MODULE 2

Strategic Information

Preamble

To achieve meaningful public health impact, the response to HIV among young women and adolescent girls must be based on sound epidemiological analysis, utilizing existing data sources. There is broad consensus that programmes must prioritize high-burden geographical locations, define and target the demographic segments at greatest risk and most underrepresented in key data sources, and predict the likely impact of chosen interventions.

The HIV prevention response has faced shrinking resources. Given increasingly scarce resources for prevention, efficiency of resource use is now paramount. In practical terms, this must translate into prioritizing the most highly affected populations to achieve the goal of HIV prevention coverage for 90 per cent of at-risk populations, including vulnerable young people.

To effectively align efforts, programmes must also invest in the analysis required for strategic target-setting. The global commitment to reduce new HIV infections by 75 per cent from 2010 for young women and adolescent girls will require more dramatic course correction by certain countries, depending on the magnitude of their epidemic and the baseline HIV landscape. Performance targets should be model-driven with a transparent timeline, and must factor in the whole response across the continuum of HIV treatment services and prevention programming.

The global prevention response has, for a long time, been plagued by weaknesses in measurement and estimation of the key programmatic results. Strengthening **routine data and reporting systems** remains a critical obstacle to identifying gaps in the prevention programme. This should be paired with investment in quality evaluation and evidence generation to recalibrate decision-making for prevention services and systems. Evaluations are only worth doing if done well, but they need not be extensive or costly.

This module presents recommended methodologies, tools and approaches to collect and analyse epidemiological data for informing decision-making, strengthening targeted programming, optimizing programmes and maximizing efficiency. The content is intended to equip programme managers and implementers with tools to advocate for the right amount of investment in data and data systems.

Key Takeaways

- The next frontier in prevention for young women and girls requires hyper-granular epidemiological data at the subnational level to inform tactical decision-making.
- All programme partners must advocate for strategic target-setting using mathematical modelling methods and based on a powerful theory of change.
- National programmes require robust data systems with integrated reporting — linked across sectors and across community and health facility services — to identify programmatic gaps and support rapid evidence-based decision-making .
- Programmes should leverage ongoing research and evaluation platforms to efficiently achieve desired results and to hold programme implementers accountable .

Programming Considerations

2.1 Start with Epidemic Overview and Analysis

Increasingly sophisticated tools and methodological approaches are available in the prevention arena to describe how HIV is geographically distributed and to define local transmission dynamics. These tools and approaches can prioritize geographic areas in which to target programming. A significance threshold has been defined in which locations are categorized by annualized HIV incidence rate: greater than 2 per cent, extremely high incidence; 1 per cent, very high incidence; and 0.3 per cent, high incidence.

Programming must be guided accordingly to align comprehensive prevention programming with areas of greatest need. It must be noted, however, that even if programming is recalibrated to focus on the highest-burden or highest-incidence locations only, the need for prevention programming is likely to outstrip the available resources. To optimize efficiencies, epidemic incidence modelling should identify localities where predictors of HIV vulnerability and risk — including socio-behavioural dimensions, settlement patterns, overlapping inequities and poverty — combined with HIV epidemiological data predict localized epidemics with extensive overlapping vulnerabilities and missing services.

Most methodologies now use weighted HIV variables to improve the identification of significant epidemic clusters, which assures that more attention is given to areas of high HIV prevalence than to areas of low prevalence. When overlaid with carefully selected social and economic analysis tools — including social and economic vulnerability analysis — localities with both a high intensity of transmission and clusters of deep deprivation may be clearly identified.

Implementers should advocate to incorporate empirically robust analyses such as the **Multidimensional Poverty Index** (Oxford University) and the related **Multiple Overlapping Deprivation Analysis** to identify profiles of at-risk children and pockets of child poverty and deprivation requiring an exceptional policy and programmatic response. Where possible, such analyses should utilize internationally accepted standardized datasets, but customize the relevant dimensions, thresholds and indicators to the national context.

Beyond markers of incidence, implementers can access data on key dimensions of the HIV epidemic through the United Nations Programme on HIV/AIDS (UNAIDS) portal **AIDS Info**, which compiles annually updated data on key HIV trends across the most affected

countries. UNAIDS uses the **AIDS Impact Model (AIM)** to generate national and regional numerical estimates every other year. An online application is also available to estimate HIV prevalence and incidence (users can input one or multiple surveys). Although the HIV prevalence and incidence calculator is intended for UNAIDS national-level estimates, it is available to all online users. Publicly available survey datasets like Demographic and Health Surveys (DHS) and the related AIDS Indicator Surveys, Multiple Indicator Cluster Surveys (MICS) and Public Health Impact Assessment Surveys also provide a rich source of open-access datasets for further analysis *(see 'Inventory of Publicly Accessible Data Sources')*.

When analysing the HIV epidemic, it may be helpful to visualize HIV trends over time, across countries and by background characteristics. The DHS Program STATcompiler allows users to create custom tables, charts and thematic maps based on thousands of demographic and health indicators, to help make data more accessible.

Where there is clear evidence of heterogeneity and substantive variations in the HIV epidemic, spatial analysis methods that process more granular and precise local data will become increasingly indispensable for local planning. An array of geospatial methods are available to programme teams. UNAIDS promotes a straightforward and relatively accessible approach (PrevR)[1] that uses sampled HIV prevalence data from household surveys, with no spatial information data. Bayesian approaches (model-based geostatistical approaches) also perform well and are of increasing interest. Spatial analysis methods can inform small-area estimations with acceptable precision, even down to the neighbourhood and street level.

The utility of programmatic mapping to improve sectoral planning and service delivery has been demonstrated across contexts, including by the Avahan Programme in India and the World Bank-financed HPDP2 programme in Nigeria *(see 'Programmatic Mapping to Improve Service Delivery')*.

2.2 Set Strategic Targets

Ambitious measurable targets are required to drive results at the national and subnational level. In 2016, the UN High-Level Meeting on Ending AIDS set bold and ambitious targets to achieve a 75 per cent reduction of new HIV infections between 2010 and 2020. All countries are accountable for these targets. The available data already show that some countries have made critical headway relative to others. Yet, most countries have not recalibrated their national programme targets, which has been a critical gap in programming.

Spectrum/Estimation and Projection Modelling Software (Avenir Health) addresses this gap by facilitating national programme target-setting. It provides mathematical modelling software to describe the HIV response and programmatic impacts. The most practical Spectrum tools for adolescent girl programming are AIM and GOALS.

- AIM estimates the number of people living with HIV, new HIV cases and AIDS deaths. These data direct programme planners to gaps in HIV care, helping identify the populations that most need preventive services and treatment support.
- The GOALS model is more directly linked to HIV programming by extrapolating the expected impact of interventions on achieving national-level goals like reduction of new HIV cases and treatment coverage. It also informs implementers of the funding required to reach their goals, and what can be achieved with the available resources.

Similar mathematical models have been used to estimate programmatic cost and impact for prevention programming, for instance in voluntary medical male circumcision (VMMC) programming,[2] and should be strongly considered for adolescent- and youth-centred programming. These models include incremental analysis and age-structured mathematical and subnational units. Work is underway to integrate the age-structured mathematical model within Spectrum.

2.3 Strengthen Systems for Routine Monitoring and Reporting

Once global and national targets have been established, strong systems must be in place to monitor their progress. Appropriate indicators to measure progress should align with a theory of change that maps out the pathway to achieve stated results, identifying output, outcome and impact indicators to measure global progress. Ideally, these indicators are developed by consensus with multiple levels of stakeholders.

Indicator measurement is necessary to track programmatic progress, and is still at a stage of relative infancy for prevention programmes (relative to care and treatment). Given the pervasive weaknesses in prevention systems and the relatively recent entrance of large-scale multisectoral initiatives to address the prevention needs of women and girls, there is an urgent need to invest in strengthening data systems, starting with indicator selection and measurement. From the national system, implementers should seek to influence the adoption of robust indicator and measurement frameworks that prioritize a strategic set of indicators.

Measurement frameworks should have a clear logical and empirical link across the causal chain from outcomes to lower-level results, and should prioritize measures that are

sensitive to improvement or deterioration in prevention outcomes. This is not an easy task, but is one that warrants frequent review and should dovetail with national responses to inform evaluation and research *(see 'HIV Indicator Guidance Sheets' and 'The Global Fund Measurement Framework for Adolescent Girls and Young Women Programs')*.

Programmes may also elect to create their own unique indicators or reassess the value of those currently in use. UNAIDS *(see 'Operational Guidelines for Selecting Indicators for the HIV Response')* provides standards to consider when assessing new or used indicators, such as whether the indicator is needed and useful, has technical merit and is fully defined.

National indicators are tracked by UNAIDS through the Global AIDS Monitoring (GAM) system, which stipulates annual reporting *(see 'Global AIDS Monitoring 2020')*. The GAM system provides further guidance on how to implement a national-level monitoring system, as well as how to report the data.

Together with a rigorous and appropriately sized measurement framework, the health management information system (HMIS) forms the backbone of effective monitoring. Prevention programming largely lacks a coherent streamlined approach to information management, a gap that is further exacerbated by the need to track outcomes across sectors for young woman- and girl-centred programming. Prevention programming for young women and girls could learn from work in the social protection and child protection spheres, including best practices such as instituting a central integrated registry for all children and women's social services, anchoring intersectoral reporting around strong relational databases and carefully weighing the use of unique identifiers to support young women's and girls' longitudinal tracking.

District Health Information Software 2 (DHIS2) is the largest and most widely used HMIS, used by more than 100 countries, 67 of them low- and middle-income *(see 'District Health Information Software 2 (DHIS2)')*. DHIS2 collects, manages and analyses individual data on integrated health activities across systems. It is often referred to as the backbone of routine health monitoring systems. Alternative solutions such as OpenDatakit, CommCare and SurveyCTO are less expansive in their uptake and may be utilized alongside DHIS2 and client medical record systems (for instance, OpenMRS).[3]

In some jurisdictions, prevention measures have been integrated into the national DHIS2 database, facilitating routine and integrated prevention reporting by the health sector. The adoption of different technical platforms for the key sectoral databases, leading to issues with interoperability, remains a key — but not insurmountable — limitation of such efforts.

There is no shortage of guidance to support implementers with assessing routine management information systems, to support investments in system design and strengthening, and to conceptualize the impact of these systems on programmatic performance *(see 'PRISM (Performance of Routine Information System Management) Series'*, and guidance on routine health information system (RHIS) performance diagnostics, electronic RHIS performance and RHIS assessments[4]). Prudent practice requires that implementers of system-strengthening efforts pay equal attention to the organizational and behavioural determinants of information systems' reliability and utilization as they do the technical determinants.

2.4 Evaluate, Research and Assess

Evaluation and research highlight inefficiencies, system bottlenecks and implementation gaps. They also provide a basis from which to establish value for money and ensure accountability. Yet, few national programmes for young women and girls have invested sufficiently to unlock the catalytic potential of an integrated research portfolio. Investments in research and evaluation are both possible and immensely beneficial — providing the information needed to strengthen programmes — and ultimately improve the lives many young women and girls.

Evaluation can be right-sized for programmes through careful articulation of the reasons why data are being collected. Ideally, evaluations and assessments should be built into programmes during the design stage. Where this has not been the case, independent research methods should be embedded within programmes to evaluate progress towards public health impacts. If a baseline assessment has not been completed, novel evaluation designs could approximate a counter-factual outcome, and careful triangulation of numerous evidence and data streams should be considered *(see 'Monitoring and Evaluation: Developing an evaluation strategy', 'Measuring What Matters'* and *'Rainbow Framework'* for step-by-step guides, curated lists of data-collection methods, and supplemental documents to help develop original evaluations).

The DREAMS (Determined, Resilient, Empowered, AIDS-free, Mentored and Safe) initiative, a private–public partnership funded by the US President's Emergency Plan for AIDS Relief (PEPFAR) to reduce the number of new HIV infections among young women and adolescent girls in high-burden countries, offers state-of-the-art experience that should be replicated by prevention programmes. DREAMS integrates an independent impact evaluation portfolio for accountability and embedded implementation science for programme learning

to complement a responsive technical assistance portfolio *(see 'DREAMS Impact Evaluations Portfolio').*

Ongoing research is also required to understand the best approaches to identifying and reaching vulnerable young women and adolescent girls and their partners and linking them to HIV services. One such fruitful approach is using research findings to improve routine healthcare practices through implementation science, helping leaders understand how to deliver interventions and identify when a programme is not working and why.

The DREAMS Implementation Science Portfolio, supported by the Population Council, has demonstrated best practice in integrating field-driven, practitioner-centred learning into a multi-sectoral programme response. Over 20 research publications provide evidence to strengthen and optimize programmes in the DREAMS initiative. These studies provide a rich base of methodological insight to help understand how implementation science can advance incrementally advance practice, especially when combined with adaptive learning and management, quality improvement and evaluation investments. Study protocols can be found for Swaziland, Tanzania, Uganda, Kenya and a combination of settings *(see 'Reducing HIV Risk among Adolescent Girls and Young Women: Implementation science around the DREAMS initiative').*

Promising Directions

Adaptive evaluation designs. These offer an alternative to traditional observational studies or randomized controlled trials, both of which require a fixed design throughout the investigation. Novel adaptive designs allow modifications during a study and/or statistical procedures without undermining the study's validity and integrity, making studies more flexible, efficient and fast. Adaptive multi-arm multi-cluster designs have been successfully deployed to assess the impact of a single intervention deployed alone or in combination as part of an HIV care and prevention package (as in Malawi[5] and South Africa in 2019) in a complex sequence of care.

Digital and big data. Harnessing digital data (including Internet searches, social media and online media) and data science is emerging as a promising approach to complement traditional surveillance, research and evaluation in public health. Potential applications are wide and vast: social media analytics have been used to refine estimates of key populations and other marginalized groups to assess subgroups requiring enhanced prevention or treatment focus. Social media platforms (such as WhatsApp) have been utilized to conduct focus groups and surveys (Facebook bots), and video, social media analysis and sensors could be deployed to collect behavioural data.

Empirically derived risk analysis. In certain settings, empirically derived tools have already been developed to help identify young women and adolescent girls at heightened risk of acquiring HIV. These tools are often brief questionnaires (5–10 questions), with items informed by rigorous empiric research linking specific behaviours or characteristics to increased HIV vulnerability. Girls can be given a score based on how they answer each question. Higher scores typically denote heightened vulnerability to HIV. The Baseline Behaviour Assessment[6] by CAPRISA *(see 'Centre for the AIDS Programme of Research in South Africa (CAPRISA) Behaviour and Risk Assessment')* and methods used in the VOICE trial[7] *(see 'An Empiric HIV Risk Scoring Tool to Predict HIV-1 Acquisition in African Women')* offer a few validated approaches to predict HIV vulnerability.

Inventory of Publicly Available Data Sources

AIDS Info
Joint United Nations Programme on HIV/AIDS (UNAIDS); English
http://aidsinfo.unaids.org

UNAIDS leads the collection of the world's most extensive data on HIV epidemiology, programme coverage and finance; it also publishes the most authoritative and up-to-date information on the HIV epidemic. UNAIDS works with all countries to collect and analyse data on their AIDS responses and to help build the capacity to generate and use strategic information. Data from UNAIDS have been trusted and used by countries and organizations around the world to guide and monitor their responses to HIV since UNAIDS was formed in 1996.

United Nations Educational, Scientific and Cultural Organization (UNESCO) Institute for Statistics
UNESCO; English, French
http://uis.unesco.org/ http://data.uis.unesco.org/

The UNESCO Institute for Statistics is the official and trusted source of internationally comparable data on education, science, culture and communication. It produces a wide range of indicators in UNESCO's fields of action by working with national statistical offices, line ministries and other statistical organizations. Themes: Education; Sustainable Development Goal 4 (SDG4); Science, Technology and Innovation; Culture; Communication and Information; Demographic and Socio-economic.

The Demographic and Health Surveys (DHS) Program
ICF International; more than 200 languages, including English, French, Spanish
https://dhsprogram.com/

The DHS Program provides technical assistance for more than 400 surveys in over 90 countries, advancing global understanding of health and population trends in developing countries. The DHS Program has a worldwide reputation for collecting and disseminating accurate, nationally representative data on fertility, family planning, maternal and child health, gender, HIV, malaria and nutrition.

The AIDS Indicator Survey is a DHS survey developed as a standardized tool to provide countries with indicators for effective monitoring of national HIV programmes.

The DHS StatCompiler allows users to make tables based on thousands of demographic and health indicators across more than 90 countries. Tables can be customized to show indicators by background characteristics, over time and across countries.

Multiple Indicator Cluster Survey (MICS)
UNICEF; English, French, Spanish, Arabic, Russian, Chinese
mics.unicef.org

MICS is the largest source of statistically sound and internationally comparable data on women and children worldwide. In countries as diverse as Costa Rica, Mali and Qatar, trained fieldwork teams conduct face-to-face interviews on a variety of topics, focusing mainly on issues that directly affect the lives of children and women. MICS was a major source of data on the Millennium Development Goals indicators and will continue to be a major data source during the 2030 Sustainable Development Agenda to measure SDGs indicators.

Population-based HIV Impact Assessments (PHIA) Project ICAP at Columbia University, US Centers for Disease Control, PEPFAR; English
https://phia.icap.columbia.edu https://www.youtube.com/watch?v=hDLxcfUBepI

The PHIA Project measures the reach and impact of HIV programmes in PEPFAR-supported countries through national surveys. For each PHIA survey, trained staff conduct household-based HIV counselling and testing, and the results of tests are returned. The surveys also ask questions about adults' and children's access to preventive care and treatment services. The results measure national and regional progress towards the UNAIDS 90-90-90 goals and guide policy and funding priorities. The website provides a dashboard with information on ongoing PHIA surveys. Final reports with datasets are available on the website from Eswatini, Malawi, Zambia and Zimbabwe. Summary reports are available (at the time of writing) from other implementing countries (Cameroon, Côte d'Ivoire, Ethiopia, Haiti, Kenya, Lesotho, Namibia, Rwanda, Tanzania, Uganda and Zambia), and timelines show when each country is anticipated to complete its report.

Violence Against Children Surveys (VACSs)

US Centers for Disease Control and Prevention (CDC); English, Spanish
https://www.cdc.gov/violenceprevention/childabuseandneglect/vacs/index.html
https://www.togetherforgirls.org/request-access-violence-children-survey-datasets

VACSs are led by the CDC as part of the Together for Girls partnership. They comprise nationally representative household surveys of males and females aged 13–24 years. VACSs measure the prevalence of sexual, physical and emotional violence in childhood, adolescence and young adulthood, its incidence in the past 12 months and the circumstances surrounding it. The surveys also identify risk factors, protective factors and consequences of violence. VACSs' results are published in national reports used in the development of national action plans and guide effective evidence-based programmes and policies.

United Nations Desa/Population Division: World Population Prospects 2019

United Nations Secretariat; English
Website: https://population.un.org/wpp

The 2019 Revisions of World Population Prospects is the twenty-sixth round of official United Nations population estimates and projections prepared by the Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat. The main results are presented in a series of Excel files displaying key demographic indicators for each United Nations development group, World Bank income group, geographic region, SDGs region, subregion and country or area for selected periods or dates between 1950 and 2100.

HIGHLIGHTED IMPLEMENTER RESOURCES

2.1 Start with Epidemic Overview and Analysis

Programmatic Mapping to Improve Service Delivery

The World Bank Group; 2016; English
https://olc.worldbank.org/content/programmatic-mapping-improve-service-delivery

This video [no video on page above; Diana Chamrad to discuss] presents the programmatic mapping approach as a tool to improve the efficiency and effectiveness of health service delivery. The approach underscores the importance of understanding the local context and consequently enabling the delivery of the right interventions, for the right people/populations, at the right time, and in the right locations. Programmatic mapping provides critical information that helps policymakers, programme planners and implementers understand the local context — providing information on the location, size, typologies and operational dynamics of the target population — which allows them to effectively focus and tailor the services provided.

UNAIDS Incidence by Modes of Transmission

UNAIDS; 2012; English
https://www.unaids.org/en/dataanalysis/datatools/incidencebymodesoftransmission

The Modes of Transmission spreadsheet helps users calculate the expected number of new infections per year within a population based on the current distribution of infections and patterns of risk within that population. These data help identify who is at risk of HIV infection and the risk behaviours that may facilitate overall HIV transmission. The accompanying EPI-MOT tool helps to assess the availability and quality of the epidemiological and behavioural data that are needed for the MOT modelling

HPTN 071 (PopART): A Cluster-Randomized Trial of the Population Impact of an HIV Combination Prevention Intervention Including Universal Testing and Treatment: Mathematical model

Cori, Anne, et al., *PLoS One*, vol. 9, p. e84511; 2014; English
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0084511

A model was developed to assist the development of the PopART cluster-randomized trial. PopART aims to test whether a combination prevention package including universal testing and treatment may reduce HIV incidence. The model was used to describe the generalized HIV epidemics in South Africa and Zambia.

What Drives the US and Peruvian HIV Epidemics in Men Who Have Sex with Men (MSM)?

Goodreau, Steven M., et al., *PLoS One*, vol. 7, p. e50522; 2012; English
https://journals.plos.org/plosone/article/metrics?id=10.1371/journal.pone.0050522

This article proposes a conceptual framework for understanding the drivers of epidemics and modelling the potential effect of HIV interventions for MSM — people who played a key role in the global HIV epidemic. The model estimates the proportions of transmissions occurring in main versus casual partnerships, and by the sexual role, infection stage and testing and treatment history of the infected partner, for MSM in the United States and Peru.

Investigating Voluntary Medical Male Circumcision Program Efficiency Gains through Subpopulation Prioritization: Insights from application to Zambia

Awad, S. F., et al., PLoS One, vol. 10, p. e0145729; 2015; English
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0145729

The purpose of the age-structured mathematical model is to inform a new VMMC strategy focused on optimizing impact while minimizing costs by targeting specific subpopulations. The approach utilizes mathematical modelling and a three-tiered conceptual framework to assess the epidemiologic and cost–benefit implications of different VMMC policy scenarios. The model describes the heterosexual transmission of HIV in a given population by stratifying the population according to sex, circumcision status, age group, sexual risk group, HIV status and stage of infection.

Actuarial Society of South Africa AIDS models

Actuarial Society of South Africa; 2011; English
https://www.actuarialsociety.org.za/downloads/committee-activities/aids-models/

These AIDS models were developed to estimate the impact of antiretroviral treatment in recent years as well as that of significant increases in levels in condom usage over the last decade. The latest version of the model was released in 2011.

Bärnighausen, Bloom, Humair Model Formulation

Bärnighausen, Till, David E. Bloom & Salal Humair; Harvard School of Public Health, University of Kwazulu-Natal, Lahore University of Management Sciences; 2012; English
https://childrenandaids.org/sites/default/files/2020-03/Barnighausen%2C%20Bloom%2C%20Humair%20%28BBH%29%20Model%20Formulation.pdf

The Bärnighausen, Bloom, Humair model estimates the impact of ART programme dynamics on HIV prevalence and incidence. The model is a discrete-time mathematical model with yearly increments and two main population classes: men and women aged 15 and older. Each population class is divided into pools representing people without HIV infection and people with HIV infection differentiated by the number of years since HIV acquisition. The years since HIV acquisition model the decline in CD4 count over time; for example, 5 years after infection, an untreated person's CD4 count falls below 350/μl, and 8 (9) years after infection, an untreated man's (woman's) CD4 count falls below 200/μl. Each pool of men/women is further subdivided into those not receiving antiretroviral therapy (ART) and those receiving ART.

2.2 Set Strategic Targets

Spectrum Models

Avenir Health; English, French, Portuguese, Arabic, Russian
https://www.avenirhealth.org/software-spectrummodels.php
https://avenirhealth.org/Download/Spectrum/Manuals/SpectrumManualE.pdf

Spectrum is a suite of user-friendly policy models providing policymakers, planners and programme teams with analytical tools to project future needs and examine the effects of policy options. To access and operate any single model, users must download the entire Spectrum suite. The models include: DemProj (population projection), FamPlan (family planning), LiST (lives saved), AIM (AIDS impact), GOALS (funding related to goals), Resource Needs Model (Costs of implementing an HIV/AIDS programme), RAPID (resources for the awareness of population impacts on development), Safe Motherhood and Allocate. AIM and GOALS are described further below.

AIDS Impact Model (AIM)

pp. 89–183: https://avenirhealth.org/Download/Spectrum/Manuals/SpectrumManualE.pdf

AIM projects consequences of the HIV epidemic, including numbers of people living with HIV, new infections, AIDS deaths by age and gender, and new tuberculosis cases and orphans. UNAIDS uses AIM to make national and regional estimates, released every 2 years. Module 2 includes the GOALS model showing how the amount and allocation of funding is related to the achievement of national goals; and the Resource Needs model that estimates the costs of implementing an HIV and AIDS program.

GOALS

pp. 366–394: https://avenirhealth.org/Download/Spectrum/Manuals/SpectrumManualE.pdf

The GOALS simulation model can be used to plan HIV prevention and treatment programmes. The model simulates the spread of HIV in a national population and estimates the impact of scaling up various prevention and treatment programmes on the trend in new HIV infections, AIDS deaths and costs. The model can be used to examine alternate strategies to find those that are the most effective and cost-effective in different epidemic settings. The GOALS model supports strategic planning at the national level by linking programme goals and funding, and can help answer the following key questions:

- How much funding is required to achieve the goals of the strategic plan?
- What goals can be achieved with the available resources?
- What is the effect of alternate patterns of resource allocation on the achievement of programme goals?

GOALS Express

Avenir Health; 2019; English
https://www.avenirhealth.org/software-goals-express.php

GOALS Express is a subset of the full GOALS model. It can be used to interactively scale up prevention and treatment in four epidemic settings: hyper-endemic epidemics, generalized epidemics, concentrated epidemics and injection drug-driven epidemics.

2.3 Strengthen Systems for Routine Monitoring and Reporting

Global AIDS Monitoring 2019. Indicators for monitoring the 2016 Political Declaration on Ending AIDS

UNAIDS; 2019; English, French, Spanish, Russian
https://www.unaids.org/sites/default/files/media_asset/global-aids-monitoring_en.pdf

This guidance document provides updated indicators for monitoring the goals outlined in the 2016 United Nations Political Declaration on Ending AIDS. More tools are available through an online portal to help navigate the indicator-monitoring process, including tutorials on registration and managing the account.

District Health Information Software 2 (DHIS2)

University of Oslo; multiple languages, including English, French and Spanish
https://www.dhis2.org/individual-data-records http://www.dhispb.com http://www.dhiskp.gov.pk

DHIS2 is an open source web-based HMIS platform. DHIS2 is the world's largest HMIS platform, in use by 67 low and middle-income countries. DHIS2 incorporates aggregated and event-specific data, and incorporates user friendly analytics through tailored dashboards, charts, pivot tables, and maps to support reporting, analysis and dissemination of data. DHIS2 combines statistical data collection, validation, analysis, management and presentation. DHIS2 can be used to monitor patients' health, improve disease surveillance, map disease outbreaks, and speed up access to health data for health facilities and government organizations.

PRISM (Performance of Routine Information System Management) Series

MEASURE Evaluation; 2018; English
https://www.measureevaluation.org/resources/tools/health-information-systems/prism

MEASURE Evaluation, which is funded by USAID, provided technical and financial assistance to strengthen RHISs for more than 15 years. One of the project's mandates was to strengthen the collection, analysis and use of these data for the delivery of high-quality health services.

Health Information Systems Strengthening Resource Center

MEASURE Evaluation; 2018; English
https://www.measureevaluation.org/his-strengthening-resource-center

The Health Information System (HIS) Strengthening Resource Center is a learning space for health professionals, decision- makers and information technology professionals, in which to access resources, search for HIS assessment tools, and learn how HIS strengthening is contributing to stronger health systems.

The Global Fund Measurement Framework for Adolescent Girls and Young Women Programs

The Global Fund to Fight AIDS, Tuberculosis and Malaria; 2018; English
https://www.theglobalfund.org/media/8076/me_adolescentsgirlsandyoungwomenprograms_frameworkmeasurement_en.pdf

This framework is aligned to the Global Fund's modular framework, which details programmatic modules for HIV, TB and malaria, coupled to a corresponding list of indicators (including those for adolescent girls and young women) upon which countries build their funding requests. As part of the accountability framework, the countries are required to include these indicators with respective targets in their performance frameworks based on planned activities for adolescent girls and young women.

HIV Indicator Guidance Sheets

The Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM); 2017; Language: English
https://www.theglobalfund.org/media/5189/me_indicatorguidancesheets-annexa-hiv_sheet_en.xlsx

These Excel sheets provide indicators for outcome and impact, and coverage and output results. The indicators include those for adolescent girls and young women, among many other populations. Outcomes and impacts require periodic review every 1 to 3 years for GFATM-supported programming. Impact and outcome assessments should be based on all available information, including impact and outcome indicators as well as programme reviews/evaluations and other assessments/studies. The findings from these assessments inform future strategy, reprogramming and investments, including investments to strengthen the measurement of disease burden and data collection, analysis and reporting. Coverage and output indicators should be assessed every 6–12 months. In 12 high-prevalence epidemic countries of eastern and southern Africa, plus Cameroon, data disintegration by age group 15–19 and 20–24 years is required.

Referral Systems Assessment and Monitoring Toolkit
Measure Evaluation; 2013; English
https://www.measureevaluation.org/resources/publications/ms-13-60

The Referral Systems Assessment and Monitoring Toolkit was developed for HIV and AIDS, but can be adapted for wider use. It provides programme managers with assessment templates to conduct the in-depth analyses needed to determine whether existing referral systems and their mechanisms are functioning as intended. It also explains how to generate routine data based on the frequency and completion of referrals across sectors. The toolkit provides a series of practical tools, which may be adapted as needed. It also provides clear step-by-step instructions to assist managers when deciding which referral system component to implement, how to adapt and use tools for data collection, and how to analyse, interpret and use the generated information.

Unique Identifier Codes: Guidelines for use with key populations
FHI 360; 2016; English
https://www.fhi360.org/sites/default/files/media/documents/resource-linkages-uic-guidance.pdf

This guidance document helps governments, partners and other key stakeholders to understand how to develop Unique Identifier Codes (UICs) for people accessing HIV services. A UIC is any set of numbers or letters, an alphanumeric combination, or any unique identifier such as a fingerprint or other biomarker that can be used to identify a specific individual. UICs maintain personal privacy while facilitating close individual tracking throughout service provision. This resource provides further information on UICs: types, generation, assignment and record linking; ethical considerations for UIC development and use; and technical considerations for UIC development use. The guidance was designed for the Linkages programme addressing HIV in key populations, but can also adapted for use with other vulnerable populations, such as adolescent girls and young women.

Operational Guidelines for Selecting Indicators for the HIV Response
UNAIDS; 2015; English
https://www.unaids.org/sites/default/files/sub_landing/files/4_3_MERG_Indicator_Standards.pdf

These operational guidelines describe in detail how to use the indicator assessment tool. The tool assesses the extent to which indicators intended for use in the HIV response meet a set of internationally agreed standards. These operational guidelines, the indicator assessment tool and the standards were all produced by the UNAIDS Monitoring and Evaluation Reference Group.

2.4 Evaluate, Research and Assess

Monitoring and Evaluation: Developing an evaluation strategy
Adolescent Girls Initiative (AGI); 2013; English
https://www.s4ye.org/agi/html/Monitoring_and_Evaluation_Developing_an_Evaluation_Strategy.html

This resource guide provides the protocols and concept notes used by AGI in different evaluation strategies using various methodologies. There are also quantitative resources (indicators and individual and household surveys) and qualitative resources (reports and focus group discussion instruments) that have been used in AGI evaluation projects. AGI pilots include a strong evaluation component to assess each project's overall success in achieving its intended outcomes.

Measuring What Matters (a thinking tool): Evaluation that asks the right questions of the right people in the right way
Blanluet, Noreen; Co-production Network for Wales; 2019; English, Welsh
https://info.copronet.wales/measuring-what-matters/

Measuring What Matters connects an up-to-date curated list of data-collection methods (each linked to reliable and respected organizations, published guidance and resources) with a simple set of questions, making sure that implementers find the right way to collect data and measure impact when evaluating activities.

Rainbow Framework
Better Evaluation; 2014; expanded version: English, Portuguese; compact version: English, Portuguese, Spanish, French, Arabic, German
https://www.betterevaluation.org/rainbow_framework

The Rainbow Framework organizes the many different monitoring and evaluation methods and processes by the tasks that are often undertaken. Tasks include managing an evaluation or evaluation system, defining what will be evaluated, framing the boundaries for an

evaluation, describing activities, outcomes, impacts and context, understanding the causes of outcomes and impacts, synthesizing data from one or more evaluations, and reporting and supporting use of findings. The Rainbow Framework helps users plan a monitoring and evaluation activity by prompting them to think about each of these tasks in turn and select a combination of methods and processes (called options) that cover all tasks involved. Alternatively, users may choose an approach – a pre-packaged combination of options. There are two downloadable versions of the Rainbow Framework: one only shows the tasks, and one also includes all the options (methods and processes).

The Adolescent Girls Initiative-Kenya (AGI-K): Study protocol

Austrian, Karen, et al., *BMC Public Health*, vol. 16, p. 210; 2016; English
https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-016-2888-1

AGI-K was a randomized trial designed to test whether different single-sector combinations of 2-year interventions can improve the well-being of adolescent girls (aged 11–14 years) after 4 years (when aged 15–18 years) by delaying childbearing. The four sector-specific interventions for AGI-K were based on the Asset Building Theory of Change and included violence prevention, education, health and wealth creation. The violence prevention intervention used community conversations and planning focused on enhancing the value of girls in the community. The educational intervention included a cash transfer to the household that was conditional on school enrolment and attendance. The health intervention was culturally relevant, age-appropriate sexual and reproductive health education delivered in a group setting once a week over 2 years. Lastly, the wealth creation intervention provided savings and financial education, as well as start-up savings.

DREAMS Impact Evaluations Portfolio

London School of Hygiene & Tropical Medicine; 2018; English
https://www.lshtm.ac.uk/research/centres-projects-groups/dreams#publications

The London School of Hygiene & Tropical Medicine (LSHTM) is leading a portfolio of evaluation studies to track the impact of DREAMS in Kenya, South Africa and Zimbabwe. The evaluation draws on LSHTM's expertise in HIV, adolescent health and evaluation across all faculties, and close research partnerships with experienced institutes in each country, namely: the Africa Health Research Institute in Durban, South Africa, the African Population and Health Research Centre (APHRC) in Nairobi, Kenya; the Kenya Medical Research Institute in Siaya, Kenya; and the Centre for Sexual Health HIV and AIDS Research in Harare, Zimbabwe.

PLACE Swaziland: Adolescent Girls and Young Women, Their Partners, and Men Ages 20–34

Reynolds, Zahra, Bheki Mamba & Ireen Hakasenke; Measure Evaluation;
2017; English
https://www.measureevaluation.org/resources/publications/tr-17-168

This study was designed to identify risk behaviours of girls and young men aged 20–34 years in Swaziland. These data will be used in activities as part of the DREAMS (Determined, Resilient, Empowered, AIDS-free, Mentored, and Safe) initiative of PEPFAR to focus HIV testing services and linkage to care or other high-impact interventions more precisely on male partners. Specifically, the study was designed to characterize male sexual partners of adolescent girls, describe sexual partnerships among adolescent girls and their partners, profile health-seeking behaviours of male partners and identify places where adolescent girls and young men socialize and meet new sexual partners in the areas identified as priorities by DREAMS.

Reducing HIV Risk among Adolescent Girls and Young Women: Implementation science around the DREAMS initiative

Population Council; 2015–2018; English
https://www.popcouncil.org/research/reducing-hiv-risk-among-adolescent-girls-and-young-women-DREAMS

Population Council researchers lead the implementation science component of the DREAMS initiative — assessing different aspects of the various approaches being used to reduce HIV infections among adolescent girls and young women — to determine what works and what does not in applying prevention science for girls. This research provides new evidence and guide programme models that DREAMS partners need to: (1) reach adolescent girls and young women and their sexual partners at high risk of HIV infection; (2) link them and their partners with essential resources; (3) develop the most effective evidence-based policies and programmes to improve girls' lives and their supportive environment. This evidence may be used to strengthen DREAMS and related community-based programming and policies for adolescent girls and young women.

Investing When it Counts: Reviewing the evidence and charting a course of research and action for very young adolescents

Population Council; 2016; English
https://www.popcouncil.org/uploads/pdfs/2016PGY_InvestingWhenItCounts.pdf

The early teens have tended to be a neglected cohort regarding health and welfare, because they are assumed to be relatively healthy and well. Recognizing how important the early years of adolescence are for both girls and boys in forming norms, values, identity and behaviours as they enter puberty, this tool identifies research approaches, existing data sources and data tools to expand the knowledge base on young adolescents. It also addresses sensitivities and ethical challenges that arise in relation to research in this young age group, including the particularly sensitive areas of sexual and reproductive health and sexual violence. Approaches include techniques such as mapping, programme-coverage exercises and other practical tools, and take a gender perspective.

Centre for the AIDS Programme of Research in South Africa (CAPRISA) Behaviour and Risk Assessment

CAPRISA, University of Kwazulu-Natal; 2016–2021; English
https://www.avac.org/sites/default/files/u3/CAPRISA_Baseline_Assessment.pdf https://www.avac.org/trial/caprisa-082

CAPRISA developed a baseline behaviour and HIV risk perception assessment as part of an ongoing prospective observational cohort study to assess HIV risk factors and prevention choices in young women in KwaZulu-Natal, South Africa. Participants are assessed monthly for the first 3 months, and quarterly thereafter.

An Empiric HIV Risk Scoring Tool to Predict HIV-1 Acquisition in African Women

Balkus, Jennifer E., et al., *Journal of Acquired Immune Deficiency Syndromes*, vol. 72, pp. 333–343; 2016; English
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4911322/

VOICE risk score: This score includes variables for age, marital/cohabiting status, partner provides financial support, partner has other partners, any curable sexually transmitted infection (STI) at baseline and HSV-2 status.
Risk score for HPTN 035 (A) and FEM-PrEP (B): HIV incidence and 95 per cent confidence intervals by risk score for HPTN 035, excluding variable for any curable STI at baseline and HSV-2 status (A).

The HIV Prevention Cascade

Strive Channel, Measurement and Surveillance of HIV Epidemics (MeSH) Consortium; 2018; English
https://www.youtube.com/watch?v=7qQ5wm5tU_8

The HIV Prevention Cascade framework teaches implementers how to use everything that is known about the virus for more effective prevention efforts. The infographic in this video explains how the Prevention Cascade works, using the example of pre-exposure prophylaxis (PrEP) as a direct prevention mechanism for the population of vulnerable adolescent girls and young women in sub-Saharan Africa. For each stage of the cascade, the infographic identifies key interventions, platforms and policies while considering biomedical, behavioural and structural aspects.

National Commitments and Policies Instrument (NCPI)

UNAIDS; 2019; English
http://www.aidsinfoonline.org/ncpi/libraries/aspx/home.aspx

NCPI is the most comprehensive standardized questionnaire available to assess the policy, strategy, legal and programme implementation environment for the HIV response. NCPI data can be accessed through this tool. The importance of the NCPI lies in the process of data collection and data reconciliation between different stakeholders, detailed analysis of the responses, and its use in strengthening the national HIV response. The NCPI process provides a unique opportunity for the variety of stakeholders to take stock of progress made and to discuss what still needs to be done to support an effective and efficient HIV response. When completed in a truly collaborative manner, inviting appropriate representation and respecting different views, the NCPI process can play an important role in strengthening in-country collaboration and increasing shared ownership of the HIV response.