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National programs for AIDS need the capacity to conduct their own monitoring and evaluation, not only for monitoring the epidemic and reporting to donors, but also for improving the programs.

Global Advances in Monitoring and Evaluation of HIV/AIDS: From AIDS Case Reporting to Program Improvement

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The cornerstone of a country's response to the human immunodeficiency virus-acquired immunodeficiency syndrome (HIV/AIDS) epidemic is the development of an appropriate and efficient monitoring and evaluation (M&E) system. Such a system is essential to make optimal use of limited resources and integrate lessons learned with the response required for scaling up HIV/AIDS programs to achieve national-level effects (Chan Kam, Goodridge, and Moodie, 2001). If there is to be a sustainable, effective national response, national governments must be responsible for setting the agenda, leading the strategic planning process, and coordinating action. An M&E plan needs to be intricately linked to the planning and implementation of programs and ideally needs to be put in place from the start (Rugg and Mills, 2001). These concepts and approaches are not new and certainly not unique to the field of HIV/AIDS. What is unique to HIV/AIDS, however, are the following characteristics:

- AIDS is a relatively new viral disease that emerged in the early 1980s and rapidly spread within high-risk populations and subsequently within the general population in many countries
- Changes in the HIV/AIDS programming are rapid and often dramatic as progress continues to be made in understanding the origin and dynamics of HIV; the causes and patterns of HIV infection; and how we can prevent, treat, and potentially cure the disease

As De Lay, Ernberg, and Stanecki (2001) have stressed:

HIV/AIDS is now the fourth leading cause of death worldwide, and the single leading cause of death in sub-Saharan Africa. We have continued to be surprised, shocked and devastated by this pandemic, which the global community has consistently underestimated [p. vii].

The rapid spread of HIV has resulted in global, national, and local responses that have evolved considerably over time. Piot, the executive director of Joint United Nations Programme on HIV/AIDS (UNAIDS), has commented:

In 20 years of responses to the AIDS pandemic the world has learned many hard lessons. We have learned that half-measures do not work: progress is made only when communities and nations whole-heartedly embrace the fight against AIDS. We have learned that there is no “one-size-fits-all” solution in designing and delivering the most effective prevention and care initiatives. We have learned that HIV feeds on social inequality, especially the inequality between men and women. Above all, we have learned that we are not powerless to change the course of the pandemic. Reversing the AIDS pandemic is about changing the world we live in—our behaviors and relationships, where money flows and who makes decisions. It requires every one of us to play our part [2001, p. v].

We have come to a time when the global community has pledged an unprecedented commitment to fighting HIV/AIDS and made a concerted effort to strengthen the associated M&E systems, as illustrated by the chapters in this issue. In this chapter, we take a broad and historical look at international developments over the past twenty years in HIV/AIDS M&E. Although not intended to be exhaustive, the chapter presents epidemiological surveillance and program M&E as distinct but complementary components of a comprehensive M&E system.

One of the major shortcomings in the HIV/AIDS response has been the fragmentation of M&E efforts across various agencies. Recently, however, agencies have taken deliberate steps toward creating a unified approach that links different data collection efforts and information systems. Another major challenge is the gap that remains between the collection of data and their actual use both to reduce people’s exposure to HIV infection and to improve the lives of those infected. Ideally, data use is not an isolated activity but the final stage in an interconnected series of steps, beginning with planning health information systems and continuing through collecting, managing, and analyzing data (World Health Organization, 2004a). We examine these critical data use issues and conclude with a discussion of lessons learned and the way forward.

What Do We Need to Know?

Although much of the early data collection efforts did not involve the use of a framework, an organizing framework has since evolved. The organizing M&E framework for HIV/AIDS builds on the “Framework for Program Evaluation in Public Health” (Centers for Disease Control and Prevention, 1999) and the UNAIDS’ *National AIDS Programs: A Guide to Monitoring and Evaluation* (2000).

The investigation of any problem starts by asking pertinent questions that serve to initiate and organize the response. Such questions might include: What is the problem? What is contributing to the problem? What can be done about the problem? Once a program response has been implemented, is it working? and Once a reasonable period of time has passed, is the program reaching enough people to make a difference in the resolution (or severity) of the problem? (Centers for Disease Control and Prevention, 1999; Teutsch and Churchill, 1994). These basic questions provide a simple and pragmatic way to organize the resources necessary to build a national M&E system. Figure 2.1 frames the questions that must be addressed when planning a comprehensive national M&E system and considering the data sources and methods that may be employed to provide the answers. Each step in the staircase diagram is the foundation for the next step in the investigative process. Because evaluators beyond HIV/AIDS may find it useful, we will expand on this.

The first step is problem identification. In the case of HIV/AIDS, we initially seek to *identify the nature, magnitude, and course of the overall epidemic* and related subepidemics. This information typically comes from surveillance systems, special surveys, and epidemiological studies. This first step may also include questions about the *nature and magnitude of the programmatic response* to date. Situation analysis, gap analysis, and response analysis are the typical information-gathering activities that seek information about program status from, for example, related documents, informant interviews, and field observations. The methods used in this first step are also used in the last step when we determine overall impact and collective effectiveness of combined program efforts at the national level, thus closing the loop in the iterative process of program planning, implementation, and evaluation.

In the second step, we seek to determine the *contributing factors* and determinants of risk for infection. This information is usually obtained from knowledge, attitude, and behavior surveys; epidemiological risk factor studies; and determinants research. The results at this step help in the design of appropriate interventions.

The third step focuses on *what interventions might work* under ideal circumstances in rigorous research-driven protocols (efficacy trials) or under specific field conditions (effectiveness studies). This is an important

Figure 2.1. A Public Health Questions Approach to Unifying HIV/AIDS Monitoring and Evaluation

Determining Collective Effectiveness	Outcomes and Impacts Monitoring	Are collective efforts being implemented on a large enough scale to impact the epidemic (coverage; impact)? Surveys and Surveillance
Monitoring and Evaluating National Programs	Outcomes	Are interventions working/making a difference? Outcome Evaluation Studies
	Outputs	Are we implementing the program as planned? Outputs Monitoring
	Activities	What are we doing? Are we doing it right? Process Monitoring and Evaluation, Quality Assessments
Understanding Potential Responses	Inputs	What interventions and resources are needed? Needs, Resource, Response Analysis and Input Monitoring
		What interventions can work (efficacy and effectiveness)? Are we doing the right things? Special studies, Operations res., Formative res. and Research synthesis
		What are the contributing factors? Determinants Research
Problem Identification		What is the problem? Situation Analysis and Surveillance



step, although it is often not sufficiently funded in the rush to “do something” (see Chapter Nine, this issue). Typical evaluation methods include intervention outcome studies with control or comparison groups, operations research, health services research, formative research, and other special studies.

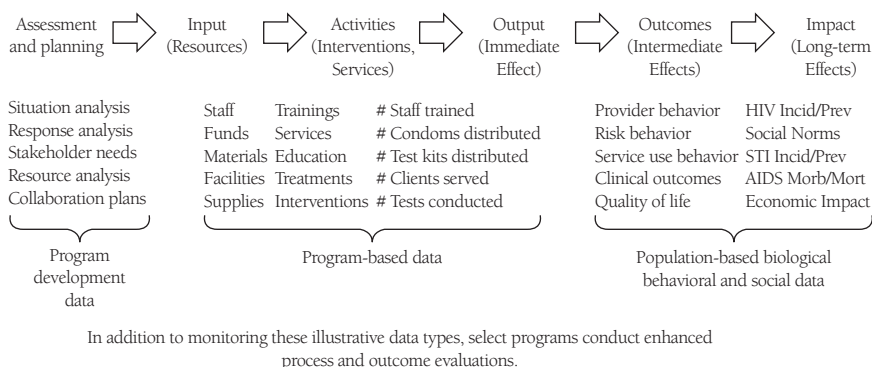
The fourth step involves determining *what specific interventions and resources are needed*. This question is usually addressed through analysis of program coverage data from special surveys or from the national health management information system. However, both sources are not fully employed at this time and will need considerable strengthening to be useful in strategic planning and management of programs. Several donors have committed to devoting extra resources in this area.

The fifth step seeks to *assess the quality of program implementation* by asking questions regarding it. Process monitoring, evaluations, and other forms of quality assessments are typically performed at this step.

Similarly, the sixth step seeks to *examine the extent of program outputs*, answering questions of “how many” and whether the program is implemented as planned. Typically this information is routinely collected from health management information systems.

The seventh step examines program outcomes and answers questions about program effectiveness. Typically, applied outcome evaluations studies are employed at this stage.

The final step focuses on determining overall program effects and collective effectiveness. Building on the answers to the questions at previous steps, information from population-based surveys and other surveillance

Figure 2.2. Global HIV/AIDS Monitoring and Evaluation Framework

Note: Abbreviations: STI, sexually transmitted infection; Incid/Prev, incidence or prevalence; Morb/Mort, morbidity or mortality.

activities are once again used to answer questions at this final step. In addition, the systematic collection of program-related qualitative data assists in interpreting program outcomes and impact and contributes to our understanding of what is or is not working. Such information could also identify unexpected results and community perceptions that influence program results but cannot be answered using trend data alone. However, qualitative studies are not routinely funded. This is an ongoing problem—not unique either to developing countries or to HIV/AIDS, although several donors are now planning to support such efforts.

Central Organizing Framework and Data Needed

All agencies endorse a simple “input-activities-output-outcome-impact” framework as the basic organizing framework. This provides a way to organize the data required to monitor program progress and suggests a logical order for collecting and analyzing information. The process starts with examining the required inputs (for example, resources) for implementing activities, the activities themselves (for example, counseling and testing), and then the resulting outputs (immediate effects, such as number of people tested). Outputs may lead to outcomes (intermediate effects, such as risk behavior change) that in turn may lead to impact (long-term effects, such as reduction in HIV incidence). Figure 2.2 shows this paradigm with some illustrative types of data that might be collected at each step. To truly determine the merit or value of a program, evaluation studies must supplement monitoring data, as discussed earlier.

Monitoring HIV/AIDS Programs

AIDS Case Reporting. Disease monitoring or surveillance is defined as the ongoing systematic collection, analysis, and interpretation of data to describe diseases and their transmission in populations (Centers for Disease Control and Prevention, 2003). Historically, HIV/AIDS surveillance began in the United States in 1981 with the first AIDS case definition: “a disease, at least moderately predictive of a defect in cell-mediated immunity, occurring in a person with no known cause for diminished resistance to that disease” (Centers for Disease Control and Prevention, 1982, p. 507). Although this first definition highlights the limited understanding of the disease at that time, AIDS case reporting allowed the elucidation of risk groups, provided information on sex and age patterns of the disease, suggested the various routes of transmission, and gave a general idea of where to target prevention efforts (Centers for Disease Control and Prevention and others, 2004).

In 1985, the World Health Organization (WHO) published a case definition for AIDS in Africa, the Bangui, Central African Republic, definition, which included the presence of two major signs *and* one minor associated symptom (World Health Organization, 1985). This definition was widely adopted but lacked sensitivity. However, the major limitation was that of severe underreporting (an estimated 90 percent or more of AIDS cases were not reported). Also, it was often confused with clinical staging of the disease and did not adequately capture HIV-related morbidity. Given these challenges, the AIDS case definition has subsequently been updated several times to incorporate new developments in HIV diagnostics and an increased understanding of the spectrum of morbidity associated with HIV infection.

HIV Sentinel Surveillance. When the HIV antibody test became available in 1985, it dramatically decreased reliance on AIDS case reporting for surveillance purposes. As the capacity for HIV testing became more widespread, HIV sentinel surveillance became the cornerstone of national surveillance systems. National governments and international agencies increasingly relied on HIV sentinel surveillance to provide an estimate of HIV prevalence in the general population.

The early global response to HIV/AIDS was coordinated by the WHO's Global Program on HIV/AIDS, and between 1987 and 1991, more than 145 national AIDS programs were established in resource-constrained countries around the world. Because virtually all national AIDS programs resided within ministries of health, the first national short- and medium-term plans were focused exclusively on the health sector response to the epidemic. In conjunction with advances in HIV testing capability, the WHO's Global Program on HIV/AIDS in 1987 developed guidelines for HIV surveillance among pregnant women attending antenatal clinics. The HIV prevalence among these women is still used to estimate the prevalence of HIV infection among 15- to 49-year-olds in countries with generalized epidemics (that is, HIV prevalence exceeds 1 percent in antenatal clinic clients). Many countries developed

antenatal clinic-based surveillance systems, and some countries expanded these to include surveillance among other easily accessible groups, such as patients in sexually transmitted disease clinics, blood donors, and clients of voluntary counseling and testing centers. Some of these groups, however, may be biased toward higher prevalence rates largely because of higher levels of risky sexual behavior (World Health Organization, 2004b).

Behavioral Surveys. In 1988, the WHO Global Program on AIDS launched a program of surveys to collect basic descriptive information about individual perceptions, knowledge, attitudes, and sexual behaviors in general populations as they relate to the risk of HIV infection (World Health Organization, 1988). Until then, no large representative surveys on sexual behavior had ever been undertaken in developing countries because most attention was focused on populations at high risk for contracting or transmitting HIV infection. The driving force for these surveys was the assumption that greater knowledge of sexual behavior in representative samples of the general population in different sociocultural contexts should have important implications for designing and evaluating interventions to foster necessary behavioral change to control the spread of HIV infection (Carael and others, 1995).

The challenges in conducting such surveys were enormous: collecting information on sexual behavior, especially outside stable relationships, is controversial, and the definition of the basic concepts of sexual behavior and the assessment of their validity and reliability are difficult (Carballo, Cleland, Carael, and Albrecht, 1989). The focus on sexual relations with a nonregular partner is obvious. Of all the risk factors for sexually transmitted infections (STIs), including HIV, the number of recent or lifetime (or both) sexual partners has consistently proved to be one of the most important, at least where unprotected sex is widely practiced (Andersen and others, 1991). However, the actual risk of infection depends on the overall prevalence of HIV and other STIs in particular communities and networks (Carael and others, 1995).

Although the idea of conducting sexual behavior surveys among representative samples of the general population was initially greeted with reluctance both by government officials and the research community, more than twenty countries participated in the WHO Global Program on AIDS cross-cultural survey research. Unfortunately, the information collected was only partly used for planning prevention programs and for evaluating behavioral change (Carael and others, 1995). None of the countries involved in the research program repeated the surveys or transformed them into a routine behavioral monitoring tool. Despite these difficulties, the population-based HIV/AIDS surveys proved that it is indeed possible to collect highly personal and sensitive information from individuals. However, the need remains for information from a range of data sources—including quantitative and qualitative inquiries into individual behaviors and sexual network and mixing patterns—to be interpreted together.

Second-Generation HIV Surveillance. Changes in HIV prevalence may be indicative of the long-term effect of multiple HIV/AIDS prevention programs, but it is difficult to prove that observed changes are directly linked to specific programs because other factors such as mortality, migration, and saturation of the population at risk may also contribute to changes (Asamoah-Odei, Carael, Rehle, and Schwartlander, 2001). The concept of second-generation surveillance was introduced to better measure population diversity, including populations and subpopulations at risk and their epidemiological and behavioral trends over time, especially in mature epidemics. The underlying concept of second-generation surveillance is that different epidemics need different surveillance systems. Its main elements include considering biological surveillance (HIV, AIDS, other STIs) and behavioral surveillance as integral components, depending on the stage and type of the epidemic, and it provides useful information to monitor the HIV epidemic and measure the progress of the national HIV/AIDS program (Rehle, Lazzari, Dallabetta, and Asamoah-Odei, 2004).

Two major developments in monitoring HIV-risk behaviors strengthened the capacity to follow the diversity of the epidemic. First, large-scale nationally representative demographic and health surveys, which traditionally had focused on maternal and child health and family planning, increasingly included male respondents and also added a module on HIV/AIDS. This was an important step toward standardizing indicators for monitoring behavioral changes over time. Second, behavioral sentinel surveys were developed to monitor behavioral changes in specific at-risk populations (Henry, 1996; Rehle, Lazzari, Dallabetta, and Asamoah-Odei, 2004) over time. Despite the difficulties in measuring HIV-related risk behaviors through behavioral surveys, as discussed by Carael and others (1995) and Rehle, Lazzari, Dallabetta, and Asamoah-Odei (2004), behavioral surveys have been the main source of data for identifying trends in HIV-related risk behaviors to date. However, recently the value of supplementing HIV surveillance and behavioral surveys with sound qualitative data collected through rapid ethnographic assessments has proved useful in the interpretation of HIV epidemiological data and the design of effective HIV prevention programs (Needle and others, 2003). The multimethod data-triangulation approach that this represents has long been considered valuable and has received much attention in the evaluation literature (for example, Manderson and Aaby, 1992; Trotter, 1995). Although triangulating data from multiple sources takes time and skill, it can be seen as a process of “nesting” qualitative data within a quantitative data collection plan. As such, it can greatly strengthen a public health response by enhancing the sophistication of the surveillance and monitoring efforts and by providing essential data for the design of an effective response (Needle and others, 2003).

As we get better at understanding the HIV/AIDS epidemic, it should translate into an improved ability to identify and interpret changes over time and to identify factors that in turn should lead to an improved response.

The interpretation of HIV trends will be even more challenging in the coming years as antiretroviral treatment becomes more widely available. Increased access to antiretroviral treatment will lengthen the survival time of HIV-infected people and thus may potentially alter the dynamics of HIV transmission by increasing the pool of HIV-infected people, disinhibiting prevention behaviors, and perhaps, decreasing the infectiousness of those treated through reduced viral loads (Rehle, Lazzari, Dallabetta, and Asamoah-Odei, 2004).

Evaluating HIV/AIDS Programs

Here we examine national program monitoring and program evaluation studies.

National Program Monitoring. Recognizing that the survey data were not being used effectively in guiding the national response to HIV/AIDS, the WHO in 1994 designed a more focused, country-oriented methods package for the evaluation of national AIDS programs that included a set of ten priority prevention indicators (World Health Organization, 1994; Mertens and others, 1994). Four indicators—knowledge of preventive practices, reported number of nonregular sex partners, condom use with nonregular partners, and reported STIs incidence—were part of a standard questionnaire requiring repeated surveys in the general population. Two additional indicators on STI case management and services and two on HIV and syphilis seroprevalence were to be collected through health facility surveys. The remaining indicators, condom availability at central and at peripheral system levels required record reviews and special assessments. These ten priority prevention indicators were proposed as complementary measures to HIV surveillance systems. The WHO Global Program on AIDS provided both technical support through its country program advisors and financial assistance to conduct these country-level program surveys, but fewer than twenty developing countries were interested in participating (Mehret and others, 1996; Mertens and others, 1994). However, in participating countries, the survey experience had the added benefit of mobilizing program managers, clinicians, and other professional staff to improved efforts in the areas of condom supply, case management of STIs, and interventions for behavioral change (Mertens and others, 1994).

By 1991, our understanding about the complex dynamics, determinants, and consequences of HIV infection had increased. The WHO Global Program on AIDS sought to address the epidemic through a truly multisectoral response. As useful as the early short- and medium-term plans had been for providing national AIDS programs a framework for planning and implementing a national response, the plans were viewed as “external” and inadequately addressed national needs and capacities (Chan Kam and others, 2001). In 1995, the WHO Global Program on AIDS was discontinued and replaced in 1996 by the Joint United Nations Programme on HIV/AIDS.

UNAIDS comprised several U.N. agencies, thus reflecting the shift from solely defining HIV/AIDS as a health problem to approaches addressing other social and developmental aspects.

As countries formulated national strategies to combat HIV/AIDS in a coordinated multisectoral response, program monitoring became more prominent and focused on assessing whether program activities were effectively implemented and made reasonable progress toward stated goals and objectives. Although the routine collection of such monitoring information remained overall lacking, many countries conducted medium-term reviews of their national plans, using the available program data to adjust management capacities and plan future activities. (Chapter Four on collaboration in this issue describes such a medium-term review in Cambodia.)

Recent efforts have placed program monitoring firmly on the international M&E agenda (see Chapter Six, this issue). UNAIDS has invested in the development of a data management system at the country level, the Country Response Information System (Joint United Nations Programme on HIV/AIDS, 2003) (see also Chapter Three, this issue). This system is scheduled for implementation in over one hundred countries by 2005. It can store epidemiological data, strategic planning information, budget allocation information, program description and implementation data, and a country-specific research inventory. The Country Response Information System should facilitate coordination of activities between the national government, donors, and implementing agencies to achieve adequate coverage of, and necessary synergies between, HIV/AIDS programs.

In addition, with support from the U.S. Agency for International Development, HIV/AIDS indicator data from a range of surveys conducted in a large number of countries has now been compiled in an easily accessible database (ORC Macro, 2004). Indicators from the following sources that are routinely collected through population-based surveys can be found in this database: UNAIDS *National AIDS Programs: Guide to Monitoring and Evaluation* (Joint United Nations Programme on HIV/AIDS, 2000), the indicators to monitor the United Nations General Assembly Special Session on HIV/AIDS (Joint United Nations Programme on HIV/AIDS, 2002), and the Millennium Development Goals (United Nations Development Program, 2004).

Program Evaluation Studies. As discussed earlier, several studies have used population-based cross-sectional, and longitudinal data collection methods to monitor trends both in the HIV/AIDS epidemic and, as described in Chapter Six in this issue, in the national programmatic response. These data sources have been supplemented by some studies attempting to understand behavioral change attributable to specific HIV/AIDS programs, but few of these studies have been done because of their high cost and complexity. From the perspective of a national program, as suggested by the editors previously in the discussion of the M&E pipeline (see Editors' Notes in this volume), it may not be practical, or even necessary, to assess behavioral change for every individual project, especially when those projects are using strategies with

already proven effectiveness (Saidel and others, 2001). Nevertheless, there is still a need for in-depth evaluation studies that focus on the effects of new or innovative interventions. Only a few rigorous, large-scale program evaluations have been conducted to date, notably in the areas of voluntary counseling and testing, school sexual health education, and mass media communication. The voluntary counseling and testing study, for example, was a randomized trial to test the efficacy of HIV counseling and testing in reducing sexual risk behavior (Voluntary HIV-1 Counseling and Testing Efficacy Study Group, 2000). This multicountry study was conducted in 1995 to 1998 in Tanzania, Kenya, and Trinidad. Sexual behavior data collected at six- and twelve-month intervals after HIV counseling showed that the intervention was most effective for HIV-infected people and sexual partners who received the counseling as a couple. Although a cost-effective intervention, especially in urban settings, its cost-effectiveness could be significantly improved through targeted approaches, such as linking counseling and testing to other services that reach high-prevalence populations (for example, in-service sites for STIs) (Sweat and others, 2000). Other examples include the Rakai (Uganda) and Mwanza (Tanzania) studies, which investigated the relationship between the treatment of STIs and sexual transmission of HIV. A decrease in population-level HIV incidence was associated with improved case management of STIs in Mwanza but was not associated with mass treatment of STIs in Rakai (Grosskurth and others, 2000). The results of the Mwanza trial had a major influence on HIV-prevention policies in many countries around the world. However, the unexpected, and seemingly contradictory, results of the Rakai trial resulted in uncertainty among policymakers and donor agencies regarding the measurable effects of interventions to reduce the incidence of STIs. Grosskurth and others (2000) argue that the results from the Mwanza and the Rakai trials are not directly comparable because they tested different interventions in different epidemiological settings using different evaluation methods. They point out that the results may be complementary, rather than contradictory, and offer possible explanations, including: differences in the stage of the HIV-1 epidemic, which can influence exposure to HIV-1 and the distribution of viral load in the infected population; potential differences in the prevalence of incurable STIs; perhaps a greater influence on HIV-1 transmission of symptomatic, rather than symptomless, STIs; and possibly greater effectiveness of continuously available services rather than intermittent mass treatment to control rapid reinfection with a sexually transmitted disease (Grosskurth and others, 2000). This example illustrates the complexities of interpreting findings from large-scale impact evaluations.

Although many more smaller-scale program evaluations have been conducted, there has been less focus on what constitutes a comprehensive evaluation agenda and on appropriate methods for evaluation (see Chapter Nine, this issue). As a result, there remain significant knowledge gaps about what programs work best for which populations.

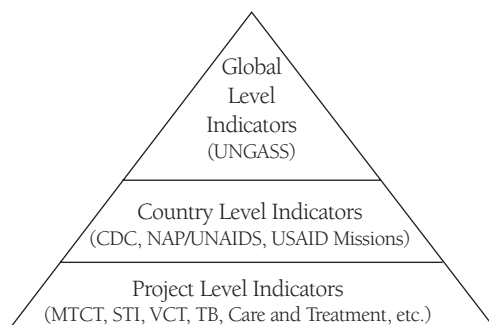
Bringing Monitoring and Evaluation Together

In recent years, there has been an increasing effort by the international community to rapidly scale up HIV prevention, care, and treatment programs; harmonize the corresponding M&E strategies and monitoring indicators; and coordinate M&E activities so that resources are used effectively to support complementary activities. This unified approach to M&E will also reduce the burden of data collection at the country level by reducing the reporting of multiple indicators to multiple stakeholders. Over the past five years, significant advances have also been made in building the human and fiscal capacity to implement these national M&E systems. These efforts at the global level have highlighted the degree of fragmentation at the country level and, hence, the paramount need for local coordination. In a recent landmark event—spearheaded by UNAIDS, the U.S. government, the World Bank, and the Global Fund to Fight AIDS, Tuberculosis and Malaria—multiple agencies and governments met and endorsed a renewed commitment to coordination guided by a new unifying theme: the “three ones principle.” This principle encourages all governments and donors working in HIV/AIDS to acknowledge and support only *one* national AIDS authority; to develop *one* overarching national strategic plan designed to organize and coordinate all donor and sector contributions; and to collaboratively develop *one* national M&E plan with dedicated personnel and resources for a single M&E organizing committee and national indicator database (Joint United Nations Programme on HIV/AIDS, 2004; also see Chapter Four, this issue).

To monitor program performance at the country level, the local national AIDS program and the various international donors typically engage in three activities: derive a limited set of program monitoring indicators, some of which overlap and some of which are specific to each agency; collaborate to endorse a unified set of national outcome and impact indicators that measure the collective effectiveness of all program partners in making progress toward national objectives; and then collect data to inform such indicators at the country level and also work collaboratively to harmonize global reporting needs with country-specific data needs. Hundreds of variables or indicators may be collected across projects at the lower levels, such as projects, districts, and so forth. Only some of these indicators need to be aggregated at the national level (for example, national AIDS program indicators [$n > 100$], UNAIDS indicators [$n = 57$]), but only UNGASS indicators ($n = 19$) are needed to monitor programs at the global level (that is, the United Nations General Assembly Special Session Declaration of the Commitment on HIV/AIDS). This is depicted in Figure 2.3 in the global indicator pyramid, which illustrates the relative relationship among the various levels of indicators.

The M&E arena has grown rapidly; yet, M&E capacity at the country level is still limited. To address this, the major donor agencies have agreed

**Figure 2.3. Global Monitoring and Evaluation Indicator Pyramid:
Levels of Indicators**



Note: UNGASS: United Nations General Assembly Special Session on HIV/AIDS; CDC: Centers for Disease Control and Prevention; NAP/UNAIDS: National AIDS Programs–Joint United Nations Programme on HIV/AIDS; USAID: U.S. Agency for International Development; MTCT: mother-to-child transmission; STI: sexually transmitted infection; TB: tuberculosis.

to jointly and systematically provide technical assistance, support the local hiring of additional M&E staff, and “learn by doing” to develop feasible approaches to building national M&E systems. For example, each agency will plan prospective evaluation studies and will also collaborate in focusing on several countries with an enhanced level of effort and technical assistance. This is a long-range collaboration (extending to at least 2008 with the current resources) with the two key goals of avoiding duplication of effort and avoiding the situation that occurred in Uganda, where answers to what actually caused the drastic reduction in HIV prevalence that occurred in the early 1990s can only be speculated upon retrospectively (Stoneburner and Low-Beer, 2004). These comprehensive longitudinal evaluation studies will provide practical information on how to implement and sustain a comprehensive yet feasible M&E system that informs national AIDS programs and donors alike on what is and is not working and where improvements are needed.

Conclusion

The past twenty years have seen an increasing awareness of the importance of M&E systems, which can provide a comprehensive understanding of the HIV/AIDS epidemic and the overall effectiveness of the resulting national response. The growing focus on collaboration epitomized in the recent “three ones principle,” has fostered more progress in collaboration and more funding for M&E than ever before. This provides an unprecedented opportunity to make M&E systems work effectively in support of the national response. As treatment expands and more people receive antiretroviral therapy, there

will be new issues on the agenda for effective global M&E (see Chapter Five, this issue). There will therefore be a continuous need for new standards, new indicators, new guidance, and new methods and toolkits (for example, "Monitoring and Evaluation Toolkit HIV/AIDS, Tuberculosis and Malaria," Global Fund to Fight HIV/AIDS, Tuberculosis and Malaria, 2003). This will require ongoing support for training and technical assistance to support the national AIDS authorities, national M&E coordinating committees, and program-level staff.

However, the overreliance on indicators that we have seen thus far is problematic. The understanding of an epidemic and an effective response in an epidemic as complex as HIV/AIDS cannot be determined by monitoring the disease and indicators alone. It requires a sustainable, comprehensive, strategic, multimethod M&E system that effectively integrates the information from monitoring indicators with findings from selected evaluation studies and qualitative methods that help us understand community responses to the HIV/AIDS epidemics.

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