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Report on the

Regional workshop on malaria elimination and malaria-free initiatives

Dubai, United Arab Emirates
13–14 June 2007

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1. INTRODUCTION

A regional workshop on malaria elimination and malaria-free initiatives was held in Dubai, United Arab Emirates, from 13–14 June 2007. The workshop was organized by the World Health Organization (WHO) Regional Office for the Eastern Mediterranean (EMRO). The objectives of the workshop were to:

- evaluate the regional achievements for eliminating malaria;
- share experience among countries at different phases of malaria elimination;
- discuss challenges in cross-border coordination/collaboration;
- discuss a regional training module on malaria elimination and prevention of its reintroduction to develop a regional course on malaria elimination.

Dr Jaouad Mahjour, Director, Communicable Disease Control, WHO Regional Office for the Eastern Mediterranean, delivered the opening speech on behalf of Dr Hussein A. Gezairy, WHO Regional Director for the Eastern Mediterranean. Dr Gezairy alluded to the high priority of malaria elimination in the Region and the regional vision of the expansion of malaria-free areas. Although the WHO global malaria programme adopted malaria elimination as a strategic direction in 2006, a number of malaria elimination efforts had been made in the Region over the past two decades starting with Oman in 1990, North African countries in 1997, followed later by Islamic Republic of Iran, Iraq, Saudi Arabia and Syrian Arab Republic. Countries were at different stages of implementation of this approach, the Islamic Republic of Iran was in the preparatory phase of elimination, and Saudi Arabia in the consolidation phase. Oman and Morocco were in the maintenance phase. In January 2007, the United Arab Emirates was certified as a malaria-free country. Additionally, special projects in certain geographical areas in endemic countries were adopted including Socotra Island in Yemen in 2002 and the Khartoum and Gezira States malaria-free initiative in Sudan in 2002.

Dr Gezairy stressed the need for high level and sustainable political commitment and sustainable resources for very high quality implementation of malaria interventions, including border coordination in order to achieve malaria elimination and to prevent the re-establishment of local transmission.

The Chairmanship was shared on a rotating basis. The agenda, programme and list of participants are included as Annexes 1, 2 and 3, respectively.

2. TECHNICAL PRESENTATIONS

2.1 Implementation of malaria elimination strategy in the Region

Dr Hoda Atta, EMRO

The objectives of the regional strategic plan for 2006–2010 to support malaria elimination emphasize certain initiatives: malaria-free North Africa, malaria-free member countries of the Gulf Cooperation Council (GCC), malaria elimination in the Islamic Republic of Iran and Iraq, the expansion of Khartoum and Gezira malaria-free initiatives to other states, and the development of initiatives in other countries such as Pakistan and Afghanistan. The

main approaches to realising these objectives include: assessment of the feasibility of elimination; support for the development of the national/subnational elimination strategy and the plan of action; capacity-building; provision of technical and logistic support in the implementation phase; conducting periodic external evaluation of the programme, support cross-border coordination and interregional cooperation; and facilitation of resource mobilization. Finally, support certification of the elimination status if countries request that.

In the phased approach countries can initiate elimination in certain geographical areas or zones with suitable eco-epidemiology and expand elimination activities as they obtain greater experience and resources for other areas. Taking the example of Oman, elimination started in 1991 in the Sharquiya region and was expanded in 1992 to Qurayat, in 1994 to the Batinah region (both north and south), in 1995 to the Muscat governorate, and in 1997 to the Dhahira region. A phased approach can be used for species elimination such as in Morocco, where in 1975 *falciparum* malaria was eliminated, and in 1999, the country developed the elimination strategy for *P. vivax*, which is more difficult to eliminate. The last local cases of malaria in Morocco were recorded in 2004.

The decision to go for elimination is based on certain milestones. If parasite prevalence among fever cases is <5%, the programme can move from control to pre-elimination. When the API is less than one case per 1000 population at risk, the programme can be reoriented to elimination. This requires a strong health information system and full coverage of diagnostics. Elimination is achieved when there are zero locally-transmitted cases, while certification can be requested only after 3 consecutive years of absence of local cases.

Experience from countries of the Region has shown that the duration of elimination of indigenous transmission is approximately 10 years with variation according to baseline, species, commitment and border issues. For a country to embark on elimination there should a strong and sustainable political commitment with the allocation of necessary national resources. A good malaria information system and expanded laboratory facilities for confirmation should be ensured before programme reorientation towards elimination.

2.2 Summary of the elimination meeting in Tunisia, 2006

Dr A. Rietveld, WHO

The official register of areas where malaria eradication has been achieved includes 24 countries, the last of which were Singapore (1981) and Australia (1982). WHO will provide certification of malaria elimination for countries that have achieved this goal and have requested certification. For certification, the minimum geographical area is one country, elimination of malaria should have covered all species, and timing is after 3 consecutive years of no local cases.

As agreed upon, the definition of malaria elimination is interruption of local mosquito-borne malaria transmission. Continued measures to prevent re-establishment of transmission are required. The indicator is zero incidence of locally contracted malaria cases in a geographical area. Re-establishment of transmission is defined as having more than two epidemiologically-linked malaria infections without an identifiable risk factor other than local mosquito transmission, in the same geographic focus, for 2 consecutive years for *falciparum*

malaria, and for 3 consecutive years for *vivax* malaria. The countries should report re-occurrence of local cases to WHO. Local *P.falciparum* transmission in a "malaria-free" country will be reported in the *Weekly Epidemiological Record* as a "note to travellers", re-establishment of transmission will be listed as "malaria risk area" in *International Travel and Health*.

The global malaria programme is developing a malaria elimination manual. The manual targets endemic countries, governments, programme managers and staff from partner agencies. It provides details on the continuum of elimination starting from pre-elimination, elimination and prevention of reintroduction and the milestone to move from one phase to the next. It is proposed to use a cut-off point of the slide positivity rate at <5% as the criterion for initiation of the elimination process.

2.3 Malaria elimination and maintenance of malaria-free status

Dr A. Beljaev, EMRO

Malaria elimination depends on the status of the government and health system and on the natural history of malaria in a given country. Elimination is more feasible in Palaearctic and oriental parasitic systems and it is less feasible in areas with higher temperatures.

P.vivax transmission has never been interrupted in Algeria, Azerbaijan, Iraq or Turkey, and has re-emerged in Armenia, Georgia, Kyrgyzstan, Russia, Turkmenistan and Uzbekistan. All of these countries belong to the Palaearctic region. *P.falciparum* transmission has never been interrupted in the Islamic Republic of Iran and Saudi Arabia which are sitting astride the borders between Palaearctic and Oriental and Afrotropical regions, respectively. *P.falciparum* malaria re-emerged in Tajikistan (Palaearctic region). The task of malaria elimination is more difficult in this group, especially, in Saudi Arabia, Islamic Repulic of Iran and Tajikistan. As such, elimination could be planned sequentially, where priority should be given to *falciparum* malaria as it is a more severe problem; more vulnerable and *anti-falciparum* activities would also affect the *vivax* malaria. *Falciparum* malaria has features that help its elimination including a relatively short duration of infection; non-infectivity of the cases during the first 12 days; requiring high temperatures for development in mosquitoes; and being finicky as concerns the vector. However, the features that may hinder control of *falciparum* malaria are: insensitivity of mature gametocytes to medicines, except primaquine; low immunogenicity; long life span of mature gametocytes; and the rapid build up of medicine resistance.

The following interventions are pertinent to malaria elimination.

2.3.1 Case detection and medicine use

Case detection should be rapid. It includes passive detection, which is the main method, and active in special situations and surveys. The use of medicines in *P.vivax* includes chloroquine (CQ) for 3 days and primaquine (PQ) for 14 days, under medical observation. The options are CQ and PQ simultaneously; CQ immediately followed by PQ and split treatment; or CQ followed by PQ after the end of the transmission season. Screening for G6PD deficiency may be undertaken. Medicines for *P.falciparum* are curative (artemisinin-

based combination therapies (ACT)) and antigametocyte treatment (primaquine 45 mg base in one dose).

2.3.2 Indoor residual spraying

Indoor residual spraying (IRS) is the main anti-vector measure. The objective is to reduce the longevity of mosquitoes and a reduction in the population densities is a valuable by-product. It should be used only in active foci with total coverage of the focus with >85% coverage of all structures. In urban areas larviciding may be the only option.

2.3.3 Meteorological monitoring

In temperate areas monitoring average daily temperatures is crucial to identify the dates of components of the malaria season, to answer the question whether an epidemiological link between two cases exists and to identify dates of eventual secondary cases after importation. While in arid areas it is important to monitor daily rainfall for early warning of epidemics. Phenological monitoring such as dates of important events in mosquito development, especially first generation of mosquitoes coming out and mass displacement of mosquitoes for hibernation is also important.

2.3.4 Classification of cases and foci

As malaria is a focal disease, it is absolutely necessary to have an inventory of all foci with their present functional status (in real time). This is to be achieved through epidemiological case investigation and classification of cases. Based on that all malaria foci should be classified, this is to be reviewed and updated every transmission season.

2.4 Case detection and malaria surveillance for malaria elimination at national and subnational levels

Dr G. Zamani, EMRO

Malaria programmes in countries deciding to implement an elimination strategy should be ready for changes in their strategies, approaches and interventions. Monitoring and evaluation as a crucial part of any malaria programme is at the heart of these changes. New indicators, data collection tools and methodologies should be defined, staff should be trained on them, and their implementation should be evaluated and revised during different stages of implementation of the malaria elimination strategy.

For the malaria control programme the main concern is to have an estimate of the malaria burden for proper planning. The information need not be very exact and to only show the trend is enough. In these situations it is aggregated data that is being dealt with. However, with the malaria elimination programme complete reporting of all cases one-by-one is necessary. All cases should be evaluated regularly and all concerned health authorities should receive regular feedback for all cases.

Case definition should be standardized for all sectors and a strong regulation for notification of all malaria cases by all public and private health services should be developed.

All malaria cases should be epidemiologically investigated and classified with a unique code (it may be national ID code). This information should be linked to malaria foci, laboratory data which include species and genotyping, density and presence gametocyte and quality control of malaria microscopy. Hard copy of patient cards (diagnosis, treatment, follow-up) should be kept at the district level at least until the national audit at the end of the transmission season.

In addition to the surveillance of malaria cases, a comprehensive surveillance system for all malaria foci needs to be established to monitor ecological data, health service providers including the private sector and entomological and vector control information. A malaria information system should be based on a geo-referenced database of all foci and malaria cases. Using concepts of geographical reconnaissance and new GIS technology, all foci should be mapped and continuously updated. Design and implementation of this system should be fully integrated and coordinated with the general health information system which sustains it after interruption of transmission and the full integration of the malaria programme in the health system.

Malaria surveillance is not only a tool for achieving malaria elimination but also a means for verification and maintenance of this status. Countries embarking on a strategy of malaria elimination need to put a system in place for continuous data validation to identify problems when they are occurring and also to be prepared for the process of certification of a malaria-free status if needed.

2.5 Malaria diagnosis and its quality assurance for elimination

Dr. M Zedjali, National Malaria Programme, Oman

Microscopy remains the gold standard for malaria diagnosis as it allows species diagnosis and parasite quantification. Competency of microscopists is a core issue in quality assurance and recently has received more attention. In April 2005, WHO Regional Offices for the South-East and Western Pacific Regions biregional workshop on quality assurance for malaria microscopy in Kuala Lumpur recommended establishing standardized methods for accreditation of competence and developing scientifically sound methods of slide validation. This was further discussed in the informal consultation on quality control of malaria microscopy held in Geneva in March 2006. It concluded that competency assessment is needed and must include evaluation of sensitivity of reading and identification of malaria species as well as quantification of parasite density by counting.

Accreditation programmes in malaria microscopy should be at least 5 days, must include blood film preparation (safe handling), staining, reading and interpretation. To allow for one-to-one interaction a maximum of 12 participants is preferred. Programmes should also include a pre- and post-test. Highly experienced trainers and well-validated slides, thick film and thin film, should be used (PCR). The number of *P.falciparum* and *P.vivax* slides should be adjusted according to local prevalence.

Validation is needed as it allows monitoring of performance over time, allows additional problems to be detected (e.g. poor staining and quality of slide preparation); validators should be subjected to a regular external competency assessment. Validation must be coupled with

assessment and correction of other factors affecting poor performance, e.g., workload, work environment, reagents, microscopes, lack of support network and supervision or non-work-related factors. Blood-safety measures and timely feedback including ratings should be included.

2.6 National malaria treatment guidelines including chemoprophylaxis for travellers

Dr A. Bosman, Global Malaria Programme

The objectives of malaria treatment in an elimination programme are: to cure the infection; to prevent the progression to severe disease and prevent death; to reduce the infectious reservoir; to prevent relapses in *P.vivax* infection; and to prevent malaria infection among travellers. ACTs are treatments of choice for all cases of uncomplicated *falciparum* malaria except during the first trimester of pregnancy when ACT may be used only if no alternative effective antimalarial medicine is available. The selection of the first-line treatment is based on therapeutic efficacy studies in the country while treatment of imported malaria cases should be based on the origin of infection.

Treatment of choice of severe *falciparum* malaria in low-transmission areas (i.e. areas targeting elimination) is artesunate 2.4 mg/kg iv or im given without delay (time=0) then at 12 hours and 24 hours, then once a day. Artesunate is available as a powder of artesunic acid, which is dissolved in sodium bicarbonate (5%) to form sodium artesunate. The solution is diluted in approximately 5 ml of 5% dextrose and given by intravenous injection or by intramuscular injection to the anterior thigh. The solution should be freshly prepared and administered immediately and should not be stored. As soon as the patient can swallow, give oral artesunate (4 mg/kg daily) to complete a full 7 days of treatment together with doxycycline (3.2 mg/kg once daily) for 7 days. For children <8 years and pregnant women, clindamycin should be given at the dose of 10 mg/kg twice daily for 7 days instead of doxycycline, which is contraindicated in these groups.

For reducing infectivity, artemisinin derivatives have a specific and significant activity against *falciparum* gametocytes. The synergy in suppressing infectivity of *P.falciparum* between ACTs and primaquine (0.75 mg/kg, max 45 mg) is unknown. In *P. vivax*, *P. malariae* and *P. ovale* effective treatment with schizontocidal medicine is sufficient to abolish infectivity.

Anti-relapse therapy in *vivax* malaria is by primaquine 0.25 mg/kg daily doses (adult daily dose of 15 mg) should be given for 14 days; there is no evidence that shorter courses are effective. *P. vivax* infections acquired in Indonesia and Oceania require a higher dose of primaquine for radical cure, i.e. 0.50 mg/kg per day for 14 days. Therapeutic doses of primaquine, via its oxidative metabolites may cause acute haemolysis in subjects with G6PD deficiency. If significant haemoglobinuria occur (detected by gross examination of urine) primaquine treatment should be stopped. In moderate G6PD deficiency, primaquine 0.75 mg/kg should be given once a week for 8 weeks. Primaquine is contraindicated in: 1) severe (non-African) G6PD deficiency; 2) pregnancy, and 3) neonates (lower age limit of safety not established <1~4).

The treatment of choice of uncomplicated *falciparum* malaria during pregnancy and the breastfeeding period is quinine +/-clindamycin during the first trimester. During the second and third trimesters, ACT first-line treatment, or artesunate + clindamycin or quinine + clindamycin can be used. Primaquine is contraindicated in pregnancy, while dapsone and tetracyclines should not be given to breastfeeding women.

The treatment of choice of severe malaria during pregnancy is artesunate (iv or im) or quinine (iv or im) during the first trimester, while artesunate (iv or im) or artemether (im) during the second and third trimesters.

Chloroquine weekly chemoprophylaxis may be used during pregnancy and the breastfeeding period in areas with *P.vivax* or CQ-sensitive *P.falciparum*, while chloroquine + proguanil daily chemoprophylaxis is recommended in areas with *P.vivax* and *P.falciparum* and emerging CQ resistance. In areas with high *P.falciparum* transmission or high levels of resistance, mefloquine weekly chemoprophylaxis can be used but there is limited safety information on exposures during the first trimester.

For areas with high *falciparum* transmission or high levels of medicine resistance WHO recommends the following medicines for chemoprophylaxis: mefloquine weekly; doxycycline daily or atovaquone-proguanil daily. Primaquine 30 mg base daily has protective efficacy above 85% against *P.falciparum* and primary infections with *P.vivax* but needs G6PD screening.

2.7 Geographical reconnaissance and GIS for mapping malaria risk and managing anti-malaria interventions

Dr M. Khalifa, WHO

GIS offers the ability to easily collect, update, display, monitor and analyse complex datasets beyond the capacity of any manual system. The following are important to be included in the malaria database: basic maps at governorate, district and village levels, population, socioeconomic and health indicators, malaria cases (prevalence, incidence) and deaths, medicine resistance of *P.falciparum* and *P.vivax*, malaria vectors distribution and behaviour, insecticide resistance of mosquitoes, altitude, temperature, relative humidity, rainfall, geology, soil, hydrology, vegetation (satellite images).

Geographical reconnaissance (GR) has mainly focused on enumerating the houses and potential breeding places. Working maps in suitable scales are drawn showing most of the required information for each village/locality. Disease distribution and other information is reflected on the maps. The strategy of vector control is decided accordingly and plotted on these maps. The daily workload for every spray man is estimated on the basis of terrain, distances and other GR information. The maps are used for correct supervision, monitoring, evaluation and vigilance.

3. MALARIA-FREE INITIATIVES AT SUBNATIONAL LEVEL IN HIGH-BURDEN COUNTRIES

3.1 Cross-border malaria collaboration between Afghanistan and Tajikistan

Dr Asha, Malaria Programme Manger, Afghanistan

In line with the Tashkent Declaration (November 2005) and the Kabul Declaration (April 2006), the project is being developed with particular emphasis on border areas in Tajikistan and Afghanistan. The cross-border malaria meeting for Central Asian countries and Afghanistan supported the elimination of *falciparum* malaria in Central Asia (Dushanbe, Tajikistan, 21–23 November 2006). A Tajik–Afghan project to eliminate *P. falciparum* malaria was developed in 2007. The mission in Afghanistan aimed at data collection and situation analysis. Several field visits, meetings and consultations with national stakeholders and their international partners were conducted, together with negotiations with potential donors and partners to fund the project proposal. The project is expected to be finalized before the end of 2007.

3.2 Khartoum and Gezira malaria-free initiative, progress and key lessons

Khartoum and Gezira were selected to drastically reduce the malaria burden. The initiative is cost effective as it covers nearly one third of the entire Sudanese population and is an achievable target as Khartoum used to be malaria free and Gezira successfully managed to control malaria. There is high potential for support as Khartoum is the capital city and commercial seat and Gezira is of agricultural importance.

The key elements of success have been: action-oriented political commitment; creation of core group with expertise, influence and resolve; selection of sound and effective control strategies; full involvement of the community; effective intersectoral collaboration; full engagement of partners, ministries, community organizations and schools; and effective communication through the media and all channels of communication, including routine discussion at the cabinet level.

The preparatory phase addressed capacity-strengthening, improving the working environment with office connectivity, filling staffing gaps with those with necessary skills, boosting staff morale, incentives, training and staff development, availing transport for field operations (vehicles, bikes and motor cycles), procuring and distributing essential supplies and equipment. All existing and potential breeding sites were identified and assigned to teams for appropriate action.

The technical interventions included a variety of vector control methods employed in accordance with updated micro-stratification (source reduction, larviciding, insecticide-treated nets (ITNs) and long-lasting insecticide-treated nets (LLINs) and IRS) with close supervision and effective monitoring and evaluation.

Intermittent irrigation was implemented free-of-charge. The general public, the Ministries of the Environment, Industry and Agriculture, the water agency and the Farmers Union played very active vital roles in environmental management. Prompt and appropriate

diagnosis was emphasized with purchase of new microscopes and needed reagents. A series of training courses was conducted with the establishment of a quality assurance system including upgrading of the central reference laboratory. Treatment guidelines were updated and included ACT.

Operational research was stressed including malaria stratification in Khartoum State, Knowledge, Attitudes and Practice (KAP) survey for the population in Khartoum State, insecticides assessment (susceptibility test) and monitoring of medicine resistance. The results were disseminated, five articles were published and four were accepted.

3.3 Elimination of malaria from Socotra Island, Yemen

Dr M Khalifa, WHO, Medical Officer, Yemen

Socotra Island is at an altitude of 1500 m, the mean daily temperature ranges from 22° C–31° C, and the mean humidity ranges from between 50 and 75. The seasonal rainfall takes place from October to January and limited rainfall takes place from March to June (170 mm/year). The island used to be hyperendemic. The predominant malaria species is *P. falciparum* (>95% of cases), and the predominant vector is *An culicifacies*.

Malaria elimination was initiated due to feasibility factors: epidemiologically, malaria on the island is an oriental type of malaria compared to the Afrotropical type on the mainland of Yemen. There is a long dry season during which there is no malaria transmission and there is a windy season every year (from May/June to August). As a small island, the population movement is relatively easy to monitor. With a very high level of political commitment Socotra is looked at as a unique tourism centre. The population who have suffered a lot from malaria are very cooperative and were very keen to put an end to their suffering. Very dedicated and enthusiastic staff are running the health offices and the number of private clinics is very limited.

The project was launched in September 2000 with emphasis on community participation, health education, training, surveys, GR, improving case management, IRS, larviciding, entomological surveillance and supervision. ITNs were introduced in 2002 and in 2004 greater effort was paid to strengthening case detection, malaria case notification, epidemiological investigation and vigilance. A malaria case detected anywhere in Socotra Island should be notified to the malaria office in Hadibou and from the malaria office in Hadibou to the national malaria control programme headquarters in Sana'a within 24 hours of its detection by telephone. The malaria case notification form should be filled out and sent by fax within 48 hours. The project has been a real success story and no local cases have been reported since 2005 compared to a prevalence rate of 57.2% in 2000.

3.4 The experience of successful control of re-emerged malaria in a malaria-free area: northwest of the Islamic Republic of Iran

Dr A.Raeisi, National Malaria Programme Manager, Islamic Republic of Iran

This area was free of malaria for almost 20 years. After the border conflict between Azerbaijan and Armenia in 1994 a huge number of the displaced population passed the Aras River and entered the country. The displaced people settled mainly in two districts which

belong to Iranian Azerbaijan with a population of 3.6 million and Ardebil province with 1.2 million inhabitants. Kalibar in Azerbaijan province and Parsabad in Ardebil province were affected districts. Primary health care staff had 'forgotten' malaria and nobody was expecting any cases of local malaria. The total number of relevantly-trained personnel and services were limited to one microscopy technician and a malaria diagnostic facility in each province.

The main vectors are *An.Sacharovi* and all detected cases were *P.vivax*. The main interventions were rapid case detection and prompt treatment, IRS, environment management and massive community education. Strong efforts were exerted for case-finding and prompt/radical treatment. The role of the local governor was very strong especially in environmental management along the Aras River and encouraging community awareness and participation. The successful implementation of the interventions interrupted the local transmission and no indigenous cases have been reported since 2005 (Figure 1).

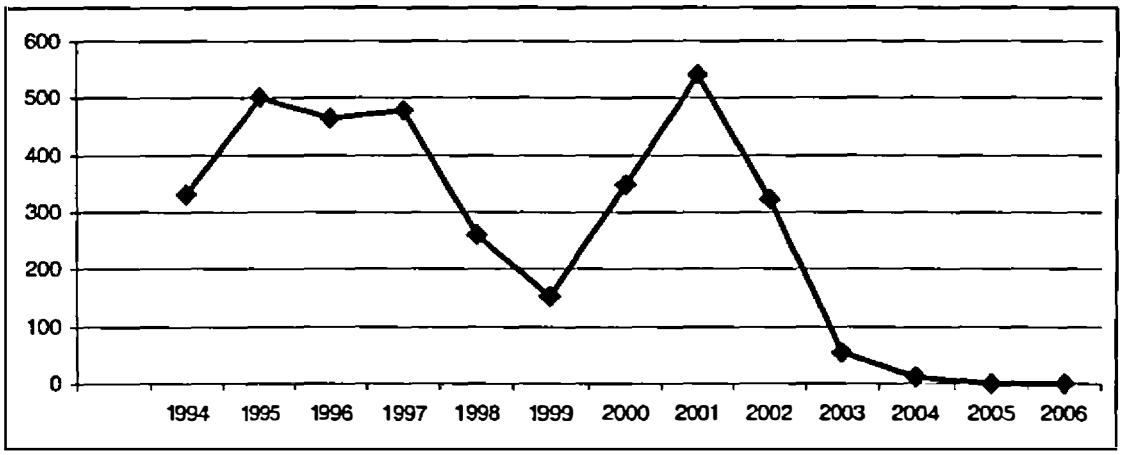

Figure 1. Trend of indigenous malaria cases in Ardebil Province 1994–2006

3.5 Design and implementation of a regional course on malaria elimination

Dr A. Beljaev, EMRO

The objective of the proposed regional course on malaria elimination is to provide comprehensive knowledge on the strategy of malaria elimination and the prevention of reestablishment of local transmission in different epidemiological situations. Potential participants in the course will be malaria control programme managers at national or subnational level and the duration of the course will be 2 weeks including field work.

Suggested modules for the course are as follows:

- epidemiological basis for malaria elimination;
- classification of cases and foci of malaria;
- methods of laboratory diagnosis of malaria and its quality assurance;
- use of medicines in elimination programmes;
- geographical and ecological factors related to malaria, GIS and geographical reconnaissance and use of meteorological information;
- vector control in malaria elimination programmes;
- prevention of reintroduction of malaria;

- planning, monitoring and evaluation.

4. CONCLUSIONS

Participants were divided into three groups to discuss the priorities and needs for supporting malaria elimination. The group consisting of Afghanistan, Islamic Republic of Iran and Pakistan requested WHO to support a situation analysis including gap analysis in border areas to be followed by the development of a project proposal. They also requested WHO to facilitate coordination of malaria control interventions and the sharing of epidemiological data between three neighbouring countries.

Countries with a recent interruption of malaria transmission requested WHO for support on programme assessment (Morocco and the Syrian Arab Republic), malaria microscopy training, strengthening surveillance system including entomological surveillance, procurement of ACT and operational research. Morocco and Oman requested WHO to initiate the process of certification of malaria-free status.

Participants highlighted the need for human resources development and training on different aspects of malaria elimination and the prevention of reestablishment of local transmission. They requested WHO to design a comprehensive training course on malaria elimination.

ANNEX 1

AGENDA

1. Opening session

2. Objectives and expected outcomes of the workshop

3. Review of the different aspects of the implementation of malaria elimination strategy in the Region

4. Report on the 2006 malaria elimination meeting in Tunisia: Definition of malaria elimination and malaria-free status

5. Updates and discussions on the strategic approaches for malaria elimination and maintenance of malaria-free status including diagnosis, treatment and vector control interventions

6. Report on malaria-free initiatives at subnational level in high-burden countries

7. Discussion on designing and implementation of a regional course on malaria elimination

8. Main WHO priorities for supporting malaria elimination and malaria-free initiatives, 2008–2009

9. Recommendations

10. Closing session

ANNEX 2

PROGRAMME

Wednesday, 13 June 2007

08:30–09:00	Registration	
09:00–09:30	Opening session • Opening remarks • Objectives of the workshop and method of work • Election of the Officers	*Dr J. Mahjour*
09:30–10:00	Report on implementation of malaria elimination strategy in the Region • Mapping possibility of malaria elimination strategy in different strata of the Region • Phased approach to malaria elimination • Comparative review of eliminating projects in the Region	*Dr H. Atta*
10:30–11:00	Summary of elimination meeting in Tunisia, 2006 • Definition of malaria elimination and malaria-free status • Overview of malaria elimination field manual, 2007	*Dr A. Rietveld*
11:00–1:30	Discussions	
11:30–12:00	Strategic approaches for malaria elimination and maintenance of malaria-free status	*Dr A. Beljaev*
12:00–12:30	Case detection and malaria surveillance for malaria elimination at national and subnational levels	*Dr G. Zamani*
12:30 – 13:00	Discussions	
14:00–14:30	Geographical reconnaissance and GIS for mapping malaria foci	*Dr M. Khalifa* and *MOH/UAE*
14:30 – 15:00	Vector control interventions for malaria elimination	*Dr P. Guillet*
15:00–15:30	Discussions	
16:00–16:30	National malaria treatment guidelines including chemoprophylaxis for travellers	*Dr A. Bosman*

16:30–17:00	Malaria diagnosis and its quality assurance for elimination	*Dr M. Al Zedjali*
17:00–17:30	Discussion and conclusion	

Thursday, 14 June 2007

09:00–09:15	Malaria-free initiatives at subnational level in high-burden countries	*Dr H. Atta*
09:15–10:15	• Joint collaboration project for malaria elimination between Afghanistan and Tajikistan	*Afghanistan*
	• Elimination of malaria from Scotora Island, Yemen	*Yemen Representative*
	• Progress, key lessons from malaria-free initiative in Khartoum and Gezira States, Sudan	*Sudan Representative*
	• Lessons learnt from malaria reintroduction in areas with long duration of a malaria-free status: Example of Azerbaijan in the Islamic Republic of Iran	*Islamic Republic of Iran Representative*
10:30–11:00	Discussions	
11:00–11:30	Design and implementation of a regional course on malaria elimination	*Dr A. Beljaev*
11:30–15:00	Main WHO priorities for supporting malaria elimination and malaria-free initiatives, 2008–2009	*Group work*
15:00–16:00	Presentation of the group work	
16:00–17:00	Discussion, conclusion and recommendations	
17:00	Closing session	

ANNEX 3

LIST OF PARTICIPANTS

AFGHANISTAN
Dr Abdul Wasi Asha Saadat
Director of Malaria and Leishmaniasis
Control Programme
Ministry of Public Health
Kabul

Dr Abdul Wasi Jawad
RBM Manager
Ministry of Health
Takhar Province

Dr Mohammad Nadir
Regional Technical Coordinator
East Afghanistan
Health Net/TPO Regional Office
Karti Char near Qandahari Mosque
Street no. 1, House no. 3
Kabul

EGYPT
Dr Ibrahim Abdel Wahab Elaish Dawoud
Malaria Control Programme Manager
Ministry of Health and Population
Cairo

ISLAMIC REPUBLIC OF IRAN
Dr Ahmad Raeisi
National Malaria Programme Manager
Ministry of Health and Medical Education
Tehran

IRAQ
Dr Qahtan Kshash Jasim Al Salihi
Specialist in Community Medicine
Communicable Disease Control Centre
Ministry of Health
Baghdad

MOROCCO
Dr Abderahmane Laamrani El Idrissi
Head of Parasitic Diseases Service
Directorate of Epidemiology and Diseases Control
Ministry of Health
Rabat

OMAN
Dr Majed Shahoo Al Zedjali
Director, Department of Malaria Eradication
Ministry of Health
Muscat

PAKISTAN
Dr Faisal Mansoor
Director
Directorate of Malaria Control Programme
Ministry of Health
Feroz Centre, Blue Area
Islamabad

SAUDI ARABIA
Dr Sulaiman Kassim Al Faify
Director of Malaria Department
Ministry of Health
Riyadh

SUDAN
Dr Tarig Abdelgadir Mohamad
National Malaria Control Coordinator
Federal Ministry of Health
Khartoum

Dr Abbas Suleiman Mohamed
Gezira State Malaria Control Programme
National Malaria Control Programme
Federal Ministry of Health
Gezira State

Mr Salaheldin Mubarak El Khalifa
Khartoum State Malaria Control Programme
National Malaria Control Programme
Federal Ministry of Health
Khartoum

SYRIAN ARAB REPUBLIC
Dr Nasir Ajlani
Head of Malaria and Parasitic Diseases
Ministry of Health
Damascus

UNITED ARAB EMIRATES
Dr Mahmoud Fikry
Assistant Under-Secretary for PreventiveMedicine Ministry of Health
Dr Abduaziz Masad Al-Muthana
Director General, Central Malaria Control Department
Ministry of Health
Abu Dhabi

Eng. Fahmi Beidas
National Malaria Control Programme
Ministry of Health
Abu Dhabi

YEMEN
Dr Abdulsalam Saeed Al-Akel
Director, National Malaria Control Programme
Ministry of Public Health and Population
Sana'a

Other Organizations

KEMRI-University of Oxford-Wellcome Trust Collaborative Programme
Dr Simon I. Hay
Malaria Public Health and Epidemiology Group
Centre for Geographic Medicine
Kenyatta National Hospital Grounds (Behind NASCOP)
Nairobi
KENYA

Islamic Development Bank
Dr Daouda Mallé
Senior Health Expert
Leader IDB Malaria Programme
Jeddah
SAUDI ARABIA

Mr Hisham A. Fakha
Projects Officer
Healthcare Sector Specialist
Country Operations Department – 1
Jeddah 21 432
SAUDI ARABIA

Merlin
Dr Fayaz Ahmad
Health Advisor Asia Desk
Global Malaria Focal Person
Peshawar
PAKISTAN

OBSERVERS

Dr Emad A-Abdul Karim
Specialist Committee Medicine
Disease Control Department
Ministry of Health
Dubai

Dr Jyoti Joshi Jain
Disease Control Department
Ministry of Health
Dubai

WHO SECRETARIAT

Dr Jaouad Mahjour, A/Director, Division of Communicable Disease Control, WHO/EMRO
Dr Hoda Atta, Regional Adviser, Roll Back Malaria, Division of Communicable Disease Control, WHO/EMRO
Dr Andrea Bosman, Medical Officer, Global Malaria Programme, WHO/HQ
Dr Mikhail Ejov, Medical Officer/Malaria Regional Adviser, WHO/EURO,
Dr Aafje Rietveld, Medical Officer, HTM/GMP/MCO, WHO/HQ
Dr Ghasem Zamani, Medical Officer, Roll Back Malaria, WHO/EMRO
Mr Kamal Salih Mustafa, RBM Technical Officer, WR Office, Afghanistan
Dr Najibullah Safi, National RBM and Leishmaniasis Officer, WR Office, Afghanistan,
Dr Qutbuddin Kakar, RBM National Officer

Dr Waqar Butt, RBM Coordinator, WHO Office, Somalia,
Mr Mohamoud Wais, RBM Technical Coordinator, WR Office, Sudan,
Dr Jeylani Abdullahi Mohamoud, RBM Technical Officer, WHO Office, south Sudan,
Dr Mohamed Ali Khalifa, RBM Medical Officer, WR Office, Yemen,
Mr Mohamed Laaziri, Temporary Adviser, WHO/EMRO
Dr Andrei Beljaev, Temporary Adviser, WHO/EMRO
Dr Walter Wernsdorfer, Temporary Adviser, WHO/EMRO
Eng. Ramy Ghanem, Technical Assistant, HIS, WHO/EMRO
Mrs Omneya Mahmoud, Administrative Assistant, Division of Communicable Disease Control, WHO/EMRO
Mrs Mervat Sheta, Senior Secretary, Division of Communicable Disease Control, WHO/EMRO
Ms Nahla Ibrahim, Secretary, Division of Communicable Disease Control, WHO/EMRO