Technical Brief: Findings from the Case Study to Measure M&E Systems Strengthening in Côte d'Ivoire and Nigeria

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Background

Monitoring and evaluation (M&E) are integral and individually distinct parts of program preparation and implementation. They are critical tools for forward-looking strategic positioning, organizational learning, and sound management. Monitoring and evaluation are meant to influence decision making, including decisions to improve, reorient, or discontinue the evaluated intervention or policy; decisions about wider organizational strategies or management structures; and decisions by national and international policy makers and funding agencies.[1]

To a large degree, monitoring and evaluation depend on sound health information systems with reliable, timely, high-quality input and usable and available information output. National governments and subnational entities need this information to set policy, plan for needed resources, and design and implement effective, targeted programs. At the global-level, donors and partners use the information to track progress toward the goals of special initiatives in low-resource countries, such as the U.S. President's Emergency Plan for AIDS Relief (PEPFAR),[2] the President's Malaria Initiative,[3] Family Planning 2020,[4] and Ending Preventable Child and Maternal Deaths,[5] among others. The stronger a health information system is, the more available, accurate, and useful the information output is to meet the various needs. Global investment, therefore, should continue to support sustainable country-led health information systems.

M&E systems strengthening has proven difficult from technical and political perspectives.[6] Evaluations of the success of systems strengthening must take into account the specific sensitivities of environments where multiple donors, investors, and recipients operate when crafting findings and recommendations. At the same time, evaluations of the success of M&E systems strengthening must account for complex environments where multiple donors, investors, and beneficiaries operate.[7]

This case study to document M&E systems strengthening in Côte d'Ivoire and Nigeria sought to (1) document the M&E system strengthening interventions and investment from 2007–2012 and (2) identify M&E system strengthening progress and the need for future interventions. It was conducted with funding from PEPFAR and the U.S. Agency for International Development (USAID), MEASURE Evaluation.

Côte d'Ivoire and Nigeria were selected from 12 PEPFAR-focus countries in Africa based on the HIV/AIDS epidemic burden, donor interest, and the level of U.S. Government investment in HIV/AIDS strategic information over the last five years. From 2007–2013, Nigeria received over $100 million in funding to strengthen M&E of its national HIV/AIDS response; Côte d'Ivoire received nearly $30 million.[8]

[1] UNICEF, Programme Policy and Procedures Manual: Programme Operations, UNICEF, New York, Revised May 2003, pp. 109-120.

[2] Since 2005, the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) is the U.S. Government initiative to help save the lives of those suffering from HIV/AIDS around the world.

[3] Since 2005, the President's Malaria Initiative (PMI) strives to reduce the intolerable burden of malaria and help relieve poverty on the African continent.

[4] Family Planning 2020 (FP2020) is a global partnership that supports the rights of women and girls to decide, freely, and for themselves, whether, when, and how many children they want to have.

[5] On June 25, 2014, the U.S. Agency for International Development (USAID) and the Governments of Ethiopia and India, in collaboration with UNICEF and the Bill & Melinda Gates Foundation, came together for a high-level forum called Acting on the Call: Ending Preventable Child and Maternal Deaths to celebrate progress, assess the challenges that remain and identify the steps needed to sustain momentum in the future.

[6] Operations Evaluation Department 2005; Porter et al. 2012.

[7] Bennett *et al*., 2006; Institute of Medicine of the National Academies 2013.

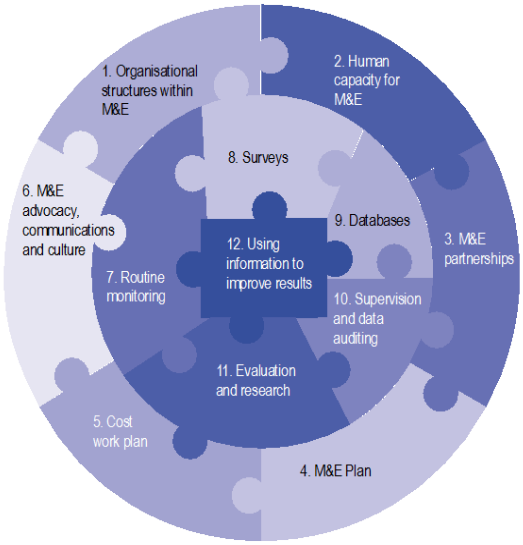
[8] United States President's Emergency Plan for AIDS Relief (PEPFAR) 2010a; PEFAR 2010b; PEFAR 2011a; PEFAR 2011b; PEPFAR 2012a; and PEPFAR 2012b.

This case study used the UNAIDS Three-Ones principles[9] to define the *One National HIV M&E System* in each country, which comprised the national AIDS coordinating authorities (in Côte d'Ivoire, the Ministry of Health in the Fight Against AIDS (Ministère de la Santé et de la Lutte contre le SIDA, or MSLS), formally the Conseil National de Lutte Contre le SIDA, and in Nigeria, the Nigerian National Agency for the Control of AIDS, or NACA), and all data sources and systems for the necessary data for national coordination, including United Nations General Assembly Special Session (UNGASS), PEPFAR, and other international development partners.

Case Study Methods

The case study focused on concepts from the middle ring of the *12 Components Organizing Framework*. As pictured in Figure 1, the middle ring has five components that collect, verify, and transform data into useful information.[10]

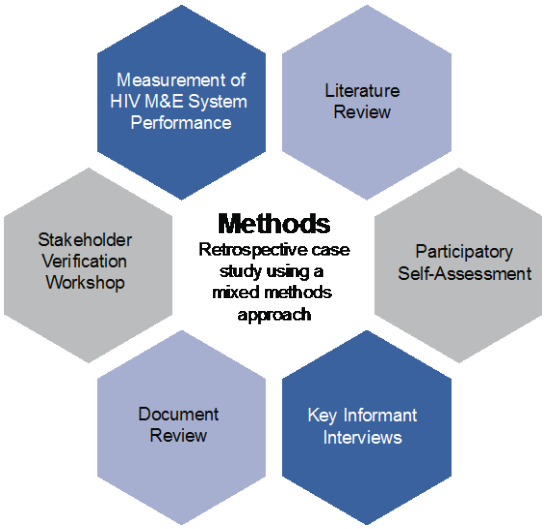
Figure 1: 12 Components of a Functional M&E System



The mixed-method retrospective approach used in this case study (as shown in figure 2) included these elements:

1. A literature review on M&E system strengthening of the health sector for low-resource countries
2. A participatory self-assessment to identify the *Most Significant Changes*[11] in the HIV M&E system from 2007–1012
3. Key informant interviews to further explore the improvements identified during the participatory self-assessment workshop
4. A country-specific document review to establish the context and verify findings
5. A stakeholder verification workshop to clarify and confirm initial findings
6. Measurement of M&E system performance using predetermined indicators

Figure 2: Case Study Methodology



The study team comprised MEASURE Evaluation staff based in the United States, Côte d'Ivoire, and Nigeria. The U.S. team visited Côte d'Ivoire in August and November 2013 and Nigeria in August 2013 and January 2014. Stakeholders from each country were engaged to provide feedback, input, and validation to

[9] UNAIDS 2004.
[10] UNAIDS Monitoring and Evaluation Reference Group 2008.
[11] Davies, R. and Dart, J. (2005). The most significant change technique: A guide to its use, from http://www.mande.co.uk/docs/MSCGuide.pdf

ensure that findings would be relevant to future M&E system-strengthening efforts.[12]

Findings: Côte d'Ivoire

The M&E successes identified in Côte d'Ivoire by stakeholders during the participatory self-assessment and further described by the key informants focused largely on aspects of the routine health information system and the interventions undertaken by the Ministry of Health and the Fight Against AIDS and the Directorate of Information, Planning, and Statistics (Direction de l'Information, de la Planification et de l'Evaluation, or DIPE), with support from MEASURE Evaluation on behalf of USAID and PEPFAR, and additional development partners. Informants explained how the activities listed below strengthened data collection and management processes that resulted in improved quality and increased use of HIV information. In addition, the management information system for antiretroviral drugs and supplies was improved and issues to strengthen the second generation of surveillance were addressed. These findings are summarized below, depicted in Annex A and detailed in the full report.[13]

The HIV Indicator Dictionary harmonizes multiple lists of indicators for monitoring HIV programs.[14] This activity was initiated in 2010 when the lack of harmonized indicators was identified as a challenge by representatives from multiple ministries during a leadership development program facilitated by MEASURE Evaluation. The HIV Indicator Dictionary was used to develop the National HIV M&E Plan 2011–2015 and the National HIV Strategic Plan, 2012–2015.

The Data Management and Procedures Manual, developed 2010–2012, provides (1) a common understanding of the stages of data management, (2) a schedule for the different stages of data management, (3) standardized data collection tools, and (4) identification of stakeholders and their roles. The manual laid the foundation for the development of the HIV Indicator Dictionary.

The electronic HIV information system for HIV patient records (SIGDEP) and the health management information system (SIGVISION) were harmonized in 2009 and deployed through a web-based platform with manuals, standards, and mechanisms for quality control, launched in 2012.

Data quality assurance tools were implemented by both the National HIV Care and Treatment Program and National Orphans and Vulnerable Children (OVC) Program:

- The Supervision Grid guides the implementation of supportive supervision visits from the regional level to health facilities for routine HIV data.
- The Supportive Supervision Guide helps in data quality improvement for OVC programs.
- Data validation meetings verify HIV data from health facilities before collation at the regional level.

The drug and supply management system was improved after the National Monitoring Committee (NMC) was established in 2007 to support coordination of supply procurement and distribution, estimate quantities of drugs needed, and procure drugs. At the same time, the Public Health Pharmacy developed the Management Information System to manage procurement and distribution data for antiretroviral (ARV) drugs

[12] A description of this methodology can be found in the "Technical Brief: Measuring M&E System Strengthening: Applications, Lessons, and Recommendations from a Retrospective Case Study in Côte d'Ivoire and Nigeria." MEASURE Evaluation, August 2014.

[13] A full report on these findings can be found in *A Case Study to Measure National M&E System Strengthening in Côte d'Ivoire*, MEASURE Evaluation, 2014. A timeline of the key events related to these activities appears in Annex B.

[14] Ministère de la Santé et de la Lutte contre le SIDA (MSLS), PEPFAR/USAID, and MEASURE Evaluation. (2012). Dictionnaire des indicateurs VIH nationaux. Edition 2012. Abidjan (Côte d'Ivoire): République de Côte d'Ivoire.

and supplies. Since 2008, ARV stock-outs have been greatly reduced at the central level as a result of better coordination of purchases of core stocks. In 2012, the system was expanded to include malaria drugs and the supply chain.

A National Strategic Plan that includes second-generation HIV surveillance requirements was developed. Before 2009, no national strategic plan included surveillance activities. WHO introduced its second-generation guidelines in 2009, and Côte d'Ivoire's revised HIV National Strategic Plan 2011–2015 incorporates these second-generation surveillance needs.

Findings: Nigeria

The M&E successes identified in Nigeria by stakeholders during the participatory self-assessment and described by key informants focused heavily on the routine health information system and interventions by the Federal Ministry of Health (FMOH), National AIDS Control Authority (NACA), and the Department of Planning, Research and Statistics, with support from MEASURE Evaluation on behalf of USAID and PEPFAR and additional development partners. Key informants noted these activities resulted in significant improvements to the national HIV M&E system. These findings are summarized below.[15]

The harmonization of indicators and data collection tools for treatment, testing and counseling, and prevention of mother to child transmission of HIV/AIDS programs initiated in 2006 and concluded in 2011 includes standardized indicator definitions and data collection and collation procedures. The quarterly data validation meetings use these standards to assess and review data, and they paved the way for adapting the web-based district health information software 2.0 (DHIS 2.0).

HIV database integration and the establishment of the electronic Nigerian National Routine Information Monitoring System (eNNRIMS) in 2011 captures HIV and non-HIV data. DHIS 2.0 software enables Nigeria to move to a more fully integrated information system. DHIS 2.0, the first web-based database system for HIV in Nigeria, was rolled out to about 200 service delivery points and 20 states in 2010 to reduce data integrity threats and enable the use of data at all levels of the health system.

Data quality assurance was improved through M&E monthly and quarterly meetings at the state and local AIDS authority forums to capture and review submitted routine data. NACA led national joint routine data quality assessments four times since 2008 using the Routine Data Quality Assessment Tool[16] to identify weaknesses and produce action plans for a multi-state national sample of service providers. Since 2011, quarterly state-level data validation meetings are held by the FMOH's Strategic Information unit with The Global Fund and World Bank to review data collected by implementing partners.

Use of survey and surveillance data. In 2007, the FMOH coordinated the 2007 Integrated Biological and Behavioral Surveillance Study, the 2008 Antenatal Clinic Sentinel Sero-prevalence Survey, and the 2012 National HIV/AIDS and Reproductive Health Survey, with support from NACA. All these surveys successfully captured data for impact and outcome indicators identified in the National M&E Plan. Survey and surveillance data are used to adjust programs, such as behavioral change communication messages, in the prevention program, along with international

[15] A full report on these findings can be found in "A Case Study to Measure National M&E System Strengthening in Nigeria," MEASURE Evaluation. A timeline of the key events related to these activities appears in Annex D.

[16] The Global Fund to Fight Aids, Tuberculosis and Malaria, Office of the Global AIDS Coordinator, PEPFAR, USAID, WHO, UNAIDS, MEASURE Evaluation. (2008). Routine Data Quality Assessment Tool, Guidelines for Implementation for HIV, TB, and Malaria Programs.

reporting, such as the 2008 UNGASS report, 2010 Universal Access Report, and 2012 Global AIDS Response Progress Report (GARPR), and for general decision making by FMOH.

Performance Measurement

Although findings from the key informant interviews in Côte d'Ivoire and Nigeria provided qualitative evidence of increased availability and improved reporting rates, the data generated to compile the relevant performance indicators, which were predetermined outcome indicators, revealed gaps and made it difficult to quantitatively measure M&E system strengthening.[17]

Conclusions

Analysis of the qualitative findings focused on providing understanding in four key areas: (1) national commitment to HIV M&E system strengthening, (2) performance of the HIV M&E system, (3) national capacity to strengthen the HIV M&E system, and (4) integration of HIV M&E systems with national health information systems. A summary of conclusions follows.

Increased National Commitment to HIV M&E Systems Strengthening: In Côte d'Ivoire and Nigeria, government agencies have evolved to assume more responsibility in implementing the national HIV M&E systems and take ownership of the processes. In Côte d'Ivoire, the DIPE evolved from direct management by MEASURE Evaluation for many of its data collating and reporting functions to assumption of full responsibility, which demonstrates a commitment by the national government, through DIPE, to the national HIV M&E system and improved human and hardware capacity. The FMOH has made great strides in coordinating and managing the process of moving from multiple, vertical data systems to one HIV management system, the eNNRIMS, which also demonstrates a willingness to commit resources for managing data flow and ownership.

Improved HIV M&E System Performance: Much of the M&E systems-strengthening efforts have laid a foundation for future improvements. For example, both the HIV Indicator Dictionary in Côte d'Ivoire and the data collection tool harmonization process in Nigeria allow all stakeholders to understand indicators and work from the same numerator and denominator definitions. Limiting the number of indicators in use by setting priorities and working with the same set of data collection tools will, in time, improve data quality. Although this case study attempted to objectively and quantitatively measure improvements in data quality—data completeness, reporting rates, or the more sophisticated concepts of validity, reliability, or integrity—the data sources were incomplete and limited.

Increased Capacity to implement HIV M&E System Functions: The case studies revealed improved capacity for data quality and identification of data quality challenges and the means to address them. In Côte d'Ivoire, the Supervision Grid, Routine Data Quality Assessment Tool training, and National OVC Program Reporting Guidelines provided for data quality awareness and skills transfer from the central level to civil society organizations. These documents are system reference materials used to review community-based data. In Nigeria, joint routine data quality assessment exercises and quarterly data validation meetings address data quality from the national to subnational levels, which helps transfer skills from donors (PEPFAR, through MEASURE Evaluation; The Global Fund; and The World Bank) to NACA and the FMOH, which, in turn, work with states and local government to verify data before collation.

[17] The experience in applying these indicators is further explained in Technical Brief: Measuring M&E System Strengthening: Applications, Lessons, and Recommendations from a Retrospective Case Study in Côte d'Ivoire and Nigeria, MEASURE Evaluation, August 2014.

Integration of HIV M&E Systems with National Health Information Systems: Côte d'Ivoire and Nigeria made strides in harmonizing HIV indicators and electronic databases to capture and collate data that are beginning to integrate with PEPFAR reporting systems and the national health information systems. At the time of data collection for these case studies, both of these processes were at early stages and had plans to integrate multiple HIV databases before moving forward with integrating HIV data with the national health information system.

Recommendations

The methodology for these case studies was designed to identify successes—the *Most Significant Changes* in the M&E system that produced changes in how the M&E systems functioned overall—in the middle ring of the *12 Components Organizing Framework*. Although the identified successes made it clear that substantial progress in strengthening the M&E systems was achieved, the systems have additional opportunities for improvement. The following two key recommendations emerged as a result of these case studies.

Improve performance measurement of HIV M&E systems. Databases continue to evolve and improve, which highlights the potential to clearly define standards for performance measures and benchmarks to monitor and evaluate the availability, quality, and use of data. At a minimum, improvement needs to focus on data availability to produce trend analyses on reporting rates, data completeness, and the proportion of sites that have received supportive supervision visits according to national standards. Future initiatives should include the local adaptation and operationalization of outcome-level indicators to measure the performance of HIV M&E systems.

Address the needs of the HIV M&E system as a whole. Achievements identified by stakeholders showed heavy reliance on donor technical, financial, and human resource inputs. The *One National HIV M&E System* could be improved with further attention to the framework's outer-ring components: the human resources, partnerships, and planning required to support data collection and use. For example, in Nigeria, the Data Management and Procedures Manual has not been applied consistently at all service delivery points as a result of internal politics, differences in program implementation, and differing levels of buy-in among the range of service providers in the *One M&E System*. Future M&E interventions must take into account factors at work in outer-ring components to establish an enabling environment for M&E that could lead to real country-ownership, sustainability, and broader systems thinking.

Resources

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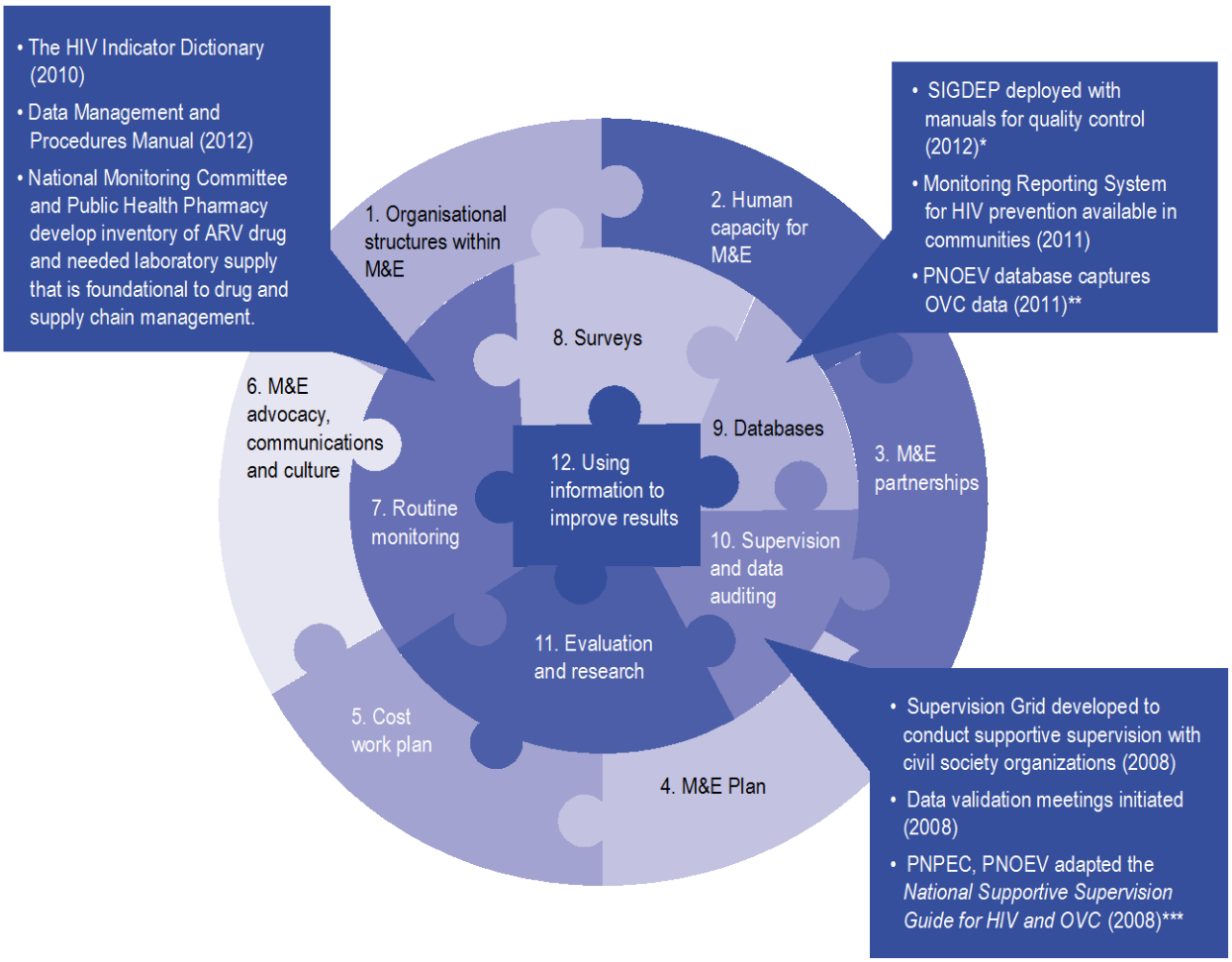
Annex A: Most Significant Changes in Côte d'Ivoire



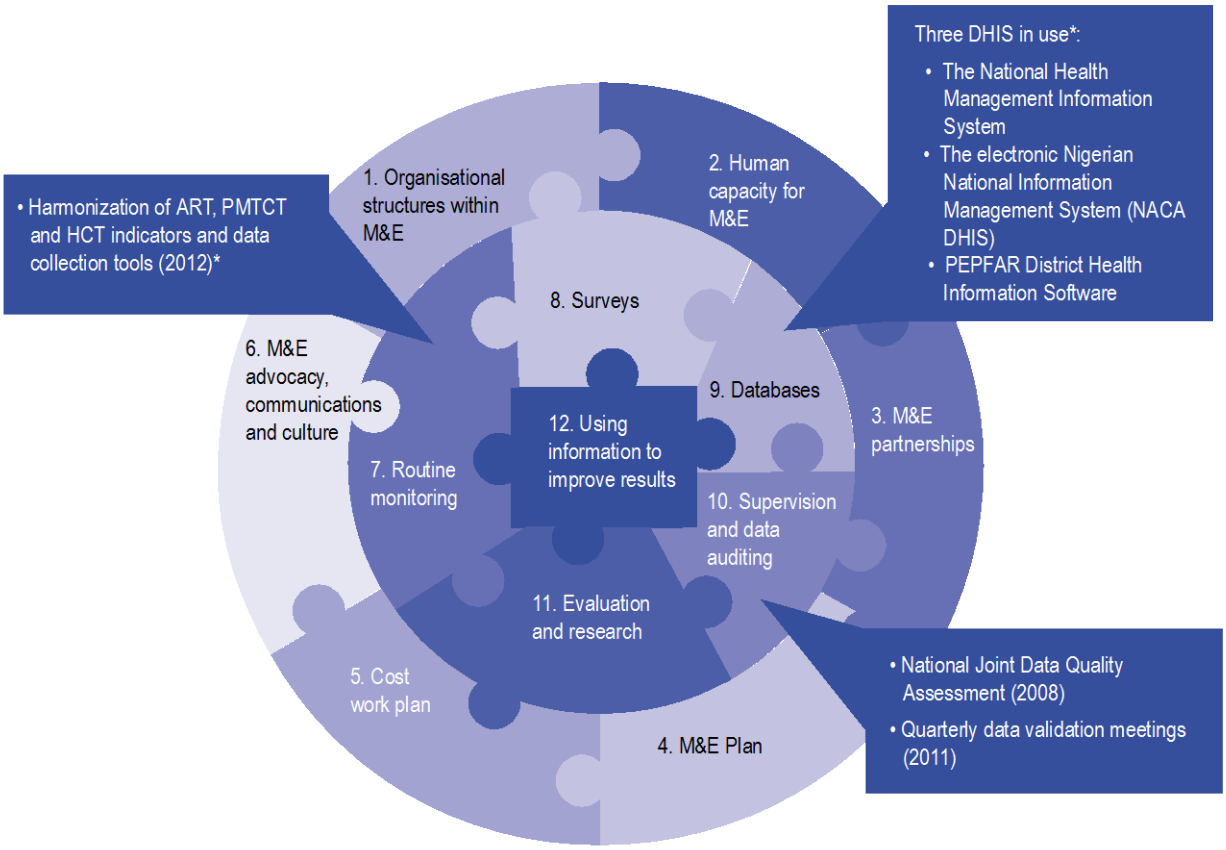
* National HIV/AIDS electronic patient monitoring system (SIGDEP)
** National Support Program for Orphans and Vulnerable Children (Programme National de prise en charge des Orphelin et enfants Vulnérable, or PNOEV).
*** National Program to Support People Living with HIV (Programme National de Prise en Charge Médicale des personnes Vivant avec le VIH, or PNPEC), National Support Program for Orphans and Vulnerable Children (Programme National de prise en charge des Orphelin et enfants Vulnérable, or PNOEV).

Annex B: Timeline for Côte d'Ivoire's National HIV M&E System Achievements

Year	Event
pre-2007	National guidelines developed for entering routine HIV data into health facility registers
2007	HIV information database, SIGVISION, developed to collate routine health data at district and regional levels Significant gaps identified in data availability, data flow, human resources, and M&E skills in the social sector following a situational assessment National Monitoring Committee formed to estimate and manage antiretroviral drugs (ARV) and laboratory supply needs The Public Health Pharmacy, with donor support, develops a Management Information System (MIS) for ARV drug and supply chain management
2008	SIGDEP begins to be developed by revising SIGVISION paper-based tools to capture routine HIV data electronically Information Technology Technical Working Group created to establish a single database for the health sector that includes HIV facility- and community-based data streams Findings from an assessment of the HIV M&E system using the PRISM Assessment Tool[18] leads to production of new data collection tools Electronic management of ARV treatment and HIV patient records initiated by ACONDA using Monistac software Migration of ACONDA data to SIGVIH begins, managed by the Directorate of Information, Planning, and Evaluation Supervision Grid produced to conduct supervision with the local initiative's technical support unit for solving problems related to program management and data quality Data validation meetings instituted by the Ministry of Health in the Fight Against AIDS following a training in the Routine Data Quality Assessment Tool[19] to verify accuracy of HIV data with health centers before collation at the regional level Stock-outs of ARV drug and supplies are noticeably reduced according to key informants
2009	SIGVIH renamed SIGDEP, and SIGDEP version 1.5.5 released Need for new strategic plan for second-generation surveillance identified following a situational analysis
2010	Multiple ministries participate in the MEASURE Evaluation Leadership Development Program and identify a lack of standard indicator definitions that produce poor quality data "Second Ivoirian Civil War" begins New strategic plan for second-generation surveillance developed
2011	PEPFAR ceases to fund paper-based data collection and requests SIGDEP be used to collect PEPFAR data "Second Ivoirian Civil War" ends National Program for Orphans and Vulnerable Children Reporting Guidelines developed to address significant gaps in social sector M&E system Strategic plan for second-generation surveillance incorporated into 2011–2015 National Strategic Plan for HIV
2012	HIV Indicator Dictionary becomes available with harmonized indicators with standard definitions National HIV M&E Plan 2011–2015 and National HIV Strategic Plan, 2012–2015 developed using the HIV Indicator Dictionary New Data Management and Procedures Manual, developed based on HIV Indicator Dictionary, disseminated SIGDEP user manual released Roughly 60% of facilities with $\geq$ 200 HIV patients per month have SIGDEP installed Malaria drugs and supply chain management data added to Management Information System

[18] MEASURE Evaluation. (2009). Performance of Routine Information System Management, PRISM Tools for Assessing, Monitoring, and Evaluating RHIS Performance.
[19] The Global Fund to Fight Aids, Tuberculosis and Malaria, Office of the Global AIDS Coordinator, PEPFAR, USAID, WHO, UNAIDS, MEASURE Evaluation. Routine Data Quality Assessment Tool, Guidelines for Implementation for HIV, TB & Malaria Programs, June 2008.

Annex C: Most Significant Changes in Nigeria



* Anti-retroviral drug therapy (ART) prevention of mother to child transmission of HIV/AIDS (PMTCT), HIV testing and counseling (HTC).
**District health information software (DHIS), electronic Nigerian National Routine Information Management System (eNNRIMS).

Annex D: Timeline for Nigeria's HIV M&E System Strengthening Achievements

Year	Event
2007	Rapid scale-up of HIV program required revision to the Nigerian National Routine Information Management System HIV Nigerian National Routine Information Management System National Operational Plan I, 2007–2010 developed Antiretroviral therapy, HIV testing and counseling, and prevention of mother-to-child (PMTCT) transmission of HIV/AIDS indicators selected to be harmonized
2008	HIV, tuberculosis, and malaria facility-based data harmonized and integrated into one form for use by health centers National Joint Routine Data Quality Assessment Tool[20] [21] implemented Antenatal clinic surveillance begins to use routine PMTCT data to estimate HIV prevalence
2009	12 Components Assessment using the 12 Components M&E Systems Strengthening Tool[22] led to indicator harmonization, DHIS 2.0, implementation of a joint routine data quality assessment tool, and development of the national research agenda
2010	HIV program indicator harmonization process kicked off with stakeholder meetings Electronic Nigerian National Routine Information Management System rolled out to 200 health service delivery points in 20 states
2011	National HIV and AIDS Monitoring and Evaluation Plan, 2011–2016 adapted National HIV/AIDS data collection tools review meeting Quarterly data validation meetings first conducted by Federal Ministry of Health's Strategic Information unit to meet the Global Fund and World Bank mandate
2012	Agreement among partners and stakeholders on 70 operationally defined indicators and data collection tools developed for antiretroviral therapy, HIV testing and counselling, and PMTCT of HIV

[20] MEASURE Evaluation. (2009). Performance of Routine Information System Management, PRISM Tools for Assessing, Monitoring, and Evaluating RHIS Performance.
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