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The Multilateral Initiative on Malaria: looking back and looking ahead

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Abstract

The Multilateral Initiative on Malaria (MIM) started in 1997 with the aim of giving African scientists an equal voice with Northern scientists in making decisions about malaria research in Africa. Is there a need for MIM today with the large increase in funding for malaria research from governments and foundations? I conclude that MIM is still needed today to support African scientists' investigator-initiated research and training.

The Multilateral Initiative on Malaria: the beginning

In July 2009, US President Barack Obama spoke to Ghana's parliament about building a partnership between African nations and the wealthy nations of the world to address the many pressing issues facing Africa, including public health problems. In the same spirit, 12 years earlier in 1997, Harold Varmus, then Director of the US National Institutes of Health (NIH), called on scientists in wealthy nations (referred to as the North) to work with African scientists to address the enormous health burden imposed on Africa by malaria. In collaboration with the Pasteur Institute and the Wellcome Trust, he initiated the first meeting of what was later called the Multilateral Initiative on Malaria (MIM) in Dakar [1]. Varmus played an essential role in articulating the need for Northern and African scientists to work together to expand African research on malaria and to reduce the awful disease burden of malaria in Africa. He was also instrumental in setting the achievable goal (as MIM's first priority) of establishing internet connectivity between African and Northern scientists, enhancing the ability of African scientists to communicate with scientists worldwide and to gain access to the scientific literature. At the end of the first MIM meeting, Varmus committed the US National Library of Medicine (NLM), through an effort called the Multilateral Initiative in Malaria Communications Network (MIMCom) to help meet this goal. MIM differed from previous initiatives to foster science in Africa in that MIM involved scientists equally from Africa and from the North. The organizers of MIM understood that to a substantial extent, money for African research in malaria must of necessity come from the North, but believed that the scientific expertise must depend on African scientists as well as Northern scientists.

The first MIM meeting established focus groups for specific areas of research that included antimalarial drugs, pathogenesis, immunology, entomology, vector control methods, epidemiology, health systems, vaccines and case management [Final Report: International conference on malaria in Africa: Challenges and opportunities for cooperation, <http://www3.niaid.nih.gov/topics/Malaria/PDF/senegal1997.pdf>]. The groups covered interventions, training and the funding (mechanisms of cooperation and support). Each focus group, composed of an equal number of scientists from Africa and from the North, was

asked to identify the most important questions in its area and research strategies to provide answers, including ways to enhance collaboration. For example, Terrie Taylor chaired the pathogenesis group that identified variations in the pattern of disease in different localities as a 'roadblock' to testing experimental interventions in severe disease. This led to the creation of the Severe Malaria in African Children (SMAC) network, which has provided data on severe disease from several locations, facilitating studies that required large cohorts for analysis [2]. Similarly, Dominic Kwiatkowski developed a collaborative network for genome-wide associations for severe malaria (malariaGEN) [3]. Both of these networks involved African scientists and the training of new African members of the network. The antimalarial drugs focus group discussed the many problems facing nations of Africa in making decisions concerning the identification of effective drugs, and suggested a network to follow drug resistance in different African countries. Fred Binka, the chair of vector control methods focus group, identified the need to evaluate interventions, and established a program entitled the International Network for the Continuous Demographic Evaluation of Populations and Their Health (INDEPTH) [4] funded by the Gates Foundation. The program identifies scientifically valid methodologies for longitudinal studies of the population health status and cost effectiveness of interventions in Africa.

The MIM Secretariat was formed to oversee coordination and communication within MIM and to organize a Pan-African meeting every 3–4 years. After the meeting in The Hague, the Wellcome Trust committed to house and to support the first Secretariat with the long-term goal of moving the Secretariat to an African institution (Table 1). This goal was met in 2006 when Wen Kilima took on the Secretariat at the African Malaria Network Trust (AMA-NET), an organization established to build capacity in Africa in vaccine testing.

MIMCom

In 1997, internet connectivity was universally identified by African scientists at the Dakar meeting to be a priority for the development of science in Africa. It was recognized that research could not be accomplished without internet connectivity for access to the scientific literature, discussion with collaborators and access to applications to funding agencies and online courses. Under the leadership of Julia Royall at the US NLM [5], and later through the work of the Royal Institute of Technology in Stockholm, internet connectivity through satellite-based transmission was developed at 27 sites in 14 countries throughout Africa (Figure 1). This was an enormous accomplishment at the time. Now internet connectivity is more readily available and cheaper in Africa than was the case a decade ago. In addition, the public digital library (PubMed Central), open-access journals and journals that provide free content to the world's poorest countries through the HINARI (Health InterNetwork Access to Research Initiative) program of WHO have greatly increased the cost-free provision of scientific articles to all scientists in the developing world who have an internet connection. Thus, MIMCom is no longer as important of a component of MIM as it was at the beginning.

MIM/TDR

The biggest challenge from the time of the Dakar meeting to the meeting in The Hague (later in 1997) was to bring together funding agencies to form a central funding mechanism. Unfortunately, central funding was not achieved, and The Hague meeting was the low-point of MIM. After The Hague meeting, Tore Godal committed the WHO Special Programme for Research and Training in Tropical Diseases (TDR) to fund African scientists' research through a new component of WHO/TDR, MIM/TDR. However, from the beginning in 1997, it was clear that all funding, for example that from the Wellcome Trust, could not be channeled through MIM/TDR because of the statutes of the funding agencies. TDR was an important funding agency with personnel and offices and, most importantly, with experience

with capacity building in Africa (25% of their budget was dedicated to building capacity in developing countries). However, TDR had only a small budget (~\$1.5 million) to invest in malaria research, and relied on donations for its funding. The National Institute of Allergy and Infectious Diseases (NIAID) of NIH recognized the building of science in Africa as one of the most important elements of MIM, and has consistently committed funds to this program, as has TDR. Other groups, such as the Rockefeller Foundation, AFRO (the WHO regional office for Africa) and The World Bank, committed funding to MIM/TDR for the short term.

What impact has MIM had on African science?

An important report was published in 2005 entitled Malaria Research & Development, An Assessment of Global Investment [Malaria R&D Alliance, Program for Appropriate Technology in Health (PATH). <http://www.path.org/vaccineresources/details.php?i=745>]. The total investment in MalariaR&D in 2004 was \$323 million. In the report, capacity building was estimated to receive only \$12.4 million or 3.8% of the total investment in malaria research. What role has MIM played in stimulating investment in African research on malaria? MIM/TDR funded grants on a competitive basis focused on research topics identified as critical at the first MIM meeting in Dakar by the focus groups. The grants required African-initiated research, a training component and partnerships with another group, either in the North or within Africa. Francine Ntoumi's group was one of the first funded by MIM/TDR and she dreams of returning to the Republic of Congo. It is the perception of the leaders of MIM/TDR [6] that the funding helped African scientists build programs that attracted groups from the North. The strongest two groups supported by MIM/TDR studied drug resistance and insecticide resistance. These groups formed networks to standardize collection of data and develop ways to inform their governments on anti-malarial drug policy. Terrie Taylor referred to the first MIM meeting in Dakar as a critical influence in forming the SMAC network [2], although SMAC was funded outside of MIM/TDR. MIM/TDR has been active in supporting young African scientists and promoting their careers [6]. Abdoulaye Djimde, an African researcher from Mali is 'extremely grateful for the MIM' for six years of support. 'For scientists working in Africa, it is much easier to get funding for doing clinical trials and very tough to get funds for basic research.... I received much exposure from MIM to present my work at various International Symposia'. Francine Ntoumi had similar words of appreciation. 'I was able to decide on my own research program. ...MIM gave me a voice'. MIM might also have had a role in Brian Greenwood's planning for a Gates Foundation Grant, including the establishment of the Gates Malaria Partnership, which has the training of African scientists in malaria research as its key goal. Metrics for MIM's success can also be found in the 2007 paper written by TDR/WHO and MIM/TDR [7] to highlight accomplishments in building science. Approximately 190 African scientists were trained for PhDs and MScs within the program, one-third of these were funded entirely by MIM. An earlier paper highlighted ideas to optimize training and re-integration into the African community [8]. The first grantees have emerged as leaders in Africa and scientists with international reputations. The research funded by these grants led to 99 published research articles. However, because funding for MIM/TDR has been limited to support investigator-initiated research proposals, the African research infrastructure was only modestly increased by MIM/TDR.

The Future of MIM

Brian Greenwood notes the Dakar meeting as a turning point in malaria research. The biggest change since 1997 has been the large increase in funding in malaria research in Africa from private foundations such as the Wellcome Trust, the Bill and Melinda Gates Foundation and from government agencies such as the EU, including funding for testing of drugs and vaccines. The difference between MIM/TDR and these funding sources is that

MIM/TDR only supports research that originates from African scientists to answer specific questions and with its limited funds, complements the activities of the larger funders. The Gates Malaria Partnership, an important training program, has as one of its goals capacity strengthening of African scientists. Today, it is the responsibility of senior African scientists to identify the best students who can be promoted for further training and future leadership.

I have spent my research life working on expanding the basic knowledge of malaria: its vectors, the character of *Plasmodium*, the human genetics in malaria and the human response to malaria. We hope that some of the discoveries from basic malaria research will lead to new ways of controlling, eliminating or eradicating malaria. I am personally interested in methods to transform *Anopheles* mosquitoes into a pest instead of a fearsome vector of malaria. I would like to see African colleagues involved in this type of research. Funding for basic research is extremely difficult to obtain in Africa. Where will African scientists receive the funds to perform basic research if not from an organization such as MIM/TDR? I am greatly encouraged by the recent move by the NIAID/NIH, which has always provided support of African science, to enlarge its portfolio in malaria research in Africa, including the recent call for research proposals for malaria research from scientists in endemic countries partnering with scientists outside of these areas.

To renew the spirit of Dakar [1], there is a need for a second Dakar-like meeting where the problems in malaria and goals of research are defined by African and Northern scientists on an equal footing.

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Figure 1.

The Multilateral Initiative in Malaria Communications Network (MIMCom) provided enhanced connectivity for African scientists at 27 sites in 14 countries. Julia Royall, Chief International Programs at the US National Library of Medicine (NLM), was brought to NLM/NIH in 1997 to lead the program. (Figure from Julia Royall for Trends in Parasitology).

Table 1Secretariats for MIM since its beginning in 1997^a

Secretariat Site	Years	Pan-African Meeting	Accomplishments
The Wellcome Trust, UK	1997–1999	Durban, SA	The first MIM Secretariat. Study of funding for malaria research in Africa.
The Fogarty Center, NIH, USA	1999–2002	Arusha, Tanzania	External evaluation of MIM. Supported courses in Africa.
Stockholm University and Karolinska, Sweden	2002–2005	Yaoundé, Cameroon	Involved in developing connectivity in Africa.
AMANET, Tanzania	2005–2009	Nairobi, Kenya	Established MIM Secretariat in Africa
Yaoundé, Cameroon	2010		

^aThe first two Secretariats were chosen at the meetings in the Hague, Netherlands, and Durban, SA, respectively. The next three were chosen by people involved in MIM from applications.