

Report on the

**Third intercountry meeting of national  
malaria programme managers**

Lahore, Pakistan  
12–15 May 2003



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## **EXECUTIVE SUMMARY**

The third intercountry meeting of national malaria programme managers of the WHO Eastern Mediterranean Region was held at, Lahore, Pakistan, from 12 to 15 May, 2003. (See Annex 1 for Agenda and Annex 2 for Programme). The meeting was attended by representatives from 18 countries of the Region plus representatives from Algeria and United Republic of Tanzania as well as several Roll Back Malaria (RBM) partners, technical advisers and other experts together with staff of the WHO Regional Office for the Eastern Mediterranean and WHO headquarters, totalling 65 participants (Annex 3). For continuity and follow-up, recommendations arising from the second intercountry meeting are included as Annex 4 of this report.

In the context of Roll Back Malaria (RBM), country status reports were presented on malaria control and Plans of Action for years 2004–2005 were developed. The main themes emphasized were: anti-malaria drug policy (involving combination therapy) and increasing access to treatment; integrated vector management (IVM) and creation of a regional network for monitoring insecticide resistance in vectors.

Other topics on which expert presentations were made included: progress and challenges of RBM globally; social mobilization for malaria control and prevention experiences from other disease programmes; quality assurance on malaria microscopic diagnosis; preparation of the regional atlas of malaria and upgrading of the regional RBM website.

Recommendations were unanimously adopted for: capacity-building; inter-country and inter-regional cooperation for malaria prevention and control; malaria treatment policy for combination therapy; mapping of malaria and its vectors; and monitoring and management of vector resistance to insecticides.

Participants were provided with a CD-ROM containing full illustrated texts of all presentations and background documents for this meeting, together with other relevant items from RBM/East Mediterranean Region website.

### **Recommendations**

#### *General*

1. While Member States have achieved various degrees of progress against malaria, WHO should continue to provide support for malaria control planning, programme implementation, evaluation, monitoring and coordination in all countries of the Region.
2. WHO should play a more active role in capacity building for malaria prevention and control, through revitalization of national and regional training centres and courses.

3. WHO should strengthen inter-regional cooperation and collaboration for malaria prevention and control, particularly between Eastern Mediterranean Region and African Region.
4. At subregional level, intercountry collaboration should be strengthened against malaria, especially among (a) neighbouring countries of the Arabian peninsula, i.e. Saudi Arabia, Oman, United Arab Emirates and Yemen, (b) Afghanistan, Islamic Republic of Iran and Pakistan.
5. At country level, closer working relationships should be fostered inter-regionally between countries with traditional ties and/or extensive population interactions that are relevant to malaria epidemiology and control e.g. Oman and the United Republic of Tanzania (Zanzibar); Algeria with other Maghreb Union countries; Yemen with countries of the Horn of Africa.
6. Technical cooperation should be developed, at national and regional levels, to monitor and manage the problems of antimalaria drug resistance and insecticide resistance in malaria vectors.
7. Participation of country representatives from the WHO African Region in RBM meetings of the Eastern Mediterranean Region is beneficial and they should be invited whenever appropriate. Likewise, relevant malaria programme managers from the Eastern Mediterranean Region and Eastern Mediterranean Regional Office should be invited to participate in WHO African Region/RBM review and planning meetings.
8. Regional meetings of RBM programme managers should be provided with the recommendations from previous meetings (e.g. to scale up insecticide treated bednet coverage), for review and re-adoption.
9. Countries should contribute information for mapping of malaria and its vectors in the atlas on the Regional Office website.

#### *Malaria treatment policy*

10. In view of (a) high levels of chloroquine resistance in *P. falciparum* malaria in several countries, (b) limited data on sulfadoxine pyrimethamine sensitivity and (c) widespread use of alternative antimalarial drugs in the private sector, there is a need to evaluate new options for first-line treatment of malaria throughout the Eastern Mediterranean Region.
11. Sufficient human and financial resources should be invested in all countries of the Eastern Mediterranean Region to establish/expand functional sentinel sites for evaluation of the therapeutic efficacy of each malaria treatment option.
12. In view of the high cost of combinations containing artemisinin, the countries with high *P. falciparum* malaria burden (Djibouti, Somalia, Sudan, Yemen) should evaluate the therapeutic efficacy of sulfadoxine pyrimethamine compared to sulfadoxine

pyrimethamine plus chloroquine and sulfadoxine pyrimethamine plus amodiaquine over the next malaria transmission season. If the result shows poor sulfadoxine pyrimethamine efficacy, the countries should consider introducing artesunate plus amodiaquine combination therapy (supplied to RBM at production cost).

13. Countries with relatively low *P. falciparum* burden and evidence of (a) high failure-rates of chloroquine treatment and (b) efficacious sulfadoxine pyrimethamine, might introduce artesunate in combination with sulfadoxine pyrimethamine for treatment of confirmed *P. falciparum* cases, in order to delay the development of resistance to sulfadoxine pyrimethamine and improve clinical resolution. In such countries (e.g. Afghanistan, Islamic Republic of Iran, Pakistan) steps should be taken to change the first-line treatment to sulfadoxine pyrimethamine plus artesunate, for laboratory-confirmed (microscopy or rapid diagnostic tests) *P. falciparum* infection. Chloroquine should be reserved as first line treatment of clinically diagnosed and laboratory-confirmed vivax malaria infection.
14. A national working group should be established to prepare and drive the appropriate malaria treatment policy change and advise on its implementation.
15. Access to effective treatment should be improved by ensuring free diagnosis and treatment in the public sector, donor funding support, advocacy and community education for behavioural change, strengthening community-based services and the referral system.
16. In view of the rising expense incurred/required for antimalarial drugs, especially those containing artemisinin derivatives, and the widespread practice of over-diagnosing malaria, there is a need to expand access to laboratory diagnosis of malaria. In-service training on WHO standards for malaria microscopy should include laboratory management as part of new national programmes for quality assurance of malaria diagnosis.
17. The RBM partnership should develop a facility for supply of antimalaria drugs, similar to the Global TB Drug Facility, to ensure affordable supplies of effective and appropriate drugs for malaria treatment.

#### *Monitoring and management of vector resistance to insecticides*

18. In order to provide evidence for preventing and overcoming problems of insecticide resistance in malaria vector mosquitoes, WHO should establish a network on vector resistance among countries of the Eastern Mediterranean Region (EMNVR), with allocation of necessary resources.
19. National malaria programme managers should assess their resources (equipment, funds, personnel etc) and available information on vector insecticide resistance, and report to WHO/Eastern Mediterranean Regional Office by end July 2003, in order to help planning the EMNVR budget.

20. WHO/Eastern Mediterranean Regional Office focal point on vector control should finalize guidelines for monitoring and management of insecticide resistance in vectors of malaria and other vector-borne diseases. An initial training workshop on the use of these guidelines and standardization should be conducted before the end of 2003.
21. The Ministry of Health of each country should routinely monitor and strategically counteract vector insecticide resistance, through the EMNVR, in the framework of integrated vector management.
22. WHO should ensure coordination of the EMNVR with parallel networks, especially with the African Network for Vector Resistance (ANVR) already established by WHO African Region.

## 1. INTRODUCTION

The third intercountry meeting of national malaria programme managers of the WHO Eastern Mediterranean Region was held at Lahore, Pakistan, from 12 to 15 May, 2003. (See Annex 1 for Agenda and Annex 2 for Programme). The meeting was attended by representatives from 18 countries of the Region plus representatives from Algeria and United Republic of Tanzania as well as several Roll Back Malaria (RBM) partners, technical advisers and other experts together with staff from the WHO Regional Office for the Eastern Mediterranean and WHO headquarters, totalling 65 participants (for List of Participants See Annex 3). For continuity and follow-up, recommendations arising from the second intercountry meeting are included as Annex 4 of this report.

The meeting was opened by Major General (Retd.) Muhammad Aslam, Director General of Health, Pakistan, who welcomed the participants on behalf of the Federal Minister of Health, His Excellency Mr Mohammad Nasir Khan.

A message from Dr Hussein A. Gezairy, (WHO) Regional Director for the Eastern Mediterranean, was read out by Dr Khalif Bile Mohamud, WHO Representative, Pakistan. Dr Gezairy reminded participants that Roll Back Malaria (RBM) was initiated in 1998 as a global partnership with the goal of halving the global malaria burden by 2010. The United Nations General Assembly declared 2001–2010 the “Decade to Roll Back Malaria in Developing Countries”. Combating malaria was also included among the Millennium Development Goals, goal six of which is to combat HIV/AIDS, malaria and other diseases, with indicator 22 set as the proportion of the population in malaria risk areas using effective malaria prevention and treatment measures. This reflected the significance of malaria as one of the major infectious disease problems of the 21st century.

Malaria remained a serious problem in the Region, said Dr Gezairy. Although several countries had eliminated it and others had limited it to small foci, the Region included countries ranking among the worst affected by malaria in the world, namely Afghanistan, Djibouti, Somalia, Sudan and Yemen. In these and some other malarious countries, most people had only limited access to effective malaria treatment and vector control measures remained inadequate.

Dr Zuhair Hallaj, Director, Communicable Disease Control, WHO Regional Office for the Eastern Mediterranean remarked that in many developing countries the primary health care system had been built on the foundations of the old malaria eradication programme that had quickly achieved its objectives in some countries (e.g. Lebanon, Jordan). Dr Hallaj recalled his first visit to Lahore in 1968, during the malaria eradication era, when so many great pioneers of public health were working in the global malaria programme. Time was not on the side of malaria control, since new communicable disease priorities had emerged, notably human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) and most recently severe acute respiratory syndrome (SARS). He requested the malaria programme managers to keep in mind their national objectives and requirements, while



preparing their RBM Plan of Action for WHO support during the biennium 2004–2005. Dr Hallaj outlined the meeting objectives as follows:

- assess the progress made and problems encountered by the national malaria control programmes in the implementation of the RBM initiative.
- propose specific activities to accelerate the implementation of the plan of action of RBM Member States.
- review country experiences and issues involved in selection and implementation of antimalarial drug policies and discuss the policies for funding to ensure access to treatment.
- review the current status of insecticide resistance in malaria vectors and adopt standardized protocols for its monitoring.

On behalf of the provincial authority, His Excellency Dr Tahir Ali Javed, Minister of Health, Punjab Province, welcomed all the participants to Lahore and noted that malaria was among the oldest causes of human misery and poverty, particularly affecting young children and women during pregnancy. Despite past efforts, malaria remained one of the most serious risks and obstacles to health in places such as Punjab Province and parts of many other countries in the Region. Among the difficulties to overcome, Dr Javed cited the need for better access to prompt diagnosis and appropriate treatment, unresponsive health services, and the rising levels of resistance in malaria parasites and their vectors. Hence national plans should focus on local needs and capacity, while WHO encouraged the multisector approach through the global partnership of RBM. He reported that RBM was one of six priority health programmes in Pakistan and, so far, had been initiated in 19 out of 43 districts with greatest malaria risk. To optimize RBM, however, required more frequent interaction at various levels, including cross-border meetings. New emphasis must be given to intersectoral cooperation, capacity-building and the development of effective public–private partnerships in support of RBM objectives. Thus Dr Javed encouraged the meeting to devise enhanced ways of working together against malaria.

## **2. ROLL BACK MALARIA**

### **2.1 Roll Back Malaria implementation in the Eastern Mediterranean Region**

*Dr Hoda Atta*

The overall malaria burden in the Region is estimated at 15 million cases and 47 000 deaths per year among the population of 287 million living under malaria risk (60% of the Region's population).

Grouping countries by current malaria operational status shows the malaria problem concentrated in a few countries, with more than half (14/23) of the Region's Member States having achieved successful control or elimination of malaria (Table 1).

**Table 1. Current malaria operational status in Eastern Mediterranean Region**

<b>Group 1:</b>	Bahrain, Cyprus, Jordan, Kuwait, Lebanon, Libyan Arab Jamahiriya, Palestine, Qatar, Tunisia, United Arab Emirates	Malaria free countries/areas
<b>Group 2:</b>	Egypt, Morocco, Oman, Syrian Arab Republic	Countries with very limited foci and targeting malaria eradication
<b>Group 3:</b>	Islamic Republic of Iran, Iraq, Pakistan, Saudi Arabia	Countries with low/moderate endemicity and well established control programmes
<b>Group 4:</b>	Afghanistan, Djibouti, Somalia, Sudan, Yemen	Countries with severe malaria problem and/or threatened by epidemics and complex situations

Sudan has about half of the regional malaria burden and 99.9% of cases occur in only five countries: Afghanistan, Pakistan, Somalia, Sudan, Yemen (Tables 2 and 3). Social instability due to conflicts in some of these countries has limited the general health delivery system and resources. Hence their malaria control programmes have very inadequate diagnostic facilities, weak surveillance, a shortage of well-trained staff for malaria control and prevention at peripheral level, and insufficient intersectoral cooperation for malaria control.

During 2002, two courses on malaria for state managers and a diploma course were supported in Sudan and a WHO-supported course on integrated vector management was conducted in Yemen, mainly for Yemeni field workers with facilitators from Islamic Republic of Iran, Oman, Saudi Arabia and the Regional Office. The Roll Back Malaria initiative (RBM) supported the Malaria Free Initiative (MFI) in Khartoum and Gezira States in Sudan by sending field experienced teams from Oman to assist the programme planning and implementation.

RBM supported countries with high malaria burden to seek resources from the Global Fund to Fight AIDS, Tuberculosis and Malaria. A workshop to brief consultants and country representatives on proposal development was held in Cairo, July 2002. Proposals were submitted from Afghanistan, Islamic Republic of Iran, Pakistan, Somalia, Sudan (north and south) and Yemen. All proposals from high burden countries have been approved for funding (Table 4). Meanwhile, additional funds for malaria control in Afghanistan were mobilized from Kuwait, Qatar, Health Net International and United States Agency for International Development (USAID).

**Table 2. Number of parasitologically confirmed malaria cases in 18 countries of Eastern Mediterranean Region.**

Country	Cases in 2000		Cases in 2001		Cases in 2002		Species transmitted locally
	Total	Autochthonous	Total	Autochthonous	Total	Autochthonous	
Bahrain	58	0	54	0	45	0	nil
Cyprus	2	0	0	0	0	0	nil
Egypt	17	0	11	0	10	0	nil
Iraq	3212 <sup>a</sup>	most	-	-	-	-	<i>P. vivax</i>
Islamic Republic of Iran <sup>b</sup>	19 163	most	19 274	most	15 558	9122	<i>P. falciparum</i> ≈ <i>P. vivax</i>
Jordan	158	0	124	0	159	0	nil
Kuwait	235	0	233	0	-	-	nil
Lebanon	44	0	40	0	59	0	nil
Libyan Arab Jamahiriya	131	8	NA	NA	16	0	<i>P. vivax</i>
Morocco	59	3	59	0	104	19	nil
Oman	694	6	635 <sup>c</sup>	2 <sup>d</sup>	590	6	nil
Pakistan <sup>e</sup>	82 526	most	79 437	most	-	-	<i>P. falciparum</i> > <i>P. vivax</i>
Palestine	3	0	2	0	1	0	nil
Qatar	140	0	114	0	159	0	nil
Saudi Arabia <sup>f</sup>	6608	4736	3074	1614	2612	1226	<i>P. falciparum</i> > <i>P. vivax</i>
Syrian Arab Republic <sup>g</sup>	42	6	63	47	27	15	<i>P. vivax</i>
Tunisia	47	0	30	0	-	-	nil
United Arab Emirates	27	0	35	0	36	0	nil

NA Not available

&gt; Predominance of one species

<sup>a</sup> Includes 2058 cases in the three northern governorates only<sup>b</sup> Endemic areas mostly in the south-east<sup>c</sup> Including 3 cryptic cases<sup>d</sup> Introduced cases<sup>e</sup> Greatly reduced from ~600 000 cases officially estimated in 1999 (see previous Meeting Report)<sup>f</sup> Endemic areas only in the south-west<sup>g</sup> Transmission only in the north east

**Table 3. Number of recorded and estimated cases of malaria in five countries with highest malaria prevalence (Group 4)**

Country	Year	Total cases reported	Cases confirmed	Cases estimated	Species transmitted
Afghanistan	2002	590 176	414 611	2 500 000	<i>P. falciparum</i> < <i>P. vivax</i>
Djibouti	2001	4 312		80 000	<i>P. falciparum</i> > <i>P. vivax</i>
Somalia	2002	15 772	1851	2 000 000	<i>P. falciparum</i> > <i>P. vivax</i>
Sudan	2002	3 587 132	1 434 853	7 500 000	<i>P. falciparum</i> > <i>P. vivax</i>
Yemen	2002	68 122	68 122	3 000 000	<i>P. falciparum</i> > <i>P. vivax</i>
Total (Group 4)		4 265 514		15 080 000	
All 18 other countries* (Groups 1–3)		102 288	= < 1% of Eastern Mediterranean Region total		

\*data for latest year reported in Table 2

**Table 4. Global Fund approvals for malaria programmes in Eastern Mediterranean Region countries**

Country	Channel suggested	US \$ approved		Period
		First year	Total	
Afghanistan	WHO Afghanistan	3 125 605	3 125 605	18 months
Pakistan	National Programme	2 317 300	7 720 500	4 years
Somalia	United Nations Children's Fund (UNICEF) Somalia	4 682 031	12 886 413	3 years
Sudan (north)	WHO Sudan	7 046 156	33 240 453	5 years
Sudan (south)	WHO Sudan (south)	6 692 166	27 827 045	5 years
Yemen	WHO Yemen	830 667	11 878 206	5 years

The RBM team of the Regional Office produced manuals on the use of larvivorous fish (English) and on integrated vector control for use by malaria control programmes (Arabic and English). Arabic translations were published of the *20th expert committee on malaria* and *Instructions for treatment and use of insecticide-treated mosquito nets*. The RBM website launched in 2001 has been redesigned and is being updated periodically. The United Arab Emirates celebrated its national malaria day (28 December 2002) with participation from the Regional Office. Africa Malaria Day (25 April 2003) highlighted RBM advocacy throughout the Region with the release of the *Africa Malaria Report 2003*. A strong delegation from the Regional Office attended ceremonies in Khartoum on 24 April to support the Sudan RBM programme.

The RBM programme was selected for evaluation by internal and external teams during 2001–2002 and as a result, in 2003, the partnership has been restructured at global level. At Regional level, a plan was developed, questionnaires were sent to the countries and data were analysed. Evaluation missions visited Sudan and Yemen. Results indicate that RBM support is appreciated and has contributed to reduction of malaria in those countries. The RBM

evaluation mission to Yemen concluded that “Malaria incidence has demonstrated a remarkable reduction almost in all governorates under the RBM purview, especially in the Socotra Island” and in Sudan found that “Malaria incidence in Khartoum State in 2002 has recently dropped to less than 50% of its previous level, and also the mortality rate has shown a significant reduction by 17%. In Gezira State the share of malaria in the total attendance level of the health care services shows a significant reduction”.

Under the Regional Office/United Nations Development Programme/WHO/World Bank Special Programme for Research and Training in Tropical Diseases (TDR)/RBM Small Grants Scheme, 7 applications were funded from 5 countries (Egypt, Islamic Republic of Iran, Oman, Sudan and Yemen) to investigate operational issues related to drug policy, quality of antimalarials, early detection of imported cases and improving vector control operations.

To guide the drug policy, an intercountry workshop on assessing the therapeutic efficacy of antimalarials was held in Sana'a Yemen, April 2002 where representatives from seven countries with local transmission of *P. falciparum* participated and were trained on the WHO protocols for monitoring therapeutic efficacy. With RBM support, a number of sentinel sites for monitoring are now operational in the Islamic Republic of Iran, Somalia, Sudan and Yemen. In Afghanistan a study was conducted in collaboration with the nongovernmental organization Merlin. The results so far indicate a level of resistance to chloroquine.

In 2002, HealthMapper was introduced to Afghanistan, Pakistan, Saudi Arabia, Sudan, and Yemen in cooperation with the Health Information Support unit in the Regional Office. A project was supported in Sudan for strengthening the surveillance system for forecasting and early detection of malaria epidemics in five epidemic prone states.

During 2002, the appropriateness of indoor residual insecticide house-spraying was evaluated in Sudan and it was recommended to scale-up the programme of using insecticide-treated bednets through social marketing. Insecticide-treated bed nets were also supported in Afghanistan, Djibouti and northern Iraq. Insectary facilities were established in Khartoum and Gezira, and young entomologists were trained. Saudi Arabia was supported on the evaluation of the use of insect growth regulators for mosquito control and in vector mapping using Geographic Information System (GIS) software.

A mechanism for certification of malaria-free countries was reactivated through an Informal Consultation on Prevention of Re-introduction of Malaria and Elimination of Residual Foci, held in Morocco, June 2002. The malaria eradication programme in Oman was evaluated in 2002 by a team consisting of an epidemiologist, a vector control specialist and a health economist. RBM supported planned activities for elimination of malaria in Morocco. In the Syrian Arab Republic, the malaria and leishmaniasis control programmes were reviewed highlighting problems of poor diagnosis and treatment, and weak capacity in entomology. The malaria programme in Qatar was also reviewed with recommendations to strengthen intersectoral collaboration and entomological surveillance.

RBM supported Sudan in the implementation of the Malaria Free Initiative in Khartoum and Gezira states which started in April 2002 and is continuing to support the malaria eradication programme in Socotra Island which has been implemented since 2000.

## **2.2 RBM progress in WHO African Region**

*Dr Charles Paluku*

More than 90% of the global burden of malaria is in the WHO African Region. Most countries of the Region are committed to the achievement of the Abuja targets. This means they should initiate appropriate and sustainable action to strengthen the health systems to ensure that by the year 2005:

- At least 60% of those suffering from malaria have prompt access to and are able to use correct, affordable and appropriate treatment within 24 hours of the onset of symptoms.
- At least 60% of those at risk of malaria, particularly pregnant women and children under five years of age, benefit from the most suitable combination of personal and community protective measures such as insecticide-treated mosquito nets and other interventions which are accessible and affordable to prevent infection and suffering.
- At least 60% of all pregnant women who are at risk of malaria, especially those in their first pregnancies, have access to chemoprophylaxis or intermittent preventive treatment.

RBM progress has been made in many countries of the Region with scaling-up of insecticide treated mosquito nets, monitoring antimalarial drug sensitivity, updating drug policy, improving case management and access to prompt diagnosis and treatment, and monitoring and evaluation.

## **2.3 Implementation of RBM interventions at the global level**

*Dr David Alnwick*

On behalf of Dr Alnwick, Dr Andrea Bosman (WHO/CDS/MAL) summarized the current global RBM progress and challenges, following the recent restructuring with benefits from the Global Fund to Fight AIDS, Tuberculosis and Malaria. He explained the process and outcomes whereby the WHO Malaria Control Department now operates in relation to regions and countries, while the RBM Partnership Secretariat are also housed in WHO/Headquarters. On behalf of Member States, WHO facilitates RBM capacity-building, advocacy, implementation, monitoring and evaluation, especially for countries receiving support for from the Global Fund for malaria prevention and control.

## **2.4 Communication for behavioural impact**

*Ms Asiya Odugleh*

Ms Odugleh outline the new method of communication for behavioural impact (COMBI) that has proved to be advantageous for community mobilization to achieve health benefits. She listed the things to do and not to do in order to achieve the desired behavioural

result among people to optimize positive and sustainable health impact. She gave examples of success stories on leprosy, dengue, lymphatic filariasis and commended the COMBI approach to promote insecticide-treated bednet coverage and delivery of antimalaria treatments.

### **3. ANTI-MALARIA DRUG POLICIES AND RESISTANCE**

#### **3.1 Global overview on drug policy and access to treatment**

*Dr A Bosman*

Dr Bosman described antimalarial drug policies in view of failures of chloroquine and other treatments for *P. falciparum*. Much progress is being made with development of new alternative drugs and antimalarial combination therapy given as fixed-dose multiple-therapy, i.e. simultaneous use of two or more blood schizonticidal drugs with independent modes of action and different biochemical targets in the parasite.

Based on a technical consultation on antimalarial combination therapy in April 2001, the following therapeutic options, currently available, have the potential for deployment (in priority order) regardless of cost:

- artemether plus lumefantrine
- artesunate (3 days) plus amodiaquine
- artesunate (3 days) plus sulfadoxine and plus pyrimethamine (SP) where still effective
- amodiaquine plus SP where amodiaquine and SP are still efficacious
- artesunate (3 days) plus mefloquine in areas of low transmission

Dr Bosman encouraged malaria managers to review their current diagnosis and treatment policies for each country. The national status of monitoring malaria drug resistance was reported in plenary by several countries (Afghanistan, Islamic Republic of Iran, Somalia, Sudan, Yemen). For the four groups of countries, malaria treatment policies were discussed in detail and recommendations drafted by working groups (Annex 6).

#### **3.2 Quality assurance in microscopic diagnosis**

*Dr Guy Barnish*

Dr Guy Barnish discussed ways to improve quality assurance with malaria microscopy and diagnosis. He defined quality assurance as the set of activities that are carried out to monitor and improve performance. It is a systematic and planned approach, and is a continuous process. For malaria diagnosis he dismissed rapid diagnostic tests as untrustworthy and expensive. Hence the need to rely on classical blood slide microscopy for malaria and the unique value of Giemsa staining. He recommended the following procedures, to be carried out systematically in a continuous process:

1. Design quality assurance system
  - Form a quality assurance team (staff of laboratory and external supervisor)
  - Design or redesign the service
  - Define what needs to be done (goal, purpose statement or mission statement)

2. **Set standards**
  - **Define the aims**
  - **Accept WHO standards for slide making, staining and microscopy**
  
3. **Quality control**
  - **Develop indicators (standard operating procedures, checklists)**
  - **Establish data collection (monitoring) system**
  - **Monitor performance (internal and external)**
  
4. **Quality improvement**
  - **Calculate results from data collection**
  - **Identify and prioritise quality problems (from monitoring information)**
  - **Analyse/understand what is causing the problem**
  - **Make an action plan to overcome the problem**
  - **Implement the solution**
  
5. **Evaluation**
  - **Evaluate whether there has been any improvement**
  
6. **Repeat the cycle**
  - **If evaluation shows improvement, re-design the service and set new indicators.**

Dr Barnish also discussed quality improvement to achieve a different level of performance, and quality control based on standard operating procedures tested and established for all sampling, analysis and data processing. Standard operating procedures are incorporated into the whole quality assurance system to enable standard operating practices to be followed, monitored and updated when necessary. He reminded participants that the goal is to provide an efficient, effective, accurate and reliable laboratory diagnosis of malaria service. Therefore, on behalf of WHO, he is preparing quality assurance guidelines which, if followed, may be used to ensure high quality laboratory diagnosis of malaria. Thus he aims to facilitate a system that is applicable (with appropriate modifications) to all malaria diagnostic laboratories at country, regional and district levels.

With regard to training, it is not sufficient for laboratory staff to be technically competent. They should have skills to execute guidelines and standards in terms of dependability, accuracy, reliability and consistency. To begin the quality assurance cycle, all malaria diagnostics laboratory staff and resources should be monitored by a senior laboratory technologist who has experience to evaluate not only the skills of the personnel, but also the technical knowledge to assess the quality of microscopes and other equipment. From this initial monitoring visit the problem areas should be identified (staff skills, equipment and supplies). Remedial action should then be taken to correct equipment and supply deficiencies; followed by on-site staff training with pre-and post-training tests to evaluate the effectiveness of the training.



The Ministry of Health should appoint a national quality assurance coordinator and, depending on the number of malaria diagnostic laboratories in each province/region, a number of regional laboratory technologists should be nominated/appointed. These persons are the “front line” supervisors who actually initiate and conduct the monitoring and training/re-training in the diagnostic laboratories. It is they who must assess each and every situation, and provide information to the national coordinator. It is they who are responsible for the high quality outputs from the laboratories, ensuring that equipment and supplies are maintained in good working order and addressing the problems if there are breakdowns in the supply system. They are not responsible for ordering equipment and supplies, but should be in a position to help rectify problems should they occur. Their role is to support, monitor and evaluate the laboratories and the staff, train and re-train the staff and provide feedback, thus ensuring that there is a constant cycle that results in overall improvement to and within the system of the laboratory diagnosis of malaria.

In summary, the quality assurance requirements are:

- Set up a national microscope servicing system, either within the government or establish a contract with a private company.
- Use standard operating procedures for each step, with good laboratory practice.
- Use good quality materials and personnel. The process of making blood smears, staining and examining them (microscopy) is time consuming; failure to maintain high standards results in poor diagnosis.
- Monitor laboratory staff operating procedures (their adherence to standard operating procedures).
- Introduce duplicate and “spiked” slides randomly, and record and monitor accuracy (perhaps as often as every 20 slides) or use cross-checking.
- Maintain a database of workers results and review it regularly.
- Check slides for
  - blood slide quality
  - staining quality.
- Confirm accuracy of diagnosis (parasites present or absent).
- Record results.
- Deliver results to correct person as soon as possible.

It is as important to accurately diagnose negative cases as it is to diagnose positive cases. This is becoming increasingly important as antimalarials become more expensive. The current WHO standard recommendation is to cross-check all positive malaria slides and 10% of negatives. The correct diagnosis and treatment of any condition saves money, time and health.

#### **4. INTEGRATED VECTOR MANAGEMENT: IMPLEMENTATION IN THE EASTERN MEDITERRANEAN REGION**

*Dr Abraham Mnazva*

Integrated vector management involves control efforts using all possible methods targeted against all vectors of medical importance. It is a process of evidence-based decision-making in order to plan, deliver, monitor and evaluate targeted, cost-effective and sustainable combinations of regulatory and operational vector control measures to reduce transmission risks, adhering to principles of intersectorality and partnership.

Vector-borne diseases contribute more than 2.2% of the total estimated burden of disease in countries of the Region, representing 11% of the global burden of vector-borne diseases and 17% of all infectious diseases in the Region. Vector-borne diseases are concentrated in a few countries of the Region that suffer most from the burden and its socioeconomic consequences (Table 5). Such diseases include malaria, leishmaniasis, schistosomiasis, lymphatic filariasis, African trypanosomiasis, onchocerciasis and several arboviruses: notably Rift Valley fever and Crimean–Congo haemorrhagic fever. Several other prevalent diseases such as diarrhoea and trachoma are transmitted by insects but are not usually considered as vector-borne diseases. The dynamics of vector populations, the level of transmission risks and disease incidence fluctuates geographically and seasonally. Asthma is to some extent attributable to insect allergens that can be suppressed by measures used for pest and vector control.

The main vector control measures employed in most countries of the Region have been indoor residual house spraying, larval control using insecticides, source reduction and larvivorous fish, and the general improvement in housing leading to progressive reduction and elimination of malaria and other vector-borne diseases in most of the countries. WHO works with countries to improve the control of vector-borne diseases through technical support, capacity-building, advocacy and operational research for evidence-based interventions. To optimize vector control programmes, guidance is needed on the selection and appropriate use of each intervention, especially the synergies that may be derived from combining several methods. Merging different control programmes may be a priority, to achieve efficiencies in addressing more than one vector-borne diseases in situations where the vectors occur together and have similar behaviour and/or ecology allowing joint targeting.

Although countries of the Region have implemented vector control for many years, these programmes have not fully utilized the concept of integrated vector management. Therefore, RBM/EMRO recently drafted a regional framework for the implementation of integrated vector management. The framework that will provide countries of the Region with guidance on the optimal use of resources (financial, human and technical, including insecticides) with a view to enhancing the protection of human health and the environment.

To comply with the Stockholm Convention banning DDT and other persistent organic pollutants, most countries/areas of the Region (except Afghanistan, Cyprus, Iraq, Libya, Palestine, Qatar, Somalia) do not use DDT. Only four countries (Morocco, Saudi Arabia,

Sudan, Yemen) have notified Annex B exemption, whereby they may use DDT for use against public health vectors until 2011, while working to develop alternative methods of vector control.

Ten vector-borne diseases are sufficiently prevalent in the Eastern Mediterranean Region to be listed in the *World health report 2002* as significant contributors to the burden of disease. Table 5 gives estimates of disability-adjusted life-years (DALYs) lost in 2001 due to these infections, ranked in descending order of burden for the whole Region.

The biggest challenge is therefore to ensure that integrated vector management is implemented at country level, necessitating the establishment, strengthening or reorganization of vector control services through a multidisciplinary and intersectoral collaboration approach. Moreover, the development of national plans of action are required by 2004, with new guidelines for vector control, following comprehensive needs assessment to achieve the following targets: identification of technical, human and financial resources/deficiencies; development of a proposal to establish integrated vector management services within the existing framework of national health policies and systems to obtain agreement from relevant authorities; development of national guidelines and strengthening the structure for planning, implementation, monitoring and evaluation of integrated vector management with a core group to support relevant activities; inter and intra-sectoral collaboration and facilitation of public/private partnerships, cross-border coordination and community participation; and planning and carrying out necessary operational research for evidence-based integrated vector management interventions. RBM/EMRO will finalize and disseminate a draft strategic framework for comments by countries; obtain endorsement by the Regional Committee; and develop and disseminate guidelines for planning, implementation and situation analysis by the end of 2003.

In terms of using insecticide-treated nets, information on their efficacy and effectiveness comes mainly from trials conducted in Africa. Bednets are commonly used in some countries of the Region, especially during the summer months of the year when people sleep outdoors because of the heat, but these nets are usually not made to WHO specifications. Those countries of the Region where insecticide-treated bednet programmes have begun are mostly financed through external funding. These nets have been distributed for free by either the public sector and/or by nongovernmental organizations except in Afghanistan, Sudan and partly in Yemen where cost sharing has been implemented.

Generally the regional experience with insecticide-treated bednet indicates that cost sharing through nongovernmental organizations and the public sector is very costly (though not necessarily to the end user) and more importantly, the public sector is not well equipped to handle finances from sale of nets. Secondly, this approach has failed to target high risk groups who would have benefited from free distribution of nets and thirdly, even where free distribution has been done, insecticide-treated nets coverage, re-treatment and usage have been too low to significantly impact transmission of malaria and other vector-borne diseases that share similar biting and resting behaviour.

**Table 5. Regional burden of vector-borne diseases**

Vector-borne disease	Eastern Mediterranean Region burden: DALYs	Member States		
		Endemic	Epidemic prone	Non-endemic
Diarrhoeal diseases <sup>a</sup>	10 784 000	all	all	0
Malaria	2 050 000	Afghanistan, Djibouti, Islamic Republic of Iran, Iraq, Jordan, Morocco, Pakistan, Saudi Arabia, Somalia, Sudan, Syrian Arab Republic, Yemen	all	Bahrain, Cyprus, Egypt, Kuwait, Lebanon, Libyan Arab Jamahiriya, Oman, Palestine, Qatar, Tunisia, United Arab Emirates
Trachoma	602 000	Afghanistan, Djibouti, Egypt, Islamic Republic of Iran, Iraq, Libyan Arab Jamahiriya, Morocco, Oman, Pakistan, Somalia, Sudan, United Arab Emirates, Yemen	–	Bahrain, Cyprus, Jordan, Kuwait, Lebanon, Palestine, Qatar, Saudi Arabia, Syrian Arab Republic, Tunisia
Lymphatic filariasis	489 000	Egypt, Sudan, Yemen	–	20 countries
Leishmaniasis	278 000	all	–	0
Schistosomiasis	202 000	Egypt, Iraq, Lebanon, Libya, Oman, Palestine, Saudi Arabia, Somalia, Sudan, Yemen	–	Afghanistan, Bahrain, Cyprus, Djibouti, Islamic Republic of Iran, Jordan, Kuwait, Morocco, Pakistan, Qatar, Syrian Arab Republic, Tunisia, United Arab Emirates
Dengue	85 000	Not known	all	Not known
Japanese encephalitis	81 000	Not known	Afghanistan, Pakistan	Not known
Onchocerciasis	46 000	Sudan, Yemen	–	21 countries
Trypanosomiasis	40 000	Somalia, Sudan	–	21 countries
Top 10 vector-borne diseases total	14 657 000 = 11% of DALYs attributed to vector-borne diseases globally = 17% of DALYs attributed to communicable diseases regionally			

<sup>a</sup> enteric infections causing diarrhoeal diseases are only partly transmitted by vectors, being more often acquired directly from faecal/oral route or via contaminated water and foodstuffs.

To address these challenges and to ensure access to insecticide-treated bednets at country level, RBM/EMRO plans to work with countries, nongovernmental organizations and the private sector in a well-coordinated manner in which the roles of each are defined. For example the public sector's role will be to create an enabling environment by developing guidelines, ensuring that taxes and tariffs on insecticide treated bednets are removed and identifying high risk groups for free distribution. The private sector's role will be to create demand and promote use of insecticide treated bednets and target the market that can afford to pay at full cost. Nongovernmental organizations on the other hand blend both the public and private sector roles. In this way, countries will be supported to develop national insecticide-

treated bednets strategic plans based on this model of public/private partnership. However, in countries with adequate resources or under complex emergency, free distribution coupled with adequate promotion might be the best choice.

## **5. INSECTIVE RESISTANCE MONITORING AND MANAGEMENT**

### **5.1 Global resistance problems and need for net working**

To introduce the topic of insecticide resistance, Dr Pierre Guillet presented an overview of the global situation for vector resistance to insecticides and the need for sustainable networks to monitor, prevent and manage insecticide resistance.

### **5.2 Current status on insecticide resistance of vectors in the Eastern Mediterranean Region**

*Dr Mnzava*

Insecticide resistance has been reported from malaria vectors in most countries of the Region. This resistance is mostly towards DDT and organophosphate insecticides (e.g. malathion, temephos) and, in some situations, may have originated from vector selection by exposure to pesticides used for agricultural purposes. The choice of safe insecticides for implementation of integrated vector management is therefore limited. Moreover, capacity to detect, monitor, manage and map the distribution of insecticide resistance at country level is weak. As countries embark on the implementation of integrated vector management, there is a need to update the information on the status of insecticide resistance since the information is very old.

To address this problem, RBM/EMRO plans to establish a regional network of individuals from selected priority countries (Islamic Republic of Iran, Morocco, Oman, Pakistan, Saudi Arabia, Sudan, United Arab Emirates and Yemen), experts from the Region (Egypt and Islamic Republic of Iran) and international experts. International experts will train the individuals from the countries involved in the monitoring of insecticide resistance on specialised skills and the experts from the Region will visit countries on a needs basis and provide on-the-spot training on conducting susceptibility tests and analysis. The Regional Office will maintain a stock of susceptibility test kits and papers to ensure prompt delivery to countries. A database will be established and maintained in one of the identified laboratories in the Region. The laboratory will also map the distribution of insecticide resistance and mosquito vectors. Members of the network will meet annually to review the data and share experiences. The network will expand to include other countries in the Region as capacity is established in the priority countries. This activity will also go a long way to strengthen entomological surveillance in countries.

### **5.3 The experience of the Regional Office for Africa in establishing a regional network for monitoring vector resistance**

As an example of what can be done to assess and manage vector resistance, Dr Guillet presented the African Network on Vector Resistance to Insecticides being organized by the WHO Regional Office for Africa.

### **5.4 Working group on vector control**

The Eastern Mediterranean Region Working Group on Vector Control developed an outline plan for all countries of the Region (Annex 6) to participate in monitoring problems of vector resistance to insecticides, in order to facilitate improvement of vector control strategies and practices.

In discussion, concern was expressed by several nongovernmental participants that resistance monitoring should be undertaken by independent workers (from academic and other organizations not responsible for control operations) and that the results of monitoring resistance should be employed for strategic programme management.

## **6. COUNTRY REPORTS AND PLANS OF ACTION FOR 2004–2005**

### **6.1 Country malaria situation reports**

National malaria programme managers of the 18 countries participating in the meeting each presented their country situation reports. Key points were listed by country under four headings: actions, progress, challenges, prospects.

Follow-up is required to consolidate and tabulate this information in conjunction with the plan of action for each country.

### **6.2 Afghan refugees**

*Dr Mark Rowland*

Dr Rowland presented the findings of Health Net International concerning malaria problems among Afghan refugees. He showed useful comparisons (e.g. prevalence and rates of chloroquine resistance) of malaria problems in the general population of Pakistan in comparison with the Afghan refugees.

### **6.3 National plans of action for biennium 2004–2005**

Dr Zuhair Hallaj encouraged the programme managers to be realistic in their programme planning for the next biennium. He emphasized the need for an inter-agency coordination committee to avoid duplication of resources by various donors. During days 2 and 3 programme managers drafted their national plan of action for the next WHO biennium

2004–2005. These were briefly presented and discussed, to be finalized for WHO support (Annex 5).

## **7. WHO/EMRO MALARIA ATLAS**

*Mr Hani Farouk*

The computer-based atlas of malaria in the Eastern Mediterranean Region, covering all countries of the Region for several years was presented. The atlas depends on data input from country reports, allowing regular updating (at least annually). The HealthMapper software programme allows focus on local details (e.g. topography, demography, malariometric data by year) and overviews at each administrative level (district, province, country, Region). The current version of the atlas, comprising 32 maps, is available on the Regional Office website. As part of the Health Information Systems unit's epidemiological mapping work, the atlas will continually develop according to user needs and inputs, with additional capabilities to be added as the HealthMapper package evolves.

## **8. WHO/EMRO MALARIA WEBSITE**

*Mrs Nahed El Shazly*

The redesigned regional RBM website ([www.emro.who.int/rbm](http://www.emro.who.int/rbm)) was presented. It provides far more information and flexibility than the previous version, with links to many other relevant websites of the WHO and other sources. It provides access to all Regional Office technical documents on malaria, RBM and integrated vector management, as well as meeting reports, country activities (under national flags), staff and country profiles, research and training opportunities, and events. This report and the report of the previous 2<sup>nd</sup> Intercountry Meeting of National Malaria Programme Managers will be available and can be fully down-loaded.

## **9. CONCLUDING SESSION**

Working Group reports on anti-malarial drug policy for countries of the four groups (Annex 6) and conclusions on monitoring of insecticide resistance and mapping of malaria vectors in the Region were presented and discussed in plenary.

Recommendations were unanimously adopted for: capacity-building; inter-country and inter-regional cooperation for malaria prevention and control; malaria treatment policy for combination therapy; mapping of malaria and its vectors; and monitoring and management of vector resistance to insecticides.

Participants were provided with a CD-ROM containing full illustrated texts of all presentations and background documents for this meeting, together with other relevant items from RBM/East Mediterranean Region website.

The session commenced with a brief overview of the meeting activities and achievements, presented by Dr Muhammad Arif Munir, who also presented the example of the RBM biennial plan of action for Pakistan.

Mr Ejaz Rahim, Pakistan Federal Secretary of Health welcomed all the RBM national programme managers and other experts. He said RBM has recently been adopted as one of only seven national programmes in Pakistan. Moreover, Pakistan is one of only six countries that have been approved by the Global Fund to Fight AIDS, Tuberculosis and Malaria for support against all three diseases. Thus Pakistan is now hard at work on capacity-building for control and prevention of communicable diseases. He pledged to fully support the plan of action 2004–2005 and noted the specific requirement for an entomologist at federal level. Mr Rahim endorsed the COMBI approach to engender social as well as political commitment. He praised the efforts of the Regional Office to revitalize malaria training centres, noting how much the field of malaria prevention and control has changed with benefits from new methods and materials, as well as new challenges of resistance, operational constraints and the new linkages involved. He noted the need to coordinate agricultural pesticide practices with the need to maintain the effectiveness of insecticides for use against priority disease vectors and pests of public health importance.

## 10. RECOMMENDATIONS

### *General*

1. While Member States have achieved various degrees of progress against malaria, WHO should continue to provide support for malaria control planning, programme implementation, evaluation, monitoring and coordination in all countries of the Region.
2. WHO should play a more active role in capacity building for malaria prevention and control, through revitalization of national and regional training centres and courses.
3. WHO should strengthen inter-regional cooperation and collaboration for malaria prevention and control, particularly between Eastern Mediterranean Region and African Region.
4. At subregional level, intercountry collaboration should be strengthened against malaria, especially among (a) neighbouring countries of the Arabian peninsula, i.e. Saudi Arabia, Oman, United Arab Emirates and Yemen, (b) Afghanistan, Islamic Republic of Iran and Pakistan.
5. At country level, closer working relationships should be fostered inter-regionally between countries with traditional ties and/or extensive population interactions that are relevant to malaria epidemiology and control e.g. Oman and the United Republic of Tanzania (Zanzibar); Algeria with other Maghreb Union countries; Yemen with countries of the Horn of Africa.



6. Technical cooperation should be developed, at national and regional levels, to monitor and manage the problems of antimalaria drug resistance and insecticide resistance in malaria vectors.
7. Participation of country representatives from the WHO African Region in RBM meetings of the Eastern Mediterranean Region is beneficial and they should be invited whenever appropriate. Likewise, relevant malaria programme managers from the Eastern Mediterranean Region and Eastern Mediterranean Regional Office should be invited to participate in WHO African Region/RBM review and planning meetings.
8. Regional meetings of RBM programme managers should be provided with the recommendations from previous meetings (e.g. to scale up insecticide treated bednet coverage), for review and re-adoption.
9. Countries should contribute information for mapping of malaria and its vectors in the atlas on the Regional Office website.

#### *Malaria treatment policy*

10. In view of (a) high levels of chloroquine resistance in *P. falciparum* malaria in several countries, (b) limited data on sulfadoxine pyrimethamine sensitivity and (c) widespread use of alternative antimalarial drugs in the private sector, there is a need to evaluate new options for first-line treatment of malaria throughout the Eastern Mediterranean Region.
11. Sufficient human and financial resources should be invested in all countries of the Eastern Mediterranean Region to establish/expand functional sentinel sites for evaluation of the therapeutic efficacy of each malaria treatment option.
12. In view of the high cost of combinations containing artemisinin, the countries with high *P. falciparum* malaria burden (Djibouti, Somalia, Sudan, Yemen) should evaluate the therapeutic efficacy of sulfadoxine pyrimethamine compared to sulfadoxine pyrimethamine plus chloroquine and sulfadoxine pyrimethamine plus amodiaquine over the next malaria transmission season. If the result shows poor sulfadoxine pyrimethamine efficacy, the countries should consider introducing artesunate plus amodiaquine combination therapy (supplied to RBM at production cost).
13. Countries with relatively low *P. falciparum* burden and evidence of (a) high failure-rates of chloroquine treatment and (b) efficacious sulfadoxine pyrimethamine, might introduce artesunate in combination with sulfadoxine pyrimethamine for treatment of confirmed *P. falciparum* cases, in order to delay the development of resistance to sulfadoxine pyrimethamine and improve clinical resolution. In such countries (e.g. Afghanistan, Islamic Republic of Iran, Pakistan) steps should be taken to change the first-line treatment to sulfadoxine pyrimethamine plus artesunate, for laboratory-confirmed (microscopy or rapid diagnostic tests) *P. falciparum* infection. Chloroquine should be reserved as first line treatment of clinically diagnosed and laboratory-confirmed vivax malaria infection.

14. A national working group should be established to prepare and drive the appropriate malaria treatment policy change and advise on its implementation.
15. Access to effective treatment should be improved by ensuring free diagnosis and treatment in the public sector, donor funding support, advocacy and community education for behavioural change, strengthening community-based services and the referral system.
16. In view of the rising expense incurred/required for antimalarial drugs, especially those containing artemisinin derivatives, and the widespread practice of over-diagnosing malaria, there is a need to expand access to laboratory diagnosis of malaria. In-service training on WHO standards for malaria microscopy should include laboratory management as part of new national programmes for quality assurance of malaria diagnosis.
17. The RBM partnership should develop a facility for supply of antimalaria drugs, similar to the Global TB Drug Facility, to ensure affordable supplies of effective and appropriate drugs for malaria treatment.

*Monitoring and management of vector resistance to insecticides*

18. In order to provide evidence for preventing and overcoming problems of insecticide resistance in malaria vector mosquitoes, WHO should establish a network on vector resistance among countries of the Eastern Mediterranean Region (EMNVR), with allocation of necessary resources.
19. National malaria programme managers should assess their resources (equipment, funds, personnel etc) and available information on vector insecticide resistance, and report to WHO/Eastern Mediterranean Regional Office by end July 2003, in order to help planning the EMNVR budget.
20. WHO/Eastern Mediterranean Regional Office focal point on vector control should finalize guidelines for monitoring and management of insecticide resistance in vectors of malaria and other vector-borne diseases. An initial training workshop on the use of these guidelines and standardization should be conducted before the end of 2003.
21. The Ministry of Health of each country should routinely monitor and strategically counteract vector insecticide resistance, through the EMNVR, in the framework of integrated vector management.
22. WHO should ensure coordination of the EMNVR with parallel networks, especially with the African Network for Vector Resistance (ANVR) already established by WHO African Region.

**Annex 1**

**AGENDA**

1. Opening session
2. Objectives and expected outcomes of the meeting
3. Progress in the implementation of the Roll Back Malaria (RBM) initiative at global, regional and country levels: successes, problems and constraints
4. Global Fund to Fight AIDS, Tuberculosis and Malaria
5. Draft RBM Plans of Action for the biennium 2004–2005
6. Review of antimalarial drug policy and access to treatment
7. Review the status of insecticide resistance and the protocol for its monitoring
8. Recommendations
9. Closing session

Annex 2

PROGRAMME

**Monday, 12 May 2003**

- 08:30 – 09:00 Registration
- 09:00 – 10:00 Opening Session
- Message from Dr Hussein A. Gezairy, Regional Director, WHO/EMRO
  - Address by Major General (Retd.) Muhammad Aslam, Director-General of Health, Pakistan
  - Nomination of officers, objectives of the meeting and method of work, Dr Zuhair Hallaj
- 10:00 – 10:30 RBM evaluation and progress report for 2002/Dr Hoda Atta
- 10:30 – 10:50 IVM implementation/Dr Abraham Mnzava
- 10:50 – 11:20 Implementation of RBM interventions at the global level: progress and challenges/Dr Andrea Bosman
- 11:20 – 12:00 RBM progress in AFRO, EURO, SEARO/Regional RBM representatives
- 12:00 – 12:15 Social mobilization for malaria control and prevention experiences from other Disease programmes/Dr Asiya Odugleh
- 12:15 – 14:00 Discussions
- 14:00 – 15:15 RBM update in high endemic countries (Afghanistan, Sudan, Yemen)/Country presentations
- 15:15 – 16:00 Discussions
- 16:00 – 16:45 RBM update in low/mod endemic countries (Iran, Pakistan, Saudi Arabia)/Country presentations
- 16:45 – 17:00 Discussions
- 17:00 – 17:40 RBM update in countries with residual malaria transmission (Morocco, Syrian Arab Republic)/Country presentations
- 17:40 – 18:00 Discussions

**Tuesday, 13 May 2003**

- 08:30 – 09:00 Global overview on drug policy and access to treatment/Dr Andrea Bosman
- 09:00 – 09:40 National drug policy and current status of monitoring antimalarial resistance: experiences of Sudan, Yemen, Somalia, Islamic Republic of Iran, Afghanistan/Country and nongovernmental organizations presentations
- 09:40 – 10:00 Discussions
- 10:00 – 10:40 Quality assurance on malaria microscopic diagnosis/Dr Guy Barnish
- 10:40 – 11:30 Challenges and recommendations on drug policy issues working groups
- 12:30 – 13:00 Conclusions from the working groups

- 14:00 – 14:15 Current status on insecticide resistance in EMR/Dr Abraham Mnzava
- 14:15 – 14:30 Global problem and need for Regional Network/Dr Pierre Guillet
- 14:30 – 14:45 AFRO experience in establishing regional network monitoring/Dr Pierre Guillet and Dr A. Mnzava
- 14:45 – 16:00 Discussions
- 16:00 – 16:10 Draft protocol for monitoring insecticide resistance/Dr Abraham Mnzava
- 16:10 – 17:40 Discussing protocol to monitor insecticide resistance, drafting the plan of action/working groups

**Wednesday, 14 May 2003**

- 08:30 – 09:00 Presentation of Atlas of Malaria in EMR/Mr Hani Farouk
- 09:00 – 11:00 Finalization of protocol and recommendations on monitoring insecticide resistance/working groups
- 11:00 – 12:00 Continuation of Finalization of protocol and recommendations on monitoring insecticide resistance/working groups
- 12:00 – 14:00 Conclusions from the working groups, All countries
- 14:00 – 14:30 Introduction on working groups for RBM Plans of Action for 2004–2005/Dr Zuhair Hallaj and Dr Hoda Atta
- 14:30 – 16:00 Working groups: RBM Plans of Action for 2004-2005/All countries
- 16:20 – 17:30 Continuation of Working groups: RBM Plans of Action for 2004–2005/All countries

**Thursday, 15 May 2003**

- 09:00 – 11:00 Presentations and discussions of RBM Plans of Action/plenary
- 11:00 – 11:15 Presentation of new RBM website/Mrs Nahed El Shazly
- 11:15 – 12:30 Conclusion and Recommendations/plenary
- 12:30 – 13:00 Closing session

**Annex 3**

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Annex 4

**RECOMMENDATIONS FROM THE PREVIOUS MEETING**

Second Intercountry Meeting of National Malaria Programme Managers, Muscat, Oman, 24–28 March 2002. Document WHO-EM/MAL/280/E/L, pages 38–39.

**To Member States**

1. Countries with local *P. falciparum* transmission should establish a system of continuous monitoring of therapeutic efficacy of antimalarials through carefully selected representative sentinel sites in order to support drug policy.
2. Malaria endemic countries should update their antimalarial drug policies as needed, addressing the issue of physical and financial accessibility to treatment with a view to introducing home management in poorly accessible areas.
3. In high falciparum malaria transmission areas, intermittent preventive treatment should be considered for introduction as a policy for managing malaria during pregnancy.
4. Epidemic-prone countries should establish/strengthen early warning systems for early detection and rapid response to malaria epidemics as part of their general epidemic preparedness and response plans.
5. Countries should apply an integrated vector control approach for prevention and control of vector-borne diseases. In malaria endemic countries, the use of insecticide-treated mosquito nets and other materials should be scaled up, where and when appropriate and culturally acceptable, to impact malaria transmission.
6. Countries should strengthen their resource mobilization efforts; the Global Fund to fight AIDS, Tuberculosis and Malaria could be an opportunity to bridge the budget deficit to accelerate and expand the implementation of their national plans.
7. Countries that have already achieved interruption of malaria transmission should maintain an effective surveillance system for the early detection and effective management of imported cases and for monitoring essential entomological parameters.
8. Member States of WHO having common borders should maintain coordination and collaborative activities to prevent and control malaria, especially in border districts, facilitated by WHO.
9. Countries should promote greater involvement of nongovernmental organizations and other public sectors in malaria programmes, especially the private medical sector in implementing national policies.

10. Countries should use chemicals such as Giemsa stain, insecticides and larvicides based on WHO recommendations and specifications.

**To WHO**

11. WHO should continue to provide technical support to countries for planning and programme implementation.
12. WHO should strengthen efforts to assist countries in mobilizing resources and to identify potential partners in support of their national programmes.
13. WHO should develop a regional framework and regional policy for implementation of integrated vector management, and assist countries in implementing this strategy.
14. WHO should continue human resources development especially for vector control and develop standardized packages to be used to train peripheral health workers, physicians and the community in integrated disease prevention and control.
15. WHO should continue its efforts to foster inter-regional cooperation.
16. WHO should continue to develop technical guidelines and training modules for all levels to cover all major aspects of malaria prevention and control.

## Annex 5

**TABLE OF COUNTRIES PARTICIPATING, REPORTING AND PLANS OF ACTION  
PREPARED FOR 2004–2005**

Country	Attended Meeting	Annual Report		Plan of Action 2004–2005
		Submitted	on CD	
AFG	✓✓**	✓	✓	draft
BAH	✓	✓	✓	draft
CYP	–	–	–	–
DJI	✓	–	–	–
EGY	✓✓(*)	✓	✓	draft
IRN	✓(*)	✓	✓	draft
IRQ	–	–	–	–
JOR	✓	–	–	?
KUW	–	–	–	–
LEB	✓	–	–	?
LIB	–	–	–	–
MOR	✓	✓	✓	draft
OMA	✓	✓	✓	draft
PAK	✓✓✓✓✓✓ *****	✓	✓	draft
PAL	–	–	–	–
QUALITY ASSURANCET	✓	✓	✓	draft
SAA	✓	✓	✓	draft
SOM	*(*)	✓	–	?
SUD	✓✓*	✓	✓	draft
SYR	✓	✓	–	?
TUN	✓	✓	–	?
UAE	✓	✓	✓	draft
YEM	✓**	✓	✓	draft
WHO/HQ	***	NA	NA	NA
EMR	*****(**)			
AFR†	✓✓*	✓	✓	NA
Others	##	✓✓	✓	NA

# = partner

✓ = national participant

\* = WHO delegate, (\*) TA or STC

† = AFR participants from Algeria, United Republic of Tanzania (Zanzibar) and WHO/RBM

## Annex 6

## WORKING GROUP REPORTS

## 6.1 Challenges and Recommendations on drug policy issues

6.1.1+2 Working Group for countries of Group 1 (malaria-free)  
and Group 2 (limited foci and targeting malaria eradication).

Operational	Oman	Qatar	Jordan	Egypt	Lebanon	Tunisia	Syria	Morocco
Early Detection	1-2	3-4 *under-reporting *only for blood donors	1-2	1-2	3-4	3-4	1-2	1-2
Diagnosis	1-5	1, 7-10	1-4 Private sector	1-5	6-10	1-5	1-5	1-5
Treatment	1	2 (radical & chemo prophylaxis)	1 (chemo prophylaxis is not free)	1	2	1	1	1
Awareness/ Health Education	1	Only for travelers	Only for travelers	1	2		1	1
Plan Of Action	✓	✓	✓	✓	✓	✓	✓	✓

Case Detection	Problems
1. PCD=Passive case detection	-
2. ACD=Active case detection	-
3. PCD=Passive case detection	+
4. PCD=Active case detection	+
<b>Diagnosis</b>	
1. Microscopy available at periphery, regional and central level	-
2. Training & evaluation of microscopy personnel	-
3. Written field manual for diagnosis by species (Atlas)	-
4. Quality control & proficiency testing	-
5. Use of Rapid diagnostic test (RDT)	-
6. Microscopy available at periphery, regional and central level	+
7. Training & evaluation of microscopy personnel	+
8. Written field manual for diagnosis by species (Atlas)	+
9. Quality control & proficiency testing	+
10. Use of Rapid diagnostic test (RDT)	+
<b>Treatment</b>	
1. National drug policy for malaria treatment & chemo prophylaxis	-
2. National drug policy for malaria treatment & chemo prophylaxis	+
<b>Health Education</b>	
1. Traveler, school children and general pop.	-
2. Traveler, school children and general pop.	+



### 6.1.3 Group 3: Afghanistan, Islamic Republic of Iran and Pakistan: countries with low/moderate endemicity

#### 6.1.3.1 Background

Summary data (approximate)

		Afghanistan	Iran	Pakistan
Treatment protocol for uncomplicated falciparum malaria	1 <sup>st</sup> line	CQ	CQ+PQI	CQ
	2 <sup>nd</sup> line	SP	SP+Q3	SP
	3 <sup>rd</sup> line	Q	Q+Doxy/AS	Q
Diagnosis		Clin/lab	Lab	Clin/lab
%Pf		20%	15%	31%
CQ failure	D28	85%	77%	70%
	D3	20%(approx)	25%	20%
Public sector service coverage		<35%	>90%	25%
Public sector service utilization (where exists)		?	>90%	20%
Microscopic services (per population)		10–30 000 (planned)	Community level	10–30 000

CQ chloroquine; SP sulphadoxine-pyrimethamine; Q quinine; Q33 day course of quinine;

PQI one dose of primaquine; Doxy doxycycline; AS artesunate; Clin clinical diagnosis; Lab laboratory diagnosis; Pf Plasmodium falciparum; Pv Plasmodium vivax; RDT Rapid diagnostic test

#### 6.1.3.2 Drug treatment policy

In view of high degree of treatment failure with CQ, all participants agreed steps should be taken to change first-line treatment protocol in the three countries to the following:

CQ for clinically diagnosed malaria and laboratory confirmed Pv infection

SP+AS for laboratory confirmed (microscopy or RDT) Pf infection

Rationale for choice: SP remains efficacious in the three countries. The addition of artesunate will theoretically delay the development of resistance to SP and improve symptom resolution. Clinical diagnosis is too non specific to warrant use of SP plus AS: data from eastern Afghanistan, the most endemic part of the three countries, suggest that falciparum malaria only accounts for 5% of febrile illness. Should the drug be deployed on the basis of clinical symptoms alone, this would result in unacceptable over-treatment, with attendant excessive cost, risks of side-effects, misuse and possible encouragement of the development of resistance.

First dose of SP plus AS to be given under supervision of health worker, days two and three AS to be given in clearly marked packages (eg envelopes) with clear instructions from the health worker.

**6.1.3.3 Access to treatment and diagnosis**

Participants agreed that ACCESS to treatment and diagnosis should be improved by:

1. Free diagnosis and treatment through public sector;
2. Donor advocacy for funding support, e.g. via Global Fund for ATM;
3. Community education/behavioural change communication re recognition of febrile illness, promotion of prompt treatment seeking for febrile illness, possibility of treatment failure with CQ, where to go for quality diagnosis and treatment;
4. Training of Community Health Workers (AFG) and Lady Health Workers (PAK) in the delivery of chloroquine, the possibility of treatment failure, the need for follow-up within three days, the referral to health center for diagnosis and treatment in the event of persistence/worsening of symptoms, and how to counsel care-givers/people with malaria;
5. Development and dissemination of standard treatment guidelines, including the private sector;
6. Training to include the private sector.

For expansion of access to quality diagnostic services:

- Phase 1: should focus on delivery quality assured microscopic services (see below) at the Rural/Comprehensive Health Centre level for PAK/AFG before,
- Phase 2: expansion of services to more endemic areas.

**6.1.3.4 Quality assurance of laboratory services**

Consider accreditation system for private sector providers

Include private sector providers in data collection system

Cross checking system:

100% + and 10%- district (PAK)

100%+ and 10%- provincial level (PAK, IRAN)

10% national level (IRAN, PAK)

AFG yet to introduce nation-wide system, but similar system where HNI operates

Agreed need for quality standardized supply distribution, refresher training, standard guidelines, regular laboratory equipment maintenance, monitoring and cross checking system

Iran: Instituting an accreditation system with quantifiable indicators for inputs (staff training, supplies and equipment, physical space), processes (stock ruptures, maintenance of equipment), and outputs (quality of service, consumer satisfaction) etc. Will share details with AFG and PAK in July.

PAK: similar registration system, needs strengthening Afghan refugee camps in Pakistan (HNI): 2 monthly supervision visits for monitoring (treatment, diagnosis, data collection activities) on the spot training, minor microscope maintenance (eg bulb replacement), slide

collection for cross checking, feed back on cross check results, data collection, surveillance data for targeting of prevention (eg ITNs)

AFG to re-institute similar monitoring and quality assurance system

#### **6.1.3.5 Follow-up**

Participants agreed that issues of standardized drug treatment policy and quality control of diagnostic services should be followed-up at cross-border meeting; representatives from Tajikistan should be invited also to attend.

#### **6.1.3.6 Participants in Group 3**

Dr Ashaa Director of IMPD, MOH Afghanistan

Dr Ashraf, National Program Officer, WHO Kabul Afghanistan

Dr Fayaz Ahmad, Deputy Program Manager, HNI

Dr Abbas Shabazy, Malaria Control Officer, MOH of Iran

Dr Quthuddin Wakar, Technical Officer RBM, WHO Pakistan

Dr Muhammad Aslam Khan, Health Education Officer, MCP, MOH, Pakistan

Dr Khalid Iqbal, Provincial Coordinator, NWFP Peshawar, Pakistan

Dr Amir Mohammad Kakar, Provincial Coordination Balochistan, MCP, Pakistan

Dr Mohammed Arif Munir, Director, Malaria Control Program, Pakistan

Dr Mark Rowland, LSHTM, U.K.

Dr Nadine Ezard, Medical Officer, RBM WHO Kabul Afghanistan (Rapporteur)

6.1.4 Group 4: countries with high malaria endemicity and/or complex situations (DJI, SOM, SUD, YEM)

#### **Items Discussed**

- Resistance to antimalarial drugs and review of national malaria treatment guidelines
- Access to treatment near the home
- Quality assurance of laboratory diagnosis

#### **6.1.4.1 Resistance to antimalarial drugs and review of national malaria treatment guidelines**

The participants discussed the process of updating treatment guidelines in each of the respective countries. Currently, all participating countries are monitoring the therapeutic efficacy of the first and second line antimalarial drugs to provide updated information for policy change. In all countries, there are no data available at present on alternative options to chloroquine or SP.

In Sudan, studies are on going to evaluate chloroquine in three sites and SP in one site. In Yemen, both drugs are under investigation and the studies will be completed in 2003 and a policy consensus meeting has been planned for 2004. In Djibouti, last study on chloroquine was completed in 1992 showing high sensitivity to chloroquine. A new study has been planned as a part of RBM implementation. In Saudi Arabia, 12% of RI was documented in 2000. In Somalia studies on chloroquine and SP are on going in two sites.

Looking at preliminary available information it seems that already high levels of resistance to chloroquine exist in the countries reaching up to 60% in Somalia, 50% in Yemen and 40% Sudan. There is limited information on SP efficacy at present and concern was expressed especially in view of the widespread use of this drug in the private sector especially in Somalia and Sudan.

The group also brainstormed on the process of revising malaria treatment policy. Experience from Zanzibar was shared. The following critical steps were suggested as important tools to influence the policy makers:

- Collecting and showing results of therapeutic efficacy of alternative treatment option
- Establishment of a national working group to drive the process
- Translation of scientific results into appropriate information for policy makers
- Presentation of malaria morbidity and mortality trends using health information data
- Consensus-building among all the key stakeholders including the private sector
- Presenting prescriber's perceptions on the use of failing drugs
- Presenting consumer complaints
- Estimation of resources required for the policy change

In countries where the private sector plays a major role in malaria treatment like Sudan and Somalia, there is a need to develop appropriate interventions to influence practices and behaviours. Developing new guidelines and distributing them to the private practitioners will not be an effective way to change practices. Experience from Zanzibar has shown that efficient communication strategy to promote the new policy can mobilize the private sector, where the drugs are already available in the market.

There was a consensus that countries having high level of chloroquine resistance need to evaluate urgently the potential option for first line treatment during the 2003 malaria transmission season. As a minimum, the study should evaluate SP against SP+CQ and SP+AQ. In case of high level of SP sensitivity, the choice of the best combination with SP will be based on the result of tests. Because of the high cost of artemisinin containing combinations (ACT), the country representatives proposed to evaluate in-depth an interim policies using SP+CQ or SP+AQ based on evidence before considering ACT. Several participants expressed serious concern over the added value of chloroquine to SP in areas where already chloroquine is failing. There is no evidence that in this situation that chloroquine can protect SP. On the contrary, if the results show poor SP efficacy the countries agreed that the next potential option for first line treatment for malaria should be artesunate+amodiaquine.

The participants recognized the importance of investing human and financial resources for establishing functional sentinel sites not only for the evaluation of first-line and second-line antimalarial treatment currently in use, but also for the evaluation the therapeutic efficacy of new malaria treatment options.

#### **6.1.4.2 Access to treatment near the home**

Self-treatment of malaria is widespread in most of the countries but the national malaria control programmes provide limited support for improving home management of malaria. The participants agreed to consider home management in a holistic approach not limited to the procurement and distribution of antimalarial drugs near the home. This should include also improving knowledge and practices on malaria prevention, appropriate use of antimalarial drugs for uncomplicated malaria and adherence to treatment regimens and early recognition and referral of severe malaria. Taken under this broad approach, home management should be one of the key components of all malaria control programmes.

The issue of selection of antimalarial drugs for use in the community was discussed especially for countries in need to replace chloroquine and which are considering combination therapy. The experience of Mozambique was presented, where amodiaquine+SP was approved as the new first line treatment for uncomplicated malaria to be used at the health facilities while keeping chloroquine for use in the community level in a liberalized way. However, the decision is being reviewed in the country for ethical reasons in view of high level chloroquine resistance and high burden of malaria in areas with limited access to health facilities.

There was a general consensus from the group that artemisinin based combination therapy should be given after laboratory confirmation.

#### **6.1.4.3 Quality control of laboratory diagnosis**

The participants stressed the need for strengthening laboratory diagnosis through microscopy in view of the increasing cost of the antimalarial drugs and wide spread practices of over-diagnosing malaria using clinical criteria. The experience of Sudan and Saudi Arabia has shown the importance of evaluating the laboratory services in the private sector and involving them in the quality assurance programme lead by the MoH.

A general outline and steps was discussed as follows:

- Need assessment focusing on accessible urban areas involving public and private sectors.
- Nomination of QA coordinator and regional focal person/supervisor
- Establishment of Standard Operating Procedures (SOPs) for quality control.
- Establishment of course on lab QA at national level for all regional supervisors
- Conducting on-job training by regular supervision, which includes laboratory management (should not be more expensive than the classical refresher courses).
- Implementation of the SOPs for quality malaria microscopy involving the private sector. The proportion of negative and positive slides to be re-examined should be defined according to QA guidelines and country specific malaria burden.
- Regular monitoring and evaluation.

**6.1.4.4 Recommendations by/for Group 4 countries**

1. In view of the high levels of chloroquine resistance reported in several countries and limited data on SP and widespread use of alternative antimalarial drugs in the private sector, there is a need to evaluate potential options for first line treatment.
2. Sufficient human and financial resources should be invested in all countries in establishing functional sentinel sites not only for the evaluation antimalarial treatment currently in use, but also for the evaluation the therapeutic efficacy of new malaria treatment options.
3. Because of the high cost of artemisinin containing combinations, the countries with high malaria burden should evaluate the therapeutic efficacy of SP compared to SP+CQ and SP+AQ over the next malaria transmission season. If the result shows poor SP efficacy, the countries should consider introducing artesunate+amodiaquine.
4. In addition to antimalarial drug efficacy assessment, the following activities should be implemented
  - as part of the preparatory phase policy change:
  - establishment of a national working group to drive the process;
  - collection of malaria morbidity and mortality trends using health information data;
  - situation analysis on prescriber's perceptions and consumer behaviour
  - on the use of failing drugs;
  - estimation of resources required for the policy change
  - (drug procurement, training, communication etc).
5. Home management should be one of the key components of all malaria control programmes, aiming to improve:
  - knowledge and practices on malaria prevention;
  - availability of effective drugs near the home;
  - appropriate use of antimalarial drugs for uncomplicated malaria;
  - adherence to treatment regimens;
  - early recognition and referral of severe malaria.

Participants in Group 4	Title	Institution	Country
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Dr Andrea Bosman	Medical Officer	WHO	WHO/HQ
Dr Marian Warsame (Rapporteur)	Temporary Adviser	WHO	EMRO

## 6.2 Working Group on Monitoring of Insecticide Resistance and Mapping of Malaria Vectors in the Eastern Mediterranean Region

### 6.2.1 Items Discussed:

- Proposed insecticide resistance monitoring guidelines
- Essential structure(s) and resources for implementation of proposed guidelines
- Funding for implementation

### 6.2.2 Comments on Proposed Guidelines:

Some technical revision of the guidelines will be required and completed using e-mail exchanges by the end of May 2003. Once finalised and endorsed, the guidelines will need to be adapted to local conditions based on the availability of funding, human resources and infrastructure. Training on the guidelines will be provided in a workshop in Cairo before the end of 2003. This will include participants from all member states, working on malaria control and, if possible, already familiar with insecticide resistance monitoring. In preparation for the workshop, the group recommended restructuring of the document as follows:

- The main part of the document should outline the proposed Eastern Mediterranean Network on Vector Resistance (EMNVR).
- Additional detail should be provided on options for implementation of the network, using case examples if necessary (e.g. African Network or insecticide resistance monitoring in Islamic Republic of Iran and Yemen).
- The use of data collected by each country and by the network as a whole needs to be outlined more clearly. How will the data be used to influence policy of insecticide use in vector control programmes and what are the options (e.g. rotation of pyrethroid and propoxur in Iran for residual spraying during two annual malaria transmission seasons) and their impact.
- In this context, the need to interpret insecticide resistance data in conjunction with epidemiological data should be mentioned.
- Methods for insecticide resistance testing, etc. should be moved to the annex
- The job description of the country level coordinator should be made clearer and job descriptions for field technicians should be included in the annex.

### 6.2.3 Resources and Structures for Implementation

All EMR Member States will be required to conduct an "inventory" of existing insecticide resistance data and past experiences in vector control (such as replacement of an insecticide with a new compound of when resistance exceeded a certain level). Furthermore an inventory of existing facilities and other resources that can be used for resistance monitoring will be required, to establish each country's capacity to implement the guidelines, the need of countries to amend them according to their local situation and to estimate the necessary future support (financial, technical).

The presently envisaged regional network structure will have at least two reference centres (proposed: School of Public Health, Teheran and Cairo). Final selection will be made on the basis of existing capacity and ability to support staff in other countries. In addition to

support, reference centres will also be used to conduct molecular or biochemical insecticide resistance tests on mosquito specimens, should this be required.

Routine monitoring for insecticide resistance in malaria vectors by member states should employ at least one of three standard WHO bioassay methods, depending on the interventions used. The methods are: I) exposure of female adult mosquitoes in WHO test tubes (residual house spraying programmes); II) exposure of female adult mosquitoes to insecticide treated mosquito netting (large scale ITN programmes); or larval bioassays (in countries with control programmes based on larval control). The minimum requirement at country level to implement this system is a "country level coordinator" and a small number of field technicians, to sample mosquitoes and conduct the tests. For example in the African Network, an average of two to three technicians were identified at country level, trained and supervised by a vector biologist during the initial stages of their work.

The details of the structure used for resistance monitoring will vary between countries. For example, country level coordinators may be a Ministry of Health (MoH) staff members or belong to a University (e.g. Iran). This also applies to field technicians. In countries emerging from chronic emergencies, such as Afghanistan, the coordinator may be a staff member of the malaria control programme, with non-governmental organisations providing field technicians, support and supervision, with the aim to hand over this responsibility to the MoH once sufficient capacity has developed.

#### 6.2.4 Funding

All EMR Member States were urged to include a component on insecticide resistance monitoring in their RBM plans of action before the end of the present meeting, to ensure allocation of WHO funds during the upcoming funding cycle. Additional funding should also be sought by each country using different mechanisms, such as the Global Fund or contributions from bilateral health sector donors. An example for the receipt of additional funding are Yemen, Sudan and Djibouti, who have been awarded US\$ 500 000 by the GCC States. Other countries within the Region are likely to benefit from the finalization and endorsement of the guidelines on monitoring of insecticide resistance, as the document can be presented in support of funding applications.

#### 6.2.5 Recommendations from the Working Group

- There is a need for an insecticide resistance network in the Eastern Mediterranean Region
- The MoH of each country should lead the implementation of the network in their respective country
- Guidelines for the network should be finalised by end May 2003
- The MoH of each member country needs to provide an inventory of existing resources and data by the end of June 2003
- A training workshop on guidelines should be conducted in Cairo before the end of 2003.

#### 6.2.6 Additional Issues Recommended for Discussions at Upcoming Workshop

- Criteria for selection of sentinel sites
- Regional insecticide resistance database



**6.2.7 Issues Recommended for Discussion in another forum**

Supply and procurement of pesticides: to ensure that products recommended for vector management are available in countries that encounter problems with insecticide resistance.

**6.2.8 Participants in the Working Group on Vector Resistance**

<b>Name</b>	<b>Organisation</b>	<b>Position</b>	<b>Country</b>
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Osama M. Ali	WHO	Vector Biologist	Yemen
Pierre Guillet	WHO	Scientist, Vector Contr	Geneva, Switzerland
Graham White	WHO	Short Term Consultant	EMRO
Rana M. Saleem	Punjab Health Services	Entomologist	Pakistan
Btissam Ameur	MoH	Director Vector Control	Morocco
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Sidiq Mohd. Ismail	MoH	Focal Point IVM	Sudan
Hassan Vatandoost	Tehran School of Public H.	Associate Professor	Iran
Mohd. Zaki Osman	Research Institute	Senior Entomologist	Egypt
Hanaw Helmy	Ain Shams University	Research & Training	Egypt
Ghazala Nadeem	Malaria Training Centre	In-charge	Pakistan (Lahore)
Muhammad Mukhtar	IWMI	Entomologist	Pakistan
Jan Kolaczinski	HealthNet International	Programme Manager	Afghanistan/Pakistan
Kate Graham	HealthNet International	Research Advisor	Afghanistan/Pakistan
Sylvester Kazi	A to Z Textile Mills	Export Manager	Tanzania

Note: Participants listed here do not represent all Member States of the Region. The need for broader consultation prior to endorsement of the document was recognized, in order to ensure consensus on its implementation. This is particularly important because the economic status of countries varies widely across the region and may influence implementation of proposed plans.