

Report on the

**Intercountry meeting on leishmaniasis control  
strategies in the Eastern Mediterranean  
Region**

Aleppo, Syrian Arab Republic  
27–30 October 2008



**World Health  
Organization**

Regional Office for the Eastern Mediterranean

Report on the

**Intercountry meeting on leishmaniasis  
control strategies in the Eastern  
Mediterranean Region**

Aleppo, Syrian Arab Republic  
27–30 October 2008



**World Health  
Organization**

Regional Office for the Eastern Mediterranean

© World Health Organization 2009

All rights reserved.

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

The World Health Organization does not warrant that the information contained in this publication is complete and correct and shall not be liable for any damages incurred as a result of its use.

Publications of the World Health Organization can be obtained from Distribution and Sales, World Health Organization, Regional Office for the Eastern Mediterranean, PO Box 7608, Nasr City, Cairo 11371, Egypt (tel: +202 2670 2535, fax: +202 2670 2492; email: [DSA@emro.who.int](mailto:DSA@emro.who.int)). Requests for permission to reproduce WHO EMRO publications, in part or in whole, or to translate them – whether for sale or for noncommercial distribution – should be addressed to the Coordinator, Knowledge and Management and Sharing, at the above address; email [HIT@emro.who.int](mailto:HIT@emro.who.int)).

## CONTENTS

1.	INTRODUCTION.....	1
2.	TECHNICAL PRESENTATIONS .....	2
2.1	Background.....	2
2.2	WHO leishmaniasis control programme.....	2
2.3	Issues and challenges for leishmaniasis control in the Region .....	3
2.4	Leishmaniasis in Mediterranean countries .....	3
3.	COUNTRY PRESENTATIONS.....	3
3.1	Afghanistan.....	3
3.2	Islamic Republic of Iran .....	4
3.3	Iraq.....	4
3.4	Libyan Arab Jamahiriya.....	5
3.5	Morocco .....	5
3.6	Syrian Arab Republic.....	5
3.7	Tunisia.....	6
4.	GROUP WORK .....	6
4.1	Group work 1: Elaboration of a regional surveillance system.....	6
4.2	Group work 2: Creation of a leishmaniasis regional network .....	7
4.3	Group work 3: Identification of training needs .....	7
4.4	Group work 4: Research priorities.....	7
5.	RECOMMENDATIONS.....	7
	Annexes	
1.	AGENDA.....	8
2.	LIST OF PARTICIPANTS .....	10
3.	PLAN OF ACTION FOR THE PREVENTION AND CONTROL OF LEISHMANIASIS, 2009–2010.....	15
4.	PRELIMINARY OUTLINE FOR THE LEMMNET WEB SITE.....	17
5.	TOPICS TO BE ADDRESSED TO IMPROVE LEISHMANIASIS CONTROL.....	18

## 1. INTRODUCTION

A meeting on leishmaniasis control strategies in the Eastern Mediterranean Region was organized by the World Health Organization (WHO) Regional Office for the Eastern Mediterranean (EMRO) in Aleppo, Syrian Arab Republic, from 27 to 30 October 2008. The objectives of the meeting were to:

- achieve a consensus on the strategic approaches to the prevention and control of different endemic forms of leishmaniasis in the Region;
- critically review the current status of control programmes in selected countries of the Region;
- develop new approaches for integrated control within existing health systems;
- identify priority control-oriented research needed by entities/countries.

Riadh Ben-Ismaïl, Regional Adviser, Tropical Diseases and Zoonoses, WHO Regional Office for the Eastern Mediterranean, delivered the opening remarks of Dr Hussein A. Gezairy, WHO Regional Director for the Eastern Mediterranean. In his speech Dr Gezairy said that the convening of the meeting came at an opportune moment when countries and the Region at large were faced with severe outbreaks of anthroponotic cutaneous leishmaniasis. Such countries included Afghanistan, Islamic Republic of Iran, Pakistan and Syrian Arab Republic. Whereas this deplorable situation had been exacerbated by long years of conflict as in the case of Afghanistan, it was also very clear that the traditional and classical methods of control and prevention were failing and needed to be revised. This was particularly true in many countries, even in those countries, such as the Syrian Arab Republic, where for many years there had always been very strong political commitment and financial support.

Dr Gezairy said that critically reviewing control strategies for the control and prevention of anthroponotic cutaneous leishmaniasis and zoonotic cutaneous leishmaniasis would help towards formulating evidence-based, realistic and cost-effective control strategies that were easy to translate into programmes and action. Many countries of the Region still remained at risk of outbreaks of zoonotic cutaneous leishmaniasis that usually followed rodent population explosions. This was the case in Iraq, Libyan Arab Jamahiriya, Morocco and Tunisia, and in some provinces in Pakistan and the Islamic Republic of Iran. An understanding of the population dynamics of the rodent reservoir was essential to establish a preventive control strategy based on early prediction of rodent outbreaks. Some countries in the Region had already undertaken operational research that led to the development of successful multisectoral integrated control programmes against zoonotic cutaneous leishmaniasis. This consultation provided a forum for programme managers to discuss and promote the introduction of these strategies in those countries affected.

Dr Lama Jalouk (Syrian Arab Republic) was elected as the Chairperson for the meeting. Dr Jose A. Ruiz Postigo (Egypt) and Professor Richard W. Ashford (United Kingdom) were elected as Rapporteurs. The programme and list of participants are included as Annexes 1 and 2, respectively. Table 1 in Annex 3 shows the plan of action for the prevention and control of leishmaniasis adopting a horizontal approach for 2009 to 2010 and Table 2 outlines countries' specific needs. Annex 4 includes a preliminary outline of the LEMMNET web site and Annex 5 contains a list of topics to be addressed to improve leishmaniasis control.

## **2. TECHNICAL PRESENTATIONS**

### **2.1 Background**

*Riadh Ben-Ismaïl*

Leishmaniasis is a parasitic disease transmitted by the bite of sandflies which have previously fed on an infected reservoir host. There are two basic clinical presentations, visceral leishmaniasis or "kala-azar", which is the most severe and is fatal in almost all symptomatic cases if left untreated. Leishmaniasis is prevalent in 88 countries, affecting an estimated 12 million people with roughly 2 million new cases reported every year, 500 000 of which are visceral leishmaniasis and 1 500 000 cutaneous leishmaniasis (90% of these cases are in Afghanistan, Algeria, Brazil, Islamic Republic of Iran, Peru, Saudi Arabia and Sudan). The disease burden is calculated at 2 357 000 DALYs (disability-adjusted life years: 946 000 in men and 1 410 000 in women), a significant rank among communicable diseases. The burden of cutaneous leishmaniasis represents a third of the global figure of the burden of disease (770 000 DALYs). Given the importance of leishmaniasis, the Sixtieth session of the World Health Assembly approved a resolution for the control of leishmaniasis.

In general, cutaneous leishmaniasis has a tendency to heal spontaneously but may leave scars which, depending on the species of *Leishmania* responsible, may evolve into recidivans cutaneous leishmaniasis, which is difficult to treat and which leaves extensive scars. Cutaneous leishmaniasis is a public health problem, as well as social problem, in many countries. Cutaneous leishmaniasis is endemic in 82 out of the 88 countries in which leishmaniasis is transmitted. The disease affects poor and deprived groups and the impact that cutaneous leishmaniasis has on propagating poverty is significant, as treatment is expensive and therefore unaffordable, or involves a considerable loss of wages. The cost of treatment and implementation of prevention strategies requires sizeable investment (financial and human resources), especially for vector and reservoir control. Cutaneous leishmaniasis is re-emerging in many settings and in different countries with a variable number of cases and outbreaks occurring in urban areas and refugee camps, and especially among internally-displaced populations.

Operational research is required in multiple areas for evidence-based decision-making. Public sector reporting of leishmaniasis cases is barely 20%. The disease burden is therefore underestimated and real figures may be 4 to 5 times higher than reported. As cutaneous leishmaniasis does not kill, little attention is paid to the improvement of its control at the individual or societal levels. Leishmaniasis is neglected among the neglected diseases, requiring enhanced support and attention for development and implementation of effective prevention and control strategies. Countries of the Region harbour around 12% of the total leishmaniasis burden globally, almost exclusively by cutaneous leishmaniasis.

### **2.2 WHO leishmaniasis control programme**

*Jorge Alvar*

The leishmaniasis control programme aims at supporting countries in the development and adaptation of their health policies based on their own profiles and analysing national leishmaniasis control plans of action as they relate to the implementation of control activities. Advocacy,

including partnerships with a broad range of stakeholders, and mobilizing financial resources with donors are also important components of the programme. WHO has established an agreement with Sanofi-Aventis which has provided funds for the period 2007–2011 for the Americas, the Maghreb and Middle East regions to reduce the burden of the disease.

For visceral leishmaniasis an elimination programme has been launched targeting the reduction of the annual incidence of the disease to less than 1 per 10 000 people by 2015 in South Asia. In the Horn of Africa, WHO is supporting visceral leishmaniasis programmes in North and South Sudan and in Ethiopia. Special attention is also being given to HIV-leishmaniasis co-infection and efforts are being made to make liposomal amphotericin more widely available for control programmes.

### **2.3 Issues and challenges for leishmaniasis control in the Region**

*Riadh Ben-Ismaïl*

Early detection of cases is carried out in schools and colleges from October to June. Vertical programmes, using only personnel resources and the infrastructure of malaria/leishmaniasis units, not primary health care structures or community-based approaches, are certainly neither able to cover all the affected areas nor all the active cases in each settlement. The requirement of parasitological confirmation (positive dermal smear) before treatment is initiated, probably increases the number of false–negative patients that remain without treatment. A sizeable proportion of infected cases remains during the transmission season (from June to the end of October) and is responsible for the spread of the disease. Treatment of the disease presents a number of challenges as antimonials are expensive, toxic, painful and not always available. There is a lack of standard guidelines and the medicine is estimated to be ineffective or inadequately administered in more than 60% of cases aggravated by insufficient compliance and follow-up. Increasingly chronic resistant cases are being observed. There is currently weak knowledge of the vector biology, ecology and dynamics of transmission. No impact assessment of insecticide indoor-spraying campaigns has been conducted.

### **2.4 Leishmaniasis in Mediterranean countries**

*Darem Tabaa*

A number of countries are affected by leishmaniasis in the northern Mediterranean: France, Greece, Italy, Portugal, Spain and Turkey. Approximately 20 000 cases of cutaneous leishmaniasis have been reported in the last 10 years.

## **3. COUNTRY PRESENTATIONS**

### **3.1 Afghanistan**

*Waqar Butt*

Anthroponotic cutaneous leishmaniasis is a major public health problem in Afghanistan. Since 1996, the infection has been spreading to new areas. In 2007, the total number of reported cutaneous leishmaniasis cases was above 30 000. A survey conducted in Kabul in 2005 revealed

that females are more affected than males and active lesions are more prevalent among those aged 6–20 years, who live in dwellings with animals or in mud houses. Active lesions are less prevalent in houses with mesh windows and among those who own and regularly use insecticide-treated bednets. The disease exhibits strong clustering of cases at the household level and is associated with poverty. Control activities include treatment of patients with antimonials. In a few centres, thermotherapy is also being used. Distribution of bednets through the malaria programme has benefited leishmaniasis control. Information, Education, Community (IEC) activities are also being carried out. Despite many efforts, the national programme has not been able to convince partners to consider leishmaniasis as a priority disease in Afghanistan. Only limited human and financial resources are available for the control of this stigmatizing disease and antimonials in the country are insufficient to treat all known cases.

### **3.2 Islamic Republic of Iran**

*Mohammed Reza Shirzadi*

Zoonotic cutaneous leishmaniasis caused by *L. major* is common in 15 rural provinces and represents approximately 70% of cutaneous leishmaniasis in the country. In the district of Bam, there has been an eightfold increase in the number of anthroponotic cutaneous leishmaniasis cases reported over the last 5 years after the 2003 earthquake. In 2007, 22 000 cases of cutaneous leishmaniasis were reported and the annual incidence has been reported as 32–40/100 000 people in the last 5 years. The 15–44 year-old age group are the most affected. There is a seasonal variation in the number of cases with an increase between September and February. Control activities include education of health workers and the population, immediate case finding (active in new anthroponotic cutaneous leishmaniasis-infected areas and passive in zoonotic cutaneous leishmaniasis areas), and standard treatment (using DOTs), and free delivery of diagnosis, treatment and dressings. In recent years an increased prevalence of cutaneous leishmaniasis has been observed with its extension to new areas. There is a need to improve information about treatment outcomes. The rate of treatment failure with glucantime® has lately been increasing (especially in the treatment of anthroponotic cutaneous leishmaniasis).

### **3.3 Iraq**

*Somaia Badri Hasan*

In the last 5 years 7000 cases of cutaneous leishmaniasis have been reported. The number of cases increases between December and March. Unlike in neighbouring countries visceral leishmaniasis is a significant problem with 2000 cases reported in the last 2 years. An in-depth assessment should be conducted, where possible, to confirm the extent of the problem. Control activities include case detection and specific treatment, preventive measures by impregnated bednets delivered to at-risk group (farmers, soldiers, people living in rural areas), vector control by residual insecticide and spraying, and rodent and stray dog control. There is a need for staff in charge of the programme to attend refresher training. Improving surveillance and control measures in the current security situation represents a tremendous challenge.



### **3.4 Libyan Arab Jamahiriya**

*Baddereddin Annajar*

Zoonotic cutaneous leishmaniasis due to *L. major* was progressively increasing and 7000 cases were reported between 2002 and 2006 in the northwest region, with the exception of Tripoli and its suburbs. The number of cases has progressively decreased since the implementation of control activities at the end of 2006 and currently stands at less than 500 in 2008. The total population estimated to be at risk of zoonotic cutaneous leishmaniasis is 800 000. Control measures have mainly consisted of reducing the rodent population and using vector control techniques by local pest management companies. The national programme has ensured the availability of diagnosis and treatment free-of-charge in endemic areas. There is a need to improve the surveillance system to avoid under-reporting of cutaneous leishmaniasis cases. Clear guidelines for treatment and rodent control (*Psammomys*) should be developed. There is a technical difficulty in identifying parasite strains to investigate re-infections and relapses. The impact of the environment on implemented control activities should be assessed and environmental impact assessment should precede interventions.

### **3.5 Morocco**

*Abderrahmane Laamrani*

Zoonotic cutaneous leishmaniasis due to *L. major* occurs in unpredictable outbreaks in the south and south-east; 9000 cases have been reported in the last 5 years. Anthroponotic cutaneous leishmaniasis due to *L. tropica* occurs in towns and villages in the centre of the country and 6000 cases have been reported in the last 5 years. Control activities include vector and reservoir control, active and passive case detection alongside early treatment free-of-charge, health education (schools and localities) and multisectoral collaboration (Ministry of Interior, Agriculture and Education). There is a need to regulate intersectoral collaboration and conduct research activities. It is considered that community participation is insufficient. Disordered urbanization, which is taking place in the country, could represent a risk for increased transmission.

### **3.6 Syrian Arab Republic**

*Hind Bakour*

Anthroponotic cutaneous leishmaniasis represents about 90% of all cutaneous leishmaniasis cases. In the first semester of 2008, 18 000 cases of cutaneous leishmaniasis have already been reported which is equivalent to the total number of cases reported in the previous year. Leishmaniasis has spread to between 300 and 500 villages. Surveillance includes both active and passive case detection. There is a peripheral centre for leishmaniasis control in each province. Diagnosis and treatment services are provided free-of-charge and reports are compiled on a monthly basis. Pentavalent antimonials are used for treating patients. Most cases are treated by intralesional injections, and in a few cases, intramuscular injections are given. Control measures include early detection and treatment of cases and vector control. Vector control using indoor residual spraying has been the main strategy for many years. Personal protection measures include the use of ITNs. Despite the strong policy and regulatory background, no national strategies have been put in place to date. In view of the experience gained in the previous year it seems more appropriate to shift

from insecticide-spraying campaigns to the use of the pyrethroid-impregnated bednets but that has not formally been addressed as a national strategy yet.

### **3.7 Tunisia**

*Afif Ben Salah*

Zoonotic cutaneous leishmaniasis due to *L. major* is the main public health problem. In the last 4 years a decrease has been observed in the annual incidence after some pilot interventions were implemented. Currently, the annual incidence is approximately 30 per 100 000 people. However, more long-term assessment is needed to confirm this trend. Control activities include passive case detection and treatment of cases, ecological surveillance for the emergence of rodents in areas where chenopods were ploughed and replaced by acacias. There is a need to develop tools to predict zoonotic cutaneous leishmaniasis epidemics. It is important to integrate clinical/epidemiological research into primary health care and community levels to ensure sustainability, conduct clinical/epidemiological research and further promote current good clinical practices.

## **4. GROUP WORK**

### **4.1 Group work 1: Elaboration of a regional surveillance system**

The aim of the regional surveillance system is to ensure monitoring of leishmaniasis trends in the Region to permit the detection of new emerging foci, to allow the monitoring of spatial dynamics of different forms of *Leishmania*, including visceral leishmaniasis, in order to better conduct preventive measures, utilise diagnostic and curative resources, increase awareness among policy-makers and to ensure safe land use. The regional surveillance system should be able to evaluate, review and exchange knowledge and experience between different systems already existing in the region (strengths, weaknesses, failures and successes) and use a common language with standardized case definitions (suspected, probable, confirmed) and data collection forms.

Four steps in this process have been identified.

- Conducting a situation analysis on the strengths and weaknesses of the present surveillance of leishmaniasis, standardize case definitions and data collection forms and reach consensus on computing tools and needs (e.g. to evaluate the feasibility of using the RASDOON GIS application of the Regional Office).
- Conduct two training workshops on data management, GIS and GPS. Level 1 to adopt a common language for epidemiologists and data management specialists, and level 2 to concentrate on data management specialists.
- Implement and follow-up the application in different countries.
- Evaluate the newly-developed surveillance system, tools and procedures.

#### **4.2 Group work 2: Creation of a leishmaniasis regional network**

The Leishmaniasis Mediterranean and Middle East Network (LEMMNET) is proposed as a new independent web-based information-sharing tool. Information can be posted in Arabic, French and English. It will need a moderator and is meant to be a member-based platform (members can freely post and download information) open to nongovernmental organizations, ministries, UN agencies and individual specialists. It will include links to other relevant web sites and resources (bi-directional). After creating and disseminating this web site, its use will be monitored.

#### **4.3 Group work 3: Identification of training needs**

The priorities in terms of training courses for the Region are: epidemiology (prevalence, risk assessment, outbreak investigation, etc.); planning, monitoring and evaluation (data collection, analysis, etc.); case management (clinical aspects, laboratory diagnosis and treatment); specialized techniques for diagnosis (e.g. PCR); vector and reservoir; and health education.

#### **4.4 Group work 4: Research priorities**

Research is needed in: diagnostic tools to differentiate between *L.major* and *L.tropical* at field level; operational research to evaluate the use of certain treatment protocols and vector/reservoir control methods; and the use of case containment as an innovative method to improve control of anthroponotic cutaneous leishmaniasis. Investigators should take into consideration what relevant unanswered questions at control programme levels exist, to prioritize research that could help to reduce the burden of the disease and to alleviate the suffering of those patients already affected. Programme managers and scientists from research institutes, the unit of Tropical Diseases and Research in the Regional Office and universities should be in close contact in order to exchange ideas and to join efforts for the common goal of improved disease control.

### **5. RECOMMENDATIONS**

1. Implement a regional training strategy on: programme management; eco-epidemiology; case management; diagnosis, including PCR and other new techniques; monitoring and evaluation of interventions; health education; and risk assessment.
2. Establish a harmonized regional surveillance system.
3. Create a regional network to: share information and experiences; harmonize control measures; promote capacity-building; improve medicine access and monitor medicine resistance; and facilitate subregional collaboration.
4. Promote political commitment of national governments for: formulation of policies; availability of appropriate allocation of resources; multisectoral collaboration; community mobilization; and coordination with neighbouring countries.

**Annex 1**

**AGENDA**

**Monday, 27 October 2008**

08:30–09:00	Registration	
09:00–10:00	Opening Session	
	<ul style="list-style-type: none"><li>• Opening Remarks</li><li>• Message from H.E. the Minister of Health, Syrian Arab Republic</li><li>• Objectives of the meeting</li><li>• Introduction of participants</li><li>•</li></ul>	<i>Dr R. Ben-Ismail</i>
10:15–10:45	WHO Global Programme of Control and Research	<i>Dr J. Alvar</i>
10:45–11:15	Issues and challenges on leishmaniasis control in the countries of the Region	<i>Dr R. Ben-Ismail</i>
11:15–12:00	Leishmaniasis situation in the (other) MZCP countries and Euro-Mediterranean collaboration perspectives	<i>Dr A. Seiminis Dr D. Tabaa, Professor P. Ambroise-Thomas</i>
12:00–13:00	Review of country programmes: Syrian Arab Republic, Afghanistan	
14:00–15:00	Review of country programmes: Morocco, Tunisia	
15:00–16:00	Review of country programmes: Libyan Arab Republic	
16:15–17:00	Conclusions of the first day	

**Tuesday, 28 October 2008**

- 9:00–10:15      Review of country programmes: Islamic Republic of Iran, Iraq
- 11:00–13:00      Discussions on anthroponotic cutaneous leishmaniasis: Current situation, challenges and way forward
- Surveillance systems
  - Case detection
  - Diagnostic tools
  - Case management
  - Treatment
  - Prevention and control (vector/reservoir control, health education, community, etc.)
  - Research priorities
- 16:15–17:00      Conclusions of the second day

**Wednesday, 29 October 2008**

- 08:30–16:00      Discussions on zoonotic cutaneous leishmaniasis: current situation, challenges and way forward
- Surveillance systems
  - Case detection
  - Diagnostic tools
  - Case management
  - Treatment
  - Prevention and control (vector/reservoir control, health education, community, etc.)
  - Research priorities
- 16:15–17:00      Conclusions of the third day

**Thursday, 30 October 2008**

- 09:00–12:30      Discussion of plans of action, implementation issues and research priorities
- 14:00–15:00      Conclusions and recommendations
- 15:00              Closing session

**Annex 2**

**LIST OF PARTICIPANTS**

**AFGHANISTAN**

Dr Kathy Fiekert  
Adviser to Ministry of Public Health  
**Kabul**

**FRANCE**

Professor Ambroise-Thomas  
Member of the National Medicine Academy  
**Meylan**

**ISLAMIC REPUBLIC OF IRAN**

Dr Mohammed Reza Shirzadi  
Director  
Zoonoses Control Programme  
Ministry of Health and Medical Education  
**Tehran**

Professor Abolhassan Nadim  
School of Public Health (retired Professor)  
Tehran University  
**Tehran**

**IRAQ**

Dr Sumayah Badri Hassan Al-Tawijri  
Director of Zoonotic Disease  
Ministry of Health  
**Baghdad**

**LIBYAN ARAB JAMAHIRIYA**

Dr Badereddin Annajar  
General Coordinator of the NCP for Leishmaniasis  
National Center for Infectious Diseases Prevention and Control  
**Tripoli**

**MOROCCO**

Dr Abderrahmane Laamrani ElIdrissi  
Head of Service  
Ministry of Health  
**Rabat**

**SYRIAN ARAB REPUBLIC**

Dr Mohamed Jamil Ouied  
Deputy Minister of Health  
Ministry of Health  
**Damascus**

Dr Mahmoud Karim  
Director of Communicable and  
Environmental Diseases  
Ministry of Health  
**Damascus**

Dr Lama Jalouk  
Director  
Leishmaniasis Control Centre  
Ministry of Health  
**Aleppo**

Dr Hend Bakour  
Director  
Malaria-Leishmaniasis- Schistosomiasis Control Programme  
Ministry of Health  
**Damascus**

**TUNISIA**

Dr Afif Ben Salah  
WHO Collaborating Centre for Leishmaniasis  
Pasteur Institute  
Tunis

**UNITED KINGDOM**

Professor Richard William Ashford  
Consultant Biologist  
Formerly Professor of Parasite and Vector Biology  
at Liverpool School of Tropical Medicine

**OTHER ORGANIZATIONS**

**WHO/MZCP**

Dr A. Seimeinis  
Director  
Mediterranean Zoonoses Control Programme  
Athens  
**GREECE**

Dr Haitham Hanbali  
Director of Zoonotic Disease Programme  
Ministry of Health  
National Coordinator for WHO/MZCP  
Damascus  
**SYRIAN ARAB REPUBLIC**

**TEMPORARY ADVISER/MZCP**

Dr Darem Tabbaa  
Faculty of Veterinary Medicine  
Hama  
**SYRIAN ARAB REPUBLIC**

**OBSERVER**

Mr Anwer A. Almntaser  
Head of the evaluation Technical Committee  
National Control Programme of Leishmaniasis  
National Centre of Infectious Disease Prevention and Control  
Tripoli  
**LIBYAN ARAB JAMAHIRIYA**



**WHO SECRETARIAT**

Dr Riadh Ben-Ismaïl, Regional Adviser, Tropical Disease and Zoonoses, WHO Regional Office for the Eastern Mediterranean

Dr Jose Antonio Ruiz Postigo, Medical Officer, Tropical Disease and Zoonoses, WHO/EMRO

Dr Jean Georges Jannin, Coordinator, WHO/HQ/HTM

Dr Ghada Muhjazi, Technical Officer, Damascus, Syrian Arab Republic

Dr Waqar Butt, Medical Officer, Malaria, WHO Afghanistan

Ms Abeer El Telmissany, Secretary, Division of Communicable Disease Control, WHO/EMRO



**Table 1. Plan of action for the prevention and control of leishmaniasis adopting a horizontal approach, 2009–2010 (cont.)**

	1st quarter	2nd quarter	3rd quarter	4th quarter	1st quarter	2nd quarter	3rd quarter	4th quarter
<b>Regional network</b>								
Creation of web page								
Review meetings								
<b>Regional strategy and country profile</b>								
Focal point in Regional Office								
Expert support to define strategy								
Reporting								
Network treatment centres								

**Table 2. Specific national needs for the prevention and control of leishmaniasis**

	<b>Capacity- building</b>	<b>Specific training</b>	<b>Medicine access</b>	<b>Cross-border issues</b>
Afghanistan				
Islamic Republic of Iran				
Iraq				
Libyan Arab Jamahiriya				
Morocco				
Pakistan				
Syrian Arab Republic				
Tunisia				

Annex 4

PRELIMINARY OUTLINE FOR THE LEMMNET WEB SITE

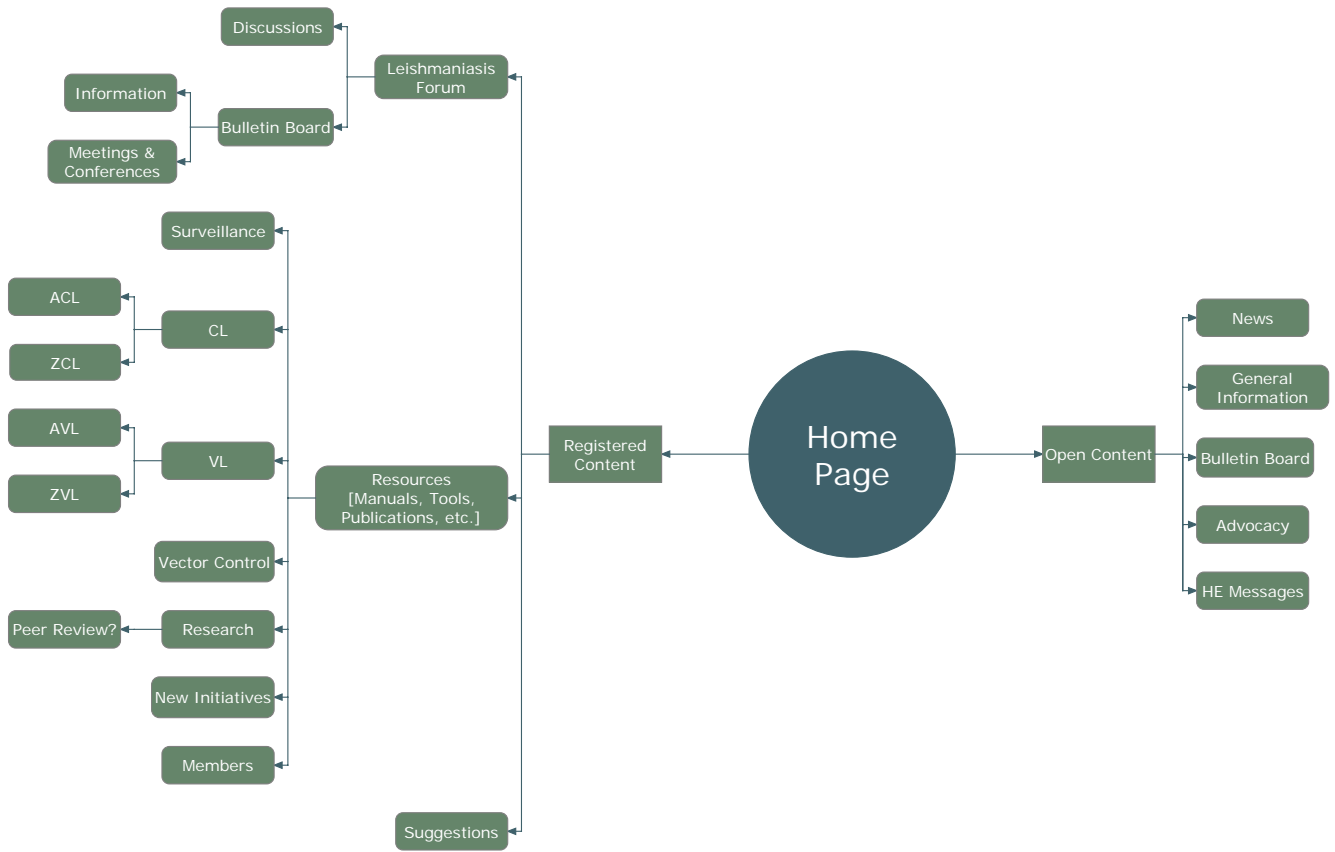


Figure 1. Preliminary outline for the LEMMNET web site

**Annex 5****TOPICS TO BE ADDRESSED TO IMPROVE LEISHMANIASIS CONTROL**

The following topics need to be addressed in order to improve knowledge to design improved leishmaniasis control strategies.

- Identify relevant gaps in knowledge by reviewing:
  - Taxonomy and biology of *Meriones spp.* and *Psammomyes*
  - Bionomics of *P. papatasi* and *P. sergenti*
- Identify at-risk potential foci by reviewing endemic zones on:
  - Phytogeography features
  - Climatic stratification
  - Surface geology and land use
- From research conducted in the past 30 years, which new tools or developments are available to improve the control of leishmaniasis in the Region in terms of:
  - programme design, implementation, monitoring and evaluation?
  - epidemiological information?
  - ecological information, including vectors and reservoir hosts?
  - vector and reservoir host control?
  - Diagnosis?
  - treatment and prognosis?
  - sociological assessment of KAP (Knowledge, Attitudes, Practices)?
- Applied research should address the following issues.
  - Environmental (health) impact assessment of development projects should include leishmaniasis risk.
  - Is there evidence of man-to-man transmission of *L. major*? If so, is it epidemiologically relevant?
  - What is the reservoir host of *L. killicki*?
  - What are the bionomics and reservoir role of *Meriones spp.* and *P. obesus*? Is one of these a liaison host? If so, which one?
  - Long-term monitoring of *P. obesus* and *Meriones spp.* densities by simple transects to identify determinants and predict outbreaks.
  - Are sandflies attracted to lesions? If so, by what? Heat? Smell?
  - The development of a repellent topical antiseptic, long-lasting treatment.