Assessment of the Roll Back Malaria Monitoring and Evaluation System

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Executive Summary

Introduction

The Roll Back Malaria (RBM) partnership is currently undergoing an evaluation of its progress after three years of implementation. One objective of the RBM Partnership is to develop an effective monitoring and evaluation (M&E) system to assess RBM progress towards its objectives and determine whether its goals have been met at the country, regional, and international levels. USAID, as a primary funder of this monitoring and evaluation system, particularly for the Africa region, has requested a specific assessment of the monitoring and evaluation system at the regional and global level. The results of this assessment will feed into the larger external evaluation and will provide recommendations to improve the capacity of RBM to monitor its effectiveness.

The methods used here have consisted of document reviews, database reviews, summary analysis of indicators and methodology, and key informant interviews in Harare, Geneva, Atlanta and by phone with nearly all other partners. The consultancy took place between November 2001 and January 2002.

- WHO/AFRO: 3 staff from RBM and 1 person from integrated disease surveillance
- WHO/HQ: 5 staff from RBM, 2 from integrated disease surveillance, 2 from TB
- Interviews and general discussions were also held with most of the individuals involved in or with a close interest in M&E of RBM, with members of the Partnership, and several malaria experts from RBM itself, and externally.

Framework

The framework for M&E for RBM is comprehensive in its coverage of all areas relevant to Roll Back Malaria. It emphasizes local control over data collection efforts by developing standardized approaches and encouraging countries to pick indicators appropriate to its epidemiologic profile. The framework uses minimal new data collection, instead relying on existing mechanisms and tapping into larger survey efforts, such as the DHS, where appropriate. This reliance on on-going data collection efforts while improving existing systems aims is laudable but has potential to increase problems in acquiring the desired data in a timely fashion.

The conceptual framework spells out the elements of a malaria program but does not clarify the processes, outputs, and outcomes within each element. In addition, there is no guidance on the appropriate selection of indicators at different levels, except to urge countries to choose one process and one outcome indicator for each element. The 'evaluation' aspect of M&E is not evident in the framework documents either which could limit efforts to empirically prove the merits and cost-effectiveness of various programs.

Databases and Platforms

Monitoring and evaluation depends on high-quality valid and reliable data on the target program. Several databases are in use, or being created. However, many challenges remain if these databases are to play a solid role in M&E. In many cases the databases are not complete and some of the data are of questionable quality. It is of particular concern that the baseline surveys are still not complete.

At the country level, various sources of data exist including national health information systems, national surveys such as the Demographic and Health Survey (DHS) or the UNICEF Multi-indicator Cluster Survey (MICS). These sources provide information for program monitoring and impact assessment on a regular basis. WHO/AFRO has also developed a methodology for collecting country baseline data which is currently being implemented in Africa. In addition, RBM has contracted with the INDEPTH network of

demographic surveillance sites to collect specific indicators on malaria morbidity and mortality to inform the program on disease trends.

Indicators and Sources of Data

There is a lack of consistency in indicators and definitions reported across countries and regions within RBM. The biggest issue is a lack of clarity on the definition of the indicators and target population covered. This lack of consistent guidelines and practices is a minor problem within a given country but can create more serious problems when it is aggregated at the regional or international level and compared with data from other countries that use different definitions or data sources.

The guidelines require countries to report on the 5 'global' indicators and suggest selecting indicators to cover outcome and process levels as well. However, many countries have difficulty in recognizing the process/outcome/impact hierarchy. RBM (either regional or international) could greatly assist in this effort by providing technical assistance to individual countries to develop their M&E plans.

The RBM M&E framework suggests many different sources of data for most of the key indicators, including 4 of the 5 global indicators, which leads to confusion as to the most appropriate mechanism to obtain the needed data. A large number of the proposed indicators are population-based, yet the bulk of the data used are derived from routine health information systems or facility-based information and do not use the most accurate denominator estimates. The RBM guidelines currently provide no guidance on the appropriate *selection* of data sources. Indeed, in AFRO Region, community surveys are being implemented without the rigid sampling methodologies necessary to be representative. This can create confusion and controversy when an indicator derived from one source is not the same as one calculated from another. Finally, there is an inconsistency in definitions of the suggested indicators, particularly the 'global' or 'core' indicators. These inconsistencies lead to confusion and ultimately jeopardize attempts to aggregate data at the regional or international level.

Organizational Capacity

Many of the shortcomings of the M&E system of RBM are due to organizational or structural issues within the RBM offices. The M&E team at HQ is tasked with: a) coordinating an internal M&E working group; b) developing and implementing a work plan to track progress of RBM at all levels; c) developing a geographical information system for RBM; d) developing and testing tools for malaria M&E; and e) coordinating reporting on RBM and related activities. In addition to the M&E team at WHO/HQ, individuals within the programmatic components of RBM have M&E responsibilities. Several individuals working in other units such as Stop TB and Communicable Disease Surveillance are also collaborating on aspects of RBM M&E, however, the organizational structure of RBM does not clearly define the roles and responsibilities of these individuals vis-à-vis the M&E team. Likewise, budget allocations for M&E activities are not clearly defined among the groups. This confusion leads to redundancies in some activities and gaps in others.

At WHO/AFRO, the M&E team is understaffed, consisting of one epidemiologist and one data manager. Both individuals are frequently on other activities within RBM and the larger WHO office. Other regional offices do not have dedicated M&E staff. This is a serious shortcoming given that all the data for international monitoring must come through the regional offices first.

There is no clear delineation of responsibilities between the regional bureaus and WHO/HQ for monitoring and evaluation activities nor is there any formalized chain for reporting or deadlines. RBM is caught between the stated goal of helping countries develop their monitoring systems and the demand to produce accurate, timely tracking for the overall initiative. However, given the constraints mentioned

above, this review suggests that technical assistance for the development of monitoring systems should be viewed as a separate, but equally important, activity from the monitoring of international efforts, at least in the early years of the initiative.

Recommendations

1. Recommendations for establishing systematic evaluation of RBM

1.1 Establish a strong M&E Team at the RBM Secretariat and in the Regional Offices.
We see this as needing at least three separate initiatives:

- Increase the number of qualified M&E staff both at HQ and in the Regional offices, especially AFRO.
- Streamline the management structure so that there is more authority to drive the evaluation decisions.
- Establish a reference group to provide periodic consultation on specific technical issues related to monitoring and evaluation.

1.2 Establish and maintain a plan and timeline for RBM M&E reports at the regional and global levels.
Reports that are essential in the near future include:

- A baseline report for measures (dating from approximately 1998-1999) of impact, outcome, and process indicators from settings where these data exist
- Progress reports describing specific issues such as evaluation of priority interventions, or monitoring the effect of a major policy change (e.g. change in first line drug policy).
- A format for annual reporting on progress with specific indicators and a timeframe for reporting must be established.
- A global report on malaria, produced every few years, like the TB Global Report, would be very helpful at the international level.

1.3 Establish a transparent system for assessing data quality and standardization across countries especially for the core indicators. The current M&E framework allows for local adaptation of many indicators thus potentially rendering some indicators incomparable. Certain indicators, when established as "global" or at least as "regionally critical," must be exempt from country modification.

1.4 Establish methods for documenting sources of data within the specific databases used for M&E purposes, and the extent to which they are representative of a country situation. Currently, data sources for country indicators are not documented when the data are aggregated to the national or regional level thus confusing interpretation.

1.5 Establish clear guidelines for data collection protocols and sampling strategies used to collect malaria-focused data in countries. For those indicators which can be obtained through standard survey methodologies, these should be used. For other indicators, RBM needs to provide clear and consistent recommendations on how to collect the necessary data and technical assistance in data collection when necessary.

1.6 Establish a complete malaria database at the global level. Currently, no complete database for malaria exists at the global level (although the AFRO Regional office is compiling one for that region). RBM must be pro-active in collecting data and holding countries to reporting requirements and deadlines.

1.7 Develop clear terms of reference for the HQ M&E unit as a whole. Management needs to clarify how the *cross-cutting* programs like M&E should interact with the *vertical* teams. Current collaboration is based more on personal relations than on a defined structure.

Assessment of the Roll Back Malaria Monitoring and Evaluation System

I. Introduction

The Roll Back Malaria partnership is currently undergoing a broad-based evaluation to assess its progress after three years of implementation and to define future directions for the worldwide effort to combat malaria. As part of the broader evaluation, the partners have requested an external evaluation of the RBM Cabinet Project. The purposes of this sub-activity are to evaluate the success of the Global Partnership and the Cabinet towards reaching the goals of the Abuja Summit and to make recommendations regarding future directions for RBM and the Cabinet.

One of the larger objectives of the RBM Partnership is to develop an effective monitoring and evaluation system to assess RBM progress towards its objectives and determine whether its goals have been met at the country, regional, and international levels. USAID has been a primary funder of this monitoring and evaluation system, particularly for the Africa region. As such, USAID requested a specific assessment of the monitoring and evaluation system at the regional and global level with particular attention to the role of RBM/AFRO. The results of this assessment will feed into the larger external evaluation and will provide recommendations to improve the capacity of RBM to monitor its effectiveness.

The primary purpose of this activity is to conduct an assessment of the current status of the Roll Back Malaria monitoring system and to provide recommendations on improvements for the monitoring system at all levels of the partnership.

Objectives:

- Review existing monitoring framework for RBM, with particular attention to the feasibility and timeliness of data collection and analysis at both regional and country levels. This aspect of the review will build on the M&E report of the Joint DFID/USAID Evaluation of AFRO in 1999 and the internal RBM evaluation of 2001.
- Review existing databases and monitoring platforms of relevance to RBM, with attention to how existing structures can be most effectively linked to the RBM monitoring effort and contribute to strengthening regional and country capacity. While the primary emphasis will be on data on malaria in Africa, systems from elsewhere will also be examined if they are thought to offer useful examples or products that can strengthen RBM monitoring.
- Propose next steps to increase partner coordination and capacity at all levels for timely monitoring of progress towards the Abuja summit and RBM goals.

II. Methodology

The methodology used for this evaluation has consisted of document reviews, database reviews, summary analysis of indicators and methodology, and key informant interviews in Harare, Geneva, Atlanta and by phone with nearly all other partners. The consultancy took place between November 2001 and January 2002.
At WHO/AFRO, 3 staff from RBM and 1 person from integrated disease surveillance, and at WHO/HQ, 5 staff from RBM, 2 from integrated disease surveillance, 2 from TB were interviewed. Telephone and personal interviews and general discussions were also held with most of the individuals involved in or with a close interest in M&E of RBM, with members of the Partnership, and several malaria experts from RBM itself. A complete list of contacts and documents reviewed is included in the Appendices.

The results are presented in four sections: the Evaluation Framework, Databases and Platforms, Indicators and Sources of Data, and Organizational Capacity. The final section is a list of recommendations. The

discussions below are summaries of information gathered from a review of the data, the methodological guidelines, and from discussions with staff regarding their understanding of the goals of the RBM monitoring and evaluation system. There are almost certainly gaps in the documentation reviewed. Monitoring and evaluating the malaria situation at the global, regional and country levels is an enormous task for the RBM Partners. Thus, this report is written in the spirit of providing constructive criticism and potential future directions to enhance the systematic evaluation of malaria at this critical time.

III. Framework

A conceptual framework is a schematic diagram that defines how program inputs produce program outputs and ultimately lead to the desired changes. The framework describes how the program should work in the ideal situation. This schematic also provides the foundation for selecting appropriate indicators to monitor the progress of the program at each level: inputs, processes, outputs, and outcome. In terms of monitoring and evaluation, the conceptual framework should also highlight how the program interacts with the external environment to contribute to the desired impact. Once the conceptual framework has been developed, it should guide the monitoring and evaluation process in terms of identifying programmatic areas to be tracked and defining the necessary indicators. This review has brought to light several shortcomings in the framework which need to be addressed in order to improve data collection and use for monitoring and evaluation.

The framework for M&E for RBM is comprehensive in its coverage of all areas relevant to Roll Back Malaria. It addresses not just the fundamentals of prevention, diagnosis, and treatment, but also issues of intersectoral linkages and national and international partnerships. The conceptual framework schematic attempts to define how the elements work together. The accompanying documents suggest key indicators and data sources for measuring progress.

The M&E Framework documents contain some very positive elements. The framework emphasizes local control over data collection efforts by developing standardized but adaptable approaches and encouraging countries to pick and choose indicators appropriate to its specific epidemiologic profile. The framework utilizes minimal data collection on its own, instead relying on existing mechanisms and tapping into larger survey efforts, such as the DHS, where appropriate. In fact, RBM takes this approach one step further by making a conscious effort to strengthen the health sector data collection as a whole. Together, this reliance on on-going data collection efforts while improving existing systems aims to reduce the burden on Ministries of Health and make RBM monitoring cost-effective and beneficial to the target countries. Unfortunately, reliance on external agencies slows and delays data collection activities.

A review of M&E activities and documents indicate that the framework itself is not used as comprehensively in the field as it should be. Current data collection efforts are targeted at the top of the framework, i.e., the prevention, diagnosis and treatment elements. The baseline surveys currently completed or underway in many countries collect a broad range of data on these elements. Other areas of the framework, such as service delivery and community action are also covered to some extent in the baselines, particularly by those countries that have chosen many of the optional indicators. Other elements of the framework, such as issues of health sector development, intersectoral linkages, and partnership support are discussed in the framework documents and several indicators are proposed. However, a review of the AFRO baseline studies shows that to date, none of the countries are collecting information on these areas.

The conceptual framework spells out the major elements of a malaria control program. However, it does not further clarify the processes, outputs, and outcomes within each element. Such definitions are critical in helping to develop national-level M&E plans particularly in the selection of indicators and the timing of data collection. For example, program processes should be monitored on a regular (quarterly, semi-

annually) basis for program management. Output indicators show what has been achieved at the level of the program itself (such as service delivery or bednet coverage). Outcome or impact indicators track the ultimate goals of the program and, in the context of an evaluation, the extent to which the program has contributed towards these goals. The current RBM framework does provide a table in the annexes which lists all the impact, outcome, and process indicators together with information on sources of data and periodicity of collection. However, there is no guidance on the appropriate selection of indicators at different levels except to say that countries should choose one process and one outcome indicator for each element. The tables themselves lend to the confusion in that several sources of data with differing periodicities are listed for each indicator with no guidance as to when to use one or the other.

The 'evaluation' aspect of monitoring and evaluation is weak, and not clearly evident in the framework documents. “True” evaluation (i.e., one accepted international definition in the health field) involves attributing changes in impact indicators to program interventions, while controlling (statistically or by study design) for alternative explanations for change. It is a more complex procedure than simply tracking impact indicators over time. However, evaluation serves an important purpose in program M&E. Evaluation can be used to determine the overall effectiveness of the intervention strategies for replication or scaling up. Evaluation studies can determine the cost-effectiveness of program components. These issues are particularly important for new or growing programs which need to base decisions to expand on empirical data. Because of the scope and expense of conducting impact evaluations, it is important that these activities be defined and budgeted from the outset of the program. The RBM M&E documents do not provide any guidance on when and how to conduct impact evaluation.

One of the gaps in the RMB M&E strategy is a vision for monitoring the economic impact of malaria. The Framework document itself mentions economic burden as an important factor, and describes a working group commissioned to provide guidance on this area by Dec. 2000. However, none of the documents we reviewed provided any guidelines on indicators or mechanisms for tracking changes in economic burden at either the national or household level. There are three main areas where economic issues should be tracked: the costs to the health sector, the costs to households and communities, and the burden on the economy of the country due to days lost by sick workers, changes in productivity due to malaria programmatic activities and lowered levels of the malaria burden in small areas. The first two elements are vital for program planning and management, while the third and fourth elements are useful primarily as advocacy tools. The assessment team strongly recommends that this issue be addressed and appropriate guidance provided to national programs and the Partnership.

IV. Databases and Platforms

Monitoring and evaluation depends on high-quality data that are valid and reliable sources of information on the target program. At the country level, program managers need timely data to manage activities and track progress. At the regional and international levels, stakeholders need to be able to track trends both within and across countries using indicators that are consistent over time and throughout geographic regions.

This review examined the data available at country, regional and international levels. Several databases are currently in use, or being created. However, considerable challenges remain if these databases are to play a solid role in monitoring and evaluation. In many cases the databases are not complete and some of the data are of questionable quality. Of particular concern, the baseline surveys are not complete yet, and for about a third of those that have been completed, their data are not yet entered.

Country level

a) *National Health Information Systems* - Within national information systems, there are considerable efforts being made to produce reports about the malaria situation. Most HIS collect routine information on key variables such as cases seen (often disaggregated into < 5 and > 5). These data are collected primarily from public sector health facilities and aggregated up to district, region and national levels. Due to incompleteness of reporting, varying definitions, and inconsistent denominators, these databases are of dubious quality.
b) *Demographic and Health Surveys* - Periodically (usually every 5 years or so) countries conduct a DHS. The level and extent to which these data are used for malaria programming monitor varies considerably by country. The data are archived at MACRO (available on their website) but generally not part of RBM databases in country.
c) *Country Baseline Surveys* - 12 countries in the AFRO region have completed their baseline survey and submitted their reports to AFRO and 6 others are in the process of doing their surveys. These are maintained at the country level as well as aggregated up to RBM/AFRO and eventually RBM/HQ. Currently AFRO is in the process of compiling a database but is still waiting on reports from many countries. RBM/Geneva would presumably share this database once it is developed. Other regional offices have no such initiatives for malaria in place (although some have data on specific projects). A few countries have submitted their reports on CD ROM. This suggests an electronic database does exist in these countries and that we understand there are plans to develop these electronic systems into full databases for M&E at the national level. Software is being developed for distribution to countries for this express purpose.
d) *DSS/INDEPTH network* - Data collected as part of INDEPTH, which links field sites utilizing a Demographic Surveillance System (DSS), may be one of the best ways to continuously monitor key indicators (i.e., cause specific mortality). Currently there are 28 sites in 14 African countries. By definition, field stations already employing DSS should have a wealth of monitoring data on vital statistics and that could be related to malaria programmatic interventions according to a geographically defined population. Through INDEPTH (the network of these sites established in 1998), information collected through DSS at these sentinel sites could be synthesized on an ongoing basis in order to provide high quality, population-based, health and demographic data in resource poor settings.
e) *Integrated Disease Surveillance Systems* –These systems exist in most countries, and RBM is meant to tap into these databases to supplement the baseline surveys and eventually to use them for evaluation and monitoring. The current assessment focused at the regional and international levels and did not examine individual country surveillance systems. However, many of the concerns related to health information systems discussed above (and below – see sources of data) can also apply to surveillance systems.

Regional Level

a) *Database of Baseline Indicators for Evaluation of malaria in Africa* - Currently 12 countries out of 46 total countries in the region, have completd their surveys, written their reports and submitted these to AFRO. These 12 have now been entered into a database. This database is the most complete source of data for RBM in Africa so far (although it is far from being completed – see attached). None of the other regions have undertaken an effort of this magnitude. The database is relatively basic. It contains all the core indicators from the AFRO Region M&E guide plus the supplementary indicators when countries have elected to collect them. The most complete data in this database comes from a very few countries. All countries are missing some of the core indicators. Significantly absent are those related to malaria in pregnancy. This database is a start at developing a workable platform for beginning the evaluation process for RBM, however concerns remain about how the countries are collecting these indicators. As an example, in Uganda the indicator on under 5 mortality had been estimated from this survey data that had been gathered from just a few districts. Moreover this

indicator incorrectly measured all children under 5 reported to have died as a proportion of all under 10-year-olds.

b) *Paper sources* – RBM/AFRO has in Harare tremendous resources in its office in terms of reports from countries and regions on many aspects of malaria prevention and control. However, these reports are still in paper form, and thus information that needs to be abstracted from the reports takes considerable time. For cross national or cross regional evaluation purposes (e.g. to assess regional progress towards the Abuja goals) these data will be hard to access.

International/Global level

a) *Integrated Disease surveillance system* – at global /WHO (Geneva). There is an ongoing programme to strengthen disease surveillance under a combination of several actors including the Integrated Disease Surveillance, Integrated Management of Childhood Illness, the Malaria VPD, and the Expanded Programme on Immunization –CSR programmes at WHO.
b) *UNICEF End of Decade surveys*. These are surveys compiled from several data sources and they have been designed expressly to measure the state of children's health and wellbeing since the 1990 Declaration of the Rights of the Child. Three statistics have been tabulated by country and can be seen on the website www.childinfo.org. These statistics are the basic coverage and child treatment indicators that RBM calls for core indicators (see attached tables). The data used have come from MICS, DHS and other national level surveys.
c) *RBM Website*: There is a lot of overview, or progress documentation on RBM's website. These documents form a database of their own.
d) *Global Health Network*-upcoming report-We understand a report on the status of TB, HIV and malaria has been commissioned at WHO/HQ. This will require data from the malaria database at the AFRO regional office.

V. Indicators and Sources of data

1. Sources of Data

The RBM Initiative has identified 5 primary sources of data for their M&E system: routine surveillance (HIS), demographic surveillance, community and household surveys, health facility surveys, and document reviews. These diverse systems are intended to cover the variety of information needs, both short-term and long-term. Each has its own inherent strengths and weaknesses that need to be taken into account for the RBM monitoring system.

a) *Routine Surveillance (Health Information Systems)* The RBM M&E plan counts on the use of routine systems for many of the impact indicators as well as several of the outcome and process indicators. This reliance on routine information for the critical impact indicators, most of which are population-based, could result in bias and discrepancies with internationally recognized standards. In some regions (Europe, and parts of the Americas), routine surveillance is well-developed and can contribute timely information on population-level indicators. In other critical regions, such as Africa or South-East Asia, this is not the case. Routine information systems in these areas are usually not complete and reliable enough to provide accurate national-level indicators. Specifically, utilization of health facilities varies considerably among countries and even regions within countries, so population-level coverage is not complete. For all these reasons, data from routine health information systems should not be used for international comparisons at this point, although efforts should be made to improve data quality for internal use.

b) *Demographic Surveillance* RBM has provided support to the INDEPTH network of demographic surveillance sites. This is intended to provide more accurate data on critical indicators in areas where the routine information systems are not functional. In theory, this could be an excellent source of quality data on population-based indicators of morbidity and mortality. In practice, RBM has yet to receive any data at all from these systems and this is a source of frustration. Also, since these surveillance sites are run by different organizations, usually for purposes not related to RBM, there could be some question on consistency of data collection across sites. This is not an insurmountable obstacle however, and regular monitoring by RBM staff could make this a viable source of impact data. These sites could provide an excellent source for data in between DHS or other large surveys and also can be used as a 'gold standard' for validation of HIS or surveillance data.

c) *Community and Household Surveys* Population-based surveys are critical sources of data for many of the outcome and impact indicators. The critical issue is the consistency of the indicators and methodological approaches (especially sampling) when using survey data to track trends over time. Currently, many countries have implemented the DHS, which is widely considered to be the gold standard of household surveys. The DHS collects a variety of demographic data as well as malaria-specific data though a special additional module. Where DHS has been used, we can be reasonably certain of obtaining accurate data on many process indicators such as household use of bednets and household treatment practices. The DHS data can also provide some mortality information through demographic estimation techniques, but it does not collect cause of death information.

Other countries have used the UNICEF MICS survey or other survey methods to arrive at population-level indicators. With many of these efforts, the quality and consistency of the data over time are less sure. RBM has also developed its own instruments which are being used in the AFRO region to collect baseline indicators at the household and community levels (and health facility, see below). These instruments are designed to meet specific needs of the RBM program in the Africa region. They are also intended to be rapid and easy to use at the district level. The questionnaires and sampling methodologies are quite different from that used by the DHS. A quick review of DHS vs. RBM baseline data from several African countries reveals radical differences in some of the key indicators, such as mortality, between the two data sets.

In order to assure the quality and consistency of the data used for reporting at the international level, this review recommends that RBM use the DHS or other comparable national-level surveys for reporting on 'global indicators'. This will insure that the data are collected in a comparable fashion across countries and over time. The RBM monitoring tools should be used for annual monitoring purposes within countries as a quick method to track progress between DHS surveys.

d) *Health Facility Assessments* are designed to look at quality of care in service provision, as well as availability of supplies and equipment within different levels of the health care system. There are several different types of facility assessments currently being conducted: the Service Provision Assessment (SPA) of the DHS, the Situation Analysis conducted by Population Council, the IMCI Facility Assessment of WHO and others. RBM intends to rely heavily on health facility assessments for impact and outcome indicators. Many of the issues raised under the household surveys section apply to facility surveys as well: there are concerns about consistency of data collection instruments and sampling methods. Here again, we recommend that RBM should collaborate with on-going data collection efforts in the context of IMCI or the SPA rather than implementing its own surveys. This will assure consistent, quality data and also provide internationally comparable indicators. For routine monitoring of equipment and supplies, regular use of existing logistics information should suffice.

e) *Review of Documents* The review of documents method is only intended for one-time use on specific indicators such as the existence of national guidelines for treatment, or epidemic-preparedness plans.

As such, it is an appropriate method to determine whether such documents have been developed and published. The various instruments discussed above will need to be adapted to track whether the documents achieve their intended objectives, i.e. that policies are followed consistently.

2. Indicators

Definitions

There is a lack of consistency indicators and definitions reported across countries and regions within RBM. The biggest issue is a lack of clarity on the definition of the indicators and the target population. RBM has published documentation covering the definitions, but even then it is not always clear. One primary example is what constitutes 'complicated' malaria and 'severe' malaria, which differ depending on what reference document one consults. Another potentially confusing area is the definition of 'health facility' for those indicators to be derived from facility data. Most countries have a mix of public sector facilities of different types, private sector clinics and doctors offices, and other facilities run by NGOs, religious organizations and other groups. Which facilities are supposed to be included is not immediately clear from the documentation, nor are the country-specific definitions included in any of the databases. Finally, regions and countries are allowed the flexibility of choosing which indicators they will report on (although all are asked to report on the 5 'global' indicators).

This lack of consistent guidelines and practices is not an enormous problem within a given country. As long as the country sticks to the same definitions and data collection mechanisms from year to year, the data will be relatively useful for tracking trends. The problem arises when it is aggregated at the regional or international level and compared with data from other countries who may have used different definitions or data sources. RBM should be very clear on the specific definitions (both numerator and denominator) for the suggested indicators and especially for the 'global' indicators used to track overall RBM progress.

Selection of Indicators

The current RBM guidelines offer very little assistance for countries to develop a country-specific framework and select appropriate indicators. The guidelines require countries to report on the 5 'global' indicators and suggest selecting indicators to cover outcome and process levels as well. However, most countries do not have specialists in M&E assigned to the malaria activities and therefore may have difficulty in recognizing the process/outcome/impact hierarchy. Each country needs to set for itself clear objectives regarding its own malaria program and then select the appropriate indicators to monitor progress. RBM (either regional or international) could greatly assist in this effort by providing technical assistance to individual countries to develop their M&E plans.

Data sources

The RBM M&E framework suggests many different sources of data for most of the key indicators, including 4 of the 5 global indicators. For example, the core indicator 'malaria death rate in target groups' has 5 different potential sources of data listed in guidelines: routine HIS, demographic surveillance, DHS surveys, health facility surveys, and community surveys. In actuality, this indicator will differ radically depending on the source of data used and the method of calculation. Data on malaria deaths derived from routine HIS will at best represent only those deaths occurring at or reported to the health facilities. More importantly, routine HIS in most countries lacks accurate denominator data to derive population-based indicators such as this. On the other hand, DHS surveys are sampled to be representative of the

population, but they do not collect cause of death information and therefore could not provide the numerator for this indicator.

The issue of data quality for denominators is repeated throughout the indicator guidelines. A large number of the proposed indicators are population-based, i.e. the denominator is either the general population of a given country or a subset such as pregnant women or children under 5. Routine information systems (esp. in Africa) often use out-of-date or inaccurate estimates of population figures, thus injecting an element of bias in the indicators derived from them. Health facility surveys can only collect information on those patients seen at the clinics, again not accurately representing the general population. The most accurate data collection methods for population-level indicators are either through demographic surveillance or a household survey sampled to be representative of the population. The RBM guidelines currently provide no guidance on the appropriate *selection* of data sources. Indeed, in AFRO Region, community surveys are being implemented without the rigid sampling methodologies necessary to be representative. This can create confusion and controversy when an indicator derived from one source is not the same as one calculated from a different data set. RBM needs to provide more specific guidance on which data sources are appropriate in which circumstances (district/country level monitoring vs. international comparisons) and then monitor the sources of data that are fed into the M&E system.

Finally, a review of the monitoring and evaluation documents that we have seen has highlighted an inconsistency in the suggested indicators, particularly the 'global' or 'core' indicators. The Framework document clearly spells out 5 'global' indicators and states that they are of such paramount importance that all RBM countries should collect them. However, in the detailed description in the Appendices, only the indicators on morbidity, mortality, and drug stockouts are listed as global core indicators. The appendix list also includes case fatality rate and malaria treatment failure among the global core, but these indicators are not included in the lists found elsewhere in the document. In addition, review of various lists of key indicators in other documents likewise don't match the core list set out in the framework. These inconsistencies lead to confusion and ultimately jeopardize attempts to aggregate data at the regional or international level. RBM and partners should agree on a minimum set of 'global' indicators, their definitions, and data sources which will be collected by all countries involved in the initiative.

VI. Organizational Capacity

Many of the shortcomings of the M&E system of RBM are due to organizational or structural issues within the RBM offices. Both RBM/HQ and RBM/AFRO are short-staffed in the M&E Units. RBM/HQ has 2 M&E staffers: a senior advisor who began in March 2000 and a technical officer who started in September 2001. The team will also soon add a secretary. The M&E team at HQ is tasked with: a) coordinating an internal M&E working group; b) developing and implementing a work plan to track progress of RBM at all levels; c) developing a geographical information system for RBM; d) developing and testing tools for malaria M&E: and e) coordinate reporting on RBM and related activities.

In addition to the M&E team at WHO/HQ, there are individuals within the programmatic components of RBM who have M&E responsibilities. Several individuals working in other units such as Stop TB and Communicable Disease Surveillance are also collaborating on aspects of RBM M&E such as the GIS system, and reporting on Global Fund indicators. However, the organizational structure of RBM does not clearly define the roles and responsibilities of these individuals vis-à-vis the M&E team. Likewise, budget allocations for M&E activities are not clearly defined among the groups. One of the objectives of the M&E team is the creation of a cross-cluster task force on M&E of malaria and the individuals who will participate have been identified. However, to date, the task force has not been formally established. This confusion leads to redundancies in some activities and gaps in others. Most importantly, the M&E team is not always involved or aware of the various activities within the other units and therefore loses some ability to coordinate the M&E efforts. RBM management needs to spell out clear roles and

responsibilities for the M&E team (as opposed to just the individual staff) as well as outline the formal relationships between the M&E team and the other units within RBM.
At WHO/AFRO, the M&E team is likewise understaffed, consisting of one epidemiologist and one data manager. The senior staff member is responsible for providing technical assistance and financial support to the baseline data collection at the country level and analyzing M&E data coming in from across the Africa region. The data manager is developing a database for the baseline surveys and compiling country profiles for the RBM website. Both individuals are frequently called away to other activities both within RBM and the larger WHO office. Other regional offices have no dedicated M&E staff. This is a serious shortcoming, given that all the data for monitoring must come through the regional offices first.

There is no clear delineation of responsibilities between the regional bureaus and WHO/HQ for monitoring and evaluation activities and reporting. There is no formalized chain of reporting nor regular deadlines specified for countries to collect data and produce reports. None of the regional offices have firm reporting plans in place. The vision as specified in the documents is that AFRO (it is less clear for other regions) will report on baseline data collection twice in the first year (as surveys are conducted and analyzed) and yearly thereafter; however, this has not occurred as planned. Similarly, the data needs within countries are different from those at regional and international levels. WHO has specified which indicators it considers the 'global' indicators but the same delineation of needs has not been spelled out between the countries and the regions. Currently, the countries are reporting all the data they have collected, both required and supplementary indicators, to AFRO. In addition, no formal plan exists to obtain data from 'external' sources such as MICS or DHS surveys which may be on-going in the country. Any collaboration that exists tends to be more ad hoc than regularized. RBM needs to develop a more formalized system of reporting at all levels before it will be able to adequately track its programs.

RBM is caught between the stated goal of helping countries develop their monitoring systems and producing accurate, timely tracking for the overall initiative. While there is no question that countries need assistance to develop their own capacity to track their programs, reliance on these systems for monitoring the international initiative is not feasible. Experience has shown that the development of good routine information systems within countries is a costly and time-consuming business. This review suggest that technical assistance for the development of monitoring systems should be viewed as a separate, but equally important, activity from the monitoring of international efforts, at least in the early years of the initiative.

VII. Recommendations

Considerable data are available for the monitoring of malaria. However, weaknesses in methodologies used to collect the data, gaps and delays in data acquisition and entry, inconsistencies and lack of standardization across the data collection efforts, and lack of human and financial resources at key centres all mean that the initiatives against malaria in most countries cannot be evaluated using many of the existing databases. In fact, RBM will need to reorganize its approach to monitoring and evaluation, especially if it wishes to demonstrate impact at a global, regional and, for the most part, national levels.

It is possible to evaluate malaria in most regions with some of the current data, though there may need to be some extra initiatives to fill gaps. Clear leadership and monitoring of the standard of data coming into systems is needed to ensure relatively complete datasets are available to establish a systematic M&E process over the next 8 years.

Listed below are some suggested steps to increase capacity to monitor and evaluate malaria.
Considerable effort has already gone into the development of *national* capacity in some countries, and these efforts should not be discounted (these will serve the best interests of national malaria programs in

the future etc.). However, if RBM wishes to establish efficient evaluation of impact within the national programs, much more work remains to be done.

The recommendations are organized into three sections: recommendations for establishing a systematic evaluation of RBM, which include specific activities and assessments that need to be carried out the RBM M&E team; technical recommendations on the methods and indicators based on a review of the database platforms; and recommendations to improve communication both at the partnership level and within RBM/WHO itself.

1. Recommendations for establishing systematic evaluation of RBM

1.1 Establish a strong M&E team at the RBM Secretariat and in the Regional Offices: We see this as needing at least three separate initiatives:

- Increase the number of qualified M&E staff both at HQ and in the Regional offices, especially AFRO. These need to be experienced M&E people who can enhance the existing team and facilitate a more focused approach to M&E.
- Streamline the management structure so that there is more authority to drive the evaluation decisions. The M&E team needs the authority to insist upon certain standards of measurement, to require the meeting of deadlines, and it should be backed up by senior management.
- Establish a reference group to provide periodic consultation on specific technical issues related to monitoring and evaluation. This reference group should consist of malaria researchers, monitoring and evaluation specialists, and other experts who can address the complex issues involved in measuring change in malaria programs. The group should be used to advise on data collection protocols, indicator standardization, gaps in knowledge regarding M&E, and other specific issues. It should not be a 'working group' but rather an advisory panel who can keep RBM apprised of the state of the art in malaria measurement. This group should meet once a year for 5 years or until M&E processes at the international and national levels are more established.

Immediate tasks for an expanded M&E Team:

1.2 Establish and maintain a plan and timeline for RBM M&E Reports at the regional and global levels. Reports that are essential in the near future include:

- In this calendar year (2002), there is a critical need to develop a baseline report for measures (dating from approximately 1998-1999) of impact, outcome, and process indicators from settings where these data exist.
- Reports are also needed describing progress on specific issues such as evaluation of priority interventions, or monitoring the effect of a major policy change (e.g. change in first line drug policy).
- A format for annual reporting on progress with specific indicators and a timeframe for reporting must be established. This will allow both countries and RBM to monitor progress on a timely basis and step in where needed to fill gaps in data.
- A global report on malaria, produced every few years, like the TB Global Report, would be very helpful at the international level.

1.3 Establish a transparent system for assessing data quality and standardization across countries especially for the core indicators.

Justification: There is a need to reassess some of the specific indicators of inputs, process, outputs, and impact of RBM programs. For example, following the Abuja Meeting in April 2000, several key targets

were developed but their place among the indicators is currently unclear. Each goal needs to be mapped clearly to one or more indicators. In addition, the current documents on RBM M&E provide for some local adaptation for even the key, critical measures thus potentially rendering some indicators incomparable. A marked lack of standardization across countries and even within countries make any kind of cross national comparison impossible. Certain indicators should be established as "global" or at least as "regionally critical" and therefore exempt from country modification. This must be done to ensure that at least some of the indicators will be standardized over time and provide the global progress report needed. The reference group mentioned above can play a critical role in reviewing the indicators and defining which indicators are to be considered core and for what level of evaluation.

1.4 Establish methods for documenting sources of data within the specific databases used for M&E purposes and the extent to which they are representative of a country situation

Justification: The documentation coming from the field contains considerable variation in data sources and indicators. Moreover, the sources are not documented when the data are aggregated to the national or regional level, thus confusing interpretation. For example, the baseline database from the AFRO region includes a measure from Uganda of under-5 crude death rate of 78.04/1000. The recently released DHS (2001) for Uganda reports an under-5 mortality rate (for the 4 years preceding the survey) of 151.5/1000. Without clear sourcing of the data this discrepancy will lead to severe confusion in later years.

1.5 Establish clear guidelines for data collection protocols and sampling strategies used to collect malaria-focused data in countries.

The recommended strategies for data collection, especially for core indicators, need to be reassessed urgently. For those indicators that can be obtained through standard survey methodologies (e.g. under-5 mortality), existing data from these surveys should be used. The DHS and similar mechanisms have been used in many of the RBM countries and can provide reliable quality data on many of the needed indicators. For indicators not available through these sources, RBM needs to provide clear, consistent recommendations on how to collect the necessary data.

The current documentation on how to collect data is insufficient to enable sound data collection to be carried out on a systematic basis. In particular, the sampling plans and the specifications for facility-based data collection in conjunction with the population-based estimates are inadequate. Numerous examples of relatively inexpensive and valid sampling plans exist – e.g., the cluster sample survey used for EPI and other health programs or the segmented cluster sample plan (used in MICS). The advantage of using one of these methods is that the biases are well understood and can be controlled for to some extent during analyses. With some effort, these could be adapted for malaria-specific evaluations. A manual for the methodologies used to collect the data should be produced soon and under expert guidance.

Facility-based data collection: RBM M&E team should use established facility-based data collection mechanisms where possible for consistency and methodological rigor. The Service Provision Assessment of the DHS is one of the most up-to-date tools for facility assessments. Other possibilities include the IMCI surveys, and the Situation Analyses conducted in some countries. Another idea might be to investigate more use of market surveys, especially for distribution and coverage rates for ITN programmes. We believe this has recently been used by at least one social marketing organization involved in the distribution of bednets in Malawi.

1.6 Establish a complete malaria database at the global level

Justification: No database for malaria appears to exist at the global level although the AFRO database will eventually be replicated at HQ level. HQ should be developing its own database of indicators from

the various data collection efforts. This should be a pro-active effort both in terms of providing technical assistance to countries attempting to compile data and in holding countries to reporting requirements and deadlines.

1.7 Other organizational recommendations for the enhanced M&E team:

- There are no clear terms of reference for the HQ M&E unit as a whole (although individual terms of reference exist). Management needs to clarify how the *cross-cutting* programs like M&E should interact with the *vertical* teams and what the role of the M&E person on each *vertical* team is vis-à-vis the M&E team -- if indeed this structure is maintained. Current collaboration is based more on personal relations than on a defined structure. Ambiguity leads to duplication of efforts in some areas and gaps in information for others.
- RBM should establish standard guidelines and selection criterion for consultants. The highly varied work that has been done under the guidance of consultants may also reflect the problems noted in the methodological guidelines noted above.
- The strengthened RBM M&E team should develop a database of technical consultants with prior expertise in M&E for technical assistance activities in country. RBM could tap into existing databases at WHO or other partner organizations or perhaps contract out this activity to one of the partners.

2. Technical Recommendations

2.1 Because the main goal of RBM is to reduce the malaria burden (especially the malaria-associated mortality and morbidity) by one-half, measures on infant and child mortality are key to the RBM M&E efforts. Under-5 child mortality and infant mortality rates can be collected from, or projected from, recent DHS or censuses for most countries in Africa. RBM should contract a demographer to compile the major impact baseline data for the all-cause child and infant mortality rates for all AFRO countries that have had a DHS within the last 5 years.

2.2 RBM might consider investing some effort into the feasibility of using under-2 all-cause child mortality (a measure that can be calculated using data from the standard mechanisms mentioned above). This may be vital for countries with high HIV-related death rates in the older child ages.

2.3 RBM should provide technical assistance to countries to increase capacity to measure malaria treatment and prevention during pregnancy. Although the current guidelines single out pregnant women as a special target group, to date virtually no country is collecting data on them.

2.4 There are no indicators that measure the impact of malaria on social activity or economic productivity. The work by Jeremy Sachs and Ann Mills would help to develop appropriate indicators to demonstrate changes over time of the effect of malaria on overall development indices. UNAIDS has worked hard to try to develop these types of measures, and there may be some crossover of data collection that can be used for RBM as well as HIV.

2.5 More attention should be paid to tracking changes in the policy environment and eventually evaluating the impact of a changing policy environment on malaria programme outcomes. Program effort indices have been used for both family planning and HIV/AIDS with a relative degree of success (and at relatively low cost to the country). RBM may wish to investigate the development of such an index for malaria programs to track overall effort and changes in the policy environment.

2.6 RBM might consider the idea of conducting the evaluation of the national programmes in a stepped or staged fashion. In other words, in the next 3 years, focus on conducting an intense evaluation of a subset of AFRO region (5-7 countries?). These countries would meet certain criteria – e.g., to have had a DHS since 1997, to have completed a baseline, etc. Over these first few years many kinks could be worked out, indicators tested and the different levels of evaluation intensity assessed. Some of these first countries could be countries that are currently part of the INDEPTH network, since this

would help the overall quality of the data. After 3 years, RBM could then rollout a much more extensive guide to evaluation methods to other countries that have signed the Abuja Declaration.

3. Recommendations for improving communication

Communication with RBM offices (HQ and regions) as well as between RBM and country programs continues to be an important issue. Listed below are some of the major areas where immediate action will definitely help this process of developing systematic M&E for RBM:

3.1 USAID should work with Measure DHS+ to assure interaction with RBM at HQ as well as those people working on malaria at country level when a DHS is to be implemented. Currently, there is very little communication. Malaria program people are often not involved with design of the study nor the analysis. There also appears to be haphazard dissemination of the final reports to countries and within countries. More intensive interaction with RBM and with country programs would help the survey to produce the most valuable data and would assist countries in using it appropriately.

3.2 Similar issues to those mentioned above exist with UNICEF/MICS and other large household surveys. RBM should provide guidance to countries about which surveys are most useful for malaria-related information and perhaps even facilitate collaboration where possible.

3.3 We also identified several areas where communication needs to be enhanced within levels of WHO. There should be simultaneous reporting of data to all levels. Presently RBM-HQ does not directly contact countries for data, instead waiting for reports from the regional bureaus. This has the potential to become a major bottleneck in the flow of information, in both directions.

Appendix. 2 Tables
References and Background Documents
Visits to Harare and Geneva
Interviews/Discussions/persons contacted
Example of Database platform – illustration of the Harare Baseline Database

Table 1: **Evidence of matched selected indicators**

WHO ***(Framework for Monitoring Progress & Evaluating Outcomes and Impact, 2000)***	**AFRO** ***(RBM Initiative in the African Region: M&E Guidelines, 2000)***	**SEAR/WPR** *(Report SEAR/WPR Biregional meeting on control of Malaria, 2000)*
Global Indicators (pg. 13) 1. Malaria death rate (probable & confirmed cases) among target groups (under 5 and other target groups)	Under 5 (other target group) malaria mortality rate	
2. # of malaria cases, severe and uncomplicated (probable and confirmed) among target groups (under 5 and other target groups)	# malaria cases (uncomplicated and severe) in children under 5	# of suspected malaria cases # of probable (severe + uncomplicated) malaria cases # of confirmed (severe + uncomplicated) malaria cases # of Falciparum malaria cases # of severe malaria cases (probable + confirmed) # of confirmed severe malaria cases
3. Proportion of households having at least one treated bednet	% of households with at least one ITN	Avg. number of persons per net
4. % patients with uncomplicated malaria getting correct treatment at health facility and community levels, according to the national guidelines, within 24 hours of onset of symptoms	% of children under 5 (and other target groups) with uncomplicated malaria correctly managed at health facilities	Doses of antimalarial drugs distributed
5. % health facilities reporting no disruption of stock of antimalarial drugs (as specified in the national drug policy) for more than one week during the previous 3 months	% of health facilities with no stock outs of nationally recommended antimalarial drugs continuously for one week during the last 3 months	
Impact Indicators (pg. 10) 1. Crude death rate among target groups	Under 5 (other target groups) Crude Death Rate	
2. Malaria death rate (probable and confirmed cases) among target groups	Under 5 (other target groups) malaria mortality rate	
3. % probable and confirmed malaria deaths among patients with severe malaria admitted to a health facility	Case fatality rate of severe malaria inpatients among children under 5 (and other target groups)	# of malaria deaths (probable + confirmed) # of confirmed malaria deaths
4. # of cases of severe malaria (probable and confirmed) among target groups	Morbidity attributed to malaria (uncomplicated and severe) among children under 5 (and other target groups)	# of severe malaria cases (probable + confirmed) # of confirmed severe malaria cases

Table 1: Evidence of matched selected indicators (cont.)

WHO (Framework for Monitoring Progress & Evaluating Outcomes and Impact, 2000)	AFRO (RBM Initiative in the African Region: M&E Guidelines, 2000)	SEAR/WPR (Report SEAR/WPR Biregional meeting on control of Malaria, 2000)
5. # of cases of uncomplicated malaria (probable and confirmed) among target groups	Morbidity attributed to malaria (uncomplicated and severe) among children under 5 (and other target groups)	
6. Annual Parasite Incidence (API) among target groups (by region/according to the epidemiological situation		
<u>Impact Indicators</u> (pg. 19)		
1. # of cases of uncomplicated malaria (probable and confirmed) among target groups per unit population per unit time	Morbidity attributed to malaria (uncomplicated and severe) among children under 5 (and other target groups)	
2. # of cases of severe malaria (probable and confirmed) among target groups per unit population per unit time	Morbidity attributed to malaria (uncomplicated and severe) among children under 5 (and other target groups)	
3. # of malaria deaths (probable and confirmed) among target groups per unit population per unit time	Under 5 malaria mortality rate	# of malaria deaths (probable + confirmed) # of confirmed malaria deaths
4. Case fatality rate--proportion of probable and confirmed malaria deaths among patients admitted with severe malaria to a health facility per unit time	Case fatality rate of severe malaria inpatients among children under 5 (and other target groups)	
5. # of microscopically confirmed malaria treatment failures per # of patients treated (reported for each drug used)		
	<u>Others</u> % under 5 (and other target groups)with malaria attack/fever getting appropriate treatment within 24 hours of onset % of under 5 (and other target groups) admitted with severe malaria and correctly managed at health facilities % under 5 sleeping under ITNs % pregnant women (other target groups) sleeping under ITNs % of pregnant women on intermittent antimalarial treatment or antimalarial chemoprophylaxis	

Table 1: Evidence of matched selected indicators (cont.)

WHO (Framework for Monitoring Progress & Evaluating Outcomes and Impact, 2000)	AFRO (RBM Initiative in the African Region: M&E Guidelines, 2000)	SEAR/WPR (Report SEAR/WPR Biregional meeting on control of Malaria, 2000)
	Others (cont.)	
	Malaria epidemics detected within two weeks of onset and properly controlled	# of epidemics early detected and controlled # of epidemics not timely detected or not controlled
	Proportion of countries/districts accelerating the implementation of RBM according to the Regional guidelines	
	Proportion of countries with established system for monitoring antimalarial drug efficacy	
	Proportion of countries with established system for monitoring resistance of vectors to insecticides	
	Regional stocks of drugs and supplies available to support countries in epidemics	
	% of total agreed national RBM budget met by RBM partnership	
		Others
		Mid-year population
		Population at risk of malaria
		# of asymptomatic patients tested
		# of asymptomatic malaria cases
		# of nets treated in at least one round
		# of persons protected by house spraying

Table 2: AFRO Indicators and Sources of Data

AFRO (RBM Initiative in the African Region: M&E Guidelines, 2000)	AFRO-Baseline	MICS	DHS	DSS*
Under 5 (other target groups) Crude Death Rate	X		X	X
Under 5 (other target group) malaria mortality rate	X		X	X
% of households with at least one ITN	X	X	X	X
% of children under 5 (and other target groups) with uncomplicated malaria correctly managed at health facilities	X		X	X
% of health facilities with no stock outs of nationally recommended antimalarial drugs continuously for one week during the last 3 months	X		X (From SAM?)	
Case fatality rate of severe malaria inpatients among children under 5 (and other target groups)	X			X
Morbidity attributed to malaria (uncomplicated and severe) among children under 5 (and other target groups)	X		X	X
% under 5 (and other target groups)with malaria attack/fever getting appropriate treatment within 24 hours of onset	X	X	X	
% of under 5 (and other target groups) admitted with severe malaria and correctly managed at health facilities	X			
% under 5 sleeping under ITNs	X	X	X	X
% pregnant women (other target groups) sleeping under ITNs	X			X
% of pregnant women on intermittent antimalarial treatment or antimalarial chemoprophylaxis	X		X	X

*It is our understanding that DSS has the potential to collect information for almost all AFRO indicators, although what is actually collected may vary by country

Reference List/ Documents consulted

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