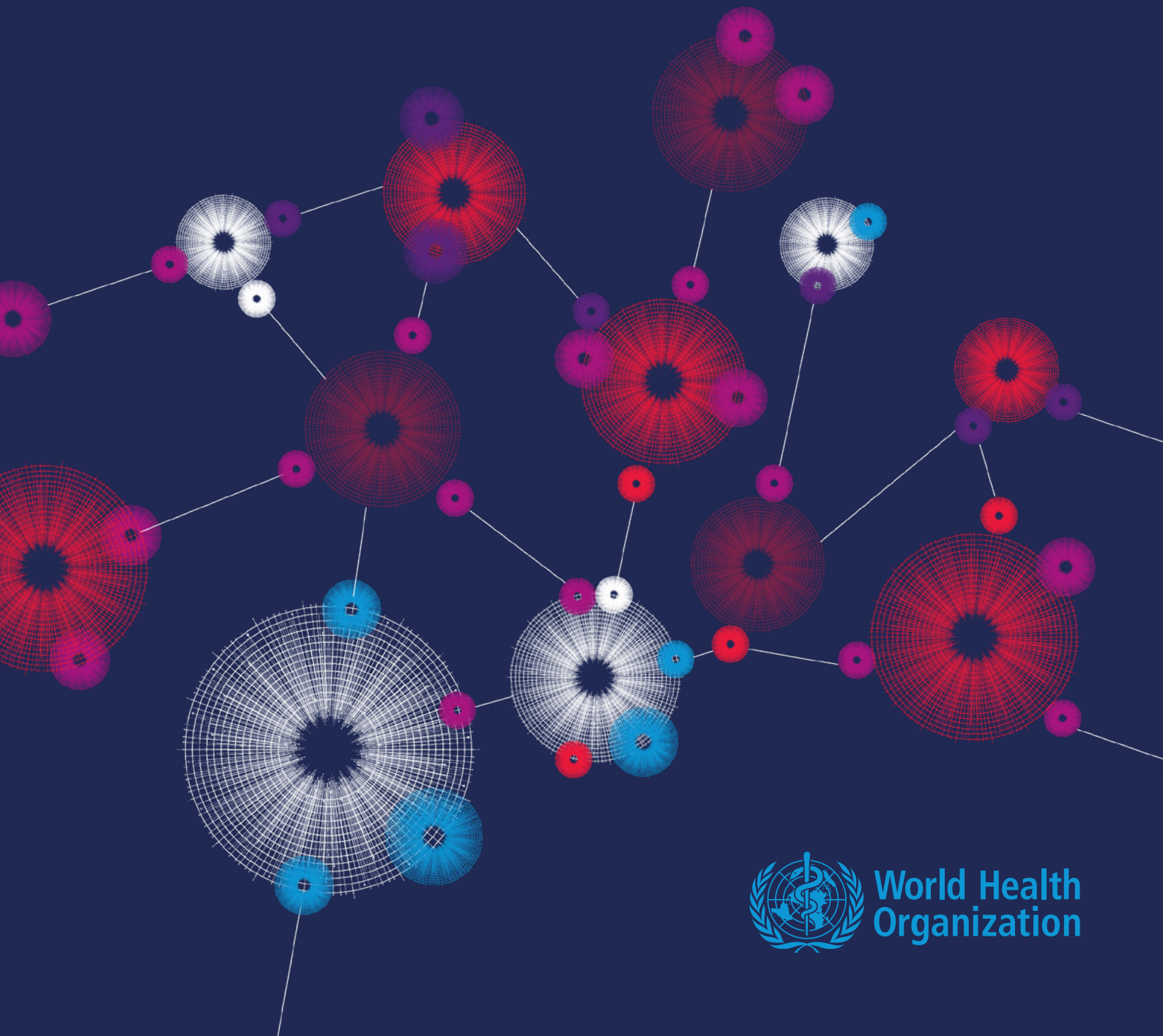
# Consolidated guidance for strengthening national routine surveillance systems

## Updated HIV case definitions, advanced HIV disease indicators and surveillance checklist



World Health Organization

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# Abbreviations and acronyms

| | |
|---|---|
| **ART** | antiretroviral therapy |
| **CD4** | cluster of differentiation subtype 4 (type of white blood cell) |
| **PEPFAR** | United States President's Emergency Plan for AIDS Relief |
| **PrEP** | pre-exposure prophylaxis |
| **STI** | sexually transmitted infection |
| **TB** | tuberculosis |
| **TPT** | TB preventive treatment |
| **UNAIDS** | Joint United Nations Programme on HIV/AIDS |

# Glossary

**Accuracy.** The extent to which data correctly reflect the true values of the events, conditions or outcomes being measured.

**Acquired HIV drug resistance** develops when HIV mutations emerge because of viral replication among individuals receiving antiretroviral drugs.

**Advanced HIV disease.** For adults, adolescents and children five years and older, advanced HIV disease is defined as a CD4 cell count ≤200 cells/mm$^3$. At presentation, all children living with HIV younger than five years should be considered as having advanced HIV disease unless they have received antiretroviral therapy (ART) for more than one year and are clinically stable. Where CD4 testing is unavailable, advanced HIV disease can be defined as a WHO clinical stage 3 or 4 event at presentation for care.

**Aggregate data.** Includes data elements that are entered into a data system reflecting a combination of individuals or services with shared characteristics, for example, number of positive HIV test results or number of people 15–19 years old tested.

**ART.** Using a combination of antiretroviral drugs for treating HIV infection.

**Civil registration** is the continuous, permanent, compulsory and universal recording of the occurrence and characteristics of vital events (live births, deaths, fetal deaths, marriages and divorces) and other civil status events pertaining to the population as provided by decree, law or regulation through a civil registration and vital statistics system.

**Clinical staging of HIV** is a clinical classification system that categorizes HIV-related disease progression into four stages based on the presence of specific signs, symptoms and clinical conditions for a person with confirmed HIV infection. It is used to assess disease severity and, when CD4 testing is unavailable, can support the identification of advanced HIV disease.

**Completeness.** The extent to which all expected records, reporting units and required data elements are captured in a surveillance system.

**Confidentiality.** The right of individuals to have their data protected during storage, transfer and use to prevent unauthorized disclosure of that information to third parties.

**Data element.** A logical unit of data that has a name, precise definition and a set of permissible values (if applicable). Indicators comprise formulas of data elements and other components.

**Data quality assessment** is a structured, systematic process to validate the accuracy, completeness and reliability of routine HIV programme data and the systems generating them.

**Electronic health information system.** A computerized system used to store, manage and analyse routine service data, including both aggregate and individual-level data systems. In these guidelines, the terms “electronic” and “digital” are used synonymously.

**Health information system.** Used to manage data to inform decisions on designing or managing health services; the system encompasses data collection, compilation, analysis, synthesis and use.

**HIV case surveillance.** The reporting of an initial diagnosis of HIV (a case) and subsequent sentinel events related to public health actions to a public health agency responsible for monitoring and responding to the epidemic; it includes a set of data elements critical for programme management and programme monitoring.

**HIV self-testing.** A process in which a person collects their own specimen (oral fluid or blood) using a simple rapid HIV test kit and then performs the test and interprets the result, when and where they want.

**Indicator.** A quantitative or qualitative measure that provides a valid and reliable way to assess performance or reflect changes connected to an activity, project or programme.

**Individual-level data.** Information that relates to a single person, possibly collected over time and across different points of care, and that may be related to their clinical or research encounters: for example, data for an individual receiving HIV care at multiple points in the cascade of services along with that individual’s sociodemographic characteristics. Individual-level data can enable longitudinal and multivariate analysis of indicator data. In this publication, “individual-level data” is synonymous with “patient-level data” and “personal health data”.

**Infant diagnosis.** The testing of infants and children to determine their HIV status following possible exposure to HIV during gestation, delivery and breastfeeding, to ensure access to life-saving HIV treatment. **Early infant diagnosis** is testing HIV-exposed infants younger than two months. For infants younger than 18 months, diagnosis should be performed using molecular (nucleic acid) technologies; serological assays can be used for children 18 months and older.

**Interoperability.** The ability of health information systems, applications and devices to exchange, interpret and use data in a coordinated manner across organizations and levels of the health system to support surveillance and service delivery.

**Key populations.** Defined groups of people who, due to specific types of higher-risk behaviour, have an increased risk of acquiring HIV, viral hepatitis or sexually transmitted infections regardless of the epidemic type or local context. Also, they often have legal and social issues related to their behaviour that increase their vulnerability to acquiring HIV. These guidelines focus on five key populations: (1) men who have sex with men; (2) people who inject drugs; (3) people in prisons and other closed settings; (4) sex workers; and (5) trans and gender-diverse people.

**Minimum dataset.** A standardized set of essential data elements required to systematically capture and monitor key events in an individual's interaction with the health system over time, supporting surveillance, programme monitoring and public health action. It defines the key data to be collected by a health information system through any paper, electronic or mobile device and is used in calculating indicators needed for programme management and monitoring.

**Person-centred monitoring.** The routine collection, compilation and analysis of data on health service clients over time and across service delivery points, with the primary purpose of guiding the continuity of clinical management of a person over time and across locations.

**Pre-exposure prophylaxis** (**PrEP).** HIV PrEP is the use of antiretroviral drugs by people who do not have HIV to prevent them from acquiring HIV.

**Privacy.** In this publication, privacy refers to the legal protection that has been accorded to an individual to control both access to and use of personal information; it provides the overall framework within which both confidentiality and security are implemented.

**Routine surveillance.** In the context of public health, surveillance is the continuous, systematic collection, analysis and interpretation of health-related data needed for planning, implementing and evaluating public health practice. Surveillance builds on routine data, including patient or client monitoring, but also includes other data to describe the overall health context for public health action.

**Security.** Technical approaches that address the physical, electronic and procedural aspects of protecting information collected as part of the scale-up of HIV services. Security must address protecting data from inadvertent or malicious inappropriate disclosure, ensure the availability of data even when there is system failure or user errors and protect data from unauthorized alteration.

**Sentinel event.** A predefined key event in the context of surveillance for which relevant data are transmitted to the public health agency responsible for HIV surveillance to support public health action. Sentinel events may include HIV diagnosis, initiation of ART, immunological test results (such as viral load) and death. Sentinel event data are typically a priority subset of data drawn from monitoring systems.

**Strategic information.** Data that are interpreted and used for planning and decision-making to improve the direction and results of a programme. Relevant information may be derived from a wide variety of sources (for example, monitoring systems, evaluations, programme reviews, surveys, models and case studies). It should be analysed holistically and strategically to improve the programme.

**Timeliness.** The extent to which data are reported and available quickly enough to support routine monitoring, public health decision-making and response.

**Trans and gender-diverse people.** An umbrella term for people whose gender identity, roles and expression does not conform to the norms and expectations traditionally associated with the sex assigned to them at birth; it includes people who are transsexual, transgender or otherwise gender nonconforming or gender incongruent. Transgender people may self-identify as transgender, female, male, transwoman or transman, transsexual or one of many other gender-nonconforming identities. They may express their genders in a variety of masculine, feminine and/or androgynous ways. The high vulnerability and specific health needs of trans and gender-diverse people necessitate a distinct and independent status in the global HIV response.

**Treatment failure.** Lack of clinical or viral response among people who received suboptimal treatment or who received optimal treatment but failed to respond clinically (refers to virological, immune or clinical failure).

**Undetectable viral load.** Defined as an HIV viral load that is not detected.

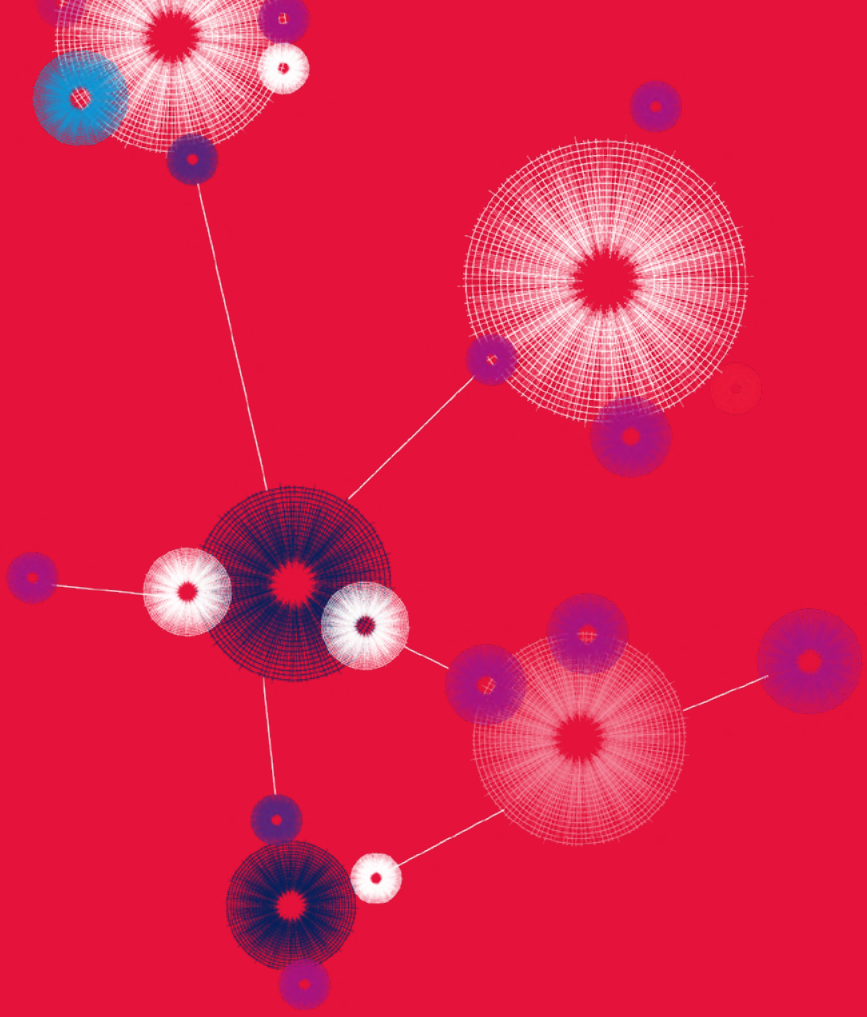
**Unique identifier.** An alphanumeric code that helps individuals to identify themselves when accessing a variety of health services over time and to support health-care workers in linking relevant health information and de-duplicating records when providing services. A content-free unique identifier

can be issued at the time of registration to avoid any additional personal information from being collected when accessing HIV services.

**Verbal autopsy.** is a method used to determine the cause of death through interviews with the deceased person's next of kin or caregivers.

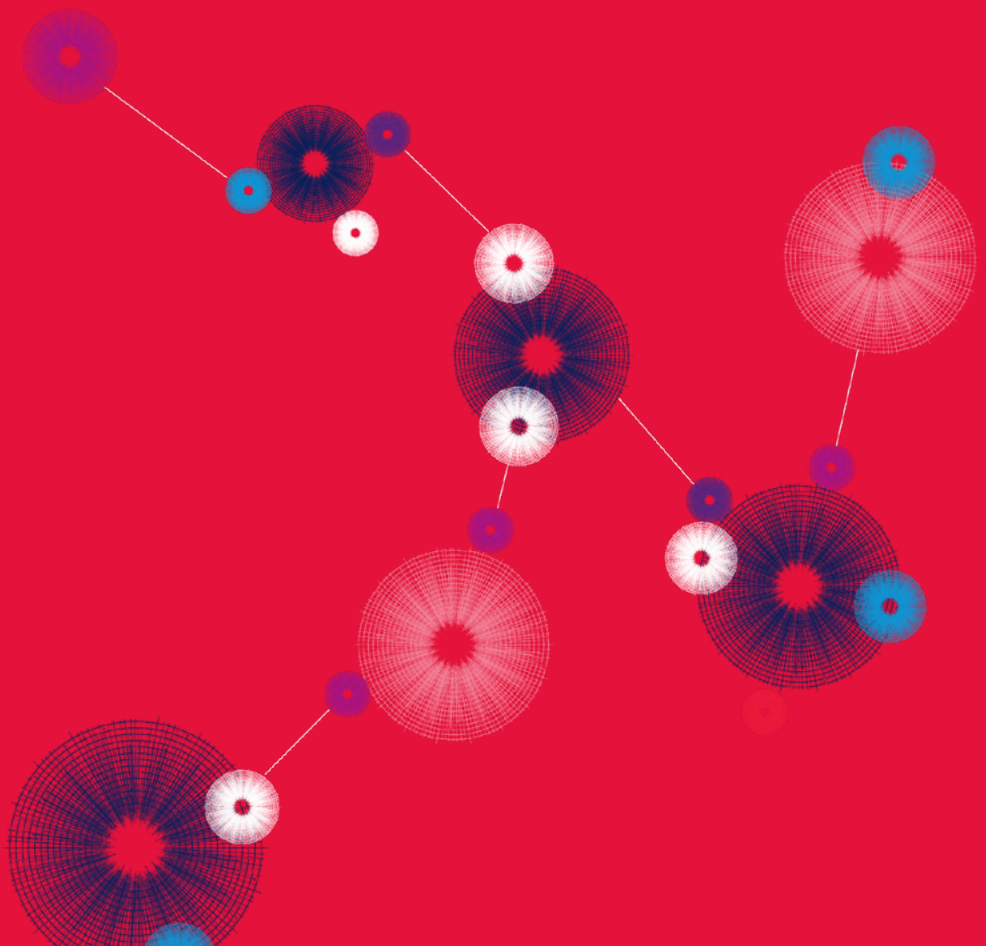
**Viral suppression.** There are three key categories for HIV viral load measurements: unsuppressed (>1000 copies/mL), suppressed (detected but ≤1000 copies/mL) and undetectable (viral load not detected by the test used).

**Virological failure.** is defined by a persistently detectable viral load exceeding 1000 copies/ml after at least six months of using ART.



# 1

# Introduction



# Background and Rationale

Globally, the HIV response continues to reduce the number of people acquiring HIV and dying from HIV-related causes and increasing the number of people accessing antiretroviral therapy and reaching HIV viral suppression *(1)*. In 2025, an estimated 1.2 million people acquired HIV globally, a 42% reduction compared with 2010, and HIV-related deaths more than halved from 1.3 million in 2010 to 570 000 in 2025. With these achievements, longevity has improved, transforming HIV into a manageable chronic condition for many people living with HIV. However, persistent challenges remain. Progress has slowed in recent years in incidence reduction, and deaths remain unacceptably high, in part because advanced HIV disease continues to impose a substantial burden: an estimated 1.9 million people had advanced HIV disease in sub-Saharan Africa in 2022 *(2)*. Advanced HIV disease remains a challenge across all world regions, with higher mortality among people living with HIV who have advanced HIV disease *(3)*. In addition, despite the availability of highly effective prevention and treatment, in 2025, vertical transmission resulted in an estimated 93 000 infants acquiring HIV, and an estimated 61 000 children died from HIV-related causes. Overall, the progress made remains uneven between and within countries and regions, and is currently insufficient to meet global targets for incidence and mortality *(1, 4, 5)*.

Against this backdrop, geopolitical and financing shifts are reshaping the global response to HIV. Reductions in official development assistance and increasing uncertainty in external funding have had profound implications for national programmes, especially in countries that have historically relied on major funding mechanisms such as the United States President's Emergency Plan for AIDS Relief (PEPFAR) and the Global Fund to Fight AIDS, Tuberculosis and Malaria. These changes jeopardize the continuity of services, weaken surveillance systems and risk reversing progress in prevention, testing and treatment if not managed carefully *(6)*. In addition, countries are facing growing and competing health demands, requiring more efficient, integrated and sustainable approaches to service delivery and monitoring.

In this evolving environment, routine HIV surveillance systems play a critical role. Timely, accurate and granular data are essential to monitor epidemic trends, assess programme performance and guide priority setting within increasingly constrained resource envelopes. Routine data systems, embedded within service delivery, provide continual information on new diagnoses, identify remaining gaps and quantify how outcomes change over time. Strengthening these systems is central to ensuring that countries can respond to changing epidemiological patterns, maintain effective programmes and monitor progress towards global targets even as funding landscapes shift.

The transition from paper-based to digital health information systems facilitates improved surveillance. Digital, person-centred data systems enable the continuous capture of individual health events, linking clinical data, laboratory results and programme information on outcomes. These systems improve the accuracy, completeness and timeliness of data, facilitating more responsive and evidence-driven programme management. Digital systems can also support the integration of facility- and community-based data, which is increasingly important as differentiated service delivery models for HIV expand. By enabling linkage across service points and over time, they provide more comprehensive data on HIV programmes. The shift to digital data requires strong governance frameworks, including protections for data security and confidentiality, especially for members of key populations, who may face stigma, discrimination and criminalization *(7)*. Ensuring the safe and ethical use of data is therefore a critical component of HIV surveillance systems. Although progress towards digitalization is advancing, many countries continue to operate mixed systems that combine paper-based and electronic reporting. This guidance recognizes this reality and supports both approaches.

Strengthening HIV surveillance within broader disease monitoring and national surveillance architectures improves efficiency and accountability. The need to better integrate, screen and treat infections related to HIV is critical to improve health outcomes among people at elevated risk for and living with HIV. The modes of transmission and epidemiology of several of these infections are similar to those of HIV, with overlapping risk profiles, and services are often delivered to the same populations. These include sexually transmitted infections, viral hepatitis, tuberculosis (TB) and cervical cancer *(8)*. Also, interventions to prevent, diagnose and treat these infections are often similar and delivered through integrated or closely related services. In addition, as people living with HIV age, they face an increasing burden of noncommunicable diseases *(9–11)*. WHO guidelines on HIV service delivery recommend integrating services for hypertension, diabetes and mental health (including depression, anxiety and substance use) into HIV service delivery *(12)*. Such service integration requires integrating underlying data systems to support more person-centred, coordinated care across the life-course. Focusing on the core components and standards required for HIV surveillance facilitates interoperability

across data systems. As countries move toward operationalizing the wider use of individual-level data, interoperable or integrated data systems will become an important tool for ensuring effective, high-quality services across not only the HIV cascade but also for prevention, diagnosis and treatment for other health conditions. Better integration of health services across diseases will also advance the goals of universal health coverage *(13)*.

## What's new in this consolidation of WHO strategic information guidelines on HIV

This guidance updates the previous *Consolidated guidelines on person-centred HIV strategic information: strengthening routine data for impact (8)*, which covered the use of person-centred HIV monitoring across the HIV prevention, testing and treatment cascade, better integration of related infections, the use of routine data for HIV surveillance to track the epidemic and response and building a secure, interoperable digital data system. Those guidelines made 22 data recommendations for health information systems and data use and presented a standard minimum dataset and indicators across six technical areas. These included HIV prevention, HIV testing, HIV treatment, HIV-related infections (sexually transmitted infections, viral hepatitis, TB and cervical cancer), the use of routinely collected data for HIV surveillance (including methods for measurement of HIV prevalence and incidence) and guidance on digital health data focusing on data governance, interoperability, unique identifiers and privacy and security. A set of indicators across technical domains was suggested with 25 core indicators among 80 priority indicators for reporting. A wider set of additional indicators was included to supplement those in the priority set. The guidelines also emphasized the importance of triangulating data from other sources of HIV-related strategic information, including from population-based surveys, modelling, quality of care measures and community-led monitoring, to assess the representativeness of findings from routine data systems.

The previous guidance on *WHO case definitions of HIV for surveillance and revised clinical staging and immunological classification of HIV-related disease in adults and children* was published in 2007 *(14)*. Since then, there have been several updates to HIV testing guidelines and changes to recommendations on diagnostic algorithms for adults and children. Further, definitions for advanced HIV disease and the use of clinical staging have also evolved.

This new consolidated guidance builds on the 2022 consolidated guidelines and updates the 2007 HIV case surveillance guideline to provide more in-depth information for HIV case surveillance systems, focusing on standardization and improving surveillance data quality and use. The guidance defines the core elements of a strong routine HIV surveillance system. The foundation is the use of updated HIV case definitions, which ensure consistency in reporting of people diagnosed with HIV across settings. In addition, the guidance includes a set of priority indicators for advanced HIV disease, which enable programmes to track key priorities for identification and care for individuals with advanced HIV disease across several health conditions, with the ultimate goal of reducing mortality among people living with HIV.

The new guidance also provides a structured surveillance checklist to support the systematic implementation of HIV surveillance with regular review to assess progress across several domains such as completeness, accuracy and timeliness to improve the quality and comparability of data collected through routine systems. It further emphasizes the importance of linking HIV surveillance with related health information systems, including civil registration and vital statistics for mortality reporting and maternal, newborn and child health platforms to monitor vertical transmission. Taken together, these components establish a comprehensive framework for generating reliable surveillance data to monitor key indicators of the HIV epidemic and can be further used to estimate HIV incidence, prevalence and mortality.

## Objectives and guiding principles

The overarching goal of this guidance is to support countries in strengthening the collection, analysis and use of routine HIV surveillance data. A strong surveillance system is characterized not only by what data are collected but by how they are collected, validated and used. By establishing clear standards for case definitions, advanced HIV disease indicators and the assessment of system functionality through a checklist, this guidance aims to equip countries with the tools needed to generate high-quality, actionable data that can improve health outcomes for people living with

HIV, and to monitor programme performance and epidemic trends.

Ensuring the long-term sustainability of routine surveillance systems is a key guiding principle. As funding landscapes evolve, countries increasingly rely on routine data as a primary source of strategic information. Strengthening data systems that are integrated within national health information architectures and that can be maintained with domestic resources is essential for continuous monitoring of epidemic trends over time. Achieving this requires robust systems that can link, validate and routinely assess data from multiple sources. These aspects are captured in the HIV surveillance checklist. Although countries may not currently be able to meet the standards and benchmarks laid out in the checklist, they provide a quantifiable way to measure progress over time. These standards are achievable across diverse settings and provide a clear pathway for stronger, more resilient HIV surveillance systems.

## Process of development of this guidance

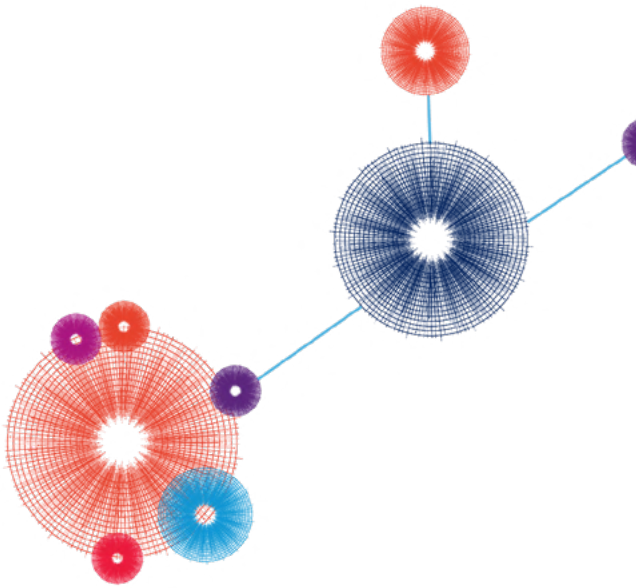
WHO staff and consultants developed these guidelines based on review of recent global and regional guidance documents, consultative meetings and inputs of technical experts. The minimum datasets and priority indicators included in these guidelines were identified through consultation with technical experts with country-level, regional and global perspectives.

The HIV Surveillance Technical Working Group, which had responsibility for oversight of guidelines development, included two co-chairs and members with expertise in strategic information and monitoring and evaluation, with representation from WHO regions, Member States (health ministries), civil society, partners and academic institutions. The technical working group provided inputs on the overall approach to the guidance and indicators and reviewed drafts of the chapters at different stages.

WHO headquarters provided overall direction, coordination and oversight. All external contributors to the development of the guidelines completed a WHO declaration of interests form.

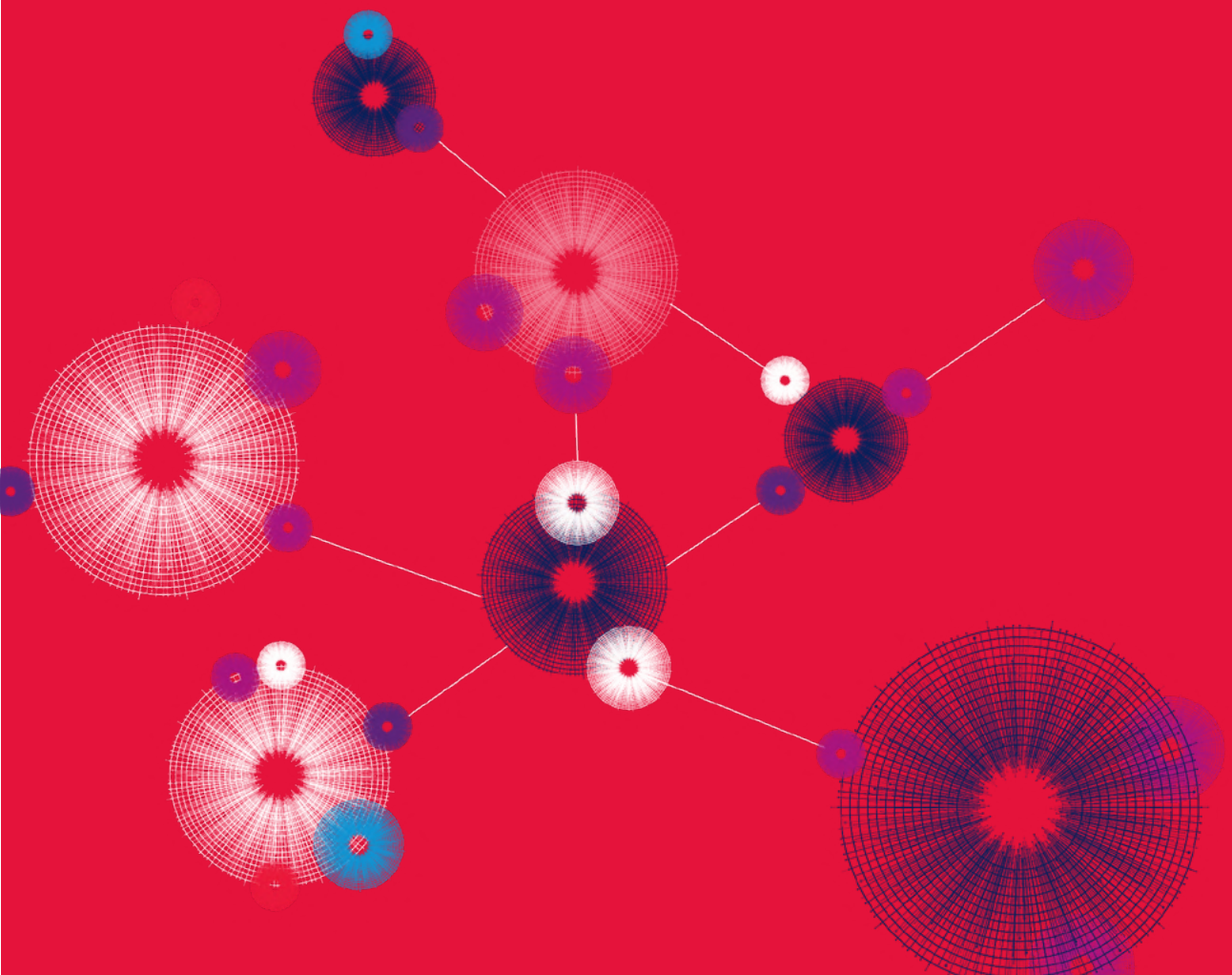
## Intended audience

This guidance is intended primarily for national and subnational HIV programme managers, surveillance officers, partners and other stakeholders involved in designing and using surveillance systems and tools for collecting, analysing and using HIV health sector data. These include national-level staff establishing strategic information policy, guidelines, frameworks, tools and health information systems. The guidance will also be of interest and use to technical partners and other stakeholders that support the design and implementation of HIV surveillance systems and related tools. Other potential users include stakeholders concerned with developing and analysing strategic information, including nongovernmental organizations, private-sector care providers, civil society organizations and academic groups involved in teaching and research.



# 2

# Updated HIV case definitions



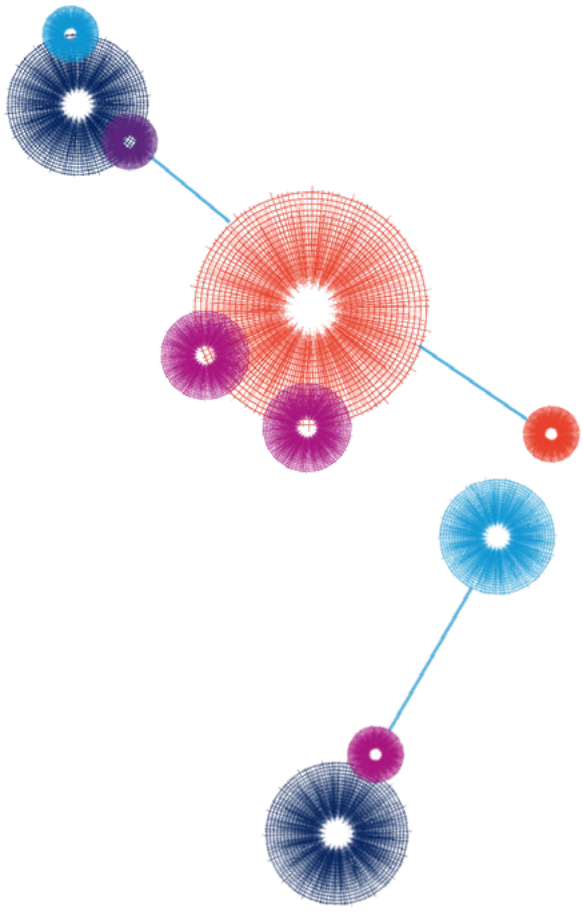
# Background

Accurate data on new HIV diagnoses and on HIV-related mortality are critical to understanding shifting epidemiological trends and to guiding the programmatic response, especially because of the growing need for focused age, gender, geographical and other demographic priority setting for service delivery (for example, by key population or ethnicity). Identifying people living with HIV who are not aware of their status and linking them to care and treatment services helps them to achieve viral suppression, which reduces morbidity, death and the risk of onward transmission *(15)*. Differences in treatment outcomes and mortality rates among people living with HIV may result from various risk factors, delayed ART initiation and comorbidities that need programme intervention *(12, 16)*.

As testing strategies for HIV detection have advanced, the WHO HIV surveillance case definition *(14)* needs to be updated to ensure that data submitted through routine surveillance systems remain consistent and standardized for effective epidemiological analysis. HIV case surveillance is defined as the reporting of an initial diagnosis of HIV infection (a case) and subsequent sentinel events related to public health actions to a public health agency responsible for monitoring and responding to the epidemic. Sentinel events may include an HIV-positive test, entry into HIV care and treatment, ART regimen, first and follow-up tests for CD4 counts and HIV viral load, assessment for advanced HIV disease and death.

Protecting HIV-related information – whether on paper or stored digitally – is essential for privacy and security. Digital platforms require clear governance, standardized technical protocols and strong ethical and legal safeguards to ensure that patient data remains protected *(8, 17)*. Data security and confidentiality are especially important for people from key populations, who are disproportionately affected by HIV, other sexually transmitted infections and viral hepatitis – men who have sex with men, sex workers, people who inject drugs, people in prisons and other closed settings and trans and gender-diverse people *(7)*. The criminalization and stigmatization of same-gender sexual activity, sex work and drug use or possession in many settings creates barriers to accessing health services for these individuals and makes collection of information about these attributes sensitive.

**HIV case surveillance** is defined as the reporting of an initial diagnosis of HIV infection (a case) and subsequent sentinel events related to public health actions, to a public health agency responsible for monitoring and responding to the epidemic.



# WHO case definition for HIV infection

WHO suggests a simplified HIV case definition for reporting and surveillance based on diagnostic criteria, regardless of clinical or immunological status (Box 2.1). Diagnosing HIV infection among an adult, adolescent, child or infant at any immunological stage requires confirmation with age-appropriate tests. For individuals 18 months or older, a three-test strategy (three consecutive reactive HIV tests for a positive diagnosis) is recommended, using three different types of tests *(18)*. The testing algorithm must be sequential, not parallel, and should not be confused with a tiebreaker strategy, which refers to an HIV testing strategy in which a third test is used determine the diagnosis if the results of the first and second tests differ. WHO does not recommend tiebreaker strategies because studies have shown that these increase the likelihood of false-positive results *(19)*.

A three-test strategy increases the positive predictive value to above 99.9% and thus prevents HIV misdiagnosis *(19)*. The first test in the algorithm should have the highest sensitivity. The type of test that is used first in the strategy may differ for different populations. For example, among pregnant women, dual HIV and syphilis rapid tests may be used first to increase coverage of syphilis testing and help to prevent congenital syphilis in addition to HIV transmission *(18)*.

Since maternal HIV antibody transferred passively during pregnancy can persist for as long as 18 months among children born to mothers living with HIV, reactive HIV antibody test results are difficult to interpret among infants younger than 18 months, so alternative test types are recommended. HIV-exposed infants should be tested at birth, at 4–6 weeks of age, at nine months during breastfeeding and finally at 18 months or six weeks after breastfeeding ends.

WHO also recommends against using Western blot assay as a confirmatory test in the HIV testing algorithm *(20)*. A systematic review showed that testing strategies and algorithms using Western blotting resulted in significantly higher indeterminate results, longer turnaround time, lower linkage to treatment and greater loss to follow-up than testing strategies and algorithms that used simple tests such as rapid diagnostic tests and enzyme immunoassays.

**Box 2.1.** WHO definitions for a confirmed case of HIV infection.

**A case of HIV infection is defined as an individual with confirmed HIV infection, irrespective of CD4 cell count or WHO clinical stage.**

**Individuals 18 months or older**

Three consecutive reactive HIV serology tests according to the national algorithm. The three tests should be different and may include three consecutive HIV rapid tests or a combination of rapid tests, enzyme immunoassays or HIV nucleic acid tests (DNA or RNA).

**Children younger than 18 months of age:**

Positive results on two separate specimens using HIV nucleic acid tests (DNA or RNA) or a laboratory-based p24 antigen enzyme immunoassay. The second specimen should be taken and tested more than four weeks after birth. Testing may be done from birth up to 18 months of age, and the time points should align with national testing schedules and risk-based guidance regarding enhanced postnatal prophylaxis. If the child is 18 months or older when breastfeeding ends, the three-test algorithm according to the case definition for individuals 18 months or older should be used.

## WHO case definition for advanced HIV disease

People with advanced HIV disease have a significantly elevated risk of severe opportunistic infections and death, requiring intensive clinical follow-up and a comprehensive package of care, as recommended by WHO *(3, 21)*. The burden of advanced HIV disease continues to be considerable, despite the global expansion of ART coverage. A systematic review of 117 cohorts of people living with HIV found that in outpatient settings one third of CD4 counts measured were under 200 cells/mm3, indicating advanced HIV disease *(22)*. At a population level, an analysis of nationally representative household surveys from 13 African countries estimated the burden of advanced HIV disease in sub-Saharan Africa to be 1.9 million people, and it was more common among men than women *(2)*.

Surveillance of advanced HIV disease is important for early detection, rapid ART initiation and optimized clinical management to reduce HIV morbidity and mortality and to ensure progress towards the 2030 global AIDS targets to reduce AIDS-related deaths by 90% since 2010 *(4)*. Understanding patterns of advanced HIV disease also helps to identify populations and geographical areas with higher rates of advanced HIV disease, supporting priority setting for testing strategies, outreach and tailored services for underserved groups.

In 2025, WHO published new recommendations for CD4 testing as the preferred diagnostic approach to identify advanced HIV disease, with clinical staging conditionally recommended in settings where CD4 testing is not available *(21)*. These recommendations improve the understanding of disease progression and immune status, to assess risk for opportunistic infections and HIV-related complications and enable the WHO-recommended advanced HIV disease package of care to be offered to reduce morbidity and mortality. WHO established a four-stage clinical staging system for HIV to assess the extent of HIV disease once HIV infection has been confirmed (serological and/or virological evidence of HIV infection), which has been updated periodically *(14)*. Box 2.2 provides the updated

**Box 2.2.** WHO case definition for advanced HIV disease.

**For adults, adolescents and children five years and older with confirmed HIV infection, advanced HIV disease is defined as a CD4 cell count ≤200 cells/mm3.[a] At presentation, all children living with HIV younger than five years should be considered as having advanced HIV disease, unless they have received ART for more than a year and are clinically stable.**

[a] When CD4 testing is unavailable, advanced HIV disease can be defined as a WHO clinical stage 3 or 4 event at presentation for care.

**Box 2.3.** Indications for CD4 testing in HIV programmes.

**CD4 testing to identify advanced HIV disease among people living with HIV who:**

a. are initiating or reinitiating ART
b. are re-engaging in care following disengagement
c. have treatment failure or clinically identified treatment failurea
d. are hospitalized or seriously ill or are considered clinically unstable.

**CD4 testing to support the identification of treatment failure when viral load testing is unavailable**

**CD4 testing to assess eligibility to stop co-trimoxazole prophylaxis**

**CD4 testing to assess eligibility for fluconazole prophylaxis**

case definition for advanced HIV disease, Box 2.3 provides the indications for CD4 testing, and Annex 1 describes the criteria for clinical staging of HIV disease for adults and children in settings without CD4 testing.

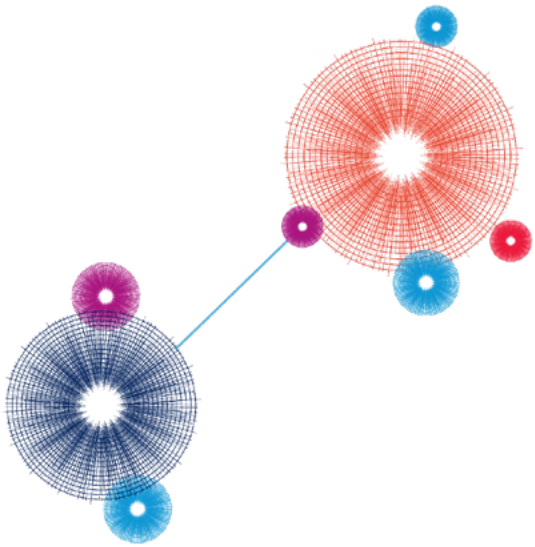
## Measuring mortality

Accurate information on deaths among people living with HIV is critical to understanding the impact of HIV programmes and to inform methods of estimating HIV prevalence and incidence. Moreover, distinguishing between HIV-related mortality and all-cause mortality among people living with HIV is key for setting priorities for intervention and accurately understanding epidemiological trends. The under-reporting of deaths among people diagnosed with HIV and potential misclassification of the cause of death can result in underestimating mortality among people living with HIV and potentially overestimating the number of people living with HIV who are lost to follow-up *(23)*. Such misclassification affects programme planning and the monitoring of progress towards global HIV targets. Estimates of mortality for key populations are especially difficult to obtain in resource-limited settings because they face additional barriers to testing and care and urgently need to be improved.

Deaths among people living with HIV may be recorded and reported directly by clinics or hospitals when the death of a person is known, but in many instances this information is either missing or unknown, especially when deaths occur at home. In addition, information on deaths among inpatients in hospitals may be recorded in different health information systems or may not have information on HIV status recorded. Yet, a systematic review estimated that the overall risk of in-hospital death among people living with HIV was 16%, with 72% of deaths from HIV-related causes with a minimal change from 2000 to 2023. *(3)*. Therefore, a national HIV case surveillance system, should include data from all sites where people living with HIV may receive services, including HIV testing, outpatient care and treatment, community-based services and hospitals or inpatient facilities. Death records from reporting sites can be supplemented by mortality surveillance and verbal autopsy or confirmed by national death registration.

There are several approaches to better enumerate deaths among people living with HIV and HIV-related deaths in the population by cross-referencing other data sources where deaths are recorded. When available, data files including deaths for which HIV and/or AIDS were recorded on the death certificate or when cause(s) of death would be unusual for an individual not living with HIV (for example, Kaposi's sarcoma or Pneumocystis pneumonia) may be linked using unique personal identifiers (for example, civil identification numbers, national health identifiers, master patient indexes or bespoke matching algorithms based on existing patient identifying information). Some settings may also have the option of comparing routine HIV data records with national death files listing all deaths among people younger than 60 years occurring within a calendar year. Recording of deaths is likely to be more accurate in countries where logging deaths with a national registry system is a legal requirement. However, even in these settings, HIV and AIDS are not always recorded as the underlying cause of death, and the true burden may therefore be underestimated *(24)*. Using the standardized list of International Classification of Diseases codes is important to ensure consistency in defining and reporting HIV-related mortality *(25)*. In other settings, HIV-specific verbal autopsy methods may be considered to improve death reporting among people living with HIV. Such methods have proven efficient in identifying HIV-related mortality in several African countries and among various cohorts *(26)*. However, because of the many challenges with measuring HIV-related mortality the Global AIDS targets rely on modelled estimates *(4)*.

Accurately measuring mortality remains a challenge because of under-reporting of deaths overall, misclassification of causes of death and incomplete linkage across data sources. Strengthening mortality surveillance is therefore essential to improve the accuracy and completeness of mortality data and to better inform programme monitoring and epidemiological analyses. WHO is developing a strategy on mortality surveillance to support countries in strengthening data systems, improving cause-of-death ascertainment and promoting standardized approaches, including data linkage and using International Classification of Diseases coding *(27)*.



## A minimum dataset for HIV case surveillance

A **minimum dataset** includes the essential data elements required to systematically capture and monitor key events in an individual's interaction with the health system over time, supporting surveillance, programme monitoring and public health action.

Strengthened HIV surveillance systems involve reporting HIV diagnoses and advanced HIV disease cases through a standardized reporting system, with additional data elements that can include sentinel paediatric or pregnancy-related events, related infections and deaths as well as more specific data elements, such as the probable route of HIV acquisition *(8)*. Together these data elements facilitate an understanding of the distribution of new HIV diagnoses, disease progression and mortality. Using regular, reliable routine surveillance data to track new HIV diagnoses and treatment outcomes including mortality will enhance timely decision-making and the overall national response.

A comprehensive HIV surveillance system should incorporate data from all types of service delivery points at which HIV data and sentinel events may be captured, including outpatient and inpatient settings, hospitals, community-based and private services and from sources such as clinical records, antenatal care clinics, HIV testing services, pharmacies, laboratories and vital statistics registries that record the cause of death. Using a minimum dataset of data elements to capture key events in an individual's interaction with the health system and combining these data elements with a unique identification standard can link a single client's health interactions across time and locations.

The WHO-recommended minimum dataset for HIV case surveillance includes essential data elements on HIV diagnosis, disease progression, treatment outcomes and vertical transmission (Table 2.1). Distinguishing individuals newly diagnosed with HIV from those who may have previously tested HIV-positive in another setting, region or country is especially important for HIV incidence calculations. Accurate and complete data are also needed on first (baseline) CD4 test at diagnosis and, as far as possible, correct categorization of people lost to follow-up since these individuals may have silently transferred to another facility or have died and therefore should be removed from denominators *(8, 23)*. Treatment outcomes include different categories related to the successful initiation and response to ART, as well as stopping ART, lost to follow up, treatment failure or death. WHO has defined treatment failure for clinical, immunological and virological failure for the decision to switch ART regimens *(28)* (Annex 2). Compared with clinical or immunological monitoring, viral load testing provides an early and more accurate indication of treatment failure and the need to switch from first-line to second-line drugs *(28)*. Measuring viral load also helps to discriminate between treatment failure and non-adherence, following enhanced adherence support. Further, viral load testing gives clients a measure of understanding, control and motivation to adhere to treatment and understand their HIV infection. In addition, surveillance systems should capture key data on pregnant women living with HIV and HIV-exposed infants and children to monitor vertical transmission and assess timely diagnosis, and linkage to care and treatment for children living with HIV.

HIV surveillance systems that rely on aggregate data have more challenges in capturing longitudinal data than those capturing individual-level data electronically. Aggregated data include the potential for double-counting individuals who either receive multiple services at a single facility or who move between facilities; enabling only broad categories of disaggregation; the loss of detail at each level of aggregation; difficulties in rechecking reports against individual-level data; and a lack of ability to interrogate data further because of the time and effort needed to manually check paper forms and registers. However, aggregate and paper-based systems are still used in many countries, and a mix of types, such as paper and digital, aggregate and individual will likely continue for some time. Data from the two sources can be combined for summary statistics at the subnational or national level. Higher-volume urban health services are likely to be the first to use digital reporting systems and, as more health facilities come online, the percentage of facilities reporting electronically will grow. Even at a smaller scale, individual-level surveillance systems can contribute to enhancing data quality and monitoring, and combined with data from higher volume sites with more comprehensive individual-level data can be used to estimate potential biases in data and reporting and provide epidemiological insights from a broader geographical area.

The quality of routine data depends on how well information is captured by the health information system and health service providers and subsequently cleaned and reviewed by data managers. Within a quality management system, routine data preparation should integrate data quality assessment (such as completeness and outlier identification) alongside laboratory quality assurance activities, including periodic external quality assessment, to ensure both data integrity and testing accuracy. In the long term, good quality routine case surveillance data provides a sustainable, timely and granular source of information for monitoring new HIV diagnoses and deaths among people living with HIV, and for improving estimates of HIV incidence and mortality.

In the long term, **good quality routine case surveillance data** provides a sustainable, timely and granular source of information for monitoring new HIV diagnoses and deaths among people living with HIV, and for improving estimates of HIV incidence and mortality.

**Table 2.1.** Recommended minimum dataset for HIV case surveillance.

| Area | Data elements | Potential data sources[a] | Use in HIV incidence & prevalence estimation | Potential derived indicators |
|---|---|---|---|---|
| HIV diagnosis | HIV diagnosis test date | HIV testing data | Pivotal date from which to estimate incidence and for inclusion in prevalence estimates | Estimated HIV testing coverage (when combined with all other testing data)<br><br>Reclassification of new diagnoses as long-term infection (with or without exposure to antiretroviral drugs) |
| Demographics | Date of birth, age or age group<br><br>Sex (male, female, other) | HIV testing data<br><br>ART registry | Determining age, sex and regional distributions of HIV diagnoses | Used for disaggregating indicators |
| Previous HIV testing | Previous HIV test (either negative or positive):<br><br>HIV test date<br><br>HIV test result | HIV testing data | Date from which some estimates will take a midpoint between a previous negative test and first diagnosis for estimating incidence<br><br>The period in which a previous HIV-positive test occurred will determine whether an individual is included in HIV incidence or prevalence calculations | Annualized rate of tests per person per year by key population<br><br>Previous linkage to HIV prevention services |

| Area | Data elements | Potential data sources[a] | Use in HIV incidence & prevalence estimation | Potential derived indicators |
|---|---|---|---|---|
| Initial pretreatment disease assessment | First CD4 test result at HIV diagnosis (baseline CD4)<br>Date of CD4 sample collection<br>HIV clinical stage | HIV testing data and/or ART registry | Measure of immune function<br>CD4 back-calculation of HIV incidence | Proportion with advanced HIV disease<br>Reclassification of new diagnoses as long-term infection |
| Initiation of ART | Date started ART (among pregnant women, whether already receiving ART or ART started during pregnancy) | ART registry | | Time to ART initiation |
| Viral suppression | First viral load test result<br>First viral load test date<br>Most recent viral load test result<br>Most recent viral load test date | ART registry | Measure of treatment response | Reclassification of new diagnoses as long-term infection<br>People receiving ART with viral suppression (the third 95 in 95–95–95)<br>Viral load testing coverage<br>Treatment failure |
| Treatment outcomes | Not receiving ART<br>On ART and virologically suppressed[b]<br>On ART and not virologically suppressed (treatment failure[c])<br>Stopped ART<br>Lost to follow-up (≥28 days since last missed appointment)<br>Died[d] | ART registry | | New and cumulative number of people started on ART<br>Currently receiving ART<br>Proportion of people living with HIV receiving treatment (the second 95 in 95–95–95)<br>ART attrition |

| Area | Data elements | Potential data sources[a] | Use in HIV incidence & prevalence estimation | Potential derived indicators |
|---|---|---|---|---|
| HIV diagnoses among pregnant women | Date of first antenatal care visit<br>HIV status at first test during current pregnancy (known positive, tested negative, tested positive, not tested)<br>Dates and results of subsequent HIV tests during pregnancy<br>Pregnancy among women living with HIV receiving ART | ART registry | HIV incidence and prevalence among women attending antenatal care | HIV testing coverage among pregnant women attending care<br>New diagnoses among pregnant women not receiving ART<br>ART coverage among pregnant women<br>Viral suppression at labour and delivery |
| Vertical transmission | HIV-exposed infant or child<br>HIV-exposed infant or child test result of assay-1<br>Final diagnosis of HIV-exposed infant<br>HIV-exposed infant or child started on antiretroviral drug prophylaxis | ART registry<br>Antenatal care data | HIV prevalence and incidence among children | Vertical transmission rate<br>Early infant diagnosis coverage<br>Proportion of infants whose final HIV status is known<br>Infant antiretroviral drug prophylaxis coverage |
| Disease progression | Date of advanced HIV disease (or AIDS) diagnosis | ART registry | | Proportion of people living with HIV with advanced HIV disease |
| Death | Date of death<br>Cause of death[e]:<br>HIV-related<br>HIV-unrelated | ART registry<br>Civil registration and vital statistics system<br>Verbal autopsy<br>Modelled estimates | HIV prevalence | Proportion of HIV-related deaths among people living with HIV |

[a] Electronic medical records can be used when any of these data elements are recorded.

[b] If viral load is not available, "On ART and clinically stable" may be used as a substitute measure.

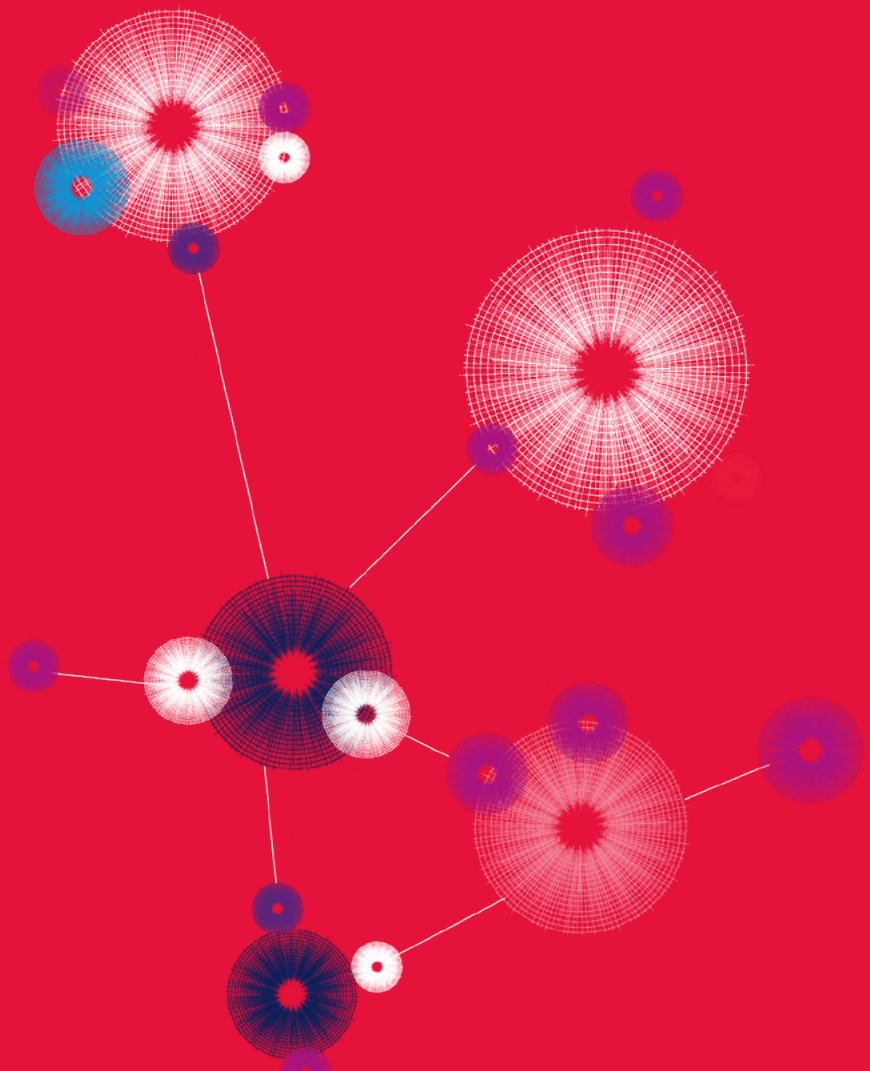
[c] If viral load is not available, then treatment failure can be defined clinically. See Annex 2.

[d] For required death-related data elements, see the "Death" row below.

[e] Cause of death should be reported in accordance with International Classification of Diseases codes in an electronic medical register or as reported as an underlying or secondary cause of death in the death certificate for people living with HIV *(25)*.

# 3

# Surveillance for advanced HIV disease



# Background

Monitoring advanced HIV disease is essential for reducing mortality among people living with HIV *(3)*. Effective monitoring ensures that people with advanced HIV disease are rapidly identified and linked to appropriate services, which is important for improving outcomes and reducing the risk of life-threatening complications. Obtaining different perspectives on the epidemic and the response is key, for example, to assess gender equity and age-specific differences in coverage, to ensure quality of services for specific subgroups, to review current or long-term performance and to compare population- based and programme-based measures of performance. This guidance builds upon the guidance and indicators in the *Consolidated guidelines on person-centred HIV strategic information (8)*, which details several aspects of treatment monitoring including for advanced HIV disease.

Strengthening national HIV surveillance systems involves standardizing the reporting of individuals with advanced HIV disease. This includes tracking whether individuals had a CD4 count test when recommended and tracking the provision of the recommended package of care for advanced HIV disease *(21)*. The implementation of recommended screening tools and treatment protocols needs to be monitored to ensure that people receive comprehensive care. Mortality data can come from hospitals, clinics, national death registries and cross-referencing other sources, including from the community through verbal autopsy methods. Given the challenges and costs of these measurements, routinely collecting programme data is a valuable way to track programme performance and outcomes. In addition, monitoring helps to direct resources to gaps in care, ensuring that the populations and areas with the greatest need receive the necessary support.

# Key principles of advanced HIV disease surveillance

Focusing on identifying advanced HIV disease is fundamental to effective monitoring. This includes identifying advanced HIV disease at diagnosis, reinitiation of ART and if a person experiences treatment failure.

Regular monitoring of CD4 counts during follow-up visits helps to track disease progression and the effectiveness of treatment as detailed in WHO guidance *(21)*. In addition, monitoring for viral suppression, adherence challenges and opportunistic infections provides valuable insights into the person's health status and the need for tailored care.

A comprehensive list of priority data elements for advanced HIV disease monitoring is essential for tracking longitudinal information over time. This includes data on CD4 counts, viral load, adherence and the presence of opportunistic infections. By collecting and analysing these data, health-care providers can identify trends and patterns, enabling them to make informed decisions about care and resource allocation.

# Data elements and indicators for monitoring advanced HIV disease

Introducing specific indicators for advanced HIV disease is important to assess the effectiveness of programmes and identify areas for improvement. A cascade of advanced HIV disease indicators provides a comprehensive framework for monitoring the continuum of care for individuals with advanced HIV disease across several health conditions.

A minimum dataset containing data elements for monitoring advanced HIV disease is intended to capture the key events in an individual's interaction with the health system related to advanced HIV disease. The primary purpose is to standardize patient information with a simplified and harmonized set of essential data elements relevant to core person-centred management and programme monitoring. Standardization also enables programme staff to compare data across populations, time, geographical areas and settings and provides data for clinical teams to monitor the quality of care longitudinally and along the cascade of HIV services.

Table 3.1 provides a priority list of data elements for monitoring advanced HIV disease, followed by a list of indicators that can be derived from these data elements. Reporting periods for indicators can follow national reporting protocols – with monthly, quarterly or annual reporting and review.

**Table 3.1.** Recommended minimum dataset for monitoring advanced HIV disease.

| Area | Data elements |
|---|---|
| Demographics | Date of birth, age or age group |
| | Sex (male, female, other) |
| Treatment outcomes | Not receiving ART, On ART and virologically suppressed, On ART and not virologically suppressed (treatment failure*), stopped ART, lost to follow-up (≥28 days since last missed appointment, death*) |
| Diagnosis of advanced HIV disease | HIV test date |
| | HIV test result |
| | CD4 test date (at diagnosis, at reinitiation, or at treatment failure) |
| | CD4 test result (at diagnosis, at reinitiation, or at treatment failure) |
| | Clinical stage at start of ART |
| Advanced HIV disease package of care | ART start date |
| | ART reinitiation date |
| | Co-trimoxazole prophylaxis start date |
| | Tuberculosis (TB) screening date |
| | TB screening result |
| | TB diagnostic test category |
| | TB diagnostic test date |
| | Date of TB diagnosis |
| | TB treatment start date |
| | TB treatment completion date |
| | Eligible for TB preventive treatment |
| | TB preventive treatment start date |
| | TB preventive treatment completion status |
| | Cryptococcal antigen screening test date |
| | Cryptococcal antigen screening test result |
| | Cryptococcal antifungal treatment start date (among people screening positive for cryptococcal antigen) |
| | Date of start of fluconazole primary prophylaxis |
| | Cryptococcal meningitis diagnostic test date |
| | Cryptococcal meningitis diagnostic test result |
| | Cryptococcal meningitis diagnostic test category |
| | Date of start of fluconazole prophylaxis |
| | Date started cryptococcal meningitis treatment induction regimen |

Table 3.2 contains a list of indicators that can be derived from the recommended data elements for HIV case surveillance. The reporting periods for indicators can follow national reporting protocols – with monthly reporting and quarterly and annual review. The indicators should be collected over the same reporting period. Eight core indicators are highlighted in the table with a red dot and are those which should be captured in all settings as a priority. Additional indicators can be calculated based on country context and programme priorities. Indicators on TB and HIV from the *Consolidated guidelines on person-centred HIV strategic information (8)* can be collected with an additional disaggregation for advanced HIV disease to assess the burden of advanced HIV disease among people with TB (Annex 3).

Key patient categories for advanced HIV disease indicators include the following and are important indicator disaggregation to understand among whom advanced HIV disease is occurring and where to better focus resources.

The key patient categories for advanced HIV disease which should be collected in all HIV surveillance data systems are:

- people newly diagnosed with HIV;
- people reinitiating ART after a period of treatment interruption (or people who have tested HIV positive in the past and are tested again but have not been receiving ART); and
- people who experience HIV treatment failure (which can be defined as clinical, immune or viral failure (Annex 2) *(28)*).

**Table 3.2.** Priority indicators for monitoring advanced HIV disease.

| Indicator ID | Short name | Indicator definition | Numerator definition | Denominator definition | Disaggregation |
|---|---|---|---|---|---|
| AHD.CD4 ● | CD4 count testing coverage | % of people living with HIV who had a CD4 test | Number of people who received a CD4 test at diagnosis, reinitiation of treatment or after treatment failure | Number of people who were newly diagnosed with HIV, reinitiating treatment or had treatment failure | Sex<br>Age<br>Patient category: new diagnosis, reinitiation, treatment failure<br>Key populations[a] |
| AHD.DIG ● | Advanced HIV disease diagnosed | % of people living with HIV with a CD4 cell count of ≤ 200 cells/mm3 | Number of people living with HIV with a CD4 cell count of ≤ 200 cells/mm3 at diagnosis, reinitiation of treatment or treatment failure | Number of people living with HIV who had a CD4 test at diagnosis, reinitiation of treatment or treatment failure | Sex<br>Age<br>Patient category: new diagnosis, reinitiation, treatment failure<br>Key populations[a] |
| AHD.STG | WHO clinical stage 3 or 4 illness | % of people living with HIV with WHO HIV stage 3 or 4 or AIDS-defining illness | Number of people with WHO HIV stage 3 or 4 or AIDS-defining illness at diagnosis, reinitiation of treatment or treatment failure | Number of people newly diagnosed with HIV, reinitiating treatment or who had treatment failure | Sex<br>Age<br>CD4 count ≤ 200 cells/mm3<br>Patient category: new diagnosis, reinitiation, treatment failure<br>Key populations[a] |

| Indicator ID | Short name | Indicator definition | Numerator definition | Denominator definition | Disaggregation |
|---|---|---|---|---|---|
| AHD.TOT | Total advanced HIV disease (CD4 test or clinical stage) | Total % of people living with HIV with advanced HIV disease | Total number of people living with HIV receiving ART with a CD4 count ≤200 cells/mm3 **OR** WHO clinical stage 3 or 4[b] | Number of people newly diagnosed with HIV, reinitiating treatment or who had treatment failure | Sex<br>Age<br>Patient category: new diagnosis, reinitiation, treatment failure<br>Key populations[a] |
| AHD.CPT | Co-trimoxazole prophylaxis initiated | % of people living with HIV who were provided co-trimoxazole prophylaxis among those with a CD4 cell count <350 cells/mm$^3$ | Number of people living with HIV with a CD4 cell count <350 cells/mm$^3$ who were provided co-trimoxazole prophylaxis | Number of people living with HIV with a CD4 cell count <350 cells/mm$^3$ | Sex<br>Age<br>Key populations[a] |
| AHD.CRA ● | Cryptococcal antigen testing for screening | % of people with advanced HIV disease who were screened for cryptococcal antigen | Number of people with advanced HIV disease who were screened for cryptococcal antigen | Total number of people with advanced HIV disease (AHD.TOT) | Sex<br>Age<br>Patient category: new diagnosis, reinitiation, treatment failure<br>Key populations[a] |
| AHD.CSP ● | Cryptococcal screen positive | % of people with advanced HIV disease who screened positive for cryptococcal antigen | Number of people with advanced HIV disease who screened positive for cryptococcal antigen | Total number of people with advanced HIV disease who were screened for cryptococcal antigen | Sex<br>Age<br>Patient category: new diagnosis, reinitiation, treatment failure<br>Key populations[a] |
| AHD.CTI ● | Crypto-coccosis treatment initiated for people who screened positive for cryptococcal antigen | % of people with advanced HIV disease who screened positive for cryptococcal antigen who initiated antifungal treatment | Number of people with advanced HIV disease who screened positive for cryptococcal antigen and initiated antifungal treatment | Total number of people with advanced HIV disease who screened positive for cryptococcal antigen | Sex<br>Age<br>Patient category: new diagnosis, reinitiation, treatment failure<br>Key populations[a] |
| AHD.FLU | Fluconazole prophylaxis | % of people with advanced HIV disease who received fluconazole primary prophylaxis | Number of people with advanced HIV disease who received fluconazole primary prophylaxis | Total number of people with advanced HIV disease (AHD.TOT) | Sex<br>Age<br>Patient category: new diagnosis, reinitiation, treatment failure<br>Key populations[a] |

| Indicator ID | Short name | Indicator definition | Numerator definition | Denominator definition | Disaggregation |
|---|---|---|---|---|---|
| AHD.CMD | Cryptococcal meningitis diagnosed | % of people with advanced HIV disease who have cryptococcal meningitis | Number of people who received a diagnosis of cryptococcal meningitis (using any diagnostic test) | Total number of people with advanced HIV disease (AHD.TOT) | Sex<br>Age<br>Patient category: new diagnosis, reinitiation, treatment failure<br>Key populations[a] |
| AHD.ART ● | Advanced HIV disease among people living with HIV receiving ART | % of people living with HIV receiving ART with advanced HIV disease | Total number of people living with HIV receiving ART with a CD4 count ≤200 cells/mm3 **OR** clinical stage 3 or 4[b] (AHD.TOT) | Number of people living with HIV receiving ART | Sex<br>Age<br>Patient category: new diagnosis, reinitiation, treatment failure<br>Key populations[a] |
| AHD.MOR ● | Mortality among people with advanced HIV disease[c] | % of people with advanced HIV disease who died | Total number of people living with HIV receiving ART with a CD4 count ≤200 cells/mm3 **OR** clinical stage 3 or 4 who died[b] | Estimated number of people living with HIV | Sex<br>Age<br>Patient category: new diagnosis, reinitiation, treatment failure<br>Key populations[a] |
| AHD.TBM | Mortality due to HIV-associated TB | % of people who died from HIV-associated TB | Number of people with HIV-associated TB who died | Estimated number of people living with HIV | Sex<br>Age<br>Disease type: pulmonary, extrapulmonary<br>Key populations[a] |
| AHD.CMM ● | Mortality due to cryptococcal meningitis among people living with HIV | % of people living with HIV who died due to cryptococcal meningitis | Number of people living with HIV with cryptococcal meningitis who died | Estimated number of people living with HIV | Sex<br>Age<br>Key populations[a] |

● Core indicator recommended for all settings; all indicators should be collected over the same reporting period.

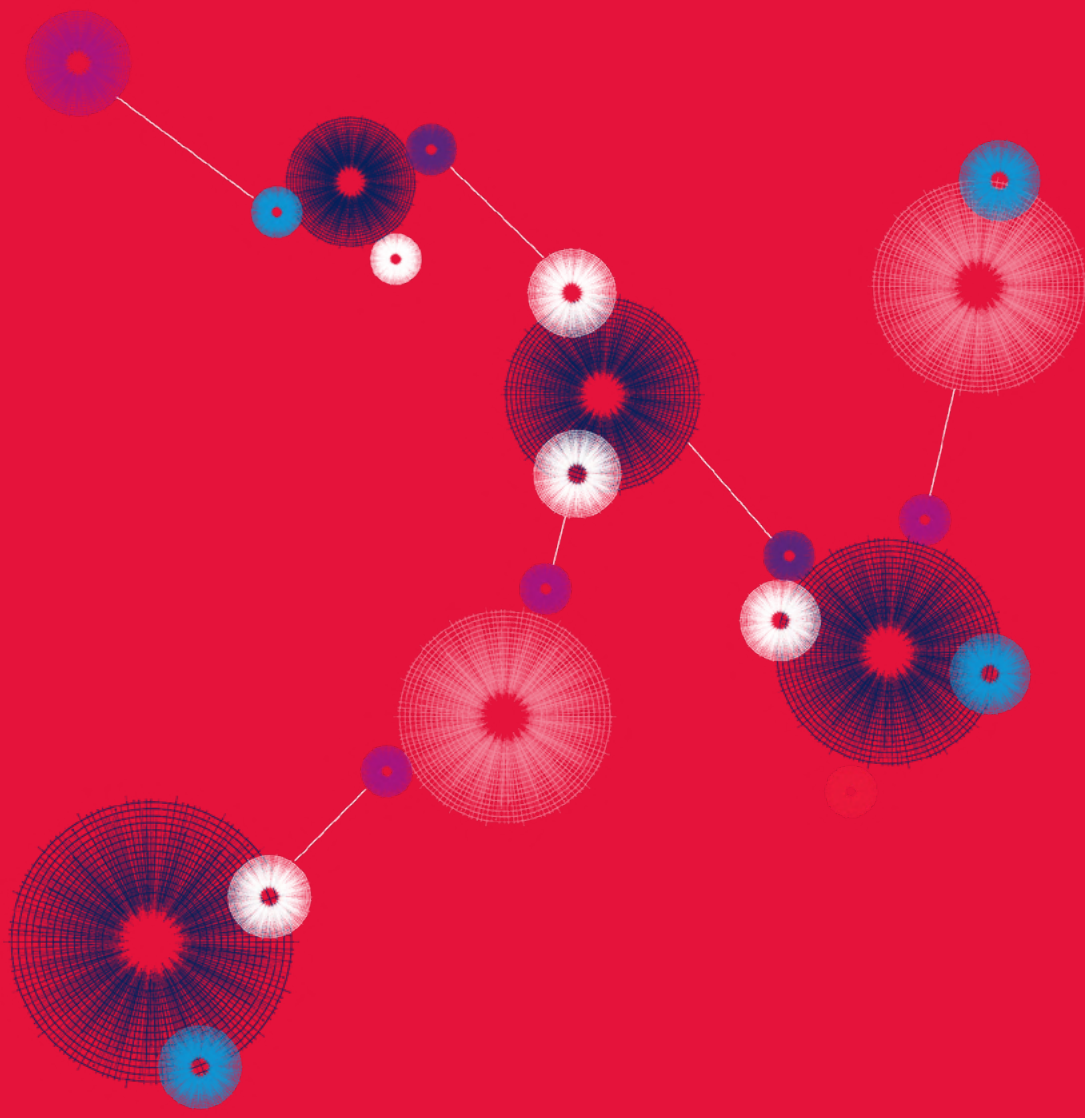
[a] Data on key populations including men who have sex with men, people living in prisons and other closed settings, people who inject drugs, sex workers, and trans and gender diverse people should only be collected where data security and confidentiality can be ensured.

[b] Individuals should not be counted twice. Cases identified through CD4 count or, if unavailable, through clinical staging should be included once and combined to generate the total number of people living with HIV with advanced HIV disease.

[c] For this indicator, cause of death should be reported in accordance with International Classification of Diseases codes in an electronic medical register or as reported as an underlying or secondary cause of death in the death certificate for people living with HIV.

# 4

# Surveillance checklist for routine HIV data systems



# Background

Routine HIV surveillance systems are central to monitoring the course of the HIV epidemic and assessing the effectiveness of the programmatic response *(8)*. Although key indicators such as HIV incidence, mortality and treatment outcomes have traditionally been derived from a combination of surveys, programme data and modelling, the increasing availability of routine, person-centred data within national health information systems has significantly strengthened the capacity for timely and granular analysis of people diagnosed with HIV and their health events over time, enabling longitudinal monitoring across the continuum of care.

High-quality routine data are especially important for understanding where and among whom new HIV diagnoses are occurring, so that gaps in service delivery can be identified and enable more precise focusing of prevention, testing and treatment services. These data can also be used in modelling approaches that estimate HIV incidence and mortality.

As countries expand digitized health systems and transition towards greater use of individual-level data, ensuring that these data are complete, accurate and internally consistent is essential *(8, 29)*. Weak data quality – such as missing information, inconsistencies or duplicate records – can lead to biased estimates of HIV incidence, prevalence and mortality and undermine national and global monitoring efforts. Moreover, poor data quality can negatively influence HIV service delivery if programmatic gaps are missed and people living with HIV do not receive the care they need *(30)*.

In the current context of constrained and declining funding for HIV programmes *(6, 31)*, the importance of robust routine surveillance systems has increased. Reliable national data systems provide a sustainable and efficient source of information to track epidemic trends and guide the setting of priorities for limited resources. Strengthening these systems, including through electronic individual-level health information systems, is therefore critical to understanding epidemic dynamics and ensuring that responses remain evidence informed and equitable.

This HIV surveillance checklist is designed to support countries in systematically assessing the content and quality of data recorded in routine national health information systems. It is based upon and references the 2022 *Consolidated guidelines on person-centred HIV strategic information (8)*. The surveillance assessment should be nationally representative, evaluating whether key data elements are collected and whether data are complete, accurate and consistent. The checklist provides a structured approach to identifying strengths and gaps in surveillance systems. This enables countries to determine the extent to which routine data can be used to generate reliable estimates of HIV incidence, prevalence and mortality and to guide targeted improvements in data systems and programme performance.

# Considerations for key populations

Five key populations – men who have sex with men, sex workers, people who inject drugs, trans and gender-diverse people and people in prisons and other closed settings (such as detention centres) – experience a disproportionately higher burden of HIV as well as overlapping risks for viral hepatitis and sexually transmitted infections *(7).* Key populations often face criminalization, stigma, discrimination and other structural barriers that limit access to services and result in elevated risk for HIV acquisition and poorer health outcomes compared with the general population. Therefore, all countries – those with a high HIV burden across all populations and those with epidemics affecting predominantly key populations – should give priority to and address the health needs of members of key populations for an effective, integrated, person-centred response.

In routine health information systems covering health services provided in a general health setting, individuals may not disclose information indicating their key population status, making information disaggregated by key population status difficult to obtain and potentially inaccurate. In addition, data collection tools, especially those that are paper based, may not include data elements for key populations, creating difficulty in capturing information on key populations who access HIV-related services. Some facilities cater specifically to key populations and in some instances provide HIV prevention interventions that are relevant only for members of certain key populations, such as harm-reduction services for people who inject drugs. In these settings, individuals may be more comfortable with discussing and recording risk factors. Data elements and indicators should therefore be disaggregated for each key population if the relevant population can benefit and if this can be done safely and securely.

Data on key population status and probable route of HIV transmission are sensitive and may be affected by laws criminalizing HIV transmission and related behaviour as well as stigma, discrimination

and concerns about disclosure *(8)*. In settings where it is safe to do so or where anonymized or pseudonymized case reporting systems are in place, capturing the probable route of transmission for people acquiring HIV can provide important insights into trends in HIV incidence, prevalence and risk factors and strengthen the HIV response for key populations. However, because of differential disclosure and potential risks to individuals, such data may be incomplete, and data should not be collected if this could discourage access to services.

When collected, these data must be guided by strict safeguards. Individual-level information should only be accessible to authorized health-care workers and protected through robust confidentiality and data security measures, supported by legal frameworks that prevent unauthorized access or disclosure *(8)*. If these safeguards cannot be ensured, collecting such data is not recommended.

# Overview of the contents of the HIV surveillance checklist

## 1.1 What are the objectives of the checklist?

- to assess whether routine national HIV data systems capture the core data needed on people living with HIV, including new diagnoses, mortality, treatment outcomes, prevention and testing;
- to evaluate HIV and related data system coverage and quality measured through the completeness, accuracy, consistency and timeliness of data recorded and reported across the surveillance system;
- to identify strengths, gaps and priority actions to improve programmes and the quality and use of routine HIV surveillance data; and
- to determine the extent to which these routine data can support reliable national and subnational HIV estimates.

## 1.2 What does the checklist include?

The checklist has two parts.

- Part A has 28 questions designed to provide a general description of the HIV surveillance system being assessed. The questions assess the characteristics of the national HIV surveillance system, other sources of data for key populations in particular and set the background for Part B.
- Part B has 19 standards (general statements about the criteria for a high-performing HIV surveillance system) and associated benchmarks, across five sections.
  - **Section 1.** Core standards for HIV case surveillance and vital registration systems comprises nine standards related to the reporting of new HIV diagnoses (such as data quality and system coverage) and one related to the measurement of deaths (using mortality data from vital registration systems).
  - **Section 2.** Supplementary standards for specific populations comprises three supplementary standards to assess whether a national HIV surveillance system can serve as a reliable proxy measure of the number of children acquiring HIV from vertical transmission, the number of people diagnosed with HIV who have TB and the extent of HIV drug resistance.
  - **Section 3.** Treatment outcomes comprises two standards that can be used to assess the quality of treatment outcome data.
  - **Section 4.** Prevention monitoring comprises two standards related to including various prevention interventions in surveillance systems; the responses can be used to assess the availability and quality of these data.
  - **Section 5.** HIV testing comprises two standards to assess whether key HIV testing indicators are routinely collected and whether testing data are accurate, complete and consistent..

## 1.3 What are the benchmarks?

Benchmarks define (in quantitative terms where possible) the level of performance or reference point against which something can be measured and, if met, are considered sufficient to meet the respective standards. To ensure that the most complete data are available for review, the assessments are designed to use data from the most recent complete calendar year, unless otherwise stated. Depending on the timeliness of the reporting and finalization of data validation procedures in the system, the lag time may range from no delay to up to one year. In some instances, data from additional years are needed to assess trends over time, conduct cohort-specific analyses, while data from a single quarter can be used to reduce the burden of data collection. Assessment of the HIV surveillance system using the checklist every 3–5 years enables progress to be monitored over time.

For Parts A and B of the checklist, a detailed description should be provided, including a justification of the outcome assigned. Other key actions that should be recorded are those that address gaps identified in the surveillance and vital registration systems that would prevent these systems from accurately capturing the number of people acquiring HIV and deaths among people living with HIV and actions that could improve the quality of HIV surveillance, based on established best practices. An estimated budget to support activities that could bridge these gaps can assist the national HIV programme in developing a monitoring and evaluation investment plan.

The standards and benchmarks related to health system coverage (standard B1.9) and vital registration (standard B1.10) are outside the purview of national HIV programmes. However, these two standards and their associated benchmarks are deemed necessary to assess the capacity of the surveillance system to accurately estimate the burden of HIV.

This checklist was developed primarily for use at the national level but may also be used at the subnational level. The checklist assesses only one part of system capacity; it is not intended to assess the system's ability to fulfil other programmatic requirements (such as patient care, delivering laboratory results or managing drug stocks). However, these other requirements may be discussed as part of the detailed description in the checklist, if appropriate. Another issue is that the standards assess the output rather than the input or processes of the surveillance system, which vary by country. Using the results of Part B of the checklist, coupled with the information collected in Part A, countries can identify areas in which additional resources can be targeted to effectively strengthen their surveillance systems.

## 1.4 What defines a strong HIV surveillance system?

A country's HIV surveillance system can be assessed as generating data of high quality and coverage of people living with HIV, including new diagnoses and mortality, if the system meets all 10 standards in Section 1 of Part B and their associated benchmarks. The three supplementary standards in Section 2 of Part B can be used to assess whether a HIV surveillance system can provide a reliable proxy measure of the number of children acquiring HIV from vertical transmission, the number of people diagnosed with HIV who have TB and the extent of HIV drug resistance. The two standards in Section 3 of Part B can be used to assess whether the HIV surveillance system is accurately recording and monitoring treatment outcomes. A further two standards in Section 4 assess data recording and quality related to monitoring HIV prevention interventions. These may be delivered through nongovernmental organizations or non-national programmes; however, all programmes should be assessed against the same data standards. Two standards in Section 5 assess HIV testing data. The standards and benchmarks for meeting each standard are described within the checklist itself.

The assessment provides an objective situational analysis of the current HIV surveillance system. It is intended to provide a baseline and a framework that can be used to support improvements to the system, if required. Subsequent assessments can be used to determine whether benchmark targets have been met based on the initial assessments. The results of the assessment are based on applying the checklist to the surveillance system over the relevant time period. Following external peer review and endorsement by the WHO HIV Surveillance Advisory Group once all components of Part B are met, data from the routine HIV case surveillance system can considered reliable for supporting national and subnational HIV estimates. This determination is valid for the assessment period and should be periodically reassessed.

## 1.5 Who can implement the checklist?

The checklist is best implemented by external technical experts with informed and current knowledge of HIV programmes and disease surveillance systems, in close collaboration with the national HIV programme. This is intended to facilitate objectivity in the assessment and avoid any potential introduction of bias from self-assessment, even if the bias is unintentional. Nevertheless, in-country HIV programme staff can use the checklist for self-assessment.

The following individuals should either be part of the review team or be interviewed as part of the review, to ensure comprehensive understanding of the surveillance system:

- the HIV programme manager;
- the HIV programme officer;
- the HIV monitoring and evaluation officer;
- the HIV strategic information officer;
- the HIV statistician or epidemiologist;
- the HIV data manager;
- HIV laboratory personnel;
- HIV pharmacy personnel;
- recipients of care; and
- the WHO HIV programme officer.

# Part A: Characteristics of the HIV surveillance system

*Before the checklist assessment in Part B is conducted, complete the following questions to provide a descriptive overview of the national HIV surveillance system. The information collected provides background on system design, coverage, governance, data flows and resources and serves as contextual information for interpreting the results of the standards-based assessment in Part B.*

| Questions | Outcomes (best practices are in bold) | Detailed descriptions and key actions required to address gaps |
|---|---|---|
| A1. What type of system is used for HIV case surveillance? | ❒ **HIV diagnoses are reported through an active surveillance system, and data are updated longitudinally over time**<br>❒ HIV diagnoses are reported through a passive surveillance system without updates to complete missing data or to add information over time | |
| A2. How are data recorded for people diagnosed with HIV at the service delivery level (such as in HIV testing services, health centres and clinics)? | ❒ **Fully digital (≥95% of data recorded electronically at the point of service)**<br>❒ Mostly digital (75–94% electronic; some paper-based components remain)<br>❒ Mixed digital and paper-based (25–74% electronic)<br>❒ Mostly paper-based (5–24% electronic)<br>❒ Fully paper-based (<5% electronic)<br>❒ Data are not recorded | |
| A3. Do all service delivery points systematically use standardized HIV data collection forms and tools, including those for HIV case reporting (such as for HIV testing, CD4 count and viral load)? | ❒ **Yes, completely**<br>❒ Mostly<br>❒ Partially<br>❒ No, not at all | |

| Questions | Outcomes (best practices are in bold) | Detailed descriptions and key actions required to address gaps |
|---|---|---|
| A4. Which people diagnosed with HIV are reported and included in the national HIV surveillance system?<br><br>(Tick all that apply) | ❒ **All people diagnosed with HIV from all parts of the country are included (newly diagnosed, those previously positive and known people living with HIV)**<br>❒ Some people living with HIV are excluded (such as foreign nationals and those previously positive)<br>❒ Some parts of the country are excluded<br>❒ Some case types are excluded (such as unconfirmed cases)<br>❒ Some care providers (such as non-national HIV programme providers, prisons or private practitioners) are excluded<br>❒ Others (please specify) | |
| A5. What types of HIV data are available at the national level? | ❒ **Comprehensive individual-level system (case-based data available nationally and linkable across health services)**<br>❒ Individual-level data are available for the entire country but are not linked<br>❒ Individual-level data are available for parts of the country<br>❒ Only aggregated data are available | |
| A6. What is the expected frequency of data transmission from the first subnational administrative level to the national level? | ❒ **Real time**<br>❒ More often than monthly<br>❒ Monthly<br>❒ Quarterly<br>❒ Annually<br>❒ Less often than annually | |

| Questions | Outcomes (best practices are in bold) | Detailed descriptions and key actions required to address gaps |
|---|---|---|
| A7. At what levels of the system are HIV data systematically verified for accuracy, timeliness and completeness? | ❒ **From the service unit upwards**<br>❒ From the first administrative level upwards<br>❒ From the second administrative level upwards<br>❒ Only at the national level<br>❒ Not at any level | |
| A8. What types of quality assurance procedures are systematically undertaken for HIV data at all levels?<br>(Tick all that apply) | ❒ **Quality controls are in place for the digital surveillance system (automated checks at data entry and batch checking plus standard operating procedures)**<br>❒ Data are reviewed during supervisory monitoring visits to service units and subnational levels (how often?)<br>❒ Data are reviewed during meetings with HIV staff (how often?)<br>❒ Other (please specify) | |
| A9. Is feedback on HIV data quality systematically provided to all lower reporting levels for data recorded at all stages of the pathway of testing, prevention, treatment and care? | ❒ **Yes, completely**<br>❒ Mostly<br>❒ Partially<br>❒ No, not at all | |
| A10. When are national HIV data for a given calendar year considered validated and ready for national analyses and reporting? | ❒ By April of the following calendar year<br>❒ By July of the following calendar year<br>❒ By December of the following calendar year<br>❒ More than one year later | |

| Questions | Outcomes (best practices are in bold) | Detailed descriptions and key actions required to address gaps |
|---|---|---|
| A11. Are there national guidelines for recording and reporting HIV case surveillance data (such as documentation or instructions)?<br><br>(Tick all that apply) | ❒ **Yes, they are posted on the internet**<br>❒ Yes, they are available in a manual or other reference document (such as training materials)<br>❒ No | |
| A12. Does the national HIV programme have a plan for training staff involved in HIV case surveillance data collection and reporting at all levels of the reporting process (such as for data capture by clinical staff, data entry, validation and analysis)? | ❒ **Yes**<br>❒ No | |
| A13. How often do HIV programme staff receive training specifically on HIV surveillance (collecting, reviewing and validating HIV data)?<br><br>(Tick all that apply) | ❒ **Training is routinely received at the national and subnational levels (how often?)**<br>❒ Training is received at the national level only<br>❒ Training is received on an ad hoc basis<br>❒ Staff members receive training when they are appointed<br>❒ No routine training is received | |

| Questions | Outcomes (best practices are in bold) | Detailed descriptions and key actions required to address gaps |
|---|---|---|
| A14. How many staff members work on HIV surveillance at the national level?<br><br>(Tick all that apply) | ❒ **Epidemiologists, full-time (#___)**<br>❒ Epidemiologists, part-time (#___)<br>❒ Statisticians, full-time (#___)<br>❒ Statisticians, part-time (#___)<br>❒ Data managers, full-time (#___)<br>❒ Data managers, part-time (#___)<br>❒ Data quality officers, full-time (#___)<br>❒ Data quality officers, part-time (#___)<br>❒ Other (please specify) | |
| A15. Is a national HIV surveillance report routinely produced and disseminated each year? | ❒ **Yes**<br>❒ No | |
| A16. Have the goals of the surveillance system been put in writing? | ❒ **Yes**<br>❒ No | |
| A17. Are policies and procedures in place to protect the confidentiality of all surveillance data (such as records and registers)? | ❒ **Yes, completely**<br>❒ Mostly<br>❒ Partially<br>❒ No, not at all | |
| A18. Are a long-term financial plan and budget in place to support HIV surveillance activities? | ❒ **Yes**<br>❒ No | |
| A19. When was the last time the HIV surveillance system was evaluated? (Share the report) | ❒ **Within the past 5 years**<br>❒ Within the past 5–10 years<br>❒ Longer than 10 years<br>❒ Never | |

| Questions | Outcomes (best practices are in bold) | Detailed descriptions and key actions required to address gaps |
|---|---|---|
| A20. Is the HIV surveillance system integrated within a national health surveillance system architecture? | ❒ **Fully integrated: the HIV surveillance system is integrated within a national surveillance system architecture across all levels of the health system (national and subnational) and includes all major HIV-related programmes and providers**<br>❒ Mostly integrated: the HIV surveillance system is integrated within the national surveillance system but with limited exclusions (such as some programmes, providers or geographical areas)<br>❒ Partially integrated: the HIV surveillance system is integrated into the national surveillance system for some components but has substantial exclusions across programmes, providers or geographical areas<br>❒ Not integrated – The HIV surveillance system operates separately from the national surveillance system architecture<br>❒ Other (please specify) | |
| A21. Which methods of unique identification does your country use for health care services? | ❒ **National health identifier**<br>❒ National identifier<br>❒ National programme identifier (e.g. ART number)<br>❒ National health insurance identifier<br>❒ Biometric identifier<br>❒ Other (specify)<br>❒ None | |

| Questions | Outcomes (best practices are in bold) | Detailed descriptions and key actions required to address gaps |
|---|---|---|
| A22. Are HIV data routinely triangulated with data from other relevant systems (such as TB, antenatal care and vital registration) and are final figures agreed upon and corrected at the national level before final publication? | ❒ **Yes, completely: HIV data are routinely triangulated with data from other relevant systems as appropriate (such as TB, antenatal care and vital registration) and corrected before final publication**<br>❒ Partially: cross-checking occurs for some systems and/or periods but is not routine and/or final numbers are not consistently corrected at the national level before final publication<br>❒ No: HIV data are not systematically cross-checked with other relevant systems to align key indicators before final report publication | |
| A23. Are data on key populations systematically collected among people diagnosed with HIV in the national HIV surveillance system? | ❒ **Yes, completely: data on key populations are systematically collected and reported through secure national surveillance systems**<br>❒ Partially: data on key populations are collected, but some programmes or parts of the country are excluded (such as population-specific programmes and services provided by nongovernmental organizations)<br>❒ Not collected: data on key populations are not collected in routine national health information systems | |

| Questions | Outcomes (best practices are in bold) | Detailed descriptions and key actions required to address gaps |
|---|---|---|
| A24. Are data on key populations protected in accordance with laws governing personal data privacy? | ❒ **Fully protected: access to data on key populations is restricted to authorized health-care workers with strong confidentiality, security and legal safeguards in place to prevent unauthorized disclosure**<br>❒ Partially: access to data is generally limited to health-care workers. Confidentiality, security and legal safeguards are in place but not consistently applied.<br>❒ No: data on key populations are collected, but access controls are weak. Confidentiality, security and legal safeguards are weak or absent.<br>❒ Not applicable: data on key populations are not collected. | |
| A25. Are data on the probable route of HIV transmission collected for all people newly diagnosed with HIV? | ❒ **Yes: the probable route of HIV transmission is recorded for all people newly diagnosed with HIV, with the option to select multiple routes if relevant**<br>❒ Partially: the probable route of HIV transmission is recorded for some people but may be incomplete or limited to a few categories<br>❒ Not collected: the probable route of HIV transmission is not collected | |
| A26. In which year was the last integrated biobehavioural survey for key populations conducted? | ❒ For sex workers:<br>❒ For men who have sex with men:<br>❒ For people who inject drugs:<br>❒ For trans and gender-diverse individuals:<br>❒ For people in prison and other closed settings:<br>❒ Other, specify: | |

| Questions | Outcomes (best practices are in bold) | Detailed descriptions and key actions required to address gaps |
|---|---|---|
| A27. Were key populations engaged in designing, implementing and disseminating the most recent integrated biobehavioural survey for key populations? | ❒ **Yes, fully: engaged across all stages (design, data collection and dissemination)**<br>❒ Partially: engaged in some stages only<br>❒ No: not engaged | |
| A28. How would you characterize the financial and operational sustainability of the national HIV surveillance system?<br><br>(Consider staffing, infrastructure, funding sources, system maintenance and continuity of core surveillance functions over the next 3–5 years.) | ❒ **Fully sustainable: core surveillance functions are funded through stable domestic resources, adequate staffing and infrastructure, with low risk of disruption over the next 3–5 years**<br>❒ Partially sustainable: core surveillance functions are largely supported by stable funding and operational capacity, but some gaps in funding or workforce capacity exist and present moderate risks to continuity<br>❒ At risk: significant funding or capacity gaps with a high risk of disruption to core surveillance functions in the near term | |

# Part B: Checklist for HIV surveillance and vital registration systems

This section assesses whether routine HIV surveillance and related data systems meet defined standards for recording and reporting data on people diagnosed with HIV, including new HIV diagnoses, mortality and treatment outcomes. The standards focus on the quality, completeness and consistency of outputs generated by these systems. Data required to assess these standards may not be captured within a single system. Instead, they are typically drawn from multiple sources, including national case-based surveillance, routine health information systems, laboratory information systems and civil registration and vital statistics systems for mortality data. All relevant data sources should be considered in the assessment.

The checklist evaluates both internal consistency (the alignment and accuracy of data within the same system, such as consistency between related indicators over time) and external consistency (the agreement of HIV data with data from other systems or sources, such as civil registration and vital statistics or demographic estimates or global trends). Together, these indicate the validity and reliability of national HIV data.

## HIV case definitions and case surveillance

Assessment of HIV case definitions and surveillance systems should be aligned with WHO guidance, ensuring that standardized case definitions are used consistently and that systems distinguish new diagnoses from individuals who have previously tested HIV positive. Case surveillance systems should enable individuals to be monitored over time, including linkage across testing, treatment and care, to ensure accurate measurement of new HIV diagnoses and treatment outcomes, including mortality.

## Treatment outcomes and HIV viral suppression

Assessment of treatment outcomes should include standardized definitions aligned with WHO guidance, including people who are not receiving ART, on ART and virologically suppressed, on ART and not virologically suppressed (treatment failure), stopped ART, were lost to follow-up or died. Monitoring of viral suppression should distinguish between suppressed, unsuppressed and undetectable viral load results, if available, to ensure that treatment effectiveness is accurately assessed *(32)*.

## HIV prevention monitoring

Assessment of HIV prevention monitoring should ensure that data systems capture standardized indicators and minimum dataset elements across key HIV prevention interventions, in accordance with WHO guidance *(8)*. Prevention data should be documented at the individual level if possible and sufficiently detailed to monitor coverage, service utilization and continuity across interventions and populations.

## HIV testing

Assessment of HIV testing should ensure that standardized indicators are routinely collected, including testing volume, positivity and linkage to treatment. HIV testing data should be complete, accurate and disaggregated by key variables such as age, sex and testing entry point, to enable knowledge of status to be monitored, gaps identified and programmes and data improved.

## Instructions for assessing benchmarks

For each standard, assess whether the system meets the associated benchmark(s) using available national data sources. Based on the evidence, assign one of the following results: met, partially met, not met or not applicable. A standard is considered met only if all required benchmarks are satisfied, unless otherwise specified. If none of the criteria are satisfied, then the standard is not met.

The core standards (B1.1–B1.9) are used to assess the capacity of the surveillance system to provide high-quality data for measuring new HIV diagnoses which can be used to estimate HIV incidence, and standard B1.10 assesses the measurement of HIV-related mortality using vital registration data. If all nine core standards are met, the surveillance system can be considered as providing sufficient quality for estimating HIV incidence and prevalence. If all 10 standards (B1.1–B1.10) are met, the system can be considered as providing data of sufficient quality for estimating both HIV incidence and mortality.

Assessments should draw on data from the most recent complete reporting period (typically based on a full calendar year), and if relevant, consider trends over time and consistency across data sources. Describe the key findings and any limitations in the results description column and identify actions required to address gaps in data quality, completeness or system performance.

<table>
<tr><th>Standard</th><th>Benchmarks</th><th>Results</th><th>Results (description) including key actions required to address the gaps</th></tr>
<tr><td colspan="4">Section 1 - Core Standards</td></tr>
<tr><td colspan="4">HIV surveillance system data quality</td></tr>
<tr><td>B1.1 Case definitions are consistent with WHO guidelines</td><td>All three benchmarks should be satisfied to meet this standard:<ul><li>New HIV diagnoses have recorded confirmatory testing</li><li>New HIV diagnoses are distinguished from those with a previous positive test</li><li>Advanced HIV disease status defined by a CD4 test (or clinical stage) is recorded for people newly diagnosed with HIV and those re-engaging in care</li></ul></td><td>❒ Met<br>❒ Partially met<br>❒ Not met</td><td></td></tr>
<tr><td>B1.2 The HIV case surveillance system is designed to capture a minimum dataset of elements for reporting HIV cases</td><td>Data are routinely collected for each of the following minimum dataset elements for people diagnosed with HIV:<br><table><tr><th>CATEGORY</th><th>DATA ELEMENTS</th></tr><tr><td>All HIV cases</td><td>• Date of birth, age or age group<br>• Sex (male, female, other)<br>• HIV diagnosis test date<br>• First CD4 test result at HIV diagnosis (before treatment) (or HIV clinical stage, WHO criteria, where CD4 is not available)<br>• Date of CD4 sample collection (or clinical stage)<br>• Most recent viral load result<br>• Most recent viral load test date<br>• Date started ART<br>• Treatment outcomes of most recent year<br>• For case-based systems, a patient identifier to link across HIV testing and treatment systems</td></tr><tr><td>Pregnant women</td><td>• Date of first antenatal care visit<br>• HIV status at first test during current pregnancy<br>» Pregnancy in women living with HIV on ART<br>» New HIV diagnoses among pregnant women<br>• Dates and results of subsequent HIV positive tests during pregnancy</td></tr><tr><td>HIV-exposed infants</td><td>• HIV-exposed infant or child<br>• HIV-exposed infant or child test result of HIV assay – 1<br>• Final diagnosis of HIV-exposed infant</td></tr></table>See chapter 2 or details on data sources and data elements.</td><td>❒ Met<br>❒ Partially met<br>❒ Not met</td><td></td></tr>
</table>

| Standard | Benchmarks | Results | Results (description) including key actions required to address the gaps |
|---|---|---|---|
| B1.3 All scheduled periodic data submissions have been received and processed at the national level | *For paper-based systems:*<br>• 100% of expected reports from each HIV service unit have been received, and data have been aggregated at the national level<br>*For national individual-level or case-based digital systems that import data files from subnational (such as provincial or regional) digital systems:*<br>• 100% of the expected data files have been imported from each HIV service unit | ❒ Met<br>❒ Partially met<br>❒ Not met<br>❒ Not applicable | |
| B1.4 Data in quarterly reports (or equivalent) are accurate, complete and internally consistent<br>*(for paper-based systems only)* | All benchmarks should be satisfied to meet this standard.<br>• Subtotals of the number of people diagnosed with HIV by age group and sex equal the total number of reported HIV cases in ≥95% of quarterly reports (or equivalent) from HIV service units<br>• The number of people diagnosed with HIV in ≥95% of quarterly reports (or equivalent) matches the number of people recorded in HIV registers and source documents (patient treatment cards and laboratory registers)<br>• Data for the minimum dataset variables (B1.2) are available for ≥95% of the total number of reported people diagnosed with HIV in each category in quarterly reports | ❒ Met<br>❒ Partially met<br>❒ Not met<br>❒ Not applicable | |
| B1.5 Data in the national database are accurate, complete, internally consistent and free of duplicates<br>*(for digital case-based or individual-level systems only)* | All benchmarks should be met to reach this standard.<br>• Data validation checks are in place at the national level to identify and correct invalid, inconsistent and missing data in the minimum dataset (B1.2)<br>• For data elements in the minimum dataset (standard B1.2), ≥95% of individual records are complete, valid and internally consistent for the year being assessed<br>• <1% of case records in the national dataset for the year being assessed are unresolved potential duplicates | ❒ Met<br>❒ Partially met<br>❒ Not met<br>❒ Not applicable | |

| Standard | Benchmarks | Results | Results (description) including key actions required to address the gaps |
|---|---|---|---|
| B1.6 HIV surveillance data are externally consistent | Two of the three following benchmarks should be met to reach this standard.<br>• The total number of pregnant women who are tested for HIV plus those already known to be HIV positive recorded in the HIV surveillance system is within 5% of the expected number of pregnant women from national demographic statistics<br>• The percentage of children (0–14 years old) diagnosed with HIV compared with adults declines year on year, consistent with global trends<br>• The number of people newly diagnosed with HIV who have TB matches the number of people newly diagnosed with TB who are living with HIV<br>*If vital registration systems are available, then additionally:*<br>• Trends in HIV-related mortality are consistent with trends from vital registration reporting systems (directionally similar, acknowledging coding and attribution limitations) | ❒ Met<br>❒ Partially met<br>❒ Not met | |
| B1.7 The number of reported HIV diagnoses is internally consistent | Both benchmarks should be met to reach this standard.<br>• The year-to-year change in new HIV diagnoses is consistent with the year-to-year change in HIV testing volume and positivity (trajectories are in the same direction, allowing for documented programmatic shifts such as targeted testing)<br>• The year-to-year change in new HIV diagnoses is consistent with the year-to-year change in number of people living with HIV initiating ART for the first time (the trajectories are in the same direction) | ❒ Met<br>❒ Partially met<br>❒ Not met | |

| Standard | Benchmarks | Results | Results (description) including key actions required to address the gaps |
|---|---|---|---|
| **System coverage** | | | |
| B1.8 All people diagnosed with HIV are reported | All benchmarks should be satisfied to meet this standard.<br>• HIV case reporting is a legal requirement<br>• All case types, including people newly diagnosed, previously testing positive and re-engaging in care are included in the overall number of reported people diagnosed with HIV<br>• All pregnant women testing HIV positive and pregnant women currently receiving ART are recorded<br>• ≥90% of new HIV diagnoses are reported to national health authorities, as determined by a national-level study or investigation conducted within the past 10 years | ❒ Met<br>❒ Partially met<br>❒ Not met | |
| B1.9 Population has good access to health care | • Universal health coverage index score is ≥80 (Sustainable Development Goal indicator 3.8.1) | ❒ Met<br>❒ Partially met<br>❒ Not met | |
| **Vital registration** | | | |
| B1.10 The vital registration system has high national coverage and is of high quality | • Vital registration data provided by civil registration and vital statistics are evaluated as either "1 – high" or "2 – medium" (see WHO methods and data sources for country-level causes of death 2000–2019 *(9)*) | ❒ Met<br>❒ Partially met<br>❒ Not met | |

| Standard | Benchmarks | Results | Results (description) including key actions required to address the gaps |
|---|---|---|---|
| **Section 2 – Supplementary standards for specific populations** | | | |
| B2.1 Surveillance data provide a measure of national HIV drug resistance | All three of these benchmarks should be satisfied to meet this standard.<br>• Levels of drug resistance among infants are documented through a nationally representative survey conducted in the past three years<br>• Acquired HIV drug resistance levels are documented through WHO-recommended nationally representative drug resistance survey methods conducted in the past three years<br>• Levels of cabotegravir and lenacapavir[a] drug resistance are measured among people who test HIV positive while receiving these drugs for pre-exposure prophylaxis (PrEP) | ❒ Met<br>❒ Partially met<br>❒ Not met | |
| B2.2 Surveillance data provide a measure of the vertical transmission rate | All of these benchmarks should be satisfied to meet this standard.<br>• ≥95% of pregnant women with unknown HIV status are tested for HIV during current pregnancy<br>• HIV test results for assay-1[b] are recorded for all HIV-exposed infants<br>• Final diagnosis is recorded for ≥95% of HIV-exposed infants<br>• Data for pregnant women living with HIV are linked and validated with their HIV-exposed infants | ❒ Met<br>❒ Partially met<br>❒ Not met | |
| B2.3 Surveillance data provide a measure of the prevalence of TB disease in people diagnosed with HIV | One of these two benchmarks should be satisfied to meet this standard.<br>• ≥90% of people living with HIV initiating ART have TB status recorded<br>• ≥90% of people living with HIV currently receiving ART have a recorded TB screen in the past 12 months | ❒ Met<br>❒ Partially met<br>❒ Not met | |

| Standard | Benchmarks | Results | Results (description) including key actions required to address the gaps |
|---|---|---|---|
| **Section 3 – Treatment outcomes** | | | |
| B3.1 Monitoring ART is consistent with WHO guidelines | All these benchmarks should be satisfied to meet this standard.<br>• Treatment status definitions are consistent with WHO guidelines<br>• Data on people living with HIV receiving ART at the national level can be disaggregated by at least the following variables: age, sex, ART regimen, advanced HIV disease status and viral load (and key population status where safe to collect this information[c])<br>• HIV viral load is recorded for people living with HIV after ART initiation | ❒ Met<br>❒ Partially met<br>❒ Not met | |
| B3.2 Recording and reporting of treatment status among people diagnosed with HIV is accurate, complete and consistent | All these benchmarks should be satisfied to meet this standard.<br>• Treatment outcomes are available for ≥95% of people diagnosed with HIV<br>• <1% of records for people living with HIV receiving ART are missing the ART regimen<br>• HIV viral load is recorded for ≥95% of people living with HIV after ART initiation<br>• Viral load coverage is at least 50% for all people living with HIV currently receiving ART<br>• CD4 test (or clinical stage) is recorded for ≥95% people newly diagnosed with HIV or re-engaging in care to assess for advanced HIV disease<br>• Annual linkage between the HIV surveillance system and the civil registration and vital statistics system is conducted to identify deaths among people living with HIV | ❒ Met<br>❒ Partially met<br>❒ Not met | |

| Standard | Benchmarks | Results | Results (description) including key actions required to address the gaps |
|---|---|---|---|
| | (continued)<br>• Deaths among people living with HIV identified through clinical records, investigation, or linkage with vital registration are recorded in the HIV surveillance system and used to update mortality records<br>*For paper-based systems*<br>• National number of people living with HIV current receiving ART matches the number for ≥95% of the people living with HIV in facility registers<br>• Recording of advanced HIV disease status matches the number for ≥95% of the people living with HIV in facility registers<br>• Recording of viral suppression status matches the number for ≥95% of the people living with HIV in facility registers<br>*For* case-based or individual-based digital systems<br>• Data validation checks are in place to ensure the validity of HIV diagnosis, assigned treatment outcome status, advanced HIV disease status and viral suppression for people living with HIV | | |

| Standard | Benchmarks | Results | Results (description) including key actions required to address the gaps |
|---|---|---|---|
| **Section 4 – HIV prevention monitoring** | | | |
| B4.1 Monitoring HIV prevention is consistent with WHO guidelines | These benchmarks should be applied to prevention interventions implemented in the national programme.<br>• All HIV prevention data systems should be capable of capturing the recommended minimum dataset elements defined below: | ❒ Met<br>❒ Partially met<br>❒ Not met | |

| Intervention | Minimum dataset |
|---|---|
| HIV testing | • HIV test sample date<br>• HIV test result |
| Pre-exposure prophylaxis (PrEP) | • Date PrEP prescribed<br>• PrEP product prescribed (for example, oral, dapivirine vaginal ring or injectable cabotegravir or lenacapavir)<br>• Volume of PrEP product prescribed or dispensed<br>• Date of follow-up appointment |
| Post-exposure prophylaxis (PEP) | • Date post-exposure prophylaxis prescribed<br>• Date post-exposure prophylaxis course completed |
| Needle and syringe programmes | • Date injecting equipment provided<br>• Number of needles and syringes provided |
| Opioid agonist maintenance treatment for opioid dependence | • Date opioid agonist maintenance treatment initiated<br>• Date opioid agonist maintenance treatment dose received<br>• Date opioid agonist maintenance treatment take-away dose(s) dispensed<br>• First date maintenance dose received<br>• Date of loss to follow-up or opioid agonist maintenance treatment stopped |
| Voluntary medical male circumcision[d] | • Date voluntary medical male circumcision performed<br>• Date of follow-up<br>• Date of adverse event related to voluntary medical male circumcision reported<br>• Type of severe adverse event |

| Standard | Benchmarks | Results | Results (description) including key actions required to address the gaps |
|---|---|---|---|
| | (continued)<br>• Data for PrEP, post-exposure prophylaxis, voluntary medical male circumcision and harm reduction are recorded by the individuals served (not by the commodities distributed)<br>• Core indicators for HIV prevention can be disaggregated by age and sex (and key population status if this information can be collected safely[c]) *(8)* | | |
| B4.2 HIV prevention data are accurate, complete and consistent | All the benchmarks should be satisfied to meet this standard.<br>*For paper-based systems*<br>• The number of individuals who received a prevention intervention at least once (such that each individual is counted only once) matches the number in the source register<br>• Outcomes are recorded for post-exposure prophylaxis, voluntary medical male circumcision and harm reduction in ≥90% of records<br>• All prevention indicators can be disaggregated by age and sex (and key population status if this information can be collected safely[c])<br>• PrEP indicators can be disaggregated by formulation (oral, long-acting methods such as lenacapavir cabotegravir and dapivirine vaginal ring)<br>• The number of people living with HIV who initiated TB preventive therapy in the source register at the health facility matches the number reported<br>*For case-based or individual-level digital datasets*<br>• Data validation checks are in place at national level to identify and correct invalid, inconsistent and missing prevention data in the minimum set of variables (B4.1)<br>• For each category of HIV prevention intervention received, the required data elements are complete, valid and internally consistent in at least 90% of individual records for the year being assessed | ❒ Met<br>❒ Partially met<br>❒ Not met | |

| Standard | Benchmarks | Results | Results (description) including key actions required to address the gaps |
|---|---|---|---|
| **Section 5 - HIV testing** | | | |
| B5.1 Monitoring indicators for HIV testing are consistent with WHO guidelines | Both of these benchmarks should be satisfied to meet this standard.<br>• Data are routinely collected for each of the following indicators for ≥95% of all settings providing HIV testing:<br>» the number of HIV tests performed;<br>» HIV positivity (number of tests conducted with a HIV-positive result);<br>» the number of people newly diagnosed with HIV and initiating ART (linkage to ART);<br>» the number of people who were identified and tested using partner testing services (index testing); and<br>» the number of HIV self-tests distributed (aggregate).<br>• All HIV testing indicators can be disaggregated by age, sex and testing entry point (and key population status if this can be done safely[c]) | ❒ Met<br>❒ Partially met<br>❒ Not met | |
| B5.2 HIV testing data are accurate, complete and consistent | All the benchmarks should be satisfied to meet this standard.<br>*For paper-based systems*<br>• The number of tests procured at the national level is consistent with the number of tests performed and/or distributed nationally<br>• The number of individuals tested for HIV and reported nationally matches the number of individuals in testing registers<br>*For case-based or individual-based digital datasets*<br>• Data validation checks are in place at the national level to identify duplicate HIV-positive tests and incorrect, inconsistent and missing results<br>• For each test, the date and result are available for ≥95% of individual records (excluding HIV self-tests, for which recording the results may not be required) | ❒ Met<br>❒ Partially met<br>❒ Not met | |

[a] Applies to newly introduced PrEP medications. [b] Assay-1 refers to initial, highly sensitive screening test conducted as part of a diagnostic HIV algorithm. [c] If feasible and data security and confidentiality can be ensured *(8)*.
[d] Only for relevant countries providing voluntary medical male circumcision for HIV prevention.

# 5

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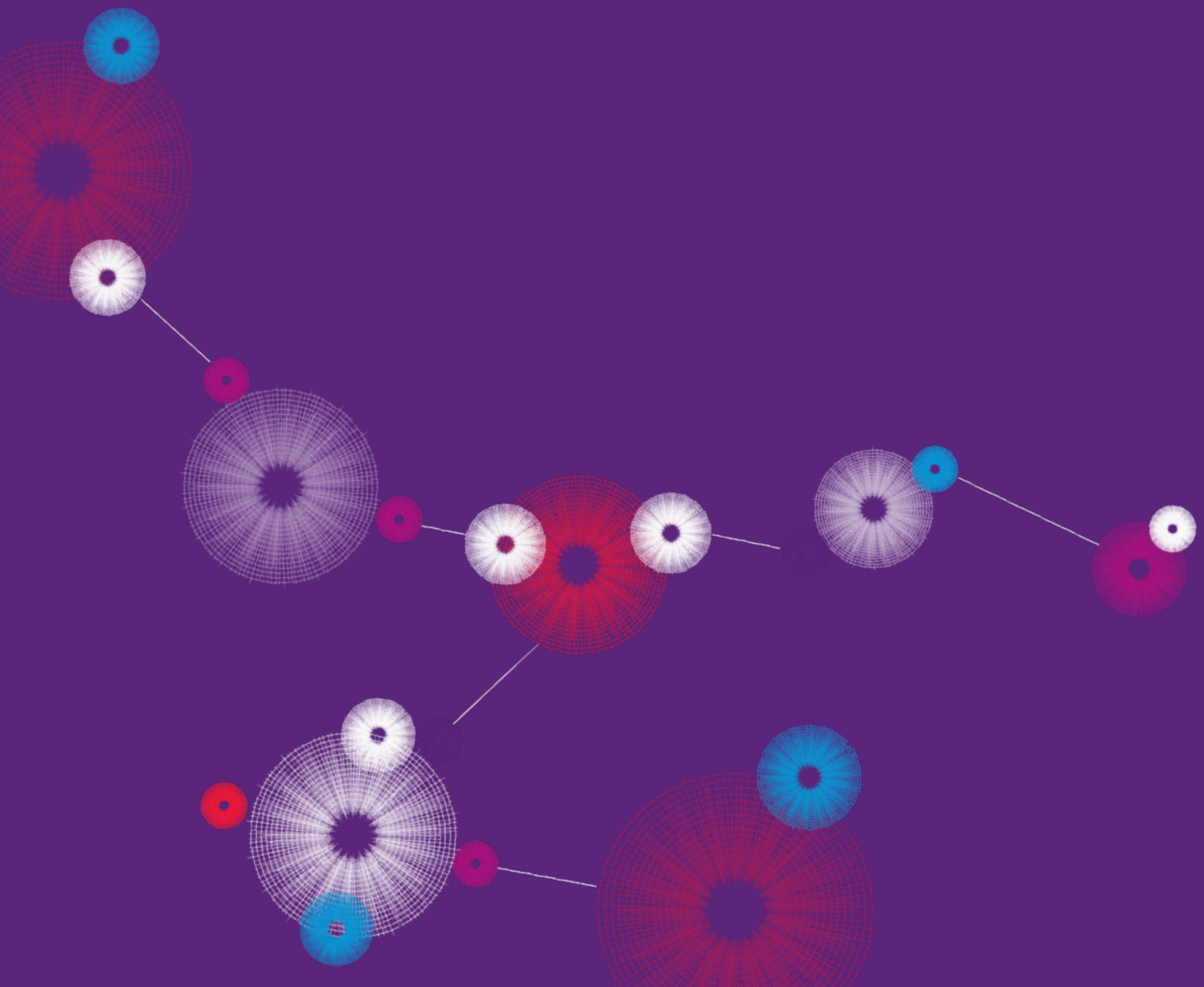

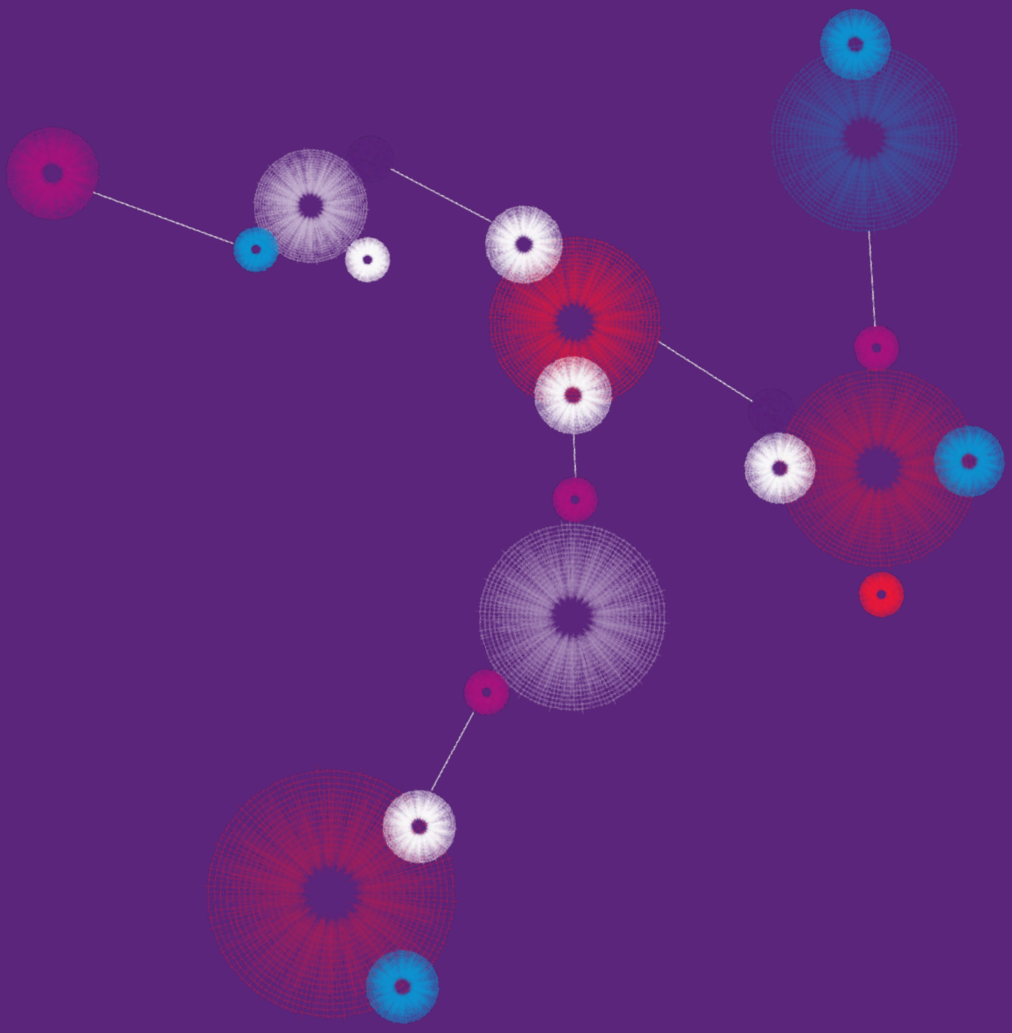

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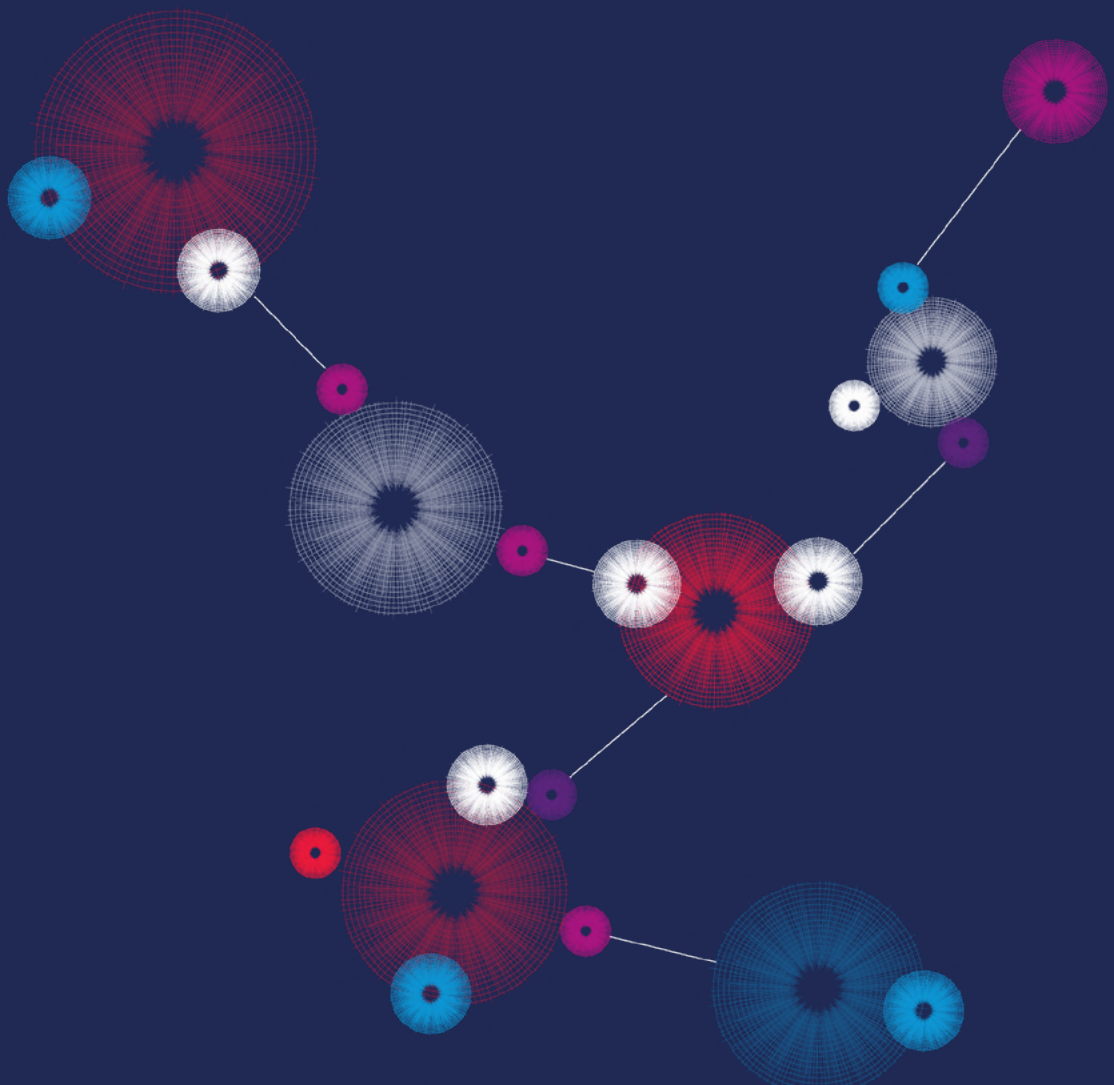
# Annex 1



## WHO clinical staging of HIV disease for adults, adolescents and children

| Clinical stage | Adults and adolescents (age ≥15 years) | Children (age <15 years) |
|---|---|---|
| Clinical stage 1 | Asymptomatic<br>Persistent generalized lymphadenopathy | Asymptomatic<br>Persistent generalized lymphadenopathy |
| Clinical stage 2 | Moderate unexplained weight loss (<10% of presumed or measured body weight)<br>Recurrent respiratory tract infections (sinusitis, tonsillitis, otitis media and pharyngitis)<br>Herpes zoster<br>Angular cheilitis<br>Recurrent oral ulceration<br>Papular pruritic eruption<br>Fungal nail infections<br>Seborrhoeic dermatitis | Unexplained persistent hepatosplenomegaly<br>Recurrent or chronic upper respiratory tract infections (otitis media, otorrhoea, sinusitis and tonsillitis)<br>Herpes zoster<br>Lineal gingival erythema<br>Recurrent oral ulceration<br>Papular pruritic eruption<br>Fungal nail infections<br>Extensive wart virus infection<br>Extensive molluscum contagiosum<br>Unexplained persistent parotid enlargement |
| Clinical stage 3 | Unexplained severe weight loss (>10% of presumed or measured body weight)<br>Unexplained chronic diarrhoea for longer than one month<br>Unexplained persistent fever (intermittent or constant for longer than one month)<br>Persistent oral candidiasis<br>Oral hairy leukoplakia<br>Pulmonary TB<br>Severe bacterial infections (such as pneumonia, empyema, pyomyositis, bone or joint infection, meningitis and bacteraemia)<br>Acute necrotizing ulcerative stomatitis, gingivitis or periodontitis<br>Unexplained anaemia (<8 g/dl), neutropaenia (<0.5 ×$10^9$/L) and/or chronic thrombocytopaenia (<50 × $10^9$/L) | Unexplained moderate undernutrition[a] not adequately responding to standard therapy<br>Unexplained persistent diarrhoea (14 days or more)<br>Unexplained persistent fever (above 37.5°C, intermittent or constant, for longer than one month)<br>Persistent oral candidiasis (after first six weeks of life)<br>Oral hairy leukoplakia<br>Lymph node TB; pulmonary TB<br>Severe recurrent bacterial pneumonia<br>Acute necrotizing ulcerative gingivitis or periodontitis<br>Unexplained anaemia (<8 g/dL), neutropaenia (<0.5 × $10^9$/L) or chronic thrombocytopaenia (<50 × $10^9$/L)<br>Symptomatic lymphoid interstitial pneumonitis<br>Chronic HIV-associated lung disease, including bronchiectasis |

| Clinical stage | Adults and adolescents (age ≥15 years) | Children (age <15 years) |
|---|---|---|
| Clinical stage 4[b] | HIV wasting syndrome<br>*Pneumocystis* (*jirovecii*) pneumonia<br>Recurrent severe bacterial pneumonia<br>Chronic herpes simplex infection (orolabial, genital or anorectal of more than one month in duration or visceral at any site)<br>Oesophageal candidiasis (or candidiasis of trachea, bronchi or lungs)<br>Extrapulmonary TB<br>Kaposi sarcoma<br>Cytomegalovirus infection (retinitis or infection of other organs)<br>Central nervous system toxoplasmosis<br>HIV encephalopathy<br>Extrapulmonary cryptococcosis, including meningitis<br>Disseminated nontuberculous mycobacterial infection<br>Progressive multifocal leukoencephalopathy<br>Chronic cryptosporidiosis<br>Chronic isosporiasis<br>Disseminated mycosis (extrapulmonary histoplasmosis, coccidioidomycosis)<br>Lymphoma (cerebral or B-cell non-Hodgkin lymphoma)<br>Symptomatic HIV-associated nephropathy or cardiomyopathy<br>Recurrent septicaemia (including nontyphoidal *Salmonella*)<br>Invasive cervical carcinoma<br>Atypical disseminated leishmaniasis<br>HIV-associated nephropathy or cardiomyopathy | Unexplained severe wasting and/or oedema (severe acute malnutrition), stunting or severe undernutrition[c] not responding to standard therapy<br>*Pneumocystis* (*jirovecii*) pneumonia<br>Recurrent severe bacterial infections (such as empyema, pyomyositis, bone or joint infection and meningitis, but excluding pneumonia)<br>Chronic herpes simplex infection (orolabial or cutaneous of more than one month's duration or visceral at any site)<br>Oesophageal candidiasis (or candidiasis of trachea, bronchi or lungs)<br>Extrapulmonary TB<br>Kaposi sarcoma<br>Cytomegalovirus infection (retinitis or infection of other organs with onset at age older than one month)<br>Central nervous system toxoplasmosis (after the neonatal period)<br>HIV encephalopathy<br>Extrapulmonary cryptococcosis, including meningitis<br>Disseminated nontuberculous mycobacterial infection<br>Progressive multifocal leukoencephalopathy<br>Chronic cryptosporidiosis (with diarrhoea)<br>Chronic isosporiasis<br>Disseminated endemic mycosis (extrapulmonary histoplasmosis, coccidioidomycosis, penicilliosis)<br>Cerebral or B-cell non-Hodgkin lymphoma<br>HIV-associated nephropathy or cardiomyopathy |

[a] For children younger than five years, moderate malnutrition is defined as weight-for-height less than –2 z-score or mid-upper arm circumference ≥115 mm to <125 mm.

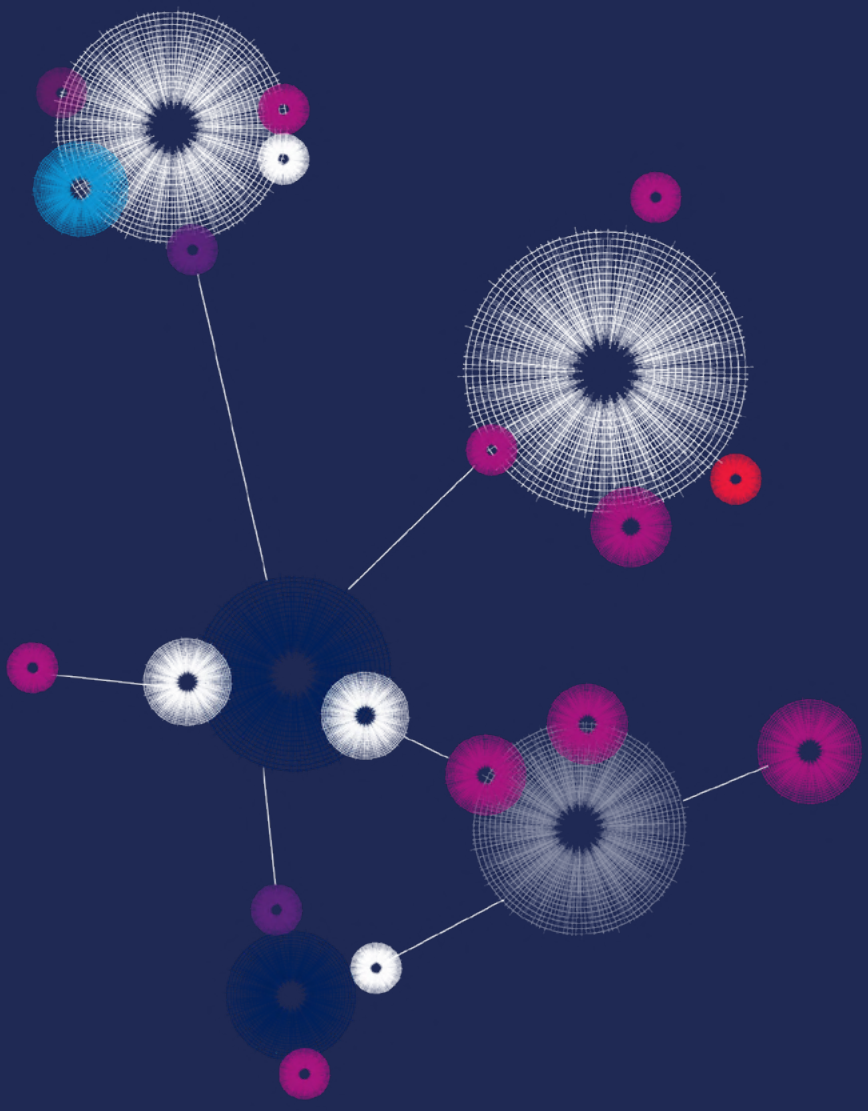
[b] Some additional specific conditions can be included in regional classifications, such as penicilliosis in Asia, HIV-associated rectovaginal fistula in southern Africa and reactivation of trypanosomiasis in Latin America.

[c] For children younger than five years of age, severe wasting is defined as weight-for-height less than –3 z-score; stunting is defined as length-for- age or height-for-age less than –2 z-score; and severe acute malnutrition is either weight for height less than –3 z-score or mid-upper arm circumference <115 mm or the presence of oedema.

***Note:*** an AIDS-defining illness is a specific opportunistic infection, cancer or clinical condition that occurs in a person with confirmed HIV infection that indicates severe immune suppression sufficient to diagnose a severe HIV-related illness (AIDS). This definition was largely used in HIV classification before widespread ART; now it is less emphasized in routine care.

***Source:*** adapted from: Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infections: recommendations for a public health approach, 2nd ed. Geneva: World Health Organization; 2016 (https://iris.who.int/handle/10665/208825).

# Annex 2



## WHO definitions of clinical, immunological and virological failure for the decision to switch ART regimens *(1)*

| Failure | Definition | Comments |
|---|---|---|
| Clinical failure | **Adults and adolescents**<br><br>New or recurrent clinical event indicating severe immunodeficiency (WHO clinical stage 4 condition[a]) after six months of effective treatment<br><br>**Children**<br><br>New or recurrent clinical event indicating advanced or severe immunodeficiency (WHO clinical stage 3 and 4 clinical condition except for TB) after six months of effective treatment | The condition must be differentiated from immune reconstitution inflammatory syndrome occurring after initiating ART<br><br>For adults, certain WHO clinical stage 3 conditions (pulmonary TB and severe bacterial infections) may also indicate treatment failure[a] |
| Immunological failure | **Adults and adolescents**<br><br>CD4 count at 250 cells/mm$^3$ following clinical failure[b]<br><br>or<br><br>Persistent CD4 cell count below 100 cells/mm$^3$<br><br>**Children**<br><br>*Younger than five years*<br><br>Persistent CD4 cell count below 200 cells/mm3<br><br>*Older than five years*<br><br>Persistent CD4 cell count below 100 cells/mm3 | Without concomitant or recent infection to cause a transient decline in the CD4 cell count<br><br>Current WHO clinical and immunological criteria have low sensitivity and positive predictive value for identifying individuals with virological failure. There is currently no proposed alternative definition of treatment failure and no validated alternative definition of immunological failure |
| Virological failure | Viral load above 1000 copies/mL based on two consecutive viral load measurements three months apart, with adherence support following the first viral load test. ART switch after first viral load >1,000 copies/mL for those receiving NNRTI-based regimens | An individual must be taking ART for six months before it can be determined that a regimen has failed.<br><br>Individuals with viral load > 50 to < 1000 copies, maintain ARV regimen, enhance adherence counselling and repeat viral load testing after three months. Consider switch after second viral load > 50 to < 1000 copies/mL if people are on NNRTI-based ART |

[a] See Annex 1 for the the list of clinical conditions associated with advanced or severe HIV disease associated with immunodeficiency.

[b] Previous guidelines defined immunological failure based on a fall from baseline, which is no longer applicable in the context of CD4-independent treatment initiation.

Reference

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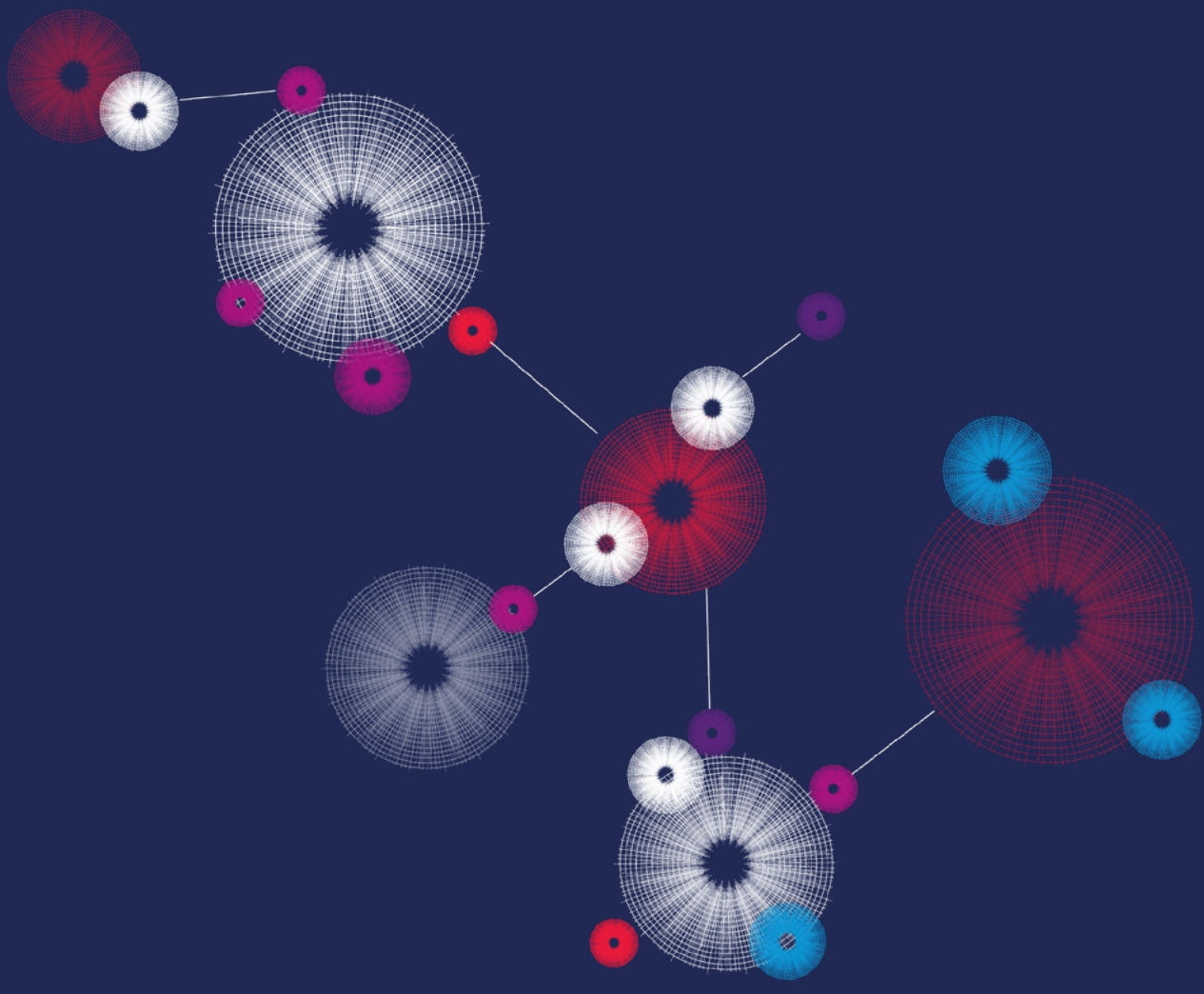
# Annex 3



### Indicators on TB among people living with HIV updated to include a disaggregation for advanced HIV disease *(1)*

| Indicator ID | Short name | Indicator definition | Numerator definition | Denominator definition | Disaggregation |
|---|---|---|---|---|---|
| TBH.1 ● | TPT initiation | % of people living with HIV receiving ART who initiated TB preventive treatment | Number of people receiving ART who initiated TB preventive treatment | Number of people receiving ART who are eligible for TB preventive treatment | Sex<br>Age<br>Advanced HIV disease status<br>TB preventive treatment regimen type |
| TBH.2 ● | TPT comple-tion | Number and % of people living with HIV receiving ART who completed a course of TB preventive treatment among those who initiated TB preventive treatment | Number of people receiving ART who completed a course of TB preventive treatment during the reporting period | Number of people receiving ART who initiated any course of TB preventive treatment during the previous reporting period | Sex<br>Age<br>Advanced HIV disease status<br>TB preventive treatment regimen type |
| TBH.3 | TB diagnostic testing type | % of people living with HIV with TB symptoms who receive a rapid molecular test as a first test for diagnosis of TB | Number of people living with HIV and having TB symptoms who were tested using a rapid molecular test as a first test during the reporting period | Number of people living with HIV who are screened for TB and found to have symptoms during the reporting period | Sex<br>Age<br>Advanced HIV disease status |
| TBH.4 | People living with HIV with active TB disease | % of people living with HIV newly initiating ART who have active TB disease | Number of people living with HIV newly initiating ART who have active TB disease | Number of people living with HIV newly initiating ART | Sex<br>Age<br>Advanced HIV disease status |
| DFT.1 | TB screening coverage among people newly initiating ART | % of people living with HIV newly initiating ART who were screened for TB | Number of people newly initiating ART who were screened for TB | Number of people living with HIV who newly initiated ART | Sex<br>Age<br>Advanced HIV disease status |
| DFT.2 | TB symptom-screened positive among people newly initiating ART | % of people living with HIV newly initiating ART who were screened for TB symptoms and who screened positive | Number of people living with HIV newly initiating ART who screened positive for TB symptoms | Number of people living with HIV newly initiating ART during the reporting period who were screened for TB symptoms | Sex<br>Age<br>Advanced HIV disease status |

| Indicator ID | Short name | Indicator definition | Numerator definition | Denominator definition | Disaggregation |
|---|---|---|---|---|---|
| DFT.3 | TB testing coverage | % of people living with HIV newly initiating ART with TB symptoms who receive a rapid molecular test for diagnosis of TB | Number of people living with HIV newly initiating ART who are investigated for active TB disease with appropriate diagnostic testing | Number of people living with HIV newly initiating ART and screened positive for TB symptoms | Sex<br>Age<br>Advanced HIV disease status<br>TB diagnostic test type |
| DFT.4 ● | TB diagnosis | % of people living with HIV newly initiating ART and tested for TB who are diagnosed with TB disease | Number of people living with HIV newly initiating ART who were diagnosed as having TB disease | Number of people living with HIV newly initiating ART and screened positive for TB symptoms who had appropriate diagnostic testing during the reporting period | Sex<br>Age<br>Advanced HIV disease status |
| DFT.5 | TB treatment initiation | % of people living with HIV newly initiating ART and diagnosed with TB who initiated TB treatment | Number of people living with HIV newly initiating ART who were diagnosed with TB and who started treatment for TB disease | Number of people living with HIV newly initiating ART who were diagnosed with TB disease | Sex<br>Age<br>Advanced HIV disease status<br>TB treatment regimen type<br>Disease type: pulmonary, extrapulmonary |
| TBT.COM[b] | TB treatment completion | % of people living with HIV newly initiating ART and who initiated TB treatment who completed TB treatment | Number of people living with HIV newly initiating ART who completed treatment for TB | Number of people living with HIV newly initiating ART who initiated treatment for TB | Sex<br>Age<br>Advanced HIV disease status<br>TB treatment regimen type |

● Core indicator recommended for all settings; all indicators should be collected over the same reporting period.

***Note:*** All indicator metadata is available in the WHO *Consolidated guidelines on person-centred HIV strategic information (1)*. All indicators should be reported from the same reporting period, as per national reporting protocols with monthly or quarterly reporting and annual review.

[a] Examples include GeneXpert testing, LF-LAM, sputum acid-fast bacilli (AFB) examination (alone) or other diagnostic testing.

[b] New indicator on TB treatment completion not included in the WHO *Consolidated guidelines on person-centred HIV strategic information (1).*

Reference

1. Consolidated guidelines on HIV prevention, testing, treatment, service delivery and monitoring: recommendations for a public health approach, 2021 update. Geneva: World Health Organization; 2021 (https://iris.who.int/handle/10665/342899). Licence: CC BY-NC-SA 3.0 IGO.

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