EXECUTIVE SUMMARY

Global Fund 5-Year Evaluation: Study Area 3

The Impact of Collective Efforts on the Reduction in Disease Burden

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Submitted to:
The Global Fund to Fight AIDS, Tuberculosis, and Malaria
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EXECUTIVE SUMMARY

1 BACKGROUND AND LESSONS LEARNED

BACKGROUND

1.1 A Unique Evaluation Study of Scaling Up in Countries

In November 2006, the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund) Board made the decision, as part of its own five-year evaluation, to invest in a multicountry study that focused on assessing country progress and collective impact of all partners in scaling up the response against AIDS, tuberculosis (TB), and malaria.

In November 2006, the Global Fund Board agreed to fund an extensive, three-part evaluation of its first five years of operation. The first two parts of the evaluation focused on the Global Fund's organizational efficiency and effectiveness, and the effectiveness of the Global Fund partner environment. The third part, the subject of this report, focused on country progress in the fight against AIDS, TB, and malaria, with special attention to health systems.

There have been different types of multicountry evaluation studies in the health sector. Some, such as the Joint United Nations Programme on HIV/AIDS (UNAIDS) five-year evaluation, involve multiple-country assessments focusing almost entirely on the institutions' own role in the response. Others, such as the Institute for Health Metrics and Evaluation's analyses of the Global Alliance for Vaccines and Immunization (GAVI), completely rely on secondary analysis of existing data. Another type of evaluation deals with a specific set of interventions, such as the multicountry evaluation of the Integrated Management of Childhood Illness (IMCI), with extensive primary data collection and analysis in countries.

This evaluation study is distinct from previous evaluations in several ways. First, it focuses primarily on the collective impact of the Global Fund and its national and international partners through a comprehensive assessment of country progress. Second, the evaluation study does not focus on the health impact of a limited set of interventions, but all possible interventions in the battle against three major diseases: HIV/AIDS, TB, and malaria. Furthermore, the way in which the evaluation study was conducted was special in that it followed a set of key principles that are intrinsic to the Global Fund itself, including the fostering of country ownership and contribution to the strengthening of country capacity and systems.

Of the almost US$12 million made available by the Board for the evaluation study, 40% was allocated to data collection, 30% to capacity building and data analysis in countries, 15% to administration, and 15% to the development of instruments, tools, and reports.

1.2 Documenting Impact and Strengthening the Basis for Evaluation

Because the scaling up of the response against the three diseases began in 2003-2004 and the timing of the evaluation followed so soon after, it is unreasonable to expect that the

evaluation would capture the full impact of the scaling up, given the time it takes from funding approval to health impact.

The period of implementation that the evaluation study measured was relatively short and made it impossible to document the full health impact. Scaling up through the Global Fund, PEPFAR, and other disbursements began in 2003 but only reached substantial levels of funding and numbers of countries in 2004-2005. The time between a Board decision on a proposal and actual implementation may easily reach 15-23 months (approximately 9-12 months between Board approval and grant signing, 2-3 months between signing and disbursement, and 4-8 months between disbursement and implementation in the country). The time between implementation of the interventions and reaching high coverage levels to subsequent population impact can also vary from a few months to years and is quicker for some interventions (e.g., treatment) than others (e.g., behavioral change programs). Finally, the time between actual population health impact and the ability to document these changes is also several years because of the delay between data collection and results (e.g., often 2-3 years for HIV surveillance, 2 years for TB treatment outcomes) and because of limitations of measurement instruments (e.g., HIV prevalence among young people to assess HIV incidence trends).

The evaluation study has initiated a process of strengthening country evaluation capacity through the engagement of country stakeholders and institutions, a critical evaluation of the current situation with new analyses of existing data, and the collection of new data to fill major gaps. These efforts will be supported by a model evaluation platform, which provides guidance and tools to countries for the evaluation of scaling up and should become a basis for collaborative efforts. In several countries (e.g., Burkina Faso, Tanzania, and Zambia), discussions about using district-based data collection to inform annual health sector reviews, assess data quality, and monitor progress are already ongoing.

1.3 Multiple Dimensions of a Complex Study

The evaluation study was a complex undertaking, involving a large number of international and country actors and a large number of countries, combined with a broad scope of the evaluation (three diseases) and a comprehensive participatory approach.

Of 20 countries selected by the Global Fund Technical Evaluation Reference Group (TERG), 18 participated in the evaluation. In each country, a special Impact Evaluation Task Force (IETF) was established before the evaluation study via a contract with UNAIDS. The IETF reported to the Country Coordinating Mechanism and was responsible for developing a workplan and overseeing evaluation of activities. In total, 49 local institutions and individuals were subcontracted to compile and analyze available data in all countries and collect new data in eight countries.

Following an international tender, the evaluation study was organized and overseen by a consortium of five organizations, led by Macro International Inc., with the African Population and Health Research Center, Harvard University School of Public Health, Johns Hopkins Bloomberg School of Public Health, and World Health Organization (WHO). Consultations with existing expert groups, global initiatives, and technical programs in international organizations were also part of the evaluation study.

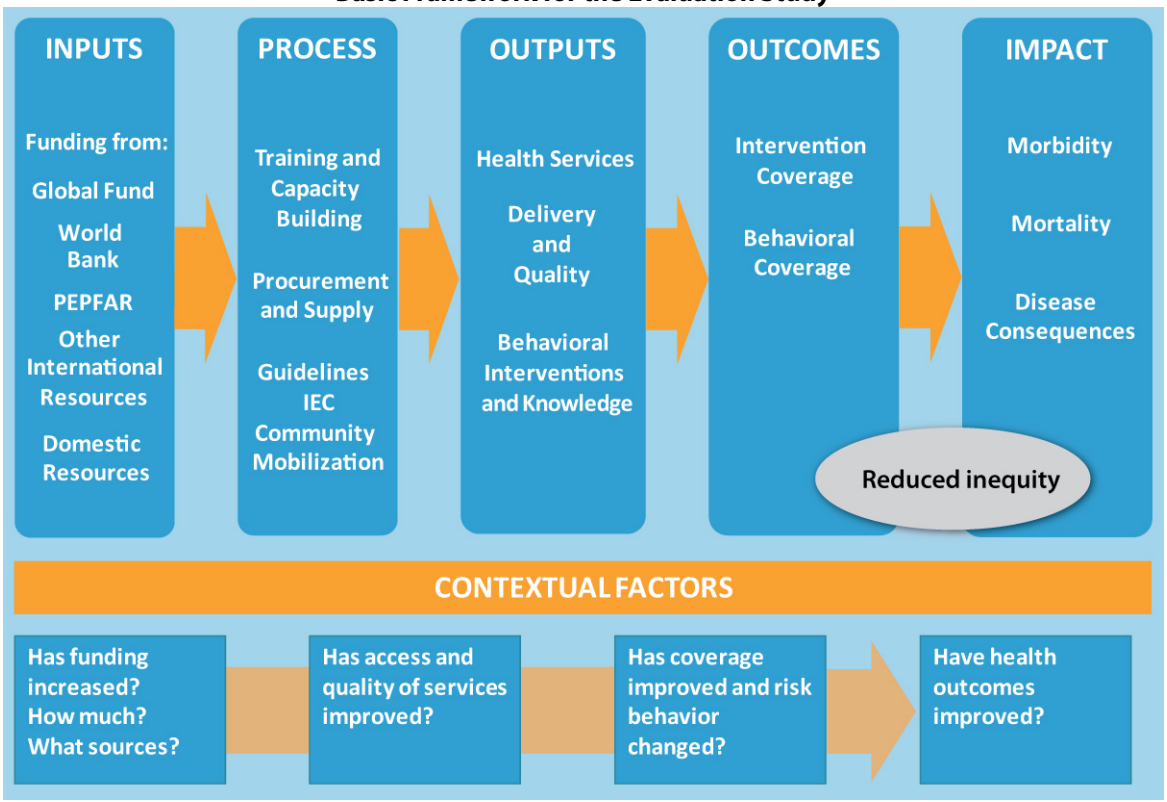
The TERG was tasked by the Board to organize and oversee the evaluation study and ensure its independence. The Global Fund Secretariat played a limited role through its support of the TERG and assistance to the Evaluation Study Consortium in making country connections.

1.4 An Analysis of Existing Data and New Data Collection

The evaluation study design used a stepwise approach to examine trends in health outcomes, coverage and risk behaviors; access and quality of services; and funding. Secondary analysis and record reviews were conducted in 18 countries, and new data collection was carried out in eight of these countries.

The evaluation study focused on the collective efforts to scale up prevention and treatment programs, with special attention to the role of the Global Fund. The potential contribution of the Global Fund was assessed by focusing on its financial contribution relative to other players. The evaluation study was designed to adhere to scientific evaluation criteria while aligning to the processes and principles outlined in the International Health Partnership (IHP+) common evaluation framework, which is based on the tenets of the 2005 Paris Declaration on Aid Effectiveness. A stepwise approach to evaluation study was used, consisting of four sequentially linked questions on trends in funding, access to services, coverage of interventions and risk behaviors, and health outcomes. Within the limits set by contextual factors, improvements at each step can be plausibly ascribed to improvements in the previous step (see Figure 1).

Figure 1
Basic Framework for the Evaluation Study



Data collection in countries included national health accounts, district facility censuses, household surveys, civil society organization surveys, record reviews, and follow-up studies of patients. Special

efforts were made to evaluate data quality, analyze subnational data, and assess the state of health services.

LESSONS LEARNED IN IMPLEMENTATION

Experiences gained from the evaluation study design and the processes of its implementation provide important lessons for future large-scale evaluations. It is also important to keep in mind that one of the principal objectives of the evaluation study was to lay a foundation for stronger performance monitoring and evaluation in the future. This section assesses the extent to which the evaluation study was able to adhere to the principles of the IHP+ common evaluation framework.

1.5 Ensuring Collective Action in Evaluation

Efforts to engage partners were more successful at the global level than the country level, where the evaluation study was perceived by partners as a mostly Global Fund activity.

The evaluation study was partly successful in bringing partners on board. At the global level, the Global Fund Secretariat organized meetings to inform and discuss the evaluation with partners. In particular, the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) showed an interest and agreed to fund capacity-building activities related to the evaluation study. At the country level, partners, such as PEPFAR, UNAIDS, the World Bank, and bilateral donors, have been interested. Some partners participated in the IETF in several countries, but they generally did not perceive it as a truly joint evaluation.

1.6 Alignment with Country Processes

The alignment with country processes was generally limited, as the tight timeline and the perceived Global Fund focus in countries did not allow for sufficient time to ensure that the data collection and analysis work would be streamlined and results used for annual in-country health sector reviews and other major planning and reporting cycles.

The timeline of the evaluation study was short. The contract with the consortium was signed in April 2007, work planning led by country IETFs occurred in May to November 2007, secondary analyses and fieldwork ran from November 2007 to August 2008 in most countries, and new data analyses were conducted beginning in June 2008. This left little time for alignment with country-led processes, such as annual health sector or midterm reviews. There was only partial alignment with these processes in some countries, and further efforts need to be made to maximize the country benefits of the evaluation study. In general this evaluation became an "added task" for most countries rather than an opportunity to strengthen their on-going monitoring and evaluation work.

1.7 Balance between Country Participation and Independence

Creating special task forces for the evaluation was not a successful way for ensuring country ownership, but independence was maintained by subcontracting country institutions and individuals.

Evaluations should be driven by country needs and ensure active country participation without sacrificing scientific rigor and credibility while maintaining objectivity and independence. Common protocols and standardized indicators and measurement tools, adapted by countries as needed, helped enhance data quality and comparability between countries and populations over time. Data collection and analysis were carried out by local institutions and researchers generally not affiliated with the disease programs using the locally-adapted, standardized tools and methods. However, in several cases, capacity constraints led to the omission of evaluation study components and delays in the compilation and analysis of the data. Furthermore, several countries made changes to the study protocols, sometimes for valid reasons (e.g., Peru focused on cities only), which affected the ability to obtain comparable results. In a few instances, the results were considered invalid because of the strong program involvement in the evaluation (e.g., in follow-up studies of patients).

IETFs were set up to ensure stakeholder involvement and manage the potential tension between country ownership and independent assessment. The task force model, with its link to the Country Coordinating Mechanism, was only successful in a few countries. It would be more effective and more sustainable to build upon existing mechanisms of coordination and leadership within countries.

1.8 Harmonization of Approaches to Evaluation and Performance Assessment

The evaluation study avoided the duplication of data collection, but the lack of integration with country health information plans limited its ability to more thoroughly evaluate impact.

The evaluation study was somewhat successful in avoiding duplication of data collection efforts, but the lack of long-term planning implied that the data collection efforts were not part of country health information plans. In fact, in most countries such plans do not exist. For instance, in Tanzania six partly overlapping surveys with malaria modules were conducted in 2008. Data sharing by partners was generally good, although in some countries it was difficult for the local teams to obtain all the data that should have been easily accessible for the evaluation study.

1.9 Capacity Building and Health Information System Strengthening

Through workshops and technical assistance, the evaluation study significantly strengthened capacity to conduct evaluations, but systematic involvement of institutions and much larger investments are needed to make a difference.

Systematic involvement of key country institutions in evaluation activities is necessary to achieve country ownership of the data and ensure that weaknesses in health information systems are brought to the fore with a view to systems strengthening. In general, country capacity was strongest in *data collection through surveys* and weakest in the areas of *data quality assessment* and *data analysis*. Several workshops and on-the-job activities were conducted to build capacity in analysis. Several priority areas for capacity building were identified, especially proper processing of survey data and the skills to assess data quality, conduct analysis, and write reports.

1.10 Funding for Evaluation

Investments by the Global Fund and its partners in evaluation have been limited during the past years and are part of the reason why the evaluation questions can only be partially answered.

As a general guide, between 5% and 10% of the overall scale-up funds need to be set aside for monitoring and evaluation. At the country level, only limited use has been made of Global Fund and other funding to improve monitoring and evaluation and to strengthen health information, which is discussed in the next section. Most progress has been made in funding household surveys for HIV/AIDS, primarily through PEPFAR, and for malaria, through multiple donors, and the development of reporting systems for antiretroviral treatment (ART), mainly through PEPFAR and other donors.

RECOMMENDATIONS

Recommendation 1.1 Improving evaluation of scaling up in the future

There is a need for more frequent evaluations that are planned with sufficient time to allow greater integration with country health information systems and the involvement of partners.

There is a need for more frequent and rigorous evaluation of scaling up based on accurate documentation of trends in key indicators and complementary special studies to address evaluation questions. Unfortunately, such evaluation is currently constrained by limited baseline and trend data at the national and subnational levels. Stronger health information systems are needed to permit future evaluations to build on ongoing data-collection efforts used by countries to manage programs and monitor performance. Evaluations of scaling up would then be based on in-depth assessments of levels, trends, and equity from existing data. The accurate documentation of trends requires investments in health information systems, which are discussed in Recommendation 2.1.

These data should be paired with operational and complementary evaluation research to answer the complicated impact evaluation questions in the best possible ways. The Global Fund and partners should aim to better integrate monitoring and evaluation with operations and implementation research.

Therefore, evaluation plans should make realistic provision for the time and effort needed to ensure the participation of key stakeholders as well as for making the necessary administrative and financial arrangements. This should allow sufficient time for the involvement of partners in the design phase and minimize the potential duplication and fragmentation of efforts. It would also allow that, within countries, the coordination and alignment with country health sector review and planning processes could be ensured and that country institutions could be involved and strengthened during the evaluation process.

Recommendation 1.2 Annual series of country evaluations

The Global Fund and its partners should build on the evaluation study and continue to support evaluations of scale up each year in a selected number of countries involving all relevant stakeholders with strong country institutional involvement.

Because evaluation would be much stronger if based on in-depth analysis of existing data complemented by special studies, it is desirable to establish a regular process of evaluation that is supported by major partners involved in scaling up to reach the Millennium Development Goals (MDGs).

Rather than embarking on large-scale multicountry efforts in a single year—which are difficult to manage because they involve large numbers of countries—the Global Fund and its partners should each year support evaluations in five to seven countries, and each year a different set of countries should be evaluated. The evaluations should use a standardized set of well-tested protocols, which are part of the model evaluation platform, adapted to country situations. They should start at least 18 months before the results are expected. In general, the evaluations should follow the Paris Declaration principles, as translated for health in the IHP+ common evaluation framework, and incorporate the lessons learned from this Five-Year evaluation study. The results of the evaluations should be reported to the Board and other relevant forums.

These country evaluations should be a joint effort of major partners involved in supporting HIV, TB, and malaria interventions and related health systems strengthening (HSS). The inclusion of evaluations focused on MDG4 (child mortality) and MDG5 (maternal health), however, should also be considered.

2 MONITORING AND EVALUATION

MAIN FINDINGS

2.1 ADDRESSING DATA GAPS

Despite increased data collection for the three diseases, there are major data gaps and weak health information systems in countries that seriously limit the ability to evaluate progress.

The solidity of the conclusions of an evaluation is critically dependent on the availability and quality of the underlying data. This applies not only to data needed to assess health impact, but also to data required for ongoing program monitoring and to data used by the Global Fund, PEPFAR, and other funding entities for performance-based disbursement.

In recent years there have been important improvements in data availability, especially in relation to malaria and HIV. These have generally been the result of the implementation of household surveys, focusing on HIV and malaria indicators. Some countries have also strengthened paper-based and/or electronic recording and reporting systems in order to improve the availability and quality of data on medical interventions such as ART.

Notwithstanding these positive developments, the evaluation study found significant deficiencies in data availability, quality, and comparability both at baseline and over time. This particularly pertains to data on health impact, where the ability to accurately document trends in new infections, prevalence, and mortality is limited, partly due to slow data collection and analysis and measurement issues. Countries also have significant gaps in the monitoring of access to and quality and coverage of services, where completeness and data quality are major challenges. Finally, data gaps concern the poor documentation of inputs and processes, such as funding and human resources, which is further complicated by the large number of civil society organizations that are involved in scaling up a wide range of difficult-to-measure interventions, such as home-based care and support.

2.2 HIV/AIDS: DATA AVAILABILITY AND QUALITY

Improved data availability has resulted from investments in data sources, mainly through U.S. government support with a much smaller contribution from other donors. Nonetheless, data availability and quality continue to fall short of what is needed for sound evaluation.

Thanks, for the most part, to investments made by the U.S. government with a small contribution from the Global Fund, scaling up has led to a number of improvements in the availability and quality of data on program outputs and health outcomes. These include the following:

- Monitoring of HIV prevalence through the implementation of population-based surveys with HIV testing, better antenatal clinic-based HIV surveillance systems, and limited improvements in surveillance among high-risk populations

- Information on risk behaviors and intervention coverage through more frequent population-based surveys with HIV/AIDS-related questions
- Data on HIV service provision through facility assessments sometimes carried out in combination with other health programs
- Clinic reporting systems for HIV, in some instances through electronic reporting of aggregate data and electronic health records
- Regular compilations of data from multiple sectors supported by UNAIDS, for global reporting in relation to the United Nations General Assembly Special Session (UNGASS) goals
- Availability of financial data on HIV/AIDS with the implementation of UNAIDS-supported AIDS spending assessments (including National AIDS Spending Assessments), although the quality is variable, and out-of-pocket expenses are not taken into account.

There are, however, a number of persistent data weaknesses that not only hamper the ability to evaluate programs but also affect program monitoring and management. These include the following:

- Lack of data on AIDS mortality due to a failure to invest in civil registration systems with cause of death certification in hospitals or verbal autopsy for nonhospital deaths.
- Long lag time between data collection and availability of results (e.g., 2-3 years for HIV surveillance) and lack of time trend data on most at-risk populations.
- Inadequate data on antiretroviral treatment outcomes including adherence and survival.
- Poor quality of data on provision of interventions (ART, preventing mother-to-child transmission of HIV/AIDS [PMTCT], HIV testing and counseling) emanating from health facility reports and poorly maintained national databases with insufficient quality control.
- Fragmentation in information flows as different partners and donors track information on their own activities and services with a lack of standardized, transparent and joint reporting systems.
- Incomplete and inaccurate data on community interventions (care and support, orphans) collected through administrative records involving large numbers of service delivery organizations. Such data are often used for performance-based disbursement but cannot be translated into population coverage estimates.
- Data quality-control mechanisms are not well established or institutionalized.

2.3 TB: Data Availability and Quality

TB programs have a well-functioning clinic-based diagnosis and treatment reporting system in most countries, but major gaps exist for other types of data.

The 18 evaluation study countries included six of the 22 countries designated by WHO as "high-burden countries" (HBCs) (Cambodia, DR Congo, Ethiopia, Mozambique, Tanzania, and Vietnam). Four of the 18 countries have smear-positive TB notification rates greater than 100 per 100,000 population: Cambodia, DR Congo, Lesotho, and Zambia. However, the countries participating in this study should not be regarded as being representative of a worldwide TB

epidemic because many of them have well-established TB programs, which impose limits on opportunities for further advances.

A detailed analysis of the availability and quality of TB-related data in the evaluation study countries highlighted the strength of the standardized facility and district-based recording and reporting systems in most countries. The analysis specifically looked at quarterly, subnational reporting of case notification and treatment success rates. Subnational data for the last 10 years were obtained and analyzed for 16 evaluation study countries (Ethiopia and Kyrgyzstan did not provide reports) to assess completeness and accuracy of reporting.

- Two of the 16 countries (DR Congo and, to a lesser extent, Burundi) have major gaps in their data, which is indicative of poor reporting systems.
- Completeness of reporting was assessed using subnational case notification reports for districts (10 countries) or provinces (6 countries). Of the 10 countries providing data at the district level, seven had complete or nearly complete information from all reporting units. Countries requiring significant adjustments for missing information included DR Congo, Rwanda (in 2 years only), and Zambia.
- Overall quality of reporting data was evaluated in 16 countries based on consistency of time trends, male-female ratios, and ratio of smear positive to all cases. Three countries had excellent data quality based on these criteria (Ghana, Malawi, and Rwanda). In six countries the data quality assessment indicated that there is considerable scope for improvement.
- The comparison of treatment success rates between those reported to WHO and those obtained from subnational record reviews showed good consistency in recent years for all countries, with the exception of Moldova, Mozambique, and Zambia.

There are, however, also important data weaknesses that hamper the ability to evaluate the impact of scaling up. These include a lack of data on the following:

- TB mortality in countries without civil registration systems
- Disease prevalence, which is only obtained through special surveys that are costly due to the large sample sizes needed to measure low TB prevalence and are not integrated with other health data collection efforts
- Equity
- Diagnostic intensity from laboratories to help interpret trends in case notification
- Supply of TB services.

2.4 Malaria: Data Availability and Quality

Major progress has been made in monitoring intervention coverage and malaria morbidity through household surveys, but major gaps in malaria mortality and morbidity data impede the ability to evaluate impact of malaria programming.

Among the 18 evaluation study countries, 11 are classified as malaria endemic, all in Sub-Saharan Africa, and five as epidemic or low transmission. Lesotho and Moldova have no on-going malaria

transmission. Data availability and quality to monitor the progress and evaluation of malaria programs have greatly improved during the past five years through the use of a small set of standard indicators, the introduction of malaria modules in Demographic and Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS), and the implementation of malaria indicator surveys. All but one country had at least two national surveys in the last five years, allowing for the assessment of trends and equity in the coverage of interventions. There has also been an increase in the use of biomarkers to measure parasitemia and anemia.

The evaluation study, however, showed that there are major data gaps that impede the evaluation of the impact of the malaria interventions, including the following:

- Data on malaria mortality are lacking in all evaluation study countries as there are no civil registration systems that include cause-of-death data. Child mortality trends are often used as a proxy, but very recent trends are available from only a few countries, and the contribution of malaria control can only be derived by making assumptions about its relative importance.
- As of now, there are only few countries with more than one survey that included parasite prevalence, so no trends regarding population morbidity can be assessed in most countries.
- The completeness and accuracy of trend data on malaria cases and mortality in health facilities is highly variable, and at present such data are only useful in some settings where (1) dedicated efforts have been made to ensure good and consistent data quality over time and (2) the extent to which symptomatic patients seek treatment is known. Because of inadequate facility data, as noted in several country reports, the overall report is based on mostly household survey data.[1]
- Few countries have data on the quality of services. As programs are rolling out, this is an information gap that needs to be addressed to improve implementation.

2.5 Strengthening Health Information Systems

Development partners are only partly addressing the causes of information gaps and often in a piecemeal way.

Support by donor and funding agencies for monitoring and evaluation, while often substantial, has been program-targeted rather than systemic, with a focus on generating consensus around core indicators and stepped-up reporting requirements. Not enough has been done to build and maintain country capacities in data generation, compilation, management, analysis, dissemination, sharing, and use. Country health information systems suffer from poor planning, weak institutions and capacities, and insufficient donor coordination, leading to uncoordinated surveys, incompatible and poorly supported information technology solutions, different clinic-based reporting styles (especially for HIV/AIDS), and frequent demands for donor reports. The predominance of HIV/AIDS in, for instance, the creation of indicators and reporting systems is disproportional to the disease burden in most countries. Notwithstanding efforts focused on the "Three Ones," the approach to health information systems development has been characterized by fragmentation and a reliance on ad hoc solutions for what are, in practice, systemic weaknesses. In general, the Global Fund has contributed little to strengthening country health information systems. In particular, in

[1] For analysis of clinic data, see World Health Organization. 2008. World malaria report 2008. Geneva: WHO Press.

the context of performance-based funding, as will be seen in the next section, there are missed opportunities to improve monitoring and evaluation systems.

2.6 PERFORMANCE-BASED FUNDING

Timely, complete, and accurate data and statistics are the foundation of performance- or results-based disbursement. The evaluation study shows that this basis is, at best, weak.

Performance-based funding (PBF) is increasingly popular in the health sector as a way to focus programs on outcomes or results and accelerate implementation. For instance, GAVI uses one indicator (DTP3 coverage) to disburse Immunization Services Support funds to countries and implements a data quality audit system to verify reported results. Yet, it has been shown recently that this relatively simple PBF system based on one coverage indicator, which can be verified easily through multiple sources, can potentially lead to major overpayments based on erroneous data,[2] if not supported by a strong health information system and a regular independent assessment of accuracy of reporting.

PBF is also one of the cornerstone approaches of the Global Fund. Funding is released based on demonstrated results against agreed country-owned targets and indicators that are decided upon in the initial grant agreement.[3] There are two fundamental challenges to the PBF from the data perspective.

First, the evaluation study has shown the multiple issues concerning data availability and quality due to weaknesses of country health information systems. PBF requires the ability to generate reliable and trustworthy data within relatively short time periods. In the absence of solid data on program outcomes, intervention coverage, and health status, the tendency has been to use performance measures of program inputs and processes as the basis for target-setting and benchmarking. Such measures often rely on clinic- and program-based reporting systems from a multitude of partners and service delivery points, which have multiple weaknesses, particularly in relation to accuracy and completeness of reporting and bias. Financial incentives may further aggravate such problems. The complexity of monitoring the use of funds is complicated by the large numbers of interventions, projects, recipients, and target populations.

Second, as shown by the review of selected country grants, there is frequent shifting of indicators and targets during the different stages of the Global Fund grant. Impact and outcome indicators are usually included, but there is limited investment in the measurement, and baselines and targets often are no more than guesses or estimates based on outdated data. In several instances the indicators are simply the wrong choice because the data need modeling (e.g., TB incidence data) or have considerable measurement issues (e.g., condom use at last sex with non-regular partner), which render them unsuitable for PBF. Therefore, PBF relies almost entirely on a range of process and output indicators that require solid quality control systems. The measures taken by the Global Fund to control quality, such as indicator guidelines, verification by the local fund agent in country, and ad hoc country visits, have not been adequate, as can be deduced from the actual country system and the data used in the grant performance reports. Regular independent assessment of data quality

[2] Lim, S.S., D.B. Stein, J. Charrow, and C.J.L. Murray. 2008. Tracking progress toward universal immunization and the impact of global initiatives: A systematic analysis of three dose DTP immunization coverage. Lancet, 372: 2031-46.
[3] Low-Beer, D. et al. 2007. Making performance-based funding work for health. PLoS Medicine 4(8): e219.

through further analysis, facility assessment, and population-based data collection are essential but may still not guarantee a satisfactory system of rating performance.

RECOMMENDATIONS

Recommendation 2.1 Strengthening country health information systems

A more systematic investment and coordinated approach of all partners is urgently needed to strengthen country health information systems, which are the necessary basis for monitoring progress, performance-based funding, and evaluation.

The increased demand for accountability and results requires a more systematic and coordinated approach involving all major partners than currently is the case. Global alliances and partnerships should earmark significant resources to strengthening country health information systems and enhancing institutional and individual capacities to generate reliable and timely data at the national and subnational levels. Key actors in bringing about these changes at the country level are the Ministry of Health, the National Statistics Office, and academic and research organizations and institutions.

The H8,[4] Health Metrics Network (HMN), and other efforts have provided a basis for a health information strategy that should lead to greater accountability and results through strengthening country health information systems, including the enhanced use of existing data through better access and analysis, systematic investment in filling data gaps, and improved country analytical capacity.[5] The HMN Framework provides guidance on the contents and roadmap for such a plan which should be fully integrated with the National Health Sector Strategic Plan.[6] International support and resources are urgently needed to permit performance monitoring and future evaluations, striking a balance between standardization and country specificity. Priority data sources for support include the following:

- Surveys: Support harmonized data collection and analysis through household and target population surveys, which should be part of a national health information plan
- Health systems data: Enhance the monitoring of health system strengthening, with an emphasis on improving data on financing, human resources, and health service delivery, including regular district assessments as conducted in the evaluation study
- Surveillance and clinic data: Strengthen through innovation, with much attention to data quality and particular emphasis on the appropriate use of information technology
- Birth and death registration, including attribution of cause of death: While this is a long-term goal, investments need to be made now so that such data are available in the future, starting with improving hospital data, registration in urban populations, and demographic surveillance studies.

[4] Includes the Bill and Melinda Gates Foundation; the GAVI Alliance; the Global Fund; UNAIDS; the United Nations Population Fund; the United Nations Children's Fund; WHO; the and World Bank

[5] H8. 2008. Health information strategy paper. Geneva.

[6] Health Metrics Network. 2007. Framework and standards for country health information systems. Geneva: World Health Organization.

Recommendation 2.1a Strengthening proposals to the Global Fund

The Global Fund and its partners should find ways in which it can strategically improve its support for strengthening country health information systems in a coordinated manner.

The Global Fund has always recognized the need to support monitoring and evaluation and has consistently indicated that 5% to 10% of its funding could be used for monitoring and evaluation. Such funding generally did not happen, and, if it did it, it was not used in a way that adequately strengthened the country system. The evaluation study discovered how difficult it is to redirect unspent Global Fund country funds from previous grants toward monitoring and evaluation work, a process that includes either long delays or complete failure. Much more could be done , in countries lagging behind in grant implementation, to facilitate the use of existing funds for better monitoring and evaluation.

The Global Fund should also develop a much more strategic approach to increase its investments in strengthening country health information systems as part of HSS. Currently, the approach is fragmented, and there is no single mechanism in place that prevents a country from getting separate grants for and parallel implementation of a national TB prevalence survey, a malaria indicator survey, and an HIV survey, or from investing large amounts of money in a single data source without consideration for the overall situation. This requires the development of well-structured guidance to countries, which should be developed as a matter of priority with relevant partners such as HMN, WHO, CDC and the U.S. Agency for International Development, much along the lines in which disease-specific programs provide country guidance to proposal development for interventions. The Global Fund and partners should focus on one health information system with well-defined goals and data collection plans that includes disease-specific monitoring and evaluation efforts. This guidance should also provide minimum standards for approval to assist and facilitate the technical review mechanisms of the Global Fund.

Recommendation 2.1b Reorient HIV/AIDS monitoring and evaluation toward one system

The Global Fund and its partners should reorient investments in HIV/AIDS monitoring and evaluation toward strengthening country health information systems, thereby minimizing fragmentation and duplication and maximizing data quality and use for decision making.

HIV/AIDS-related investments in the "Third One" have fallen short in terms of establishing one monitoring and evaluation system for the disease itself and even more so in contributing to strengthened health information systems. The evaluation study noted marked progress in the availability and quality of HIV data for monitoring and evaluation, with increasing numbers and frequency of household surveys and facility assessments, and better clinical reporting in some countries. However, these developments have frequently led to imbalances.

Although a few countries have relatively simple information systems that permit sound program monitoring and performance evaluation, in most settings there are too many parallel routine reporting systems for HIV/AIDS that collect data for too many indicators. In most countries, huge efficiency gains could be realized through reducing duplication in routine reporting systems. Thus far, investments in UNGASS reporting have neither improved institutional capacity nor have they

involved systematic assessments of data quality. The Global Fund and its partners should limit the investments in HIV information systems for which the implications for the system as a whole are not clear.

Recommendation 2.1c Strengthen, expand and align TB monitoring efforts

The Global Fund and its partners should make a systematic effort to assist countries in strengthening their information systems for better program management and monitoring and evaluation to address major data gaps, including TB mortality and prevalence, service availability and quality, and diagnostic effort.

The evidence base on which to assess the epidemiologic impact of scale-up efforts against TB is limited. There remains a critical need to strengthen the empirical basis for measuring changes in TB incidence, prevalence, and mortality and for linking these changes to TB control, including funding. The WHO Task Force on TB Impact Measurement has recommended a range of necessary new work, including strengthening of surveillance systems, better analysis of routine notification and vital registration data, as well as programmatic data (such as diagnostic intensity and drug availability) and disease prevalence surveys in at least 21 countries. As the Global Fund moves forward with developing and refining impact measurement platforms in countries, it will be essential to provide sufficient financial support to ensure that these platforms are developed with rigorous quality assurance measures, including those at the subnational levels. These regular assessments can be done by local institutions, with or without international participation, that are independent of the TB program. In addition, it will be important to align investments in population-based TB surveys and mortality with general efforts to improve health information systems, including health examination surveys and vital events monitoring with causes of death.

Recommendation 2.1d Systematic approach toward malaria monitoring and evaluation

The Global Fund and its partners should develop a more systematic approach to data collection and analysis for the monitoring and evaluation of malaria programs.

The establishment of ambitious malaria goals with a set of well-defined interventions and the ability to measure change in relatively short periods of time is leading to a rapid increase in malaria-specific data collection in countries. Duplication of M&E efforts is increasingly common, as evidenced by the evaluation study in several countries. Therefore, a systematic approach should be promoted and include four components: (1) regular surveys with malaria modules and biomarkers to monitor coverage and health impact, (2) accurate monitoring of financial inputs and expenditures, (3) improved program data on inputs and processes, and (4) systematic information on service utilization, availability, and quality. The Global Fund should look for ways to work with partners to ensure that such monitoring and evaluation is done in accordance with international standards, while global and country data needs are also met in a way that country health information systems are strengthened. In particular, the health facility data on hospital admissions and clinic attendance are in urgent need of strengthening, which should be done in a way that also benefits the general facility recording and reporting systems.

Recommendation 2.2 Performance-based funding

The Global Fund and its partners should consider immediate measures to improve data availability and quality to support its performance-based disbursement system, including more emphasis on results, better alignment with country information systems, and stronger validation mechanisms.

From a data perspective, the Global Fund performance-based funding system, as it currently functions, is too crude with too few systematic investments in measures to improve availability and quality of data and statistics. First, the system is largely focused on process and output indicators, with data provided by a large number of program implementers, such as civil society organizations and projects. Outcome or impact indicators are included, but there is no concomitant investment to monitor trends. Second, the clinic, project, and program-based reporting systems are often poorly integrated into a national system. The number of antiretroviral therapy clinics supported by or people trained with Global Fund resources are relevant to Global Fund PBF, but for countries it is much more important to have regular information for the country as a whole. Issues of double counting and parallel reporting and quality control are common. This is not unique to the Global Fund and occurs in such cases as PEPFAR and GAVI. Third, the evaluation study has exposed multiple problems regarding the assessment of performance against a specific target. The challenge of generating accurate and complete data from large numbers of recipients of funding within a single country for a large number of interventions is enormous. Financial incentives may further aggravate the problems, and current efforts to deal with this are not adequate. The development of an internal quality-assessment component as part of a facility-based reporting system is important but not enough. Regular independent assessment of the quality through further analysis, facility assessment, and population-based data collection are essential, including systematic support to the development of institutional capacity within countries.

Such investments need to be supported by a high level of transparency and quality, which is currently not the case. Decisions are currently made based on qualitative judgments derived from a large number of indicators of often poor or uncertain quality.

Recommendation 2.3 Country capacity building in health information

The Global Fund and its partners should redirect and increase their M&E investments to strengthen country capacity, aiming at greater country institutional involvement and harmonized approaches, tools, and methods.

The Global Fund and its partners should help countries develop systems that strengthen data availability, quality, and use to monitor progress, assess performance, and evaluate in a way that goes well beyond current approaches that rely heavily on (semi-)external inputs, such as the local fund agent.

First, a major constraint faced by many countries relates to the individual and institutional capacities required across a range of issues associated with data collection, management, analysis, and sharing. Capacity building requires support to institutions complemented by investment in training of individuals. In the health sector, there has been relatively little attention to institutional

capacity building in support of such functions.[7] Establishing stronger partnerships for capacity building between research institutes and Ministries of Health could go some way toward filling the capacity deficit. The institutional component is critical in terms of long-term sustainability. Different organizational forms for such institutions can be envisioned, from an integral part of a Ministry of Health to an entirely separate private, nonprofit organization. Governance and financing structures may also differ. However, evidence from a number of countries suggests that capacity-strengthening efforts should preferably be directed toward institutions that are independent of program implementation so as to maximize objectivity and minimize risks associated with vested interests. In some countries, national statistics offices can provide this degree of objectivity and transparency. Elsewhere, academic, research, and public health institutions may be well placed to provide this function.

Landscaping the institutional context would serve as the foundation for decision making regarding capacity-strengthening activities. The Global Fund and its partners should work with countries to develop institutional capacity-development plans for the health sector and subsequently invest in those plans. The specific areas in which capacity building is required are as follows:

- Data compilation and storage: Bringing together for analytic purposes data generated by the national statistics office, Ministries of Health, researchers, donors, development partners, funds, nongovernmental organizations (NGOs), and others
- Data processing: Including data editing and tabulation
- Data analysis and synthesis: Bringing together data from multiple sources for the purpose of health sector reviews and planning; policy analysis; country, regional, and global reporting; and evaluation
- Data quality assessment, validation, and adjustment: Independent assessment of the quality of data generated from such sources as clinical and administrative sources and ad hoc surveys
- Estimation and statistical modeling: Application of global standards, tools, and methods to correct for bias and missing values, generate estimates, and forecast for planning purposes, focusing on key statistics (e.g., child mortality, immunization coverage, HIV prevalence).

The Global Fund and its partners should also work together to provide a broad-based platform for evaluation and health systems surveillance. The goal is to improve the availability, quality, and use of the data needed to inform country health sector reviews and planning processes, and to monitor health-system performance. This should also inform all global monitoring processes. The platform should build upon existing national and international efforts to bring together data on health systems and specific programs. It ultimately should include a database; a repository of health information documents; dashboards to monitor progress; standards, tools, and methods for evaluation; and information on the country institutional capacity. The evaluation study tools, methods, and experiences are a key input for a model evaluation platform. The recently developed IHP+ common evaluation framework and related results frameworks (e.g., the framework developed for maternal and child health [MCH] in the context of the Catalytic Initiative) provide a

[7] A recent review of statistical capacity-building activities by the agencies of the United Nations system found that extensive support to statistical capacity building was directed toward data collection and processing for household surveys but noted that sector statistics (including health) appear to receive little support for capacity building.

good foundation for a well-integrated results-oriented approach. The use of the HMN framework aims to ensure that the full range of health information system issues is addressed.

The Global Fund should also consider supporting national cross-cutting M&E mechanisms. This provides a platform for governmental bodies, local academics, and civil society organizations to meet regularly with bilateral, United Nations, and large national NGOs to develop and implement national health information system plans.

3 HIV/AIDS

MAIN FINDINGS

3.1 GLOBAL CONTEXT

HIV continues to be a leading cause of ill health and mortality among adults in many countries, even though epidemic growth has halted for about a decade. Increases in international funding have been large, led by PEPFAR and the Global Fund.

According to UNAIDS and WHO, 2.7 million people were newly infected with HIV during 2007 and 2 million died from HIV-related causes, bringing the total number of people living with HIV to an estimated 33 million (uncertainty range 30.3-36.1 million).[8] Prevalence rates have been adjusted downward over the past few years as better data have become available. Current estimates indicate that adult HIV prevalence has leveled off at 0.8% since about 2000.

Global resource flows for HIV/AIDS have increased from US$1.4 billion in 2000 to an estimated US$10 billion in 2007, with two-thirds committed through bilateral and multilateral funding streams. During the periods 2003-2004 and 2005-2006, US$11 billion and US$17 billion, respectively, were disbursed. In other words, during the period 2003-2006, disbursements amounted to almost US$1,000 per person living with HIV/AIDS (PLWHA). PEPFAR and the Global Fund, and to a lesser extent the World Bank, accounted for a large part of the increase.

Increased funding for HIV programs in low- and middle-income countries is reflected in some signs of reductions in AIDS mortality and new infections, although progress appears uneven. The most dramatic progress has been reported for coverage of ART, which reached 31% by the end of 2007.[9]

3.2 FUNDING IN THE 18 EVALUATION STUDY COUNTRIES

HIV funding increased rapidly in the 18 evaluation study countries, with 18% coming from the Global Fund. There were differences in funding levels between countries and the relative predominance of HIV funding in national health spending.

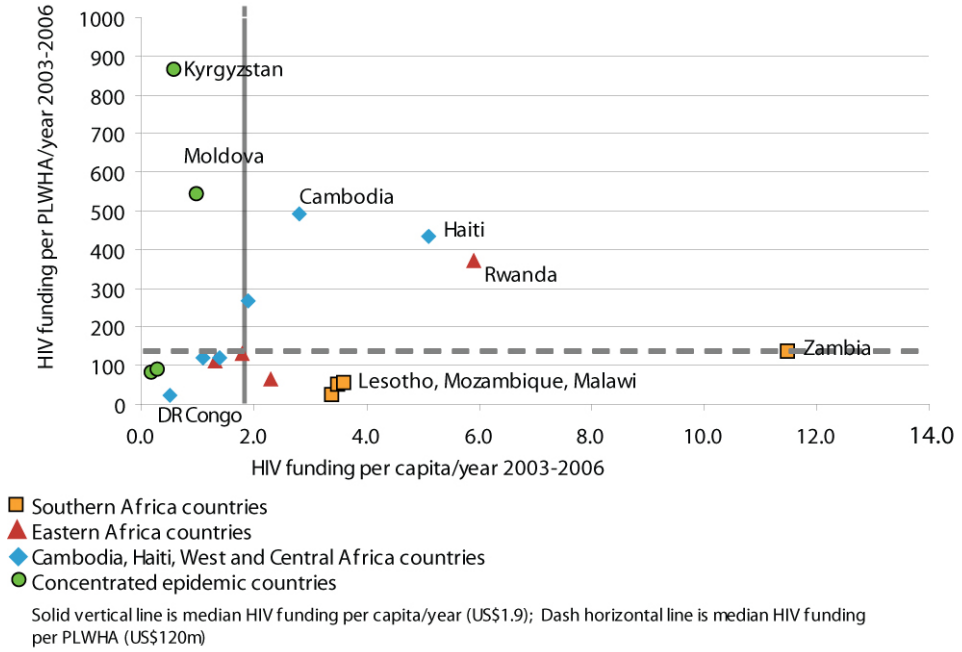
The 18 evaluation study countries are highly diverse in terms of the level and nature of the HIV epidemic. In the countries with generalized epidemics, there are major differences in adult prevalence, from 20% in Lesotho, 10% or higher in three countries in southern Africa, 6% in Tanzania, and below 3% in the remaining nine countries. Four countries have concentrated epidemics, with general adult prevalence consistently below 1%.

For the 18 countries, cumulative funding for HIV/AIDS from all sources during 2003-2006 amounted to about US$2.9 billion, or about 15% of the global total. Average funding over the period increased threefold, from US$350 million in 2003 to US$1 billion in 2006. Global Fund

[8] UNAIDS. 2008. Report on the global AIDS epidemic 2008. Geneva: UNAIDS.
[9] WHO, UNAIDS, and UNICEF. 2008. Towards universal access: Scaling up priority HIV/AIDS interventions in the health sector. Geneva: WHO Press.

disbursements to the 18 countries during 2003-2006 amounted to US$556 million (18% of total). The Global Fund was the largest donor in five of the 18 countries. PEPFAR's share of total funding was 28%, and it was a larger donor than the Global Fund in its six focus countries and seven other countries.

Figure 2
External HIV Funding (Constant 2006 US$) per Person Living with HIV/AIDS (PLWHA) and Per Capita, 2003-06 (Annual Average), by Country



Per capita funding increased in all countries but at markedly different paces and levels. Some countries received considerably more per capita funding than others with similar epidemic and regional profiles. Figure 2 shows the external HIV funding levels per capita and per person living with HIV/AIDS. Zambia received by far the highest amount per capita (US$11 per capita per year for the period 2003-2006, in constant US$2006), but because of the size of its epidemic, did not receive more than other countries in terms of funding per PLWHA. The other countries in southern Africa however received considerably less external funding, which puts them at the lower end in terms of funding per PLWHA. Some countries such as the Democratic Republic of Congo received little funding by all accounts, while Rwanda, Haiti and Cambodia received the highest amounts per capita and per PLWHA. Some countries with concentrated epidemics (Kyrgyzstan, and Moldova) received large amounts compared to the numbers of people living with HIV (over US$500 per PLWHA), with a significant share going to prevention among most at risk populations.

In the 18 evaluation study countries, prevention, treatment, and care each accounted for roughly 30% to 40% of total spending on HIV/AIDS, but data quality is considered to be poor. Virtually no country has accurate data on spending by type of preventive intervention, such as interventions directed at most at-risk populations. In the four countries with NHA in 2003 and 2006 HIV-specific expenditures increased substantially and more rapidly than for other diseases. More details can be found in section 6.2 on health systems.

3.3 Access to and Readiness of Services

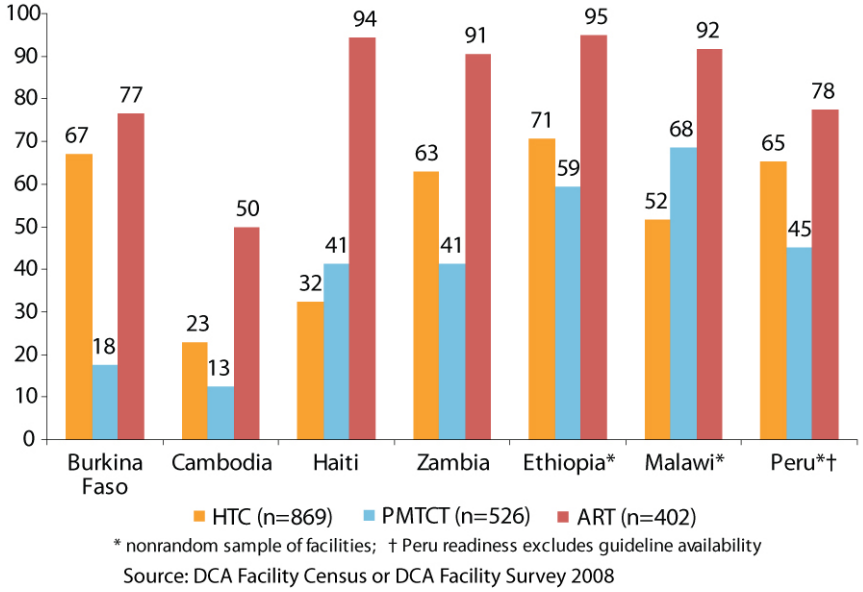
There has been a major expansion in access to services in all countries. However, district facility assessments in seven countries show that gaps in basic requirements such as trained personnel, guidelines, medicines, and equipment need to be addressed in order to ensure the provision of quality services.

The number of sites delivering HIV interventions has increased dramatically in all evaluation study countries this decade and especially since 2004. In most countries, the number of facilities that provide HIV testing and counseling or ART more than doubled between 2004 and 2007. PMTCT is now offered in at least one-quarter of all health facilities, even though the number of sites per 1,000 pregnant women remains below 1 in all countries, except Zambia (2.2 per 1,000). In virtually all countries, the location of sites vis-à-vis the location of people in need of treatment shows a deficit in rural areas, although this is beginning to change as programs scale up. This imbalance also reflects the fact that the epidemic is more urban than rural in most countries.

In the seven countries with a District Comprehensive Assessment (DCA) Facility Assessment, 1,939 public and private health facilities were visited. Overall, 20% to 60% of facilities offered HIV testing and counseling services, 5% to 45% PMTCT, and 5% to 40% ART. These figures are higher than would be observed in a random sample of facilities because Ethiopia, Malawi, and Peru purposefully selected specific facilities to survey, most of them in urban areas.

In the four countries that conducted a full DCA Facility Census in selected districts, the readiness of facilities to provide quality HIV services was fairly good. For instance, among the facilities that offered PMTCT, 84% (Burkina Faso) to 100% (Cambodia) had nevirapine or AZT in stock. Among the facilities offering ART, almost all had adequate drug supplies for first line combination therapy. However, taking together the presence of trained staff, guidelines, diagnostic equipment (HIV test), and medicines for the respective services, there is still considerable area for improvement (see Figure 3).

Figure 3
Percentage of Surveyed Health Facilities that Offer Specific HIV Services that Meet Basic Requirements for HIV Testing and Counseling (HTC), PMTCT, and ART, Countries with DCA Facility Assessments 2008



Basic requirements taken into account: HTC-trained staff, guidelines, and any HIV test; PMTCT-trained staff, guidelines, any HIV test, and NVP or AZT; ART-trained staff, guidelines, and at least one of the main WHO-recommended first-line therapy drug regimen in stock.
Source: DCA Facility Census and DCA Facility Survey 2008

The increase in funding has resulted in a wide array of home-based care and support activities, interventions aimed at prevention or care, and programs to support orphans and vulnerable children, often provided through civil-society organizations. Record reviews and community surveys in selected countries indicated a large number of activities, although it was impossible to translate this into measures of access and quality.

3.4 Coverage of Interventions

There have been dramatic increases in estimated coverage of ART and, to a lesser extent, in HIV testing and counseling and PMTCT. In several instances, these increases tend to be larger in countries with higher levels of external funding.

According to country reports on availability of HIV testing and counseling, in most countries utilization among adults has at least doubled since 2004, as has the provision of PMTCT to pregnant women. Some countries, such as Lesotho and Tanzania, have used campaign-style approaches to mobilize large numbers of people to be counseled and tested with varying success. Recent national surveys and the 2008 DCA surveys also indicate substantial increases in the uptake of HIV testing and counseling.

ART coverage has also improved significantly in all evaluation study countries. Countries with the most rapid increases in coverage between 2004 and 2007 are Cambodia, Moldova, Rwanda, Tanzania, and Zambia, including most countries with relatively larger levels of external funding. Cambodia had the highest estimated coverage in 2007 (67%), followed by Moldova (58%) and Rwanda, Benin, Haiti, and Zambia (41% to 48%).

Rural-urban differences, however, remain large in most countries, with intervention coverage in urban areas at least twice as high as rural areas. Rural-urban differences may gradually narrow but there are still major discrepancies between urban and rural availability of counseling and testing sites and ART coverage.

Differences by level of education, for example, in HIV testing and counseling, tend to be even larger than rural-urban differences, indicating the clear need to target people with lower levels of education. There is some evidence (from Tanzania and Zambia) that coverage differences by educational level can be reduced over time as services expand.

Information about coverage of community-based care for PLWHA is limited. Findings from the DCA Household Surveys in four countries with generalized epidemics show that only 10% or fewer households received any form of assistance during the period preceding a recent adult death. In general, it is difficult to gauge either the coverage or the outputs of the large numbers of civil-society organizations and multisectoral activities in HIV prevention, care, and treatment. Better measures to monitor the impact of such programs are needed. These should be part of special operational research studies, given the wide variety of interventions and the difficulties in measuring exposure to and intensity of interventions.

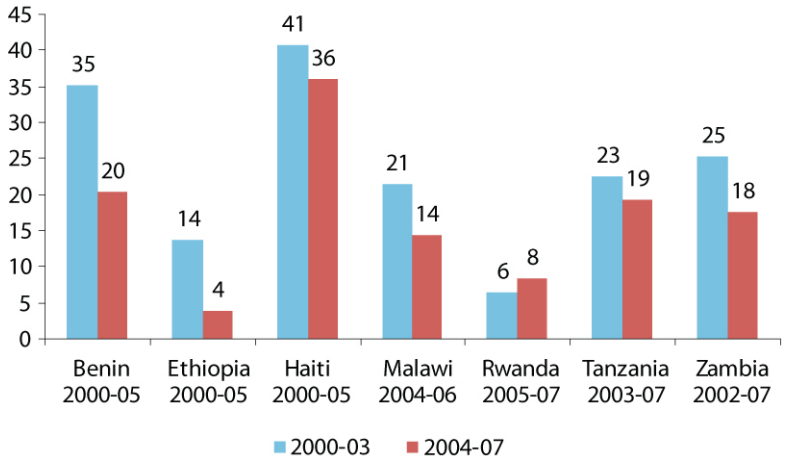
In terms of program coverage aimed at most at-risk populations, the lack of comparable estimates for these populations, often from small-scale studies, leads to ambiguous trend information for the bigger picture. Difficulties in identifying and enumerating these populations result in questionable denominators and, therefore, large uncertainties in the precision of estimates. However, a qualitative judgment on available data from some countries leads to the conclusion that condom distribution has improved among sex workers and men who have sex with men in Cambodia and Peru, respectively, and significant progress in clean needle exchange programs has been made in Kyrgyzstan and Moldova.

3.5 Risk Behaviors

National surveys show reductions in HIV high-risk behaviors among men in the general population in most countries since 2000, with two countries providing evidence of changes after scaling up (2003). There is little evidence of large-scale changes in behaviors among most at-risk populations (primarily because of a lack of comparable representative data to allow for an examination of trends).

Population-level changes in risk behaviors could result from a wide array of interventions. Household surveys in countries with two surveys within the last decade show consistent evidence of a modest decrease in higher risk sexual behavior, some of which took place before scaling up and some, possibly, after the scale up (notably in Tanzania and Zambia) (see Figure 4). The only exception is Rwanda, which already had much low levels of reported higher risk behavior than the other countries.

Figure 4
Percentage of Men who Had a Nonregular Partner in the Last Year and Did Not Use a Condom at the Last Sex with Such a Partner, Selected Countries



Comparable data on exposure to interventions and risk behaviors in most at-risk populations, such as sex workers, men who have sex with men, and injecting drug users, are too limited to evaluate progress in most countries, with the exception of special studies in Vietnam conducted as part of donor-driven projects.

3.6 HIV Transmission and Mortality while on ART

Some countries show evidence of a possible decline in HIV incidence rates among young people, while survival data among people on ART are generally impressive.

Only a few countries have recent data on HIV prevalence, either from surveillance or household surveys that allows an assessment of before and after 2003 trends. An assessment of the trends among young people, supported by mathematical modeling with HIV prevalence and sexual behavior trend data, shows that three countries offer evidence suggestive of a decline since 2003. Malawi antenatal clinic surveillance data show a decline since 2003 that continued in 2007. In Tanzania, population-based surveys in 2003 and 2007, supported by antenatal clinic surveillance data, show evidence of a decline in HIV incidence since 2003. In Zambia, after taking the large number of people on ART into account, there may have been a modest decline in HIV incidence during 2003-2007. In addition, three countries, Benin, Ethiopia, and Rwanda, probably experienced declines in incidence, but these mostly started before the scale-up period.

For countries reporting treatment outcomes since 2004, results suggest good retention rates in the first year. Survival rates are only available from special follow-up studies, which generally show relatively high early mortality but overall good survival rates 12 months after treatment initiation. Although most countries reported the percentage lost to follow-up and deaths to be less than 8% in the first 12 months, it is possible that this is too optimistic a scenario that does not adequately reflect the extent of missing data or early mortality due to delayed initiation of treatment.

The most dramatic effect of scaling up has been the large increase in years of life due to ART. The evidence of the effect of scaling up prevention efforts is still fairly limited but can be examined better in the future when more data become available and interventions expand their reach. There are no sound representative data on trends in new HIV infections in most at-risk populations. Some

projects report successful interventions, but these are mainly in small-scale research studies. The number of infections averted due to mother-to-child transmission is still small because coverage of the intervention has been low until recently.

3.7 From Inputs to Results

Increased funding has led to better access to care, including rapid increases in intervention uptake and notable survival benefits through ART. Evidence of changes in HIV transmission is limited, mainly due to a lack of data, the complexity of the epidemiology, and the early timing of the evaluation study.

There are strong associations between the volume of external HIV resources becoming available during 2003-2006 and the number of service points established and the number of clients who received services. For all three interventions examined, the number of service sites and the number of people receiving the intervention increased in parallel with increases in HIV funding, although rural and less-educated populations tended to benefit less. The DCA Facility and Household Survey data provided evidence that districts with higher service availability had higher HIV testing and coverage rates among pregnant women and adults in general than districts with lower service availability. In general, the readiness of facilities—mostly public sector—to provide HIV services for ART , and to a lesser extent for HIV testing and counseling and PMTCT is fairly good in terms of trained staff, guidelines availability, diagnostic tests, and availability of medicines.

The extent to which interventions in the health and other sectors have resulted in behavioral and biological changes is difficult to gauge in most countries, despite improvements in data collection. In several countries, changes in general population risk behaviors appear to have taken place, and in some of those countries these appeared to occur after 2003. There is no widespread evidence of changes in behavior among most at-risk populations, in part because measures regarding these populations are methodologically challenging and uncertain.

Modeling showed that the proportion of infections averted due to PMTCT remained low in the 18 evaluation study countries but increased from less 1% in 2003 to 4.2% in 2007. The number of adult life years added due to ART increased rapidly from just 6,607 in 2003 to 576,438 in 2007 in the 18 countries.

The number of infections averted through scaling up from 2003-2004 is difficult to estimate, as, in the absence of data for 2007-2008, the numbers heavily depend on projecting the past trends, which is not useful for evaluation purposes. In terms of impact, changes in HIV transmission are difficult to measure, and there are multiple epidemiological factors that play a role. Few countries, however, showed evidence of decreased transmission.

RECOMMENDATIONS

Recommendation 3.1 Strengthening prevention programs

The Global Fund and its partners should reinforce prevention strategies tailored to the type of epidemic and local context and focus on the most cost-effective interventions. The Global Fund needs to ensure that the most effective set of preventive strategies are funded given the

type of epidemic and local context, accompanied by appropriate investment in measuring results.

In some countries with data there is evidence of positive changes in risk behaviors and reduced HIV transmission since scaling-up. It is impossible to conclude at this point whether much more could have been achieved given the large investments in HIV prevention relative to other diseases. There is an inevitable time lag between a prevention intervention and the anticipated behavioral change, and between behavior change and the ultimate impact on HIV transmission. It is also possible that the particular mix of prevention interventions or their implementation have been sub-optimal and not sufficiently well tailored to the type of epidemic and the local context. These questions can only be answered through in-depth research studies.

Prevention programs supported by the Global Fund (and its partners) have been characterized by a rather diffuse set of interventions with only limited strategic focus on the type and course of the epidemic and the local context. For instance, countries with concentrated epidemics may receive the bulk of their funding for general interventions for AIDS and sex education for young people. The results have been difficult to document, even of exposure to interventions. In the few areas where it is possible to document the outcomes of interventions (e.g., the proportion of the adult population who know their HIV status or the prevalence of unprotected sexual intercourse with a higher risk partner), there is evidence of only gradual progress.

PMTCT in many countries has only recently started to scale up, but the integration with general maternity care services still needs considerable expansion of scope. Monitoring systems remain fragmented and not integrated with other reporting systems.

The Global Fund and its partners' support to prevention efforts needs to become more result-oriented and find new ways to ensure that investments target the most cost-effective prevention strategies and that they are supported by solid monitoring and evaluation activities, including operations research. Currently, large amounts of money are distributed to large numbers of sub-recipients with unclear impact.

Recommendation 3.2 Predictable funding and treatment

The Global Fund and its partners should provide predictable funding and support to reliable antiretroviral drug supply and distribution systems in order to build upon and expand treatment-related investments in rural and most at-risk populations.

Virtually all countries launched treatment programs that have been highly successful, but there remains considerable area for improvement, in terms of both access to and quality of services. Ensuring access to all in need will require increasing resources, even though it appears that currently, in most countries, ART programs consume a relatively small share of the overall HIV budget, either because ART results in savings through lower hospital admissions or due to home-based care. In terms of quality, although availability of trained staff and treatment guidelines is fairly good, further efforts are needed to ensure that treatment sites have the necessary basic medicines and supplies.

Expanding ART coverage to the two-thirds of people who live with advanced HIV infection will require a systematic and sustainable approach. The majority of people who are not on ART live in rural areas or are part of marginalized populations. The expansion of ART coverage to rural

populations will require much greater attention to the health systems strengthening (HSS) component of HIV programs. Similarly, enhancing treatment access to most at-risk populations will be needed, and the lack of information on the current situation affects the ability to plan the right interventions. An important challenge will be to manage the unprecedented increases in the numbers of people receiving ongoing care in ART programs, especially in countries with HIV prevalence rates of more than 3%. This requires stable financing to provide and maintain reliable systems for the procurement of medicines, patient monitoring, record keeping, and follow-up.

4 TUBERCULOSIS

MAIN FINDINGS

4.1 GLOBAL CONTEXT

Strengthening of the existing Directly Observed Treatment, Short Course (DOTS) strategy is the focus of scaling up, with steady progress on treatment outcomes.

WHO estimates that in 2006 there were 9.2 million new cases of TB and 1.5 million deaths from TB, in addition to 0.2 million TB deaths among persons co-infected with HIV (TB/HIV).[10] The number of estimated new cases per year worldwide has been increasing due mainly to population growth, but the global incidence rate has declined annually since 2003. TB prevalence in 2006 was estimated to be 14.4 million persons. Estimated global prevalence has declined since 1990, reflecting a range of factors, including declining incidence rates, improved case detection, and cure, but also reduced survival in some regions relating to TB/HIV. In Africa, TB incidence and prevalence are estimated to be three times higher than global incidence and prevalence rates.

The emphasis of global TB control efforts has been on scaling up existing DOTS programs to promote early diagnosis of active TB and attain high rates of successful treatment while also addressing specific challenges such as TB/HIV and multidrug-resistant TB (MDR-TB). Progress toward international treatment outcome targets is steady. In 2006, WHO estimated that the case detection rate for new smear-positive cases was 61% (target 2015: 70%), and the treatment success rates achieved its 85% target in 2006-2007.

Globally, funding for TB more than doubled during 2003-2006 and reached US$3.3 billion in 2008 among 86 countries reporting to WHO. National governments are the main funders of TB control programs. The Global Fund is the predominant source of external funding in HBCs and, with a disbursement of US$1 billion during 2003-2006, was responsible for nearly all of the increase in funding over this period.

4.2 FUNDING

Expenditures on TB increased in only half of the countries, and the Global Fund is responsible for 61% of external funding, with considerable variation between countries.

Overall, US$215 million was disbursed by the major funders to the 18 evaluation study countries during 2003-2006, with 61% from the Global Fund. The Global Fund is the key external funder in some countries and is non-existent in others. A comparison of expenditures on TB between 2003-2004 and 2005-2006 shows an increase in just half of the 16 evaluation study countries, including a doubling in four countries.

[10] World Health Organization. 2008. Global tuberculosis control 2008: Surveillance, planning, financing. Geneva: WHO.

Four countries conducted a National Health Account study for 2003 and 2006. In two countries—Malawi and Zambia—per capita expenditure on TB decreased from 2003 to 2006 by at least one-third because of reductions in expenditures by the government (both countries) and from external sources (Malawi). Only Burkina Faso observed an increase from $0.1 to $0.8 per capita, entirely due to an increase in externally funded expenditures; there was no change in Tanzania.

For most of the 18 evaluation study countries, per capita TB funding in 2006 was below Int$1. The median for the 18 countries was Int$0.30 per capita and Int$273 per treated case.

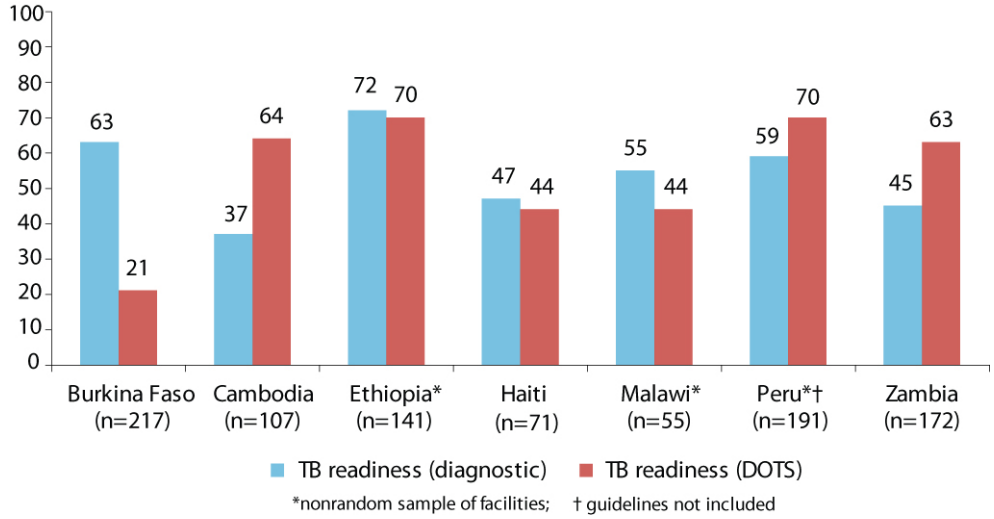
4.3 Access, Quality and Coverage of Services

There is widespread access to TB services, although there are no major increases since scaling up, and there is considerable scope for improving the quality of diagnostic and treatment services.

There was no clear trend in levels of access to TB services, as measured by facility density. Since 2003, the number of facilities providing TB services per population in 2007 had increased by at least 10% in six, decreased by at least 10% in one, and remained about the same in the other six of 13 countries that provided trend data. A similar pattern was observed for the five years preceding 2003.

The DCA Facility Assessments in the seven evaluation study countries showed deficiencies in diagnostic and treatment readiness of health facilities, affecting the quality of care. Public facilities scored better than private facilities in all countries. The availability of diagnostic equipment and materials in facilities that offer TB sputum tests ranged from 54% to 91% (median: 77%), and 27% to 53% (median: 40%) were able to offer same-day results. Figure 5 shows the readiness for diagnosis of TB (at least one staff trained in diagnosis and management of TB, guidelines available, and TB sputum test available [not necessarily observed]) among facilities that report to offer TB diagnosis, and for DOTS of TB (trained staff, guidelines, and essential drugs [INH, rifampicin, ethambutol, and pyrazinamide]) among facilities that report to offer TB treatment.

Figure 5
Percentage of Surveyed Health Facilities that Offer TB Services that Meet Basic Requirements of Service Readiness for the Diagnosis and Treatment (DOTS) of TB, Countries with DCA Facility Assessment 2008



Service readiness is defined as at least one trained personnel, guidelines, TB sputum test (for facilities reporting to have sputum diagnostic services), and availability of four basic TB drugs, including ethambutol, isoniazid, pyrazinamide, and rifampicin (for facilities reporting to provide DOTS).
Source: DCA Facility Census or DCA Facility Survey 2008

TB treatment success rates are another indicator of the quality of care. In general, the country-reported data were found to accurately reflect district records, although discrepancies were observed between country records and global numbers in six countries. There is no evidence of an acceleration of the treatment success rate from 2003. Provincial data from 15 countries showed that four countries have made significant progress in reducing geographic disparities in treatment outcomes: Benin, Cambodia, Moldova, and Rwanda.

Coverage estimates for TB interventions—notably TB case detection rates—depend heavily on assumptions, as most countries have no direct measures of the denominator, the incidence rate of smear-positive TB. The level of diagnostic effort through smear microscopy can be used to monitor the strength of the program in terms of its ability to detect cases—and to adjust TB notification rates. Only one-third of the 18 countries were able to provide data on the number of TB suspects examined by smear, which showed large differences between countries (Peru was four times higher than other countries) and an increase since 2001 in some countries.

4.4 Disease Burden

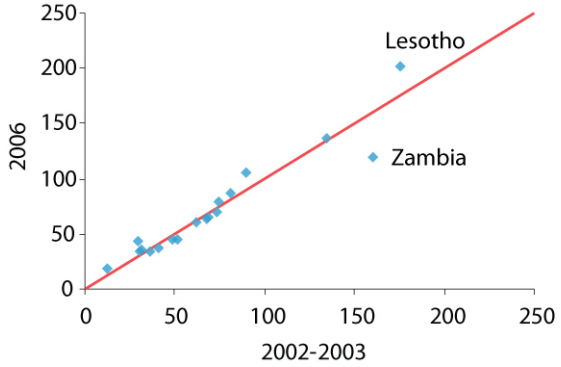
TB notification rates are stable or declining in several countries, but the required supporting data on diagnostic intensity are often lacking.

Direct data on disease burden are relatively uncommon in HBCs. TB mortality data are not available because no death registration systems exist, except in Moldova and Kyrgyzstan. TB population prevalence data were only available from one country (Cambodia in 2002), where the prevalence of smear-positive TB was 3.2 times higher than the observed case notification rate,

implying that slightly more than half of patients are diagnosed within two years of the onset of active disease. Such surveys with biological and clinical data collection are rarely conducted because they require large sample sizes.

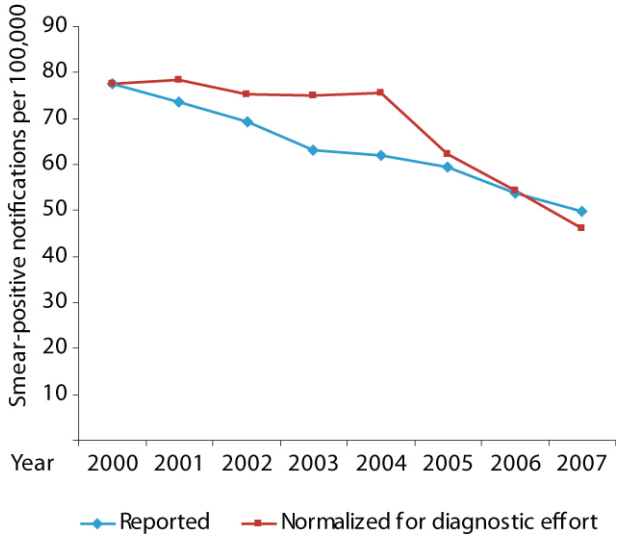
Smear-positive TB case notifications are an uncertain source of information on the disease burden because the extent to which cases are successfully detected by the system tends to vary between countries and over time. Comparing 2003 and 2006, most countries had minimal changes except for Lesotho (8% increase) and Zambia (30% decrease) (see Figure 6). Subnational variation in TB notification rates was reduced in Rwanda and to a lesser extent in Peru, but increased in Burkina Faso, Haiti, and Malawi. Trends in case notification rates in the absence of complete detection, however, offer ambiguous information about underlying epidemiologic trends, as they may reflect a range of factors, including levels of diagnostic effort, types and quality of reporting systems, and care-seeking behavior of people with TB, which may not be constant over time.

Figure 6
TB Notification rate per 100,000 Population, 2002-2003 and 2006



In this evaluation study notification rates adjusted for diagnostic efforts were used as a proxy for disease burden. However, efforts to use diagnostic intensity as an indicator to adjust for program strength with data from six countries produced variable results. Peru data produced the most convincing evidence that this method is very useful, whereas data from Cambodia and Zambia lead to large and less plausible adjustments (see Figure 7).

Figure 7
New Smear-positive Cases per 100,000 Notified in Peru, 2000-2007, Before and After Adjusting for Trends in Diagnostic Intensity



Among the 18 evaluation study countries, a total of 1.2 million smear-positive cases were registered between 2003 and 2006. The estimated actual number of deaths among smear-positive patients treated under DOTS ranged between 106,000 and 138,000 in these countries. The number of deaths averted through DOTS compared with a non-DOTS regime is estimated to range from nearly 150,000 to up to 700,000. These figures correspond to between 4.5 million and 21.4 million life years gained. In these ranges, the lower numbers are likely to be closer to the true values because prior analyses of trends in estimated case detection have suggested that most patients recruited under DOTS would likely have been detected and treated anyway in the public health system.

4.5 From Inputs to Results

Positive trends in treatment success rates have continued in most countries, but there is little evidence of accelerated progress since 2003 and a modest association with funding levels and trends.

The financial data from the evaluation study countries suggest substantial increases in TB funding in some countries and no overall major increases in funding in others, with an increasing share of funding from the Global Fund. There is limited evidence from the evaluation study countries that increased international funding for TB since 2003 has led to an acceleration of progress in access and quality of TB services and no evidence of marked changes in TB incidence and prevalence. The clearest indication of progress appears to be the continuation of the positive trends in many countries in treatment success rates. Although comparison of treatment outcomes to funding across countries suggests some relationship between financial inputs and successful treatment, a large component of the variation in outcomes across countries appears to be attributable to factors other than financial resources.

RECOMMENDATIONS

Recommendation 4.1 Predictable funding for TB programs

The Global Fund, as the most important donor of TB control programs at present, needs to find ways to ensure predictable multiyear funding to maintain quality programs, as other donors appear to have increasingly channeled their funding through the Global Fund.

The Global Fund has become the major external donor of country TB control programs, with considerable variation between countries, responsible for more than half of international funding during 2003-2006. The role of external funding is particularly large in African countries—in five of 11 evaluation study countries in Africa, the Global Fund is the sole external donor. This evaluation study does provide only modest evidence that increased funding in TB since 2002-2003 has led to an acceleration in treatment success rates or other indicators. The question of whether a major part of the additional funding is needed to address specific challenges (MDR-TB and TB/HIV) was not addressed in this evaluation study.

There are, however, several positive patterns observed in this study: (1) increases in diagnostic effort in most countries, (2) increases in diagnostic facilities in some countries, (3) satisfactory or improving treatment outcomes in most countries, and (4) substantial numbers of averted deaths. In terms of epidemiologic impact, we find that despite increased diagnostic effort, the overall picture shows little increase in case notifications. This suggests that TB incidence may be relatively stable or declining overall. However, it is important to emphasize that the 18 countries participating in the present study are not a representative sample of the high TB prevalence countries, as they already benefit from well-established programs, so the overall findings must be interpreted in this light.

5 MALARIA

MAIN FINDINGS

5.1 GLOBAL CONTEXT

A high disease burden has existed in Africa and parts of Asia with little progress for decades, but a new focused intervention strategy shows encouraging signs for successfully combating the disease.

The burden of malaria, especially in regards to malaria mortality, is largely confined to countries in Sub-Saharan Africa. Of the estimated 250 million cases[11], approximately 70% occur in Africa, with another 20% to 25% in countries in South Asia.[12] Malaria deaths, estimated at 900,000 worldwide in 2006, are even more concentrated in countries in Sub-Saharan Africa, with 800,000 deaths occurring among children under the age of five in countries of that region.[13] The estimated rate of malaria cases and deaths has remained largely constant since the 1980s in most countries, but in recent years there have been signs of improvement from several countries derived from population-based surveys or health-facility reporting.

In recent years, most countries have adopted the WHO-recommended intervention strategy that, depending on the epidemiological context, includes new and old interventions: the use of indoor residual spraying (IRS) of DDT, promotion of long-lasting insecticide-treated bednets (ITNs), intermittent preventive therapy of pregnant women (IPTp) with sulfadoxine and pyrimethamine (SP), and treatment with artemisinin combination therapy (ACT). The time lag between policy changes and scaling up implementation are variable between countries and between the four interventions, but there is evidence from many countries that coverage has been increasing. Major gaps still remain.

International funding for malaria increased rapidly from less than US$50 million in 2003 to more than US$700 million by 2006, with the Global Fund playing a major role, especially in the earlier years of scaling up. In 2006, the Global Fund disbursements represented about 50% of total disbursements by the World Bank, the U.S. government, and the Global Fund.

5.2 FUNDING

There have been major increases in funding, led by the Global Fund, with large differences in levels of external funding between countries.

The 15 evaluation study countries with external funding for malaria received US$435 million during 2003-2006, of which 76% came from the Global Fund. During this period, for the 11 evaluation study countries with endemic malaria in Sub-Saharan Africa, commitments from the three biggest donors increased more than fivefold. Countries that received the highest amounts of

[11] The World Health Organization. 2008. World Malaria Report, 2008. Geneva: WHO.
[12] Based on work in Snow, R.W., C.A. Guerra, A.M. Noor, H.Y. Myint, and S.I. Hay. 2005. The global distribution of clinical episodes of Plasmodium falciparum malaria. Nature 434: 214-217.
[13] UNICEF and RBM. 2007. Malaria & children. New York: UNICEF.

external funding per person at risk for the period 2003-2006 were Rwanda (US$9 per person at risk for 2003-2006), Zambia ($4.5), Burundi ($4.4), and Ethiopia ($2.2). Several endemic countries received less than $1 per person at risk over the four-year period, including Burkina Faso, DR Congo, and Malawi.

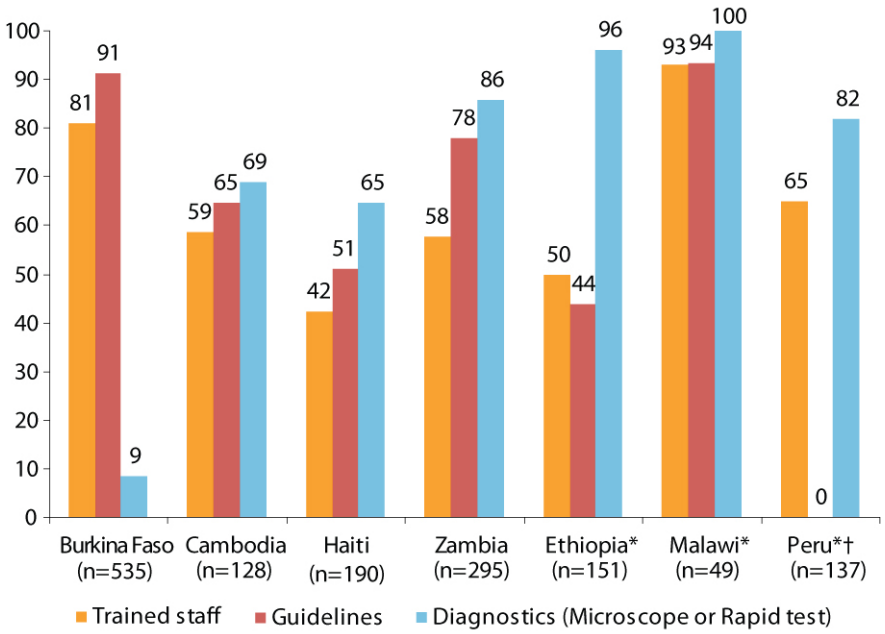
The five countries with 2006 National Health Accounts data show that malaria expenditures ranged from 9% (Burkina Faso) to 23% (Tanzania) of total health expenditures in the endemic countries and 4% in Haiti which does not have endemic malaria. Out-of-pocket expenditures still account for the largest share for four of the five countries.

5.3 Access and Quality of Services

Malaria diagnostic capacity remains suboptimal, and ACT availability is limited except in Zambia, and in large facilities in Ethiopia, and Malawi.

The availability of key diagnostics and drugs in health facilities offering malaria interventions shows that there is considerable scope to improve access to quality services. The majority of facilities offer treatment services, but many lack diagnostic capacity through blood slide or rapid test (see Figure 8).

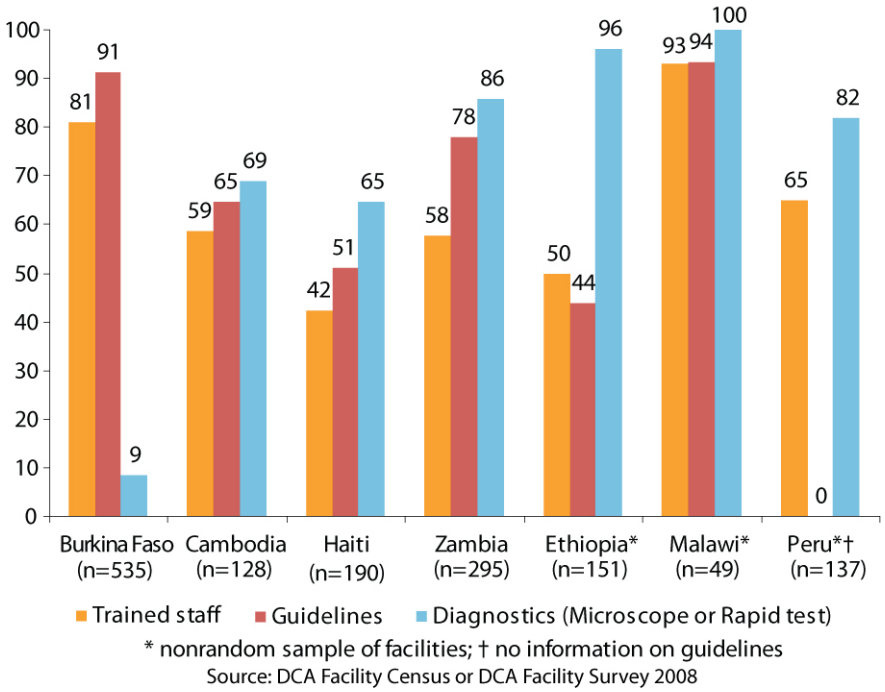
Figure 8
Percentage of Surveyed Health Facilities that Offer Malaria Services that Have Trained Staff, Guidelines, and Diagnostic Aids (Slide or Rapid Test), Countries with DCA Facility Assessments 2008



* nonrandom sample of facilities; † no information on guidelines
Source: DCA Facility Census or DCA Facility Survey 2008

ACT was available in 80% to 90% of selected facilities that offer malaria treatment services in Ethiopia, Malawi, and Zambia, but it is much less common in the other countries (see Figure 9). SP (Fansidar), which is used for intermittent preventive therapy during pregnancy, was found in the majority of clinics in Burkina Faso, Malawi, and Zambia but was uncommon in all other countries.

Figure 9
Percentage of Surveyed Health Facilities that Offer Malaria Services that Have Artemisinin Combination Therapy, SP (Fansidar), and Other Antimalarial, Countries with DCA Facility Assessments 2008



* nonrandom sample of facilities; † no information on guidelines
Source: DCA Facility Census or DCA Facility Survey 2008

5.4 Intervention Coverage

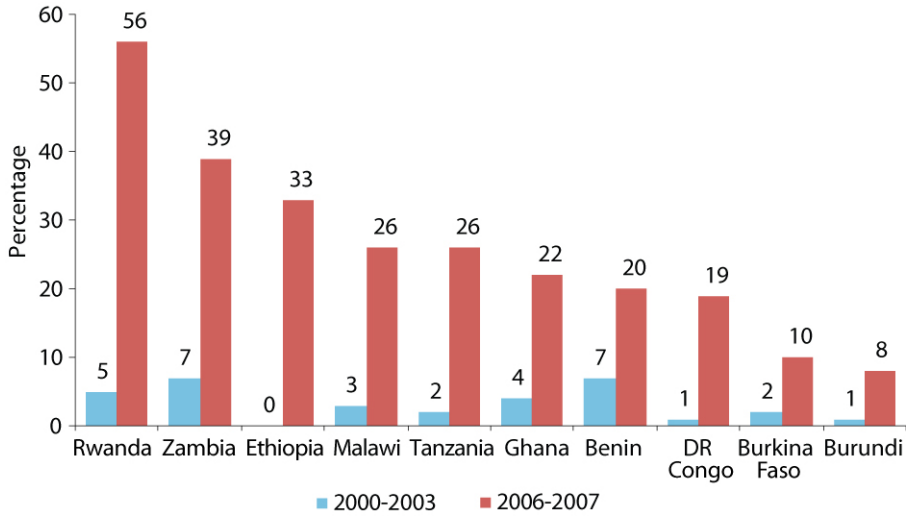
In all countries, major progress has been made in ITN and IPTp coverage and local improvements in IRS coverage. Progress in ACT treatment has been made in just one country.

The coverage of interventions has improved considerably in many countries in recent years.

- ITN: The most dramatic and widespread improvements are observed in the household ownership and use rates for ITNs. In all 10 evaluation study countries in Africa with survey data from 2003 or earlier and from 2006-2008 coverage of children sleeping under an ITN increased from well below 10% to on average one-fourth of children, ranging from a low of about 10% in Burkina Faso and Burundi to 56% in Rwanda (see Figure 10).

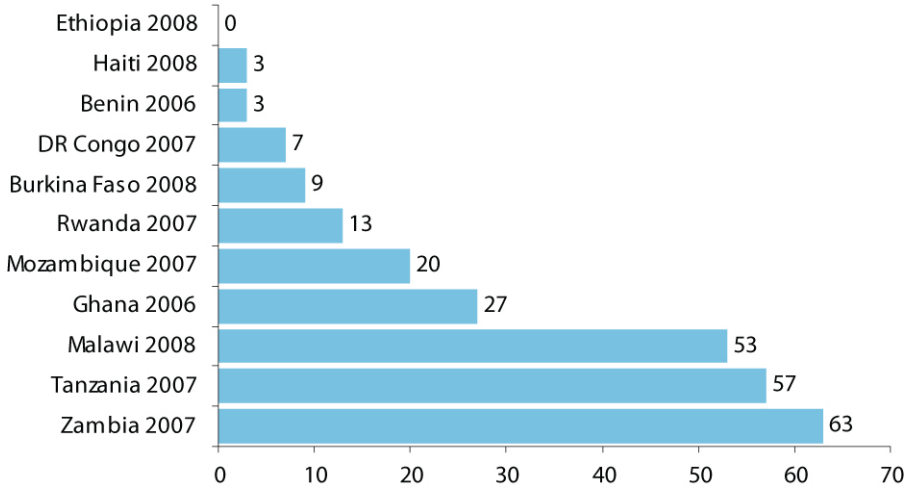
  One way to investigate the importance of Global Fund support is to look at the association between ITN distribution and Global Fund disbursements during the period 2003-2007. A simple correlation shows a significant association between these two measures (r = 0.69), suggesting a strong association between Global Fund support and ITN coverage.

Figure 10
Percentage of Children under 5 Years who Slept under an ITN during The Last Night, 2000-2003 and 2006-2008 National Surveys



- IPTp: Though limited to only some countries, the second most successful scale up concerns IPTp. Countries with trend data have shown upward trends in coverage, and three countries—Malawi, Tanzania, and Zambia—had coverage rates of 45%, 57%, and 63%, respectively, at the time of their most recent survey (see Figure 11). Given that IPTp is a new intervention (coverage of a single dose of SP in Zambia was 1% in 2001), the current levels of coverage in these three countries are an impressive success story, much like ITNs. In several countries, however, IPTp scale up has been less successful, with coverage below 10%, including several west and central African countries with high levels of transmission.

Figure 11
Percentage of Women who Gave Birth in the Last Two Years and who Received Two Doses of SP during Antenatal Care, 2006-2008 National Surveys



- IRS: Indoor residual spraying is the intervention that shows the greatest difference among evaluation study countries. While only five of the malaria-endemic countries have some policy promoting IRS, those countries have rapidly scaled up their use of IRS. In fact, in Mozambique, Tanzania (Zanzibar), and Zambia, IRS coverage is quite high and plays a major role in the number of lives saved in those countries. For example, in Mozambique the estimated number of protected households, which includes the use of nets or IRS, results in an estimated 15,332 deaths averted, most due to IRS. Likewise in a model for Zanzibar alone (excluding mainland Tanzania), it was estimated that by 2006 more than 400 malaria deaths had been averted, approximately a 90% reduction in the estimated malaria deaths in Zanzibar among children under the age of five.
- Treatment of children with fever: The findings related to ACT are the most perplexing and worrisome of the four primary malaria interventions because they show the least improvement. While there are data showing that most countries have purchased large amounts of ACT, there is little or no evidence of a corresponding increase in the use of ACT for treatment of children. A notable exception is Zambia, where 13% of children who were treated for fever were reported to have been treated with ACT in 2006. No other country showed coverage of ACT above 5%. This may partly be affected by bias in the mother's recall of specific drugs. The low levels of coverage of ACT may also be because of the lag between financial disbursements, purchasing, and distribution of drugs and the use of those drugs being reported correctly in surveys. If this is the case, new surveys should clearly show large increases in ACT coverage for 2008-2009. Another troubling issue with ACT has been the general lack of improvement in treatment (in most countries) by any measure. There is also little evidence that more children receive antimalarial treatment for fever now than 5 or 7 years ago or that the services at the clinics have substantially improved.

5.5 Disease Burden

A few countries provide evidence of reductions in parasite prevalence and a potential decline in malaria-attributed child mortality.

There is some evidence of changes in disease burden—

- Zambia had two national surveys in the last three years with biomarkers and observed a modest decline in parasite prevalence among children under five years. Zanzibar research data showed a large decline during the past few years.
- Rwanda and Zambia survey data also suggest substantial declines in under-five mortality between the two most recent surveys (declines of 38% and 29%, respectively), and the decline is more pronounced after the neonatal period when malaria is a more important cause of death, suggesting that malaria interventions have contributed to this improvement.
- Data from selected health facilities suggest that in Rwanda and Zambia the numbers of in-patient cases and deaths are falling, but more rigorous studies are needed. The most convincing evidence is based on sentinel hospitals and research in Zanzibar, which indicate a large decline in the numbers of in-patient cases and deaths starting from about 2004.

- There is no evidence of a decline in severe anemia among children, albeit a less specific indicator of malaria burden, in the six countries with two surveys.
- Modeling with the coverage of the interventions as the main input for 11 evaluation study countries indicates that 110,000 lives were saved by ITN use and 24,000 by IPTp. The model also indicates that a significant part of this positive effect may have been offset by children with malaria getting less treatment in DR Congo, where there was an additional 90,000 deaths.
- Parasite prevalence rates are much higher among the poorest children and among rural children. There is, however, some early indication that the coverage gaps for ITN use between rural and urban and between the poorest and those better off are reducing as programs expand, including those in Ethiopia, Ghana, Malawi, Rwanda, and Zambia.

5.6 From Inputs to Results

Coverage of new interventions has increased rapidly in many countries, mainly supported by the Global Fund in its initial years and multiple actors in more recent years, and has had a demonstrated health impact in a few countries.

Rapid increases in funding for malaria, along with a selected set of effective interventions, have resulted in significant increases in intervention coverage and initial signs of health impact in some countries. Countries with the larger influx of external resources—the eastern African countries of Malawi, Rwanda, Tanzania, and Zambia—have been able to scale up interventions at an impressive pace and much faster than those with low levels of investment such as Burkina Faso, DR Congo, and Ghana. During 2003-2006, the Global Fund was the primary donor that made these positive developments possible especially in earlier years.

One of the things that this evaluation study was not able to do effectively was document the impact of other contextual variables that may have had an effect on the ability of countries to apply for and successfully use funds from the Global Fund to implement programs in malaria control. However, a strong case can be made that a critical factor in the success of the Global Fund in addressing malaria was the launching of the Roll Back Malaria (RBM) Partnership in 1998.

In documenting the rapid scale up of ITN, IRS, and IPTp use in the malaria endemic countries in the evaluation study, it is clear that ITN scale up in particular has proceeded at a rapid pace. Part of the reason for the rapid gains in coverage (funded in large part by Global Funds grants) may be a result of the level of preparedness in countries due in part to the RBM Partnership.

Even though this interpretation is not well documented by this evaluation study, in discussing the findings from the analyses with various actors at the country and international levels, almost all mentioned the synergistic effects of RBM and the partner organizations, which worked with national programs to establish national policy and set a work agenda for malaria control, and the Global Fund, which provided much needed funding to implement the national plans.

RECOMMENDATIONS

Recommendation 5.1 Potential for impact

Accelerating grants for malaria control should be a priority, given the encouraging initial results from several countries and from research, particularly focusing on countries where other donors are less active and Global Fund grants can catalyze major changes.

The Global Fund investments during 2003-2006 have had a catalytic effect on malaria programs in many countries with demonstrable results. New large international initiatives such as the President's Malaria Initiative and the World Bank have appeared on the scene or expanded their efforts. Initial evidence from selected countries indicates that the potential for short-term progress and health impact is large, and possibly larger than for scaling up other interventions. In many countries the amount of funding for malaria increased dramatically after 2006, even for successful countries such as Zambia, in part through the Global Fund. This should lead to major improvements in the next few years. Therefore, sustained funding of malaria control programs should be a priority. On the other hand, with new sources of potential funding, it is imperative that partners and funding agencies coordinate and collaborate on providing contributions so that funding can be used in the most cost-effective manner.

The Global Fund and its partners should continue the scale up of all four key interventions and provide support for rapid diagnostic testing. It is difficult to pinpoint which interventions have been most effective as efforts are made to scale up all four. Evidence indicates that the achievement of high levels of coverage of ITN use, backed up by universal access to effective diagnoses using laboratory tests and treatment with ACT, is essential. This needs to be complemented by IPTp and IRS use. While scaling up ITN use currently appears to have been very successful in most countries and perhaps has the greatest potential for continued scale up and health impact, there is clearly a need to support continued efforts in the other three interventions. This is especially true in the area of diagnosis and treatment because there is less evidence of progress in this area. If transmission levels of malaria are brought down, and as ACT is increasingly employed as the first line of treatment, widespread use of rapid diagnostic testing should be promoted.

6 HEALTH SYSTEMS AND SCALING UP: THE CURRENT SITUATION

MAIN FINDINGS

6.1 GLOBAL CONTEXT

There is much interest in determining whether scaling up HIV prevention and treatment efforts in particular have had an effect, positive or negative, on health systems and on other disease programs, but current research has provided little conclusive evidence either way.

The Global Fund, PEPFAR, and other partners have instigated both significant increases in health funding and shifts in their composition. Health budgets have grown considerably since 2003, and HIV/AIDS now accounts for a much greater share of these budgets. These effects are particularly pronounced in HBCs.

Several studies have been conducted to assess the effects on the health system of scaling up interventions against the three diseases. In general, scaling up against HIV/AIDS has been the primary focus of these studies because of its high funding levels, the large numbers of people infected in several countries, and its potentially large impact on health service provision due to life-long treatment programs. Scaling up efforts against TB and malaria have generally not given rise to similar concerns because they are perceived to be less likely to draw resources from equally or more important interventions against other diseases.

In practice, there is limited conclusive evidence as to the net effects of scaling up on health systems overall or on non-HIV/AIDS programs. This evaluation study was not designed to provide comprehensive documentation of the effects of scaling up. It focused on describing gaps in essential health service components at the district level and comparing developments in HIV-related activities with other, primarily MCH, interventions.

By its own estimates, in 2008 the Global Fund directed 35% of approximately US$4 billion of approved financing to key health systems elements.[14] In Round 5, the first HSS grants were awarded to three countries, of which only one, Cambodia, had actually received the funds by 2007. In Round 7, crosscutting funding for HSS rose, with about US$186 million approved.

6.2 FUNDING

In most countries, total external funding directed to HIV has increased in both absolute and relative terms; funding for MCH has also increased in absolute terms.

In the evaluation study countries, total health expenditure per capita increased between 2003 and 2006 from a country median of Int$70 to Int$83. At the low end, Burundi, DR Congo, and

[14] Atun R. 2008. Capacity development: Using Global Fund grants to strengthen health systems. Presentation at the Global Partnership Forum, December 8-10, Dakar, Senegal.

Ethiopia had a total health expenditure in 2006 of Int$11, Int$12, and Int$27 per capita, respectively; at the high end, Peru had a health expenditure of Int$306 per capita.

In the 18 evaluation study countries, during 2003-2006 HIV-related external funding accounted for slightly more than 10% of total health expenditure. The share was more than 20% in six countries in eastern and southern Africa, with Burundi (49%, where total health expenditure per capita is very low) and Lesotho (7% only, relies less on external assistance) as outliers. A comparison of the increases in external funding for HIV with those for child and maternal health over the period 2003-2006 shows that increases for HIV-related programs were significantly greater (median 1.9 times greater, and 1.7 times greater excluding the three countries with no child health data) than increases for child (0.7) and for maternal health (1.0).

There is little evidence that the increase in HIV/AIDS spending has been achieved at the expense of resources for other interventions. In most countries, resources for child, maternal, and neonatal health have also grown during 2003-2006, though not at the pace of HIV/AIDS resources.

National Health Account (NHA) studies with subaccounts conducted in 2008 in Burkina Faso, Malawi, Tanzania, and Zambia show that between 2003 and 2006, total health expenditure increased in all four countries (the Haiti NHA only provided 2006 data). Expenditure on other diseases (not HIV, TB, or malaria) remained about the same in Malawi and Zambia and increased in Burkina Faso and Tanzania. Because HIV expenditures increased more rapidly, the relative share of other diseases decreased in three of the four countries and most dramatically in Tanzania, where it fell from 71% to 47%.

Additionality of funding can be gauged at two levels. First, the global resource flows have clearly demonstrated the effect of Global Fund, PEPFAR, and other contributions on the scaling up because levels of funding went up dramatically for the three diseases and did not appear to do so at the cost of funding for other diseases. There was some evidence of replacement funding within the donor community, especially for TB, where the Global Fund contributions increased but bilateral donors appeared to reduce direct funding. And in some countries where World Bank investments declined, this was the case for HIV. Second, the government contribution was about one-fifth to one-third of the total health expenditure in the four countries. In Burkina Faso, the overall government share increased from 2003 to 2006 (23% and 32%, respectively), but it declined in Malawi (35% to 21%, respectively). In Tanzania and Zambia there was little change (28% to 30%, and 24% both periods, respectively) (see Table 4.16 in main report). Thus, in the four countries with trend data from NHA studies, government funding for HIV, TB, malaria, and other diseases generally did not show declines.

HIV, TB, and malaria programs in low-income countries in the evaluation study depend highly on external funding, as shown by the NHA studies and the comparison of the size of external HIV funding and total health expenditures in 2006. Often more than 70% is financed by external donors, and the Global Fund plays an important role, especially in TB, malaria, and HIV treatment. Fluctuations in funding because of grant suspension, nonrenewal, or non award of proposals are potentially large, as the sustainability in terms of country ability to replace withdrawn donor funds is low. The extent to which the Global Fund approach of competitive-funding applications and performance-based funding are conducive to enhancing predictable funding and continuous intervention delivery could be reexamined. In low-income countries, the Global Fund should

monitor more closely the funding situation to ensure that any problems with meeting targets are detected early and resolved quickly to avoid the suspension of large amounts of funding and such action's potentially disastrous aftermath.

The absorptive capacity of most countries with Global Fund grants has been satisfactory, as gauged by Global Fund disbursement reports. However, Global Fund disbursed funds are mostly reported as "spent" by the principal recipient when disbursed to subrecipients. PEPFAR reports lower levels of expenditure of disbursed funds, but the two systems are not comparable.

6.3 State of District Health Systems

In general, there are about 1 to 1.5 health facilities per 10,000 people, with the government as the main provider. Intensive efforts to roll out HIV interventions involve private sector and civil society, and the access gap between HIV and longer-standing health services appears to be closing rapidly.

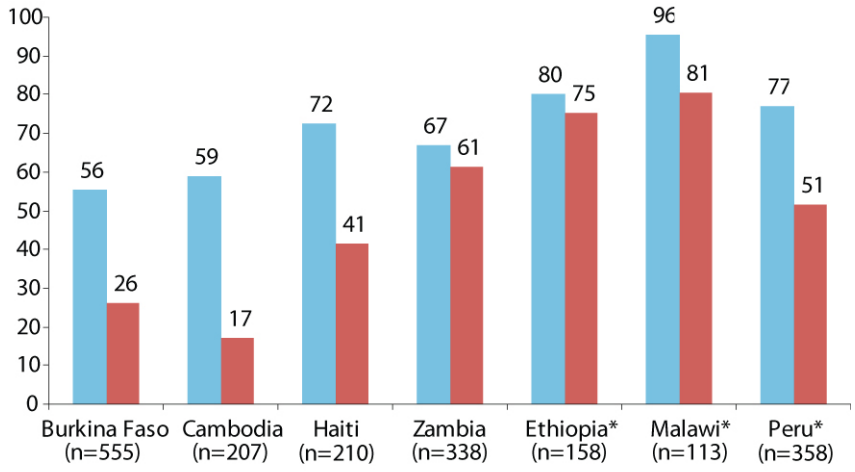
The evaluation study measured the availability of services in seven countries and 38 districts, including seven urban districts. In four countries a full census of facilities was done. The median density of facilities in the 38 districts was 1 to 1.5 facilities per 10,000 population, ranging from about 0.5 to 4 per 10,000. In all countries, urban districts stand out with higher facility density, as was to be expected.

In all settings, governments bear most of the responsibility for health facilities, administering 50% to 70% of all health facilities. The private (for profit) sector administers 20% to 40% and civil-society organizations (nonprofit) the remainder. Only in Haiti are civil-society organizations important providers of health care.

The government is the main provider of MCH services (immunization, antenatal care, and delivery care) in all countries. For ART services, the private sector is more prominent; even in the Zambian districts (including Lusaka), where major efforts are being made to roll out ART services through the public sector and civil-society organizations, nearly 40% of the facilities providing ART were privately administered. In contrast, in Haiti, the private sector hardly plays any role in ART service provision.

In general, individual health facilities are more likely to offer services such as antenatal care, IMCI, family planning, malaria treatment, and TB treatment (DOTS) than HIV-related services such as testing and counseling, PMTCT, or ART. Figure 12 shows that IMCI, which has been promoted for a much longer period of time, is more likely to be available than HIV testing and counseling. In the Zambian districts, where HIV prevalence is much higher than in the other countries, availability of IMCI and HIV testing and counseling is nearly the same.

Figure 12
Percentage of Surveyed Health Facilities Offering IMCI and HIV Testing and Counseling, Countries with DCA Facility Assessments 2008



* nonrandom sample of facilities
Source: DCA Facility Census or DCA Facility Survey 2008

6.4 HUMAN RESOURCES

Health worker density is low in all districts, especially in rural areas. HIV scale up has focused on districts with higher health worker densities.

In Burkina Faso, Cambodia, Ethiopia, Haiti, and Zambia, the DCA Facility Assessment provides data on clinic staffing disaggregated by cadre and staff presence on the day of the interview. Only Lusaka in Zambia approaches the WHO target of 25 health workers (physicians, clinical officers, nurses, and midwives combined) per 10,000 population. Overall, in Zambia there were 11 health workers per 10,000 population, Cambodia 9, Haiti 8, and Burkina Faso only 4, with large differences between districts within countries. The actual presence of health workers on the day of the visit varied by country, district, and cadre of health worker. The presence of nurses was about 75% to 80% in all five countries. Doctors were less frequently present, especially in Burkina Faso and Zambia. Haiti and Ethiopia had better rates, with about three-quarters present on the day of the visit.

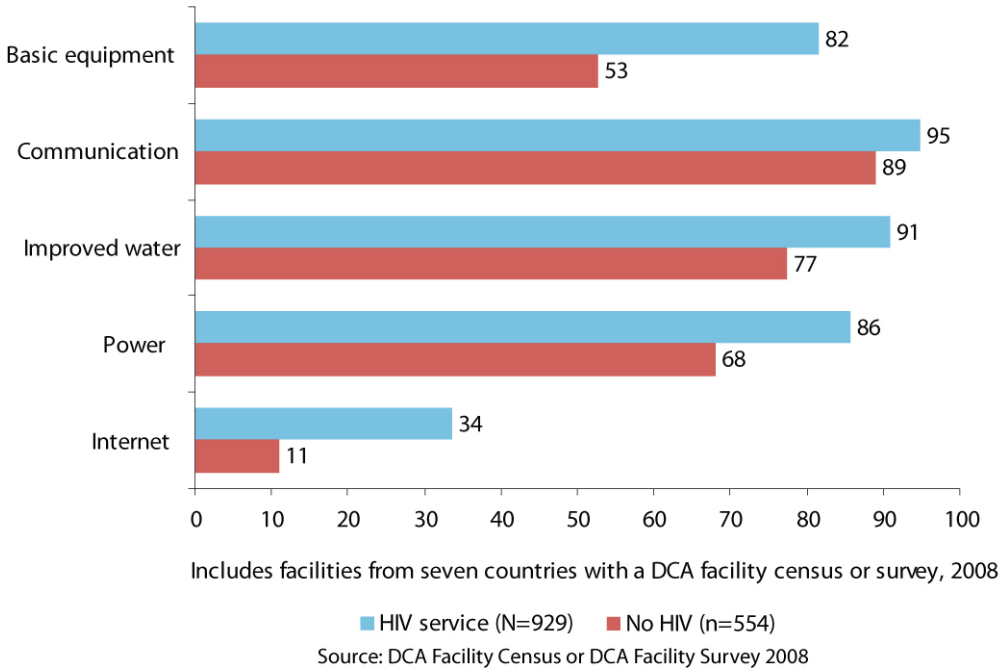
The scale up of health service-related HIV interventions has been more extensive in districts with higher levels of social and economic development and higher densities of health workers and better health infrastructure. This is primarily because scaling up was initiated in urban districts. This implies that health system weaknesses, such as poor infrastructure and limited human resources, are likely to become more prominent constraints as the scale up reaches out to more districts, especially those in rural areas. There is one caveat. It is possible that health worker density is high in districts with more HIV services because they have attracted more health workers to work on the delivery of HIV services. This issue cannot be examined with the cross-sectional district surveys.

6.5 Basic Amenities and Equipment

In many facilities there are serious deficiencies in terms of basic amenities, especially improved water supply, and essential equipment. The situation is somewhat better in facilities that offer HIV services.

Almost half of the 1,455 facilities in the five countries which conducted DCA Facility Assessments offered HIV-related services (counseling and testing, PMTCT, or ART), and these facilities generally scored better in terms of basic amenities than those not offering HIV-related services (see Figure 13). The one exception was safe water supply, on which both groups of facilities scored very low. Facilities offering HIV services are more likely to have basic equipment such as a stethoscope, weighing scale, and thermometer. These differences can be largely accounted for by the urban bias in the location of the facilities offering HIV services.

Figure 13
Percentage of Surveyed Health Facilities with Basic Amenities and Equipment, by HIV Services Availability, Countries with DCA Facility Assessments 2008



Source: DCA Facility Census or DCA Facility Survey 2008

6.6 Drug Availability

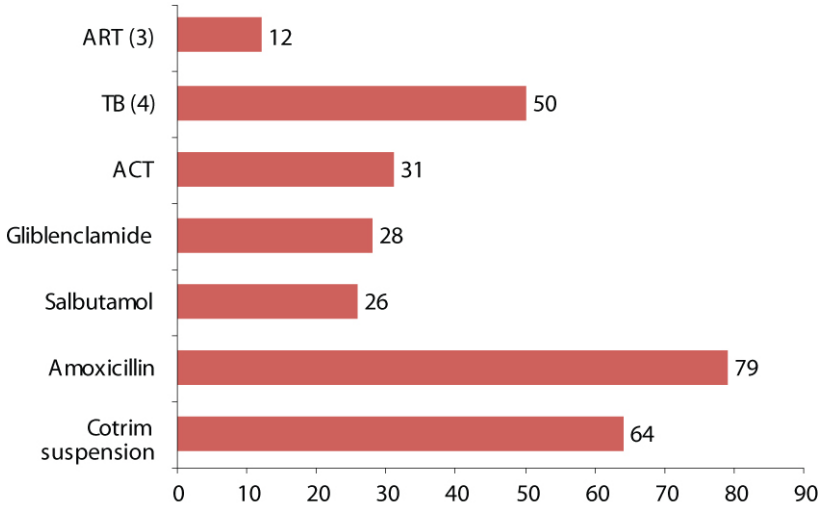
There is inadequate availability of many essential medicines, especially for chronic adult diseases but also for childhood illnesses.

An effective procurement and supply system needs to be in place to ensure continuous availability of medicines and technologies. The DCA Facility Assessments generated data on the availability of a package of 28 essential medicines and commodities at the most peripheral level of the supply chain, the health facility. Average availability was poor, ranging from a low of 38% in Burkina Faso to a high of 51% in Cambodia and Ethiopia. The lowest availability was for eight essential medicines for chronic conditions such as cardiac diseases, chronic respiratory problems, diabetes, and ulcers. Anti-infectious agents (ten antibiotic and antiparasitic drugs) were on average available in 52% to 69% of cases. Contraceptives (oral pills, hormonal injectables, and condoms) were available in most

facilities, especially in Cambodia and Ethiopia. Special medicines and commodities for children (oral rehydration salts, pediatric suspension of co-trimoxazole and paracetamol, and vitamin A) were available in 60% to 70% of cases in all countries.

Figure 14 shows the availability for selected non-expired medicines, showing the median for five countries, including medicines for management of childhood illnesses (co-trimoxazole suspension), infections (amoxicillin), chronic conditions (salbutamol for asthma and gliblenclamide for diabetes), malaria (artemisinin combination therapy), TB (all four drugs), and ART (any first-line combination). One would expect variation in the availability of medicines according to the local epidemiological profile: antibiotics and generic medicines for management of chronic diseases should be available in nearly all facilities, TB medicines in a significant part of facilities (designated treatment facilities), ACT in all facilities in HIV endemic districts, and ART in a significant proportion of facilities depending on the size of the epidemic.

Figure 14
Among Surveyed Health Facilities, the Median Percent Availability of Selected Essential Medicines for Infections (Co-trimoxazole Suspension, Amoxicillin), Chronic Conditions (Salbutamol for Asthma and Glibenclamide for Diabetes), Malaria (Artemisinin Combination Therapy), TB (All Four Drugs), and ART (Any First-line Combination), Countries with DCA Facility Census 2008



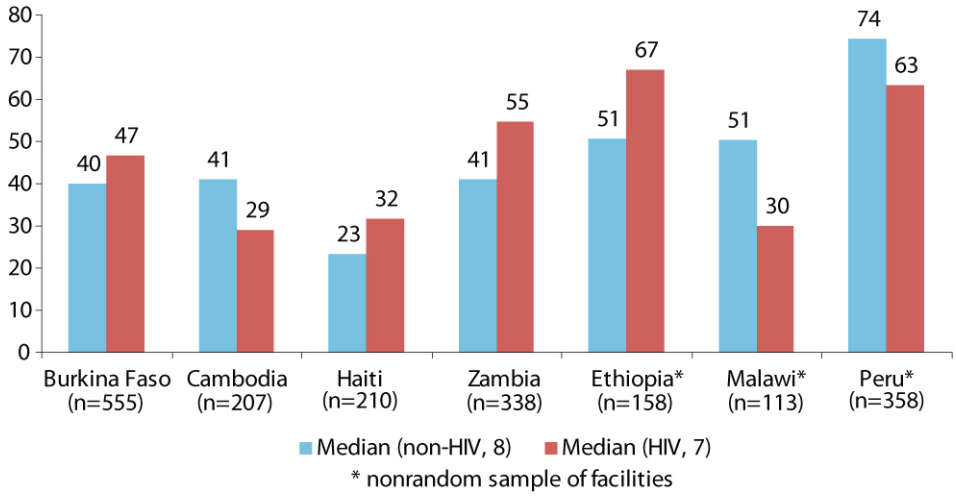
Source: DCA Facility Census

6.7 Training Exposure and Guidelines Availability

Training intensity and guideline availability for HIV services is higher than for most other interventions.

The DCA Facility Assessment asked about staff completion of 19 different types of training (with minor country-specific adaptations) in the last two years. These included seven training courses for HIV/AIDS, one for malaria, two for TB, and one for TB/HIV. The general picture is a fairly high training intensity for a large number of different topics. In four of the five countries, exposure to HIV-related training was more frequent than for other topics. Only in Cambodia and the sampled clinics in Malawi was HIV-related training less common than other topics (see Figure 15). Training for malaria and sexually transmitted infections was particularly common in Burkina Faso. Training in TB diagnosis and treatment and IMCI was most common in Cambodia and Ethiopia. Training exposure was lowest in Haiti.

Figure 15
Median Percentage of Surveyed Facilities with Staff Trained in HIV-related Training and in Other Topics, by DCA Country, 2008



In all countries with the exception of Cambodia, HIV-related guidelines were at least if not more likely to be available than guidelines for other topics such as IMCI, infection control or family planning.

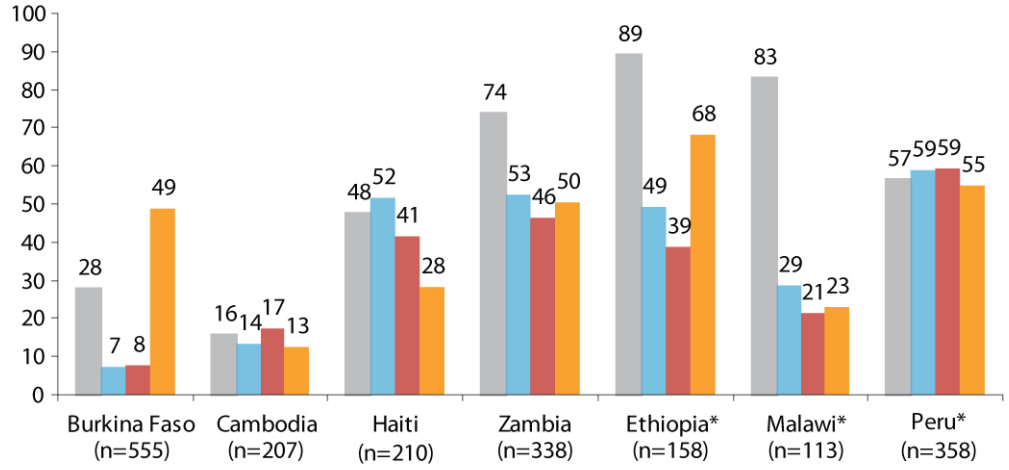
Accelerated implementation of AIDS, TB, and malaria interventions is reflected in somewhat greater training intensity and availability of guidelines than for MCH and other programs, although the differences tend to be small in most instances. However, this may simply reflect the fact that these are new programs. Service delivery levels of, for instance, PMTCT are still low compared with well established MCH programs.

6.8 Diagnostic Capacity

There are major gaps in the availability of diagnostics, but the HIV test is more commonly available than the anemia test even in low HIV prevalence countries

In all seven countries that conducted a DCA Facility Assessment, availability of basic diagnostic tests, infection control amenities, key diagnostic aids, and infrastructure was poor in many health facilities. In some cases, scale-up efforts may have introduced distortions in availability. For instance, in most countries an HIV test is now more commonly available than a hemoglobin test despite wide differences in HIV prevalence (see Figure 16). In general, the data show that large gaps exist in availability of the most basic commodities. These gaps need to be addressed if essential high-quality services are to be maintained. Addressing these gaps could contribute significantly to increasing coverage of interventions for AIDS, TB, malaria, and other conditions.

Figure 16
Median District Percentage of Surveyed Health Facilities with Essential Diagnostics, Countries with DCA Facility Assessments 2008



* nonrandom sample of facilities

Source: DCA Facility Census or DCA Facility Survey 2008

There is some evidence that HIV services have scaled up at a much greater rate than other services and that there are some distortions in the availability of essential medicines, commodities, and services. Signs of disproportionate attention to scaling up HIV-related interventions at the expense of long-standing basic health care needs include, for example, the relatively high levels of training exposure for HIV/AIDS topics and a bias toward HIV in the availability of guidelines, laboratory services, and medicines. However, the cross-sectional nature of this evaluation study precludes a comparative analysis of trends in scaling up HIV interventions compared with such measures as trends in training exposure, medicine availability, and diagnostic capacity for non-HIV-related programs.

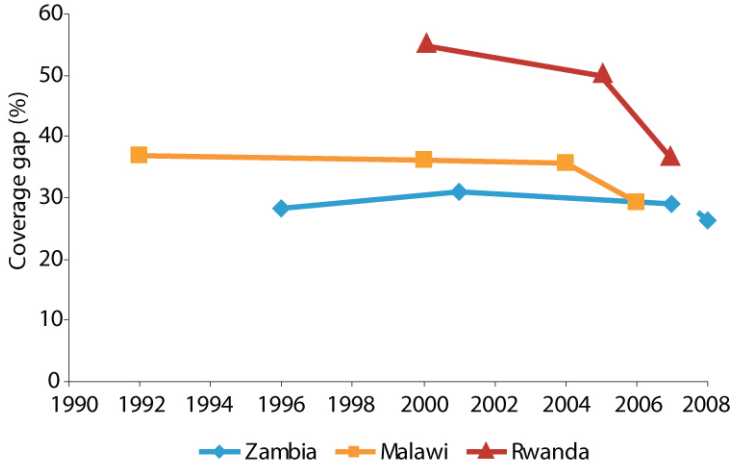
6.9 Changes in Coverage of Non-HIV Interventions and in Levels of Child Mortality

There is no evidence of adverse changes in coverage for MCH interventions or in child mortality.

Documenting trends in coverage of interventions and child mortality could help assess the extent, if any, of spill-over effects of increased resources for HIV, TB, and malaria on other health outcomes. There is a need for reliable, continuous data on coverage and mortality to be able to ascertain trends prior to 2003-2004 and subsequently. By these criteria, virtually all adult health interventions and many child health interventions are excluded. The availability of trend data on coverage is most complete for MCH programs, for which population-based household surveys have collected data in a standardized way for a limited set of core indicators since the early nineties. If scaling up efforts have no negative impact, and assuming all other things remain equal, trends in MCH interventions should continue in the same direction and at the same pace as before 2003-2004. Several countries, including Zambia, Malawi, and Rwanda, have recent coverage surveys that permit testing of this hypothesis.

Zambia has a large AIDS epidemic, and through PEPFAR, the Global Fund, and other partners significant funds have been allocated for HIV/AIDS interventions in recent years, totaling about one-third of total health expenditures. International resource flows for MCH also increased, by about 40%, between 2003 and 2006 and funding per child is relatively high (US$27 per year for 2005-2006). Zambia conducted national household surveys in 1996, 2001, and 2007. These indicate that the MCH coverage gap was about 30% in the mid-1990s and changed little in subsequent years. After 2001, there may have been a modest improvement, compared with before 2001, but differences are small (see Figure 17). The 2008 DCA Household Survey shows a slightly smaller coverage gap than the 2007 DHS survey, which may, in part, be due to an urban bias in the Zambia selection of districts in the DCA. The most recent DHS reports an under-five mortality rate of 119 per 1,000 live births for 2003-2007, compared with 158 in the preceding five-year period. Improved malaria control, a major component of the scaling up of interventions, may have contributed significantly to the decrease. Changes in child mortality due to HIV/AIDS are likely to be small, as PMTCT programs have only been rolled out recently and HIV prevalence in Zambia declined very little during 2002-2007.

Figure 17
Trend in the MCH Coverage Gap (%), Zambia, Malawi, Rwanda, National Household Survey Data



(the isolated dot indicates an estimate from the 2008 Zambia DCA Household Survey which was not national a sample)

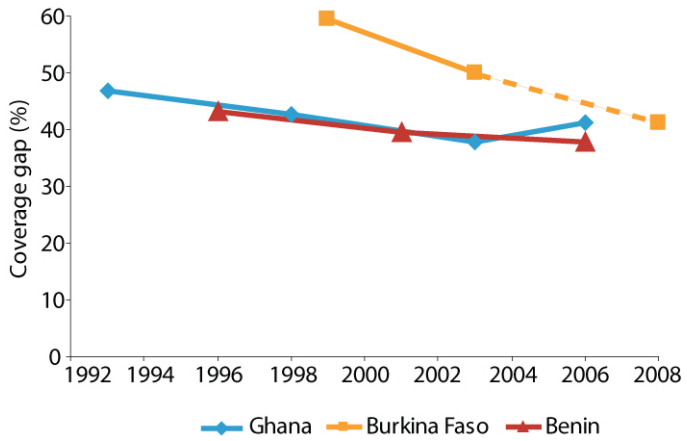
Malawi has a large epidemic and has seen major increases in funding for HIV, although considerably smaller than in Zambia, with external HIV funding amounting to about one-fifth of its total health expenditure in 2006. Malawi received about US$13 per child per year in official development assistance in 2005-2006 and saw increases of at least 40% in assistance for child and 75% for maternal and neonatal health programs. Coverage trends show little improvement from 1992 to 2004, but the 2006 MICS indicated that substantial progress was made after 2004. Most progress was made in family planning and treatment of acute lower respiratory infections.

Rwanda's national HIV prevalence is just under 3%, and the country's response against HIV/AIDS has been extensive. The predominance of HIV funding in Rwanda has been a concern raised internationally because during 2003-2006 external funding for HIV was 27% of the total health expenditure. International funding for child and maternal/neonatal health increased twofold and sixfold, respectively, between 2003 and 2006, rising to US$21 per child and US$27 per pregnant woman/neonate. Three household surveys in 2000, 2005, and 2007 indicate a gradual decline in the

overall coverage gap between 2000 and 2005 and a larger decline between 2005 and 2007. The coverage gap decreased from a high of 50% to 36% between 2005 and 2007, bringing it closer to the level in other countries in eastern Africa. Improvements were observed in all four main intervention areas of immunization, family planning, treatment of sick children, and maternal care. Under-five mortality dropped to 107 per 1,000 live births for the period 2003-2007, compared with 173 in the period 1998-2002.[15] HIV is likely to have played a minor role because prevalence among pregnant women is well below 10%. Malaria may have been an important contributing factor, even though the scale up of ITN use and other interventions is very recent.

The three west African countries with recent data, Ghana, Burkina Faso, and Benin, receive much less HIV funding than the east African countries, in part because their epidemics are smaller. A 2006 survey in Ghana suggests an increasing coverage gap, but data from Benin and Burkina Faso seem to indicate a continuing decline (see Figure 18).

Figure 18
Trend in the MCH Coverage Gap (%), Ghana, Burkina Faso, and Benin, National Household Survey Data



The remaining countries did not conduct national surveys in recent years. In Haiti, results from the 2008 DCA Household Survey are fairly similar to those from the 2005 DHS in terms of overall coverage gap, but the results for individual interventions suggest that immunization coverage has actually declined, which should give rise to concern. However, the two sources are not strictly comparable; while the characteristics of the 2008 DCA survey respondents and households are similar to that of the Haiti 2005/06 DHS survey, they are slightly more urban and wealthier.

[15] Rwanda is a possible example of positive effects of strong leadership and political commitment on health. The well-resourced AIDS program may have provided the impetus for the development of integrated approaches to service delivery and development and implementation of robust health plans to improve access to basic health services. The Rwandan government introduced various health system-related changes, including improved coordination of donors and external aid with government policy; a countrywide independent community health insurance scheme, coordinated by the Ministry of Health, reaching 73% coverage in 2006; and the introduction of a performance-based pay initiative for health workers.

RECOMMENDATION

Recommendation 6.1 Address basic gaps in services

The major gaps in basic health service availability and readiness, which affect the quality of care for common health problems, will need to be addressed as part of scaling up against the three diseases by supporting a health system component of disease specific grants and general HSS grants in a way that supports country health sector strategic plans.

The DCA Facility Assessments have shown that the availability of basic laboratory tests, infection control amenities, diagnostic aids, trained health workers, guidelines, and infrastructure needs to be improved in all seven countries. Medicine availability in health facilities remains inadequate in many districts, with medicines for chronic noncommunicable diseases in especially poor supply. It is not possible to say whether these drug stock-outs are a consequence of scaling up the response against the three diseases, especially HIV/AIDS, although this is not likely. On the other hand, there is no evidence that the investments in HIV have strengthened supply systems.

Addressing those basic service delivery gaps may contribute significantly to the scope for increasing effective coverage of interventions for AIDS, TB, malaria, and other conditions. HSS needs to be supported in a way that is fully aligned with strengthened national health sector strategic plans. The Global Fund and its partners should work together to strengthen and support such national plans, along the lines of IHP+ country compacts. This process should also become the platform for positive synergies between scaling up against the three diseases and HSS.

Currently, aspects of HIV, TB, and malaria grants are considered to contribute to HSS, but the evaluation study provides sufficient evidence that this is leading to imbalances in efforts to effectively deliver interventions, as shown by training intensity, guideline availability, and other elements of service delivery. For instance, in five countries with DCA Facility Assessments, an HIV test is now more commonly available than a hemoglobin test.

To some extent, the scale up has occurred primarily in districts with stronger health systems, higher socioeconomic status (often urban), and often in somewhat better endowed health facilities. Therefore, the health system constraints are likely to become more prominent obstacles to further expansion of HIV services. The need to address the very basic gaps in other interventions, from IMCI to noncommunicable diseases, becomes increasingly urgent.

On the other hand, the evaluation study analyses suggest that trends in coverage of MCH interventions show little evidence of a negative change in trends comparing data for 1995-2003 with data for 2004 and later in the countries with recent data. The trends, however, need to be accelerated to achieve the MDG 4 and MDG 5. External funding increases, especially for HIV, have been dramatic and have shifted country health budgets. There were also increases in funding for MCH, albeit smaller, which may have been sufficient to maintain progress in the coverage of MCH interventions and sustain the declines in child mortality that were observed in several countries.

As part of HSS, the Global Fund and its partners need to support and monitor HSS through a systematic approach that regularly assesses the strength and performance of the health system in a way that it supports country review processes such as annual health sector reviews.