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RBM Framework for Monitoring Progress and Evaluating Outcomes and Impact

FINAL VERSION

Founding Partners:

Table of contents

List of Abbreviations

AFRO	African Regional Office
AIM	African Initiative for Malaria
API	Annual Parasite Incidence
CDR	Crude Death Rate
CHW	Community Health Worker
DALY	Disability Adjusted Life Years
DSS	Demographic Surveillance Systems
EDM	Essential Drugs and Medicine
GDP	Gross Domestic Product
HIS	Health Information System
HS	Health System
IDS	Integrated Disease Surveillance
IMCI	Integrated Management of Childhood Illness
ITN	Insecticide Treated Net
MDR	Malaria Death Rate
MOH	Ministry of Health
OR	Operational Research
R&D	Research and Development
RBM	Roll Back Malaria
RH	Reproductive Health
WHO	World Health Organization

1. Introduction

1.1 *What is Roll Back Malaria?*

Roll Back Malaria is a new global initiative against malaria. RBM has been built on the foundations of the accelerated implementation of malaria control in the African region, which was based on the Regional and Global strategy for Malaria Control.
Its objective is to halve the malaria burden in participating countries through interventions that are adapted to local needs and by reinforcement of the health sector. The principal mechanism for achieving this is through intensified national action by country-level partnerships working together towards common goals within the context of health sector development and using agreed strategies and procedures. Country partnerships will be supported by a sub regional, regional and global partnerships, and technical support networks from these three levels will provide the necessary technical assistance. Roll Back Malaria will also encourage strategic investments in the development of better tools and intervention strategies through focused support for research, including operational research.

Following its launch in October 1998, Roll Back Malaria started with a preparatory phase, which lasted until December 1999. During this period, intercountry Roll Back Malaria inception meetings have been held and country level Roll Back Malaria inception processes were started. RBM operations will soon begin in many countries and their effectiveness will need to be monitored and evaluated.

An effective system for monitoring progress and evaluating outcomes and impact will be critical for the success of Roll Back Malaria. Roll Back Malaria will need to report on progress and lessons learned, on reduction of mortality and morbidity as well as on economic impact. This information will be crucial for identifying areas where modifications may be needed in relation to the intervention strategies and allocation of resources in subsequent phases of Roll Back Malaria at national, sub-regional, regional and global levels.

1.2 *Monitoring and evaluation of Health Programmes*

Monitoring is needed to verify step by step the progress of Health Programmes at district, provincial, national, regional and global levels e.g. to verify whether activities have been implemented as planned, ensure accountability, and to detect any problems and/or constraints in order to provide local feedback to the relevant authorities and to support them for promoting better planning through careful selection of alternatives for future action. For this purpose process indicators must be carefully selected.
Evaluation of outcomes and impact is needed to document periodically whether defined strategies and implemented activities lead to expected results in terms of :

- outcomes: to document e.g. treatment seeking, improved quality of treatment, changes in knowledge, attitudes, and behaviour at community level or on the performance of key components of the local health care system such as the improved quality of services, rate of coverage, establishment of inter-sectoral linkages so that improvements can be made where and when needed

- impact : the assessment of impact, e.g. the measure of the desired change in terms of reduction of mortality, morbidity or economic losses. The selection of impact indicators and the collection of data needed for their calculation, is by far the most difficult step in the evaluation process.

While monitoring is a continuous process, evaluation will need to be conducted intermittently. The periodicity of evaluation varies considerably according to the changes expected in the different areas evaluated.

OBJECTIVES OF RBM PLANS OF ACTION	WHAT HAS TO BE MONITORED AND EVALUATED	EXAMPLES OF INDICATORS TO BE SELECTED
PROCESS OR FUNCTIONING	Process indicators should check that what was planned (i) has been carried out (ii) on time	% of health personnel involved in patient care trained in malaria case management and IMCI
INTERMEDIATE RESULTS RELATED TO PRIORITY INTERVENTIONS OF THE PROGRAMME	Outcome indicators should reflect the changes in knowledge, attitudes, behaviour or facility resources specified in the outcome objectives	% of patients with uncomplicated malaria getting correct treatment, **at health facility and community levels**, according to national guidelines within 24 hours of onset of symptoms
IMPACT	Mortality and morbidity reduction	Malaria death rate (probable and confirmed) among target groups

2. Framework for RBM Monitoring and Evaluation

The World Health Organization has developed this proposal for a framework along with_indicators for monitoring the progress and evaluating the outcomes and impact of Roll Back Malaria. This framework relies on the large amount of past work accomplished by the WHO Regional Offices and on the more recent efforts of the WHO Regional Offices for Africa and for Eastern Mediterranean during the Accelerated Implementation of Malaria Control in Africa in 1997-1998. To avoid any duplication of efforts, it is therefore proposed that all national partnerships use this general framework, and that they select within the framework those indicators that are most appropriate for their specific epidemiological situation and intervention strategy.

Since malaria epidemiology is determined by natural factors which does not fit with the political shape of WHO Regions, it is quite difficult to have regional indicators which will be applicable to the three main typologies of malaria situation :

- high endemic countries, i.e. Sub-Saharan Africa;
- countries where malaria has been controlled although is still a problem, i.e. Asia and Latin America;
- countries with disappearing malaria and malaria free countries with receptive areas, i.e. North Africa and Southern Republics of the former USSR.

Despite the extensive variation of malaria epidemiology between and within regions and countries, this framework proposes 5 global indicators, of which at least 3 should be used by all the regions.

2.1 *General principles*

In developing the framework and indicators, the following general principles were taken into account:

Relevance to RBM objectives

The framework and indicators should be directly relevant to the RBM objectives. They should enable the monitoring of the principal malaria control interventions and related efforts to reinforce the health sector and allow an evaluation of the impact of RBM action on the malaria burden.

Availability and timeliness of the information

Data must be available without undue delay during both implementation and monitoring/evaluation phases.

Reliability

Indicators and criteria must be consistent and dependent across applications or time.

Standardised but adaptable approaches

The epidemiology of malaria, intervention strategies and health sector development vary considerably between regions and countries, and this variation will need to be taken into account in the monitoring and evaluation process. It has been attempted, therefore, to

2.2 *The monitoring and evaluation framework*

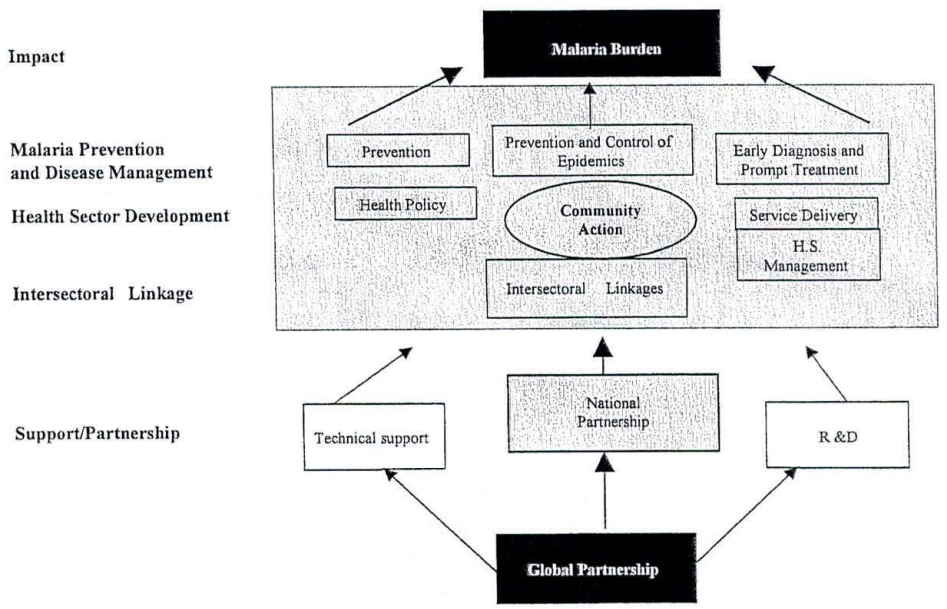
The Monitoring Group has developed a proposed monitoring and evaluation framework that identifies five "critical areas" for monitoring the progress and evaluating the outcomes and the impact of Roll Back Malaria. These five critical areas relate directly to the objective of RBM and include:

(i) the impact on malaria burden i.e. mortality, morbidity and economic losses
(ii) the improvements in malaria prevention and disease management including prevention and control of epidemics
(iii) the related health sector development
(iv) the intersectoral linkages which need to be created or reinforced
(v) the support and partnerships.

It is proposed that all regions and RBM countries use this framework to develop their own monitoring and evaluation system. The framework would then be the same for all regions and countries, but the indicators for each critical area could vary between sub-regions and/or regions and countries according to the local malaria epidemiology and the actual strategy for rolling back malaria.

The diagram below shows the framework for Roll Back Malaria monitoring and evaluation as proposed by the Monitoring and Evaluation Group, indicating the five critical areas for monitoring. The shaded boxes in the diagram refers to country-level monitoring and evaluation.

Critical areas for Monitoring and Evaluating RBM



The framework describes the main components of RBM, especially at the country level. The ultimate objective of RBM is to halve the burden of malaria, and one of the critical areas to evaluate is obviously the impact of RBM on disease burden, i.e. mortality, morbidity and economic impact. The reduction in burden will be achieved through interventions that are initiated by the national Roll Back Malaria partnership and this partnership is another critical area to monitor and evaluate. The actual interventions will vary according to malaria epidemiology and status of the health sector. However, malaria specific interventions will include the critical areas of: (i) prevention, e.g. prevention of malaria during pregnancy, use of insecticide-treated materials and other vector control measures; (ii) early diagnosis and treatment of the disease; (iii) prevention and control of epidemics in epidemic-prone areas and situations; (iv) community action; (v) operational research. To deliver these interventions, there is a need to strengthen, and thus monitor and evaluate, the relevant components of the health sector. These range from health policy, health systems management, and service delivery especially at first line health facilities. A problem as important and complex as malaria control is not just an issue for the health sector, and the involvement of other important sectors such as agriculture, education or meteorology needs to be monitored and evaluated also.

These interventions will require international support, and other critical areas to monitor and evaluate are the resources made available at all the levels, the technical support provided to countries, and the effectiveness of Research and Development to develop new tools and control strategies.

3 RBM indicators

It is recommended that the principal monitoring and evaluation system of RBM at regional, sub-regional and country levels be based on a small number of core indicators that will represent each of the critical areas in the monitoring and evaluation framework. These indicators should be intervention-oriented and provide information for action at the relevant operational level, especially at the district level. Through an extensive review of documents and consultative process, the RBM monitoring group has proposed a set of RBM core indicators by critical area as defined in the monitoring and evaluation framework.

3.1 Case definitions

The wide variety of malaria data collected and notified by different malaria control programs makes comparison between countries difficult. However, as stated in the Twentieth Report of the WHO Expert Committee on Malaria, *"...agreement on standard definitions of malaria morbidity and mortality, and on a limited number of "indicators" that could be used in all situations to monitor malaria control activities, would represent a major step forward. The use of core indicators will not preclude countries from collecting other information they consider necessary to monitor progress of their individual plans of action for malaria control."* Thus, it would be useful if groups of countries or sub regions with similar epidemiology and intervention strategies would select the same minimum group of indicators. This would greatly facilitate, at the global level, the monitoring of regional initiatives to Roll Back Malaria and of inter-country review of progress at regional level. It is also recommended that the information for mortality and morbidity, where appropriate and possible, be dis-aggregated by age, sex, and socio-economic status.

It is also strongly recommended that the official case definitions of severe malaria, uncomplicated malaria, therapeutic failure and of some other indicators as formulated in the above mentioned WHO Report be used (Annex 2). These definitions differentiate between countries where parasitological diagnosis is possible and countries where this is not possible.

3.2 *Proposed core indicators for monitoring and evaluating RBM*

A provisional list of core indicators for country and/or regional level is given per critical area in the box on the next page. A detailed description of the proposed indicators (classified into impact, outcome and process) is given in Annex 3. For each indicator, this table gives its operational definition, the method of data collection, the source of information, the level of data collection, and the periodicity of data collection. The table lists also some comments.

As mentioned before, it is proposed that each sub-region, region or country select from this list only those indicators that it considers important for the local epidemiology and intervention strategy. It is recommended that at least two indicators, one process and one outcome, be selected from each critical area in the framework.

Proposed RBM Core Indicators

I. Impact

1. Crude death rate among target groups
2. Malaria death rate (probable and confirmed cases) among target groups
3. % of probable and confirmed malaria deaths among patients with severe malaria admitted to a health facility
4. Number of cases of severe malaria (probable and confirmed) among target groups
5. Number of cases of uncomplicated malaria (probable and confirmed) among target groups.
6. Annual Parasite Incidence (API) among target groups (by region/according to the epidemiological situation)

II. Malaria prevention and disease management

Prevention

1. % of countries having introduced pyrethroids for public health use and insecticide-treated materials in the list of essential drugs and materials
2. % of service providers (health personnel, CHW…) trained in techniques of treatment of nets and/or indoor spraying according to the national policy
3. % of households having at least one treated bednet
4. % of pregnant women who have taken chemoprophylaxis or intermittent drug treatment, according to the national drug policy
5. % of antenatal clinic staff trained in preventive intermittent antimalarial treatment for pregnant women

Prevention and control of epidemics

1. % of countries with epidemic prone areas/situation having a national preparedness plan of action for early detection and control of epidemics
2. % of malaria epidemics detected within two weeks of onset and properly controlled

Early diagnosis and Prompt Treatment

1. % of health personnel involved in patient care trained in malaria case management and IMCI
2. % of health facilities able to confirm malaria diagnosis according to the national policy (microscopy, rapid test etc.)
3. % of patients hospitalised with a diagnosis of severe malaria and receiving correct antimalarial and supportive treatment according to the national guidelines
4. % of patients with uncomplicated malaria getting correct treatment **at health facility and community levels** according to national guidelines within 24 hrs of onset of symptoms

III. Health Sector Development

Health Policy

1. % of districts with plans of action reflecting national health policy
2. % of districts using health information for planning
3. % of countries having a policy of universal coverage for all with a basic package including relevant malaria control activities

Service Delivery

1. % of 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

Community Action

1. % of countries having national guidelines for malaria prevention and treatment including training of all the informal health providers and recommendations for home treatment of febrile illness/suspected malaria, recognition of the most frequent signs of danger for children, prevention of malaria during pregnancy and use of insecticide treated materials
2. % of villages/communities with at least one Community Health Worker trained in management of fever and recognition of severe febrile illness
3. % of mothers/caretakers able to recognise signs and symptoms of danger of a febrile disease in a child < 5 years

IV. Intersectoral linkages

1. % of countries with multisectoral and inter-agencies partnership established
2. % of countries having established official linkages, including the elaboration of research agenda of public health interest, between research institutions and Ministry of Health

V. Support/Partnership

1. % of countries with agreed national RBM budget met by donor funding
2. % of countries with functional sentinel sites for surveillance efficacy of 1st and 2nd line antimalarial drugs
3. Number of antimalarial drugs which have progressed to the level of phase III trials

3.3 Some general comments on the indicators

Impact indicators

Six core indicators are proposed in this framework : three for mortality, and three for morbidity.

Mortality

The objective of RBM is "to half the burden of malaria through interventions adapted to local needs and strengthening of the health sector". Given that malaria mortality is by far the most important contributing factor to the burden of malaria as measured in DALYs, it is proposed that malaria related mortality be the principal impact indicator for RBM.

The relevant mortality indicators in endemic areas are the Crude Death Rate (CDR) and the Malaria Death Rate (MDR) of children aged 0-59 months, by age and sex.

Both CDR and MDR are recommended because:

- there are circumstances where changes in CDR can be reliably measured, but changes in MDR cannot: deaths counted in surveys sometimes cannot accurately be attributed to malaria.
- where CDR is low, interventions against malaria can have indirect as well as direct benefits, reducing deaths partly attributable to other conditions; it is highly desirable to quantify these additional, indirect benefits.
- where CDR is high, malaria is sometimes a "competing risk", in which case fewer malaria deaths are offset by more deaths from other causes; when there is no measurable change in CDR, we need to distinguish between two possible explanations - the failure of malaria control and compensating mortality.
- a number of RBM interventions will not be specific to malaria, e.g. management of anaemia in pregnancy.

N.B.: In sub-Saharan Africa where *Plasmodium falciparum* is predominant, case fatality rate for severe malaria among under-five children and pregnant women or other target groups will be assessed in a few sentinel sites (district or national hospitals).

Morbidity

Although RBM's global target for malaria control has been expressed in terms of mortality (50% reduction in deaths by 2010), many countries will need to set morbidity indicators as impact targets.

In sub-Saharan Africa and in other regions where *P.falciparum* is common or re-emerging as a problem, the number of cases of severe malaria/cerebral malaria reported per year is a good indicator for indirect measurement of the effective treatment of uncomplicated, malaria both at health facility and at the community level. In many countries the only data presently reported routinely are the number of malaria cases (severe and uncomplicated), and the majority of these cases are based on presumptive diagnosis rather than parasitologic

confirmation. While these data are limited and frequently represent only a small proportion of malaria cases, if there are no major changes in the reporting system, an understanding of these limitations will allow for use of the data to generate estimates of the overall burden of disease affecting communities and for tracking of trends over time.

Outside Sub-Saharan Africa and Papua New Guinea, the single best, "core indicator" is the Annual Parasite Incidence (API) i.e. the number of microscopically confirmed malaria cases detected during 1 year per unit of population, by age, sex and parasite species, as measured through routine surveillance. Many countries in Europe, Asia, Oceania, North Africa and Latin America have shown that they can measure API by routine surveillance (patients with symptoms contacting health services), and identify *Plasmodium* spp by microscopy. A morbidity indicator will suit countries where reducing incidence is the principal goal, and reduced incidence is likely to mean fewer deaths. Furthermore, many countries have high case loads, but few malaria deaths, e.g. where *P. vivax* predominates, and where most *P. falciparum* cases receive adequate treatment.

Economic losses

Malaria imposes a harsh economic burden on families who are least able to pay for treatment, prevention costs and loss of income. In addition, malaria-endemic countries must use scarce hard currency on drugs, bednets and insecticides in an effort to control malaria. According to estimates from a recent Harvard study commissioned by RBM, Africa's GDP would be 32% greater today if malaria had been effectively controlled 35 years ago. Since the issues related to assessment of the economic burden of malaria are complex, RBM has convened a special working group to develop indicators and guidelines for tracking changes in the economic burden at the household, national, and macroeconomic levels. It is expected that by the end of 2000 recommendations from this work group will be available for dissemination as an addendum to the present document.

Malaria prevention and disease management

Prevention

The proposed core indicators for malaria prevention reflect the most important interventions for reducing the global burden of malaria.

- Hence, though Insecticides Treated Nets (ITNs) or other materials will not be used everywhere, this intervention is considered critical for reducing malaria mortality and morbidity, especially among children and pregnant women in areas with stable transmission in Africa. In areas of unstable malaria transmission, other age groups must be considered.

- Preventive intermittent treatment during pregnancy is recommended as an appropriate and effective method for reducing the consequences of malaria in pregnancy in highly endemic areas, especially for first and second pregnancies. At present only a few countries in Africa have adopted such preventive intermittent treatment as national policy. There is a need to have good data on the effectiveness of preventive intermittent treatment during pregnancy and chemoprophylaxis where it is delivered. It is expected that other countries will follow in the near future.

Disease management

Early diagnosis and appropriate treatment is the most important action against malaria. The eight core indicators proposed (five outcome and three process) will provide information on the changes in the quality of the management of the disease and allow national authorities to take appropriate action, if required. One of the outcome indicators is defined as the "Percentage of patients with an uncomplicated malaria getting correct treatment at health facility and community levels, according to the national guidelines, within 24 hours of the onset of symptoms". Where and when good diagnostic and clinical services are available and actively used, this indicator may be restricted to parasitologically confirmed cases of malaria. However, in most endemic areas, especially in Africa, health services are not widely available or used and more than 80% of the cases are managed at home. In such areas, a more appropriate indicator is the "Percentage of persons (or mothers/caretakers for children < 5) who report **at community level** that within 24 hours after fever began the patient received the recommended first line antimalarial **or** was brought to the health facility".
Preliminary results of pre-testing an instrument to measure this at the community level indicate that less than 7% of children with fever in endemic areas in Africa get appropriate treatment for malaria. Evaluation of the improvement in this indicator will be extremely important.

Prevention and control of malaria epidemics in epidemic- prone areas and situations

A good indicator for epidemic prone areas and situations is the timely detection of the epidemic, i.e. within two weeks after the notification of the first cases, and the correct control of the epidemic. This includes, according to the national policy, correct treatment of cases and appropriate vector control measures such as the use of insecticide treated materials and/or indoor spraying.

Health Sector Development

The two core indicators proposed for health sector development (1 outcome and 1 process) are not restricted to malaria but touch on broader health sector issues that need to be tackled to ensure effective malaria control. They measure the presence of the relevant health policies, and the implementation of these policies at the operational level (usually the district). It is also proposed to monitor whether these operational units have adequate funds and skilled staff to implement the policies and to provide basic services (pre-testing showed that some health districts spent over 95% of their budget on personnel and that they had virtually no funds to provide services). Below are two examples of indicators dealing with malaria related services as well as with management of the disease:

1) Percentage of health services reporting no disruption of stock of antimalarial drugs (as specified in the national drug policy) continuously for one week during the previous 3 months.
2) For areas where this is policy: whether there is a functional parasitological laboratory, i.e. a laboratory with one functional microscope, at least one trained personnel and available reagents and material according to the national policy

Inter-sectoral collaboration

Since implementation of RBM activities will require the agreement and involvement of more than just the health sector (e.g., education, finance, environment, agriculture ministries etc.) it will be important to monitor and evaluate the collaboration across these sectors. It is proposed to monitor the collaboration in operational research between national research institutions and the Ministry of Health because collaboration between research and control is often reported to be poor. It will also be important to monitor whether prevention and treatment seeking for malaria is taught in primary schools in endemic areas and whether environmental risk factors for malaria are taken into account in the planning of development projects.

Community action

The involvement of the community will be critical in most areas. Since knowledge, behaviour and attitude changes depend on many factors which differ from one place to an other one, local definitions of indicators will be required. Some examples of such indicators are proposed in view of helping the regions and the countries to define the most appropriate indicators according to their local sociological context.

Partnership and support

An effective national partnership is the key to success for Roll Back Malaria. It is proposed to monitor whether the national partnerships really bring all potential partners together, and whether these partners generate the necessary resources to roll back malaria in the countries through a tracking system.

With respect to technical support, it will be assessed whether the countries are satisfied with the technical support provided to them.

The main composite indicator for monitoring the global, regional and national partnerships is the percentage of malaria endemic countries/districts with well defined strategies for health for all accompanied by explicit resources allocation to RBM, whose needs for external resources are receiving sustained and adequate support from partners.

Research and development

For Research and Development, two core indicators have been selected which are considered most relevant for the short and medium term.

3.4 Applicability of indicators to different regions

The monitoring of RBM at national and global level will be mainly a matter of aggregating the results for the country specific indicators.

3.5 Global indicators

Although most indicators will vary between countries, there are five indicators that are considered so important that they have been selected as global indicators. It is recommended that all RBM countries report on these global indicators wherever they apply. The five global indicators are:

- Malaria death rate (probable and confirmed cases) among target groups (under-five and other targets groups)
- Number of malaria cases, severe and uncomplicated (probable and confirmed) among target groups (under-five and other targets groups)
- Proportion of households having at least one treated bednet
- Percentage of 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
- Percentage of health facilities reporting no disruption of stock of antimalarial drugs (as specificied in the national drug policy) for more than one week during the previous three months.

As mentioned before, the actual selection of RBM core indicators for a given area will depend on the epidemiological pattern, the health infrastructure and the local intervention strategy. Annex 4 indicates to what extent the proposed RBM global indicators may be applicable to countries in different regions of the world, using the regional breakdown of the WHO. It is hoped that this table will help countries in the same region or sub-region to agree on similar sets of RBM indicators. This would greatly facilitate the implementation of monitoring of RBM within a given region.

4. Possible approaches to data collection

There are five main approaches to collecting data for the proposed RBM indicators. These are (i) the regular health information system, (ii) Demographic Surveillance Systems, (iii) community surveys, (iv) health facility surveys and (v) review of documents. The box below shows some of the proposed RBM indicators listed by the relevant data collection method.

Proposed RBM indicators by data collection (some examples)

Routine surveillance (HIS)

- Crude death rate among target groups
- Malaria death rate (probable and confirmed) among target groups
- Number of cases of uncomplicated malaria (probable and confirmed) among target groups
- Annual parasite incidence (by region / epidemiology)
- % of malaria epidemics detected within two weeks of onset and properly controlled

Demographic Surveillance Systems (Africa)

- Crude death rate among target groups
- Malaria death rate (probable and confirmed) among target groups

Community Surveys

- % of pregnant women who have taken chemoprophylaxis or preventive intermittent antimalarial treatment, according to the national policy
- % of patients with uncomplicated malaria getting correct treatment at community level, according to national guidelines, within 24 hrs of onset of symptoms
- % of mothers/caretakers able to recognise signs and symptoms of a febrile disease in a child <5 years
- % of households having at least one treated bednet

Health facility Surveys

- % of health services 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 able to confirm malaria diagnosis according to the national policy (microscopy, rapid test etc.)

Review of documents

- % of districts using health information for planning
- % of countries having introduced pyrethroids for public health use and insecticide-treated materials in the list of essential drugs and medicines
- % of countries having established effective linkages, including the elaboration of a public health interest research agenda, between research institutions and MOH
- % of countries having a policy of universal coverage for all with a basic package including relevant malaria control activities

4.1 Routine surveillance (Health Information System)

Both the Health Care System and the Health Information System (HIS) are well developed in several endemic countries in Asia, America and Europe but only in a few countries in Africa. Effective reporting systems are often in place which are adequate for the purpose of RBM . In Africa, where the HIS is often limited, these data can be used in some districts hospitals, and in some referral hospitals. This approach can also provide information relevant to monitoring trends in national crude and malaria-related mortality

4.2 *Demographic Surveillance Systems*

One option for monitoring trends in malaria mortality in Africa where the quality and reliability of information generated by the HIS is poor, and the HIS rarely provides information on the burden of malaria at the community level is through Demographic Surveillance Systems (DSS) in sentinel sites. Such DSS are now operational in 28 sites in 14 African countries, and these sites have joined together in the INDEPTH network that works towards standardisation of the methodology. Because of the need for reliable information on trends in malaria mortality, RBM intends to support the INDEPTH network to include surveillance of malaria mortality in its African sites.

4.3 *Community and Household surveys*

Community-based information on prevention and treatment practices will be critical for monitoring the effectiveness of related RBM interventions. Such information is especially important for monitoring the outcomes and the effects of RBM action in areas where a large proportion of cases are managed at the home and where the burden of malaria is usually most severe. Some community surveys have already been conducted but there is a need to replicate these studies in other countries for this purpose. Community surveys tend to be time consuming and relatively costly, and they can therefore only be undertaken in selected sentinel sites in each country and at intervals of 2-3 years. There are several ongoing activities in which information on the proposed community-based indicators is already being collected. The Demographic and Health Surveys, funded by USAID and executed by MACRO, has been extended to include a malaria module which allows the collection of community-based information on several of the RBM indicators. The same is true for the Multiple Indicator Cluster Survey of UNICEF which will be undertaken in a large number of countries in the year 2000. Finally, RBM has developed a methodology for situation analysis which includes instruments for community level assessment of indicators such as % of underfives sleeping under ITNs, provision of intermittent treatment in pregnancy, provision of timely and appropriate treatment of children with fever and community action against malaria. Eight countries have already undertook a situation analysis during the year 2000 as part of their RBM strategy development, and the information to be generated will provide important baseline data on key RBM indicators.

Special surveys are not a sustainable solution to the need for community-based information and RBM will support the development of alternative approaches that would enable the Health Information System to routinely collect community level data, and for the community itself to monitor key RBM indicators.

4.4 *Health facility assessment*

The WHO Regional Offices designed Monitoring and Evaluation systems to monitor the progress, evaluate the outcomes and impact of their respective Regional Strategies for the Prevention and Control malaria. The Region specific systems, indicators and tools were field tested, revised and adapted to country specific situations in the respective Regions. These systems provide the basis for country reports on the burden of malaria. Additionally, a guide for evaluating the implementation of programmes for the promotion of the use of insecticide-treated nets and other materials in the WHO Region for Africa is being field tested in 14 countries.

IMCI has also developed and tested a methodology and instruments for a multi-country evaluation of the integrated management of the sick child. The instruments include an assessment of the clinical skills of health care staff, as well as an assessment of the available supplies and equipment at the health facility. The evaluation provides all the information needed for the proposed facility based RBM indicators. The advantage of the IMCI approach is that the assessment is not limited to skills for the management of malaria only, but that it addresses the management of the sick child, including malaria. It is therefore proposed to use for the health facility assessment the relevant sections of the IMCI evaluation methodology or to rely on the results of the IMCI evaluation where this is undertaken. The application of the method requires special skills, and it cannot be done in every facility. It is recommended, therefore, to combine the health facility assessment with the community-based surveys, and to undertake them in the same districts and at the same interval.

In case the indicator on technical skills of health care staff is not selected, the health facility assessment becomes much simpler and consists only of an assessment of the presence of the required antimalarials and, where this is policy, of the presence of parasite detection services. This simplified facility assessment can be done as part of routine supervisory visits or be easily combined with the community surveys. But it is recommended that the technical skills of health care staff be evaluated at least every two years.

4.5 Review of documents

This is the easiest and cheapest of the data collection methods. The main requirement is that the necessary documents exist and are available, and some special efforts and travel may be needed to ensure that this is indeed the case. It will also be important to retain copies of the relevant documents so that these can be made available as supporting evidence for the monitoring findings on the selected indicators .

ANNEX 1

Applicability of the Proposed Roll Back Malaria Global Indicators for Monitoring and Evaluation in WHO Regions

Indicators	AFRO	EMRO	EURO	SEARO	WPRO	AMRO
Malaria death rate (probable and confirmed cases) among target groups (under-five and other target groups)	Yes	Yes	Yes	Yes	Yes	No (Total Death)
Number of malaria cases, severe and uncomplicated (probable and confirmed) among target groups (under-five and other target groups)	Yes	Yes	Yes	Yes	Yes	No (Total Cases)
Proportion of households having at least one treated bednet	Yes	Yes	No	Yes	Yes	No
% of 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	Yes	Yes	Yes	Yes	Yes	Yes
% of 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	Yes	Yes	Yes	Yes	Yes	Yes

ANNEX 2

(WHO Expert Committee on Malaria, Technical Report Series 892,p.46-50)

9.1.1 *Standardized case definitions*

Morbidity and mortality

Definitions of malaria morbidity and mortality will vary, depending on the degree of diagnostic capabilities at different levels of the health-care system. Whenever possible, malaria case data should be reported by the patient's age group and parasite species.

In areas without access to laboratory-based diagnosis

- Case of *probable uncomplicated malaria* — a patient with signs and/or symptoms of uncomplicated malaria, who receives antimalarial treatment.
- Case of *probable severe malaria* — a patient requiring hospitalization for signs and/or symptoms of severe malaria, who receives antimalarial treatment.
- *Probable malaria death* — death of a patient who has been diagnosed with probable severe malaria.

In areas with access to laboratory-based diagnosis

- *Asymptomatic malaria* — laboratory confirmation (by microscopy or immunodiagnostic test) of parasitaemia in a person with no recent history of signs and/or symptoms of malaria.
- Case of *confirmed uncomplicated malaria* — a patient with signs and/or symptoms of uncomplicated malaria, who receives antimalarial treatment, with laboratory confirmation of diagnosis.
- Case of *confirmed severe malaria* — a person requiring hospitalization for signs and/or symptoms of severe malaria, who receives antimalarial treatment, with laboratory confirmation of diagnosis.
- *Confirmed malaria death* — death of a patient who has been diagnosed with severe malaria, with laboratory confirmation of diagnosis.

The signs and symptoms of malaria to be included in these definitions may vary in different epidemiological settings (3). The uncomplicated and severe malaria categories are intended to be mutually exclusive. For example, a patient who initially presents with uncomplicated malaria but then develops symptoms or signs of severe disease, should only be classified as having severe malaria, and not counted twice. This also applies to the probable and confirmed malaria categories. Thus, countries would be expected to report probable and confirmed cases separately.

Because of the increasing importance of antimalarial drug resistance to malaria control efforts, standardized case definition is needed for treatment failures:

- *Malaria treatment failure* — a patient with confirmed uncomplicated malaria with a history of having taken the correct dosage and followed the regimen of the nationally recommended antimalarial treatment, but presents with asexual parasitaemia on a blood smear within 14 days of the start of treatment.

9.1.2 *Indicators*

Once standardized case definitions have been agreed upon, indicators can be developed to measure the progress of the control programme (*38*). For the purpose of monitoring and evaluation, the indicators should be closely linked to the programme's objectives. In deciding how many indicators should be used, accurate measurement of a small number of core indicators is preferable to imprecise measurement of too many. As additional resources become available, and the programme gains experience and makes progress, these indicators can be refined, improved and added to. Most of the information needed to measure the indicators can be obtained from three general sources, although these sources may vary considerably in the quality of data they provide. The information sources are:

1. Routine data collected by the national health-information system (assuming that standardized case definitions have been agreed upon and used, and these data are of acceptable quality);
2. Interviews and/or observations in health facilities. These could be carried out during routine supervisory visits or during special surveys;
3. Specific household or community surveys[1].

The first two information sources should be available to all programmes; the third will require additional programme resources.
Although the cost of conducting such surveys may be high, savings can be made by measuring several indicators in the same survey.

Core indicators

Although the choice of indicators must be left up to individual national programmes, the following core (impact and outcome) indicators should be used in all malaria control programmes irrespective of the local epidemiological situation or their goals:

Impact indicators

- *Morbidity attributed to malaria*:
  - — Number of cases of uncomplicated malaria (probable and confirmed) among target groups per unit population per unit time;
  - — Number of cases of severe malaria (probable and confirmed) among target groups per unit population per unit time.
- *Mortality attributed to malaria*:
  - — number of malaria deaths (probable and confirmed) among target groups per unit population per unit time;
  - — case-fatality rate — proportion of probable and confirmed malaria deaths among patients admitted with severe malaria to a health facility per unit time.
- *Malaria treatment failures* — Number of microscopically confirmed malaria treatment failures per number of patients treated. These data should be reported for each drug used.

Outcome indicators

- *Availability of antimalarial drugs* — percentage of health facilities reporting no disruption of the stock of antimalarial drugs (as specified in the national drug policy) during the previous 3 months;
- *Reporting of morbidity and mortality indicators* — percentage of districts

reporting morbidity and mortality indicators to the national programme on a monthly basis during the previous 12 months.

Additional indicators

The following additional indicators may be used depending on the epidemiological situation and the goals of the programme:

- *Annual parasite incidence (API)* — number of microscopically confirmed malaria cases detected during 1 year per unit population.
- *Use of insecticide-treated mosquito nets* — the proportion of target groups covered by insecticide-treated nets and the proportion that report that they slept under an insecticide-treated mosquito net the previous night. These indicators will both require household or community surveys and is relevant to situations where the programme objectives are to limit and prevent transmission of falciparum malaria.
- *Performance of mothers or carers* — proportion of mothers or carers who ensure correct home management of children with fever, in accordance with national policies. This indicator will require household or community surveys.
- *Protection of pregnant women* — proportion of women in their first and second pregnancies who report per unit time that they have taken chemoprophylaxis or intermittent drug treatment, according to national drug policies.
- *Preparation for malaria epidemics* — proportion of epidemic-prone areas that have an epidemic containment plan and adequate stocks of antimalarial drugs, supplies, and functioning equipment in place or easily accessible at least 1 month before the epidemic season begins. This indicator is relevant to situations where there the programme objectives are to reduce mortality and morbidity, and to limit transmission and prevent epidemics of falciparum malaria.
- *Intradomiciliary spraying of insecticides* — proportion of houses sprayed per total number targeted for spraying. This indicate is suitable for situations where the programme objectives are to limit transmission and prevent epidemics of both falciparum and vivax malaria.
- *Laboratory diagnosis*:
  - — proportion of health districts where quality control procedures for malaria control are in place;
  - — proportion of health facilities with laboratory diagnostic capabilities, of which an adequate sample of positive and negative slides have been confirmed by a reference laboratory.

Outcome indicators specific to areas where there is residual or no transmission

Presence of foci of transmission:

- number of villages in which autochthonous cases have been reported since the beginning of the previous transmission season;
- number of cases investigated (classified by species) and found to be autochthonous;
- number of malaria cases investigated.

In these areas, mixed infections should be counted as P. *falciparum* cases.

Annex 3: Operational definitions of proposed (Impact, Outcomes and Process) core indicators for monitoring and evaluation of RBM

	Indicators	Operational Definition	Method of data collection	Source of information	Level of data collection	Periodicity of data collection	Comments
	IMPACT						
1	Crude death rate among target groups	Total number of deaths per year among target group divided by mid-year population of the same target group	**I. Routine** HIS **II. Special surveys** II.1 DSS (INDEPTH) II.2 DHS II.3. Health facility surveys II.4 Community surveys	Health facility reports DSS, DHS and health facility and/or community surveys reports	I. Di., Pr., Co. II.1 Com. II.2 Com. II.3 Di. II.4 Com.	I. 1 Year II.1.Ongoing II.2. 5 years II.3 2-3 years II.4 2-3 years	I. Relatively inexpensive but inacurrate II. More accurate but difficult and expensive - Surveys require well-trained interviewers
2	Malaria death rate (probable and confirmed) among target groups	Total number of malaria deaths (probable and confirmed) per year among target group divided by mid-year population of the same target group	**I. Routine** HIS **II. Special surveys** II.1 DSS (INDEPTH) II.2 DHS II.3. Health facility surveys II.4 Community surveys	Health facility reports DSS, DHS and health facility survey reports	I. Di., Pr., Co. II.1 Com. II.2 Com. II.3 Di. II.4 Com.	I. 1 Year II.1.Ongoing II.2. 5 years II.3 2-3 years II.4 2-3 years	See indicator 1
3	% of probable and confirmed malaria deaths among patients with severe malaria admitted to a health facility	Number of probable and confirmed malaria deaths occurring in a target group admitted in a given health facility for unit time, divided by total number of probable and confirmed severe malaria cases admitted in the same target group for the same unit time in the same health facility	**I. Routine** HIS **II. Special surveys** Health facility surveys (Inpatient surveillance)	I. HIS reports II. Health facility surveys reports	I. Di., Pr., Co. II. Di.	I and II : Year	I. As part of routine monitoring of many NMCP - Reliant on consistent reporting - II. Relatively inexpensive and more accurate
4	Number of cases of severe malaria (probable and confirmed) among target groups	Number of cases of probable and confirmed severe malaria reported per year among < 5 years (other target groups)	**I. Routine** HIS **II. Special surveys** Community surveys	I. HIS reports II. Health facility survey reports	I. Di.,Pr.,Co. II. Com.	Year	For areas with *P. falciparum*. Case definition of severe malaria to be clearly defined at country level according to WHO definitions. Training is needed.
5	Number of cases of uncomplicated malaria (probable and confirmed) among target groups	Number of cases of uncomplicated malaria (probable and confirmed) reported per year among < 5 years (other target groups)	HIS	HIS reports	Di.,Pr.,Co.	Year	As part of routine monitoring of many NMCP - Reliant on consistent reporting
6	Annual Parasite Incidence (API)	Number of microscopically confirmed malaria cases detected during 1 year per unit population (Usually 1000)	As part of routine monitoring of many NMCPs, mainly outside Africa	NMCP/HIS reports	Di.,Pr.,Co.	Year	Not recommended for high-transmission areas where specificity is low, nor for areas where health information systems are weak or where many malaria cases are not seen by the health system.

Annex 3: Operational definitions of proposed (Impact, Outcomes and Process) core indicators for monitoring and evaluation of RBM

	Indicators	Operational Definition	Method of data collection	Source of information	Level of data collection	Periodicity of data collection	Comments
	OUTCOMES						
1	% of patients hospitalised with a diagnosis of severe malaria and receiving correct antimalarial and supportive treatment according to the national guidelines	Number of patients hospitalised for one unit time with a diagnosis of severe malaria and receiving correct antimalarial and supportive treatment divided by total number of patients hospitalised with a diagnosis of severe malaria for the same unit time x 100	1. Part of routine supervision of NMCP/district and province team 2. Health facility survey 3. RBM evaluation	1. supervision reports 2. Survey reports 3. RBM evaluation reports	Di.,Pr.,Co.	1:Year 2 & 3: 2-3 years	Requires standardised forms, skilled supervisors and training
2	% of patients with uncomplicated malaria getting correct treatment at **health facility and community levels** according to national guidelines within 24 hrs of onset of symptoms	1. Number of patients (< 5 years other target groups) presenting at a given health facility for one unit time with uncomplicated malaria and receiving correct treatment according to national guidelines within 24 hours of onset of symptoms divided by total number of patients (< 5 years and other target groups) presenting at the same health facility for the same unit time with uncomplicated malaria x100	1. Part of routine supervision of NMCP/district and province health team 2. Health facility surveys 3. RBM evaluation	1. supervision reports 2. Survey reports 3. RBM evaluation reports	Di.,Pr.,Co.	1:Year 2 & 3: 2-3 years	Requires standardised forms, skilled supervisors and training
		2. Number of patients (< 5 years other target groups) who are reported to have had fever in the previous 2 weeks and reported to have received the locally recommended antimalarial treatment within 24 hours of onset of the fever divided by total number of patients (< 5 years other target groups) who are reported to have had fever in the previous 2 weeks x 100	1. District supervision 2.Community surveys 3. RBM evaluation	Reports	Di., Com.	1.Year 2. 2 years (I year if possible) 3. 2 years	1. Surveys require skilled supervisors 2. Periodicity depends on regularity of supervision 3. At community level supervision should follow IEC activities implemented
3	% of 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	Number of 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 divided by total number of health facilities visited x 100	1. District/province health team supervision 2. Health facility surveys 3. RBM evaluation	1. Supervision Reports 2. Survey reports 3. RBM evaluation reports	Di.,Pr.,Co.	1.Year 2. 1 year 3. 2 years	In countries with a short transmission season monitoring/evaluation to be conducted during transmission season

Annex 3: Operational definitions of proposed (Impact, Outcomes and Process) core indicators for monitoring and evaluation of RBM

	Indicators	Operational Definition	Method of data collection	Source of information	Level of data collection	Periodicity of data collection	Comments
4	% of health facilities able to confirm malaria diagnosis according to the national policy (microscopy, rapid test etc)	Number of health facilities able to confirm malaria diagnosis according to the national policy (microscopy, rapid test etc) divided by total number of health facilities supposed to confirm diagnosis of malaria according to the national policy x 100	1. District/province health team supervision 2. Health facility surveys 3. RBM evaluation		Di.,Pr.,Co.	Year	Requires skilled supervisors for reading of sample slides
5	% of households having at least one insecticide treated net	Number of households having at least one treated bednet divided by total number of households visited x 100	Community surveys	Reports	Com., Di.,Pr., Co.	2 years (1 year if possible)	At random methodology needed
6	% of pregnant women who have taken chemoprophlaxis or intermittent drug treatment, according to national drug policy	Number of pregnant women who have taken chemoprophlaxis or intermittent drug treatment, according to national drug policy divided by total number of pregnant women interviewed/whose ANCS has been reveiwed x 100	1.Health facility surveys 2. Antenatal care surveys 3.Community surveys	1.Survey reports 2. ANCS	Com., Di.,Pr., Co.	Year	1. TBA to be supervised in countries where they deliver intermittent treatment 2. To be integrated with RH supervision
7	% of malaria epidemics detected within two weeks of onset and properly controlled	Number of epidemics detected in a specific geographical area(district, country, region) or situation within 2 weeks during the last 12 months and for which appropriate control measures have been initiated within the following week divided by total number of malaria epidemics notified during the same period in the same area/situation x 100	Review of HIS documents	HIS reports	Di.,Pr.,Co.		1.Periodicity depends on the occurrence of epidemics 2. Appropriate control measures means actions based on national preparedness POA where such control measures are defined according to WHO global guidelines 3. Feasible but dependent on quality of HIS
8	% of mothers/caretakers able to recognise signs and symptoms of danger of a febrile disease in a child < 5 years (other target groups)	1. Number of mothers/caretakers able to recognise signs and symptoms of danger of a febrile disease in a child<5 years (other target groups) divided by total number of mothers/caretakers interviewed x 100 2. Number of mothers/caretakers able to recognise signs and symptoms of danger of a febrile disease in a child <5 years (other target groups) divided by total number of mothers/caretakers who have had training in the same sample	Community surveys	Community surveys reports	Community	2 years (One year if possible)	In some countries is already part of NMCP/District team supervision

Annex 3: Operational definitions of proposed (Impact, Outcomes and Process) core indicators for monitoring and evaluation of RBM

	Indicators	Operational Definition	Method of data collection	Source of information	Level of data collection	Periodicity of data collection	Comments
9	% of districts with plans of action reflecting national health policy	Number of districts with a plan reflecting national health policy in a given country divided by total number of districts x 100	Review of documents	District POA	Di., Co.	Year	
10	% of districts using health information for planning	Number of districts using health information for planning in 1 country divided by total number of districts x 100	Review of documents	District POA District Epidemiological data	National Regional	Year	
11	% of countries with multisectoral and inter-agencies partnership established	Number of countries with multisectoral and inter-agencies partnership established divided by number of countries implementing RBM POA x 100	Review of documents	NMCP activities report Partners meetings reports	Regional Global	Year	
12	% of countries with functional sentinel sites for surveillance efficacy of 1st and 2nd line antimalarial drugs	Number of countries with **functional** sentinel sites for surveillance efficacy of 1st and 2nd line antimalarial drugs divided by total number of countries implementing RBM POA x 100	Review of documents Country mission	Reports	Regional Global	Year	To be monitored by skilled staff according to WHO protocol
13	Number of antimalarial drugs which have progressed to the level of phase III trials		Review of documents	Scientific papers Publications	Global	5 years	
14	% of countries with agreed national RBM budget met by donor funding	Number of countries with agreed national RBM budget met by donor funding divided by total number of countries with an established RBM partnership x 100	Review of documents	Financial reports	Regional Global	Year	1. Periodicity will depend on the duration of national POA. 2. Yearly monitoring is recommended

Annex 3: Operational definitions of proposed (Impact, Outcomes and Process) core indicators for monitoring and evaluation of RBM

	Indicators	Operational Definition	Method of data collection	Source of information	Level of data collection	Periodicity of data collection	Comments
	PROCESS						
1	% of health personnel involved in patient care trained in malaria case management and IMCI	Number of health personnel involved in patient care trained in malaria case management and IMCI divided by total number of health personnel x 100	1. NMCP and IMCI Programme supervision 2. Health facility surveys	1. NMCP and IMCI supervision reports 2. Survey Report	Di., Pr., Co.	Year	Only for countries already implementing IMCI activities+O34
2	% of antenatal clinic staff trained in preventive intermittent antimalarial treatment for pregnant women	Number of antenatal clinic staff trained in preventive intermittent antimalarial treatment for pregnant women divided by total number of antenatal clinic staff x 100	1. NMCP and RH supervision 2. Health facility surveys	1. NMCP/RH supervision report 2. Survey report	Di., Pr., Co.	Year	1. In some countries TBA will also be included into antenatal clinic staff 2. To be integrated with RH programme
3	% of countries having national guidelines for malaria prevention and treatment, including training of all the informal health providers and recommendations for home treatment of febrile illness/suspected malaria, recognition of the most frequent signs of danger for children, prevention of malaria during pregnancy and use of insecticide treated materials	Number of countries having national guidelines for malaria treatment including the predefined items divided by total number of countries implementing RBM POA x 100	Review of documents	Guidelines	Regional Global		This criterion should be monitored every year until it is established that such guidelines exist at country level
4	% of villages/communities with at least one Community Health Worker trained in management of fever and recognition of severe febrile illness	Number of villages/communities with at least one Community Health Worker trained in management of fever and recognition of severe febrile illness divided by total number of villages/communities investigated x 100	Community surveys	Reports	Com., Di., Pr.	2 years	
5	% of countries having introduced pyrethroids for public health use and insecticide-treated materials in the list of essential drugs and materials	Number of countries having introduced pyrethroids for public health use and insecticide-treated materials in the list of essential drugs and materials divided by total number of countries implementing RBM POA x 100	Review of documents	List of essential drugs and medicines	Regional Global		This criterion should be monitored every year until it is established that the list of essential list of drugs and medicines has been modified according to malaria control national policy

Annex 3: Operational definitions of proposed (Impact, Outcomes and Process) core indicators for monitoring and evaluation of RBM

	Indicators	Operational Definition	Method of data collection	Source of information	Level of data collection	Periodicity of data collection	Comments
6	% of service providers (health personnel, CHW…) trained in techniques of treatment of nets and/or indoor spraying according to the national policy	Number of service providers (health personnel, CHW…) trained in techniques of treatment of nets and/or indoor spraying divided by total number of service providers x 100	1. NMCP Supervision 2. Health facility surveys	1. NMCP activities report 2. Health survey report	Di., Pr., Co.	Year	
7	% of countries with epidemic prone areas/situation having a national preparedness plan of action for early detection and control of epidemics	Number of countries with epidemic prone areas/situation having a national preparedness plan of action for early detection and control of epidemics divided by total number of countries with epidemic prone areas/situation x 100	Review of documents	National POA	Regional Global		This criterion should be monitored every year until it is established that such a preparedness POA exists according to the epidemology of malaria
8	% of countries having a policy of universal coverage for all with a basic package including relevant malaria control activities	Number of countries having a policy of universal coverage for all with a basic package including relevant malaria control activities divided by total number of malaria endemic countries x 100	Review of documents	National Policy document	Regional Global		This criterion should be monitored every year until it is established that such a policy exists
9	% of countries having established official linkages, including the elaboration of a public health interest research agenda, between research institutions and Ministry of Health	Number of countries having established official linkages, including the elaboration of research agenda of public health interest, between research institutions and Ministry of Health divided by total number of countries implementing RBM POA x 100	Review of documents	Research agenda Research protocols	Regional Global		1. This criterion should be monitored every year until it will be established that such linkages exist. 2. A follow-up is recommended
	ACRONYMS:			IMCI: Integrated Management of Childhood Illness			
	ANCS =Antenatal cards			NMCP: National Malaria Control Programme			
	CHW: Community Health Worker			POA: Plan of Action			
	DSS: Demographic Surveillance Systems			RH: Reproductive Health			
	DHS: Demographic and Health Surveys (USAID-Funded, MACRO Int'l is implementing group).			TBA: Traditional Birth Attendant			
	HIS: Health Information System			Com.= Community			
	Di. = District	Pr=Province /Region	Co. = Pays				

ANNEX 4

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