World Health Organization

GUIDELINES

CONSOLIDATED HIV STRATEGIC INFORMATION GUIDELINES

DRIVING IMPACT THROUGH PROGRAMME MONITORING AND MANAGEMENT

APRIL 2020

HIV STRATEGIC INFORMATION FOR IMPACT

World Health Organization

CONSOLIDATED HIV STRATEGIC INFORMATION GUIDELINES

DRIVING IMPACT THROUGH PROGRAMME MONITORING AND MANAGEMENT

APRIL 2020

Consolidated HIV strategic information guidelines: driving impact through programme monitoring and management

ISBN 978-92-4-000073-5 (electronic version)
ISBN 978-92-4-000074-2 (print version)

Suggested citation. Consolidated HIV strategic information guidelines: driving impact through programme monitoring and management. Geneva: World Health Organization; 2020. Licence: CC BY-NC-SA 3.0 IGO.

Cataloguing-in-Publication (CIP) data. CIP data are available at http://apps.who.int/iris.

Design and layout by 400 Communication

CONTENTS

Tables

Web Annexes

ACKNOWLEDGEMENTS

CORE WORKING GROUP

Chair: David Lowrance (World Health Organization (WHO), Switzerland); Co-chair: Virginia Loo (WHO consultant, United States of America (USA)). Members: Shabeen Ally (Office of the United States Global Aids Coordinator (OGAC), USA), Maria Au (United States Agency for International Development (USAID), USA), Annabel Baddeley (WHO, Switzerland), Victoria Bendaud (Joint United Nations Programme on HIV/AIDS (UNAIDS), Switzerland), Kristine Clark (OGAC, USA), Shona Dalal (WHO, Switzerland), Fatou Maria Drame (Enda Sante, Senegal), Taavi Erkkola (UNAIDS, Switzerland), Kristi Gichuhi (USAID, USA), Monica Alonso Gonzalez (Pan American Health Organization (PAHO), USA), John Aberle Grasse (Centers for Disease Control and Prevention (CDC), USA), Avi Hakim (CDC, USA), Suman Jain (Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM), Switzerland), Linh-Vi Le (WHO Regional Office for the Western Pacific (WPRO), Philippines), Daniel Low-Beer (WHO, Switzerland), Rachel Lucas (USAID, USA), Chibwe Lwamba (United Nations Children's Fund (UNICEF), USA), Virginia MacDonald (WHO, Switzerland), Adam MacNeil (CDC, USA), Mary Mahy (UNAIDS, Switzerland), Neema Makyao (Ministry of Health, United Republic of Tanzania), Catherine Nicols (USAID, USA), Sadhna Patel (CDC, USA), Francoise Renaud (WHO, Switzerland), Brian Rice (London School of Hygiene and Tropical Medicine (LSHTM), United Kingdom of Great Britain and Northern Ireland (United Kingdom)), Keith Sabin (UNAIDS, Switzerland), Satvinder Singh (WHO, Switzerland), Nadia Solehdin (CDC, USA), Olga Varetska (Alliance for Public Health, Ukraine), Pooja Vinayak (OGAC, USA), Jinkou Zhao (GFATM, Switzerland).

PARTICIPANTS IN THE TECHNICAL CONSULTATION

Chair: Thoko Kalua (Ministry of Health, Malawi). Participants: Annabel Baddeley (WHO, Switzerland), Magdalena Barr-Dichiara (WHO, Switzerland), Victoria Bendaud (UNAIDS, Switzerland), Clemens Benedikt (UNAIDS, Switzerland), Silvia Bertagnolio (WHO, Switzerland), Serge Billong (National AIDS Control Committee, Cameroun), Thato Chidarikire (Ministry of Health, South Africa), Shona Dalal (WHO, Switzerland), Fatou Maria Drame (Enda Sante, Senegal), Taavi Erkkola (UNAIDS, Switzerland), Avi Hakim (CDC, USA), Suman Jain (GFATM, Switzerland), Cheryl Johnson (WHO, Switzerland), Wilford Kirungi (Ministry of Health, Uganda), George Kuchukhidze (WHO Regional Office for Europe (EURO), Denmark), Linh-Vi Le (WPRO, Philippines), Virginia Loo (WHO consultant, USA), Daniel Low-Beer (WHO, Switzerland), David Lowrance (WHO, Switzerland), Rachel Lucas (USAID, USA), Chibwe Lwamba (UNICEF, USA), Virginia MacDonald (WHO, Switzerland), Adam MacNeil (CDC, USA), Imelda Mahaka (Pangaea Zimbabwe Aids Trust, Zimbabwe), Mary Mahy (UNAIDS, Switzerland), Neema Makyao (Ministry of Health, United Republic of Tanzania), Kim Marsh (UNAIDS, Switzerland), Bradley Mathers (WHO consultant, Switzerland), Morkor Newman (WHO, Switzerland), Catherine Nicols (USAID, USA), Nelson Otwoma (National Empowerment Network for People Living with HIV/AIDS, Kenya), Martina Penazatto (WHO, Switzerland), Harilala Nirina Razakasoa (WHO Regional Office for Africa (AFRO), Congo), Francoise Renaud (WHO, Switzerland), B. B. Rewari (WHO Regional Office for South-East Asia (SEARO), India), Keith Sabin (UNAIDS, Switzerland), Julie Samuelson (WHO, Switzerland), Satvinder Singh (WHO, Switzerland), Nadia Solehdin (CDC, USA), Olga Varetska (Alliance for Public Health, Ukraine), Pooja Vinayak (OGAC, USA), Marco Vitoria (WHO, Switzerland), Lara Vojnov (WHO, Switzerland), Jinkou Zhao (GFATM, Switzerland).

TECHNICAL WORKING GROUPS

Condom Working Group: Co-chairs: Gina Dallabetta (Bill and Melinda Gates Foundation (BMGF), USA) and Clemens Benedikt (UNAIDS, Switzerland). Members: Bidia Deperthes (United Nations Population Fund (UNFPA), USA), Luisa Frescura (UNAIDS, Switzerland), Chris Jones (Mann Global Health, USA), Susie McLean (GFATM, Switzerland), Keith Sabin (UNAIDS, Switzerland), Brian Smith (LSHTM, United Kingdom), Henk Van Renterghem (UNAIDS, Switzerland), Annette Verster (WHO, Switzerland), Ian Wanyeki (UNAIDS, Switzerland).

PrEP Working Group: Chair: Shona Dalal (WHO, Switzerland). Members: Rachel Baggaley (WHO, Switzerland), Victoria Bendaud (UNAIDS, Switzerland), Silvia Bertagnolio (WHO, Switzerland), Jesus Maria Garcia Calleja (GFATM consultant, Switzerland), Delivette Castor (USAID, USA), Neeraj Dhingra (National AIDS Control Organization, India), Megan Dunbar (Independent consultant, USA), Julie Fox (Kings College, United Kingdom), Peter Godfrey-Faussett (UNAIDS, Switzerland), Kimberly Green (PATH, USA) Priscilla Idele (UNICEF, USA), Heather Ingold (Unitaid, Switzerland), Elizabeth Irungu (Partners PrEP, Kenya), Naoko Ishikawa (WHO WPRO, Philippines), Sarah Jenkins (Clinton HIV/AIDS Initiative (CHAI), USA), Jessica Jones (BMGF, USA), Sarah Masyuko (Ministry of Health Kenya), Ombeni Mwerinde (Unitaid, Switzerland), Pragna Patel (CDC, USA), Giovanni Ravasi (PAHO, USA), Jason Reed (JHPIEGO, USA), Annette Reinisch (GFATM, Switzerland), Francoise Renaud (WHO, Switzerland), Keith Sabin (UNAIDS, Switzerland), Dawn Smith (CDC, USA).

HIV Testing and Linkage Working Group: Co-chairs: Cheryl Johnson (WHO, Switzerland) and Magdalena Barr-DiChiara (WHO, Switzerland). Members: Annabel Baddeley (WHO, Switzerland), Rachel Baggaley (WHO, Switzerland), Beth Barr (CDC, Kenya), Jordi Casabona (CESSHA of Catalonia, Spain), Susan Cowan (Statens Serum Institut, Denmark), Valerie Delpech (WHO consultant, Switzerland), Lenhle Dube (Ministry of Health, Eswatini), Jeff Eaton (Imperial College, United Kingdom), Rebecca Guy (Kirby Institute, Australia), Julianna Hills (UNAIDS, Switzerland), Andreas Jahn (I-TECH, Malawi), Suman Jain (GFATM, Switzerland), Muhammad Shahid Jamil (WHO, Switzerland), Tendesayi Kufa-Chakeza (SANIC, South Africa), Arielle Lasry (CDC, USA), David Lowrance (WHO, Switzerland), Nomthandazo Lukehele (WHO, Eswatini), Kim Marsh (UNAIDS, Switzerland), Bradley Mathers (WHO consultant, Switzerland), Buhle Ncube (WHO consultant, Zimbabwe), Obinna Onyekwena (GFATM, Switzerland), Morkor Newman Owiredu (WHO, Switzerland), Alasdair Reed (UNAIDS, USA), Tanya Shewchuk (BMGF, USA), Daniel Simões (Grupo de Ativistas em Tratamentos Portugal/Euro Test, Portugal), Vindi Singh (WHO, Switzerland), Chamreun Choub Sok (KHANA, Cambodia), Lynne Wilkinson (International AIDS Society (IAS), South Africa), Vincent Wong (USAID, USA).

Antiretroviral Treatment and Viral Load Working Group: Co-chairs: Marco Vitoria (WHO, Switzerland) and Lara Vojnov (WHO, Switzerland). Members: John Aberle-Grasse (CDC, USA), Monica Alonso Gonzalez (PAHO, USA), Kristine Clark (OGAC, USA), Serge Ehollie (Treichville Hospital, Côte d'Ivoire), Tom Ellman (Medecins sans Frontiéres (MSF), South Africa), Nathan Ford (WHO, Switzerland), Roxanne Hoak (Ministry of Health, Mozambique), Bonita Kalima (Elizabeth Glaser Pediatric AIDS Foundation (EGPAF), United Republic of Tanzania), David Lowrance (WHO, Switzerland), Rachel Lucas (USAID, USA), Mary Mahy (UNAIDS, Switzerland), Kim Marsh (UNAIDS, Switzerland), Eyerusalem Negussie (Ministry of Health, Ethiopia), Sabin Nsanzimana (Ministry of Health, Rwanda), Ana Roberta Pascom (Ministry of Health, Brazil), Felipe Perini (Ministry of Health, Brazil), Anton Pozniak (IAS, United Kingdom), Annette Reinisch (GFATM, Switzerland), B.B. Rewari (SEARO, India), Sarah Jane Steele (MSF, South Africa), Elena Vovc (EURO, Denmark).

HIV Drug Resistance Working Group: Co-Chairs: Michael Jordan (Tufts University, USA) and Andrew Phillips (University College London, United Kingdom). Members: Jose Alonso (Ministry of Health, Brazil), Chris Archibald (Public Health Agency, Canada), Santiago Avila (Infectious Diseases Research Centre, Mexico), George Bello (I-TECH, Malawi), Silvia Bertagnolio (WHO, Switzerland), Leonard Bikinisi (Ministry of Health, Namibia), Emiliano Bissio (consultant, Argentina), Mohammad Chakroun (Bourguiba Teaching Hospital Monastir, Tunisia), Fatim Cham (AFRO, Congo), Juliana Da Silva (CDC, USA), Vu Quoc Dat (consultant, Viet Nam), Natalie Dean (University of Florida, USA), David Dunn (University College London, United Kingdom), Felly Ekofo Isumeliko (Ministry of Health, Democratic Republic of the Congo), Alexandre Ferreira (Ministry of Health, Brazil), Elvin Geng (Washington University School of Medicine, USA), Amalia Giron (University of Valle, Guatemala), Mathieu Giroux (McGill University, Canada), Philippe Glaziou (WHO, Switzerland), Stephanie Hackett (CDC, USA), Raph Hamers (PharmAccess, Netherlands), Steven Hong (CDC, Namibia), Gillian Hunt (National Institute for Communicable Diseases, South Africa), Derval Igoe (Health Service Executive, Ireland), Aristide Desiré Komangoya-Nzonzo (WHO, Central African Republic), Rachel Lucas (USAID, USA), Kimberly Marsh (UNAIDS, Switzerland), Michelle Moorhouse (Wits Reproductive Health and HIV Institute, South Africa), Etienne Mpoyie (WHO, Democratic Republic of the Congo), Irene Mukui (Ministry of Health, Kenya), Christine Chiedza Musanhu (WHO, United Republic of Tanzania), Mark Myatt (Brixton Health, United Kingdom), Urvi Parikh (University of Pittsburg, USA), Ana Pascom (Ministry of Health, Brazil), Gerson Pereira (Ministry of Health, Brazil), Giovanni Ravasi (PAHO, USA), Steve Reynolds (Johns Hopkins University, USA), Suzanne Davis Robinson (PAHO, Jamaica), Amitabh Suthar (CDC, USA), Nazle Veras (Ministry of Health, Brazil), Christine Watera (Uganda Virus Research Institute, Uganda), Chunfu Yang (CDC, USA), Dalila Zachary (GFATM, Switzerland).

ART Toxicity Working Group: Chair: Francoise Renaud (WHO, Switzerland). Members: Brian Chirombo (WHO, South Africa), Karen Cohen (University of Cape Town, South Africa), Thu-Ha Dinh (CDC, USA), Melba Gomes (WHO, Switzerland), Hiwot Halle-Selassie (WHO consultant, Switzerland), Christine Halleux (WHO, Switzerland), Susan Kambale (WHO, Switzerland), Andrea Kim (CDC, USA), Ishmael Nyasulu (WHO, Malawi), Amitabh Suthar (CDC, USA), Rebecca Zash (Harvard University, USA).

TB/HIV Working Group: Chair: Satvinder Singh (WHO, Switzerland). Members: Sevim Ahmedov (USAID, USA), Teeb Al-Samarrai (OGAC, USA), Annabelle Baddeley (WHO, Switzerland), Victoria Bendaud (UNAIDS, Switzerland), Sean Cavanaugh (OGAC, USA), Celeste Gracia Edwards (GFATM, Switzerland), Dennis Falzon (WHO, Switzerland), Philippe Glaziou (WHO, Switzerland), Avinash Kanchar (WHO, Switzerland), David Lowrance (WHO, Switzerland), Adam MacNeil (CDC, USA), Catherine Nicols (USAID, USA).

PMTCT/Paediatric Working Group: Co-chairs: Morkor Newman (WHO, Switzerland), Martina Penazatto (WHO, Switzerland) and Chibwe Lwamba (UNICEF, USA). Members: Shabbir Ismail Abbas (EGPAF, USA), Catherine Bilger (UNAIDS, Switzerland), Savvy Brar (UNAIDS Regional Suppport Team, South Africa), Serena Brusamento (WHO, Switzerland), Ingvild Fjeldheim (FHI360, USA), Nicholas Furtado (GFATM, Switzerland), Elizabeth Katwan (WHO, Switzerland), Virginia Loo (WHO consultant, USA), Ivan Lukabwe (Ministry of Health, Uganda), Eleanor Magongo (Ministry of Health, Uganda), Mary Mahy (UNAIDS, Switzerland), Dorothy Mbori-Ngacha (UNICEF, USA), Subri Modi (CDC, USA), Innocent Nuwagira (AFRO, Zimbabwe), Elevanie Nyankesha (UNICEF, Senegal), Katherine O'Connor (CDC, USA), Laura Oyiengo (National AIDS and STI Control Programme (NASCOP), Kenya), Elleni Seyoum (WHO, Ethiopia), Monita Patel (CDC, USA), Roberta Starr (Columbia University/ICAP, USA), Leigh Tally (CDC, USA).

Sexually Transmitted Infections Working Group: Chair: Melanie Taylor (WHO, Switzerland). Members: Monica Alonso Gonzalez (PAHO, USA), Paul Bloem (WHO, Switzerland), Anne Brink (WPRO, Philippines), Giorgi Kuchukhidze (EURO, Denmark), Keith Sabin (UNAIDS, Switzerland), Ahmed Sabry (WHO Regional Office for the Eastern Mediterranean, Egypt), Igor Toskin (WHO, Switzerland), Elena Vovc (EURO, Denmark), Teodora Elvira Wi (WHO, Switzerland).

Key Populations Working Group: Chair: Virginia MacDonald (WHO, Switzerland). Members: Monica Alonso Gonzalez (PAHO, USA), Maria Au (USAID, USA), Jesus Garcia Calleja (GFATM consultant, Switzerland), Martin Choo (Asia Pacific Council of AIDS Service Organizations, Malaysia), Fatou Maria Drame (Enda Santé, Senegal), Avi Hakim (CDC, USA), Suman Jain (GFATM, Switzerland), Margaret Kugonza (GFATM, Switzerland), Sandra Kuzmanovska, (GFATM, Switzerland), Linh-Vi Le (WPRO, Philippines), Riku Lehtovuori (United Nations Office on Drugs and Crime, Austria), Virginia Loo (WHO consultant, USA), Neema Makyao (Ministry of Health, United Republic of Tanzania), Bradley Mathers (WHO consultant, Switzerland), Keith Sabin (UNAIDS, Switzerland), Olga Varetska (Alliance for Public Health, Ukraine), Annette Verster, (WHO, Switzerland), Jinkou Zhao (GFATM, Switzerland).

Adolescent Girls and Young Women Working Group: Chair: Shona Dalal (WHO, Switzerland). Members: Lize Aloo (GFATM, Switzerland), Rachel Baggaley (WHO, Switzerland), Haddi Cham (CDC, USA), Ines Dourado (Federal University of Bahia, Brazil), Regina Guthold (WHO, Switzerland), Anita Hettema (CHAI, Eswatini), Elizabeth Irungu (Partners PrEP, Kenya), Aleya Khalifa (UNICEF, USA), Ruth Laibon (UNAIDS, Switzerland), Annalise Limb (USAID, USA), Irene Mukui (Ministry of Health, Kenya), Saiqa Mullick (Wits Reproductive Health and HIV Institute, South Africa), Ombeni Mwerinde (Unitaid, Switzerland), Van Thi Thuy Nguyen (WHO, Viet Nam), Reshmie Ramautarsing (Thai Red Cross, Thailand), Jason Reed (JHPIEGO, USA), Janet Saul (OGAC, USA), Chandramouli Venkataraman (WHO, Switzerland).

Voluntary Medical Male Circumcision Working Group: Co-chairs: Julia Samuelson (WHO, Switzerland) and Lycias Zembe (UNAIDS, Switzerland). Members: Esther Mary Aceng-Dokotum (WHO, Ethiopia), Wole Ameyan (WHO, Switzerland), Mary Nana Brantuo (WHO, Namibia), Alicia Carbonell (WHO, Mozambique), Maria Carrasco (USAID, USA), Lastone Chitembo (WHO, Zambia), Bhavin Jani (WHO, United Republic of Tanzania), Mugagga Kaggwa (WHO, Uganda), Valerian Kiggundu (USAID, USA), Christine Kisia (WHO, Kenya), Nomthandazo Lukhele (Ministry of Health, Eswatini), Simbarashe Mabaya (WHO, Zimbabwe), Tebogo Madidmalo (WHO, Botswana), Busisiwe Msimanga-Radebe (WHO, South Africa), Zebedee Mwandi (JHPIEGO, USA), Ishmael Nyasulu (WHO, Malawi), Harilala Nirina Razakasoa (AFRO, Congo), Jules Mugabo Semahore (WHO, Rwanda), Maaya Sundaram (BMGF, USA), Susan Tembo (WHO, Lesotho), Anne Thomas (Department of Defense, USA).

Hepatitis, Infection Safety and Blood Safety Advisors: Philippa Easterbrook (WHO, Switzerland), Yvan Hutin (WHO, Switzerland), Junping Yu (WHO, Switzerland).

EDITORIAL CONSULTANT SERVICES

Ward Rinehart and Sarah Johnson of Jura Editorial Services provided technical editing.

FINANCIAL ACKNOWLEDGEMENT

Funding to support this work was provided by the United States Centers for Disease Control and Prevention/The United States President's Emergency Plan for AIDS Relief (PEPFAR), the Global Fund to Fight AIDS, Tuberculosis and Malaria and the Bill and Melinda Gates Foundation. In addition, WHO is grateful to the institutions that contributed staff time and made other in-kind contributions to the guidelines development process.

ABBREVIATIONS AND ACRONYMS

ADR	acquired drug resistance
AGYW	adolescent girls and young women
AIDS	acquired immune deficiency syndrome
AIS	AIDS Indicator Survey
AIM	(Spectrum) AIDS Impact Module
ANC	antenatal care
ART	antiretroviral treatment
BBS	bio-behavioural survey
BMGF	Bill and Melinda Gates Foundation
BSS	Behavioural Surveillance Survey
CD4	T-lymphocyte cell bearing CD4 receptor
CRVS	civil registration and vital statistics
CS	case surveillance
CSAVR	case surveillance and vital registration
DAK	digital accelerator kit
DHIS	district health information system
DHS	Demographic and Health Survey
DQA	data quality assessment
DQR	data quality review
DTG	dolutegravir
ED-PrEP	event-driven pre-exposure prophylaxis
EID	early infant diagnosis
EMR	electronic medical record
EMTCT	elimination of mother-to-child transmission
GAM	Global AIDS Monitoring
GF	Global Fund to Fight AIDS, Tuberculosis and Malaria
HBV	hepatitis B virus
HCV	hepatitis C virus
HIS	health information systems
HIV	human immunodeficiency virus
HIVDR	HIV drug resistance
HTS	HIV testing services
KP	key population
LFU	lost to follow-up
LMIC	low- and middle-income countries
M&E	monitoring and evaluation
MCH	maternal and child health
MER	Monitoring, Evaluation and Reporting Indicator Reference Guides (PEPFAR)

MSM	men who have sex with men
NGO	nongovernmental organization
NNRTI	non-nucleoside reverse transcriptase inhibitor
NRTI	nucleoside/nucleotide reverse transcriptase inhibitors
NSP	needle and syringe programme
OST	opioid substitution therapy
PDR	pre-treatment drug resistance
PDSA	plan–do–study–act
PEPFAR	(United States) President's Emergency Plan for AIDS Relief
PHIA	population-based HIV impact assessment
PITC	provider-initiated testing and counselling
PLHIV	people living with HIV
PMTCT	prevention of mother-to-child transmission
PrEP	pre-exposure prophylaxis
PSE	population size estimate
PWID	people who inject drugs
QI	quality improvement
SARA	Service Availability and Readiness Assessment
SDG	Sustainable Development Goal
SI	strategic information
SNU	subnational unit
SRH	sexual and reproductive health
STI	sexually transmitted infection
SW	sex worker
TAP	treatment-adjusted prevalence
TB	tuberculosis
TG	transgender
TPT	tuberculosis preventive treatment
UIS	unique identification standards
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNICEF	United Nations Children's Fund
VCT	voluntary counselling and testing
VL	viral load
VLS	viral load suppression
VMMC	voluntary medical male circumcision
VT	vertical transmission
WHO	World Health Organization

GLOSSARY

Aggregate data: Data elements that are entered into a data system as a count of individuals or services with shared characteristics, for example, number of positive HIV test results or number of people tested ages 15–19.

Differentiated use: A context that makes selected indicators appropriate for only certain countries to use and prioritize, the context being defined by characteristics of the epidemic or the response.

Digital accelerator kit: A distillation of WHO guidelines and operational resources into standardized formats that can be easily incorporated into digital patient tracking and decision-support systems. For each defined health programme area, the kits detail essential components that inform the content of these digital systems, such as workflows, core data elements, decision support logic, metrics and reporting indicators and functional requirements.

Electronic health information system: The 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 information system" and "digital information system" are used synonymously.

Health information system (HIS): A system used to manage data to inform decisions on the design or management of health services; the system encompasses data collection, compilation, analysis, synthesis and use. In these guidelines the term "health management information system" is used synonymously with HIS.

Health sector: The sector of society consisting of organized public and private health services, the policies and activities of health departments and ministries, health-related nongovernmental organizations (NGOs) and community groups, and professional associations and including health promotion and disease prevention, diagnostic, treatment and care services.

HIV case surveillance: The reporting of an initial diagnosis of HIV infection and defined sentinel events from every person diagnosed with HIV to a public health agency responsible for monitoring and controlling the epidemic; a data set encompassing elements critical for programme management.

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. Indicators should be SMART – that is, specific, measurable, attainable, relevant and time-bound – and be associated with clear sources of data.

Individual-level data system: The type of data base structured to link multiple data elements to a single person, possibly over time and across different points of care – for example, records of an individual receiving HIV care at multiple points in the cascade of services and that individual's sociodemographic characteristics. Individual-level data can allow longitudinal and multivariate analysis of indicator data. In this document individual-level data systems are synonymous with case-based, patient-level and patient tracking systems.

Monitoring: Ongoing, routine reporting of priority information about a programme, its inputs and intended outputs, outcomes and impacts in order to track progress.

Patient management: The provision of care and treatment for and in consultation with a patient over time. Patient management may also be referred to as "patient care", "clinical management" and "clinical monitoring".

Patient monitoring: The routine collection, compilation and analysis of data on patients over time and across service delivery points. The primary purpose of patient monitoring is to guide the clinical management of a patient over time and ensure continuity of care between health facilities. Patient monitoring may also be referred to as "patient tracking."

People-centred health services: An approach to care that consciously adopts the perspectives of individuals, families and communities and sees them as participants as well as beneficiaries of trusted health systems that respond to their needs and preferences in humane and holistic ways.

Person-centred monitoring: Monitoring that places the person at the centre of accessing and measuring a sequence of health services. In the context of this document, it refers to a shift from measuring services (for example, the number of HIV tests) to supporting patients, cases and people receiving HIV health services (for example, number of people tested or who know their HIV status).

Programme management: Real-time direction and decision-making of multi-faceted health programme services and resources, made on the basis of health information on programme inputs, outputs, outcomes and impact.

Programme monitoring: The routine tracking of priority information about a programme, including its outputs, quality, gaps and outcomes, typically in relation to a national plan, goals and targets.

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

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

Testing positivity rate: The percentage of newly identified HIV-positive clients among all clients tested for HIV in a specific time period; also referred to as testing yield.

Unique identification standard: In patient-level tracking, the definition of the information used to identify an individual in a data system and so to avoid duplicative records. Elements of the standard may include one or more unique identifiers that form a unique combination used for the purpose of matching and deduplicating the records of each individual within an HIS. The elements of the standard may be established or system-generated alpha–numeric sequences, biometrics and/or personal identifying information such as sex, birthdate and family member names.

EXECUTIVE SUMMARY

In the health sector response to the HIV epidemic, collection, analysis and use of data are crucial at every level, from patient care and monitoring through programme management and national programme monitoring to global monitoring. This strategic information answers the questions: "How are patients doing?", "How is the programme performing?" and "How can we do better?" Without these answers, the response to the HIV epidemic would be wandering in the dark.

Objectives. These guidelines – an update to the World Health Organization's 2015 publication *Consolidated strategic information guidelines* – present a set of essential aggregate indicators and guidance on choosing, collecting and systematically analysing strategic information to manage and monitor the national health sector response to HIV.

Specifically, for programme management, these guidelines seek to strengthen programmes' ability to identify and close gaps in service access, coverage and quality across the HIV services cascade, from primary prevention to knowing one's HIV status to viral suppression.

For programme monitoring, these guidelines seek to optimize and align national reporting used to assess countries' progress toward the 2030 95–95–95 HIV Fast Track goals – 95% of HIV-positive people knowing their status; 95% of people who know their HIV-positive status on treatment; and 95% of those on treatment virally suppressed – and towards Sustainable Development Goal 3.3, which calls for ending the HIV epidemic, as indicated by reduced incidence.

Audience. This guide is intended primarily to serve the needs of HIV programme staff in countries and their partners engaged in the collection, analysis and use of HIV-related strategic information at all levels of the health sector, including the health facility. These updated strategic information guidelines address issues relevant both to countries using aggregate electronic data systems and to countries entering data into individual-level information systems, such as electronic medical records.

Why collect and use strategic information?

- Strategic information provides the critical evidence that programme directors and line managers need to make informed decisions that improve programmes at all levels.
- Documenting outputs, outcomes and impact is crucial to the focus and sustainability of programmes.
- The availability of information is central to the accountability and transparency of decision-making by policy-makers.

The recommended indicators

The priority indicator set and guidance recommended here reflect the current state of the changing HIV epidemic, including programme innovations and investments deemed necessary for an effective response. These guidelines have been updated to reflect updates in WHO's HIV guidance since 2015, updates that encompass pre-exposure prophylaxis (PrEP), prevention for adolescent girls and young women, HIV testing, antiretroviral treatment (ART), viral load (VL), tuberculosis/HIV and elimination of mother-to-child transmission.

The recommended indicators fall into four sets:

- **National core indicators** – a set of 15 indicators essential for tracking progress against national targets. The national core indicators gauge critical aspects of coverage and quality and highlight international strategic, programmatic and clinical imperatives. These 15 indicators are widely applicable across different country contexts and are recommended for all countries.
- **National priority indicators (the Top 40)** – a set of 40 indicators (the 15 national core indicators plus an additional 25 indicators) that in real time provide programme managers the information and evidence needed to improve services and, at the same time, are feasible to collect. The Top 40 indicators are those most relevant to effective programme management in keeping with national strategy and clinical guidelines anchored in WHO technical guidelines.
- **Differentiated use** – In addition, these guidelines recommend a set of indicators of high utility for certain countries. Such countries are differentiated by specific epidemiologic characteristics – in particular, a high burden of co-morbidities of HIV and tuberculosis or hepatitis B and C; certain programme investments – in particular, voluntary medical male circumcision (VMMC) in countries with high HIV prevalence and low male circumcision prevalence; or special programme gaps – in particular, a need to increase injection safety or blood safety.
- **Impact and burden** – a set of modelled indicators, complementary to the programme-based Top 40, that quantify changes in the epidemic and monitor the effectiveness of the response. This set of indicators is considered an essential component of data reviews in all countries. It includes HIV incidence, which is the Sustainable Development Goal indicator for HIV.

Organization of the guidelines

These guidelines consist of three parts:

Part 1, Strategic information: a consolidated framework, provides the overall rationale for the use of strategic information for monitoring and managing the health sector response to the HIV epidemic and positions this guidance in the context of the global strategy for ending AIDS.

Part 2, Strong SI systems for effective decision-making, focuses on selecting and prioritizing country-specific indicator sets. This section lays out the rationale for the selection of the national core and national priority indicator sets and then offers considerations for adjusting the recommended sets to suit country contexts. Finally, this section outlines key components of a strong strategic information system built around the priority indicators.

Part 3, Recommended indicators: national core and priority, gives specific information about each of the recommended indicators. It organizes the Top 40 indicators into the following programme areas:

- reducing new infections (prevention)
- knowing status and linkage to treatment
- treatment and viral load (VL) suppression
- reducing mortality from TB/HIV
- preventing vertical transmission
- reducing co-morbidity with sexually transmitted infections
- zero discrimination
- special population groups – key populations, paediatric and adolescent, adolescent girls and young women
- differentiated use
- burden and impact.

Each of these sections includes a brief description of critical measurement issues influencing the selection of indicators for that programme area, a table presenting short indicator definitions and alignment with other global indicator guidelines, with references to published materials that provide additional details for operationalizing the collection and use of the indicator data. The programme area sections are followed by reference sheets detailing the calculation, data sources and measurement approaches for each indicator.

Choosing national indicators

WHO encourages national programmes to visualize their trajectory towards key response goals and to be forward-thinking and ambitious both in selecting indicators and in investing in the health information system needed to provide critical data. Doing so will equip programmes with the data that they need now and in the future to care for patients as well as to guide and tailor their programmes.

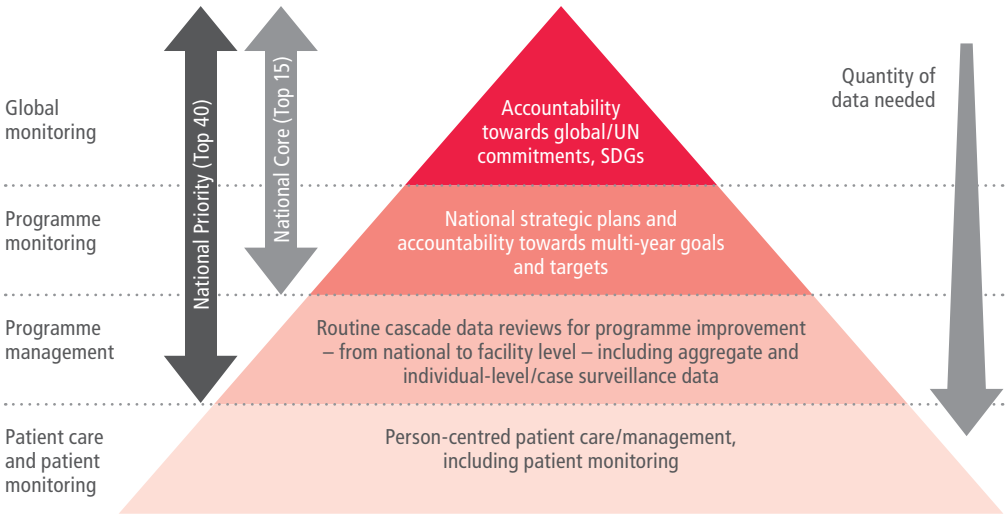
What's new in this guideline?

- An updated set of recommended indicators, with a differentiated approach for countries to prioritize and select indicators.
- The recommended indicators reflect updates in HIV technical guidelines and optimized alignment with changes in major global M&E frameworks since 2015.
- 40 priority national indicators (including 15 core indicators) to strengthen programme data use, with guidance on regular data reviews to identify gaps in the HIV services cascade.
- Improved digital content, with an accelerator kit, which helps to ensure that WHO's technical recommendations are accurately reflected in countries' digital data systems.

Criteria for selecting national indicators include:

- **Breadth:** Indicators reflect each step in the HIV services cascade, including prevention, and the extent and equity of services across geographic areas and population groups. Data are disaggregated by gender, age and location and, importantly, to assess services and impacts for key populations and other priority populations that are crucial to meeting national and global goals.
- **Depth:** Indicators speak to all three data use cases at country level: individual patient care and monitoring, programme management and programme monitoring (see figure).
- **Salience:** Indicators address priority programme areas, the largest investments of the national strategy and budget, and current critical service delivery issues.
- **Parsimony:** While coverage is complete, it is accomplished with the minimum number of indicators necessary. Fewer than 40 indicators may be enough. A focus on a few indicators with appropriate disaggregations can be powerful.
- **Feasibility:** Systems and personnel are capable of – and supported for – collecting, reporting, analysing and interpreting the data. An important determination of feasibility is the capacity of the health information system. For example, individual-level data in an electronic system are preferable for multiple reasons: better data quality, greater ease of disaggregation and more flexibility for subgroup analysis, and they can be used to monitor patient care across time and service locations. However, individual-level data systems require greater human resources and infrastructure for data entry and management.
- **Balance of sources:** The indicator set emphasizes routine programme data while balancing needs for survey-based data to fully address availability, representativeness and feasibility of data collection.

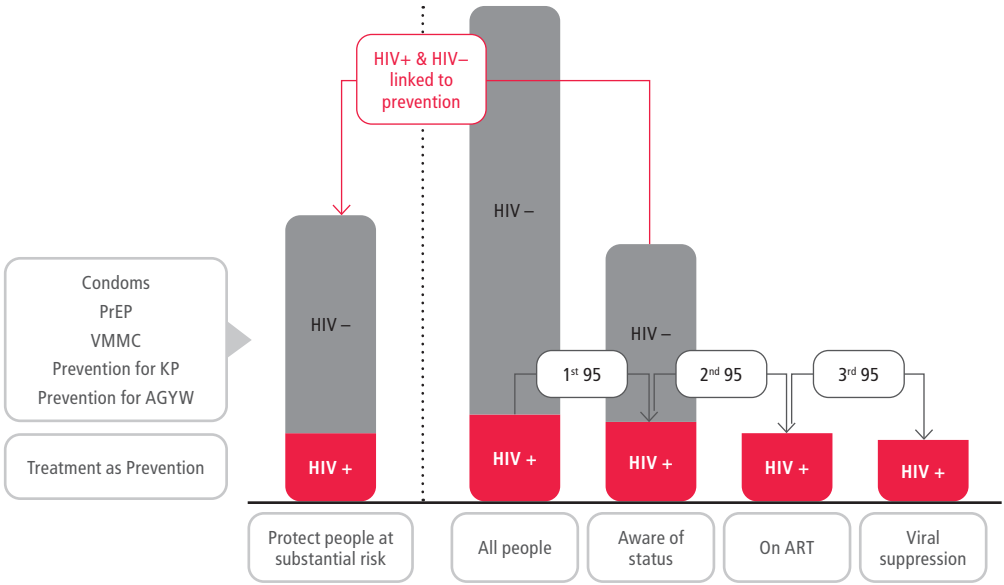
Health data use cases



Analysing and using strategic information

Monitoring the services cascade. The critical outputs and outcomes of the health sector response to the HIV epidemic can be visualized as a cascade of services, anchored by the 95–95–95 targets for 2030. In a graph of the cascade, the measures of service coverage are shown as sequential bars representing coverage for each service area in the order, from left to right, that a patient would move through them: HIV prevention, HIV diagnosis, ART, and VL monitoring and supression. The cascade format indicates programme performance at each step, while the decreases between adjacent bars indicate the quality of patient follow-up, coordination between service areas and, ultimately, service access. The figure below shows a services cascade that achieves the 95–95–95 goals.

Prevention, testing and treatment cascade of HIV services achieving the 95–95–95 goals



AGYW = adolescent girls and young women; ART = antiretroviral treatment; KP = key population; PrEP = pre-exposure prophylaxis; VMMC = voluntary medical male circumcision

These guidelines aim to strengthen the analysis and use of data at each stage of the cascade. Cascade analysis forms the core of the strategic information framework used by these guidelines because it guides managers through an assessment of performance across a set of related core services to identify where the biggest gaps occur at all levels of the health system. Once gaps are identified, targeted responses can improve linkages between points of care, retention of patients and critical outcomes such as viral suppression.

Regular data review. Routine reviews of routinely collected data form the foundation of effective programme management. Successful national programmes make such routine reviews a core function of programme managers at every level, from individual facilities to the national level. Such reviews focus on the HIV services cascade; gaps identified here reflect programme performance issues that managers can act on in a timely manner.

In addition to routinely reviewing the core cascade data, countries should periodically employ data triangulation methods to compare and integrate data from a different source or sources, such as special surveys or qualitative information from service providers and clients, to corroborate the interpretation of the core cascade analysis.

Disaggregation. A core aspect of cascade analysis – of both aggregate and individual-level data – is the disaggregation of indicators by specific geographic and sociodemographic subpopulations and important patient subgroups. This type of analysis enables managers to address issues of both programme performance and equity in terms of access and service quality. Routine assessment of equity across groups in service delivery and quality is fundamental to honouring the commitment of the HIV response to equity. In terms of improving programme performance, the fastest way to achieve overall programme targets lies in identifying and closing the gaps of the most underserved groups. Disaggregated analysis enables identification of these underserved groups, as defined by age, gender, geographic characteristics and priority population.

The usual disaggregations include geography (for example, region/province, district/county, facility), age group, gender (male/female/transgender), priority populations (for example, key populations and adolescent girls and young women) and important groups that require differentiated patient management or services (for example, pregnant women and TB/HIV patients).

Enhanced digital content. In the past WHO has provided recommended indicators only in PDF format. This has limited the direct utility of the SI guidelines for some critical end-users at country level, such as business analysts and software development teams that are ultimately responsible for ensuring that national clinical and strategic information guidelines (adapted from WHO guidelines) are accurately reflected in digital information systems. For the first time WHO will provide a digital accelerator kit (DAK) with an expanded array of human-readable contents aimed at the needs of these essential end-users. The DAK includes the following components: core (individual-level) data dictionary (including FHIR/HL7, ICD, SNOWMED, etc.), indicator (aggregate) mapping, business process mapping, decision logic, user personas and narratives. The DAK will also be used in the future to develop computable (machine-readable) guidelines.

STRATEGIC INFORMATION: A CONSOLIDATED FRAMEWORK

1

PART 1 STRATEGIC INFORMATION: A CONSOLIDATED FRAMEWORK

1.1 Introduction

This update to the 2015 *Consolidated strategic information guidelines* provides a revised set of essential indicators to monitor and manage the national health sector response to HIV. The recommended indicator set and guidance for use reflect the current state of the HIV epidemic, including programme innovations and investments deemed necessary for an effective response. The purpose of these guidelines is to help countries choose, collect and systematically analyse strategic information for two important data use cases (also referred to below as objectives):

1. **Programme monitoring:** To optimize and better align reporting at the national level for simpler, more efficient coordination and to ensure accountability for commitments to the 95–95–95 targets and Sustainable Development Goals (SDGs) by 2030.[1,2]
2. **Programme management:** To strengthen analysis, disaggregation and use of data to identify gaps in service access and coverage, improve linkages and address priorities along the HIV services cascade.

The aim of consolidation is to provide in one place the recommended indicators across the spectrum of health sector HIV services and to reference technical guidelines published by the World Health Organization (WHO) and its partners that detail recommended interventions and how to operationalize the collection and use of related strategic information (SI). The indicators prioritized in this guideline, as well as the approaches to measurement and use, are generally consistent with the WHO *Consolidated guidelines on person-centred HIV patient monitoring and case surveillance*,[3] published in 2017, which address the third and most important data use case: patient management. Thus, the updated SI guidelines are relevant to both countries using aggregate data systems and to countries using data from patient-level information systems, including for HIV case surveillance.

Why collect and use strategic information?

- SI provides the critical evidence that policy-makers, programme directors and line managers need to make informed decisions to improve programmes.
- Documenting outcomes and impact is also crucial to the focus and sustainability of programmes.
- The availability of information is central to the accountability and transparency of decision-making in the health sector.

[1] Fast-track: ending the AIDS epidemic by 2030. Geneva: UNAIDS; 2014 (https://www.unaids.org/sites/default/files/media_asset/JC2686_WAD2014report_en.pdf).

[2] SDG health indicator 3.3.1: Number of new HIV infections per 1000 uninfected population, by sex, age and key populations. See: https://sustainabledevelopment.un.org/sdg3.

[3] Consolidated guidelines on person-centred HIV patient monitoring and case surveillance. Geneva: WHO, 2017 (https://www.who.int/hiv/pub/guidelines/person-centred-hiv-monitoring-guidelines/en/).

1.1.1 Selection of indicators

To support the two main use cases, these guidelines present a framework for countries to develop a tiered set of indicators best suited for monitoring and managing their prioritized health sector response to HIV. This approach recognizes that not all indicators have the same salience in every epidemic and response context and that most countries have existing monitoring and evaluation (M&E) frameworks, tools and systems. However, a set of core principles can guide a country's prioritization process, thereby strengthening the existing M&E framework.

The tiered set includes:

- **National core indicators –** a set of 15 indicators that reflect the essential metrics of progress against targets of a national strategy. These 15 indicators are widely applicable across different country contexts.
- **National priority indicators (the Top 40)** – a set of 40 indicators – **the 15 national core indicators plus an additional 25 indicators** – that in real time provide programme managers the information and evidence needed to improve services and yet are feasible to collect, given the existing investment in data collection systems. The additional 25 indicators in the Top 40 set may have more immediate and/or short-term relevance to a country's efforts to scale up or address current barriers in service delivery. Other priority indicators may replace some of these as national programmes make progress or shift to respond to critical developments in the epidemic or the implementation environment.
- **Differentiated use –** In addition, this guideline recommends a select set of indicators for countries differentiated by specific epidemiologic characteristics (for example, countries that have a high burden of co-morbidities such as TB and HIV), programme investments (for example, voluntary medical male circumcision (VMMC) or extraordinary programme gaps (for example, a need to increase injection safety).
- **Impact and burden –** a set of modelled indicators, complementary to the programme-based Top 40, that are critical to quantifying changes in the epidemic and monitoring the effectiveness of the response. These indicators include HIV incidence (BI.3), the SDG indicator for HIV.

What's new in this guideline

- An **updated set of core indicators aligned with partners' indicators,** with a differentiated approach for countries to prioritize and select indicators.
- The recommended indicators reflect recent **updated technical guidelines** for pre-exposure prophylaxis (PrEP), prevention for adolescent girls and young women, HIV testing, antiretroviral treatment (ART), viral load, tuberculosis (TB)/HIV and elimination of mother-to-child transmission (EMTCT).
- **15 core and 40 priority national indicators to strengthen programme data use,** with guidance on regular data reviews to identify gaps in the cascade from prevention, testing, treatment to viral suppression and co-morbidities.
- Improved **digital content, with an accelerator kit,** which helps to ensure that WHO's technical recommendations are accurately reflected in the digital systems that countries are adopting.

1.1.2 Process of development

WHO staff and consultants developed these updated guidelines based on review of recent global and regional guidance documents, consultative meetings and inputs of technical experts. The recommended indicators included in these *Consolidated HIV strategic information guidelines* were identified through consultation with technical experts with country-level, regional and global perspectives. For each programme area members of virtual working groups represented ministries of health, nongovernmental and academic partners and development partner agencies – particularly those with related global HIV M&E frameworks – including the Joint United Nations Programme on HIV/AIDS (UNAIDS), the United Nations Children's Fund (UNICEF) the United States President's Fund for AIDS Relief (PEPFAR), and the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM). Working groups focused on prioritizing and organizing indicators and updating them to align with the most recent programmatic recommendations. With a few exceptions to fill recently identified gaps, the groups did not develop new indicators; most indicators were modified to align with interim partner guidance and technical guidelines, and many were retired. (See Web Annex A for a comparison of the 2015 and 2020 SI guidelines).

With a few exceptions, the working groups did not develop new indicators. Rather, most existing indicators were modified to align with interim partner guidance and technical guidelines.

To the extent possible, the indicators presented reflect alignment with other M&E frameworks promulgated by UNAIDS (for example, Global AIDS Monitoring (GAM)) and key development partners, such as the GFATM and PEPFAR. While these guidelines focus on the health sector response, the UNAIDS GAM represents the monitoring framework and indicator set for the multisectoral response to HIV/AIDS. Specifically, GAM operationalizes the monitoring of the 2016 Political Declaration on Ending AIDS, adopted at the United Nations (UN) General Assembly High-Level Meeting on Ending AIDS in June 2016. Whereas UNAIDS' GAM, GFATM's Modular Framework and PEPFAR's Monitoring, Evaluation and Reporting (MER) Indicator Reference guides have been updated on either an annual or a 3-year basis, the 2015 HIV SI guidelines were not updated on an interim basis, thus rendering them less useful over time. Going forward, updates to the online version of the consolidated HIV SI guidelines will be made in a more timely manner to maintain relevance and consistency between indicator sets that serve different purposes for different users (for example, programme managers, implementers, healthcare providers, civil society and donors).

In November 2019 WHO hosted an expert consultation to review and discuss a preliminary draft of this document. More than 60 people participated, representing a wide range of countries and partner stakeholders. With the help of a pre-survey of participants to identify key issues, during the meeting participants provided detailed inputs on priority indicators, definitions and methods of measurement, analysis and use while also commenting on the overall approach to updates in these guidelines. Ultimately, the participants validated the Top 40 prioritization scheme. The consultation called for development of a more detailed plan to roll out and disseminate these guidelines, including via multiple partner networks.

1.1.3 Intended audiences of this guideline

As reflected in the two data use objectives defined above, this guide is intended primarily to serve the needs of HIV programme staff and partners engaged in the collection, analysis and use of HIV-related strategic information at all levels of the health sector. This includes national-level staff establishing strategic information policy, guidelines, frameworks, tools and health information systems (HIS) as well as staff involved with national, subnational and service delivery (facility and community) level collection, analysis and use of HIV-related data to monitor and improve programmes. Other potential users include stakeholders concerned with developing and analysing strategic information, including nongovernmental organizations (NGOs), private-sector care providers, civil society and academic groups involved in teaching and research. These stakeholders can participate in government-led consultative processes for the design or redesign of strategic information systems and system investments in a spirit of transparency and mutual accountability.

This guide is intended primarily to serve the needs of HIV programme staff engaged in the collection, analysis and use of HIV-related strategic information at all levels of the health sector.

1.1.4 Organization of the document

This document consists of three parts:

Part 1, Strategic information: a consolidated framework, provides the overall rationale for the use of strategic information for monitoring and managing the health sector response to the HIV epidemic and contextualizes this guidance in the global strategy for ending AIDS.

Part 2, Strong SI systems for effective decision-making, focuses on selecting and prioritizing country-specific indicator sets. This section lays out the rationale for the selection of the national core and national priority indicator sets and then offers considerations for adjusting the recommended sets to fit different country contexts. Finally, this section outlines key components of a strong strategic information system built around these priority indicators.

Part 3, Recommended indicators: national core and priority, gives specific information about the indicators recommended, organized by programme area. Each section includes a brief description of critical measurement issues influencing the selection of indicators for the programme area, a table showing indicator definitions and data sources/measurement approaches and references to published materials that provide additional details for operationalizing the collection and use of the indicator data.

Online tools for users

To aid the roll-out and use of this guideline, a companion online tool is available at http://www.who.int/hiv/topics/me/en/. It includes annexes that map the 2020 indicators to the 2015 guidelines (Web Annex A), describes additional indicators that may be of use in some settings (Web Annex B) and provides further detail on the calculation of selected indicators (Web Annex C). The online publication also provides hyperlinks to key reference material and documents cited. To facilitate the adoption of these data standards and definitions for the recommended indicators into electronic information systems used by business analysts and software programmers, WHO has also developed a complementary digital accelerator kit (mentioned above) as part of this guideline package.

1.2 The strategic framework

As mentioned, this guideline focuses on two primary objectives of strategic information:

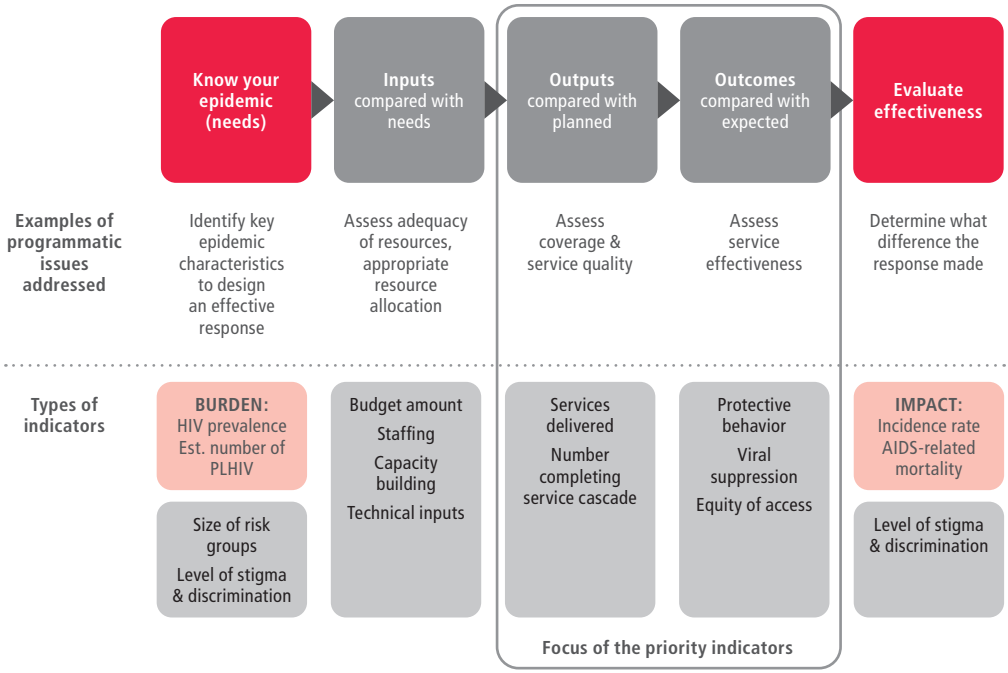
- Programme monitoring, particularly for accountability for the 95–95–95 targets and Sustainable Development Goals
- Programme management, including analysis and use of routine disaggregated cascade data.

To these ends, the indicators recommended generally reflect WHO technical standards in service delivery and use definitions compatible with other development and donor partner guidance.[1] More importantly, the indicators prioritized by countries for local use should be those that provide managers (encompassing all programme management and technical staff, data managers and healthcare providers) with information essential to adjusting service delivery and improving quality and effectiveness.

1.2.1 The HIV results chain

The health sector response to HIV can be monitored through a coherent results chain of selected key inputs, outputs, outcomes and impacts (Fig. 1.1).[2] The indicators recommended in these guidelines span the full results chain but place greatest emphasis on tracking outputs of coverage and quality and key programmatic and clinical outcomes, that is, those most useful for routine programme monitoring and management.

Fig. 1.1 HIV results chain



[1] See Web Annex A, which describes the areas of alignment between the indicators recommended in these guidelines and those included in the UNAIDS Global AIDS Monitoring (GAM) and Global Fund Modular Framework (GF MF).

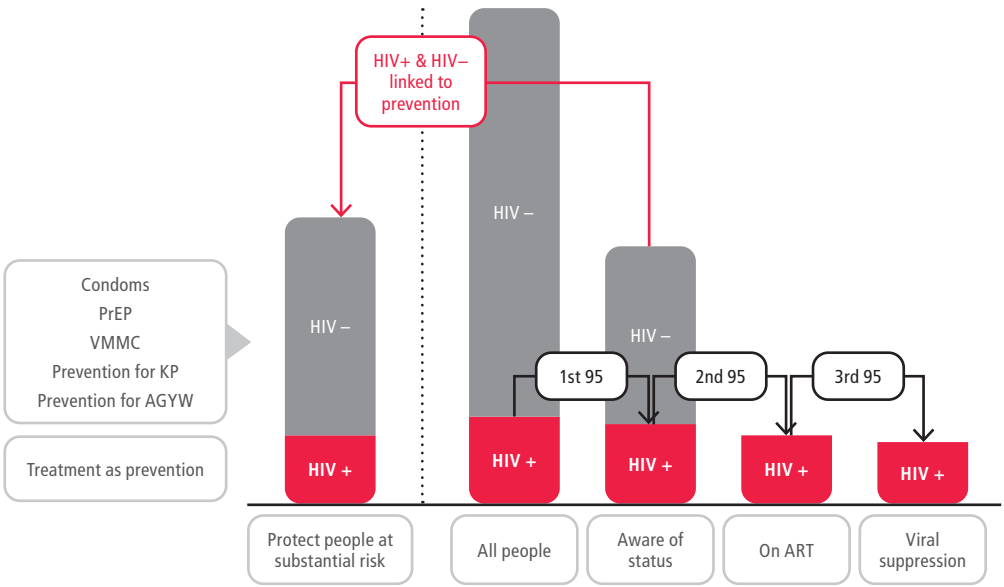
[2] Consolidated strategic information guidelines for HIV in the health sector. Geneva: WHO; 2015 (https://www.who.int/hiv/pub/guidelines/strategic-information-guidelines/en/).

In a shift from the organization of the 2015 consolidated SI guidelines, this document separates the burden and impact indicators derived from epidemic models (such as Spectrum AIM) from the list of Top 40 recommended indicators, which are more directly tied to services and aspects of the response (boxes in light orange in Fig. 1.1). The burden and impact indicators are still essential for summarizing the state of the epidemic and the response, but this separation both recognizes the difference in how such indicators are measured and used and allows greater attention to outcomes that improved programme management can address.

1.2.2 The HIV cascade of services – improving linkages from testing to prevention and treatment

As described in the WHO *Cascade data use manual*,[1] published in 2018, the critical outputs and outcomes of the health sector response to the HIV epidemic can be visualized through a cascade of services anchored by the 95–95–95 targets for 2030. In a cascade the ***measures of service coverage*** are represented as sequential bars for each service area. At the same time, the cascade format highlights gaps between bars as an ***indicative measure of quality*** of patient follow-up and coordination between service areas and, ultimately, service access. Fig. 1.2 shows how achieving the 95–95–95 targets would appear in the cascade graphic format.

Fig. 1.2 Prevention, testing and treatment cascade of HIV services



AGYW = adolescent girls and young women; ART = antiretroviral treatment; KP = key population; PrEP = pre-exposure prophylaxis; VMMC = voluntary medical male circumcision

[1] Cascade data use manual: to identify gaps in HIV and health services for programme improvement. Geneva: WHO; 2018 (https://www.who.int/hiv/pub/toolkits/hiv-cascade-data-use-manual/en/).

These guidelines aim to strengthen the analysis and use of data at each stage of the cascade, from primary prevention among those at substantial risk of infection to viral suppression. There are multiple formats for displaying cascades to gain different perspectives on the epidemic and response, 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 or to compare population-based versus programme-based performance. Cascades can be further filled in with additional bars and service areas to reflect intermediate steps in achieving high coverage and good quality, a practice of particular relevance to quality improvement activities at the facility level. (Section 1.3.2 gives more detail about how cascade analysis forms the foundation of routine data reviews to improve programme management.)

Routine cascade data reviews for programme improvement

By definition, strategic information provides managers with the essential data needed to improve services. Analysing these data and generating analytic outputs that help managers and stakeholders identify problems and areas for focus is a key aspect of routine review and use of data for decision-making.

This guideline promotes and supports managers' practice of regularly reviewing available data from across the HIV services cascade, supplemented periodically with data from models (for example, Spectrum AIDS Impact Module (AIM)), surveys and special studies to triangulate and validate assessments of programme performance, including impact. It is important to have a simplified and standard methodology that provides a common approach to these reviews. Public health sector staff and partners working at different levels of the health system can add to this core as appropriate. Fundamentally, this core consists of a prioritized, simple set of selected indicators that can be analysed at national, subnational and facility levels.

National programme managers should conduct this type of routine data review at least on an annual basis, and ideally more frequently, with emphasis on fundamental geographic divisions (subnational, facility) and disaggregated by age, gender and key population to highlight differences in service access (coverage) and quality. Subnational area managers (for example, provincial/regional or district/county level) may conduct more frequent data reviews (for example, quarterly), while facility managers may look at their data even more often (for example, monthly) to monitor progress and to support staff in delivering services more efficiently and effectively.

1.2.3 Moving from aggregate to individual-level data: enabling patient-centred monitoring and case surveillance

Individual-level data, as reflected in primary data collection tools such as patient charts, have always been viewed as critical to patient care and monitoring. As countries move toward fully operationalizing a "Treat All" policy, patient-level data become more important as a means of ensuring effective, high quality services. The potential quality of individual-level data represents a key comparative advantage over aggregate data. This potential drives increasing investment by countries in digital health information systems. For example, electronic medical records (EMRs) can further support person-centred care and patient monitoring in addition to (and, typically, as the source of) aggregate reporting of service indicator data. Additionally, the capacity to conduct HIV case surveillance is an important component of the programme management data use case, using a subset of individual-level data linked by unique identifiers.

Patient-level data also facilitate achievement of both accountability and programme management objectives. The 2017 WHO *Consolidated guidelines on person-centred HIV patient monitoring and case surveillance*[1] identify five sentinel events through a HIV patient's care cascade that must be monitored as a minimal data set for effective case surveillance:

- HIV diagnosis
- initiation of antiretroviral treatment (ART)
- viral load (VL) test
- VL suppression (VLS)
- death.

Patient-level data, when linked by unique identifiers to dates and places of care, not only facilitate care but also can monitor services and identify gaps in the service cascade.

Combined with a date associated with each event and a robust unique identification standard (UIS) that can link a single patient's experience across time and geographical locations, these data can be transformed into the key indicators needed to identify gaps in the cascade.

As with indicators calculated from aggregate data, these sentinel events define a priority subset of the data elements recommended for person-centred HIV patient monitoring. At the same time, these indicators are critical to effective programme management. By integrating and aligning the components of these systems – for example, linking the electronic patient monitoring system to a case surveillance data repository and/or to aggregate reporting systems – countries benefit from the efficiency of a common data source to serve all three fundamental data functions – patient care, programme management and programme monitoring. The principle is "collect once, use many times".

The principle is "collect once, use many times".

Similarly, tracking the delivery of prevention services (for example, condoms, harm reduction services, PrEP) to individuals also benefits from individual-level data and unique identification. Aggregate counts of such service delivery can be difficult to deduplicate and for managers to assess whether programmes are over-saturating coverage to a small population or have broader reach across a priority population. Individual-level data allow for deduplication but may increase the burden of reporting.

[1] The 2017 person-centred monitoring guidelines included six sentinel events. However, since the publication of the guidelines, the expansion of "Treat All" policies at country level has made enrolment in care and "first CD4 test" less relevant, and the latter has since been dropped as a sentinel event, while viral load suppression has been added.

Whether used for patient monitoring, case surveillance or monitoring of prevention services, all applications of individual-level data systems require standard protocols for data collection, management, security and privacy protection. Due to the higher risk that data breaches could result in loss of patient privacy and confidentiality, the data security requirements for individual-level data systems must be more stringent than those applied to safeguard aggregate data.

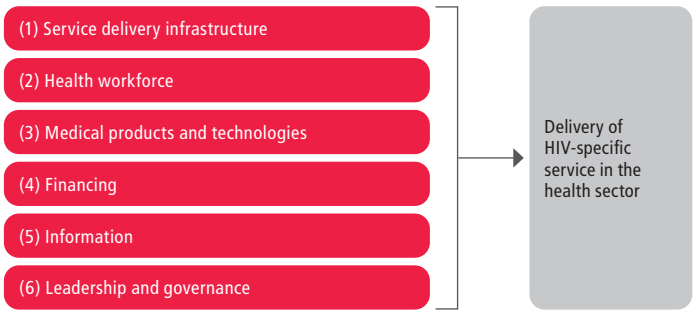
Another consideration for using indicators based on individual-level data is the extent to which these data systems cover all patient/client populations. As countries expand the use of individual-level data systems, both completeness (coverage) and quality should be assessed as part of data interpretation.

1.2.4 Health system building blocks

The delivery of HIV prevention, care and treatment services depends on the capability of the underlying health system. WHO has defined six building blocks of functional health services – service delivery infrastructure, the health workforce, medical products and technology, financing, health information systems, and leadership and governance (Fig. 1.3).[1] Although health systems-focused strategic information is beyond the purview of these HIV-specific guidelines, the indicators recommended in this guideline assume that monitoring the status and performance of these building blocks is a prerequisite to providing HIV services. Deficiencies in any of these key system components – particularly the health workforce – will immediately affect the system's capacity to deliver, monitor and manage HIV programme services.

In countries the availability of health system data, especially at facility level, is often not robust or is limited. At peripheral levels monitoring of health systems data such as human resources and the supply chain is vital to appropriate interpretation of service cascade data and to management in response to related data analyses. These systems data should be included in routine data review activities, and the information systems that provide these data should be prioritized in planning and resource allocation.

Fig. 1.3 Health system building blocks and the health sector response to HIV



Source: adapted from Everybody business: strengthening health systems to improve health outcomes: WHO's framework for action. Geneva: WHO; 2007 (http://www.who.int/entity/healthsystems/strategy/everybodys_business.pdf).

[1] Everybody's business: strengthening health systems to improve health outcomes: WHO's framework for action. Geneva: WHO; 2007. (http://www.who.int/entity/healthsystems/strategy/everybodys_business.pdf).

Guidance and tools for assessing the health system building blocks

Countries should routinely assess the adequacy of the six health system building blocks. WHO and partners have developed important guidance and tools for monitoring these inputs:

- Monitoring the building blocks of health systems: a handbook of indicators and their management strategies. Geneva: WHO; 2010 (https://www.who.int/healthinfo/systems/WHO_MBHSS_2010_full_web.pdf).
- WHO guideline on health policy and system support to optimize community health worker programmes. Geneva: WHO; 2018 (https://www.who.int/hrh/resources/health-policy-system-support-hw-programmes/en/).
- Master facility list (MFL) resource package: guidance for countries wanting to strengthen their MFL. Geneva: WHO; 2018 (https://www.who.int/healthinfo/country_monitoring_evaluation/mfl/en/).
- Global strategy on human resources for health for workforce 2030. Geneva: WHO; 2016 (https://www.who.int/hrh/resources/globstrathrh-2030/en/).
- Human resources for health information system: minimum data set for health workforce registry. Geneva: WHO; 2015 (https://www.who.int/hrh/statistics/minimun_data_set/en/).
- Health Systems 20/20 Project, the Joint United Nations Programme for HIV/AIDS (UNAIDS) and World Health Organization (WHO). Linking NASA and NHA: concepts and mechanics. Bethesda, Maryland, USA: Health Systems 20/20 Project, Abt Associates Inc.; 2009 (http://data.unaids.org/pub/globalreport/2009/nha_nasa_crosswalk_final_en.pdf).
- OneHealth Tool: Supporting integrated strategic health planning, costing and health impact analysis Geneva: WHO; 2013 (https://www.who.int/choice/onehealthtool/OneHealth_Tool_Supporting_integrated_strategic_health_planning.pdf?ua=1).
- WHO guideline: recommendations on digital interventions for health system strengthening. Geneva: WHO; 2019 (https://www.who.int/reproductivehealth/publications/digital-interventions-health-system-strengthening/en/).
- Health facility & community data tool kit. Geneva: WHO; 2014 (https://www.who.int/healthinfo/facility_information_systems/en/).
- WHO Forum on Health Data Standardization and Interoperability (3–4 December 2012, Geneva, Switzerland) (https://www.who.int/ehealth/WHO_Forum_on_HDSI_Report.pdf).

1.3 Using routine data reviews for programme improvement

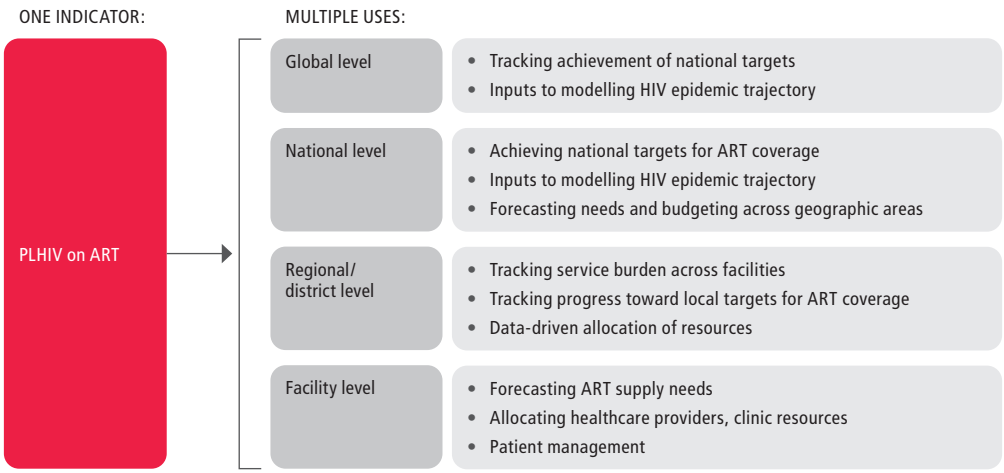
Routine data reviews form the foundation of effective programme management.[1] Successful national programmes make routine review of data a core function of programme managers at every level. Establishing such a process includes:

> Successful national programmes make routine review of data a core function of programme managers at every level.

- convening a body of programme managers, including civil society, community representatives and development partners, to review data at specified intervals;
- developing a simple, standard core analysis plan for routine data that informs management decisions appropriate for different levels;
- acting on the findings and conclusions of the data review to make adjustments to service delivery, supervision and/or resource allocation; and
- tracking the effect of these adjustments over time through ongoing routine data review.

This section describes the main levels of analysis for different purposes, that is, patient care, patient monitoring and programme monitoring; the different management questions that are the focus of data reviews at national and subnational levels; steps for establishing an effective data review process; and how the design of health information systems can facilitate the use of data by programme managers (Fig. 1.4).

Fig. 1.4 Example of multiple uses of data, by management level and purpose



ART = antiretroviral treatment; PLHIV = people living with HIV

[1] The type of routine internal process of data review that is the focus of these guidelines complements other forms of programme review, which may be more periodic (for example, every 3–5 years coinciding with the mid-term and the end of a programme period) and conducted by an external review team. Guidance for conducting this type of review can be found in the WHO Guide to conducting programme reviews for the health sector response to HIV/AIDS, available at https://www.who.int/hiv/pub/toolkits/hiv-response-guide/en.

1.3.1 Application of routine data reviews at different levels

To address key management questions and improve programmes, managers use routine data review in two ways:

- **programme monitoring** (that is, the assessment of a programme's progress against established objectives and targets)
- **programme management** (that is, managing the overall delivery of services to patients to ensure that inputs to a programme result in the expected outputs, outcomes and impact for a population of patients).

The types of improvements to focus on varies for managers at different levels, based on the type of adjustments that they have the authority to make (Table 1.1). Similarly, managers at different levels need different types of strategic information to inform the kinds of decisions they need to make.

Table 1.1 Frequency and management questions for routine data review

Managerial level	Frequency of data review	Key management issues addressed	Types of actions taken
Facility level	Monthly or more often	**Programme management** • Track outreach prevention services • Improve testing yield and linkage to ART • Optimize ART retention • Achieve viral load suppression and prevent HIV drug resistance	• Adjustments in supervision or staff allocation • Training for staff • Conduct continuous quality improvement efforts • Strengthen data quality
District level/ regional	Quarterly or more often	**Programme management** • Forecast service and resource needs • Prioritize general and facility-specific service bottlenecks to address • Assess aggregate district performance against targets • Identify inequity in access or service quality by geography or priority populations • Respond to gaps in human resources and commodities	• Provide additional resources for low-performing sites • Adjusting the focus of or mode of service delivery • Share good practices/ innovations from high-performing sites • Inform resource allocation done at the central level • Evaluate interventions/ innovations/pilot projects
National level/global	Annual or more often	**Programme management** • Identify high- and low-performing programme areas or subnational areas • Assess equity of service coverage and outcomes **Programme monitoring** • Track progress toward national strategy goals and 95–95–95 targets • Measure outcomes in risk reduction, viral suppression, stigma and discrimination • Model impact by national or subnational incidence, prevalence and mortality	• Adjustments in resource allocation (budget, staffing, technical support) • Make adjustments to patient flow or staff training to support better performance • Leadership to address policy/structural barriers to effective response

A majority of the data used in routine data review come from facility-based health information systems, that is, programme data that are routinely available. However, at the national and regional levels, the assessment of outcomes and impact/burden of HIV rely more heavily on periodic (that is, annual or less frequent) data collection, analyses and reviews, such as epidemic models and special surveys.

1.3.2 Core analysis for routine data reviews

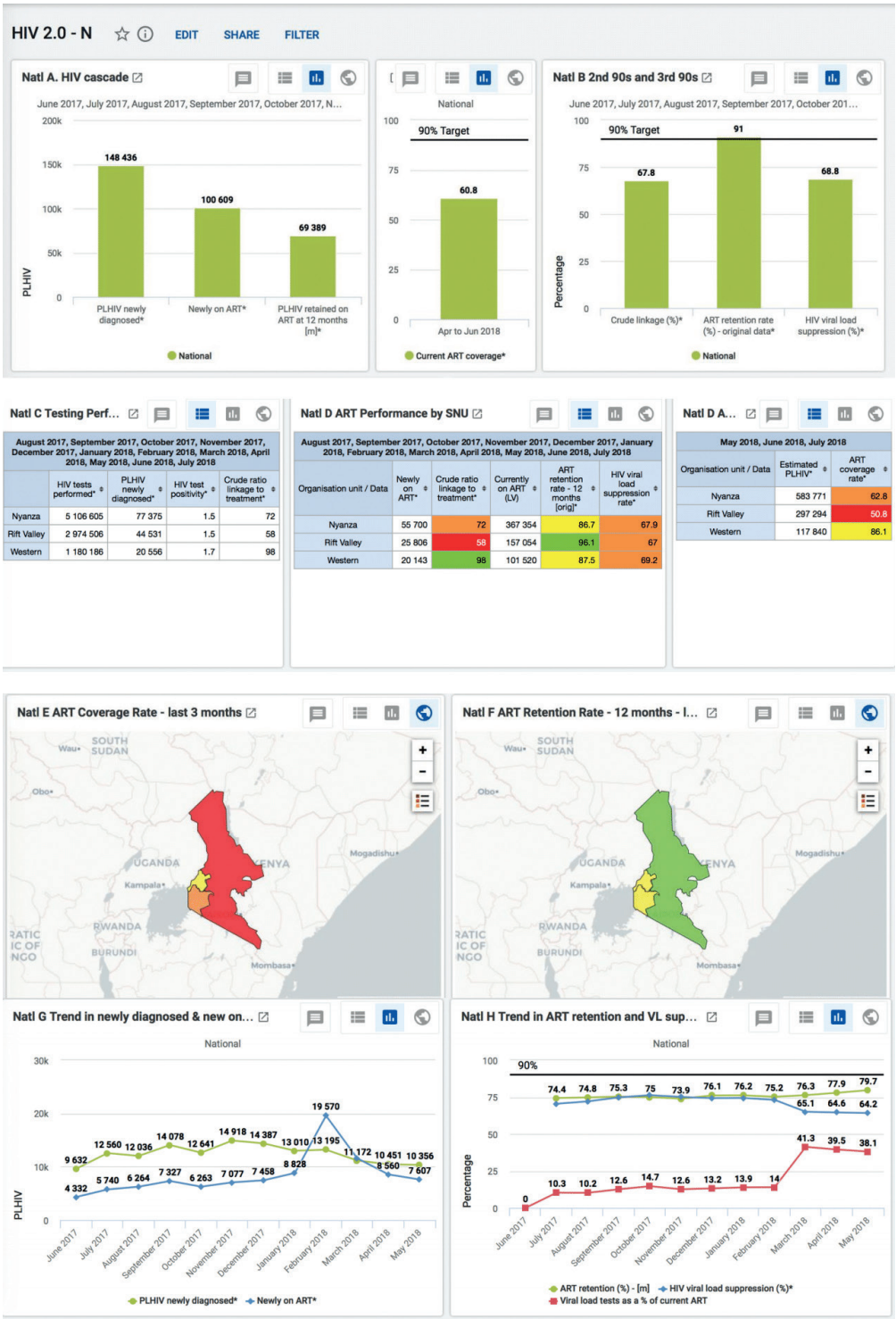
As described in Section 1.2.2, cascade analysis forms the core of the strategic information framework used by these guidelines because it guides managers through an assessment of performance across a set of related core services to identify where the biggest gaps occur. Once these gaps are identified, targeted responses can be tailored to improve linkages between points of care, retention of patients and critical outcomes such as viral suppression. And, by answering the key management questions through regular review of data routinely collected by health information systems, managers can strengthen their response by taking timely and data-driven action.

To facilitate routine data review focused on the services cascade, national programmes can develop data dashboards for standardized display of analytic outputs, including figures, tables and maps that are accessible to managers at different levels. To be feasible, data dashboards for routine data reviews should focus on a select set of widely available routine data and be limited to essential figures that summarize programme performance and describe basic aspects of data quality. Less is more; a focus on a few indicators with appropriate disaggregates can be powerful. Ideally, platforms used to generate these displays allow managers to interact with the data to further explore unexpected results, including assessing whether poor data quality plays a role or whether the results truly reflect programme performance. Such tools can be used as the focus for routine cascade data review meetings or at least to make available relevant, standardized analytic outputs.

Although there are many types of service cascades and approaches to cascade analysis, for the purposes of routine data reviews, WHO and partners produced guidance for constructing data dashboards centred on cascade analysis and using indicators that can be generated entirely from aggregate routine facility data systems.[1] These materials include a subset of 11 programme cascade indicators (drawn from the 15 national core indicators) for routine analysis with recommended data dashboards (Fig. 1.5), explanations for use and interpretation and training exercises for interpreting the dashboard figures using programme data.

[1] See: Analysis and use of health facility data: guidance for HIV programme managers. Geneva: WHO; 2019 (https://www.who.int/healthinfo/FacilityAnalysisGuide_HIV.pdf).

Fig. 1.5 HIV cascade dashboard generated from routine facility data



Source: Analysis and use of health facility data: guidance for HIV programme managers. Geneva: WHO; 2019 (https://www.who.int/healthinfo/FacilityAnalysis_GeneralPrinciples.pdf).

The main cascade featured in this dashboard gives the cross-sectional view of the percentages of people living with HIV who are diagnosed, have linked to treatment and have achieved viral suppression. This analysis is conducted for the general population at the national level as well as at subnational levels and for priority populations.

Cascade data use manual

In 2018 WHO and partners published the *Cascade data use manual*.[1] The manual features multiple examples of cascade analysis, using different types of data for different programme management purposes. This includes cascades specific to HIV treatment, mother–infant pairs receiving services for prevention of mother-to-child transmission (PMTCT) and patient groups with co-morbidity of HIV and TB, hepatitis B and/or hepatitis C.

The cascade analysis approach to programme management can also be applied to the prevention context, following both HIV-positive and HIV-negative members of high-risk groups, including key populations. The manual covers key steps in how to conduct and use data from cascade analyses. Such analyses involve assessment of data quality and reliability, triaging gaps identified through the cascade and applying strategies to improve common gaps in the cascade.

[1] Cascade data use manual: to identify gaps in HIV and health services for programme improvement. Geneva: WHO; 2018 (https://www.who.int/hiv/pub/toolkits/hiv-cascade-data-use-manual/en/).

Cascade analyses based on aggregate data have well-described limitations, particularly for countries with lower coverage of services. Nonetheless, these figures can still provide powerful insights into comparative gaps in service access. Countries that have individual-level health information systems and unique identification standards (UIS) can do robust cascade analysis, since these systems permit deduplication, although the time period covered by these cascades often begin with treatment initiation. Where electronic HIS and UIS are extended to include HIV testing services, more robust cascade analyses can be done, including of linkage to ART. In the absence of these types of electronic tools and UIS, countries must establish relatively more complex mechanisms for tracking individuals through paper-based systems designed for cohort analysis.

In addition to reviewing the core cascade analysis plan for routine facility data, countries should periodically employ data triangulation methods to compare and integrate data from a different source or sources to corroborate the interpretation of the core cascade analysis results. Examples of different sources include special survey data as well as qualitative information from service providers and clients. Data triangulation reduces the likelihood of over-reliance on any one type or source of data and can correct the limited perspective that one type or source of data may provide.[2]

[2] See: HIV triangulation resource guide. Geneva: WHO; 2009 (https://www.who.int/hiv/pub/surveillance/triangulation/en/).

1.3.3 Use cases for more in-depth data review

Routine data review can be expanded or extended to inform specific types of programme improvements. This section describes two related and commonly applied types of in-depth data review.

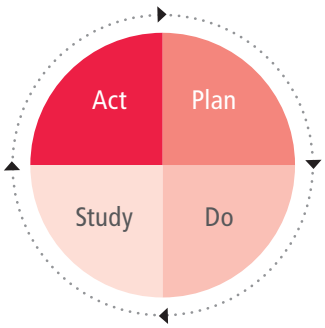
Quality improvement: monitoring performance measures and using data for action

Quality improvement (QI) is a systematic approach to improve quality. QI is a specific method designed to continually improve programme performance as part of a routine process. Generally, it is applied by health facility teams within a national QI programme and designed to test changes in programme services, continually measure the effects of these changes and use data to address gaps and so improve clinical performance and health outcomes over time.[1] QI involves measuring performance using standardized indicators, selecting quality challenges (including access and coverage), exploring their root causes, designing and implementing contextually appropriate solutions and assessing their impact using rapid, iterative tests of change.

Like the general routine cascade data review activities described above, QI requires quality data collection, reporting and use of indicators, typically a selected subset of the highest priority service indicators, and disaggregated cascade analyses. The specific set of service quality indicators depends on several factors, including data sources. Interoperable information systems (that is, systems that can share data) help to measure the quality of services, fill gaps in existing knowledge and communicate to end-users such as district health management teams and facility-level quality committees.

Many HIV programmes use QI methods selected to suit local capacity, resources and availability of relevant data, tools and experience. Many of these use the plan-do-study-act (PDSA) cycle method (Fig. 1.6). Regardless of preferences about which model to use, HIV programmes should consider how to institutionalize the culture and capacity for improvement across all levels, including in routine cascade data review activities more broadly. Like cascade data reviews, QI involves the combined efforts of a variety of stakeholders to make changes that will lead to better programmes and systems and, ultimately, improve health outcomes.

Fig. 1.6 The plan–do–study–act (PDSA) cycle



Source: Plan–do–study–act (PDSA) tool. Geneva: World Health Organization; 2019 (https://www.who.int/hiv/pub/arv/quality-care-hiv-services/en/).

[1] Guidance on strengthening service quality can be found in Maintaining and improving quality of care within HIV clinical services: Policy brief. Geneva: WHO; 2019 (https://www.who.int/hiv/pub/arv/quality-care-hiv-services/en/).

Prevention of HIV drug resistance

WHO recommends that HIVDR prevention, monitoring and response be integrated into every national HIV programme and into routine cascade data review activities.

As ART is scaled up, the emergence of significant population-level HIV drug resistance (HIVDR) to non-nucleoside reverse transcriptase inhibitors (NNRTIs) and nucleoside/nucleotide reverse transcriptase inhibitors (NRTIs) has become a global concern, threatening the effectiveness of ART and sustained reductions in HIV-related morbidity, mortality and transmission risk. As documented in WHO's global report on HIVDR in 2019,[1] levels of drug resistance to NNRTIs have been increasing and have exceeded 10% among adults initiating first-line ART in most of the countries monitored. Surveys have also documented high levels of resistance to NRTIs in infants newly diagnosed with HIV and to both NRTIs and NNRTIs in people failing ART. The worrying trend of NNRTI pretreatment resistance has been mitigated by the introduction of a new ARV, dolutegravir (DTG), an integrase inhibitor, both in first and second line. Resistance to DTG is expected to emerge at lower levels; however, ongoing surveillance combined with clinic-and national-level efforts to prevent unnecessary emergence and transmission of HIVDR remain a priority. WHO recommends that actions to prevent, monitor and respond to HIVDR emergence be integrated into every national HIV programme,[2] including as part of routine cascade data reviews.

Additional HIVDR data from patient monitoring systems and surveys in specific populations

In addition to the use of routine treatment and VL indicators, WHO recommends two types of periodic surveys to inform HIVDR prevention efforts:

- early warning indicators – facility-based assessments of factors associated with and predictive of resistance, using data from patient monitoring systems, performed quarterly or more often, ideally at least annually at all ART facilities;[3]
- national representative surveys that estimate the prevalence of HIVDR in adults and children initiating ART (pre-treatment HIVDR surveys, or PDR) or in people with viral non-suppression who are taking ART (acquired HIVDR surveys, or ADR).[4]

Used in combination, data from these sources enable stakeholders in treatment and HIVDR prevention to identify both programmatic and epidemiologic evidence of need to strengthen relevant programme services and, potentially, to revise ART guidelines.

See Sections 2.5.4 and 2.5.5 for more discussion of indicators from special surveys, including those for HIVDR. Web Annex B includes additional programmatic indicators relevant to HIVDR prevention efforts.

---

[1] HIV drug resistence report 2019. Geneva: WHO, 2019 (https://www.who.int/hiv/pub/drugresistance/hivdr-report-2019/en/).

[2] As described in section 2.4.6 of Consolidated guidelines on person-centred HIV patient monitoring and case surveillance. Guidelines. Geneva: WHO, 2017 (https://www.who.int/hiv/pub/guidelines/person-centred-hiv-monitoring-guidelines/en/0). See also Annex 2.4.6. HIVDR EWI sampling, abstraction and reporting guidance (https://www.who.int/hiv/pub/guidelines/WHO_Consolidated_Guidelines_Annexes_2.4.6.pdf).

[3] Consolidated guidelines on person-centred HIV patient monitoring and case surveillance. Geneva: WHO; 2017 (https://www.who.int/hiv/pub/guidelines/person-centred-hiv-monitoring-guidelines/en/).

[4] For guidance on HIVDR surveillance, see: HIV drug resistance surveillance guidance. 2015 update. Geneva: WHO; 2015 (https://www.who.int/hiv/pub/drugresistance/hiv-drug-resistance-2015-update/en/).

1.3.4 Establishing systems for routine data reviews

Routine data reviews are most effective when implemented as a system and given a supportive governance and organizational structure to engage managers and, as appropriate, partners (Fig. 1.7).

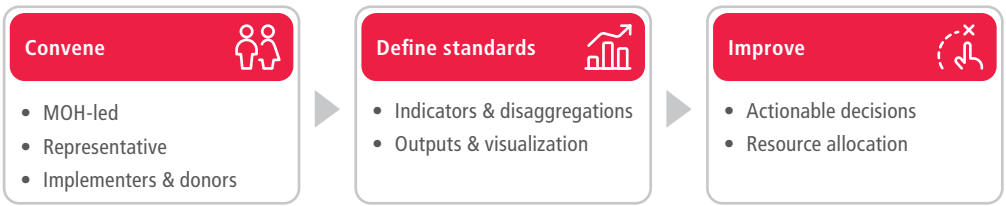
Convene. The first step is to identify and convene the right group of individuals to participate in the routine data review, including describing their roles and responsibilities for analysis, interpretation, documentation and follow-up, and setting a schedule for review meetings. The frequency of data review should correspond to the management level, with facility managers reviewing data most often (for example, weekly or monthly) and national managers at a lower frequency (for example, quarterly or semi-annually). While departments of health and ministries of health may organize routine data reviews for internal purposes, in many settings it is also important to include all relevant partners to ensure that the outputs and decisions from data review discussions are fully acted upon. These are usually context-specific determinations, but participating stakeholders may include community and civil society representatives, academic institutions and professional societies, technical/implementing partners and/or development partners. Critical to effective convening is the conception of hybrid technical groups that include programmatic, technical and data experts.

Define standards. The second step is to develop a plan for standard core analysis that can be generated from routine facility data and formatted (for example, in a dashboard) to inform the decisions appropriate to each management level. The analysis plan will specify the subset of priority indicators and disaggregations as well as the specific analytic outputs. The participants in the routine data review meetings should receive data in this standard format and become familiar with the use and interpretation of each figure, table or map through formal training and/or regular use. Building this type of report function into the development of health information systems greatly facilitates the use of routine facility data.

Improve. The third step is to translate the discussions on the interpretation of the core analysis into actionable steps for managers to act on. Because the routine data review is conducted at multiple levels, the findings and action plans developed at one level may inform action taken at other levels. Documenting actionable next steps, persons responsible and the timeline are important to ensure both accountability and coordination across management levels. For example, if data review at facility levels calls for a planned burst of effort/programming in one service delivery area, district- or provincial-level managers may bolster these efforts through changes in resource allocation or may help coordinate facilities that are planning similar efforts by sharing good practices or other technical resources. It is important to take context-specific authority in resource allocation into account in this phase. Unless the conclusions and recommendations from the data reviews are followed up as the basis for programme improvements, managers and stakeholders may lose interest in data review.

Finally, to make data-informed determinations about whether a past course of action actually strengthened service delivery, ongoing routine data meetings should review past action plans and compare current service delivery to past service delivery trends to assess any evidence of effect. This cyclical approach is consistent with a continuous QI process informed by data.

Fig. 1.7 Key components in establishment of routine data reviews



1.3.5 Electronic health information systems to support routine data reviews

The electronic health information system (HIS) used to collect, organize, analyse and report data has an important influence on the usability and accessibility of data for programmatic decision-making. As previously emphasized, the data elements of individual patient records, whether kept in paper-based patient files, log books, registers or point-of-care EMRs, are the basis of all analysis and use for programme management, including calculation of aggregate indicators. The primary data collection tools must capture all the necessary data elements (as required at different levels of analysis) in a format that facilitates (1) providers' use in patient care; (2) paper-based aggregation (where electronic systems are not available); and/or (3) individual-level data entry (whether direct or requiring transcription from paper tools). In resource-poor settings, the data entered into an electronic HIS should reflect the relevant data use cases, potentially including patient care, programme management and programme monitoring. In support of this principle, WHO has developed supplemental materials for these guidelines that provide the recommended WHO HIV metadata (core data elements and indicators) in expanded human-readable (L2) formats, which will facilitate incorporation of WHO standards into digital systems with fidelity and for any data platform used.

To optimize programme management based on routine data reviews, a comprehensive view of programme performance in a country is needed. From an HIS perspective, this means that a country should adopt the same and/or interoperable data platforms across all geographic areas and levels of health facilities that use electronic health information systems. This also has implications for funders, who should commit to supporting systems that comply with standards established by the public health sector and multisectoral digital authorities, as appropriate. To the extent that national HIV programmes contribute to the definition of data interoperability standards in the health sector, in particular as concerns unique identification, considerable cost-efficiency and sustainability gains can come from maintaining and upgrading HIV-specific components of the HIS platform.[1] Governance over HIS policies and standards should be established by the ministry of health (or equivalent) and any other government entities with related authority. Common mechanisms for effecting good governance include convening a working group with overall responsibility for overseeing, designing and enforcing interoperability standards across health information systems, including in the context of a digital health investment roadmap, e-health strategic plans or similar multi-year planning documents.

Ideally, the electronic platform(s) within the broader health information system can be used to collect, manage, analyse and visualize the data. Data visualization includes generation of figures and charts used in standard reports or data dashboards, as well as other tools to facilitate data review and use. These functions can be built into proprietary (bespoke) and open source platforms such as DHIS2. In other cases, countries may choose to export their data to platforms specifically designed for data visualization and access to different types of data users. The HIV Situation Rooms developed in several high-burden countries for policy-makers are an example of assembling data from national DHIS2 and other HIS into an integrated custom data visualization platform analogous to Tableau, Power BI, Sisense and other visualization softwares.[2] Their purpose is to create dynamic analytics and to link the gap analysis from national and regional level to facility-level planning and target setting. The platform provides decision-makers with a tool to rapidly review multiple data points from varied sources in a timely manner, without heavy manual analytic burden.

---

[1] WHA66.24. eHealth standardization and interoperability. In: Sixty-sixth World Health Assembly, Geneva, 20-27 May 2013. Resolutions and decisions, annexes. Geneva: World Health Assembly; 2013: 54-6 (WHA66/2013/REC/1 ; https://apps.who.int/gb/ebwha/pdf_files/WHA66-REC1/A66_REC1-en.pdf).

[2] More information on this work is available at: http://situationroom.unaids.org.

STRONG SI SYSTEMS FOR EFFECTIVE DECISION-MAKING

2

PART 2 STRONG SI SYSTEMS FOR EFFECTIVE DECISION-MAKING

Strategic information (SI) refers to the collection, analysis and use of data to make timely and appropriate decisions to improve programming. The selection and definition of priority indicators (individual-level and aggregate) determines *what* strategic information is most relevant to a national programme. The corresponding HIS system[1] determines *who* is responsible and *when*, *where* and *how* such information is generated and used.

2.1 Prioritizing programme indicators

A key aim of this guidance is to help countries prioritize indicators for programme use and then focus their resources on strengthening the data sources, data collection tools, databases and data quality assurance mechanisms necessary to analyse and use these data.

> A smaller number of priority indicators results in better data and better use of the data to improve programmes.

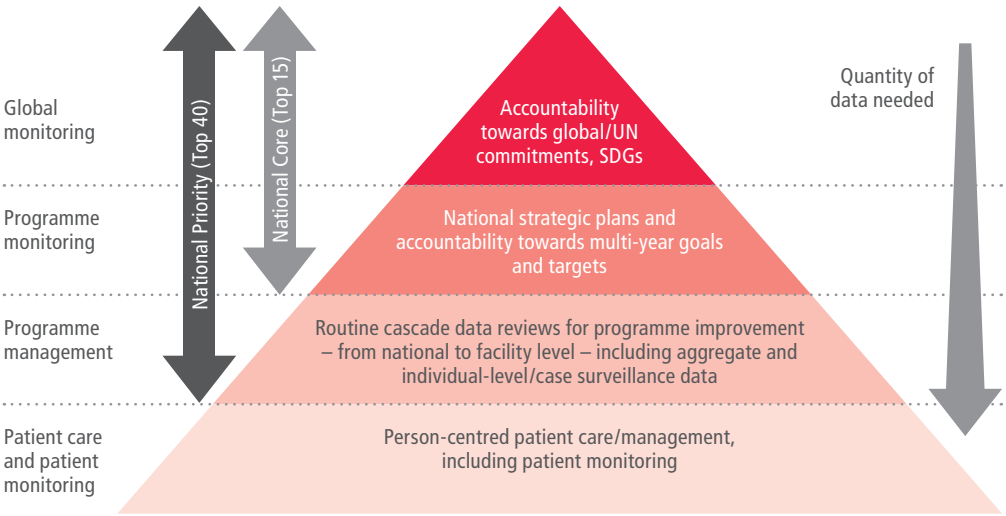
Prioritization of indicators is a key step in strengthening strategic information systems because a smaller number of indicators results in improved quality of data collection and management, optimal disaggregation and maximal use of the information to improve programmes.

The criteria for prioritization recommended in this guideline reflect two main data use objectives: (1) programme monitoring for accountability for national commitments to the 95–95–95 and SDG targets and (2) programme management based on routine cascade analyses and use for programme improvement. The first objective, monitoring, translates into prioritization of a top tier of 15 national core indicators recommended for all countries. The indicators recommended for the national core span the breadth of the cascade, reflect the critical aspects of coverage and quality and highlight international strategic, programmatic and clinical imperatives tied to outcomes and impact. They form the essential basis of routine data reviews to improve programmes at national, district and facility levels. Thus, the 15 national core indicators would comprise the minimum set sufficient for programme monitoring and management. The second objective, management, emphasizes the broader programme priorities defined by a country's national strategy and clinical guidelines (anchored to WHO technical guidelines) and the corresponding 40 national priority indicators most relevant to effective programme management at both national and subnational levels (which include the 15 core indicators). These Top 40 are recommended in settings with adequate HIS capacity and/or an epidemiologic or programme context that requires them.

[1] The term "HIS" usually refers primarily to an electronic data system. However, in the context of HIV strategic information, paper-based tools remain a core part of the information systems in many settings. These guidelines consider the term "HIS" to include the paper-based components but recognize that all countries must use some type of electronic data system to collate and analyse data for programme monitoring and programme management.

These two tiers of indicators form the basis for routine data review to assess performance in achieving access to and quality of services, including informing more intensive data "deep dives" at the facility level for the purposes of continuous quality improvement or HIV drug resistance prevention. National programmes are encouraged, ideally, to anticipate the path toward key response goals and, in that light, to be forward-thinking and ambitious both in selecting indicators and in investing in the HIS needed to provide critical data – so that they have appropriate data to care for patients as well as to guide and tailor their programmes (Fig. 2.1).

Fig. 2.1 Health data use cases



Each indicator in the core and priority sets (Table 2.1) has been reviewed and evaluated for evidence that it is a reliable measure of the intended programme areas, is SMART (that is, specific, measurable, achievable, relevant and time-bound) and is feasible to collect and use. All indicators in the original 2015 SI guidelines were reviewed, and proposed new indicators were scrutinized in a similar manner. Indicators were further prioritized within each programme area into the two tiers: those that should be considered first as potential national core indicators and those that might be considered for the larger group of national priority indicators.

Table 2.1 Recommended national core and national priority indicators[1]

Strategic objective (reference number prefix)	Programme domain	Top 15 (national core)	Top 40 (national priority)
Reduce new infections among those at substantial risk (PR)	Condoms	PR.1 Condom use (KP & Gen pop)*	PR.2 Condoms distributed
	PrEP	PR.3 PrEP uptake	PR.4 PrEP continuation (at 3 months) PR.5 Currently on PrEP
	Other prevention	KP.1 Coverage of HIV prevention (KP)* KP.2 Needles and syringes distributed	KP.3 Coverage of OST KP.4 Safe injecting practices (PWID)* GW.1 AGYW HIV/SRH integration
95% of PLHIV know their status & are linked to treatment (TL)	HTS	TL.1 PLHIV who know their HIV status (1st 95) TL.2 HIV testing volume and positivity TL.3 Linkage to ART	TL.4 HTS index testing and partner notification TL.5 HIVST distribution TL.6 Know their status (KP)
95% of PLHIV identified on ART & 95% viral suppression of those on ART (AV)	ART and VL	AV.1 PLHIV on ART AV.2 Total attrition from ART AV.3 PLHIV who have suppressed VL	AV.4 New ART patients AV.5 Late ART Initiation AV.6 VL load testing coverage AV.7 Early VL testing (at 6 months) AV.8 Appropriate 2nd VL test AV.9 ARV toxicity prevalence
Reduce mortality (TB)	TB/HIV	TB.1 TPT initiation TB.2 TPT completion	TB.3 TB diagnostic testing type TB.4 PLHIV with active TB disease
Reduce new infections among children (VT)	Vertical transmission	VT.1 Viral suppression at labour and delivery VT.2 EID coverage	VT.3 Infant ARV prophylaxis coverage VT.4 ART coverage in pregnant women VT.5 ART coverage in breastfeeding mothers VT.6 Final outcome of PMTCT
Reduce co-morbidity and mortality (ST)	STI		ST.1 Syphilis screening coverage (in ANC) ST.2 Syphilis treatment coverage (in ANC) ST.3 Cervical cancer screening among women living with HIV

* Indicates indicator is exclusively survey-based

Strategic objective (reference number prefix)	Programme domain	Top 15 (national core)	Top 40 (national priority)
Zero discrimination (SD)	Stigma	SD.1 Avoidance of health care due to stigma and discrimination (KP)*	SD.2 Avoidance of health care due to stigma & discrimination (PLHIV)*

AGYW = adolescent girls and young women; ANC = antenatal care; ART = antiretroviral treatment; EID = early infant diagnosis; Gen pop = general population; KP = key populations; OST = opioid substitution therapy; PLHIV = people living with HIV; PMTCT = prevention of mother-to-child transmission; PrEP = pre-exposure prophylaxis; PWID = people who inject drugs; SRH = sexual and reproductive health; TB = tuberculosis; TPT = tuberculosis preventive treatment; VL = viral load

[1] Standard disaggregation by age, gender and key population status are recommended for these priority indicators to ensure that the way HIV services are delivered meets the needs of different subpopulations. See section 2.4.2 for details on disaggregation.

* Indicates indicator is exclusively survey-based

The recommendations in this guideline include which indicators should be considered for the national core and national priority tiers. Standardized definitions and references are presented to ensure comparability with other global HIV M&E frameworks, including UNAIDS Global AIDS Monitoring (GAM), Global Fund Modular Framework (GF MF) and PEPFAR Monitoring, Evaluation and Reporting (MER) indicators. Such data standardization and alignment, the result of a participatory and representative consultation process, is essential in facilitating both the development of robust, interoperable health information systems and data use models at country level and in ensuring consistency and quality data for global monitoring by normative agencies, such as WHO and UNAIDS, as well as by key donor partner organizations. Web Annex B shows the overlap between national core (Top 15) and national priority (Top 40) indicators recommended in these guidelines and UNAIDS GAM, GF and PEPFAR MER.

2.2 Country customization of national core and priority indicators

Although countries are encouraged to consider including the recommended national core and priority tiers of indicators in their national M&E framework and HIS, in some settings a recommended indicator may have less relevance. For this reason for each programme area, the indicators recommended for the Top 40 are supplemented by a set of additional indicators that can be used to substitute for or supplement those in the recommended set.[2]

The listing of additional indicators, with corresponding detailed definitions and measurement methods, can be found in Web Annex C.

[2]. The list of additional indicators was vetted using a process like that used for core and priority indicators – specifically, the comparability of additional indicators to existing guidance and tools used by development partners and funders was assessed and aligned where possible. To the extent that the additional indicator listing represents a curated list of indicators, it may be useful for managers focused on a specific programme area who expect to make a more detailed assessment of programme performance in that area.

2.2.1 Criteria for selecting additional indicators

Countries with greater investments in specific programme areas or priority populations, and/or with more robust health information systems, can consider these additional indicators to refine their national priority sets. National programmes may choose to select additional indicators that:

- reflect more in-depth efforts to strengthen services in specific programme areas. These can include new initiatives, short-term bursts of effort (for example, rapid scale-up), additional funding or programmatic transitions. Important programming changes warrant additional indicators, even if their relevance is time-limited and they are dropped after specific milestones are achieved.
- come from periodic surveys, which are useful for comparing routine health information with population-based measurements.

As countries finalize their prioritized list, they may find that a more limited list of national indicators (that is, fewer than 40) is sufficient to track their progress toward the 95–95–95 targets and to conduct sound programme management. This may be particularly true if more robust disaggregations are selected. National priority indicators with low relevance to a specific country context can be removed without being replaced by another indicator; that is, there is no significance to having a prioritized indicator list that numbers 40 indicators. In principle, a smaller number of indicators, but with greater granularity for each indicator, is recommended. Countries with limited electronic HIS capacity may find that reporting aggregate data with appropriate disaggregates requires the same level of effort and resources needed for collection of a full additional indicator. Thus, countries may consider dropping a recommended national priority indicator in order to focus on deeper exploration, through disaggregation, of a more crucial indicator.

2.2.2 Differentiated programmes

Some programme areas and the corresponding recommended indicators are relevant to specific groups of countries and not to others. These include voluntary medical male circumcision (VMMC) for countries with high HIV prevalence and low male circumcision prevalence, high burden hepatitis B and C countries and countries with low coverage of safe injection or safe blood transfusion practices. In addition, high burden TB/HIV co-morbidity countries are encouraged to include a few additional indicators beyond the recommended Top 40. Section 3.9 describes indicators for these differentiated programme areas.

These programme areas are relevant to countries identified through pre-established criteria, as shown in Table 2.2.

Table 2.2 Indicators for differentiated use cases

Differentiated programme area	Criteria for relevance
Voluntary medical male circumcision (VMMC)	15 designated VMMC focus countries[1]
Hepatitis B virus (HBV) and hepatitis C virus (HCV)	HIV epidemic where a large proportion of PLHIV are people who inject drugs Prevalence of HCV infection >2% in the general population[2]
Injection safety	Low coverage/high priority[3]
Blood safety	Low coverage/high priority[4]
Tuberculosis (TB)/HIV	30 designated high burden TB/HIV countries[5]

PLHIV = people living with HIV

[1] Voluntary medical male circumcision for HIV prevention: Progress brief. Geneva: WHO; 2018. (https://www.who.int/hiv/pub/malecircumcision/vmmc-progress-brief-2018/en/).

[2] Hepatitis scorecard for the WHO Africa Region implementing the hepatitis elimination strategy [webpage] (https://www.afro.who.int/publications/hepatitis-scorecard-who-africa-region-implementing-hepatitis-elimination-strategy).

[3] Hayashi T, Hutin YJ-F, Bulterys M, Altaf A, Allegranzi B. Injection practices in 2011–2015: a review using data from the Demographic and Health Surveys (DHS). BMC Health Serv Res (27 August 2019) (https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-019-4366-9).

[4] Global status report on blood safety and availability, 2016. Geneva: WHO; 2017 (https://apps.who.int/iris/bitstream/handle/10665/254987/9789241565431-eng.pdf?sequence=1).

[5] TB high burden country list: https://www.who.int/tb/publications/global_report/high_tb_burdencountrylists2016-2020summary.pdf?ua=1. These country designations will be reviewed by WHO and may change for 2021–2025.

2.2.3 Assessing the balance of indicator sets

Once initial prioritization of indicators is completed, countries can assess the overall balance of indicators in terms of the following aspects:

- **Cascade services:** Indicators cover all stages of the cascade, including prevention.
- **National strategic plan priorities:** Indicators cover priority programme areas and the largest investments of the national strategy and budget are included.
- **Special populations relevant to the epidemic context:** Indicators include disaggregation by priority population or population-specific indicators that reflect the relative contribution of these groups to the epidemic and monitor the performance of programme services for those groups.
- **Data sources:** Indicators reflect a balance of routine facility/programme data with survey data to address the availability, representativeness and feasibility of collecting indicator data at all levels.

2.3 Important considerations in reporting and use of aggregate data

The reporting and use of aggregate routine facility data continue to comprise the major source of strategic information used to monitor the HIV response in the health sector. Understanding the strengths and limitations of this type of data is critical to their proper use and interpretation.

2.3.1 Appropriate denominators for coverage indicators

Different denominator definitions – population-based or programme-based – change the programme management questions that an indicator can answer.

Some of the recommended core and priority indicators include both a population-based and programme-based version of the denominator. Different denominator definitions change the programme management questions that an indicator can answer. Population-based denominators are used for indicators measuring what impact the programme is having on the trajectory of the epidemic. The foundation of the result chain lies in an accurate assessment of the state of the epidemic[1] and the determination of who and how many need prevention, testing and treatment services, including those not accessing services. The full population serves as the denominator of the main measures of population-based service coverage assessed along the HIV cascade, which gauge global and national progress towards the 95–95–95 targets.

In contrast, indicators using programme-based denominators reflect how programmes are planned and resourced, assessing how well programmes serve the people who are accessing them (for example, ART coverage, viral load suppression (VLS)) or the number of beneficiaries for whom resources have been budgeted. A programme-based denominator helps managers identify whether resources are being used efficiently.

For example, a population-based denominator for ART coverage in PMTCT services would use the estimated number of pregnant women living with HIV in the population as the denominator, while a programme-based denominator would count only the number of pregnant women who had been diagnosed with HIV during ANC or who already knew their HIV status.

Because the differences between the population-based and programme-based denominators can be large, the interpretation of any indicator must explicitly consider and report the type of denominator being used. In the example above, use of the programme-based denominator risks missing the need to ensure that ANC and HIV testing and treatment services are available to all pregnant women living with HIV, not just to those who report knowing their HIV status or who test positive during pregnancy.

The methods used to generate either a population-based denominator or a programme-based denominator vary. Many population-based denominators (for example, estimated number of people living with HIV) require epidemic modelling (for example, via Spectrum AIM software; see section 2.3.2). In contrast, programme-based denominators come from routine facility counts of those accessing a point of entry to services (for example, number of registered people who inject drugs, number who test positive for HIV, number who attend ANC) or survey data to estimate those using services (for example, estimated percentage of women giving birth

[1] Rice B, Sanchez T, Baral S, Mee, P; Sabin, K; Garcia-Calleja, JM et al. Know your epidemic, strengthen your response: developing a new HIV surveillance architecture to guide HIV resource allocation and target decisions. JMIR Public Health Surveill. 2018; 4(1):e18 (https://researchonline.lshtm.ac.uk/4646692/1/Know%20Your%20Epidemic%2C%20Strengthen%20Your%20Response.pdf).

in facilities). Thus, while some indicators derived from programme-based denominators may be widely available, they may not provide managers with information about those in need but not already in contact with the health system.

Population-based denominators are, by definition, likely to be more representative of the population of interest than programme-based indicators, as the former include those who do not seek health services. However, subnational point estimates of coverage may entail large confidence bounds or require larger sample sizes for surveys and/or more resources for conducting surveys and doing subnational-level modelling. This may mean that precise population-based coverage estimates in all subnational areas are not feasible. Survey-based measures used for denominators of key population indicators have the additional challenge of being representative of a relatively few selected areas, which cannot be aggregated easily into a national-level measure.

2.3.2 Interpreting and using model-based denominators

Most calculations of population-based need (that is, how many people in each service target group) require epidemic models, created by software such as Spectrum AIM, to generate estimates of people living with HIV and subgroups of people living with HIV (Table 2.3, Fig. 2.3).

Table 2.3 Indicators requiring model- or population-based denominators

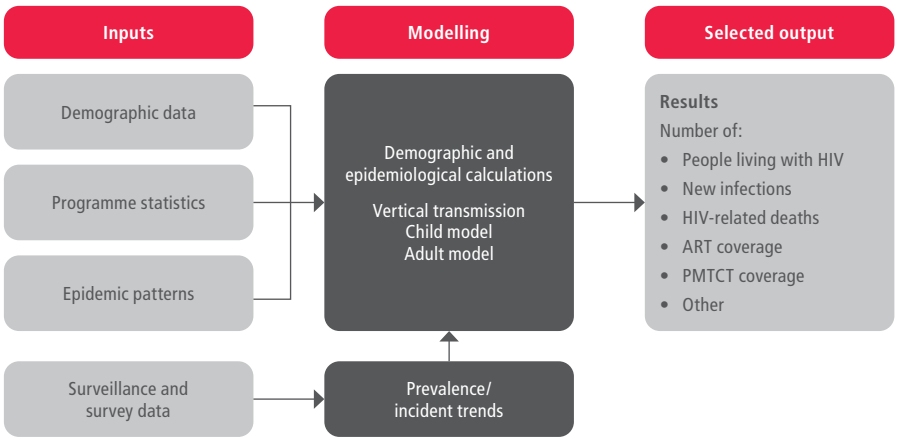
Indicator	Population-based denominator
TL.1 PLHIV who know their HIV status (1st 95)	Number of PLHIV
AV.1 PLHIV on ART[1]	Number of PLHIV
VT.2 EID coverage	Number of HIV-positive pregnant women who delivered during the reporting period
VT.3 Infant ARV prophylaxis coverage	Number of HIV-positive pregnant women who delivered in the past 12 months
VT.4 ART coverage in pregnant women	Number of HIV-positive pregnant women who delivered during the reporting period
VT.6 Final outcome of PMTCT	Number of HIV-positive pregnant women who delivered in the past 18 months (or 24 months in breastfeeding settings)

ART = antiretroviral treatment; HTS = HIV testing services; PLHIV = people living with HIV; PMTCT = prevention of mother-to-child transmission

[1] In the previous issuance of these guidelines, several indicators required an estimate of those eligible for ART separate from the estimated number of PLHIV. In the era of "Treat All" treatment eligibility, this distinction becomes moot, and the relevant estimate is simply the number of PLHIV. This evolution in indicator definitions also applies to other subpopulations, including HIV-positive pregnant women and the ART regimen they should initiate once diagnosed.

The Spectrum AIM modelling tool generates HIV estimates across various countries, using a standardized approach.[1] Modelled estimates are required because it is impossible to count the exact number of people living with HIV, people newly infected with HIV or people who have died from AIDS-related causes in any country. Doing so would require regularly testing every person for HIV and investigating all deaths, which is logistically impossible and ethically problematic. Modelled estimates – and the lower and upper bounds around these estimates – provide a scientifically appropriate way to describe HIV epidemic levels and trends.

Fig. 2.3 Use of models for HIV strategic information



[A]RT = antiretroviral treatment; PMTCT = prevention of mother-to-child transmission

2.3.3 Denominators based on key population size

For key populations, HIV cascades using routine facility data require estimating the population sizes of different key population groups as the denominator for both prevention and testing coverage, as well as for treatment and VLS, where possible. Various approaches to estimating the size of key populations in local areas have been described in global guidance documents.[2]

Once size estimates for key populations in specific local areas have been collected, countries often extrapolate these results to obtain size estimates for larger geographic areas, including the national level. These extrapolations form the basis for budget allocation and target setting. However, because these methodologies come with wide margins of error, the limitations of using these data as population-based denominators should be considered in the interpretation and use of the indicator.

[1] An overview of Spectrum and selected journal articles describing the Spectrum AIDS Impact Model (AIM), including methods and assumptions for generating estimates, can be found at: https://www.unaids.org/en/dataanalysis/knowyourresponse/HIVdata_estimates and http://www.epidem.org/publications.

[2] UNAIDS/WHO Working Group on Global HIV/AIDS and STI Surveillance. Guidelines on estimating the size of populations most at risk to HIV. Geneva: WHO; 2010 (http://data.unaids.org/pub/manual/2010/guidelines_popnestimationsize_en.pdf).

Treatment and viral suppression indicators require the estimated number of people living with HIV who are also part of key population groups. Such estimates may be derived through epidemic modelling or through approximate calculations combining population size estimates (PSE) and HIV prevalence data.

While programme-based denominators for key population service coverage also rely on certain types of PSE, they are often limited to the number of people from key populations registered with the service provider or who have received services from the implementer in the past. The limitations of these denominators relate to high mobility among key population beneficiaries and some people's desire to keep their membership in a key population hidden, which can result in an unknown mix of double counting some subgroups and undercounting others in the estimate of programme-based denominators.

2.3.4 Time periods for indicator definitions

Time is a fundamental aspect of interpreting an indicator. For example, assessing performance of an HIV testing programme based on the number of HIV tests conducted in a given reporting period may be different if the reporting period is a month, a quarter or a year. When possible, the priority indicators use an unspecified reporting period and can be calculated over different periods of time to answer programme management questions at different levels. Some indicators have specific reporting periods (for example, in the last 12 months) that are important because they reflect recommended service delivery guidelines or the way that the indicator is collected. For example, most of the survey-based indicators specify a time period to balance accurate recall and a sufficient period of time for accessing services (for example, individuals may not seek HIV testing services more than once a year).

In addition to the reporting period, many indicators have other time elements to consider. These types of indicators track patient/client service utilization over a period of time. For example, whether a second VL test was conducted *within 6 months* of an initial VL result of >1000 copies/mL; and whether HIV-exposed infants received a virological test *within 2 months* of birth. For these indicators, aggregate data collection and reporting may be challenging and require special paper-based forms and registers or digital systems that can track information for the same patient over time.

2.4 Data disaggregation to improve programming

2.4.1 Why disaggregate?

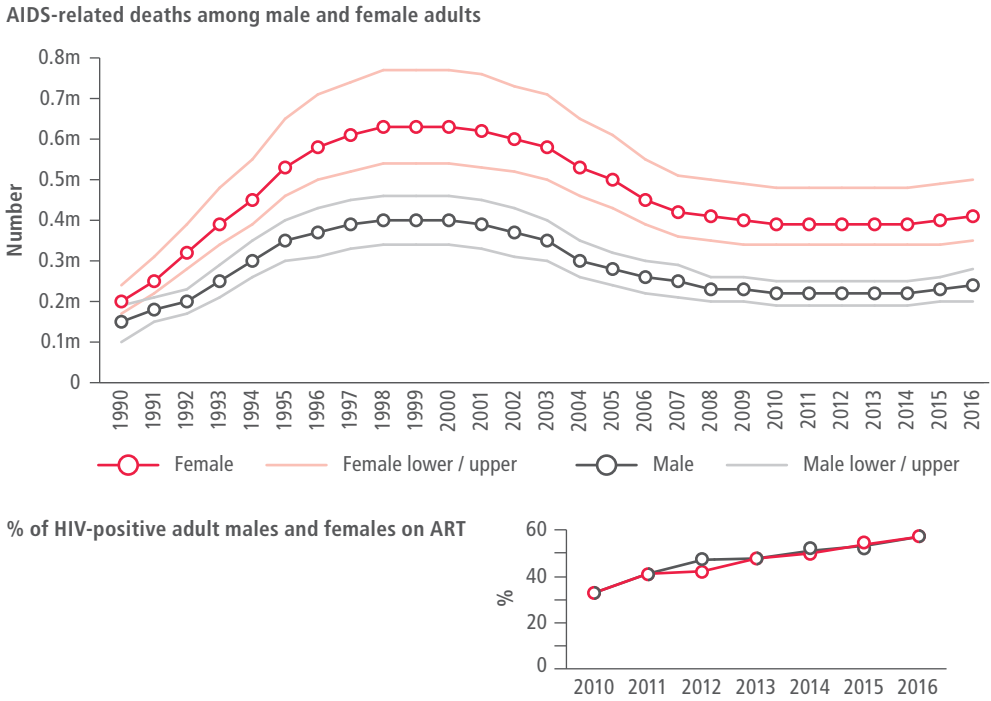
The fastest way to achieve overall programme targets lies in closing the gap of the most underserved groups. Disaggregation makes it possible to identify these groups.

A core component of cascade analysis – of both aggregate and individual-level data – is the disaggregation of indicators by specific geographic and sociodemographic subpopulations or important patient subgroups. This type of analysis enables managers to address issues of both programme performance and equity in terms of access and service quality. In the interest of improving programme performance, the fastest way to achieve overall programme targets lies in identifying and closing the gap of the most underserved groups.[1]

[1] Watkins K. The power of convergence: eliminating unfair inequalities in child survival (blog entry) (http://blogs.worldbank.org/health/power-convergence-eliminating-unfair-inequalities-child-survival). Wagstaff A, Bredenkamp C, Buisman LR. Progress on global health goals: Are the poor being left behind? The World Bank Research Observer. August 2014;29(2):137–162 (https://academic.oup.com/wbro/article-abstract/29/2/137/1632142?redirectedFrom=fulltext).

Disaggregated analysis enables the identification of these groups, as defined by age, gender and geographic characteristics (Fig. 2.4). From both programme effectiveness and equity perspectives, it is important that countries commit to services reaching all people in need and to leaving no one behind. Routine assessment of equity in service delivery and quality across groups is fundamental to honouring those commitments.

Fig. 2.4 Example of closing the gender gap in AIDS-related mortality coincident with achieving gender equity of ART coverage: Ethiopia 1990–2016



Source: Girum T, Wasie A, Lentiro K, Muktar E, Shumbej T, Difer M et al. Gender disparity in epidemiological trend of HIV/AIDS infection and treatment in Ethiopia. Arch Public Health. 2018. 75:51 (https://archpublichealth.biomedcentral.com/articles/10.1186/s13690-018-0299–8).

Defining equity

WHO defines the concept of equity as *"the absence of unfair and avoidable or remediable differences in health among populations or groups defined socially, economically, demographically or geographically"*.[1,2] Health equity is an ethical principle founded on basic notions of fairness and distributive justice. The concept is closely related to the human rights principle of equal opportunity for all people to be healthy. It also has important implications for achieving HIV elimination and universal health coverage goals.

[1] Health systems: equity. Geneva: World Health Organization; 2014 [webpage] (http://www.who.int/healthsystems/topics/equity/en/).

[2] WHO health equity assessment tool [webpage] (https://www.who.int/gho/health_equity/assessment_toolkit/en/).

2.4.2 How to disaggregate reported indicators

The subpopulations benefiting from disaggregated analysis include those defined by geography (for example, region/province, district/county, facility) age, gender, key population and important groups that require differentiated patient management or services, for example, pregnant women, TB/HIV patients (Fig. 2.5).[1]

Fig. 2.5 Main types of disaggregation

Geography	Gender	Age	Priority populations	Disease status/ treatment status	Facility type/ service modality
• Region • District • Facility	• Female • Male • Transgender (TG)	**Level 1:** 0–4, 5–9, 10–14, 15–19, 20–24, 25–29, 30–34, 35–39, 40–44, 45–49, 50+ **Level 2:** 0–4, 5–9, 10–14, 15–19, 20–24, 25–49, 50+ **Level 3:** <15, 15+ or <25, 25+	• Key populations (MSM, SW, PWID, TG, prisoners) • TB (presumptive, confirmed) • Pregnant and/or breastfeeding women	• Test result (positive, negative, indeterminate) or (already knew status, newly diagnosed, negative) • Viral suppression • Time since ART initiation	• Community-based • Facility-based

ART = antiretroviral treatment; MSM = men who have sex with men; PWID = people who inject drugs; SW = sex workers; TB = tuberculosis; TG = transgender

Because most reporting is done by service area or facility, the most basic type of disaggregation is geographic. Disaggregation by specific subnational areas enables managers to better understand the epidemic and to focus services more effectively. Location information can reveal possible differences in access to and use of services affecting certain populations or environments (for example, rural, urban or suburban), thereby drawing attention to underserved communities. Conversely, finding better programme performance in particular locations could spotlight innovative prevention, care and treatment activities that the entire programme could learn from.

Disaggregation by age helps managers identify bottlenecks in service quality and uptake that affect children and adolescents differently from adult patients, as well as barriers to health seeking or adherence that vary by age. In this guideline gender is a standard disaggregation variable for any indicator not already explicitly specifying gender.[2] The standard disaggregation should assess differences by male and female. In addition, gender should include a transgender or alternative category other than female and male. It should be noted that transgender people are included both as a category for gender and as a key population subgroup. This repetition is purposeful and intended to increase the monitoring of programmes providing services to this community.

[1] Other populations of interest may include migrant workers, refugees, long-distance drivers, military personnel and miners or people living with disabilities and people with concurrent chronic illnesses; these and other groups should be considered in M&E plans as relevant to the context, although they are not systematically listed in this guide. See: The GAP Report 2014: Migrants. Geneva: Joint United Nations Programme on HIV/AIDS; 2014 (http://www.unaids.org/en/media/unaids/contentassets/documents/unaidspublication/2014/gapreport12pops/04_Migrants.pdf).

[2] Indicators that explicitly specify gender include those for ANC attendees, pregnant and breastfeeding women, adolescent girls and young women, men who have sex with men, transgender people and STI indicators specific to adult males or females living with HIV.

As shown in Fig 2.5, generally three levels of age disaggregation are applied to different indicators in the recommended Top 40:

- Level 1 consists of 11 age categories.
- Level 2 consists of seven age categories.
- Level 3 consists of two categories.

The level of age disaggregation recommended for each indicator depends on both the source of the data and the expected utility of greater disaggregation in identifying patient groups that require more attention. In previous guidance programme-based indicators for the general population used a <15, 15+ year categories at a minimum to distinguish between paediatric and adult patient populations. However, disaggregation into finer age bands is now both more feasible and more necessary, enabling better appreciation of children and adolescents as distinct populations.[1] Finer age disaggregation is more feasible due to the expansion of digital platforms for individual-level tracking, including in low- and middle-income countries. Also, the reduction in the number of recommended priority indicators makes room for greater focus on age differences. At the same time, the strategic information needs of countries are more advanced as they strive to attain the 95–95–95 goals. For example, Spectrum AIM-modelled estimates of the number of people living with HIV, which form the base of many cascade indicator denominators, are now produced in finer age bands. The strong WHO recommendation to disaggregate and analyse the priority indicators by child and adolescent age groups is consistent with guidance from GAM and development partners such as GFATM and PEPFAR.

For a majority of indicators collected through routine facility data, the recommended age disaggregation is Level 2: 0–4, 5–9, 10–14, 15–19, 20–24, 25–49, 50+ years. For select testing/linkage, ART and VL indicators, the recommended age disaggregation is Level 1. Again, this is based on (1) the increased availability of individual-level data for these indicators and (2) the increasing need for higher-resolution data to identify variability in service access and quality as countries progress towards impact targets. Finally, for monitoring and strengthening PMTCT services, a number of vertical transmission-specific indicators use more specific age bands in their definitions; for example, early infant diagnosis looks at 0–2 month and 2–12 month age groups, while ARV coverage during the breastfeeding period defines the risk period as up to 18 or 24 months after birth, reflecting the average duration of breastfeeding in different countries.

For survey-based indicators, sample size constraints, especially for younger age groups, may limit the feasibility of more than Level 3 age disaggregation.[2] This is especially true for key population surveys, which generally include fewer than 400 respondents per survey site and/or have an eligibility criterion of being 18 years old or older.

Indicators for **priority populations** (key populations, adolescent girls and young women (AGYW), pregnant women, TB patients) come in two forms:

A. as population-specific indicators reflecting services using modes of delivery specific to the needs of that population, for example, Coverage of HIV prevention (KP) (KP.1) applies only to key populations;[3]

[1] In countries with individual-level data, which offer relative analytic ease and flexibility, continuous variables such as age should ideally be assessed in a manner customized to country-specific context rather than according to pre-determined age bands. This may be particularly relevant in the 50+ group, given increased life expectancy and noncommunicable disease prevalence in older populations.

[2] Countries that have the resources to conduct PHIA among those 0–14 years old will have sufficient statistical power to analyse the data by <15 and 15–24 age groups as well as the <25 and 25+ age groups.

[3] A selected number of key population indicators are also prioritized for prisoner populations. However, due the differences in how data are collected in prison settings, separate indicators for prison-related programming have been specified, rather than treated as a disaggregation of key populations.

B. as priority population disaggregates of indicators that include general population beneficiaries, for example, People living with HIV on ART (AV.1) includes key populations as a priority disaggregation variable.

Due to the importance of key populations as groups facing disproportionate stigma and discrimination as well as other challenges in accessing services (for example, challenges related to mobility, socioeconomic status), almost all of the Top 40 indicators include key populations as a priority disaggregation variable. It is also important that, when key population data are reported as a priority population disaggregate, data are reported separately for sex workers (male, female and transgender), men who have sex with men, people who inject drugs and transgender groups.

Almost all of the Top 40 indicators include key populations as a priority disaggregation variable.

Consistent disaggregation

Maintaining consistency of disaggregation categories across different indicators – for example, testing, linkage of new diagnoses to ART, ART retention, VL suppression – is critical for effective cascade analysis. For example, if VL suppression were disaggregated for key populations but VL testing coverage were not, interpreting VL suppression levels would require strong assumptions that key population members access VL testing at a similar level to that of the general population. Consistency of disaggregation categories across indicators also helps to streamline the process and improve the accuracy of recording data onto forms.

Countries must also consider how to analyse data by multiple disaggregation variables simultaneously. The most common form of this type of cross-tabulation is by age and gender. For example, assessing the uptake and quality of HIV-related services addressed to adolescent girls and young women requires disaggregation of the priority indicators by age and gender simultaneously. Similarly, disaggregation of service indicators for key populations may benefit from cross-tabulations by age, due to the differences in both risk and health-seeking behaviour between younger and older members of key populations. When and where to conduct multivariate disaggregated analysis depends on the capacity of the electronic information system as well as whether there is a sufficient number of beneficiaries for meaningful analysis.

2.4.3 Additional considerations for disaggregating data

The degree of disaggregation applied to each indicator depends on the local situation: the specific objective of the enquiry (what the programme needs to address) as well as the feasibility and cost of the data collection and analysis involved. Patient-level electronic health information systems are much more flexible in how data can be analysed by subgroup without requiring significant added effort for the collation/reporting process. In contrast, aggregate data systems rely on paper-based systems for collecting and collating data that are then entered into electronic data systems. Disaggregation of data routinely collected through paper-based systems requires more effort, and the necessity and utility of fine-level age disaggregation or multivariate disaggregation should be considered carefully. It is generally easier to aggregate from individual-level data than to disaggregate from aggregate data sources.

In the contexts of paper-based aggregate systems, selection of a few critical indicators with more disaggregation may be the most effective approach for programme management. The better functioning facilities or those using individual-level electronic health information systems should conduct analyses that use more or finer levels of disaggregation, even as facilities with fewer resources continue to use paper-based record-keeping. In this type of multi-tier system, the finer disaggregation categories used by selected facilities must be compatible with the broader categories used by lower-resource facilities so that comprehensive analysis of data at regional or national levels is possible.

Special consideration should also be given to the methods for collecting and analysing disaggregated data by key population status due to the potential for stigma and discrimination against these groups in healthcare settings as well as the discomfort that members of key populations may have in being easily identified. For this reason the person-centred HIV patient monitoring and case surveillance guidelines discourage recording of key population status in patient monitoring tools (for example, registers and log books) used in general population facilities. Mechanisms can be adopted to ensure that key population status is linked to patient records only for data analysis. In the absence of this level of data security, disaggregating the priority indicators by key populations will be limited to facilities that offer services specifically for key populations.

Finally, the dissemination of geographically disaggregated data through maps, in particular, requires special precautions for small population sizes. For example, identifying numbers or sociodemographic characteristics of people living with HIV or key population members in localized areas may result in breaches of confidentiality or have an adverse effect on individuals and groups in settings with high stigma, discrimination and/or criminalization.

2.5 Strengthening the sources of strategic information

Once the priority national indicator sets have been selected, national programmes can focus their efforts on strengthening the data systems and data sources that generate the data needed for the selected indicators. This section discusses three issues relevant to data sources and support systems that are most pertinent to the recommended Top 40 indicators.

1. **Integrating HIV strategic information into the broader national HIS:** For sustainability the strategic information system of the health sector response to HIV must align with the broader HIS as part of an integrated architecture. Guidance for national HIS standards, guidelines and tools are available to support development of appropriate HIS and digital health policies, guidelines, strategic plans and roadmaps, including maturity models for system interoperability.[1,2]

2. **Analysing data from multiple data sources:** Most countries manage a complex system of individual patient-level data and/or aggregated data. Patient information systems typically interface (directly, via interoperability, or indirectly, via manual data transfer) with laboratory and pharmacy routine information systems to more efficiently capture essential information for use in routine cascade analyses as well as in data validation/quality assessments. These variations and complexities in data systems are the result of differences in local infrastructure capacity, digital health leadership and planning and the resources invested in building and maintaining systems. Making these disparate ways of reporting coherent is critical to the ability to make a comprehensive assessment of programme performance via routine cascade data reviews.

[1] HIS stages of continuous improvement toolkit [webpage]. Measure Evaluation (https://www.measureevaluation.org/his-strengthening-resource-center/his-stages-of-continuous-improvement-toolkit).

[2] Measure Evaluation HIS interoperability maturity toolkit [webpage]. Measure Evaluation (https://www.measureevaluation.org/resources/tools/health-information-systems-interoperability-toolkit).

3. **Developing a "zero-based" data use plan:** The national M&E plan or framework for HIV should incorporate data from multiple sources with uses at different management levels. Most core data elements in primary data collection tools have multiple uses (for example, for aspects of patient care and monitoring, programme management and programme monitoring). A schematic that maps the critical data elements, sources, users and purposes of use can help managers ensure that the right data are available at the right frequency and at the right management levels to support data-driven decision-making. All data should have a clear utility. In considering application of these guidelines, countries are encouraged to use a "zero-based" data use plan, that is, to review and reassess every aspect of their current national metadata, as reflected in paper and electronic tools, against current and anticipated data needs moving towards 2025 and 2030 targets. In other words, do not assume that indicators should continue to be collected and reported just because they were in the past.

Do not assume that indicators should continue to be collected and reported just because they were in the past.

2.5.1 Types of data sources

Among the recommended Top 40 and additional indicators, the most common sources of data are:

- routine HIS, which provide a relatively complete, ongoing flow of real-time information about those receiving services, derived from individual-level data systems;
- probability-based surveys of key populations and households, conducted only periodically but offering a broader and representative cross-section of the population, both patients and others, and able to assess correlates of service use, behaviours and biomarkers and to track trends over time.

In addition, indicators in this recommended set include data elements that rely on health facility assessments to gauge service availability and vital registration systems to provide basic data on births and deaths. Drug resistance surveys specify a different type of indicator and are recommended periodically to monitor the effectiveness of first-line ARVs and the prevalence of resistance among treatment failures.

As countries plan investments in their data systems, it is important to take into account the strengths and limitations of each data source with respect to the interpretation and use of the information generated.

2.5.2 Use and interpretation of routine facility data

Routine facility data, sometimes referred to as programme data, constitute a critical data source for tracking the delivery of cascade services. Understanding the strengths and limitations of the available data can improve the interpretation and use of these data by programme managers.

An often-cited general limitation of routine facility data relates to the overall quality and reliability of the data reported. Due to the high work burden on service providers and clerical staff to collect and collate routine data, lapses in completeness, timeliness and accuracy can occur. For example, failure of some facilities to report consistently may appear as drops in programme coverage, but they do not reflect actual utilization levels. Many countries have limited resources to invest in infrastructure or human resource capacity to ensure high quality data. At the very least, the assessment of data quality (particularly for completeness and identification of outliers) must be integrated into the steps used to analyse routine facility data. See Section 2.6 for more resources on implementing data quality reviews and assessments.

Ideally, coverage indicators would reflect the experience or status of individuals (for example, the number of people tested rather than the number of tests processed). With aggregate or cross-sectional routine facility data, there is a risk of counting individuals multiple times if they receive the same services multiple times in a reporting period.[1] Separate assessments conducted on a sample basis – for example, a client survey to measure the proportion of people tested multiple times in a reporting period – can help to correct for this limitation. Given the specific service delivery models often used for key populations, combinations of facility- and community-based data are often required and utilized to support programme monitoring and management functions.

As countries expand the use of patient-level data systems for routine facility data collection, the application of robust, user-acceptable UIS enables the robust calculation of indicators with de-duplicated patient records. For example, UIS enables comprehensive ART retention analyses that can take into account unofficial "silent" transfers from one facility to another. Several resources have been developed to share the experience that countries have gained with UIS in terms of effectiveness in deduplication, feasibility and social acceptability.[2,3]

2.5.3 Inclusion of community-based service data

Although a majority of routine HIS are based at health facilities, effective programme monitoring and programme management also require data from community-based services. Thus, data systems increasingly must be able to capture and integrate data on the delivery of community-based services, delivered via mobile or satellite clinics and often by peer or outreach workers. Community-based services are particularly important for members of higher risk populations who may not otherwise seek services at health facilities. Consequently, large gaps in understanding the coverage and quality of service delivery to these populations will exist unless routine HIS incorporate community-based services.

Special considerations for ensuring more complete monitoring of community-based service monitoring include:

- Where NGOs are the dominant provider of community-based services, coordinating the data systems of NGOs with public sector systems is important. This includes clarifying the ownership of such data and agreeing measures to ensure data security and protection of confidentiality for patients. (See Section 2.5.6 on ethical considerations for health information systems.)
- Strategic linking of the UIS used for prevention and diagnostic services provided in community-based settings to the UIS used for diagnostic and treatment services provided in facilities.

Large gaps in understanding service delivery to key populations will exist unless routine HIS incorporate community-based services.

[1] For feasibility reasons, the HIV testing services (HTS) volume and positivity indicators explicitly count "tests" rather than "individuals" and must be interpreted with this limitation in mind.

[2] Resources for UIS include: Digital identity roadmap guide. Geneva: International Telecommunication Union; 2018 (https://www.itu.int/en/ITU-D/ICT-Applications/Documents/Guides/ITU_eID4D_DIGITAL%20IDENTITY_ROAD_MAP_GUIDE_FINAL_Under%20Review_Until-05-10-2018.pdf); ID4D Practitioner' Guide: Version 1.0 (October 2019). Washington, DC: World Bank; 2019 (http://documents.worldbank.org/curated/en/248371559325561562/pdf/ID4D-Practitioner-Guide-Draft-for-Consultation.pdf); WHO guideline: recommendations on digital interventions for health system strengthening. Geneva: WHO; 2019 (https://apps.who.int/iris/bitstream/handle/10665/311941/9789241550505-eng.pdf?ua=1).

[3] A framework for identity management – Part 1: Terminology and concepts. Geneva: International Organization for Standardization; 2019 (https://www.iso.org/obp/ui/#iso:std:iso-iec:24760:-1:ed-2:v1:en).

- Avoiding double counting of services reported through community-based services and facility-based services, to the extent that patients are referred from community-based services to facilities for follow-up and/or confirmation.
- Ensuring community engagement regarding the linkage of community- and facility-based data systems in populations that are sensitive about stigma and discrimination at health facilities.[1]

2.5.4 More effective use of population-based survey data

There are numerous guidance documents describing the proper design, sampling, data collection and analysis of population-based surveys among both the general population (for example, Demographic and Health Surveys (DHS), AIDS Indicator Survey (AIS), population-based HIV impact assessment (PHIA), HIV Drug Resistance (HIVDR) survey)[2] and of key populations at higher risk of HIV (that is, bio-behavioural surveys (BBS) and behavioural surveillance surveys (BSS)[3] or people living with HIV (for example, the PLHIV Stigma Index[4]). Many of these guidelines address population-based surveys as a surveillance tool, that is, measuring prevalence of disease, key risk behaviours and attitudes related to stigma and discrimination as well as health services use and coverage. Increasingly, biomarkers collected by these surveys can be used to estimate incidence and VLS or CD4 count.

Key considerations when using indicators from population-based surveys to assess and improve service delivery include the following:

- Population-based surveys, designed to provide rigorous, probability-based samples, can be resource-intensive, usually are implemented only periodically and usually cannot be disaggregated down to fine geographic levels. Managers and stakeholders may rely on the more frequent and granular data coming from routine HIS and use population-based survey data to periodically calibrate and assess the representativeness of findings from routine facility systems.
- Survey data have uncertainty bounds, which should be considered when using results to assess performance. When using survey data to compare performance against targets or judge the relative performance of two areas, overlapping uncertainty bounds should push managers to weigh other evidence of performance (for example, consistent performance over time, performance in related areas, related measures of service quality).

---

[1] Tool to set and monitor targets for HIV prevention, diagnosis, treatment and care for key populations: Supplement to the 2014 consolidated guidelines for HIV prevention, diagnosis, treatment and care for key populations. Geneva: WHO; 2015 (https://www.who.int/hiv/pub/toolkits/kpp-monitoring-tools/en/).

[2] On conducting general population surveys:

- Demographic and Health Surveys: The DHS Program. What we do: DHS overview [webpage] (http://www.measuredhs.com/What-We-Do/Survey-Types/DHS.cfm).
- AIDS Indicator Surveys: The DHS Program. What we do: AIS overview [webpage] (http://www.measuredhs.com/What-We-Do/Survey-Types/AIS.cfm).
- Population HIV Impact Assessment: PHIA Project [webpage] (https://phia.icap.columbia.edu).

On using general population surveys to monitor the HIV epidemic:

- UNAIDS/WHO Working Group on Global HIV/AIDS and STI Surveillance. Guidelines for measuring national HIV prevalence in population-based surveys. Geneva: UNAIDS/WHO; 2005 (http://www.who.int/hiv/pub/surveillance/measuring/en/index.html).
- UNAIDS/WHO Working Group on Global HIV/AIDS and STI Surveillance. Technical guidance note: HIV prevalence measurement in national household surveys for countries with low HIV prevalence. Geneva: UNAIDS/WHO; 2010 (http://www.unaids.org/en/media/unaids/contentassets/documents/epidemiology/20101207_HIVtesting_in_surveys_WG_en.pdf).

[3] Global HIV Strategic Information Working Group. Biobehavioral survey guidelines for populations at risk for HIV. Geneva: WHO; 2017 (https://www.who.int/hiv/pub/guidelines/biobehavioral-hiv-survey/en/).

Guidance note: HIV surveillance options for key and vulnerable populations in Global Fund grants (2017). Geneva: The Global Fund, 2017 (https://www.theglobalfund.org/media/6502/me_hivsurveillanceoptionskeyvulnerablepopulations_guidance_en.pdf?u=636917015860000000).

Toolbox for conducting integrated HIV bio-behavioural surveillance (IBBS) in key populations. (2014). San Francisco, University of California, San Francisco; 2014 (https://globalhealthsciences.ucsf.edu/sites/globalhealthsciences.ucsf.edu/files/ibbs-intro.pdf).

[4] See www.stigmaindex.org for more information on conducting such surveys.

- Probability surveys of key populations use special sampling methods to obtain more representative samples of marginalized, highly mobile individuals with a wide range of risk levels. Different sampling approaches result in representation of very different segments of the key population community. Efforts to generalize or aggregate key population survey results for national-level estimates should be done carefully and interpreted with these potential limitations in mind.
- Due to the complexity of sampling and the dependence on community engagement in conducting probability surveys of key populations, managers should ensure that the process of reviewing and interpreting results involves community stakeholders.
- Drug resistance surveys require systematic samples of patients on ART who provide specimens for HIV drug resistance testing. The most challenging aspect of conducting these surveys is the feasibility of assuring samples of ART patients across facility types and geographic areas are representative.

2.5.5 Optimizing the use of other data sources

A few key measures of programme performance require data from sources other than routine health information systems and probability surveys of the general population and key populations. This section provides resources for designing and strengthening these other data sources.

Health facility assessments monitor the capability of facilities to deliver care and their performance, including whether actual practice follows policies and protocols and whether the environment supports providers in providing high quality services. The indicators recommended in this guideline that are collected through these health facility surveys focus on the availability of different types of key HIV-related services. One of the major challenges to interpreting findings from facility assessments is understanding how well the sample reflects the range of facilities providing services. For example, private facilities are usually excluded, are under-sampled or have particularly low response rates; this should be taken into account when considering the generalizability of the facility survey results. General health facility survey tools include the Service Availability and Readiness Assessment (SARA), which has a module on HIV.[1]

Civil registration and vital statistics (CRVS) systems provide the data required for many of the vertical transmission indicators that estimate the number of births in the population as well as deaths and causes of death for the HIV-related mortality measure. The completeness and accuracy of vital registration data varies considerably among countries. The usability of CRVS data for monitoring the health sector response to HIV depends on strict compliance with reporting requirements; reporting both primary and underlying cause of death; confidentiality of the deceased and his or her family when reporting stigmatized causes of death such as HIV; and consistency, completeness and accuracy of civil registration across populations (for example, key populations and other marginalized populations) and geographic areas (for example, urban/rural).[2]

[1] Detailed guidance on the methodology and tools are available. See: Service Availability and Readiness Assessment (SARA): an annual monitoring system for service delivery. Implementation guide, Version 2.2. Geneva: WHO; 2015 (https://www.who.int/healthinfo/systems/sara_implementation_guide/en/).

[2] Tools for strengthening CRVS systems are available at: Strengthening CRVS for births, deaths and causes of death: resource kit. Geneva: WHO; 2012 (https://www.who.int/healthinfo/CRVS_ResourceKit_2012.pdf).

Other types of special studies using verbal autopsy provide additional data that may be helpful for estimating HIV-related mortality and adjusting for the bias in weak CRVS systems used for the HIV-related mortality measures.[1,2]

2.5.6 Ethical considerations for health information systems

Good data management includes developing effective processes for storing data securely, ensuring that data are used only for patient monitoring or programme monitoring, mitigating potential exposure to stigma and discrimination within health settings and not disclosing a person's HIV or key population status to others unless explicitly permitted by the patient.

As individual-level health information is increasingly used to monitor and evaluate service provision, countries must ensure and enforce strong protection of personally identifiable health information. This is particularly true for information systems that depend on regular transmission to and/or storage in remote servers or on hardware that is also used for regular communications, such as e-mail, that are prone to hacking, malware and other types of cyber-attacks.

Resources from UNAIDS for addressing data confidentiality and security include:

- The privacy, confidentiality and security assessment tool: protecting personal health information (2019); and
- The privacy, confidentiality and security assessment tool: user guide (2019).[3]

Data security is especially important for people living with HIV and members of key populations, who often face significant stigma and discrimination in health facilities. Poor data security practices and distrust of the system not only endanger patient privacy but also may lead to a decline in use of services by marginalized and vulnerable populations.

For these reasons WHO's 2017 patient-centred monitoring guidelines recommended that information about key population status should NOT be kept in registers or reported up to subnational or national data management units as individual-level records. Instead, these types of characteristics should be linked to patient records only as coded data accessible to those with specific authorization. General data security measures to safeguard patient-level data include encryption, password-protected access and system protections against server breaches and other forms of malware.[4]

[1] Verbal autopsy standards: ascertaining and attributing causes of death. The 2016 WHO verbal autopsy instrument. Geneva: WHO; 2016 (https://www.who.int/healthinfo/statistics/verbalautopsystandards/en/).

[2] Bogoch I, Gomes M, Fuente-Soro L, Varo R, Naniche D, Sacoor C et al. Identifying HIV care continuum gaps with verbal autopsy. Lancet. 2018;5(2):PE65-E67 (https://www.thelancet.com/journals/lanhiv/article/PIIS2352-3018(18)30007-9/fulltext).

[3] Both available at: https://www.unaids.org/en/resources/documents/2019/confidentiality_security_assessment_tool.

[4] Consolidated guidelines on person-centred HIV patient monitoring and case surveillance. Geneva: WHO; 2017 (https://www.who.int/hiv/pub/guidelines/person-centred-hiv-monitoring-guidelines/en/).

2.6 Data quality review and assessment

Using data of unknown or low quality may result in flawed analysis and wrong decisions. A systems approach to improving data quality includes establishing a data quality review (DQR) process. Such a process will help countries be more confident that their data reflects the status of the populations served and the performance of their programmes.

Through a collaborative effort of WHO, the Global Fund and Gavi, a harmonized, health sector-wide framework for DQR was developed.[1] It is applicable from the level of health facilities up to the national level. The DQR framework complements systems in place for routine monitoring, supervision and evaluation of programmes. WHO guidelines recommend that DQR be integrated into HIS at the point of data entry and included in routine data reviews conducted at a national level at least annually. At the same time, these tools are flexible and can be adapted or used in different contexts and for different purposes.

The DQR framework focuses on the quality of selected core tracer indicators on maternal health, immunization, HIV and TB and across different dimensions of quality.[2] (Countries can also select other indicators or expand the set of indicators based on their needs and resources.) Its analysis looks at both programme-specific and systemic issues, and it quantifies problems related to data completeness, accuracy and external consistency.

The data quality dimensions included in the DQR are:

- Completeness and timeliness: whether data reported through the system are available and on time, enabling the complete calculation of indicators.
- Internal consistency of reported data: the plausibility of reported data compared with historical values of the same indicators or an expected relationship between those two indicators. This dimension also considers reporting accuracy compared with source documents in health facilities.
- External consistency with other data sources: the level of agreement between two sources of data measuring the same health indicator.
- External comparisons of population data: the adequacy of the population data used in the calculation of health indicator denominators, such as for the calculation of a rate or proportion.

In addition to periodic data quality assessment (DQA) and DQR processes, front-end measures to design data collection forms and other tools can improve data quality and reduce the time spent by healthcare professionals and administrative staff on reporting tasks. Periodic review of these tools should ensure that they are consistent with current guidelines, indicator definitions and patient flow.

---

[1] The DQR methodology is available in a toolkit from WHO at: https://www.who.int/healthinfo/tools_data_analysis/en/.

[2] A range of tools for conducting data quality reviews (DQR) and data quality assessments (DQA) can be adapted for use in different contexts:

- The MEASURE Evaluation website compiles tools developed and used by multiple agencies for DQA of programme indicators, data audits and overall M&E system assessments, available at: http://www.cpc.unc.edu/measure/tools/monitoring-evaluation-systems/data-quality-assurance-tools.
- Haugen JA, Geir Hjemås G, Poppe O. Manual for the DHIS2 quality tool: Understanding the basics of improving data quality. Oslo: Statistics Norway; 2017 (https://pdfs.semanticscholar.org/e7ec/89e60ced5472568295a5e1d5c8ff36ac9f2b.pdf). This manual is applicable to countries that have the DHIS2 system as their routine health facility data system, and it illustrates a general approach for assessing data quality, which can be applied to other HIS platforms.

2.7 Evaluation and operational research

In addition to routine programme data, programmes need regular evaluations and a system for conducting operational research to learn from implementation and answer complex questions or to test new approaches in service delivery. Evaluation, operational research and implementation science employ research methods to address such questions, which complement routine data review as a data-driven approach to continuous quality improvement and service coverage.

Definitions

Evaluation is intended to guide decisions about a programme, project or policy at different levels:

- *Impact evaluation* assesses the true impact of a programme, project or policy by comparing what actually happened with what would have happened in the absence of the intervention.
- *Process evaluation* assesses how programme outcomes and impacts were achieved and describes the challenges and successes in implementation.
- *Formative evaluation* assesses what is and what is not working about service delivery.
- *Summative evaluation* informs decisions about whether to continue, terminate, replicate or scale up a programme.

Operational research assesses the effects of changes that are under the control of programme managers, such as improving the quality of services, increasing training and supervision of staff members and adding new service components.

Implementation science investigates and addresses obstacles and bottlenecks in the social, behavioural, economic and management spheres that hinder effective implementation.[1]

[1] Implementation research in health: a practical guide. Geneva: World Health Organization; 2013 (https://www.who.int/alliance-hpsr/resources/implementationresearchguide/en/).

Since resources are limited, it is crucial to focus investment on programmes and services that are appropriate to needs, can be well-implemented and are effective and efficient. By establishing and updating a regular evaluation agenda, countries can stay focused on primary programme priorities and the most severe bottle-necks associated with implementation. Research and evaluation studies should be planned and managed as discrete projects with formal processes and oversight. The evaluation and research agenda should also consider feasibility, that is, what data are already available so that evaluation design can focus on checking information and filling gaps rather than gathering redundant data. Sound design and management of evaluation and operational research require technical expertise to ensure that the approach is tailored to the needs of the specific country and programme context. In practice, individual-level data are much better suited to addressing salient research questions than aggregate data.[2]

[2] Additional resources for conducting impact evaluation can be found in: Peersman G. Overview: data collection and analysis methods in impact evaluation. Methodological briefs: Impact evaluation 10. Florence: UNICEF Office of Research; 2014 (https://www.unicef-irc.org/publications/755-overview-data-collection-and-analysis-methods-in-impact-evaluation-methodological.html).

RECOMMENDED INDICATORS: NATIONAL CORE AND PRIORITY

3

PART 3 RECOMMENDED INDICATORS: NATIONAL CORE AND PRIORITY

Part 3 details the recommended national core and priority indicators, organized by programme area. This includes discussion of the programmatic context and key considerations for collecting and using the indicator data. For key populations, paediatric and adolescent girls and young women, the indicators span the cascade from prevention to testing, treatment and VLS; for this reason the relevant set of indicators is organized by population (see Section 3.8). These sections include indicators that are population-specific (for example, Coverage of HIV prevention (KP) (KP.1) as well as indicators that should involve a priority disaggregation category for that population.

In the tables that follow, designations of indicators, alignment with partners' indicators and partner designations are as follows:

(NEW) – Indicator is new, not included in the 2015 *Consolidated strategic information guidelines*

Alignment categories

Consistent – Numerator and denominator definitions are the same.

Similar – Basic definitions are the same, but there are some differences in how the numerator or denominator is calculated.

Related – An indicator is reflected as only a numerator or denominator in other frameworks.

Partner designations

GAM = Global AIDS Monitoring indicators (v.2020)

GF = Global Fund to Fight AIDS, TB, and Malaria Modular Framework indicators (v.October 2019)

MER = United States President's Emergency Fund for AIDS Relief, Monitoring, Evaluation and Reporting indicators (v.2.4 FY20).

3.1 Reducing new infections

3.1.1 Condom use

Conceptual framework

Condom programming addresses both the demand and supply sides of increasing the use of male and female condoms. It encompasses creating a supportive social and political environment for condom use, promoting consistent and correct condom use among men, women and transgender individuals and ensuring the acceptability, availability and affordability of condoms and condom-compatible lubricants.

Condom promotion and mode of distribution vary according to the population addressed. For example, condom use in the general population or by clients of sex workers is often promoted through social marketing campaigns, which direct people to conventional retail outlets that sell condoms, often at subsidized prices. Other sales venues may be included, particularly when addressing adolescents or young people. Condoms for some key populations (men who have sex with men, sex workers, transgender populations) may be distributed either free or at a subsidized price at places where high-risk sex is solicited or takes place (for example, brothels, entertainment venues) or through peer outreach. Condoms are also distributed through health services, for example, in family planning, sexually transmitted infection (STI) and HIV services; to people who inject drugs, at needle–syringe services and opioid substitution therapy (OST) centres; and through workplace programmes.

It is essential to include condoms in service packages for key populations in all epidemics and to promote them vigorously to all audiences for HIV prevention in generalized epidemics. The health sector offers important venues for the promotion and distribution of condoms. Every contact with clients living with HIV or at risk of acquiring HIV or STIs is an opportunity to advocate condom use and to deliver these commodities, offering an ample supply, such as a presumed 3-month supply of 30 condoms.

> Every contact with clients living with HIV or at risk of HIV or STIs is an opportunity to advocate condom use and to provide condoms.

Strategic information for condom programming

The most basic measure of the effectiveness of condom programming is the percentage of people who use condoms, particularly during sex acts associated with greater risk. These types of measures are gathered through population-based behavioural surveys.

The selected indicator of Condom use (PR.1) addresses condom use during the last higher-risk sex act and applies to both the general population and key populations (Table 3.1). The indicator defines the relevant last sex act with different types of partners for different population groups. For example, last sex with a non-regular sexual partner among general population adults; last anal sex with a non-regular male partner for men who have sex with men and transgender people; and last sex with a client for sex workers.

Key to indicator reference number prefixes

- **PR** prevention
- **KP** key populations
- **GW** adolescent girls and young women
- **TL** testing and linkage
- **AV** antiretroviral treament and viral load
- **TB** TB/HIV
- **VT** vertical transmission
- **ST** STIs
- **SD** stigma and discrimination
- **BI** burden/impact

To measure and interpret condom distribution indicators, countries must map different mechanisms for distribution (that is, commercial, socially marketed and free distribution) and the extent to which condoms are also promoted as part of family planning services and used primarily for contraception rather than for high-risk sexual encounters.

Table 3.1 Condom indicators in the Top 40

Ref. no.	Short name	Short description	Alignment
National core			
PR.1	Condom use (KP & Gen pop)	% of people who used condoms during their last high-risk sex act* in the last 12 months	Consistent with GF HIV O–4 & O–10. Similar to GAM 3.6 & 3.18.
National priority			
PR.2 (NEW)	Condoms distributed	Total number of condoms distributed during the reporting period	Consistent with GAM 3.19

Gen pop = general population; KP = key population

* Section 3.11 provides detailed definitions.

3.1.2 Pre-exposure prophylaxis (PrEP)

Conceptual framework

WHO guidelines recommend that oral pre-exposure prophylaxis (PrEP) should be offered as an additional prevention choice for people at substantial risk of HIV infection as part of a combination HIV prevention approach, including comprehensive condom programming and harm reduction for people who inject drugs. An increasing number of countries are adopting policies endorsing PrEP for HIV prevention. In 2019, based on the available clinical evidence, WHO updated the oral PrEP guidance to include an option of event-driven dosing (ED-PrEP) for men who have sex with men. This new four-pill dosing strategy has the potential to reduce the cost of drugs, pill burden and potential toxicity, and to improve continuation among those who find daily pill-taking challenging, but it is not currently recommended for other population groups.

Many people who could benefit most from PrEP belong to key population groups that may face legal and social barriers to accessing health services. For that reason, tracking PrEP coverage for these special populations through disaggregation of indicators is highly recommended.

Challenges for adolescents in need of PrEP include legal issues of consent, social and cultural barriers and infrequent utilization of health services. Monitoring PrEP use and continuation among younger users requires fine age disaggregation (that is, five-year age bands) to better address these programmatic challenges.

Programmes may choose different PrEP service delivery points (for example, sexual and reproductive health, contraception, antenatal care (ANC), STI clinics, services for key populations) depending on their focus populations. Whenever possible, PrEP services should be integrated with existing services and use existing reporting systems.

Strategic information issues for PrEP

Measurement of the performance and effectiveness of PrEP programmes must account for both appropriate and inappropriate discontinuation of PrEP due to periods of (perceived) differing HIV risk by individuals. To gauge effectiveness, programmes must identify and assess the proportion of people who stop PrEP prematurely or who are not adherent. Discontinuation and loss to follow-up, as measured through missed appointments, should be regularly reviewed at the facility level to see if changing approaches to services, such as different or enhanced adherence counselling or contact methods, are correlated with different rates of continuation.

Since ED-PrEP is a dosing option recommended only for men who have sex with men, undeclared men who have sex with men may have daily PrEP prescribed to avoid this identification but may decide on their own to use event-driven dosing. Monitoring may identify these users as apparently non-continuous if continuation is measured by number of pills taken. Due to the varying patterns of individual risk and use, analysis and interpretation of patterns of PrEP use would benefit from data systems collecting individual-level data and using a robust UIS.

These guidelines recommend three Top 40 indicators for the routine monitoring of PrEP programmes: PrEP uptake (PR.3), PrEP continuation (PR.4) and Currently on PrEP (PR.5). Two additional indicators measuring the prevalence of PrEP-associated ARV toxicity and the HIV positivity rate among people who have been prescribed PrEP are included in Web Annex C. Due to differences in use and promotion of PrEP in different focus populations, disaggregation by key population group, adolescent girls and young women and other priority population groups is strongly recommended. As for all types of record-keeping used to disaggregate indicators by key population, efforts must be made to avoid disclosing the identities of PrEP users in the patient records and registers of facilities that offer PrEP but also serve people who are not part of a key population. This is particularly true for ED-PrEP dosing, which is currently recommended only for men who have sex with men and, thus, poses a risk of individual identification.

Table 3.2 PrEP indicators in the Top 40

Ref. no.	Short name	Short description	Alignment
National core			
PR.3 (NEW)	PrEP uptake	% of eligible people who initiated oral PrEP during the reporting period	Consistent with GF KP-6 and YP-4. Similar to MER PrEP_NEW.
National priority			
PR.4 (NEW)	PrEP continuation (at 3 months)	% of PrEP users who continued oral PrEP for 3 consecutive months after having initiated PrEP during the reporting period	NA
PR.5	Currently on PrEP	Number of people who received oral PrEP at least once during the reporting period	Consistent with GAM 3.15 and MER PrEP CURR

PrEP = pre-exposure prophylaxis

Further information

- WHO implementation tool for pre-exposure prophylaxis (PrEP) of HIV infection. Module 5: monitoring and evaluation. Geneva: WHO; 2018 (https://apps.who.int/iris/bitstream/handle/10665/279834/WHO-CDS-HIV-18.10-eng.pdf?ua=1).
- PrEP implementation tool for pre-exposure prophylaxis (PrEP) of HIV infection. Module 1: clinical. Geneva: WHO; 2017 (https://www.who.int/hiv/pub/prep/prep-implementation-tool/en/).
- What's the 2+1+1? Event-driven oral pre-exposure prophylaxis to prevent HIV for men who have sex with men: Update to WHO's recommendation on oral PrEP. Technical brief. Geneva: WHO; 2019 (https://www.who.int/hiv/pub/prep/211/en/).

3.2 Knowing status and linkage to treatment

Conceptual framework

HIV testing services (HTS) include pre-test information, HIV testing and diagnosis, post-test counselling when applicable, re-testing and referral and linkage to prevention, care and treatment services. Although many countries have scaled up HIV testing services, the mark of an effective HTS system is focus on population outcomes, such as:

1. increasing the proportion of people living with HIV who have been diagnosed (the first "95")
2. ensuring that people diagnosed with HIV are linked to treatment and
3. optimizing linkage to prevention services among HIV-negative persons at substantial risk of infection.

A cost-effective HTS programme must focus on those at highest risk and vulnerability to acquiring HIV and use available resources for service delivery approaches that best meet the needs of these groups. This includes providing HTS services in both facilities and communities and in settings that minimize stigma and discrimination against people living with HIV and/or key populations.

Strategic information for HTS and linkage

Strategic information for HTS (Table 3.3) can be collected and analysed using routine programme-based data for both programme management and programme monitoring purposes. To assess the effectiveness of services, standard approaches to collecting and reporting data are needed across a wide variety of testing settings and levels of healthcare facilities, including where HTS services are integrated into other clinical contexts (for example, ANC, family planning, TB clinics). Also, testing is promoted for different reasons, for example, based on risk assessment, to confirm clinical diagnosis or offered through routine screening of selected patient populations such as in ANC and STI clinics and to contacts of index patients. Understanding to whom testing is promoted in different testing contexts is critical to interpretation of the HTS indicators. Community-based testing and self-testing comprise important parts of the HTS service mix and should be accounted for in assessing overall testing uptake, coverage and linkage to treatment. Finally, repeat testing is critical to ensure that people enrolled in prevention programmes remain HIV-negative and, when sero-conversion is identified, that they are rapidly linked to ART. These various modes of testing are captured as disaggregation variables recommended for various testing and linkage indicators.

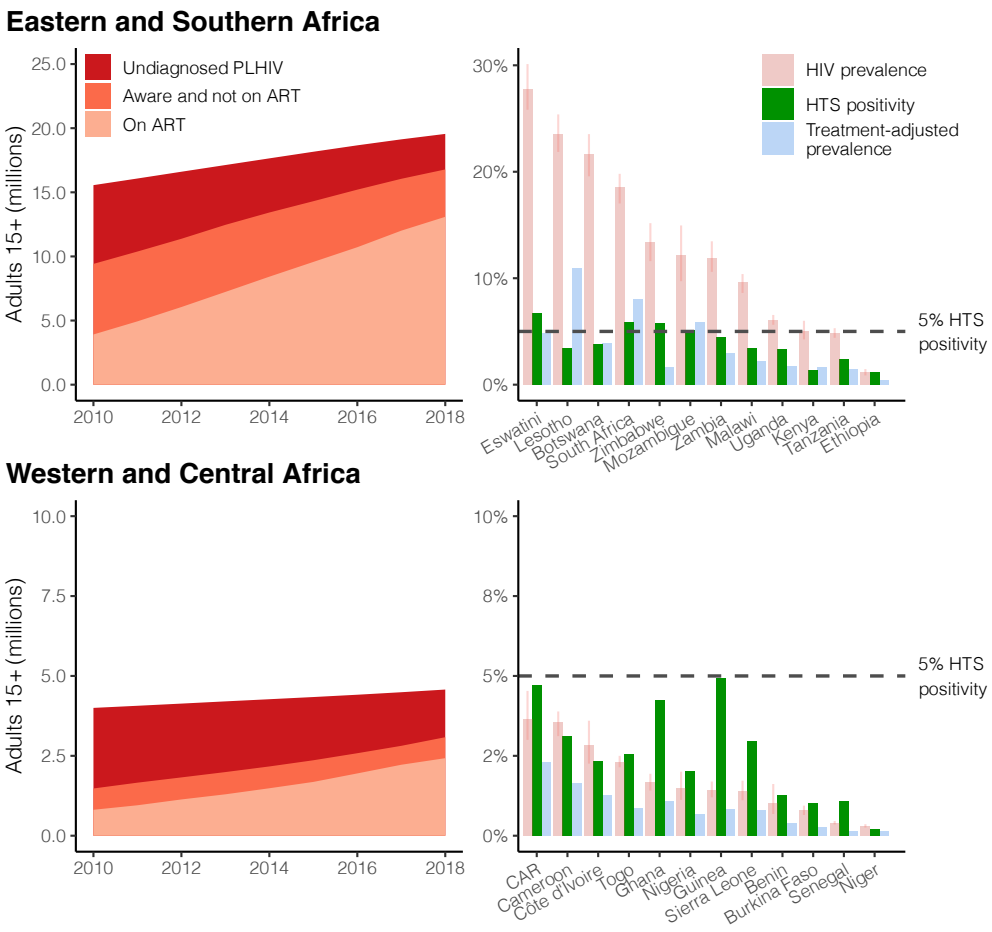
The analysis of HTS indicator data requires clarity on whether the unit of reporting represents individuals or tests conducted. It is also important to know whether data systems are able to deduplicate multiple tests used for testing a single person at a single point in time (for example, repeated tests to confirm positive results according to national testing algorithms) and/or individuals who have multiple tests within the same reporting period (for example, retesting people at ongoing high risk of exposure).

The sophistication of routine data review and analyses, particularly whether simultaneous disaggregation by multiple variables is possible, has implications for data collection forms and systems and data quality assurance. Paper-based tools used in aggregate reporting systems must be designed carefully to collect disaggregated data, prioritizing only the most critical variables, in order to maintain feasibility and data quality. Data systems that collect individual-level data offer greater flexibility in analysis. However, they require a robust UIS.

A few of the recommended HTS indicators do not come easily from programme-based sources and require a special survey (for example, Know their status (KP) (TL.6) or triangulation of data and epidemic modelling (for example, People living with HIV who know their status (first 95) (TL.1). These data are available only periodically, but they measure coverage in the population more broadly, not just among those accessing services.

To set HTS targets for test positivity and case finding that are ambitious and focused on those who are undiagnosed, programme managers need to distinguish the proportion of people living with HIV who are already diagnosed and on ART from people living with HIV who do not know their status or who know their status but have not yet been linked to ART. As HTS and ART scale-up close testing and treatment gaps, fewer people with HIV need HIV testing, diagnosis and linkage to treatment and care. Consequently, national HTS positivity, or yield, has also declined. Such trends are most apparent in high HIV burden settings such as Eastern and Southern Africa (Fig. 3.1).

Fig. 3.1 Closing the gap in the number of undiagnosed people living with HIV (2010–2018)



National HTS positivity refers to the number of tests conducted where an HIV-positive result was returned to a person in the calendar year. CAR = Central African Republic.

Source: Estimates shared in personal communication from K Giugere, M Maheu-Giroux, JW Eaton, October 2019; UNAIDS/WHO, 2019; Marsh K, Eaton JW, Mahy M, Sabin K, Autenrieth C, Wanyeki I, et al. Global, regional and country-level 90–90–90 estimates for 2018: assessing progress towards the 2020 target. AIDS. 2019. doi: 10.1097/QAD.0000000000002355.

Treatment-adjusted HIV prevalence (TAP) provides an indication of the proportion of people with HIV in the testing population by excluding those on ART. TAP can be calculated by subtracting the number of people (age 15+) with HIV on ART from both the numerator (total population age 15+ with HIV) and the denominator (total population age 15+) of national HIV prevalence estimates. TAP includes: people with HIV who are undiagnosed, people with HIV who know their status but have not initiated treatment and people with HIV who previously initiated treatment but have disengaged from care.

Further information

- Consolidated guidelines on HIV testing services for a changing epidemic. Geneva: WHO; 2019 (https://www.who.int/publications-detail/consolidated-guidelines-on-hiv-testing-services-for-a-changing-epidemic).

Table 3.3 HIV testing and linkage indicators in the Top 40

Ref. no.	Short name	Short description	Alignment
National core			
TL.1	PLHIV who know their status (first 95)	Number and % of PLHIV who know their status	Consistent with GAM 1.1 and GF HIV O-11
TL.2 (NEW)	HTS testing volume and positivity	Number of HIV tests conducted (testing volume) and the % of HIV-positive results returned to people (positivity)	Similar to GAM 1.8, MER HTS_TST and GF HTS-4
TL.3	Linkage to ART	% of people newly diagnosed with HIV initiated on ART	Consistent with GF HTS-5
National priority			
TL.4	HTS index and partner notification	Number of people who were identified and tested using index testing services and received their results	Consistent with MER HTS_INDEX
TL.5 (NEW)	HIVST distribution	Number of individual HIVST kits distributed	Consistent with MER HTS_SELF. Related to GAM 1.7.
TL.6 (NEW)	Know their status (KP)	% of key population members who tested for HIV in the past 12 months or who know their current HIV status	Consistent with GAM 3.4

ART = antiretroviral treatment; HTS = HIV testing serivces; KP = key population; PLHIV = people living with HIV

3.3 Treatment and VL suppression (adult[1])

3.3.1 Treatment and ART toxicity

Conceptual framework

Under current WHO "Treat All" guidelines, provision of ART is the foundation of the national health sector response to HIV. Indeed, global HIV elimination goals are predicated on the concept of "treatment as prevention" (combined with evidence-based primary prevention). Thus, capturing progress in ART scale-up is critical to monitoring the overall HIV prevention and treatment cascade, including reductions in both HIV incidence and mortality. Indicators in this section follow a person living with HIV from initiation and/or re-entry into treatment through to key outcomes, including retention, viral suppression, treatment discontinuation, loss to follow-up and death (see Fig. 2.6).

The key measures of ART provision assess whether:

- coverage of ART is progressing towards 95–95–95 targets, including at national and subnational levels and across socio-demographic groups (AV.1);
- patients who initiate ART are retained on treatment (AV.1 and AV.2), while the causes of attrition, including death, are characterized and monitored;
- treatment is successful in terms of patient outcomes, such as virologic suppression (AV.3).

Strategic information for treatment and ART toxicity

Measuring retention and other treatment outcomes

The essential function of a treatment programme, after initiation, is to support retention in treatment and adherence on ART in order to achieve virologic suppression (see Section 3.3.2, below). Thus, one of the key HIV-related functions of a national HIS is to determine the number and percentage of people living with HIV currently on ART at a given point in time, based on numbers of people living with HIV newly initiated on ART and attrition among those previously or newly reported to be on ART. These data must be analysed at subnational levels and across relevant sociodemographic and priority populations. By definition, the determination of the number of people living with HIV currently on ART requires assessment of all programmatic outcome categories (see guidelines on person-centred HIV patient monitoring and case surveillance[2]), including attrition categories such as death, stopped treatment and lost to follow-up, at both facility and individual patient levels. For the purpose of these guidelines, official transfers-out are reflected in the number of people living with HIV on ART who are considered alive on ART during the reporting period, that is, not considered to be in an attrition category.

Unique identification of people living with HIV in electronic HIS is the most effective means of identifying unofficial, or "silent" transfer of people living with HIV between health facilities that would be likely to influence overall retention figures. All countries should be able to report the number of people living with HIV on ART in the national programme at a given time point. To do this, it is imperative that the HIS and the human resources needed to manage the HIS be supported at all levels of the health sector. Retention in treatment and adherence to the ART regimen are essential to achieve VLS, reduce transmission, improve patient health, prevent HIV drug resistance and control the epidemic.[3]

---

[1] For paediatric and adolescent HIV care and treatment, see section 3.8.2.

[2] Consolidated guidelines on person-centred HIV patient monitoring and case surveillance. Geneva: WHO; 2017 (https://www.who.int/hiv/pub/guidelines/person-centred-hiv-monitoring-guidelines/en/).

[3] Routine monitoring of ART adherence and related data on prevention of HIV drug resistance are described in Consolidated guidelines on person-centred HIV patient monitoring and case surveillance. Geneva: WHO; 2017 (https://www.who.int/hiv/pub/guidelines/person-centred-hiv-monitoring-guidelines/en/).

Analysis of longitudinal patient outcomes

Most data required for key ART indicators, such as retention and VL suppression, come from either electronic or paper-based patient monitoring systems that capture individual-level, longitudinal data. At a minimum this includes paper medical records and ART registers. However, electronic systems are increasingly available in low- and middle-income countries, including in sub-Saharan Africa. While cross-sectional assessment of the number of people living with HIV on ART is vital, cohort (longitudinal) analyses looking at short-, medium- and/or long-term outcomes can also be useful, in particular at the facility level. Electronic data systems greatly facilitate cohort analysis by making it easier to track patients from one healthcare system contact to the next via UIS.

Definitions for tracking ART care

- **New ART patients:** New ART patients include treatment-naive patients, with no prior use of ART; non-naive patients, with or without records, who received ART from sources outside the formal healthcare system and have not been counted as new in a system that is being monitored nationally; and people living with HIV who were previously on ART within the system and who reinitiated ART during the reporting period after previously having stopped treatment or being classified as lost to follow-up.
- **People living with HIV on ART:** A facility counts as current patients those who started on ART at the facility plus patients who are transferred in, minus patients who are transferred out, dead or lost to follow-up or who stopped ART. These numbers are summed across facilities for a national total.
- **Total attrition from ART:** includes death, stopped treatment and lost to follow-up:
  - **Death (documented):** people living with HIV previously on ART who are documented to have died from any cause.
  - **Stopped ART:** Patients stop their ARV regimen for various reasons, usually but not always in discussion with healthcare providers. There may be overlap between the "LFU" (lost to follow-up) and "stopped ART" categories, since patients who stop treatment without notifying the clinic staff are classified as LFU.
  - **Lost to follow-up:** Twenty-eight days or more since last missed appointment (including missed ARV refills in either facility or community settings).

Source: Person-centred HIV patient monitoring and case surveillance. Guidelines. Geneva: WHO; 2017 (https://www.who.int/hiv/pub/guidelines/person-centred-hiv-monitoring-guidelines/en/).

Toxicity monitoring

With continued ART scale-up and earlier and more prolonged exposure to ARVs among all age groups as well as pregnant and breastfeeding women, toxicity monitoring has become a critical component of HIV treatment and prevention programmes. Although newer ARVs have more favourable toxicity profiles, ARV-associated toxicities are among the most common reasons reported for ART non-adherence, treatment discontinuation or drug substitution. WHO recommends that countries use a standardized approach to integrate toxicity monitoring into national M&E frameworks. WHO also recommends inclusion of active ARV toxicity monitoring in routine monitoring of HIV patients on ART and surveillance of ARV drug safety during pregnancy through pregnancy registries, surveillance of congenital anomalies and monitoring the impact on growth and development in infants and young children exposed to ARV drugs via breast milk.

Toxicity monitoring provides data on the incidence and clinical significance and type of serious ARV toxicities and their impact on patient outcomes and attrition. This information can inform guidance to prevent and limit the severity of drug toxicity and, thus, to optimize patient retention and VLS on treatment. Where possible, collecting information on the programmatic reasons for ART switches or treatment interruption, defined as the percentage of patients receiving ART who switch or stop their ART regimen, is recommended. Adverse birth outcomes may be routinely monitored by integrating additional indicators into the national M&E system. A higher than expected rate suggests a need for more formal assessment and consideration of national policy on use of ARVs during pregnancy.

Selection and use of treatment indicators

Overall, the indicator PLHIV on ART (AV.1) (formerly labelled "ART coverage") provides a summary measure of progress in scaling up treatment (the second 95) (Table 3.4). Along with Total attrition from ART (AV.2), it makes comparisons across countries possible. At the national level, as countries progress towards the 95–95–95 targets, ART coverage should be routinely reported at subnational levels and across sociodemographic groups. Disaggregation of ART indicators by key population and other specific priority populations may uncover specific barriers to service access. A complementary indicator, the number of new ART patients (AV.4), provides information on the programme's ability to identify people living with HIV and to start them on treatment in a timely manner. Along with the new Linkage to ART indicator (TL.3) (in the HTS section), these indicators provide powerful insights into programme effectiveness. New ART patients (AV.4) is an essential component of PLHIV on ART (AV.1), while the Late ART initiation indicator (AV.5) measures the proportion of people living with HIV who have clinical AIDS at the time that they initiate ART. In the era of "Treat All", late ART initiation most likely reflects late diagnosis.

Further information

- Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection: Recommendations for a public health approach – second edition. Geneva: WHO; 2016 (https://www.who.int/hiv/pub/arv/arv-2016/en/).
- WHO guidelines on person-centred HIV patient monitoring and case surveillance. Geneva: WHO; 2017 (https://www.who.int/hiv/pub/guidelines/person-centred-hiv-monitoring-guidelines/en/).
- WHO implementation tool for monitoring the toxicity of new antiretroviral and antiviral medicines in HIV and viral hepatitis programmes. Geneva: WHO; 2018 (https://www.who.int/hiv/pub/arv_toxicity/arv-toxicity-monitoring-tool/en/).

3.3.2 Viral suppression

Conceptual framework

The individual-level relationships among ART, VL and HIV transmission were first reported in the Rakai studies in Uganda in 2011.[1] Extrapolated to the population level, these relationships are used to measure treatment success based on VLS rates among a cohort of ART patients. VLS is also used to estimate the overall transmission potential within a community in order to gauge the effectiveness of ART in preventing transmission (that is, "treatment as prevention").

There are several established VL metrics. However, for routine programme monitoring and management, a select number of indicators are considered priorities in the 2020 guidelines (Table 3.4):

- viral suppression among all people living with HIV on ART (AV.3)
- VL testing coverage among all people living with HIV on ART (AV.6)
- early VL testing (about six months after ART start) (AV.7)
- appropriate second VL test (after initial VL ≥1000 copies/ml) (AV.8).

These indicators are generated from available VL data from laboratory information systems and/or HIV patient monitoring systems. Population-based surveys, such as Population-based HIV Impact Assessments (PHIA) and current Spectrum AIM models make possible estimates of VL for the other population groups, such as those on ART but with no VL measurement, those diagnosed but not on ART and those undiagnosed.

At a minimum a national HIV programme should routinely review available VL data to monitor the current level of VL suppression observed in the population on ART. As possible, this should include appropriate geographic and sociodemographic disaggregated analyses. In a well-performing ART programme, a majority of people on ART are expected to have suppressed VLS, thus effectively reducing the transmission probability per risk act between an infected and an uninfected person. VLS is determined by the efficacy of the drugs used and levels of retention and adherence among people living with HIV.

Currently, VL testing continues to be scaled up in many settings. Monitoring of these efforts should be prioritized, given the vital information about programme quality and effectiveness derived from routine VL testing data.

Strategic information on viral suppression

VL testing coverage and data availability

To interpret VL data, it is necessary to know VL testing coverage – for example, whether the data represent all or a selected proportion of people on ART and, if only a proportion, what biases may exist in these VL data. In some settings where access to VL testing is scarce, VL testing may be targeted for those with indications of treatment failure, infants and children, those with advanced HIV disease or pregnant and breastfeeding women, thus potentially skewing the results. At the same time, since VL data are available only for those who access VL testing services, VL data may be biased toward a more positive (that is, lower VL) outcome, assuming that people accessing testing are those with better retention and adherence and, thus, more likely to be virally suppressed. For estimates of VLS in populations beyond those who have VL measurements (AV.3), indicator values may be adjusted on the basis of assumptions about the VL levels of patients who, for example, are not on ART or do not know their sero-status.

[1] Polis CB, Gray RH, Bwanika JB, Kigozi G, Kiwanuka N, Nalugoda F et al. Effect of hormonal contraceptive use prior to HIV seroconversion on viral load setpoint among women in Rakai, Uganda. J Acquir Immune Defic Syndr. 2011;56(2):125–130. (http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3023004/pdf/nihms253001.pdf).

Measures of VL among all people living with HIV/community VL suppression

Cross-sectional, survey-based measurement of VL suppression among all people living with HIV provides a snapshot of overall VL suppression in the population, including people living with HIV on ART (>6 months), diagnosed HIV-positive but not on ART and/or people living with HIV who are not yet diagnosed. By quantifying a general level of VL in the population, this metric may provide additional insight into HIV transmission dynamics, complementing the standard third 95 estimates from model-based or programmatic data sources.

VL levels and definition of VL suppression and detection

The definition of an undetectable VL depends on the sensitivity of the test and what level of virus it can detect. For the VL indicators in this guide, per the 2016 WHO consolidated guidelines, VL suppression is defined as less than 1000 copies/mL. However, countries can consider an additional threshold that has meaning in their context.

Table 3.4 Treatment and viral load indicators in the Top 40

Ref. no.	Short name	Short description	Alignment
National core			
AV.1	PLHIV on ART	Number and % of people on ART among all people living with HIV at the end of the reporting period	Consistent with GAM 1.2 & 3.5, GF TCS-1 and MER TX_CURR
AV.2 (NEW)	Total attrition from ART	Number and % of people living with HIV reported on ART at the end of the last reporting period and/or newly initiating ART during the current reporting period who were not on ART at the end of the reporting period	Consistent with GF HIV O-21. Similar to MER TX_ML.
AV.3	PLHIV who have suppressed VL	% of PLHIV on ART (for at least 6 months) who have virological suppression	Similar to GAM 1.4, GF HIV O-12 and MER TX_PVLS
National priority			
AV.4	New ART patients	Number of PLHIV who initiated ART	Related to GAM 1.2 and GF HTS-5. Consistent with MER TX_NEW.
AV.5	Late ART initiation	% of PLHIV who initiate ART with a CD4 count of <200 cells/mm^3	NA
AV.6	VL testing coverage	% of people on ART (for at least 6 months) with VL test results	NA
AV.7 (NEW)	Early VL testing (at 6 months)	Number and % of PLHIV on ART who had VL monitoring at 6 months after initiation of ART	NA
AV.8	Appropriate second VL test	% of people receiving ART with VL ≥1000 copies/mL who received a follow-up VL test within 6 months	NA
AV.9 (NEW)	ART toxicity prevalence	% of ART patients with treatment-limiting* toxicity	NA

ART = antiretroviral treatment; PLHIV = people living with HIV; VL = viral load

* "Treatment-limiting" toxicity is defined as follows: A serious adverse drug reaction that results in drug discontinuation or substitution. In addition, any reaction that leads to treatment interruption or requires changing the drug or regimen because of an adverse drug reaction is also considered a serious adverse drug reaction.

3.4 Reduced mortality – TB/HIV

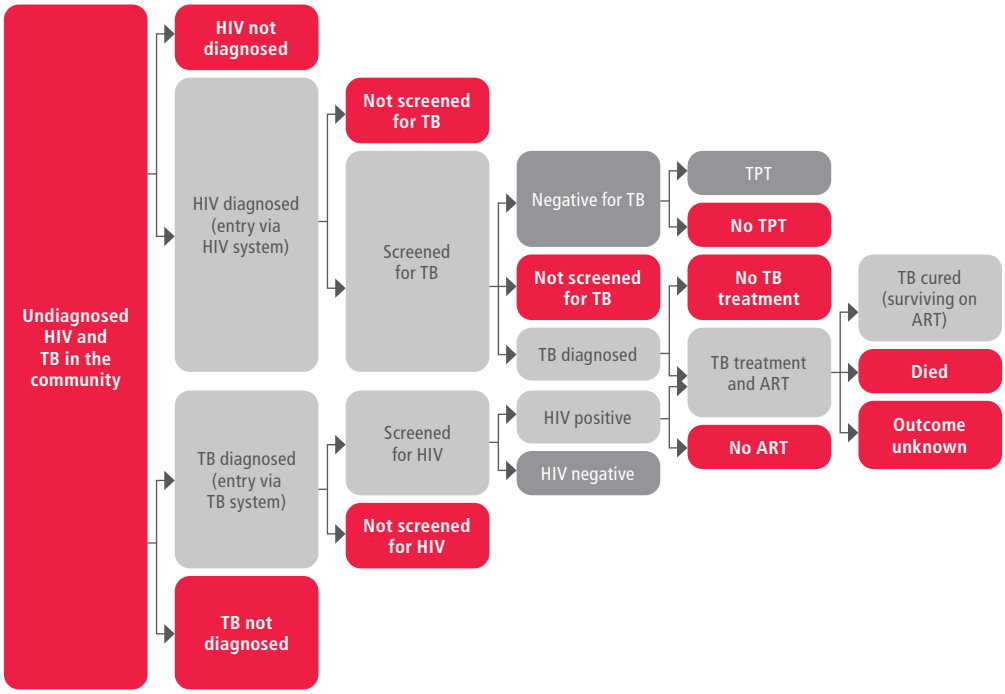
Conceptual framework

It is important that national TB programmes and national HIV programmes work together to ensure that integrated services are available, managed via routine cascade data reviews and monitored for outcomes and impact.

Tuberculosis remains the leading cause of morbidity and death among people living with HIV, even in the era of ART scale-up. In 2018 there were 477 000 reported cases of TB among people living with HIV, of whom 86% were on ART. Most of the gaps in detection and treatment were in the sub-Saharan African region, where the burden of HIV-associated TB is highest.[1] Early ART initiation and retention are crucial for reducing mortality among TB patients. Therefore, it is critical that national TB programmes and national HIV programmes work together to ensure that integrated services are available and of high quality.

The cascade of services for HIV-associated TB usually depends on whether a person enters the health system for HIV or for TB (Fig. 3.2). The HIV strategic information guidelines generally pertain to indicators for services typically provided where HIV diagnosis, care and treatment are initiated and are recorded and reported via HIV HIS. However, TB programmes, as well, could consider and adapt these guidelines, particularly where suitable digital individual-level data systems – for example, shared health records – are implemented.

Fig. 3.2 Cascade of care for TB and HIV



TB = tuberculosis; TPT = tuberculosis preventive treatment

[1] Global tuberculosis report 2019. Geneva: WHO; 2019 (https://www.who.int/tb/publications/global_report/en/).

Critically, the HIV cascade includes TB screening with subsequent diagnostic testing for those who screen positive and TB preventive treatment (TPT) provided for those in whom active TB disease is ruled out. Monitoring the implementation of newer WHO-approved diagnostic tools, such as Xpert MTB/RIF and urine LAM (lipoarabinomannan assay), is important, as they offer advantages over other diagnostic modalities. Finally, understanding of TB burden among people living with HIV should inform programme management and planning.

Strategic information for TB/HIV

In 2015 WHO updated *A guide to monitoring and evaluation for collaborative TB/HIV activities*, which recommends indicators for routine collection, reporting and use. These indicators were aligned with the TB-HIV indicators in the 2015 *Consolidated strategic information guidelines*. These updated 2020 guidelines sharpen the focus in the Top 40 indicator set on the HIV side of TB/HIV service indicators (Table 3.5), including:

- initiation of tuberculosis preventive treatment (TPT) (TB.1)
- completion of TPT (TB.2)
- TB diagnostic testing for people living with HIV (TB.3)
- TB burden among new ART patients (TB.4).

In addition to these indicators, there is also a set of five indicators reflecting the TB screening and diagnostic cascade, featured separately in the differentiated indicator section (Table 3.6). These indicators are important for monitoring gaps in the TB detection cascade for all countries and are considered a priority for the high-burden TB/HIV countries. While the updated TB screening indicator (DfT.1) focuses on screening among people living with HIV newly initiating ART, routine TB screening on an ongoing basis is also recommended for people living with HIV and on ART.

Selection of indicators

It is important to monitor the entire cascade of care from screening through testing, prevention and treatment of HIV-associated TB (Fig. 3.2). Consistent with the 2015 *Guide to monitoring and evaluation for collaborative TB/HIV activities*, countries should define standard indicators across all relevant health information systems and track key TB- and HIV-side interventions and services as well as those for other co-morbidities. Additionally, TB and HIV programmes should conduct joint routine cascade data review and reconciliation to ensure data quality and use to improve programmes.

Further information

- Global TB report 2019. Geneva: WHO; 2019 (https://www.who.int/tb/publications/global_report/en/).
- Global TB report 2016. Geneva: WHO; 2016 (http://apps.who.int/iris/bitstream/10665/250441/1/9789241565394-eng.pdf?ua=1).
- A guide to monitoring and evaluation for collaborative TB/HIV activities: 2015 revision. Geneva: WHO; 2015 (https://www.who.int/tb/publications/monitoring-evaluation-collaborative-tb-hiv/en/).
- Latent TB infection: Updated and consolidated guidelines for programmatic management. Geneva: WHO; 2018 (https://www.who.int/tb/publications/2018/latent-tuberculosis-infection/en/).

Table 3.5 TB/HIV indicators in the Top 40

Ref. no.	Short name	Short description	Alignment
National core			
TB.1	TPT initiation	Number and % of eligible PLHIV on ART who initiated TB preventive treatment	Similar to GAM 10.3 and GF TB/HIV-7
TB.2	TPT completion	% of PLHIV on ART who completed a course of TB preventive treatment among those who initiated TPT	Similar to MER TB_PREV
National priority			
TB.3	TB diagnostic testing type	% of PLHIV with TB symptoms who receive a rapid molecular test as a first test for diagnosis of TB	NA
TB.4	PLHIV with active TB disease	% of PLHIV newly initiated on ART who have active TB disease	Consistent with GAM 10.2

ART = antiretroviral treatment; PLHIV = people living with HIV; TB = tuberculosis

Table 3.6 Recommended indicators for TB/HIV differentiated use case*

Ref. no.	Short name	Short description	Alignment
DfT.1	TB screening coverage among new ART patients	% of PLHIV newly initiated on ART who were screened for TB	NA
DfT.2	TB symptom-screened positive among new ART patients	% of PLHIV newly initiated on ART who were screened for TB symptoms and who screened positive	NA
DfT.3	TB testing among those symptom-screened positive	% of people living with HIV newly initiated on ART and screened positive for TB symptoms who then are tested for TB	NA
DfT.4	TB diagnosis among those tested for TB	% of PLHIV newly initiated on ART and tested for TB who are diagnosed with active TB disease	NA
DfT.5	TB treatment initiation among diagnosed	% of PLHIV newly initiated on ART and diagnosed with active TB who initiated TB treatment	NA

ART = antiretroviral treatment; PLHIV = people living with HIV; TB = tuberculosis

* See: A guide to monitoring and evaluation for collaborative TB/HIV activities: 2015 revision. Geneva: World Health Organization; 2015 (https://www.who.int/tb/publications/monitoring-evaluation-collaborative-tb-hiv/en/).

3.5 Preventing vertical transmission

Conceptual framework

Pregnant women living with HIV are at high risk of transmitting HIV to their infants during pregnancy and delivery or through breastfeeding. The prevention of mother-to-child-transmission (PMTCT) cascade spans a broad spectrum of services from primary prevention among pregnant and breastfeeding women to diagnosing, treating and retaining HIV-positive mothers on ART to prevent transmission of HIV to their children; ensuring safe delivery; optimizing infant feeding practices; and, finally, tracking exposed infants throughout the entire exposure period to ensure early diagnosis and treatment of those who become infected. To optimize effective prevention and survival, these service milestones must also be anchored to critical time points during the vertical transmission (VT) risk period, for example, assessing ART retention at delivery, a time of increased transmission risk.[1]

Since publication of the last consolidated strategic information guidelines in 2015, many countries have moved to the "Treat All" strategy of providing lifelong ART to all HIV-infected individuals, including all pregnant and breastfeeding women living with HIV, and VL testing as the preferred means of monitoring people who are taking ART.[2] With the global shift to highly effective and simplified interventions based on lifelong maternal ART and recommendations for rapid initiation of treatment, it is now feasible to virtually eliminate new HIV infections in infants, while assuring the health of the mother. At the same time, some infants may enter PMTCT services late or remain outside these services while availing themselves of other health services. Therefore, it is important to support infant diagnosis of HIV wherever possible.

Strategic information issues in VT

Following the cascade across multiple service delivery points and over prolonged periods

As noted, the PMTCT cascade spans multiple interventions over a lengthy period, across multiple service delivery platforms and points, for both mother and child. Data must be collated from antenatal care (ANC) visits, during labour and delivery, during HIV care and at postpartum and child health visits. Tools to collect data must reflect the patient care work flow of these different service delivery points and be able to track mother–baby pairs from one such point to another. The strategic information system for VT relies on robust systems for assigning unique identifiers to link the records of the mother or the mother–baby pair, integrating HIV information into existing maternal and child health (MCH) cards or using electronic systems to facilitate this process. The vertical transmission indicators included in this guideline (Table 3.7) reflect important updates to definitions, disaggregation and in some cases new indicators for tracking progress and managing PMTCT programmes across the array of services offered.

As countries scale up PMTCT, they must invest in improving the completeness of data during the postnatal cascade. As the new guidelines for maintaining mothers on ART throughout the VT risk period are adopted, monitoring retention and adherence becomes even more critical. Historically, monitoring ART coverage and tracking final infant HIV outcome status have been weak areas of measuring the cascade.

---

[1] Global guidance on criteria and processes for validation: elimination of mother-to-child transmission of HIV and syphilis, 2nd edition. Geneva: WHO; 2017 (https://www.who.int/reproductivehealth/publications/emtct-hiv-syphilis/en/).

[2] Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection: recommendations for a public health approach – 2nd ed. Geneva: WHO; 2016 (https://www.who.int/hiv/pub/arv/arv-2016/en/).

Validation of elimination of mother-to-child transmission achievements

To support countries in collecting accurate programme data to measure and validate progress toward elimination of mother-to-child transmission (EMTCT) of HIV, WHO and partners have developed a comprehensive set of impact and programme indicators.[1] Many of these indicators are defined with population-based denominators. Epidemic models are critical to both estimating population-based denominators as well as the final transmission rate based on measures of coverage, utilization of programmatic interventions, the underlying burden of HIV among pregnant women and transmission dynamics spanning the full VT risk period. However, to improve local service delivery, managers at facilities and lower subnational levels depend on routine facility data for both the numerators and denominators of the priority indicators.

Special considerations by priority population and setting

WHO recommends offering HIV testing services to pregnant women routinely and globally, an approach that has been widely adopted and has proved acceptable to pregnant women.[2] However, in low prevalence settings where resources are scarce, HIV testing among pregnant women can focus on women at higher risk of HIV. Countries in this situation should also assess coverage in higher risk groups to ensure equity of service access and quality, including for pregnant women who are also part of key population communities. New HIV infections during pregnancy and breastfeeding are of increasing concern, with re-testing of previously HIV-negative women a priority in high prevalence settings.

Pregnant adolescents and young women (that is, <25 years old) have poorer VT outcomes than older women due to higher proportions who were previously undiagnosed, are newly initiated on treatment, are having an unplanned pregnancy, are receiving less social support and/or lack a stable household structure and other barriers.

Selection and use of indicators

Consistent with the focus of the general HIV care cascade in the era of "Treat All", the recommended PMTCT indicators focus on cascade outcomes such as viral suppression and early infant diagnosis and intermediate outcomes such as ART coverage during pregnancy and breastfeeding for HIV-positive pregnant women, and infant ARV prophylaxis (Table 3.7). Country context (for example, ANC prevalence, duration of breastfeeding, proportion of births taking place in facilities) informs a country's prioritization of the recommended VT indicators. Modelling tools, such as those offered through Spectrum AIM, can indicate where the greatest transmission risk exists and can guide countries to select indicators that focus on their largest programmatic gaps.

Another key consideration in prioritizing indicators is the availability of the data to calculate them. Data collection may be particularly difficult for indicators that have an especially complex time component (that is, service utilization or specific outcomes experienced by a patient over a period of time) and so require cohort-style tracking of individuals over time.

Further information

- Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection: recommendations for a public health approach – second edition. Geneva: WHO; 2016 (https://www.who.int/hiv/pub/arv/arv-2016/en).
- Global guidance on criteria and processes for validation: elimination of mother-to-child transmission of HIV and syphilis. 2nd edition. Geneva: WHO; 2017 (https://www.who.int/reproductivehealth/publications/emtct-hiv-syphilis/en/).

[1] Global guidance on criteria and processes for validation: elimination of mother-to-child transmission of HIV and syphilis, 2nd edition. Geneva: WHO; 2017 (https://www.who.int/reproductivehealth/publications/emtct-hiv-syphilis/en/).

[2] Consolidated guidelines on HIV testing services for a changing epidemic. Geneva: WHO, 2019 (https://www.who.int/publications-detail/consolidated-guidelines-on-hiv-testing-services-for-a-changing-epidemic).

Table 3.7 Vertical transmission and paediatric-specific indicators in the Top 40

Ref. no.	Short name	Short description	Alignment
National core			
VT.1 (NEW)	Viral suppression at labour and delivery	% of HIV-positive pregnant women who are virally suppressed at labour and delivery	NA
VT.2	EID coverage	% of HIV-exposed infants who receive a virological test for HIV within 2 months (and 12 months) of birth	Consistent with GAM 2.1, GF PMTCT-3.1 and MER PMTCT_EID
National priority			
VT.3	Infant ARV prophylaxis coverage	% of HIV-exposed infants who initiated ARV prophylaxis	NA
VT.4	ART coverage in pregnant women	% of HIV-positive pregnant women who received ART during pregnancy and/or at labour and delivery	Consistent with GAM 2.3 and GF PMTCT-2.1. Similar to MER PMTCT_ART.
VT.5	ART coverage in breastfeeding mothers	% of HIV-exposed breastfeeding infants whose mothers are receiving ART at 12 (and 24 months) postpartum	NA
VT.6	Final outcome of PMTCT	% of HIV-exposed infants whose final outcome status is known	Consistent with MER PMTCT_FO

ART = antiretroviral treatment; ARV = antiretroviral; PMTCT = preventing mother-to-child transmission

3.6 Reducing co-morbidity – STI

Conceptual framework

As outlined in the WHO *Global health sector strategy on sexually transmitted infections, 2016–2021*,[1] a key strategic pillar of STI control is strategic information based on reliable, routine STI data monitoring and surveillance. The objectives of STI surveillance are primarily to ascertain the prevalence and trends of STIs in target populations, in order to improve programme management and patient care.

STI surveillance is a key component of HIV epidemic control and programme management, as these infections are markers of unprotected sexual intercourse. Surveillance for incident STIs (for example, urethral discharge and gonorrhoea in men and primary and secondary syphilis) can serve as both an early warning of the epidemic potential of HIV via sexual transmission in a particular population and an indication of ongoing high-risk sexual activity that may need intensified programme interventions. At the same time, data used for HIV programme monitoring and management, such as size estimates of key populations and behavioural surveys, are also useful for focusing STI control activities.

[1] Global health sector strategy on sexually transmitted infections, 2016–2021. Geneva: WHO; 2016 (https://www.who.int/reproductivehealth/publications/rtis/ghss-stis/en/).

STIs in pregnant women are of great public health importance due to their potential to cause stillbirth, prematurity, low birth weight, neonatal death and diseases such as congenital malformations, ophthalmia and pneumonia in the newborn. However, recommendations for STI testing in pregnancy are generally only for syphilis, as low-cost, simple and high-performing diagnostics for gonorrhoea and chlamydia are not yet widely available. Surveillance and monitoring of syphilis in pregnancy is particularly important, in light of global and regional initiatives for EMTCT of syphilis.

Cervical cancer is the second most common cancer in women in low- and middle-income countries. Of the over 300 000 women who die from cervical cancer each year, more than 85% are in low- and middle-income countries. Deaths are projected to rise by 50% by 2030 unless urgent and intensified action is taken.

Women who are immunocompromised, such as those living with HIV, are more likely to have persistent human papillomavirus (HPV) infections and a more rapid progression to cervical pre-cancer and cancer. Women living with HIV are two to 10 times more likely than women who do not have HIV to develop cervical cancer caused by high-risk types of HPV. Coinfection with other sexually transmitted agents, such as those that cause herpes simplex, chlamydia and gonorrhoea, also increases the risk of persistence of HPV infection and development of cervical cancer.

New technologies such as rapid single syphilis and dual HIV/syphilis tests, changing epidemiology including the spread of antimicrobial-resistant Neisseria gonorrhoea, and the recent WHO initiative for the elimination of cervical cancer through vaccination and screening for HPV argue for a renewed focus on prevention, detection and appropriate treatment of STIs.

Strategic information for STI programmes

Selection and use of STI indicators

The prioritized STI programme indicators recommended in the Top 40 reflect the importance of addressing severe morbidity and mortality related to STIs. They also gauge the integration of STI and HIV services, specifically the prevention of congenital syphilis through screening and treatment of pregnant women for syphilis in ANC clinics and screening for cervical cancer among women living with HIV (Table 3.8).

Together, surveillance and monitoring are considered one of the four critical pillars of the strategy to eliminate congenital syphilis. It is advised that every country use indicators of syphilis screening coverage (and positivity, in ANC) and syphilis treatment coverage (in ANC) for basic monitoring and management of the EMTCT of syphilis programme as well as for validation of EMTCT of syphilis. Building on the systems for collecting, reporting and analysing indicators for vertical transmission of HIV, countries can strengthen the data to track their efforts to prevent congenital syphilis.

Implementation and monitoring of HPV vaccine delivery, cervical cancer screening and treatment of pre-cancerous cervical lesions are vital for the prevention of cervical cancer among women living with HIV.[1] This type of monitoring will be critical to tracking progress toward WHO Member States' commitments to global elimination of cervical cancer as a public health problem, which was launched with a global call for action in 2018.[2]

[1] Comprehensive cervical cancer control. A guide to essential practice – second edition. Geneva: WHO; 2014 (https://www.who.int/reproductivehealth/publications/cancers/cervical-cancer-guide/en/).

[2] Report on global sexually transmitted infection surveillance 2018. Geneva: WHO; 2018 (https://www.who.int/reproductivehealth/publications/stis-surveillance-2018/en/).

In countries with concentrated and lower burden epidemics, additional STI indicators may have strong relevance. For example, the seroprevalence of syphilis among sex workers and among men who have sex with men are considered core indicators for guiding the national response to STIs, and they are collected through the GAM system. Given the greater likelihood of previous infection than in the general population, diagnosis of active syphilis infection in sex workers and men who have sex with men should be based on both positive treponemal and non-treponemal test results. Data on these populations can be obtained through routine health information systems, sentinel surveillance or special surveys.

Indicators that assess the prevalence of STIs in the general population are recommended as additional indicators. Indicators collected through passive case reporting, such as reports of gonorrhoea and/or urethral discharge among adult males, may already be integrated into countries' routine disease surveillance systems. Depending on the laboratory capacity, resources and organization of the health system, case reporting can be based on either syndromic or etiologic approaches. Clear case definitions are critical for ensuring the quality of case reporting, and all probable and confirmed cases should be reported. Due to the often asymptomatic nature of STIs and limited access to STI diagnostic services in some countries, in settings that screen asymptomatic individuals for STIs, these routine programme data can sometimes serve as a proxy for more formal prevalence assessments.[1] Still, STI prevalence assessments conducted routinely (for example, every three to five years) in the general population make possible a more reliable estimate of the burden of STIs than case reporting. Prevalence data serve multiple purposes: to develop national estimates of STI prevalence and incidence; to identify population groups at high risk for STIs and HIV; to guide funding and resource allocation for STI and HIV prevention programmes; and to monitor the effectiveness of prevention programmes.

For all types of prevalence indicators, trends over time should be interpreted with caution unless the same method is consistently used and the same population is represented in each reporting or survey period. STI cases identified through either case-finding or screening should be captured by the surveillance system and analysed using available levels of disaggregation (gender, age, risk group, pregnancy status, geography, provider type).

Further information

- Global health sector strategy on sexually transmitted infections, 2016–2021. Geneva: WHO; 2016 (https://www.who.int/reproductivehealth/publications/rtis/ghss-stis/en/).
- Global guidance on criteria and processes for validation: elimination of mother-to-child transmission of HIV and syphilis. 2nd edition. Geneva: WHO; 2017 (https://www.who.int/reproductivehealth/publications/emtct-hiv-syphilis/en/).
- Landy R, Pesola F, Castañón A, Sasieni P. Impact of cervical screening on cervical cancer mortality: estimation using stage-specific results from a nested case–control study. Br J Cancer. 2016;115(9):1140–1146 (https://www.ncbi.nlm.nih.gov/pubmed/27632376).
- A tool for strengthening STI surveillance at the country level. Geneva: WHO; 2015 (https://www.who.int/reproductivehealth/publications/rtis/sti-surveillance/en/).

[1] A WHO standard protocol for conducting STI prevalence assessments among pregnant women, adaptable for other populations, is available. See: Standard protocol to assess prevalence of gonorrhoea and chlamydia among pregnant women in antenatal care clinics. Geneva: WHO; 2018 (https://www.who.int/reproductivehealth/publications/rtis/gonorrhoea-chlamydia-among-pregnant-women/en/).

Table 3.8 STI indicators in the Top 40

Ref. no.	Short name	Short description	Alignment
National priority			
ST.1	Syphilis screening coverage (in ANC)	% of ANC attendees tested for syphilis	Consistent with GF PMTCT-4
ST.2	Syphilis treatment coverage (in ANC)	% of ANC attendees testing seropositive for syphilis who are treated	NA
ST.3 (NEW)	Cervical cancer screening among women living with HIV	% of women living with HIV who have been screened for cervical cancer	Similar to GAM 10.8 and MER CXCA_SCRN

ANC = antenatal care

3.7 Zero discrimination

Stigma and discrimination are long-standing obstacles to effective HIV prevention, testing, treatment and care – both at the public health level and for the individuals involved. Stigma and discrimination against all people living with HIV, as well as directed against key populations at higher risk of HIV, discourage people from learning their status, adopting preventive behaviour and interventions and/or initiating treatment and achieving virologic suppression. Protection against discrimination is an international human right.

Discrimination should be routinely assessed in delivery of health services, particularly facility-based services, to ensure that services reach people at substantial risk (Table 3.9). Documenting the extent of stigma and discrimination in the general population is also important. Understanding how often people living with HIV and people from key populations experience discrimination in clinical settings helps programmes assess needs for training and policy changes to remove these barriers. Data can be collected through representative sample surveys of key populations and of the general population, as well as through exit interviews of patients leaving service sites. The recently updated PLHIV Stigma Index provides validated tools and methods for measuring stigma and discrimination against people living with HIV, including different vulnerable groups such as members of key populations living with HIV and in contexts such as healthcare settings across the continuum of care. The PLHIV Index website (below) also offers guidance on appropriate ways to survey people living with HIV to assess issues related to stigma and discrimination.

Further information

- PLHIV Stigma Index website: https://www.stigmaindex.org.

Table 3.9 Stigma and discrimination indicators in the Top 40

Ref. no.	Short name	Short description	Alignment
National core			
SD.1	Avoidance of health care due to stigma and discrimination (KP)	% of key population members who avoid health care because of stigma and discrimination	Consistent with GAM 4.2 and GF HIV O-16
National priority			
SD.2 (NEW)	Avoidance of health care due to stigma and discrimination (PLHIV)	% of PLHIV who avoid health care because of stigma and discrimination	NA

KP = key population; PLHIV = people living with HIV

3.8 Special population groups

Indicator groupings in this section represent population-specific sets that span the full health sector service cascade, from prevention and testing to treatment and viral suppression.

3.8.1 Key population groups

Conceptual framework

Key populations are defined as groups that, due to specific behaviours, are at increased risk of HIV irrespective of the epidemic type or local context. These guidelines focus on five key populations: men who have sex with men, people living in prisons and other closed settings, people who inject drugs, sex workers and transgender people.

Key populations are important to the dynamics of HIV transmission. They account for significant, and in some countries increasing, proportions of new infections. WHO has defined a comprehensive package of interventions to address HIV among key populations, described in detail in WHO's *Consolidated guidelines on HIV prevention, diagnosis, treatment and care for key populations*.[1] For the most part, coverage of services for key populations remains inadequate. People from key populations often face legal and social issues related to certain behaviours that both increase their vulnerability to HIV and make measuring the adequacy of service delivery to these groups challenging.

[1] The essential health sector service package includes:
- HIV prevention
- harm reduction interventions for substance use (needle–syringe programmes and opioid substitution therapy)
- HIV testing services
- HIV treatment and care
- prevention and management of co-infections and co-morbidities
- sexual and reproductive health.

Detailed guidance is available in: Consolidated guidelines on HIV prevention, diagnosis, treatment and care for key populations. 2016 update. Geneva: WHO; 2016 (https://www.who.int/hiv/pub/guidelines/keypopulations-2016/en/).

Strategic information for key populations

A number of HIV prevention interventions included in the comprehensive package are relevant only to key populations, including harm reduction interventions for people who inject drugs. Indicators for these key population-specific interventions are included among the core and priority indicator sets (Table 3.10). However, the majority of the health sector interventions in the comprehensive package are aligned with HIV programming for all groups, not just people from key populations. Thus, indicators relating to the full HIV cascade are relevant to key populations and should be disaggregated for each key population group. The methods required to derive key population disaggregates for an indicator may differ from those used to derive disaggregates for other populations. These different data sources and related methodological considerations are described below.

As for most of the other priority indicators, the main data source for the key population-specific indicators is routine programmatic data. Disaggregated data collected through surveys of specific key populations is straightforward, although these data may not be updated frequently. By comparison, disaggregation of programme data on testing and treatment services may be difficult if information indicating whether individuals are members of key populations is not collected. In this case key population-focused person-centred HIV monitoring and case-based surveillance is not possible.

This issue is common in facilities that serve the general population, such as ART clinics, where clients may not wish to disclose this information. Requiring them to do so might deter them from seeking care. Where issues of safety and the potential to discourage accessing services are a concern, collection of such information in routine data collection is not advised. In contrast, in facilities that specifically serve members of key populations, patients/clients may be more comfortable with the discussion and recording of key population-related risk behaviours. Although it cannot cover all key population members who access services, information gathered in these settings makes an important contribution to understanding the HIV response for key populations.

When determining how best to monitor and evaluate the success of HIV programmes for key populations, countries should consider the availability and limitations of different data sources and indicators in addition to what information is required for programmatic decision-making. In most settings triangulation of programme and survey data is needed to gauge the success of programmes in addressing HIV among key populations.

Estimating the size of key populations

Indicators that use programme data to estimate prevention, testing and treatment coverage require population size estimates to use as denominators. Various methods for the estimation of population size exist, each with its strengths and limitations, and each with technical and other requirements determining their suitability in different settings.[1] Determining the size of key populations can be challenging. When interpreting an indicator that has been calculated using an estimate of population size, it is important to consider the limitations of the estimation method used as well as any tendency for that method to systematically overestimate or underestimate population size.

[1] UNAIDS/WHO Working Group on Global HIV/AIDS/STI Surveillance. Guidelines on estimating the size of populations most at risk to HIV. Geneva: Joint United Nations Programme on HIV/AIDS. Geneva: WHO; 2010 (http://data.unaids.org/pub/manual/2010/guidelines_popnestimationsize_en.pdf).

If programme data (the numerator) are available from only a subset of services or only part of a country, then the denominator should be a population size estimate for only the area those services serve or for that part of the country. The population size estimate should also be relevant to the intervention being measured. For example, estimating the needle–syringe distribution rate (KP.2) requires a population size estimate of people who currently inject drugs rather than an estimate of people who have injected at any time in their lives. Coverage indicators for opioid substitution therapy (KP.3) require an estimate of the number of people dependent on opioids rather than of the total number of people who inject drugs, not all of whom will be opioid users, and it should not include those who are opioid-dependent but do not inject.

Data from surveys of key populations

In many settings surveys of key populations may provide the best or only way to gather information on service access and coverage among key populations. Also, surveys can gather information on people who do not access services.

The generalizability of findings from surveys conducted among key populations depends on how representative the survey sites are and how sample eligibility is defined. If samples are drawn only from large sites where services are provided, they are likely to overestimate general levels of coverage. Also, some sampling methods are more likely than others to include certain types of key populations. For example, time–location cluster sampling is more likely to sample more visible, venue-based key populations; respondent-driven sampling is more likely to sample people with larger social networks or in convenient proximity to the survey site. Eligibility criteria may also focus on members of key populations with higher or more recent risk behaviours (for example, sex workers who had a client in the last month). These methodological constraints should be taken into consideration when generalizing key population survey data beyond the sampling frame.

Confidentiality of strategic information on key populations

Privacy, confidentiality and safety are major concerns and should be carefully addressed in the collection and use of data. Confidentiality of information relating to key population status and stigmatized behaviours is particularly important, especially when information is linked or shared across different programmes and service providers.

Programmes, ministries of health and other government institutions must have policies and resources in place to protect the confidentiality of personally identifying information, including patient medical records. There should be commitment by authorities and legal provisions that disallow the use of these data for purposes other than delivering or improving services. Staff responsible for collecting and storing data should receive appropriate training in protecting confidentiality. Data that cannot be properly secured should not be collected. In countries where laws require retention of health-related data for specific periods of time, precautions must also be in place to ensure confidentiality of archived information.

Further information

- Tool to set and monitor targets for HIV prevention, diagnosis, treatment and care for key populations. Supplement to the 2014 consolidated guidelines for HIV prevention, diagnosis, treatment and care for key populations. Geneva: WHO; 2015 (https://www.who.int/hiv/pub/toolkits/kpp-monitoring-tools/en/).
- Global HIV Strategic Information Working Group. Biobehavioural survey guidelines for populations at risk for HIV. Geneva: WHO; 2017 (https://www.who.int/hiv/pub/guidelines/biobehavioral-hiv-survey/en/).

Table 3.10 Key population-specific indicators in the Top 40

Ref. no.	Short name	Short description	Alignment
National core			
PR.1	Condom use (KP & Gen pop)	% of people who used condoms during their last high-risk sex act in the last 12 months	Consistent with GF HIV O-4 & O-10. Similar to GAM 3.6 & 3.18.
KP.1 (NEW)	Coverage of HIV prevention (KP)	% of KP members reached with HIV prevention programmes with a defined package of services	Similar to GAM 3.7, GF KP-1 and MER KP_PREV
KP.2	Needle and syringes distributed	Number of needles and syringes distributed per year per person who injects drugs	Consistent with GAM 3.9 and GF KP-4
SD.1	Avoidance of health care due to stigma and discrimination (KP)	% of KP members who avoid health care because of stigma and discrimination	Consistent with GAM 4.2 and GF HIV O-16
National priority			
KP.3	Coverage of OST	% of PWID receiving OST	Consistent with GAM 3.10. Related to GF KP-5 and MER KP_MAT.
KP.4	Safe injecting practices (PWID)	% of PWID reporting using sterile injecting equipment the last time they injected	Consistent with GAM 3.8 and GF HIV O-6
TL.6 (NEW)	Know their status (KP)	% of KP members who tested for HIV in the past 12 months or who know their current HIV status	Consistent with GAM 3.4

Gen pop = general population; KP = key population; OST = opioid substitution therapy; PWID = people who inject drugs

3.8.2 Paediatric and adolescent HIV care and treatment

Conceptual framework

Paediatric treatment coverage lags behind that of adults; compared with adults, a smaller proportion of children and adolescents living with HIV is diagnosed and initiated on ART.[1] Worldwide, the most common route of HIV acquisition by children is during pregnancy, delivery or breastfeeding – known as vertical transmission (VT) (see section 3.5 on prevention of VT). Reducing the number of children dying of HIV requires prevention of new infections through effective interventions to promptly identify and treat infants and children living with HIV. Without treatment, half of all children living with HIV will die before the age of two.[2, 3]

[1] Communities at the centre: defending rights, breaking barriers, reaching people with HIV services. Geneva: UNAIDS, 2019 (https://www.unaids.org/sites/default/files/media_asset/2019-global-AIDS-update_en.pdf).

[2] WHO AIDS FREE Toolkit: Accelerating progress in testing and treatment for children and adolescents with HIV [website] (https://www.who.int/hiv/pub/paediatric/aids-free-toolkit/en/).

[3] Children and HIV fact sheet [webpage]. Geneva: UNAIDS; 2016 (http://www.unaids.org/sites/default/files/media_asset/FactSheet_Children_en.pdf).

As for adolescents, country reporting of adolescent-disaggregated data continues to be suboptimal. Monitoring the adolescent HIV epidemic has proved difficult because HIV data are inadequately disaggregated by age and sex.[1] In fact, due to this gap, global estimates of ART coverage are not available for adolescents ages 15–19 years living with HIV. Treatment coverage, adherence to treatment and viral suppression rate have been reported to be lower in adolescents than in older age groups.[2, 3] The significant changes and differences between younger adolescents (ages 10–14) and older adolescents (ages 15–19), which affect service delivery, necessitate better reporting of 5-year age-disaggregated data for adolescents.

The cascade of care is the same for children living with HIV as for adults – diagnosis, linkage, enrolment, treatment and viral suppression (Fig. 1.3). Thus, most of the indicators for children and adults living with HIV are identical to those for the adult population, with specific age disaggregation providing the information on children. However, the collection, organization, reporting and interpretation of strategic information for children and adolescents present specific challenges. For example, HIV-exposed infants and young children may be lost to follow-up before determination of their HIV status, making it difficult to accurately count the number of HIV-positive children. Adolescents may not be able to provide consent to HIV diagnosis and care, and they are often excluded from surveys, making it difficult to document and understand the HIV epidemic and the response in this population. The consequent dearth of data on children and adolescents has limited the capacity of programmes to tailor their services to young clients and to monitor how well they are meeting needs – hence, the need to intensify efforts to strengthen age-disaggregation and effective use of disaggregated data to improve service delivery to these groups.

The dearth of data on children and adolescents has limited the capacity of programmes to tailor their services to young clients and to monitor how well they are meeting needs.

Strategic information in paediatric and adolescent cascade services

Age disaggregation

Age disaggregation is essential to monitor and evaluate the paediatric and adolescent HIV cascade. As a child living with HIV grows from birth to childhood to younger adolescence to older adolescence and adulthood, care and treatment needs and responses change. Information along the care and treatment cascade for various age groups can help identify gaps and monitor the scale-up of specific interventions and services in priority age groups.

Following the United Nations Convention on the Rights of the Child, WHO and the United Nations Children's Fund (UNICEF) define a "child" as a human being below the age of 18.[4] At the same time, adolescence is defined as ages 10 through 19 years. In HIV epidemiology, however, it is common to count boys and girls ages 0–14 years as children, while ages 15 years and above are considered together with adults. Reasons for this include the need for consistency in trend data, the homogeneity of the population under age 15 in terms of timing and mode of acquisition of HIV (that is, almost entirely vertical) and the feasibility in most countries of disaggregating by standard 5-year age groups.

---

[1] Start free stay free AIDS free 2019 report. Geneva: UNAIDS; 2019 (https://www.unaids.org/sites/default/files/media_asset/20190722_UNAIDS_SFSFAF_2019_en.pdf).

[2] Ending the AIDS epidemic for adolescents, with adolescents. Geneva: UNAIDS, 2016 (https://www.unaids.org/sites/default/files/media_asset/ending-AIDS-epidemic-adolescents_en.pdf).

[3] Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection. Geneva: WHO; 2016 (https://www.who.int/hiv/pub/arv/arv-2016/en/).

[4] The United Nations Convention on the Rights of the Child defines a child as "a human being below the age of 18 years unless, under the law applicable to the child, majority is attained earlier".

The proposed age categories for disaggregating HIV-related data from birth through adolescence are: 0–4,[1] 5–9, 10–14 and 15–19 years or combinations of these age groups (for example, <5, or 10–19 years for adolescents). Throughout childhood and adolescence, finer age disaggregation can reveal gaps in ART coverage of specific age groups and provide essential information for planning age-appropriate approaches to service delivery. In addition, finer age disaggregation enables more accurate forecasting of commodity needs and programme planning tailored to the patient population's characteristics.

Determining the size of the populations of children exposed to and living with HIV

Indicators such as early infant diagnosis (VT.2) and ART coverage (AV.1) require estimates of the number of children exposed to or living with HIV in the denominator. Spectrum AIM software, which is used by country-based teams to generate estimates, incorporates data on HIV prevalence, fertility, treatment regimens provided to pregnant women, duration of breastfeeding and other country-specific data to estimate the number of new child infections and the timing of those infections. The numbers of children living with HIV are then estimated based on the number of children receiving ART and co-trimoxazole and taking into consideration competing causes of mortality. The relatively sparse directly observed data on children used in the models result in uncertainty around these estimates. As models such as Spectrum AIM are regularly updated and refined, the specific impact of such changes, including on the estimated number of exposed children and children living with HIV, are documented in the AIDS FREE toolkit.[2]

Data are seldom collected on the numbers of new infections among children and adolescents attributable to sexual transmission or injecting drug use, which occur particularly in their second decade. Surveys do not often interview people in these age groups since most have not reached the age of consent. Where this is an issue, the number of children and adolescents acquiring HIV through these modes of transmission should be estimated to better understand and tailor prevention and treatment efforts.

Monitoring children and adolescents across multiple sources of care

Tracking children and adolescents living with HIV through the cascade of care and treatment is challenging. There are many service provision points where HIV-infected children are identified and enrolled in care – for example, referral hospitals, ANC clinics, ART sites, mother and child health (MCH) settings, immunization clinics and well-child clinics. Children are often diagnosed in one facility and then referred to another facility to start care. Then, they may be transferred to yet another site to continue treatment, due to the perceived higher complexity of treating children, frequent shortages of paediatric ARV formulations and the relative scarcity of health workers trained in paediatric HIV care and adolescent-friendly services. The multiplicity of service points provides opportunities to enhance ART coverage. At the same time, however, it increases the risk of gaps in care due to insufficient linkages between services and loss to follow-up. As for patient tracking, unique identifier codes for users and digital information systems can strengthen ART retention by identifying loss to follow-up and so prompting patient tracing as appropriate.

Selection and use of indicators

Monitoring the care cascade for children and adolescents living with HIV from diagnosis to enrolment and retention in HIV care and treatment is based on age-disaggregated data from indicators across all programme cascade domains. (Detailed indicator descriptions can be found in the relevant sections of Part 3.)

---

[1] Although the first category, encompassing 0–4 years of age, is used for general cascade indicators, there are specific vertical transmission indicators that use narrower age bands in their definitions to capture service delivery coverage during critical windows of care for exposed and newly diagnosed infants.

[2] Improving UNAIDS' paediatric and adolescent estimates. Geneva: UNAIDS; 2018 (https://www.unaids.org/en/resources/documents/2018/20180720_paed_ado_estimates).

Trends in the volume and positivity of tests among children (TL.2) help gauge whether HIV-positive children have access to testing and are being diagnosed. The indicators of linkage to ART (TL.3) and PLHIV on ART (AV.1) provide key measures of programme effectiveness in identifying, tracking and retaining children and adolescents living with HIV in care services as they progress from infancy through childhood and adolescence. If treatment and care coverage rates are low, programmes should assess HIV diagnosis strategies as well as uptake and retention in care. The trend in percentage of eligible children newly initiating ART (AV.4) can be monitored to assess progress in improving uptake and increasing the scale of treatment services.

Review of vertical transmission (VT) indicators, such as EID coverage (VT.2) and Final outcome of PMTCT (VT.6), may help identify gaps in identification of HIV-infected children and strategies for improving early diagnosis of children at risk. While all infants identified and confirmed HIV-positive are eligible to start ART immediately, HIV-exposed infants (but not confirmed HIV-positive) need to be followed over time until their final HIV status is determined. Infected infants and children may drop out of the cascade at various stages and, once lost to follow-up, experience higher mortality rates.

Several quality-of-care indicators monitor the effectiveness of programmes addressing children and adolescents. In the case of Total attrition from ART (AV.2), programmes should track children and adolescent living with HIV who were lost to follow-up and investigate why they stopped treatment. Low rates of VL suppression (AV.3) may indicate low levels of adherence that may be related to the patient's age and require age-appropriate interventions.

Disaggregation of indicators by age group can provide further insight into reasons for low performance. Infants, children and adolescents access services at different treatment points and may experience very different barriers to HIV testing, HIV care services and ART retention and adherence based on their age and developmental stage.

3.8.3 Adolescent girls and young women

Although recent population-based surveys show declining HIV incidence overall, adolescent girls and young women in specific areas in East and Southern Africa are one of the few groups that continue to experience high HIV incidence. The prevention and treatment needs of adolescents and young adults are heterogeneous, requiring responses tailored to epidemiological considerations and to social context. For example, in some areas a specific focus on adolescent girls and young women might need to address the intersection with key populations, that is, young women who sell sex and so have high vulnerability to HIV and/or young women who inject drugs. Due to their age, young women may also face significant legal barriers to accessing sexual and reproductive health services.

For these reasons analysis of the priority cascade indicators for testing, treatment and viral suppression should be disaggregated by age and sex to obtain a set of service indicators for adolescent girls and young women to use for improving quality and tailoring services to the needs of this population.

In addition, programmes must emphasize coverage of prevention services in countries with a high incidence of HIV among adolescent girls and young women. The implementation and scale-up of a combination of prevention interventions are often needed to effectively reduce the vulnerability of adolescent girls and young women, especially with respect to sexual and reproductive health. Results from the recently concluded Evidence for Contraceptive Options in HIV Outcomes (ECHO) trial in East and Southern Africa showed high incidence of HIV infection among women seeking contraception in the study, with a higher rate among women under 25 years than among older women, irrespective of the method of contraception used. This high rate of HIV infection among women, and especially younger women, reinforces the need to

strengthen the integration of HIV testing into contraceptive and other sexual and reproductive health (SRH) services. HIV testing is the essential first step in linking people newly identified as living with HIV to ART, and condom promotion and PrEP may be appropriate for those testing HIV-negative.

The indicator to assess HIV testing coverage among women seeking contraception services (GW.1) is intended for use where HIV prevalence or incidence among women of reproductive age is high (Table 3.11). Where this is true, it will vary between and within countries. Therefore, integrating HIV testing services into contraception services could be focused on specific geolocations with known high incidence/prevalence, where providing HIV testing may be most beneficial.

Table 3.11 Specific indicator for adolescent girls and young women in the Top 40

Ref. no.	Short name	Short description	Alignment
National priority			
GW.1 (NEW)	AGYW HIV/SRH integration	% of AGYW seeking contraception/ family planning who received an HIV test	NA

AGYW = adolescent girls and young women; SRH = sexual and reproductive health

3.9 Differentiated use

The following sections review the indicators recommended for countries meeting the differentiated use criteria for specific programme areas based on specific epidemiologic characteristics, programme investments or extraordinary programme gaps.

3.9.1 Voluntary medical male circumcision

Conceptual framework

Since 2007 WHO and UNAIDS have recommended voluntary medical male circumcision (VMMC) as an important strategy for the prevention of heterosexually acquired HIV in men.[1] VMMC is a part of combination HIV prevention and should be an element in a package of care that includes comprehensive sexuality education, condom promotion and provision, HIV testing and linkage to ART, and STI management. VMMC is cost-effective and in many settings cost-saving when compared with the costs of lifelong ART if a man becomes infected. Other benefits of VMMC include the reduced risk of some other STIs, including human papillomavirus infection, the cause of cervical cancer. Currently, 15 countries where HIV burden is high and male circumcision is uncommon have made significant investment in the scale-up of VMMC. The priority indicators in Table 3.12 are recommended for these countries. As these countries scale up VMMC, they need to develop sustainability plans informed by data.

[1] WHO, UNAIDS. New data on male circumcision and HIV prevention: policy and programme implications. WHO/UNAIDS technical consultation: male circumcision and HIV prevention: research implications for policy and programming, Montreux, 6–8 March 2007. Geneva: WHO; 2007 (http://www.who.int/hiv/pub/malecircumcision/research_implications/en/index.html).

Strategic information for VMMC

Establishing and enhancing strategic information systems

This guide prioritizes indicators on the number of medical male circumcisions performed and the prevalence of adverse events related to VMMC. Additional information to support the development of VMMC M&E systems, including additional indicators, can be found in the WHO/UNAIDS *Guide to indicators for male circumcision programmes in the formal health care system*.[1] Countries prioritizing indicators and data systems for VMMC have an important opportunity to improve the collection of other HIV and sexual and reproductive health information on men, who may interact with the health system infrequently. Such data might cover HIV testing, linkages to care and treatment for men who test HIV-positive and the prevalence of STIs. Such information can inform age-relevant comprehensive sexuality education and condom promotion and provision.

To provide useful planning information, all indicators should be disaggregated (for example, by age and by service site) (see recommended disaggregations in the reference sheets in section 3.11). Quality may be assessed using standards and criteria available in *Male circumcision quality assurance: a guide to enhancing the safety and quality of services*. The source of most information on VMMC services will be health facilities' records or special surveys; collection of data from the private and traditional sectors is limited. As best practices for obtaining such information develop, countries can learn from each other.

Further information

- UNAIDS/WHO guide to indicators for male circumcision programmes in the formal health care system. Geneva: WHO and UNAIDS; 2009 (http://whqlibdoc.who.int/publications/2009/9789241598262_eng.pdf?ua=1).
- Male circumcision quality assurance: a guide to enhancing the safety and quality of services. Geneva: WHO; 2008 (https://www.who.int/hiv/pub/malecircumcision/who_hiv_mc_q_assurance.pdf).
- Male circumcision services quality assessment toolkit. Geneva: WHO; 2009 (https://www.who.int/hiv/pub/malecircumcision/qa_toolkit/en/).

Table 3.12 Recommended indicators for VMMC differentiated use case

Ref. no.	Short name	Short description	Alignment
DfC.1	VMMC scale-up	Number of VMMCs performed according to the national standard	Consistent with GAM 3.17, GF MEN-1, MER VMMC_CIRC
DfC.2	VMMC adverse events	Number and % of circumcised males experiencing adverse events	NA

VMMC = voluntary medical male circumcision

[1] A guide to indicators for male circumcision programmes in the formal health care system. Geneva: WHO and UNAIDS, 2009 (https://www.who.int/hiv/pub/malecircumcision/indicators/en/).

3.9.2 Injection safety

Universal precautions in healthcare settings include injection safety and safe disposal of injection equipment; these precautions are part of good public health practice to prevent nosocomial transmission of bloodborne agents – HIV, hepatitis B and C and syphilis. WHO and the Safe Injection Global Network (SIGN) Alliance have developed the *Tool for the assessment of injection safety and the safety of phlebotomy, lancet procedures, intravenous injections and infusions*.[1] The indicators proposed in Table 3.13 come from this tool, which has been and continues to be successfully used to conduct national surveys on injection safety.

Systematic application of injection safety principles requires programmes to use new, disposable, single-use injection equipment for all therapeutic injections.[2]

Further information

- Hayashi T, Hutin YJ, Bulterys M, Altaf A, Allegranzi B. Injection practices in 2011–2015: a review using data from the Demographic and Health Surveys (DHS). BMC Health Serv Res. 2019;19:600 (https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-019-4366-9#citeas).

Table 3.13 Recommended indicators for injection safety differentiated use case

Ref. no.	Short name	Short description	Alignment
DfI.1	Facility-level injection safety	% of healthcare facilities where all therapeutic injections are given with new, disposable, single-use injection equipment	NA
DfI.2	Rate of unsafe injections per person	Number of unsafe healthcare injections per person per year	NA

3.9.3 Blood safety

Conceptual framework

There are five key components to eliminating the risk of HIV transmission through blood transfusion:

- establishment of well-organized, nationally coordinated blood transfusion services
- collection of blood from unpaid volunteer blood donors from low-risk populations
- quality-assured testing for transfusion-transmissible infections, blood grouping and compatibility
- safe and appropriate use of blood and a reduction in unnecessary transfusions
- quality assurance and enhancement systems covering the entire transfusion process.

[1] Revised injection safety assessment tool (Tool C – revised). Tool for the assessment of injection safety and the safety of phlebotomy, lancet procedures, intravenous injections and infusions. Geneva: WHO; 2008 (https://www.who.int/infection-prevention/tools/injections/ToolC-revised.pdf).

[2] A guide on indicators for monitoring and reporting on the health sector response to HIV/AIDS. Geneva: WHO; 2011 (http://www.WHO.int/hiv/data/UA2011_indicator_guide_en.pdf).

Approximately 58% of the 117.4 million blood donations collected globally each year are collected in low- and middle-income countries.[1] The higher prevalence of HIV in blood donations in upper middle-, lower-middle- and low-income countries (0.10%, 0.14% and 0.86%, respectively) compared with high-income countries (median of 0.002%) reflects the higher underlying prevalence of HIV in the general population and more frequent use of higher risk donors.

Globally, many countries are working toward maintaining a stable base of regular, voluntary, unpaid blood donors by promoting voluntary blood donations and discontinuing paid blood donation. Although donations from voluntary, unpaid donors have increased, 58 of 139 countries surveyed in 2015 still collected more than half of their blood supply from family/replacement[2] or paid donors. Paying blood donors increases the likelihood that key population members, whose access to other sources of income may be limited, donate blood. In turn, the higher HIV incidence among key populations may increase the possibility that HIV-positive individuals donate blood within the window period, that is, soon after infection and prior to detectable levels of antibodies, thus potentially leading to false HIV-negative test results and putting blood recipients at risk.

WHO recommends that all blood donations be screened for HIV, hepatitis B virus (HBV), hepatitis C virus (HCV) and syphilis prior to use. Yet, in 2015 nearly one-quarter of blood donations in low-income countries were not screened according to basic quality procedures, which include documented standard operating procedures and participation in an external quality assurance scheme.[3]

Selection and use of indicators

The national programme indicators selected for blood transfusion safety (Table 3.14) reflect whether national programmes have the capacity and resources to ensure that every unit of blood used for transfusions has been appropriately screened. Complete (that is, 100%) screening is the expected norm for a functioning national blood supply system.

Further information

- Global health sector strategy on HIV, 2016–2021. Geneva: WHO; 2016 (https://www.who.int/hiv/strategy2016-2021/ghss-hiv/en/).
- Global hepatitis report 2017. Geneva: WHO; 2017 (https://www.who.int/hepatitis/publications/global-hepatitis-report2017/en/).

[1] Blood safety and availability [webpage]. Geneva: WHO; June 2019 (https://www.who.int/news-room/fact-sheets/detail/blood-safety-and-availability).

[2] Family members and friends of the person in need of a blood transfusion may donate blood directly to the patient, or their blood may be used to replace the stored blood used by the patient.

[3] Blood safety and availability [webpage]. Geneva: WHO; June 2019 (https://www.who.int/news-room/fact-sheets/detail/blood-safety-and-availability).

Table 3.14 Recommended indicators for blood safety differentiated use case

Ref. no.	Short name	Short description	Alignment
DfB.1	Facility-level blood safety	% of health facilities providing blood transfusion that meet requirements for safe and sufficient blood transfusion	NA
DfB.2	Quality-assured blood testing	% of blood units that are screened for bloodborne diseases in a quality-assured manner	NA

3.9.4 Tuberculosis/HIV

As detailed in section 3.4, the differentiated indicators include a set of five that reflect the TB screening and diagnostic cascade. These indicators are important for monitoring gaps in the TB detection cascade for all countries and are considered priority for the high-burden TB/HIV countries.

3.9.5 Hepatitis

It is estimated that between 5% and 25% of the approximately 36.7 million people living with HIV worldwide also have chronic hepatitis B infections (2.7 million) and/or hepatitis C (2.3 million) infections.[1, 2] HIV coinfection increases the severity of infections with hepatitis B and C viruses (HBV and HCV) and, in the absence of ART, may increase the risk of death due to cirrhosis, hepatocellular carcinoma and other liver-related mortality and reduce response to hepatitis C treatment.

The 2019 *Consolidated strategic information guidelines for viral hepatitis*[3] promote reporting on routine screening for HBV and HCV as essential to proper management of co-infection among people living with HIV. Since 2016 the GAM survey has included indicators for HBV and HCV screening among people living with HIV who are starting on ART. Based on analyses of reported indicator data over two annual cycles, WHO now recommends focusing the use of HCV indicators in high endemicity countries and those with large populations of people who inject drugs (Table 3.15). Due to the increase in use of tenofovir (TDF)-based ART regimens, which are also effective for those co-infected with HBV, screening people living with HIV for HBV is not currently considered essential for purposes of initial clinical management and routine reporting. If a change in ART regimens is considered, tenofovir discontinuation should be avoided in those who are HBsAg-positive. Finally, given the increasing emphasis on use of direct-acting antivirals as curative therapy for chronic HCV infection, an additional indicator on treatment coverage (DfH.2) has been included.

[1] Platt L, French CE, McGowan CR, Sabin K, Gower E, Trickey A et al. Prevalence and burden of HBV co-infection among people living with HIV: A global systematic review and meta-analysis. J Viral Hepat. 2019 Oct 11 (https://www.ncbi.nlm.nih.gov/pubmed/31603999).

[2] Platt L, Easterbrook P, Gower E, McDonald B, Sabin K, McGowan C et al. Prevalence and burden of HCV co-infection in people living with HIV: a global systematic review and meta-analysis. Lancet Infect Dis. 2016 Jul;16(7):797–808.

[3] Consolidated strategic information guidelines for viral hepatitis: planning and tracking progress towards elimination. Geneva: WHO; 2019 (https://www.who.int/hepatitis/publications/strategic-information-hepatitis/en/).

Further information

- Consolidated SI guidelines for viral hepatitis: planning and tracking progress towards elimination. Geneva: WHO; 2019 (https://www.who.int/hepatitis/publications/strategic-information-hepatitis/en/).

Table 3.15 Recommended indicators for hepatitis differentiated use case

Ref. no.	Short name	Short description	Alignment
DfH.1	HCV screening* coverage	% of PLHIV on ART who were screened for hepatitis C during the reporting period	Consistent with GAM 10.8
DfH.2	HCV treatment coverage	% of PLHIV on ART and diagnosed with chronic HCV infection who initiated HCV treatment during the reporting period	NA

ART = antiretroviral treatment; HCV = hepatitis C virus; PLHIV = people living with HIV
* "Screening" refers to both initial HCV antibody testing and HCV viral load (RNA) confirmation.

3.10 Burden and impact indicators

Assessing impact means looking at the long-term, cumulative effects of programmes or interventions over time on what they ultimately aim to accomplish, such as a reductions in HIV infection, HIV-related morbidity and mortality. For this purpose it is necessary to use modelled estimates because it is impossible in any country to count the exact number of people living with HIV, people who are newly infected with HIV or people who have died from HIV-related causes. Country teams use UNAIDS-supported software (for example, Spectrum AIM) to develop estimates annually. The country teams comprise primarily national epidemiologists, demographers and M&E specialists as well as technical partners.

The model-based indicators listed in Table 3.16 are used to assess burden and impact and the long-term results of the HIV/AIDS response.

Further information

- Spectrum. Avenir Health (website): http://www.avenirhealth.org/software-spectrum.php.
- Communities at the centre. Defending rights, breaking barriers, reaching people with HIV services. Geneva: UNAIDS; 2019 (https://www.unaids.org/sites/default/files/media_asset/2019-global-AIDS-update_en.pdf). See pages 295–305.
- AIDS, December 15, 2019; volume 33, supplement (https://journals.lww.com/aidsonline/toc/2019/12153). A journal supplement on HIV estimates from Spectrum AIM.

Table 3.16 Modelled and survey-based indicators of disease burden and impact

Domain	Indicator	Disaggregation	Method
Burden	BI.1 People living with HIV	Key populations (MSM, prisoners, PWID, SW, transgender persons) Gender (male, female, transgender) Age (<15, 15+)	Spectrum AIM
	BI.2 HIV prevalence among KP	Key populations (MSM, prisoners, PWID, SW, transgender persons) Gender (male, female, transgender) Age <25, 25+	Surveys
Impact	BI.3 New HIV infections (per 1000 population)	Gender (male, female, transgender) Age (<15, 15+)	Spectrum AIM
	BI.4 Final MTCT rate	None	Spectrum AIM
	BI.5 AIDS mortality	Gender (male, female, transgender) Age (<15, 15+)	Spectrum AIM

KP = key population; MSM = men who have sex with men; MTCT = mother-to-child transmission; PWID = people who inject drugs; SW = sex workers

3.11 Detailed descriptions of the national indicators

Notes

(NEW): Indicator is new, not included in 2015 consolidated SI guidelines

Alignment categories

Consistent: Numerator and denominator definitions are the same.

Similar: Basic definitions are the same, but there are some differences in how the numerator or denominator is calculated.

Related: An indicator is reflected as only a numerator or denominator or a disaggregation category in other frameworks.

Partner designations

GAM = Global AIDS Monitoring indicators (v.2020)

GF = Global Fund for AIDS, TB, and Malaria Modular Framework indicators (v. October 2019)

MER = United States President's Emergency Fund for AIDS Relief, Monitoring, Evaluation and Reporting indicators (v.2.4 FY20).

Table 3.17 Summary descriptions of the national indicators

Ref. no.	Short name	Short description	Alignment
Condom use			
PR.1 ●	Condom use (KP & Gen pop)	% of people who used a condom during their last high-risk sex act in the last 12 months	Consistent with GF HIV O-4 & O-10. Similar to GAM 3.6 & 3.18.
PR.2 (NEW) ●	Condoms distributed	Total number of condoms distributed during the reporting period	Consistent with GAM 3.19
PrEP			
PR.3 (NEW) ●	PrEP uptake	% of eligible people who initiated oral PrEP during the reporting period	Consistent with GF KP-6 & YP-4. Similar to MER PrEP_NEW.
PR.4 (NEW) ●	PrEP continuation (at 3 months)	% of PrEP users who continued oral PrEP for 3 consecutive months after having initiated PrEP during the reporting period	NA
PR.5 ●	Currently on PrEP	Number of people who received oral PrEP at least once during the reporting period	Consistent with GAM 3.15 and MER PrEP_CURR
Testing & linkage			
TL.1 ●	PLHIV who know their HIV status (first 95)	Number and % of people living with HIV who know their status	Consistent with GAM 1.1 and GF HIV O-11
TL.2 (NEW) ●	HTS testing volume and positivity	Number of HIV tests conducted (testing volume) and the % of HIV-positive results returned to people (positivity)	Similar to GAM 1.8, MER HTS_TST and GF HTS-4
TL.3 ●	Linkage to ART	% of people newly diagnosed with HIV initiated on ART	Consistent with GF HTS-5
TL.4 ●	HTS index testing and partner notification	Number of people who were identified and tested using index testing services and received their results	Consistent with MER HTS_INDEX
TL.5 (NEW) ●	HIVST distribution	Number of individual HIVST kits distributed	Consistent with MER HTS_SELF. Related to GAM 1.7.
TL.6 (NEW) ●	Know their status (KP)	% of KP members who tested for HIV in the past 12 months or who know their current HIV status	Consistent with GAM 3.4
ART & viral load			
AV.1 ●	PLHIV on ART	Number and % of people on ART among all people living with HIV at the end of the reporting period	Consistent with GAM 1.2 & 3.5, GF TCS-1 and MER TX_CURR
AV.2 (NEW) ●	Total attrition from ART	Number and % of people living with HIV reported on ART at the end of the last reporting period and/or newly initiating ART during the current reporting period who were not on ART at the end of the reporting period	Consistent with GF HIV O-21. Similar to MER TX_ML.

● National core indicator ● National priority indicator ● Differentiated use ● Burden/impact indicator

Ref. no.	Short name	Short description	Alignment
AV.3 ●	PLHIV who have suppressed VL	% of PLHIV on ART (for at least 6 months) who have virological suppression	Similar to GAM 1.4, GF HIV O-12 and MER TX_PVLS
AV.4 ●	New ART patients	Number of PLHIV who initiated ART	Consistent with MER TX _NEW. Related to GAM 1.2 and GF HTS-5.
AV.5 ●	Late ART initiation	% of PLHIV who initiate ART with a CD4 count of <200 cells/mm³	NA
AV.6 ●	VL testing coverage	% of people on ART (for at least 6 months) with VL test results	NA
AV.7 (NEW) ●	Early VL testing (at 6 months)	Number and % of PLHIV on ART who had VL monitoring at 6 months after initiation of ART	NA
AV.8 ●	Appropriate second VL test	% of people receiving ART with VL ≥1000 copies/mL who received a follow-up VL test within 6 months	NA
AV.9 ●	ARV toxicity prevalence	% of ART patients with treatment-limiting toxicity	NA
TB/HIV			
TB.1 ●	TPT initiation	Number and % of eligible PLHIV on ART who initiated TB preventive treatment	Similar to GAM 10.3 and GF TB/HIV-7
TB.2 ●	TPT completion	% of PLHIV on ART who completed a course of TB preventive treatment among those who initiated TPT	Similar to MER TB_PREV
TB.3 ●	TB diagnostic testing type	% of PLHIV with TB symptoms who receive a rapid molecular test as a first test for diagnosis of TB	NA
TB.4 ●	PLHIV with active TB disease	% of PLHIV newly initiated on ART who have active TB disease	Consistent with GAM 10.2
Vertical transmission			
VT.1 (NEW) ●	Viral suppression at labour and delivery	% of HIV-positive pregnant women who are virally suppressed at labour and delivery	NA
VT.2 ●	EID coverage	% of HIV-exposed infants who receive a virological test for HIV within 2 months (and 12 months) of birth	Consistent with GAM 2.1, GF PMTCT-3.1 and MER PMTCT_EID
VT.3 ●	Infant ARV prophylaxis coverage	% of HIV-exposed infants who initiated ARV prophylaxis	NA
VT.4 ●	ART coverage in pregnant women	% of HIV-positive pregnant women who received ART during pregnancy and/or at labour and delivery	Consistent with GAM 2.3 and GF PMTCT-2.1. Similar to MER PMTCT_ART.
VT.5 ●	ART coverage in breastfeeding mothers	% of HIV-exposed breastfeeding infants whose mothers are receiving ART at 12 (and 24) months postpartum	NA
VT.6 ●	Final outcome of PMTCT	% of HIV-exposed infants whose final outcome status is known	Consistent with MER PMTCT_FO

● National core indicator ● National priority indicator ● Differentiated use ● Burden/impact indicator

Ref. no.	Short name	Short description	Alignment
STI			
ST.1 ●	Syphilis screening coverage (in ANC)	% of ANC attendees tested for syphilis	Consistent with GF PMTCT-4
ST.2 ●	Syphilis treatment coverage (in ANC)	% of ANC attendees testing seropositive for syphilis who are treated	NA
ST.3 (NEW) ●	Cervical cancer screening among women living with HIV	% of women living with HIV who have been screened for cervical cancer	Similar to GAM 10.8 and MER CXCA_SCRN
Stigma and discrimination			
SD.1 ●	Avoidance of health care due to stigma and discrimination (KP)	% of KP members who avoid health care because of stigma and discrimination	Consistent with GAM 4.2 and GF HIV O-16
SD.2 (NEW) ●	Avoidance of health care due to stigma and discrimination (PLHIV)	% of PLHIV who avoid health care because of stigma and discrimination	NA
Key population-specific			
PR.1 ●	Condom use (KP & Gen pop)	% of people who used a condom during their last high-risk sex act in the last 12 months	Consistent with GF HIV O-4 & O-10. Similar to GAM 3.6 & 3.18.
KP.1 (NEW) ●	Coverage of HIV prevention (KP)	% of KP members reached with HIV prevention programmes with a defined package of services	Similar to GAM 3.7, GF KP-1 and MER KP_PREV
KP.2 ●	Needles and syringes distributed	Number of needles and syringes distributed per year per person who injects drugs	Consistent with GAM 3.9 and GF KP-4
KP.3 ●	Coverage of OST	% of PWID receiving OST	Consistent with GAM 3.10. Related to GF KP-5 and MER KP_MAT.
KP.4 ●	Safe injecting practices (PWID)	% of PWID who report using sterile injecting equipment the last time they injected	Consistent with GAM 3.8 and GF HIV O-6
TL.6 (NEW) ●	Know their status (KP)	% of KP members who tested for HIV in the past 12 months or who know their current HIV status	Consistent with GAM 3.4
AGYW-specific			
GW.1(NEW) ●	AGYW HIV/SRH integration	% of AGYW seeking contraception/ family planning who received an HIV test	NA

● National core indicator ● National priority indicator ● Differentiated use ● Burden/impact indicator

Ref. no.	Short name	Short description	Alignment
Differentiated use			
DfC.1 ●	VMMC scale-up	Number of VMMCs performed according to the national standard	Consistent with GAM 3.17, GF MEN-1 and MER VMMC_CIRC
DfC.2 ●	VMMC adverse events	Number and % of circumcised males experiencing adverse events	NA
DfI.1 ●	Facility-level injection safety	% of healthcare facilities where all therapeutic injections are given with new, disposable, single-use injection equipment	NA
DfI.2 ●	Rate of unsafe injections per person	Number of unsafe healthcare injections per person per year	NA
DfB.1 ●	Facility-level blood safety	% of health facilities providing blood transfusions that meet requirements for safe and sufficient blood transfusions	NA
DfB.2 ●	Quality-assured blood testing	% of blood units that are screened for bloodborne diseases in a quality-assured manner	NA
DfT.1 ●	TB screening coverage among new ART patients	% of PLHIV newly initiated on ART who were screened for TB	NA
DfT.2 ●	TB symptom-screened positive among new ART patients	% of PLHIV newly initiated on ART who were screened for TB symptoms and who screened positive	NA
DfT.3 ●	TB testing among those symptom-screened positive	% of people living with HIV newly initiated on ART and screened positive for TB symptoms who then are tested for TB	NA
DfT.4 ●	TB diagnosis among those tested for TB	% of PLHIV newly initiated on ART and tested for TB who are diagnosed with active TB disease	NA
DfT.5 ●	TB treatment initiation among diagnosed	% of PLHIV newly initiated on ART and diagosed with active TB who initiated TB treatment	NA
DfH.1 ●	HCV screening coverage	% of PLHIV on ART who were screened for hepatitis C during the reporting period	Similar at GAM 10.8
DfH.2 ●	HCV treatment coverage	% of PLHIV on ART and diagnosed with chronic HCV infection who initiated HCV treatment during the reporting period	NA

● National core indicator ● National priority indicator ● Differentiated use ● Burden/impact indicator

Ref. no.	Short name	Short description	Alignment
Burden/impact			
BI.1 ●	People living with HIV	Estimated number of people living with HIV	Consistent with GF HIV I-13
BI.2 ●	HIV prevalence among KP	% of specific key populations living with HIV	Consistent with GAM 3.3 and GF HIV I-9
BI.3 ●	New HIV infections (per 1000 population)	Estimated number of people newly infected with HIV per 1000 uninfected population	Consistent with GAM 3.1 and GF HIV I-14
BI.4 ●	Final MTCT rate	Estimated % of children newly infected with HIV from mother-to-child transmission among women living with HIV delivering in the past 12 months	Consistent with GAM 2.2 and GF HIV I-6
BI.5 ●	AIDS mortality	Total number of people who have died from AIDS-related causes per 100 000 population	Consistent with GAM 1.7 and GF HIV I-4

AGYW = adolescent girls and young women; ANC = antenatal care; ART = antiretroviral treatment; ARV = antiretroviral; EID = early infant diagnosis; Gen pop = general population; HCV = hepatitis C virus; HIVST = HIV self-testing; HTS = HIV testing services; KP = key populations; MSM = men who have sex with men; MTCT = mother-to-child transmission; OST = opioid substitution therapy; PLHIV = people living with HIV; PMTCT = prevention of mother-to-child transmission; PrEP = pre-exposure prophylaxis; PWID = people who inject drugs; SRH = sexual and reproductive health; TB = tuberculosis; TPT = tuberculosis preventive treatment; VL = viral load; VMMC = voluntary medical male circumcision

● National core indicator ● National priority indicator ● Differentiated use ● Burden/impact indicator

National core indicator

PR.1. Condom use (KP & Gen pop)

GF HIV O-4 & O-10; GAM 3.6 & 3.18

% of people who used condoms with a non-regular partner in the last 12 months (general population)

% of sex workers who used a condom the last time they had sex with a client

% of men who used a condom the last time they had anal sex with a non-regular male partner

% of transgender people who used a condom during last anal sex with a non-regular partner

% of people who inject drugs who used a condom the last time they had sex with a partner in the last month

What it measures

This indicator measures the extent to which condoms are used by people who are likely to have higher risk sex.

Rationale

- Condom use at last high-risk sex act gives a good indication of overall levels and trends of protected and unprotected sex.
- Changes in condom use are the combined result of community norms around condom use, availability of condoms and motivation of individuals to protect themselves when engaging in sex.
- Quantifying the number of unprotected high-risk sexual acts is a critical input for modelling HIV transmission.

For the general population

Numerator

Number of respondents who say they used a condom the last time they had sex with a non-marital, non-cohabitating (non-regular) partner in the last 12 months

Denominator

Number of respondents who report having had sex with a non-marital, non-cohabitating partner in the last 12 months

For sex workers

Numerator

Number of sex workers who report using a condom with their most recent paying client

Denominator

Number of sex workers who report having commercial sex in last 12 months*

For men who have sex with men

Numerator

Number of men who have sex with men who report that a condom was used the last time they had anal sex with a non-regular partner in the last 6 months*

Denominator

Number of men who have sex with men who report having had anal sex with a non-regular male partner in the last 6 months

For transgender people

Numerator

Number of transgender people who report that a condom was used the last time they had anal sex with a non-regular male partner in the last 6 months*

Denominator

Number of transgender people who report having had anal sex with a non-regular male partner in the last 6 months

For people who inject drugs

Numerator

Number of people who inject drugs who report that a condom was used the last time they had sex with a partner in the last 1 month*

Denominator

Number of people who inject drugs who report having had sex with a partner in the last 1 month

* Countries may apply different time periods to define which active key population members are eligible for the survey or are asked questions about condom use (for example, sex workers with a client in the last month). When a different time period defines a key population group more relevant for the epidemic context or consistent with a key population programme focus, countries should use that time period instead of the one given in the definition of the recommended indicator.

Method of measurement

For the general population. General population surveys (such as PHIA, DHS, AIS). Health facility records could also collect this routinely in specialized clinics, for example, HIV adolescent clinics, STI clinics, male health clinics.

Trends should be interpreted along with independent changes in the percentages of people who have had more than one sexual partner and the number of people with a non-regular partner within the last 12 months, by sex and age.

For key populations. Representative surveys of key populations (for example, BBS, BSS, HSS+). Where possible, results should be compared with rates of consistent condom use.

In countries where many men who have sex with men in the subpopulation surveyed are likely to have partners of both sexes, condom use with female as well as male partners should be investigated.

Note: The GAM indicators for last time condom use for key populations differ from the indicators here in terms of the types of sexual partners with whom the respondent had sex the last time. GAM definitions include any sexual partner, while these definitions specify last sex with a higher risk (non-regular) partner.

Disaggregation

- Gender (male, female, transgender).
- Age (<25, 25+).

National priority indicator

PR.2. Condoms distributed (NEW)

GAM 3.19

Total number of condoms distributed during the reporting period

What it measures

This indicator measures the number of condoms distributed through different modalities.

Rationale

- Proactive distribution of condoms is a strategy for ensuring adequate availability.
- By analysing the proportion of condoms distributed through different modalities, national programmes can optimize their investment in socially marketed and public-sector (that is, free) condom distribution.

Numerator (only)

Number of condoms distributed and sold during the reporting period

Method of measurement

Programme records (for example, local distribution offices, central warehouse stock records)

This indicator is important for analysing monthly and annual trends. The best approach is to sum the number of condoms given out from different service delivery points. Where these data are not available, the number of condoms distributed out of central warehouses is acceptable.

These data can be analysed by comparing condoms distributed per adult male nationally and subnationally.

The recommended reporting period is 12 months.

Disaggregation

- Condom type (male, female)
- Distribution type (commercial sector, social marketing, public sector).

National core indicator

PR.3. PrEP uptake (NEW)

GF KP-6, YP-4; MER PReP_NEW

% of eligible people who initiated oral pre-exposure prophylaxis (PrEP) during the reporting period

What it measures

This indicator measures the uptake of PrEP among those who are eligible.

Rationale

- Uptake of PrEP reflects people's awareness and interest in lowering their risk for HIV through the use of antiretrovirals.
- Through disaggregation, this indicator can help managers compare the uptake of PrEP among different types of users (for example, by first-time users, age, gender and members of priority populations).

Numerator

Number of people who initiated oral PrEP during the reporting period

Denominator

Number of people who were newly offered PrEP during the reporting period

Method of measurement

For the numerator and denominator. Programme records

The numerator includes those who started PrEP for the first time and those who have discontinued and restarted PrEP during the reporting period. The numerator should count each individual only once in a given reporting period.

The denominator is generated by counting the number of people offered PrEP after meeting eligibility criteria.

Oral PrEP dosing strategies may include daily and, for men who have sex with men, event-driven dosing. Since event-based dosing is recommended only for men who have sex with men, healthcare clients who are men who have sex with men could be asked at the time of PrEP initiation about their preferred dosing strategy. If event-based dosing is recorded in patient records or service registers, efforts must be made to ensure the confidentiality and security of these records, since event-based dosing will identify these clients as men who have sex with men.

The recommended reporting period is 12 months.

Disaggregation

- Gender (male, female, transgender)
- Age (15–19, 20–24, 25–49 and 50+)
- Experience with PrEP (first-time users, repeat users)
- Key populations (men who have sex with men, people living in prisons and other closed settings, people who inject drugs, sex workers, transgender people) and adolescent girls and young women
- Dosing (daily oral PrEP, event-driven PrEP (for men who have sex with men)).

National priority indicator

PR.4. PrEP continuation (at 3 months) (NEW)

% of pre-exposure prophylaxis (PrEP) users who continued oral PrEP for 3 consecutive months after having initiated PrEP during the reporting period

What it measures

This indicator measures the continuation of PrEP among people who start PrEP, and it also assesses loss to follow-up.

Rationale

- Data from some studies indicate that many users who discontinue oral PrEP do so during the first few months.
- This indicator provides a measure of early PrEP discontinuation as well as an indication of the number likely to continue taking PrEP.
- A low percentage of people continung on PrEP at 3 months should trigger investigation into the reasons that people stopped taking PrEP, and programmes should be revised appropriately.

Numerator

Number of people who continued on PrEP for 3 consecutive months after having initiated PrEP during the reporting period

Denominator

Number of people who initiated oral PrEP during the reporting period

Method of measurement

For the numerator and denominator. Programme records

People who initiated PrEP include both people who received PrEP for the first time and those who had previously discontinued PrEP and restarted it during the reporting period. Regular PrEP users who are continuing on PrEP should be excluded from both the numerator and denominator. All people who return for the 3-month visit and took PrEP until that time should be counted in the numerator, whether or not they chose to continue with PrEP after the 3-month visit.

The denominator is generated by counting the number of people who initiated oral PrEP during the reporting period (numerator of indicator PR.3) in accordance with national guidelines or WHO/UNAIDS standards. Individuals should be counted in the period in which they initiated PrEP to enable comparisons with the numbers from indicator PR.3 and for consistency across reporting periods.

For event-driven dosing among men who have sex with men, 3-month continuation is defined as reported use of the 4-dose regimen around at-risk exposures over a 3-month period. Continuation for event-driven dosing should not be based on number of pills taken, as this will incorrectly identify these clients as non-continuous. If event-based dosing is recorded in patient records or service registers, efforts must be made to ensure the confidentiality and security of these records, since event-based dosing will identify these clients as men who have sex with men.

The recommended reporting period is 12 months.

Disaggregation

- Gender (male, female, transgender)
- Age (15–19, 20–24, 25–49 and 50+)
- Key populations (men who have sex with men, people living in prisons and other closed settings, people who inject drugs, sex workers, transgender people) and adolescent girls and young women
- Dosing (daily oral PrEP, event-driven PrEP (for men who have sex with men)).

National priority indicator

PR.5. Currently on PrEP

GAM 3.15; MER PREP_CURR

Number of people who received oral PrEP at least once during the reporting period

What it measures

This indicator measures progress in scaling up PrEP and toward the expanded Fast Track targets.[1]

Rationale

- The use of antiretroviral medicines by people who are HIV-negative before they are exposed to HIV can prevent HIV infection.
- WHO recommends that oral PrEP containing tenofovir be offered as an additional prevention choice for people at substantial risk of HIV infection as part of combination HIV prevention approaches.

Numerator (only)

Number of people who received oral PrEP at least once during the reporting period

Method of measurement

The number counts all people who received oral PrEP at least once during the reporting period in accordance with national guidelines or WHO/UNAIDS standards. The number should count each individual only once: the first time they received oral PrEP during the reporting period. People who received oral PrEP through national programmes, demonstration projects, as part of research or through private means – and are taking it according to WHO/UNAIDS standards – should be included.

Disaggregation

- Gender (male, female, transgender)
- Age (15–19, 20–24, 25–49 and 50+)
- Experience with PrEP (first-time users, repeat users)
- Key populations (men who have sex with men, people living in prisons and other closed settings, people who inject drugs, sex workers, transgender people) and adolescent girls and young women.

[1] Fast-track commitments to end AIDS by 2030. Geneva: UNAIDS, 2016 (https://www.unaids.org/sites/default/files/media_asset/fast-track-commitments_en.pdf).

National core indicator

TL.1. People living with HIV who know their HIV status (first 95)

GAM 1.1; GF HIV O-11

Number and percentage of people living with HIV who know their status

What it measures

This indicator measures the number and percentage of people living with HIV who have been tested and know their HIV status.

Rationale

- Knowledge of HIV status is the entry point for people living with HIV to treatment and the continuum of care, and for those who test HIV-negative and remain at risk to prevention interventions.
- Disaggregated estimates can reveal gaps in access to testing among important groups of people living with HIV.

Numerator

Number of people living with HIV who have received their diagnosis and are still alive

Denominator

Estimated number of people living with HIV

Method of measurement

For the numerator. Best estimate based on available data sources

1. Direct estimates from HIV case surveillance (CS) systems of the number of people living with HIV diagnosed with HIV and reported by a surveillance system and who are still alive. HIV CS data can be used if reporting from all facilities providing confirmatory HIV testing and treatment services has been in place since at least 2014 and if people who have died, been lost to follow-up, etc., are removed from the numerator. Only confirmed HIV diagnoses should be counted. Mechanisms should be in place to deduplicate individuals reported multiple times or from multiple facilities.

2. Modelled estimates, for which the modelling approach depends on the availability of country data. For countries with robust CS and vital registration systems, the number of people who know their HIV status can be derived using the Case Surveillance and Vital Registration (CSAVR) fitting tool in Spectrum AIM. For countries with household population survey data that either directly capture the number of HIV-positive respondents who report that they know their status or the number of HIV-positive people who report ever having been tested, UNAIDS recommends (as of 2018) that the first 90 be modelled using Shiny First 90.[1]

[1] European Centres for Disease Control (ECDC) HIV Modelling Tool available at: https://ecdc.europa.eu/en/publications-data/hiv-modelling-tool and Shiny First 90 tool available at: https://shiny.dide.imperial.ac.uk/shiny90/.

For the denominator. Estimation models, for example, Spectrum AIM, are the preferred source for the number of people living with HIV. Regarding estimating the number of children who know their status in countries with modelled estimates based on household survey data: Since household surveys are often restricted to respondents of reproductive age, a separate estimate of knowledge of HIV status among children (0–14 years old) may need to be constructed using programme data in order to produce an overall (that is, all ages) estimate. In this case UNAIDS recommends that countries use the number of children on ART, as reported in GAM Indicator 1.2, as a proxy measure. This represents the most conservative measure of knowledge of status in the population.

Disaggregation

- Gender (male, female, transgender)
- Age (0–4, 5–9, 10–14, 15–19, 20–24, 25–49, 50+)
- Key populations (men who have sex with men, people living in prisons and other closed settings, people who inject drugs, sex workers, transgender people)
- ANC attendees.

National core indicator

TL.2. HTS testing volume and positivity (NEW) GAM 1.8; MER HTS_TST; GF HTS-4

Number of HIV tests conducted (testing volume) and the percentage of HIV-positive results returned to people (positivity)

What it measures

This indicator measures HIV test volume and positivity across service delivery approaches and populations.

Rationale

- Knowing the numbers of tests conducted annually by testing approach is critical to commodity forecasting and staff resource planning.
- Testing volume disaggregated by age, sex, testing approach and HIV status helps to assess the gaps among various settings, contexts and populations and better target resources.
- Annual testing volumes and positivity rates are inputs into the UNAIDS model to monitor progress towards the first 95 target – 95% of people living with HIV know their HIV status.

Numerator

Number of tests conducted in which a new HIV-positive result or diagnosis was returned to a person during the reporting period (positivity)

Denominator

Number of tests performed where results were returned to a person during the reporting period (testing volume)

Method of measurement

For the numerator and denominator. Programme data, for example, HIV testing service records or lab registers, log books and reporting forms at facility and community levels

Reported data should be a count of the number of tests conducted and their results were returned to a person and not the number of unique persons who tested during the reporting period. The method of measurement intends to prevent double counting when multiple assays are used to confirm an HIV-positive diagnosis according to the national testing algorithm. This indicator does not include self-testing.

Disaggregation

- Gender (male, female, transgender)
- Age (0–4, 5–9, 10–14, 15–19, 20–24, 25–29, 30–34, 35–39, 40–44, 45–49, 50+)
- Key populations (men who have sex with men, people living in prisons and other closed settings, people who inject drugs, sex workers, transgender people)
- TB status (presumptive TB, diagnosed TB, none)
- Testing entry point
  - **Community-level testing:** Mobile testing (for example, through vans or temporary testing facilities), voluntary counselling and testing (VCT) centres (not within a health facility setting), other community-based testing.
  - **Facility-level testing:** Provider-initiated testing and counselling (PITC) in clinics or emergency facilities, ANC clinics (including labour and delivery), VCT (within a health facility setting), family planning clinics (only in high HIV burden settings), TB clinics, other facility-level testing.

National core indicator

TL.3. Linkage to ART

GF HTS-5

% of people newly diagnosed with HIV initiated on ART

What it measures

This indicator measures the extent of linkage to care and initiation of treatment following HIV-positive diagnoses.

Rationale

- In the era of "Treat All", all people diagnosed as living with HIV should be rapidly initiated on treatment to optimize treatment outcomes and prevent new infections.
- Disaggregated reporting by time since diagnosis (for example, 28 or 90 days) provides an indication of the quality of care with respect to national guidelines on when treatment should be started.

Numerator

Number of people newly diagnosed with HIV and started ART during the reporting period

Denominator

Number of people newly diagnosed with HIV during the reporting period

Method of measurement

For the numerator and denominator. Programme records (for example, HTS register, ART register)

Data systems that collect individual-level data and use a universal indicator code can easily calculate the numerator for this indicator. In the absence of a cohort system of tracking, countries with aggregate reporting need data collection forms that categorize those who initiate ART by the timing of their HIV diagnosis. This can result in some mismatch between numerator and denominator, as some who are diagnosed with HIV toward the end of the reporting period (and so counted in the denominator) may initiate ART after the reporting period (and so not counted in the numerator). This should be considered in the interpretation of the indicator.

The recommended reporting period is 12 months.

Disaggregation

- Gender (male, female, transgender)
- Age (0–4, 5–9, 10–14, 15–19, 20–24, 25–29, 30–34, 35–39, 40–44, 45–49, 50+)
- Key populations (men who have sex with men, people living in prisons and other closed settings, people who inject drugs, sex workers, transgender people)
- TB status (presumptive TB, diagnosed TB, none)
- Time to start ART (within 14, 30 or 90 days of diagnosis, as per country guidelines).

National priority indicator

TL.4. HTS index testing and partner notification

MER HTS_INDEX

Number of people who were identified and tested using index testing services and received their results

What it measures

This indicator measures the coverage and impact of the index testing cascade of services for partners and other contacts of people living with HIV, including key population members.

Rationale

- Contact testing, including among sexual partners, has been shown to increase the diagnosis of already-infected contacts and partners of newly identified HIV cases.
- Among serodiscordant couples, partner notification and testing can be a critical step in preventing infection of the uninfected partner.
- Contact and/or partner notification and testing should be voluntary and provided with supportive services.

Numerator (only)

For the general population: Number of elicited partners of people diagnosed with HIV who received HTS

Additional cascade data collected:

- Number of people diagnosed with HIV (index cases) offered partner services
- Number of people diagnosed with HIV (index cases) accepting partner services
- Number of contacts/partners of people living with HIV whose information is elicited from people diagnosed with HIV (index cases).

For key populations: Number of elicited contacts of members of key populations who received HTS

Additional cascade data collected:

- Number of key population members offered social network-based/partner services
- Number of key population members accepting social network-based/partner services
- Number of contacts of key population members elicited.

Method of measurement

Programme data (HIV index testing services register or logbook, HTS registers or reporting forms)

This indicator represents a type of service cascade with the number of partners or contacts receiving HTS measuring the final service in the cascade. Drop-off can be measured with respect to those accepting services from among those offered partner/contact services as well as the number of partners/contacts receiving testing from among those whose information is elicited from index cases or key population members. If disaggregations by HIV status are available, managers can calculate the percentage of HIV-positive partners/contacts identified among those who received testing.

Disaggregation

- By index case: gender (male, female, transgender)
- Age (0–4, 5–9, 10–14, 15–19, 20–24, 25–49, 50+)
- HIV status of partner or contact (already knew positive, newly diagnosed positive, negative)
- Key populations (men who have sex with men, people living in prisons and other closed settings, people who inject drugs, sex workers, transgender people).

National priority indicator

TL.5. Number of individual HIVST kits distributed (NEW)

Number of HIV self-test kits distributed

What it measures

This indicator measures trends in the distribution of HIVST kits within a country at the lowest distribution point.

Rationale

- Self-testing is an increasingly common mode of HIV testing that is not captured in other indicators of HTS coverage.
- Monitoring the implementation of this type of testing among target populations will help programme managers track progress and forecast the need for supportive services such as linking clients to confirmatory testing and/or ART, as needed, as well as commodity supply chain needs.

Numerator (only)

Number of individual HIVST kits distributed

Method of measurement

HIV self-testing register or logbook. The number of individual HIVST kits distributed, rather than the number of individuals receiving HIVST kits, should be counted. To prevent double counting, data should be recorded at the lowest distribution point, that is, the site or individual giving self-test kits to those who are self-testing.

The recommended reporting period is quarterly/every 3 months.

Disaggregation

- Gender (male, female, transgender)
- Age (10–14, 15–19, 20–24, 25–29, 30–34, 35–39, 40–44, 45–49, 50+)

Note: Age of consent to self-test varies by country context, which may require adaptation.

- In all setteings: key populations (men who have sex with men, people living in prisons and other closed settings, people who inject drugs, sex workers, transgender people) and other priority populations
- In high burden settings, in addition to the above: adolescent girls and young women
- HIVST approach, as specified by national programme. For example, community-based, facility-based, secondary distribution (for example, by index case, key population member, ANC client)
- HIVST distribution by type of sites, as specified by national programme (for example, community outreach, door-to-door, mobile, workplace, antenatal clinic, primary care, outpatient department, STI clinic, family planning clinic)
- HIVST distributed for use by: self, sex partner, drug injecting partner, social contact, other

National priority indicator

TL.6. Know their status (key population) (NEW)

GAM 3.4

Percentage of key population members who tested for HIV in the past 12 months or who know their current HIV status

What it measures

This indicator measures progress in providing HIV testing services to members of key populations.

Rationale

- To receive the care and treatment required to live healthy, productive lives and to reduce the chance of transmitting HIV, people living with HIV must know their HIV status.
- In many countries, focussing testing and counselling on locations and populations with the highest HIV burden is the most efficient way to reach people living with HIV and ensure that they know their HIV status.

Numerator

Number of respondents who know that they are living with HIV (Q3 = a) or number of respondents who report having tested for HIV in last 12 months (Q1 = b & Q2= a or b) AND the result was negative (Q3 = b)

Q1. Do you know your HIV status from an HIV test? a. No, I have never been tested; b. Yes, I have been tested

Q2. If yes, when were you last tested? a. In the past 6 months; b. 6–12 months ago; c. More than 12 months ago

Q3. Was the result of your last test: a. Positive; b. Negative; c. Inconclusive

Denominator

Number of respondents

Method of measurement

Representative surveys of key populations (for example, BBS, BSS, HSS+)

Disaggregation

- Gender (male, female, transgender)
- Age (<25, 25+)
- Key populations (men who have sex with men, people living in prisons and other closed settings, people who inject drugs, sex workers, transgender people).

National core indicator

AV.1. People living with HIV on ART

GAM 1.2 & 3.5; GF TCS-1; MER TX_CURR

Number and percentage of people on ART among all people living with HIV at the end of the reporting period

What it measures

This indicator measures progress towards providing ART to all people living with HIV, that is, treatment coverage, taking into account total attrition during the reporting period.

Rationale

- WHO currently recommends treatment for all people living with HIV to achieve viral suppression.
- This indicator is central to accountability for national health sector strategic plans, effective programme management and donor programming.
- This indicator is essential to measurement of the second 90/95 target: that 90% of the people who know their HIV-positive status are accessing ART by 2020 and 95% by 2025.

Numerator

Number of people on ART at the end of the reporting period (programme data). For key populations survey data may be required.

Denominator (for calculation of % ART coverage)

1. To determine treatment coverage: Estimated number of people living with HIV (from models, such as Spectrum AIM)
2. To gauge progress toward the second 95 target, number of people living with HIV who know their HIV status (from surveys, models)

Method of measurement

For the numerator. Generated by determining the number of people living with HIV on ART at the end of the last reporting period plus the number of PLHIV initiated on ART during the current reporting period, taking into account retention/attrition status by the end of the reporting period. Retention and attrition analysis should be conducted as part of reporting on this indicator. The numerator should NOT INCLUDE people who have stopped treatment, died or were otherwise lost to follow-up (LFU) during this period. Consistent with methods for defining total attrition from ART (see AV.2), these status classification categories should be reported separately to the national level and used to calculate the number of people living with HIV who are on ART.

Outcome definitions should remain consistent with established standards,[1] with the following exception: the recommended threshold for designation of people living with HIV on ART as LFU is 28 days after the last scheduled appointment (rather than the previous 90-day standard). This is the most conservative definition, which, when combined with patient tracing capacity at facility and community levels, can facilitate maximally responsive and person-centred services to promote retention on ART, and thus adherence and VLS. In settings with limited HIS and/or programme capacity, LFU may be defined by longer intervals after last scheduled appointment or according to national guidelines. Multi-month prescribing and dispensing of ARVs should be considered in the classification.

[1] Consolidated guidelines on person-centred HIV patient monitoring and case surveillance. Geneva: WHO; 2017 (https://www.who.int/hiv/pub/guidelines/person-centred-hiv-monitoring-guidelines/en/).

For the denominator. Models such as Spectrum AIM are the preferred source for estimating the number of people living with HIV. Denominator 2 should be consistent with the numerator used for indicator TL.1 People living with HIV who know their HIV status (first 95).

The recommended maximum reporting period is 12 months. Shorter reporting intervals, for example, three months, are recommended where feasible.

Disaggregation

- Gender (male, female, transgender)
- Age (0–4, 5–9, 10–14, 15–19, 20–24, 25–29, 30–34, 35–39, 40–44, 45–49, 50+)
- Key populations (men who have sex with men, people living in prisons and other closed settings, people who inject drugs, sex workers, transgender people).

Additional or alternative disaggregations may be appropriate in some settings, depending on HIS capacity.

National core indicator

AV.2. Total attrition from ART (NEW)

GF HIV O-21; MER TX_ML

Number and percentage of people living with HIV reported on ART at the end of the last reporting period and/or newly initiating ART during the current reporting period who were not on ART at the end of the reporting period

What it measures

This indicator measures progress towards promoting retention on ART and mitigating loss, that is, ART attrition.

Rationale

- WHO currently recommends treatment for all people living with HIV to achieve viral suppression. ART retention analyses by category are essential to achieving this goal.
- This indicator is central to understanding total attrition (loss) from ART during a reporting period and to understanding net progress towards reaching the second 90/95 target.
- This indicator is closely related to AV.1 People living with HIV on ART and is measured by using the same methods and programmatic outcome classification categories.

Numerator

Number of people living with HIV reported on ART at the end of the last reporting period who were not on treatment at the end of the current reporting period (including those who died, stopped treatment and were lost to follow-up).

plus

Number of people living with HIV newly initiated on ART during the current reporting period who were not on treatment at the end of the current reporting period (including those who died, stopped treatment or were lost to follow-up).

Denominator (for calculation of total attrition rate)

Number of people reported on ART at the end of the last reporting period plus new on ART during the current reporting period

Method of measurement

For the numerator. The number of people living with HIV on ART at the end of the previous reporting period, plus the number of people living with HIV started on ART during the current reporting period, who are classified as having died, stopped treatment and/or been lost to follow-up by the end of the current period. These classification categories should be reported separately to the national level and used for calculation of indicator AV.1 People living with HIV on ART.

Definitions of treatment outcomes should remain consistent with established standards,[1] with the following exception: The recommended threshold for designation of people living with HIV on ART as LFU is 28 days after last scheduled appointment (rather than the previous 90-day standard). This is the most conservative definition that, when combined with patient tracing capacity at facility and community levels, can facilitate maximally responsive and person-centred services to promote retention on ART and, thus, adherence and VLS. In settings relying

[1] Consolidated guidelines on person-centred HIV patient monitoring and case surveillance. Geneva: WHO; 2017 (https://www.who.int/hiv/pub/guidelines/person-centred-hiv-monitoring-guidelines/en/).

on paper-based data collection and reporting, LFU may be defined by longer intervals after last scheduled appointment or according to national guidelines, as appropriate. Multi-month prescribing and dispensing of ARVs should be taken into account in the classification.

For the denominator. The number of people living with HIV who are on ART at the end of the previous reporting period plus the number of people living with HIV newly initiated on ART during the reporting period.

The recommended maximum reporting period is 12 months. Shorter reporting intervals, for example, three months, are recommended where feasible.

Disaggregation

- Gender (male, female, transgender)
- Age (0–4, 5–9, 10–14, 15–19, 20–24, 25–29, 30–34, 35–39, 40–44, 45–49, 50+)
- Key populations (men who have sex with men, people living in prisons and other closed settings, people who inject drugs, sex workers, transgender people)
- Treatment outcome category (died, stopped treatment, lost to follow-up).

Additional or alternative disaggregations may be appropriate in some settings, depending on HIS capacity.

National core indicator

AV.3. People living with HIV who have suppressed VL

GAM 1.4; GF HIV O-12; MER TX_PVLS

Percentage of people living with HIV on ART (for at least 6 months) who have virological suppression

What it measures

This indicator measures clinical outcomes of patients on ART regardless of initiation date.

Rationale

- Viral load suppression (VLS) represents the expected outcome of ART programme services (that is, the third 95).
- VLS is also the best available measure of patient adherence to ART.

Numerator

Number of people living with HIV on ART for at least 6 months and with at least one routine VL test result who have virological suppression (<1000 copies/mL) during the reporting period

Denominator

Number of people living with HIV on ART at least 6 months with at least one routine VL result in a medical or lab record during the reporting period

Method of measurement

For the numerator and denominator. Programme records (for example, ART register, patient records, laboratory records) or acquired HIVDR surveillance, population-based surveys (such as PHIA) that collect data on ART coverage and viral suppression.

This indicator must be interpreted along with VL testing coverage to assess the potential for bias, that is, whether VL testing occurs in only a particular subset of patients.

Note: First routine VL testing is recommended at 6 months after ART initiation. As per AV.7, the time window for early VL monitoring can include a margin of +/– 1 month, that is, for reporting purposes a routine VL test can take place any time from 5 to 7 months after initiation of ART.

Disaggregation

- Gender (male, female, transgender)
- Age 0–4, 5–9, 10–14, 15–19, 20–24, 25–29, 30–34, 35–39, 40–44, 45–49, 50+)
- Key populations (men who have sex with men, people living in prisons and other closed settings, people who inject drugs, sex workers, transgender people).

Additional or alternative disaggregations may be appropriate in some settings, depending on HIS capacity.

National priority indicator

AV.4. New ART patients

GAM 1.2; GF HTS-5; MER TX_NEW

Number of people living with HIV who initiated ART

What it measures

This indicator measures the expansion of ART programmes.

Rationale

- Monitoring trends in new ART patients provides managers with important information for forecasting the need for ARV and allocation of staff to ensure quality of care for ART.
- Initiation of ART is one of the sentinel events for case surveillance.

Numerator (only)

Number of people living with HIV who initiated ART in accordance with national treatment guidelines during the reporting period

Method of measurement

Programme records (for example, ART register)

The recommended reporting period is 12 months.

Disaggregation

- Gender (male, female, transgender)
- Age (0–4, 5–9, 10–14, 15–19, 20–24, 25–29, 30–34, 35–39, 40–44, 45–49, 50+)
- Key populations (men who have sex with men, people living in prisons and other closed settings, people who inject drugs, sex workers, transgender people)
- Pregnant or breastfeeding women, serodiscordant partner, other specific priority population.

National priority indicator

AV.5. Late ART initiation

Percentage of people living with HIV who initiate ART with a CD4 count of <200 cell/mm^3

What it measures

This indicator measures the proportion of people living with HIV who have AIDS at the time that they initiate ART.

Additional recommendation for settings with robust electronic HIS, for example, EMRs: Monitoring mean and median CD4 counts among those who initiate ART and have a baseline CD4 count

Rationale

- Late initiation of ART is a risk factor for treatment failure.
- In the era of "Treat All", late initiation on ART most likely reflects late diagnosis.

Numerator

Number of people living with HIV initiating ART during the reporting period with a baseline CD4 count of <200 cell/mm^3

Denominator

Number of people living with HIV initiating ART during the reporting period who have a baseline CD4 count

Method of measurement

For the numerator and denominator. Programme records (for example, ARV register, laboratory records)

The recommended reporting period is 12 months.

Disaggregation

- Gender (male, female, transgender)
- Age 0–4, 5–9, 10–14, 15–19, 20–24, 25–49, 50+)
- Key populations (men who have sex with men, people living in prisons and other closed settings, people who inject drugs, sex workers, transgender people)
- Other priority populations

Additional recommendation for settings with robust electronic HIS, for example, EMRs:

- Monitoring mean and median CD4 counts among those who initiate ART and have a baseline CD4 count.

National priority indicator

AV.6. Viral load testing coverage

Percentage of people on ART (for at least 6 months) with viral load test results

What it measures

This indicator assesses the extent to which VL testing is available in the country and enables appropriate interpretation of VL testing data.

Rationale

- WHO recommends routine VL testing at 6 months and 12 months after ART initiation and every 12 months thereafter.
- Many countries are still in the process of scaling up VL testing capacity.
- This indicator is critical to decide whether VL suppression as measured through routine data is likely to be representative of all patients on ART.

Numerator

Number of ART patients with at least one routine VL test result during the reporting period

Denominator

Number of ART patients on ART at least 6 months

Method of measurement

For the numerator and denominator. Programme records (for example, ART register, cohort reporting forms, patient records)

It is critical to deduplicate records and avoid double-counting when identifying the appropriate numerator. The denominator excludes patients who have died, transferred to another clinic or been classified as lost to follow-up.

Disaggregation

- Gender (male, female, transgender)
- Age (0–4, 5–9, 10–14, 15–19, 20–24, 25–49, 50+)
- Key populations (men who have sex with men, people living in prisons and other closed settings, people who inject drugs, sex workers, transgender people)
- Other specific priority populations.

National priority indicator

AV.7. Early viral load testing (at 6 months) (NEW)

Number and percentage of people living with HIV on ART who had viral load monitoring at 6 months after initiation of ART

What it measures

This indicator measures progress towards promoting early adherence and VLS on ART.

Rationale

- WHO currently recommends VL testing for all people living with HIV at 6 months after ART initiation to assess VLS and, in the event of non-suppression, to identify persons in need of intensive adherence counselling and follow-up.
- This indicator is central to understanding early non-adherence risk and to enable critical interventions to improve adherence and VL suppression and reduce the risk of HIV drug resistance.
- This indicator is closely related to VL monitoring.

Numerator

Number of ART patients who were eligible for VL monitoring at 6 months after initiation of ART during the reporting period and who had VL monitoring at 6 months[1] and received their results

Denominator

Number of ART patients eligible for VL monitoring at 6 months after initiation of ART during the reporting period

Method of measurement

For the numerator and denominator. Programme records (for example, ART register, cohort reporting forms, patient records, laboratory information systems)

The time window for early VL monitoring can include a margin of +/– 1 month, that is, a routine VL test can take place any time from 5 to 7 months after initiation of ART.

Disaggregation

- Gender (male, female, transgender)
- Age (0–4, 5–9, 10–14, 15–19, 20–24, 25–49, 50+)
- Key populations (men who have sex with men, people living in prisons and other closed settings, people who inject drugs, sex workers, transgender people)
- Other specific priority populations.

[1] Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection: recommendations for a public health approach – second edition. Geneva: WHO; 2016 (https://www.who.int/hiv/pub/arv/arv-2016/en).

National priority indicator

AV.8. Appropriate second VL test

Percentage of people receiving ART with VL ≥1000 copies/mL who received a follow-up VL test within 6 months after enhanced adherence counselling (or according to national guidelines)

What it measures

This indicator measures the extent to which people living with HIV with non-suppressed VL receive appropriate follow-up VL testing to check virologic suppression.

Rationale

- Virologic suppression is essential to the 95–95–95-related impact goals, including HIV elimination.
- This indicator complements the VL testing coverage (AV.6) and VL suppression (AV.3) indicators.

Numerator

Number of people living with HIV on ART who received a follow-up VL test within 6 months after a VL test result of ≥1000 copies/ml during the reporting period

Denominator

Number of people living with HIV on ART with VL ≥1000 copies/ml during the reporting period.

Method of measurement

For the numerator and denominator. Programme records (for example, ART registers, EMRs)

The recommended maximum reporting period is 12 months. Shorter reporting intervals, for example, three months, are recommended where feasible.

Disaggregation

- Gender (male, female, transgender)
- Age (0–4, 5–9, 10–14, 15–19, 20–24, 25–49, 50+)
- Key populations (men who have sex with men, people living in prisons and other closed settings, people who inject drugs, sex workers, transgender people)
- ART regimen
- Receipt of enhanced adherence counselling (yes/no/unknown).

National priority indicator

AV.9. ARV toxicity prevalence

Percentage of ART patients with treatment-limiting toxicity

What it measures

This indicator measures the incidence of serious ARV toxicities among ART patients.

Rationale

- As use of ARVs is scaled up, people living with HIV have the potential for prolonged exposure to ARVs and the potential to experience ARV-related toxicity.
- ARV-related toxicities are some of the most common reasons reported for ART non-adherence, treatment discontinuation or substitution of drugs.
- Information on toxicity prevalence can inform national guidelines and efforts to prevent and limit drug toxicity.

Numerator

Number of ART patients who have stopped treatment or switched regimen due to toxicity in the reporting period

Denominator

Number of ART patients in the reporting period

Method of measurement

For the numerator and denominator. Programme records (ART register, cohort reporting forms, patient records)

"Treatment-limiting" toxicity is defined as follows: A serious adverse drug reaction that results in drug discontinuation or substitution. In addition, any reaction that leads to treatment interruption or requires changing the drug or regimen because of an adverse drug reaction is also considered a serious adverse drug reaction.[1]

Disaggregation

- Gender (male, female, transgender)
- Age (<15, 15+)
- Key populations (men who have sex with men, people living in prisons and other closed settings, people who inject drugs, sex workers, transgender people)
- Pregnant or breastfeeding women.

[1] WHO implementation tool for monitoring the toxicity of new antiretroviral and antiviral medicines in HIV and viral hepatitis programmes. Geneva: WHO; 2018 (http://apps.who.int/medicinedocs/documents/s23488en/s23488en.pdf).

National core indicator

TB.1. TPT initiation

GAM 10.3; GF TB/HIV-7

Number and percentage of eligible people living with HIV on ART who initiated TB preventive treatment

What it measures

This indicator measures the extent to which people on ART initiated treatment for latent TB infection.

Rationale

- TB preventive treatment (TPT) is a critical component of preventing TB-related morbidity and mortality among people living with HIV.
- Recent guidelines have expanded the eligibility criteria for people living with HIV to be started on TPT.
- In the wake of recent high-level global commitments and targets, this is a critical period to track the progress that countries have made in scaling up TPT coverage.

Numerator

Number of ART patients who initiated TPT during the reporting period

Denominator

Number of ART patients who are eligible for TPT during the reporting period

Method of measurement

For the numerator. Programme records (for example, ART registers)

For the denominator. Formula for determining the number of ART patients who are eligible for TPT during the reporting period:

Number of people living with HIV on ART at end of last reporting period

[minus] number of notified HIV-positive TB patients in last reporting period

[also minus, where possible] number of people living with HIV who previously received TPT – actual, if available, or based on country estimate

[also minus, where possible] number/estimate of people living with HIV not eligible for TPT due to co-morbidities, including active hepatitis, chronic alcoholism and/or neuropathy

Disaggregation

- Gender (male, female, transgender)
- Age (<5; 5–15; 15+)
- Type of TPT regimen
- ART initiation (new on ART in the last 12 months, on ART >12 months).

Additional or alternative disaggregation may be appropriate in some settings, depending on HIS capacity.

National core indicator

TB.2. TPT completion

MER TB_PREV

Percentage of people living with HIV on ART who completed a course of TB preventive treatment among those who initiated TPT

What it measures

This indicator measures the effectiveness of scaled-up TPT programmes by assessing the proportion of patients who completed the recommended course of TPT.

Rationale

- Many countries have made progress in initiating eligible people living with HIV on TPT. However, rates of TPT completion remain poor or unknown.
- Assessment of TPT completion is a critical element of the TB/HIV cascade of services.

Numerator

Number of ART patients who completed a course* of TPT during the reporting period

Denominator

Number of ART patients who initiated any course of TPT during the previous reporting period

Method of measurement

For the numerator and denominator. Programme records (for example, ART registers)

Defining "previous reporting period": For example, for annual reporting of January to December 2020, the previous reporting period is January to December 2019 (except for programmes with 1HP-exclusive national guidelines and implementation, in which case they may use January to December 2020). For quarterly or semi-annual reporting to the national level, the previous reporting period will depend on the TPT regimen and duration defined by national guidelines.

*Note: For programmes using continuous isoniazid preventive therapy (IPT), TPT completion is defined as 6 months of treatment.

Disaggregation

- Gender (female, male, transgender)
- Age (<15, 15+)
- Type of TPT regimen
- ART initiation (<12 months on ART, 12+ months on ART).

Additional or alternative disaggregation may be appropriate in some settings, depending on HIS capacity.

National priority indicator

TB.3. TB diagnostic testing type

Percentage of people living with HIV with TB symptoms who receive a rapid molecular test (for example, Xpert MTB/RIF) as a first test for diagnosis of TB

What it measures

This indicator measures the proportion of people living with HIV who screen positive for TB symptoms who receive a recommended test for diagnosis of TB.

Rationale

- People living with HIV should be screened for TB symptoms and, if found positive, be tested for TB.
- WHO recommends rapid-diagnostic molecular tests, for example, Xpert MTB/RIF, as the first test for diagnosis of TB among people living with HIV.

Numerator

Number of people living with HIV and having TB symptoms who were tested using a rapid molecular test (for example, Xpert MTB/RIF) as a first test during the reporting period

Denominator

Number of people living with HIV and who are screened for TB and found to have symptoms during the reporting period

Method of measurement

For the numerator and denominator. Programme records (for example, laboratory register for smear microscopy and Xpert MTB/RIF, ART registers)

Disaggregation

- Gender (male, female, transgender)
- Age (<15, 15+)
- Key populations (men who have sex with men, people living in prisons and other closed settings, people who inject drugs, sex workers, transgender people)
- Pregnant or breastfeeding women.

Additional recommendation for settings with robust electronic HIS, for example, EMRs:

- Disaggregation by detailed age (<18 month–4 years, 5–14, 15–19, 20–24, 25–49, 50+).

National priority indicator

TB.4. People living with HIV with active TB disease

GAM 10.2

Percentage of people living with HIV newly initiated on ART who have active TB disease

What it measures

This indicator measures the burden of active TB disease among people living with HIV who are newly initiated on ART.

Rationale

- Early detection of TB among people living with HIV enables prompt TB treatment and early ART.
- This indicator also measures indirectly the extent of efforts to detect HIV-associated TB.

Numerator

Number of people living with HIV newly initiated on ART during the reporting period who have active TB disease

Denominator

Number of people living with HIV new on ART during the reporting period

Method of measurement

For the numerator and denominator. Programme records (for example, pre-ART and ART registers, TB register at the TB management unit)

The recommended national reporting period is 12 months, with monthly or quarterly reporting at subnational levels.

Note: Data are drawn from TB- and HIV-sided services and data sources. This indicator is related to indicator DfT.4. TB diagnosis among those tested for TB in the differentiated section. However, the latter covers only TB diagnosed as a result of symptom screening of people living with HIV newly initiated on ART (that is, it does not cover TB cases initiated on ART that were referred from TB clinics).

Disaggregation

- Gender (male, female, transgender)
- Age (<15, 15+)
- Key populations (men who have sex with men, people living in prisons and other closed settings, people who inject drugs, sex workers, transgender people)
- Pregnant or breastfeeding women.

Additional recommendation for settings with robust electronic HIS, for example, EMRs:

- Disaggregation by detailed age: 0–4, 5–14, 15–19, 20–24, 25–49, 50+.

National core indicator

VT.1. Viral suppression at labour and delivery (NEW)

Percentage of HIV-positive pregnant women who are virally suppressed at labour and delivery

What it measures

This indicator measures VL suppression at the time of delivery among HIV-positive pregnant women.

Rationale

- Viral suppression at the time delivery is a service quality measure at a critical point in the VT risk period.
- Two different denominators give indicators similar to general measures of VL suppression among people living with HIV: The programme-based denominator, that is, those on ART, delivering in a facility and having a VL test, measures the third "95". The population-based denominator, that is, those delivering in a facility regardless of ART status, measures population VL (of women living with HIV).

Numerator

Number of HIV-positive pregnant women on ART during pregnancy and delivery at a facility during the reporting period and who were virally suppressed (VL <1000 copies/ml) at delivery)

Denominator

Number of HIV-positive pregnant women on ART during pregnancy who deliver at a facility during the reporting period and had a VL test during delivery

Method of measurement

For the numerator. Programme records (for example, PMTCT registers)

For the denominator.

Population-based denominator: Modelling-based estimates (for example, Spectrum AIM)

Programme-based denominator: Programme records, labour and delivery registers

Note: This indicator should be interpreted with consideration of the VL testing coverage of HIV-positive pregnant women at delivery.

The recommended reporting period is 12 months.

Disaggregation

- Age (<15, 15–19, 20–24, 25+)
- Timing of ART initiation (during pregnancy, on ART at first ANC visit).

National core indicator

VT.2. EID coverage

GAM 2.1; GF PMTCT-3.1; MER PMTCT_EID

Percentage of HIV-exposed infants who receive a virological test for HIV within 2 months (and 12 months) of birth

What it measures

This indicator measures early HIV diagnosis in infants.

Rationale

- High coverage of early virological testing of infants helps initiate ART early in children with confirmed HIV infection and supports counselling on efforts to prevent seroconversion of those with a negative early test result.
- Current PMTCT guidelines recommend virological testing for HIV-exposed infants within 2 months of birth.

Numerator

Number of HIV-exposed infants born during the reporting period who received a virological HIV test within 2 months (and 12 months) of birth

Denominator

Estimated number of HIV-positive women who delivered during the reporting period

Method of measurement

For the numerator. Programme records (for example, PMTCT registers, laboratory records)

For the denominator. Modelling-based estimates (for example, Spectrum AIM)

Note: The denominator is a proxy measure for the number of infants born to HIV-infected women.

The recommended reporting period is 12 months.

Disaggregation of the numerator

- Test result (HIV-positive, HIV-negative, indeterminate, other) to enable calculation of the percentage positive and the percentage with an indeterminate result among HIV-exposed infants receiving a virological test
- Age of infant (<2 months, 2–12 months) to allow the separate calculation of the proportion of exposed infants receiving virological testing within 2 months of birth and within 12 months of birth.

National priority indicator

VT.3. Infant ARV prophylaxis coverage

Percentage of HIV-exposed infants who initiated ARV prophylaxis

What it measures

This indicator measures the delivery of prevention services to HIV-exposed infants immediately after birth.

Rationale

- ARV prophylaxis for HIV-exposed infants is critical for reducing the risk of mother-to-child transmission in the immediate postpartum period – part of Prong 3 of the PMTCT strategy.
- In particular, coverage of HIV-exposed infants who are born in facilities should be very high.
- When using the programme-based denominator, the indicator measures coverage among only HIV-exposed infants who are born in facilities, which is a direct measure of a programme's ability to meet standards of care.

Numerator

Number of HIV-exposed infants born within the past 12 months who were started on ARV prophylaxis at birth

Population-based denominator

Number of HIV-positive women who delivered within the past 12 months

Programme-based denominator

Number of HIV-positive women who delivered in a facility within the past 12 months

Method of measurement

For the numerator. Programme records (for example, PMTCT registers)

For the population-based denominator: Modelling-based estimates (for example, Spectrum AIM)

Note: The population-based denominator is a proxy measure for the number of infants born to HIV-infected women.

For the programme-based denominator: Programme records, labour and delivery registers

The recommended reporting period is 12 months.

National priority indicator

VT.4. ART coverage in pregnant women GAM 2.3; GF PMTCT-2.1; MER PMTCT_ART

Percentage of HIV-positive pregnant women who received ART during pregnancy and/or at labour and delivery

What it measures

This indicator measures whether a recommended course of ART has been provided to HIV-positive pregnant women.

Rationale

- Providing ART for HIV-positive pregnant women is a critical strategy for preventing vertical transmission of HIV.
- In an era of "Treat All", all HIV-positive pregnant women should be given a recommended regimen of ART as soon as possible after diagnosis, including during labour and delivery.

Numerator

Number of HIV-positive pregnant women who delivered during the reporting period and received ART during pregnancy and/or labour and delivery

Population-based denominator

Number of HIV-positive pregnant women who delivered during the reporting period

Programme-based denominator

Number of HIV-positive pregnant women who delivered during the reporting period and attended ANC or had a facility-based delivery

Method of measurement

For the numerator and programme-based denominator. Programme records (for example, PMTCT registers, ARV registers, labour and delivery registers)

For the population-based denominator: Modelling-based estimates (for example, Spectrum AIM)

The recommended reporting period is 12 months.

Disaggregation

- Age (<15, 15–19, 20–24, 25+)
- Pregnant women who inject drugs.

Disaggregation of numerator

- Timing of ART initiation (1. already on ART at first ANC visit, 2. newly on ART during pregnancy, 3. newly on ART during labour and delivery, 4. on non-recommended ART regimen)

  The primary indicator calculation should include ART status categories 1, 2 and 3. Removing the women in Category 1 "already on ART at first ANC visit" from the numerator and denominator gives a measure of ART coverage among HIV-positive pregnant women newly diagnosed during ANC. Dividing Category 2 by the sum of Categories 2 and 3 gives the proportion of new ART initiations occurring during pregnancy rather than at delivery. Calculating the indicator with those in category 4 (non-recommended ARV regimen) included in the numerator gives a broader measure, that is, coverage of HIV-positive pregnant women receiving any ARV drug.

National priority indicator

VT.5. ART coverage in breastfeeding mothers

Percentage of HIV-exposed breastfeeding infants whose mothers are receiving ART at 12 (and 24 months) postpartum

What it measures

This indicator measures the programme's ability to reduce the risk of transmission via breastfeeding (Prong 3).

Rationale

- In many countries the average breastfeeding period is 18–24 months. The long breastfeeding period represents an important risk period for HIV-exposed infants.
- Ensuring that HIV-positive mothers are retained on ART, especially during the breastfeeding period, is critical to sustaining the health of the mother and preventing infection of her infant.

Numerator

Number of HIV-exposed breastfeeding infants whose mothers are receiving ART at 12 months (and 24 months*) postpartum

Denominator

Number of HIV-exposed infants attending MCH services for a 12-month visit (and 24-month visit or first visit after the end of breastfeeding)

* Or a timeframe matched to median duration of breastfeeding in the country

Method of measurement

For the numerator. Programme records (for example, PMTCT registers, ART registers)

For the denominator: Programme records (for example, MCH service records)

Disaggregation

- Age (<15, 15–19, 20–24, 25+)
- Timing of ART initiation (already on ART at first ANC visit, newly on ART during pregnancy or labour and delivery).

National priority indicator

VT.6. Final outcome of PMTCT

MER PMTCT_FO

Percentage of HIV-exposed infants whose final outcome status is known

What it measures

This indicator measures quality of programme follow-up to track exposed infants and ascertain final status.

Rationale

- Effective PMTCT programmes must follow HIV-exposed infants until the end of the breastfeeding period to ensure that the full cascade of services and support is provided to HIV-positive mothers and their infants.
- The ability to ascertain final outcome status through routine programme data across multiple points of care is a key challenge.

Numerator

HIV-exposed infants born within the past 12 months (or 24 months in breastfeeding settings) with known final outcome status

Population-based denominator

Estimated number of HIV-positive women who delivered within the past 12 months (or 24 months in breastfeeding settings)

Programme-based denominator

Number of HIV-exposed infants who were born within the 12 months (or 24 months in breastfeeding settings) prior to the reporting period and registered in the birth cohort

Method of measurement

For the numerator and programme-based denominator. Cohort birth tracking

For the population-based denominator: Modelling-based estimates (for example, Spectrum AIM)

Disaggregation of the numerator

- Outcome status (HIV-positive, HIV-negative, no longer breastfeeding).

National priority indicator

ST.1. Syphilis screening coverage (in ANC)

GF PMTCT-4

Percentage of antenatal care attendees tested for syphilis

What it measures

This indicator measures the extent of routine syphilis screening among pregnant women at first visit (ideally) or at any antenatal care visit.

Rationale

- STIs in pregnant women, including active syphilis, have the potential to cause serious morbidity and mortality among exposed newborns.
- Routine screening of pregnant women attending antenatal clinics, as an entry point for diagnosis and treatment, is a cost-effective way to prevent congenital syphilis.

Numerator

Number of women attending ANC services during the reporting period who were tested for syphilis

Denominator

Number of women attending ANC services during the reporting period

Method of measurement

For the numerator and denominator. Programme records (for example, ANC registers)

The recommended reporting period is 12 months.

Disaggregation

- Age (<15, 15–19, 20–24, 25+).

Disaggregation of the numerator: Visit of testing (first ANC visit, other than first ANC visit during the current pregnancy), to allow calculation of percentage of syphilis tests conducted during first ANC visit among those tested.

National priority indicator

ST.2. Syphilis treatment coverage (in ANC)

Percentage of antenatal care attendees testing seropositive for syphilis who are treated

What it measures

This indicator measures the coverage of treatment of syphilis seropositive ANC attendees.

Rationale

- Programmes must ensure that pregnant women, once diagnosed with active syphilis, receive effective treatment with the recommended regimen of benzathine penicillin to effectively prevent congenital syphilis.

Numerator

Number of syphilis seropositive ANC attendees within the past 12 months who received treatment with at least one dose of benzathine penicillin 2.4 MU intramuscularly

Denominator

Number of syphilis seropositive ANC attendees within the past 12 months

Method of measurement

For the numerator and denominator. Programme records (for example, ANC registers)

Disaggregation

- Age (<15, 15–19, 20–24, 25+).

National priority indicator

ST.3. Cervical cancer screening among women living with HIV (NEW)

GAM 10.8; MER CXCA_SCRN

Percentage of women living with HIV who have been screened for cervical cancer

What it measures

This indicator measures the programme's ability to offer and provide cervical cancer screening for women living with HIV.

Rationale

- Women living with HIV are more vulnerable than HIV-negative women to developing invasive cervical cancer. (Invasive cervical cancer is an AIDS-defining condition.)
- Screening and treatment of pre-cancerous cervical lesions can reduce mortality from cervical cancer by 70%.

Numerator

Number of survey respondents who report ever having a screening test for cervical cancer using any of these methods: visual inspection with acetic acid (VIA), pap smear or HPV test

Denominator

Number of survey respondents

Method of measurement

Representative surveys of women living with HIV

Disaggregation

- Age (<15, 15–24, 25–29, 30–49, 50+)
- Test result (positive, negative, indeterminate, other).

National core indicator

SD.1. Avoidance of health care due to stigma and discrimination (key populations)

GAM 4.2; GF HIV O-16

Percentage of key population members who avoid health care because of stigma and discrimination

What it measures

This indicator measures the extent to which perceived stigma and discrimination in healthcare settings results in members of key populations avoiding health care.

Rationale

- Healthcare settings are one of the most common places that members of key populations experience discrimination.
- Tracking the proportion of key populations that avoid health care due to stigma and discrimination provides managers with information about where to focus efforts to reduce discrimination and perceived discrimination by service providers as well as identifying areas where service utilization by members of key populations can be improved.

Numerator

Number of survey respondents who answer "yes" to any of the following: "Have you ever avoided seeking…

A. any health care

B. HIV testing

C. HIV medical care or

D. HIV treatment in the last 12 months

…due to any of the following:

1. fear of or concern about stigma
2. fear or concern that someone may learn you were a [insert KP type]
3. fear of or concern about or experience of violence
4. fear of or concern about or experiencing harassment or arrest by police?

Denominator

Number of survey respondents

Method of measurement

Representative surveys of key populations (for example, BBS, BSS, HSS+)

Recommended measurement periodicity is every 2–3 years.

Disaggregation

- Age (<25, 25+)
- Key populations (men who have sex with men, people who inject drugs, sex workers, transgender people).

National priority indicator

SD.2 Avoidance of health care due to stigma and discrimination (people living with HIV) (NEW)

Percentage of people living with HIV who avoid health care because of stigma and discrimination

What it measures

This indicator measures the extent to which perceived stigma and discrimination in healthcare settings cause people living with HIV to avoid seeking health care.

Rationale

- Healthcare settings are one of the most common places that people living with HIV and those perceived to be living with HIV experience discrimination.
- Tracking the proportion of people living with HIV who avoid health care due to stigma and discrimination provides managers with information about where to focus efforts to reduce discrimination and perceived discrimination by service providers as well as identifying areas where service utilization by people living with HIV can be improved.

Numerator

Number of survey respondents who answer "yes" to any of the following: Have you ever avoided seeking…

A. health-care

B. HIV testing

C. HIV medical care or

D. HIV treatment in the last 12 months

…due to any of the following:

1. fear of or concern about stigma
2. fear or concern that someone may learn that you are HIV-positive
3. fear of or concern about or experience of violence?

Denominator

Number of survey respondents

Method of measurement

For the numerator and denominator. Representative surveys of people living with HIV (for example, PLHIV Stigma Index[1])

Disaggregation

- Age (<25, 25+).

[1] PLHIV Stigma Index website: https://www.stigmaindex.org.

National core indicator

KP.1. Coverage of HIV prevention (KP) (NEW) GAM 3.7; GF KP-1; MER KP_PREV

Percentage of key population members reached with HIV prevention programmes with a defined package of services

What it measures

This indicator quantifies the extent to which key populations have received prevention services from a defined package of interventions. It is recommended that the nationally defined evidence-based package align with the WHO Comprehensive Package for key populations. (See key population indicator section 3.8.1, for details.)

Rationale

- A combination of prevention interventions for key populations is required to reduce transmission of HIV. High coverage of a defined package of evidence-informed prevention interventions is a critical component of the response. This indicator quantifies the extent to which key population members have received such a package.

A. Survey-based

Numerator

Number of surveyed people in a key population who have received a defined, evidence-based package of HIV prevention interventions (consistent with WHO guidelines) within a defined timeframe

Consistent with GAM guidance, the numerator is measured as follows:

Number of respondents of key population surveys who report receiving at least two of the following prevention services from an NGO, healthcare provider or other sources:

- In the past 3 months, have you been given condoms and lubricant (for example, through an outreach service, drop-in centre or sexual health clinic)?
- In the past 3 months, have you received counselling on condom use and safe sex (for example, through an outreach service, drop-in centre or sexual health clinic)?
- Have you been tested for sexually transmitted infections in the last 3 months? (only for sex workers, transgender people and men who have sex with men)
- Have you received new, clean needles and syringes in the past 3 months? (only for people who inject drugs)

Denominator

Number of people in a key population responding to the survey

Method of measurement

Representative surveys of key populations (for example, BBS, BSS, HSS+)

Disaggregation

- Gender (male, female, transgender)
- Age (<25, 25+ years).

B. Programme-based

Numerator

Number of people in a key population who have received a defined, evidence-based package of HIV prevention interventions

Denominator

Estimated size of key population group

Method of measurement

For the numerator. Programme data (for example, registers, service logs). The HIV prevention interventions measured in this indicator should be aligned with the nationally defined, evidence-based package for each key population.

Note: For people who inject drugs, the package must include access to sterile needles/syringes.

For the denominator. Validated population size estimate for area relevant to the programme of interest

Disaggregation

- Gender (male, female, transgender)
- Age (<25, 25+ years)
- Type of provider (public sector, key population-led organization or other entities such as private for-profit and not-for-profit organizations, including faith-based, international, nongovernmental).

National core indicator

KP.2. Needles and syringes distributed

GAM 3.9; GF KP-4

Number of needles and syringes distributed per year per person who injects drugs

What it measures

This indicator measures whether programmes provide a sufficient number of clean units of injecting equipment that might be used by the population of people who inject drugs.

Rationale

- When measured with a denominator that is the estimated number of people who inject drugs, this indicator allows understanding of the country's progress towards national coverage of needle–syringe programmes (NSP) for all people who inject drugs.
- When measured with the denominator that is the number of people who inject drugs reached by NSPs in the last 12 months, this indicator allows understanding of the quality of NSPs in the country and whether adequate needle–syringes are being distributed to programme recipients.

Numerator

Number of sterile needles and syringes distributed by NSPs during the reporting period

Population-based denominator

Number of people in the country who inject drugs

Programme-based denominator

Number of people who inject drugs reached by the NSP during the reporting period

Method of measurement

For the numerator. Programme registers/records, NSP log books

For the population-based denominator. Size estimation exercises

For the programme-based denominator. Programme registers/records, NSP log books.

The recommended reporting period is 12 months.

Disaggregation

- Gender (male, female, transgender)
- Age (<25, 25+)
- Type of setting (community, prison/closed setting)
- Provider type (public-sector, key population-led organization, other).

National priority indicator

KP.3. Coverage of OST

GAM 3.10; GF KP-5; MER KP_MAT

Percentage of people who inject drugs receiving opioid substitution therapy

What it measures

This indicator measures the programme's ability to deliver opioid substitution therapy (OST) among opioid-dependent people who inject drugs.

Rationale

- By providing a direct method of reducing the number of injection risk acts per person who inject drugs, OST is a critical component of effective harm reduction services.

Numerator

Number of people who inject drugs and who are on OST at a specified date during the reporting period

Denominator

Number of opioid-dependent people in the country who inject drugs

Method of measurement

For the numerator. Programme registers/records, OST registers

For the denominator. Size estimation exercises

Caution should be taken to include only opioid-dependent people who inject drugs in the numerator and denominator, as not all OST recipients will have a history of injecting and not all people who inject drugs will use or be dependent on opioids.

Disaggregation

- Gender (male, female, transgender)
- Age (<25, 25+).

National priority indicator

KP.4. Safe injecting practices (people who inject drugs) GAM 3.8; GF HIV O-6

Percentage of people who inject drugs who report using sterile injecting equipment the last time they injected

What it measures

This indicator measures progress in preventing HIV transmission associated with injecting drug use.

Rationale

- The risk of HIV transmission through contaminated injecting equipment is extremely high.
- Safer injecting practices such as the use of new or sterile injecting equipment are critical to reducing transmission risk.
- Measures of injecting practices at last injection provide a proxy measure of the proportion of injection acts in which sterile injecting equipment is used.

Numerator

Number of survey respondents who answer "yes" to both questions:

1. Have you injected drugs at any time in the past month?

If yes,

2. The last time you injected drugs, did you use a sterile needle and syringe?

Denominator

Number of survey respondents

Method of measurement

Representative surveys of people who inject drug (for example, BBS, BSS, HSS+)

Disaggregation

- Gender (male, female, transgender)
- Age (<25, 25+).

National priority indicator

GW.1. Adolescent girls and young women HIV/SRH integration (NEW)

Percentage of adolescent girls and young women seeking contraception/family planning who received an HIV test

What it measures

This indicator measures the integration of HIV testing with sexual and reproductive health services by assessing the extent to which adolescent girls and young women seeking contraception are tested for HIV.

Rationale

- Adolescent girls and young women seeking contraceptive/family planning services often engage in unprotected sexual intercourse, which puts them at risk for HIV infection in high HIV burden and incidence settings (for example, Southern Africa, where HIV incidence is particularly high among adolescent girls and young women).
- The Evidence for Contraceptive Options in HIV Outcomes (ECHO) trial showed a high incidence of HIV infection among all women seeking contraception, especially women under 25 years. In high HIV burden and incidence settings such as Southern Africa, programmes should strengthen the integration of HIV prevention with contraceptive and other sexual and reproductive health services.
- HIV testing serves as a first step in linkage to ART for those testing HIV-positive and to condom promotion and, where appropriate, PrEP for those testing HIV-negative.

Numerator

Number of adolescent girls and women seeking contraception/family planning services who were tested for HIV

Denominator

Number of adolescent girls and women seeking contraception/family planning services

Method of measurement

For the numerator and denominator. Programme records; registers of contraception/sexual/reproductive health clinics could be used. Currently, HIV testing and referral to prevention or treatment are infrequently captured by reproductive health services. New strategies and materials for collecting this indicator may be needed.

The intended focus of this indicator is adolescent girls and young women, ages 10–24 years, assessed by reviewing results by 5-year age bands up to the age of 24 years. The broader inclusion of women of reproductive age over the age of 25 serves as a comparison to identify trends among adolescent girls and young women.

Disaggregation

- Age (10–14, 15–19, 20–24, 25–49, 50+)
- HIV test status (negative, positive, indeterminate).

Additional recommendations for settings with robust electronic HIS, for example, EMRs:

- Referral to/uptake of prevention (for example, PrEP) and treatment services that may reduce new infections
- HIV testing approach (for example, rapid diagnostic test, HIV self-testing, referral to HTS).

Differentiated use

DfC.1. VMMC scale-up

GAM 3.17; GF MEN-1; MER VMMC_CIRC

Number of VMMCs performed according to the national standard

What it measures

This indicator measures progress in scaling up male circumcision services.

Rationale

- WHO and UNAIDS recommend male circumcision as an efficacious intervention for HIV prevention in countries and regions with heterosexual epidemics, high HIV prevalence and low male circumcision prevalence.
- Randomized controlled trials have shown that male circumcision provided by trained health professionals with proper equipment can reduce the risk of men heterosexually acquiring HIV infection.

Numerator (only)

Number of voluntary medical male circumcisions during the reporting period performed according to the national standard

Method of measurement

Programme data (for example, VMMC registers)

The recommended reporting period is 12 months.

Disaggregation

- Age (0–4, 5–9, 10–14, 15–19, 20–24, 25–49, 50+)
- HIV status (positive, negative, indeterminate).

Differentiated use
DfC.2. VMMC adverse events

Number and percentage of circumcised males experiencing adverse events

What it measures

This indicator measures whether the scale-up of services for male circumcisions meets national standards of safety and effectiveness.

Rationale

- Staff conducting medical circumcisions must have appropriate training and access to proper equipment.
- Trends in adverse events may indicate where service providers need additional support.

Numerator

Number of males experiencing at least one moderate or severe adverse event (that is, complications resulting in death or hospitalization within 30 days or permanent disability) during or following circumcision surgery in the reporting period

Denominator

Number of men undergoing voluntary medical male circumcision during the reporting period

Method of measurement

For the numerator. Programme records (for example, VMMC registers).

Intraoperative adverse events may include pain, excessive bleeding, anaesthesia-related effects, excessive skin removal, damage to the penis, sharps injury to personnel. Postoperative adverse events may include abnormal pain, excessive swelling, infection, haematoma, bleeding, difficulty urinating, wound disruption, scar or disfigurement, injury to glans, excessive skin removal.

Disaggregation

- Age (0–4, 5–9, 10–14, 15–19, 20–24, 25–49, 50+)
- Timing of adverse event (intraoperative, postoperative)
- Service site.

Differentiated use
DfI.1. Facility-level injection safety

Percentage of healthcare facilities where all therapeutic injections are given with new, disposable, single-use injection equipment

What it measures

This indicator assesses the implementation of policies to ensure that all health facilities practice injection safety.

Rationale

- This indicator is relevant in countries that experience outbreaks of healthcare injection-associated HIV infection, that have a history of unsafe injection practices (more than 0.25 unsafe injections/per person/per year) and/or that have a prevalence of HCV infection >2%.

Numerator

Number of sampled healthcare facilities where all therapeutic injections are given with new, disposable, single-use injection equipment

Denominator

Number of facilities sampled

Method of measurement

For the numerator and denominator. Health facility survey

Disaggregation

- Type of site.

Differentiated use

DfI.2. Rate of unsafe injections per person

Number of unsafe healthcare injections per person per year

What it measures

This indicator measures the extent of unsafe healthcare injections in a population and allows for monitoring of trends.

Rationale

- While risk of HIV transmission from unsafe healthcare injections has decreased globally, it remains an important programme priority in some countries.
- This indicator is relevant in countries that experience outbreaks of healthcare injection-associated HIV infection, that have a history of unsafe injection practices (more than 0.25 unsafe injections/per person/per year) and/or that have a prevalence of HCV infection >2%.

Numerator

Average number of unsafe healthcare injections during one year among survey respondents

Denominator

Number of survey respondents who answer the question

Method of measurement

For the numerator and denominator. General population survey (for example, DHS, PHIA, AIS)

The numerator is calculated by multiplying the response from Q1 by the proportion who answer "no" to Q2.

Q1: "Have you had an injection for any reason in the last 12 months? If yes, how many injections have you had?"

Q2: "The last time you got an injection from a health worker, did he/she take the syringe and needle from a new, unopened package?"

Disaggregation

- Gender (male, female, transgender)
- Age (<15, 15+).

Differentiated use

DfB.1. Facility-level blood safety

Percentage of health facilities providing blood transfusion that meet requirements for safe and sufficient blood transfusion

What it measures

This indicator assesses the effectiveness of policies and programmes to enable health facilities to have sufficient and safe supply of blood for transfusion.

Rationale

- While risk of HIV transmission from unsafe blood transfusion has decreased globally, it remains an important programme priority in some countries.

Numerator

Number of health facilities providing blood transfusion with tracer items on the day of the assessment by the Service Availability and Readiness Assessment (SARA) survey indicators index

Denominator

Number of surveyed health facilities providing blood transfusion

Method of measurement

For the numerator and denominator. Health facility survey (SARA)

Disaggregation

- Type of site.

Differentiated use
DfB.2. Quality-assured blood testing

Percentage of blood units that are screened for bloodborne diseases in a quality-assured manner

What it measures

This indicator measures the extent of quality-assured screening of blood units at different levels of the health system.

Rationale

- Unsafe blood transfusion is still a concern, especially in low- and middle-income countries where the prevalence of transfusion-transmissible infections is high and the quality and coverage of blood screening are inadequate.
- Less than 100% screening indicates lack of or inappropriate laboratory screening and flags the risk of transmission through unsafe blood supplies.

Numerator

Number of donated blood units tested in a quality-assured manner for HIV, HBV, HCV and syphilis

Denominator

Number of donated blood units

Method of measurement

For the numerator and denominator. Programme records (for example, blood donation logs, laboratory records)

For the purpose of data collection, testing in a quality-assured manner is defined as "testing performed in a laboratory that: (1) uses documented standard operating procedures; (2) participates in an external quality assessment scheme."

Disaggregation

- Facility type
- Location, geographical-administrative units (for example, region, district).

Further information

Global health sector strategy on HIV, 2016–2021. Geneva: WHO; 2016 (https://www.who.int/hiv/strategy2016-2021/ghss-hiv/en/).

Global hepatitis report, 2017. Geneva: WHO; 2017 (https://www.who.int/hepatitis/publications/global-hepatitis-report2017/en/).

Differentiated use
DfT.1. TB screening coverage among new ART patients

Percentage of people living with HIV newly initiated on ART who were screened for TB

What it measures

This indicator measures the extent to which people living with HIV newly initiated on ART are screened for active TB disease.

Rationale

- Routine TB screening among people living with HIV newly initiated on ART and those who are already on ART is essential to identifying presumptive TB cases in need of confirmatory diagnostic testing and to determine eligibility for TPT if active TB disease is ruled out.
- Screening is most critical at the time of ART initiation, when immune compromise is greatest. It is most commonly done as a part of pre-treatment clinical assessment.
- It is important to understand the cascade from ART enrolment to treatment of active TB disease (see Fig. 3.2); this indicator will highlight any obstacles between ART enrolment and screening for TB symptoms.
- This is the first of five "screening cascade" indicators considered priority for high burden TB/HIV settings.

Numerator

Number of people living with HIV newly initiated on ART who were screened for TB during the reporting period

Denominator

Number of people living with HIV who newly initiated ART during the reporting period

Method of measurement

For the numerator and denominator. Programme records (for example, ART registers, EMRs)

Disaggregation

- Gender (male, female, transgender)
- Age (<15, 15+).

Differentiated use

DfT.2. TB symptom-screened positive among new ART patients

Percentage of people living with HIV newly initiated on ART who were screened for TB symptoms and who screened positive

What it measures

This indicator measures the percentage of people living with HIV newly initiated on ART and screened for symptoms of active TB disease who screen positive.

Rationale

- Routine TB screening among people living with HIV newly initiated on ART and those who are already on ART is essential to identifying presumptive TB cases in need of confirmatory diagnostic testing and to determine eligibility for TPT if active TB disease is ruled out.
- Screening positivity rates vary based on background TB prevalence and other epidemiological and environmental factors. However, low screening positivity rates can signal inadequate or poor quality TB screening, particularly in high burden settings.
- It is important to understand the cascade from ART enrolment to treatment of active TB disease (see Fig. 3.2); this indicator will highlight obstacles between ART enrolment and screening for TB symptoms.
- This is the second of five "screening cascade" indicators considered priority for high burden TB/HIV settings.

Numerator

Number of people living with HIV newly initiated on ART who screened positive for TB symptoms

Denominator

Number of people living with HIV newly initiated on ART during the reporting period who were screened for TB symptoms

Method of measurement

For the numerator and denominator. Programme records (for example, ART registers, EMRs)

Disaggregation

- Gender (male, female, transgender)
- Age (<15, 15+).

Differentiated use
DfT.3. TB testing among those symptom-screened positive

Percentage of people living with HIV newly initiated on ART and screened positive for TB symptoms who then are tested for TB

What it measures

This indicator measures the percentage of people living with HIV newly initiated on ART and screened positive for TB symptoms who then had clinical evaluation and/or appropriate TB diagnostic testing.

Rationale

- Appropriate TB diagnostic testing is essential for people living with HIV who symptom-screen positive for TB.
- It is important to understand the cascade from ART enrolment to treatment of active TB disease (see Fig. 3.2); this indicator will shed light on any obstacles between positive screening for TB symptoms and proper diagnostic testing, based on national clinical guidelines.
- This is the third of five "screening cascade" indicators considered priority for high burden TB/HIV settings.

Numerator

Number of people living with HIV newly initiated on ART who are investigated for active TB disease with appropriate diagnostic testing

Denominator

Number of people living with HIV newly initiated on ART and screened positive for TB symptoms during the reporting period

Method of measurement

For the numerator. Programme records (for example, ART registers, EMRs). "Appropriate" diagnostic testing refers to WHO-recommended testing modalities.[1]

For the denominator. Programme records (for example, ART registers, EMRs)

Disaggregation

- Gender (male, female, transgender)
- Age (<15, 15+).

Consider disaggregating the type of diagnostic testing, for example, GeneXpert testing, LF-LAM, sputum acid-fast bacilli (AFB) examination (alone) or other diagnostic testing.

[1] Policy statements on TB diagnostics and laboratory strengthening. Geneva: WHO, 2019 (https://www.who.int/tb/areas-of-work/laboratory/policy_statements/en/).

Differentiated use

DfT.4. TB diagnosis among those tested for TB

Percentage of people living with HIV newly initiated on ART and tested for TB who are diagnosed with active TB disease

What it measures

This indicator measures the percentage of people living with HIV newly initiated on ART and, having screened positive for active TB disease, were evaluated and/or had appropriate TB diagnostic testing who then were confirmed to have active TB disease.

Rationale

- Appropriate TB diagnostic testing based on national clinical/WHO guidelines is essential for people living with HIV who screen positive for TB.
- It is important to understand the cascade from ART enrolment to treatment of active TB disease (see Fig. 3.2); this indicator will highlight any obstacles between diagnostic testing and TB diagnosis.
- This is the fourth of five "screening cascade" indicators considered priority for high burden TB/HIV settings.

Numerator

Number of people living with HIV newly initiated on ART who were diagnosed as having active TB disease

Denominator

Number of people living with HIV who newly initiated ART and screened positive for TB symptoms who had appropriate diagnostic testing during the reporting period

Method of measurement

For the numerator. Programme records (for example, ART registers, EMRs)

For the denominator. Programme records (for example, ART registers, EMRs). "Appropriate" diagnostic testing refers to WHO-recommended testing modalities.[1]

Disaggregation

- Gender (male, female, transgender)
- Age (<15, 15+).

Note: This indicator is related to but distinct from indicator TB.4 (Top 40): percentage of PLHIV newly initiated on ART who have active TB disease.

[1] Policy statements on TB diagnostics and laboratory strengthening. Geneva: WHO, 2019 (https://www.who.int/tb/areas-of-work/laboratory/policy_statements/en/).

Differentiated use
DfT.5. TB treatment initiation among diagnosed

Percentage of people living with HIV newly initiated on ART and diagnosed with active TB who initiated TB treatment

What it measures

This indicator measures the percentage of people living with HIV newly initiated on ART and, having screened positive for TB symptoms and had appropriate TB diagnostic testing that confirmed a diagnosis of active TB disease, who then initiated TB treatment.

Rationale

- Once active TB disease is diagnosed, it is essential that TB treatment is promptly initiated and that quality clinical monitoring is provided (according to national clinical guidelines) to ensure treatment completion.
- It is important to understand the cascade from screening to treatment of active TB disease (see Fig. 3.2); this indicator will highlight any limitations between diagnosis and treatment.
- This is the fifth of five "screening cascade" indicators considered priority for high burden TB/HIV settings.

Numerator

Number of people living with HIV newly initiated on ART who were diagnosed with TB and who started treatment for active TB disease

Denominator

Number of people living with HIV newly initiated on ART who were diagnosed with active TB disease

Method of measurement

For the numerator and denominator. Programme records (for example, ART registers, EMRs)

Disaggregation

- Gender (male, female, transgender)
- Age (<15, 15+).

Differentiated use

DfH.1. HCV screening coverage

GAM 10.8

Percentage of people living with HIV on ART who were screened for hepatitis C during the reporting period

What it measures

This indicator measures the coverage of hepatitis C screening among people living with HIV and on ART.

Rationale

- Hepatitis C is an important co-morbidity in many countries with HIV epidemics.
- Screening for hepatitis C among people living with HIV is an essential means of defining disease burden and the first step in access to HCV treatment for eligible patients.

Numerator

Number of people living with HIV on ART who were screened for hepatitis C (with HCV antibody (Ab) testing followed by confirmatory testing with either HCV RNA (viral load) or HCV core antigen testing among those HCV Ab-positive) during the reporting period

Denominator

Number of people living with HIV on ART during the reporting period

Method of measurement

For the numerator and denominator. Programme records (for example, ART registers, EMRs)

Disaggregation

- Gender (male, female, transgender)
- Age (<15, 15+).

Differentiated use

DfH.2. HCV treatment coverage

Percentage of people living with HIV on ART and diagnosed with chronic HCV infection who initiated HCV treatment during the reporting period

What it measures

This indicator measures the rate of initiation of treatment for hepatitis C among people living with HIV on ART diagnosed with chronic HCV infection.

Rationale

- Hepatitis C is an important co-morbidity in many countries with HIV epidemics.
- Curative treatment for HCV among people living with HIV is an essential means of reducing morbidity and mortality and achieving elimination of HCV.
- Among people living with HIV, people who inject drugs are the most likely to be co-infected with HCV.

Numerator

Number of people living with HIV on ART diagnosed with chronic viraemic hepatitis C infection (defined as positive HCV antibody (Ab) testing followed by confirmatory testing with either HCV RNA (viral load) or HCV core antigen testing among those HCV Ab-positive) and who initiated HCV treatment during the reporting period

Denominator

Number of people living with HIV on ART who were diagnosed with chronic viraemic hepatitis C infection (defined as positive HCV antibody (Ab) testing followed by confirmatory testing with either HCV RNA (viral load) or HCV core antigen testing among those HCV Ab-positive) during the reporting period

Method of measurement

For the numerator. Programme records (for example, ART registers, EMRs)

For the denominator: Programme records and/or modelled estimates

Note: All those already diagnosed with HCV and previously treated and cured would be excluded from the denominator.

Disaggregation

- People who inject drugs.

Burden/impact indicator

BI.1. People living with HIV

GF HIV I-13

Estimated number of people living with HIV

What it measures

This indicator measures the current burden of HIV in a population.

Rationale

- Estimating the number of people living with HIV is the basis for programme planning and resource needs assessments.
- This figure represents the denominator for key programmatic indicators and response and is used in calculations.

Numerator (only)

Estimated number of people infected with HIV and who are alive

Method of measurement

Mathematical modelling tools, such as Spectrum AIM, generate age- and gender-specific estimates of the numbers of people living with HIV. UNAIDS recommends Spectrum software to estimate these numbers, as its use makes possible comparable estimates across countries and ensures that the latest understanding of the HIV epidemic and the science is being used to create the estimates.

Tools within Spectrum AIM also can estimate the size of key populations living with HIV. However, these results require inputs that are not available in many countries. Alternative approaches for rough estimates of the size of key populations living with HIV in local areas may be derived from key population survey data that provide HIV prevalence data for specific groups combined with estimates of total population size for the same area (see indicator BI.2). In contrast, national estimates of the size of key populations living with HIV require modelling and data triangulation, due to the limitations of sampling key populations in probability surveys that provide nationally representative results.

Disaggregation

- Gender (male, female, transgender)
- Age (0–4, 5–9, 10–14, 15–19, 20–24, 25–49, 50+)
- Key populations (men who have sex with men, people living in prisons and other closed settings, people who inject drugs, sex workers, transgender people) and adolescent girls and young women.

Burden/impact indicator

BI.2. HIV prevalence among KP

GAM 3.3; GF HIV I-9

Percentage of specific key populations living with HIV

What it measures

This indicator characterizes the severity of the epidemic among key populations and the potential for transmission through bridge populations.

Rationale

- In both generalized and concentrated epidemics, key populations typically have higher HIV prevalence than the general population.
- Stabilizing prevalence among key populations is a measure of the success of the national-level response to HIV.

Numerator

Number of people in a specific key population group who test positive for HIV

Denominator

Number of people in a specific key population group tested for HIV

Method of measurement

For the numerator and denominator. Probability-based surveys (such as BBS) conducted every 3–5 years or annual sentinel surveillance conducted in community or facility settings

To track changes over time, survey/surveillance sites and methods of recruitment should remain constant. National-level estimates of HIV prevalence among key populations based on survey data require appropriate methods of extrapolation, when the necessary data are available.

Disaggregation

- Key populations (men who have sex with men, people living in prisons and other closed settings, people who inject drugs, sex workers, transgender people)
- Gender (male, female, transgender people who inject drugs)
- Age (<25, 25+)
- Duration of engaging in key population-defining behaviour (for example, <1 year, >1 year of doing sex work/injecting drugs/having sex with men).

Burden/impact indicator

BI.3. New HIV infections (per 1000 population)

GAM 3.1; GF HIV I-14

Estimated number of people newly infected with HIV per 1000 uninfected population

What it measures

This indicator measures progress towards ending the HIV/AIDS epidemic and achieving the goal of "zero new infections".

Rationale

- The overarching goal of the global HIV/AIDS response is to reduce the number of people newly infected to fewer than 200 000 by 2030.

Numerator

Estimated number of people newly infected during the reporting period

Denominator

Total number of uninfected population (or person-years exposed)

Method of measurement

Mathematical modelling tools, such as Spectrum AIM. These models incorporate data from geographical and population-specific surveys and other forms of surveillance data (for example, case reporting; mortality, programme and clinical data) and assumptions about HIV transmission.

Disaggregation

- Gender (male, female, transgender)
- Age (0–4, 5–9, 10–14, 15–19, 20–24, 25–49, 50+)
- Key populations (men who have sex with men, people living in prisons and other closed settings, people who inject drugs, sex workers, transgender people) and adolescent girls and young women.

Burden/impact indicator

BI.4. Final MTCT rate

GAM 2.2; GF HIV I-6

Estimated percentage of children newly infected with HIV from mother-to-child transmission among women living with HIV delivering in the past 12 months

What it measures

This indicator measures the impact of preventing HIV infections of infants among pregnant and breastfeeding women by providing pregnant and breastfeeding HIV-positive women with antiretroviral medicines and retaining them on ART through pregnancy and breastfeeding periods to reduce mother-to-child transmission of HIV.

Rationale

- The percentage of children who are living with HIV should decrease as the coverage of interventions for preventing mother-to-child transmission and the use of more effective ART increase.
- Countries have increased access to ART and strengthening counselling on infant feeding for HIV-positive pregnant and breastfeeding women.

Numerator

Estimated number of children newly infected with HIV via mother-to-child transmission among women living with HIV delivering in the past 12 months

Denominator

Estimated number of women living with HIV delivering in the past 12 months

Method of measurement

Mathematical modelling tools, such as Spectrum AIM. To calculate the final MTCT rate, Spectrum AIM requires the following data:

- Estimated number of women living with HIV giving birth, by age group;
- Distribution of pregnant women living with HIV who are receiving ART, by the timing of treatment initiation (before conception, early in the pregnancy or late in the pregnancy);
- Proportion of pregnant women retained on ART at the time of delivery;
- Estimated HIV incidence among pregnant women and breastfeeding women;
- Distribution of women receiving ART after delivery (postpartum);
- Among women receiving ART, the percentage whose infants have stopped breastfeeding, by age of the child in months (from 0 to 35 months);
- Among women not receiving ART, the percentage whose infants have stopped breastfeeding, by age of the child in months (from 0 to 35 months).
- Among breastfeeding women receiving ART, percentage who drop out each month;
- Estimated HIV incidence among breastfeeding women;
- Probabilities of mother-to-child transmission of HIV based on various categories of ART regimen and infant feeding practices.

Burden/impact indicator

BI.5. AIDS mortality

GAM 1.7; GF HIV I-4

Total number of people who have died from AIDS-related causes per 100 000 population

What it measures

This indicator measures the impact of HIV prevention, care and treatment programmes.

Rationale

- In the era of "Treat All", effective diagnosis and treatment of people living with HIV should greatly reduce deaths due to AIDS-related causes.

Numerator

Estimated number of people dying from AIDS-related causes during the calendar year

Denominator

Total population, regardless of HIV status

Method of measurement

Mathematical modelling, such as Spectrum AIM. Modelling tools require demographic data, HIV prevalence, the number of people receiving ART, HIV incidence and assumptions concerning survival rates. Additional data from verbal autopsy and/or data from vital reporting systems (and related estimates of underreporting and misclassification) may be used as inputs.

Disaggregation

- Gender (male, female, transgender)
- Age (0–4, 5–9, 10–14, 15–19, 20–24, 25–49, 50+)
- Key populations (men who have sex with men, people living in prisons and other closed settings, people who inject drugs, sex workers, transgender people).

For more information, contact:

World Health Organization
Department of HIV/AIDS
20, avenue Appia
1211 Geneva 27
Switzerland

Email: hiv-aids@who.int

www.who.int/hiv

ISBN 978-92-4-000073-5