Multilateral Initiative on Malaria (MIM)

Malaria Research Capability Strengthening in Africa

I  INTRODUCTION

The research grants awarded through MIM/TDR have been a major component of MIM since its inception in 1997. They have provided African scientists with an opportunity to "learn by doing", they have been a channel for promoting partnerships, collaboration, technology transfer and training opportunities. The networking of groups through joint research programmes has proved a highly effective method for mutual training and dedicated workshops. The teams and institutions supported through MIM/TDR have been the centre piece that draws the other components of MIM together; MIMCom providing electronic-communication, M4 providing research materials and the MIM Pan African Malaria Conferences organized by the MIM secretariat provides a unique opportunity to share research results and foster synergies with control and governmental agencies to promote translation of research into policies and programmes.

Despite notable achievements by MIM/TDR and the other components of MIM, the lack of a critical mass of investigators, research managers and infrastructure still persists. There is insufficient capacity in Africa to generate new knowledge, new and improved tools, new strategies and policies, and to provide scientifically tested implementation approaches for malaria control. Sustainable research capacity building takes a very long time and requires persistent effort and resources.

MIM/TDR will continue to play a central role in the overall MIM effort to apply multiple approaches and create varied alliances for training and supporting African researchers and institutions to increase and sustain their capacity for producing high quality health science and translating research results into policies and programmes for malaria control.

In the long term, the outcome of this effort should amounts to well-run, well-equipped, well-funded African institutions with good opportunities for collaborative high quality research.

TDR will continue to provide research capability strengthening grants. In addition, recognising that investing in the human capital for research represents the key to the future of malaria research and control in Africa, TDR will coordinate the African School of Malarialogy, a new project of MIM.

II. BACKGROUND

The specific strategic directions and the plan of work for MIM/TDR for 2004-5 have been guided by the achievements over the past five years, the recommendations of the review of MIM conducted in October 2002, the advise from the MIM Advisory Board and the recommended new directions, discussions with the other MIM components (monthly teleconferences). The plan has also benefited from interactions with many MIM partners and an understanding of the needs of researchers and institutions, and those involved in implementing malaria control.
The plan takes cognisance of the increased visibility of malaria that has taken place in recent years and the increase in funding opportunities for malaria research (e.g. Gates) and control (e.g. Global Fund). These positive shifts create both an opportunity and a challenge for MIM/TDR and point towards new alliances and partners for research capacity building.

The work of MIM/TDR in 2004-5 falls into 3 components. Defining a strategic direction for MIM/TDR, MIM/TDR research and capacity building grants and the African School of Malarialogy

III. DEFINING A STRATEGIC DIRECTION FOR MIM/TDR

Several issues that have been raised in relation to the overall strategy for MIM and are particularly pertinent for MIM/TDR.

1. Priorities setting

One important issue has been of priority setting for MIM generally but also for MIM/TDR. The strategic direction for MIM/TDR in this area will be guided by recent efforts at identifying priority research agenda, needed capacities and partnerships.

   a) In May 2003, the MIM secretariat coordinated a questionnaire survey involving a wide range of people to making suggestions for priority areas for research and capacity building. The survey confirmed that the MIM priorities that were set 6 years ago in Dakar are still perceived as accurate. These are:

      • Functional genomics - parasite and vector
      • Health policy, system and services
      • Pathogenesis of severe malaria and malaria in pregnancy
      • Drug resistance, chemotherapy, chemoprophylaxis, drug policy
      • Socio economic and behavioural science related to malaria and health care
      • Evaluation of preventive and therapeutic measures at the community level
      • Vector biology, insecticides, resistance, bednets

   b) SWG met in Geneva in March 2003 to provide guidance to TDR and partners involved in malaria research and control by defining the global level malaria research agenda and capacity building necessary to address current needs over the following five years. The final report of the meeting is nearing completion. The group identified the following priority research areas:

      • Evaluation of treatment and access to treatment for uncomplicated malaria in children and during pregnancy with an emphasis on home management of malaria (HMM)
      • Evaluation of new approaches to preventing and managing severe malaria
      • Evaluation of Artemisinin-based combination therapies (ACT)
      • Development of new drugs with novel targets
      • New approaches to drug-based malaria prevention including Intermittent Preventive Therapy (IPT) in children and during pregnancy
      • Strategies for scaling up the use of Insecticide Treated Nets (ITNs)
      • Genomics for discovery and development of drug, diagnostics, vaccines, insecticides and anti-parasite effectors molecules,
      • Strategic and basic research in vector-parasite-host interactions
      • Assessment of mechanisms for drug and insecticide resistance
• Development and field evaluation of transgenic methods for interruption of malaria transmission
• Investigation of the pathogenesis of malaria, in particular anaemia and mechanisms of immune response
• Development and application of a common methodology for measuring socio-economic status
• Policy and operational research on the impact, viability, sustainability and optimal balance in Public Private Partnerships (PPP)
• Ethical, legal and social issues of new malaria related tools
• Continue and expand capacity building and synergistic partnerships

c. The review of MIM conducted in October 2002 and the MIM Advisory Board made some comments and recommendations that have a bearing on priority setting for MIM and MIM/TDR. These include:
• balance MIM/TDR focus on basic, applied and policy translation research
• more emphasis in socio-economic, control and behavioural science.
• how to capitalize on new tools e.g. genome sequencing for malaria research initiatives aimed at vaccines and drug development and vector control
• MIM/TDR does not yet support work in new genomic and molecular tools. Africans need access to these new tools and the capacities and infrastructure needed to use them. We must avoid creating a genomic divide
• there is a grey area between support for the operational aspects of monitoring and surveillance and support for using these systems to enable hypothesis-driven research. Opportunities for both research and control exist at this interface which are ripe for exploitation.
• newly emerging operational questions around RBM priorities for combination therapy, malaria in pregnancy, deployment of ITNs and the control of malaria in areas prone to epidemics.
• Position of MIM/TDR in the context of new and emerging efforts in malaria
• There is a strong need for research capacity to guide and monitor control efforts if there is a way to know which efforts to prevent and treat malaria will be successful. How to leverage resources for MIM for the control-oriented efforts - focus on implementation research, smaller conferences, workshops and training activities that connect scientists to policy makers

2. Monitoring and evaluation
MIM/TDR has focused on research projects, either individually or as a network which improve research capacity and leadership, or define a strategic research area for malaria, or increase opportunities for North-South and South-South partnerships, or epitomise the incorporation of research results into malaria control policy and practices. There is a need to develop elements for monitoring, evaluating and reviewing progress including proper scientific measurement of outputs, outcomes and impact in order to understand the effectiveness of the activities and to inform future planning. A review of finance flows is also required in order to track resources into and out of MIM/TDR.
A review of the MIM/TDR networks will be conducted to examine their comparative strengths and weaknesses, to disseminate lessons learned and to plan for future Identification of ways in which the translation of MIM/TDR funded research into health policy and practice can be quantified, defined and better supported will be initiated.
3. **Gaps - geographical and scientific**

Geographical and scientific gaps have been identified in the work of MIM. In trying to address them, it is necessary to balance between expansion i.e. launching new teams and building new sites against consolidation i.e. stabilizing established teams/locations. Both are important.

MIM activities are presently concentrated in a number of countries in West, East and Southern Africa. Methods of strengthening research capacity in areas where there are currently no MIM activities will be explored including South-to-South collaborations that link strong institutions with weaker ones. Although MIM/TDR focuses only on Africa, ways of linking African researchers with researchers and control colleagues working on similar research projects in Asia and Latin America will be explored. Efforts will also be made to involve French speaking scientists.

While remaining focused on centres of excellence with scientific leadership and a proven record, MIM/TDR will develop a vision to allow expansion to emerging institutions with time.

MIM/TDR will strive to invest more funds in social and health services projects in priority areas. MIM/TDR will not change course to encompass these areas on the expense of others but has linked with RBM and AFRO to create a new Initiative.

4. **Partnerships**

Strategies for promoting partnerships and collaboration between the MIM components.

How we will maintain existing partnerships and cultivate new partner relationships in the context of scientific research, capacity building and policy implementation as well as fundraising.

How to foster connections between industry scientists and African researchers, giving both sides a chance to seek out colleagues for work on vaccines and drug development.

5. **Advocacy and resource mobilization**

It is important that the funding available for MIM/TRD is increased, the goal being to double the funding. Fund raising will be built into the work of MIM/TDR.

An effort will be made to clarify the role of MIM/TDR in the malaria research portfolio for TDR. MIM could play a bigger role in the determination of the future overall malaria science agenda within TDR. Ways of building bridges between MIM and TDR to increase African participation in TDR malaria activities will be explored.

6. **MIM/TDR advisory and review group**

The MIM Task Force, which has up to now only served as a review body for grant proposals, will be reshaped and turned into a more strategic advisory group.

7. **Improving relations with the other components of MIM**

- Participation in the monthly teleconference, share information, workplans
- Clarity of the position of MIM/TDR in the new MIM projects e.g. the mentorship project, Clinical trials project, school of malariology
- Invite other MIM components to decision making meetings of TDR, not just those of MIM/TDR
- MIM components to committed to participation in Task Force meetings
- Involve TDR in MIM activities
IV. MIM/TDR RESEARCH AND CAPACITY STRENGTHENING AWARD

The strategy is to synergize facilities and competence available in Africa with those in the north and advanced developing countries to build capacity and create opportunities for developing leadership and research management skills in a cadre of mid career African scientists. Efforts in 2004-5 will support long term capacity development in the context of successful networks and collaboration established in the past 7 years, promote multidisciplinary research capacity and facilitate mentorship of young scientists.

1. Objectives

The objectives of the are to:

1. Develop core groups and regional networks of African investigators and research institutions engaged in high quality malaria research with international research partnerships.

2. Optimize the incorporation of research results to enhance malaria control activities.

The MIM/TDR Task Force on Malaria Research Capability Strengthening will support collaborative research projects with:

- well-defined scientific objectives - Hypothesis driven research focused on priority areas addressing gaps in knowledge or with potential impact on malaria control in Africa.

- Clear capacity building objectives leading to Improvement of research facilities and establishment of research teams.

- Collaboration or partnerships with African research institutions and laboratories in advanced countries.

2. Examples of areas eligible for funding include (but are not limited to):

- **Social sciences and health systems research to improve malaria control in Africa.**
  Antimalarial drug resistance and introduction of new drugs / combinations creates an urgent need to:
  - (a) develop strategies for the effective use of available tools against malaria
  - (b) provide evidence to inform policies on delivery systems and case management.

  Capacities to develop alternative health care systems based on community participation, engage policy makers to promote implementation of research findings or conduct economic and social science research to address this need are currently limited in most African countries. Research supported in this area should result in an increased capacity for malaria related social sciences and health systems research and well established partnerships with national stakeholders to assist in revising and formulating malaria control strategies in Africa.

- **Research and development of new malaria control tools from natural products.** Natural products remain a potential source of new antimalarial and insecticides. Limited capacity for focused research and discovery of malaria control tools from natural products is a major obstacle. Research supported in this area should contribute to the development of appropriate strategies, tools and frame work for validating and documenting knowledge of indigenous communities on the management of malaria. This may include emergence of a network of laboratories in Africa with international partners with capacity for extraction, assay, chemistry and toxicology of natural products.

- **Vectoral potential and insecticide resistance.** Vector control is an important strategy for malaria control. The emerging resistance of the arthropod vector to currently available insecticides underscore the need for better capacity to evaluate insecticide resistance and develop strategies for circumventing the phenomenon. Research supported in this area should result in the establishment of regional partnerships for training in malaria vector biology and control and the capacity to use more efficient tools for the detection of insecticide resistance.
• **Pathogenesis and immunology of malaria.** Severe disease including anaemia and cerebral complications account for the majority of malaria mortality in Africa. A better understanding of the pathogenesis and mechanisms of immune response to malaria will enhance the development of better tools and strategies for case management. Novel cross cutting Cross cutting approach involving clinical, biomedical, socio behavioural and economic research methods (or) genome data and bioinformatics to address critical questions and aspects of host, parasite and disease interaction may be used. Research supported in this area should contribute to understanding predisposition or protection against disease and result in regional capacity for training in immunopathology.

• **Mapping the risks and burden of malaria in Africa.** The spread of antimalarial drug resistance and limited capacity for monitoring transmission intensity and disease burden across the continent mitigate multilateral efforts to control malaria in Africa. Knowledge on the impact of population migration, conflicts, and the introduction / wide spread use of new strategies (e.g ITN, artemisinine and non artemisinin containing combination therapy) will enhance the capacities of countries to plan and respond to the challenges of malaria control.

With the possible toxicity of new drugs becoming as much a focus and the development of resistance, capacity for pharmacovigilance has become important in malaria endemic countries. Pervious research supported by the Task Force has resulted in the formation of a network of institutions using standardized protocols to generate comparable data on antimalarial drug resistance. Research supported in this area should result in multidisciplinary continental platforms/ networks with capacity to provide and collate high quality information on epidemiology of malaria, patterns of resistance to available antimalarial drugs and adverse effects of the drugs in populations.

• **Research to facilitate the introduction of new strategies and policies for malarial control.** Rational deployment and use of new and improved interventions, strategies and policies is necessary for effective malaria control. Research on improved malaria diagnosis, access to treatment, development and expansion of preventive interventions and evaluating the impact of combined control strategies are of great interest. Research supported in this area here should result in partnerships between public health and research institutions and capacity to facilitate pragmatic introduction of new and improved interventions, strategies and policies with impact on malaria control.

V. **HOW THE TASK FORCE WORKS**

The Task Force is engaged in proactive research capacity strengthening through competitive capability strengthening grants to investigators in malaria endemic regions of Africa.

The Task Force invites research proposals from African investigators resident in Africa.

Proposals will be selected for funding on a competitive basis following review by external experts in the relevant field and members of the Task Force.

Investigators are encouraged to identify and develop collaborative research proposals with more advanced resourceful laboratories to enhance capacity building and technology transfer.

Each proposal must include clear scientific and institutional capacity building plans and a well justified budget up to a maximum of $60,000 (excluding large equipment costs).

If large equipment is required, this should be well justified.

Support for trainees within the project should be appended separately and should include details of the budget, proposed training (M.Sc. or Ph.D.) and training institution.

Only in exceptional cases will the Task Force support graduate training outside the PI's institution.

Long-term research support will be provided based on satisfactory annual progress reports and availability of funds. In addition to annual review of progress, project will be evaluated every 3 years for to assess progress towards stated objectives and make decision on subsequent funding.
VI. HOW TO APPLY

Researchers interested in submitting proposals to the Task Force should download forms from the TDR website: [http://www.who.int/tdr/grants/forms.htm](http://www.who.int/tdr/grants/forms.htm). Proposals for the year 2004 are already closed. A call for proposals for 2005 will be sent out during the 2nd quarter of 2005.

All correspondence and requests for additional information should be sent to:

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