencies and cadres (e.g. peer educators, nurses, community health workers) are most effective in providing education and counselling?

Combined interventions

The evidence of combined interventions remains limited but suggests that combined interventions would be better positioned to overcome existing barriers. More exploratory studies in populations of interest would serve to better optimize adherence enhancement strategies.

Prioritization and resource allocation

In resource-constrained environments, which populations should be prioritized for adherence support interventions to achieve the greatest health impact? What criteria can be used to determine the allocation of adherence interventions among populations with varying levels of adherence risk?

Artificial intelligence-driven adherence tools

How can artificial Intelligence help identify people in need of adherence support and target appropriate interventions?

07

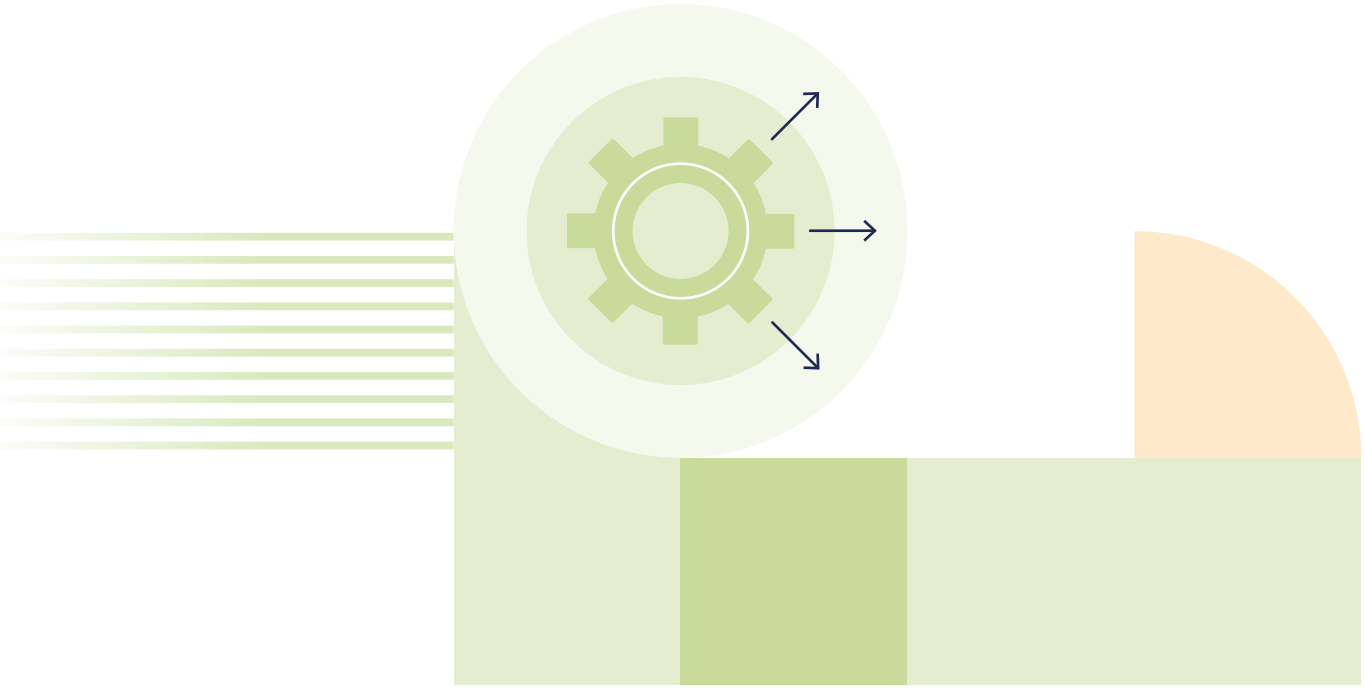
Updating and dissemination

7. Updating and dissemination

This service delivery guideline is being launched as a web-based product for dissemination and will include a summary of systematic review findings and GRADE evidence profiles presented to the GDG (see Web Annex B). The guideline will be incorporated into the periodic updates of the complete WHO consolidated guidelines on HIV which will be updated in full or in part based on regular scoping exercises of available evidence and experience from country implementation that trigger and shape the need for new guidelines. As the evidence base or user needs change, consideration will be given to producing technical updates on specific subjects.

WHO headquarters will work closely with its regional and country offices, national ministries of health and implementing partners to plan for the dissemination, adaptation and implementation of these new recommendations. Key steps in their dissemination will include presenting the recommendations at international conferences; conducting workshops to support country adaptation; developing adaptation tools to assist countries in setting priorities for resource allocation in order to move towards full implementation over time; and conducting briefings and joint planning for dissemination with international and national implementing partners.

To monitor uptake, data will be made available through the WHO country intelligence database,[2] which is updated every six months to reflect changes in policy and implementation for all UN Member LMICs and selected high-income countries.



[2] HIV Country Intelligence [online database]. Geneva: World Health Organization; 2025 (https://cfs.hivci.org/, accessed 3 July 2025).

08

Guideline development process

8. Guideline development process

Background

The last WHO guidelines on HIV service delivery were published in 2021. Since then, emerging evidence and implementation experience and approaches justify reviewing and updating the service delivery guidelines. A scoping exercise was held with national HIV programme managers, implementing partners and representatives from civil society and academia at a Catalyzing Quality HIV Care (CQUIN) Learning Network meeting in 2024 *(122)* to help define priority questions for this update; these questions were further developed by the WHO steering group.

Three systematic reviews were undertaken to address PICO (Population, Intervention, Comparison, Outcome) questions and complemented by other information sources such as targeted literature searches, programmatic information and primary surveys. Many individuals contributed to the development of the guideline including people living with HIV and representatives of affected communities, representatives from ministries of health, researchers, implementers and health care providers.

This information was presented at a virtual GDG meeting convened in April 2025, following WHO standards for guideline development *(13)*.

Retrieving, summarizing and presenting the evidence

All systematic reviews followed the PRISMA guidelines for reporting systematic reviews and meta-analyses.

The GRADE (Grading of Recommendations Assessment, Development and Evaluation) approach was used to rate the certainty of evidence and determine the strength of recommendations *(123)*. GRADE defines the certainty of evidence as the extent to which one can be confident that the reported estimates of effect (desirable or undesirable) available from the evidence are close to the actual effects of interest. After the evidence is collected and summarized, GRADE provides explicit criteria for rating the certainty of evidence that include study design, risk of bias, imprecision, inconsistency, indirectness and magnitude of effect. The strength of a recommendation reflects the degree to which the GDG is confident that the desirable effects (potential benefits) of the recommendation outweigh the undesirable effects (potential harm). Desirable effects may include beneficial health outcomes such as reduced morbidity and mortality, reduction of burden on the individual and/or health services and potential cost-savings. Undesirable effects include those affecting individuals, families, communities or health services as well as the implementation of services that may not be cost-effective within a particular context. Additional considerations include resource use and cost implications of implementing the recommendations and clinical outcomes (such as drug resistance and drug toxicity).

The PRECIS-2 tool[3] was used to assess the extent to which the conduct of a given study reflects an explanatory (ideal situation) or a more pragmatic (usual care) context. PRECIS-2 has nine domains – eligibility criteria, recruitment, setting, organization, flexibility (delivery), flexibility (adherence), follow-up, primary outcome and primary analysis – scored from 1 (very explanatory) to 5 (very pragmatic) *(124)*. The level of integration for interventions identified through systematic review was classified using the Standard Framework for Levels of Integrated Healthcare *(72)*.

Feasibility and acceptability

The pragmatism of studies provided indirect evidence on feasibility from the systematic reviews, obtained using PRECIS-2. Other sources of evidence for feasibility included the UNAIDS database on country adoption of relevant WHO recommendations. Key health ministry or partner stakeholders provided insights at the Guidelines Development Group meeting on feasibility in settings with a high burden of HIV infection. In addition, a survey *(38)* was conducted on 27 March 2025 among people living with HIV to assess the feasibility and acceptability of strategies for delivering HIV services. Dissemination of this survey was supported by the Global Network of People Living with HIV (GNP+). The results of these surveys were used to inform the acceptability and feasibility of the range of questions addressed.

Resource use and cost-effectiveness

The systematic reviews captured published evidence on resource use including costing, cost-effectiveness and affordability data. Additional literature reviews were conducted for indirect evidence that could enrich this information. The GDG and External Review Group included representatives from national programmes who also provided perspectives on resource implications in their countries.

Ethical considerations

Before the GDG meeting, the proposed areas of intervention were reviewed by a WHO staff member with expertise in global health and ethics, and key issues with respect to equity were outlined to the group for consideration when formulating recommendations.

Guideline Development

Guideline Development Group (GDG) meeting

The GDG met virtually on 8–10 April 2025. Using an electronic survey, the group ranked the importance of each systematic review outcome using the GRADE rating scale from 1 to 9 *(125)*. The systematic reviews and evidence-to-decision tables, prepared in accordance with the GRADE process, were shared in advance and presented at the meetings, where the methodologist facilitated discussions. The group agreed a priori that should a vote be necessary, a two thirds majority would be required for a decision. However, consensus was achieved for all recommendations, and no voting was required.

Peer review

The draft guidelines were circulated for review to members of the GDG and External Review Group. The WHO Guideline Steering Group reviewed the comments and incorporated them into the final document with due consideration for any conflicts of interest relating to External Review Group members.

[3] PRagmatic Explanatory Continuum Indicator Summary [webtool]. Dundee, United Kingdom: Health Informatics Centre, University of Dundee; 2016 (https://www.precis-2.org/, accessed 3 July 2025).

Declarations of interest

All external contributors to the guidelines, including members of the GDG and External Review Group, completed a WHO declaration of interests form in accordance with WHO policy for experts. A brief biography of each GDG member was published on the WHO HIV website for a period of 14 days before the first meeting of the group with a description of the objectives of the meeting. No public comments or objections were received. The responsible technical officer reviewed the declaration of interests forms as well as the results of the web-based search for each member of the GDG. The results were shared with the WHO Guideline Steering Group, which reviewed the results, and a management plan was agreed and recorded for each individual. At the start of the guideline development meeting, all conflicts of interest identified and the management plan for any conflicts of interest were shared with the meeting participants and members were asked to vocalize any additional conflicts or undeclared conflicts. In accordance with the revised WHO policy for experts, a web-based search of GDG members was conducted to identify any potential competing interest. The WHO Guideline Steering Group recorded and reviewed the results of the web-based search to identify any potential competing interest. There were no conflicts of interest that warranted exclusion from the discussion of specific recommendations.

Similarly, for the External Review Group the responsible technical officers reviewed all declaration of interest forms in accordance with WHO guideline development policy. Any conflicts of interest identified were considered when interpreting comments from External Review Group members during the external review process.

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