

# Elimination of Lymphatic Filariasis in the South-East Asia Region

*Report of the Ninth Meeting of the Regional  
Programme Review Group (RPRG)  
Yangon, Myanmar, 30 April–1 May 2012*



**World Health  
Organization**  
Regional Office for South-East Asia

# Elimination of Lymphatic Filariasis in the South-East Asia Region

*Report of the Ninth Meeting of the Regional  
Programme Review Group (RPRG)  
Yangon, Myanmar, 30 April–1 May 2012*

© World Health Organization 2012

All rights reserved.

Requests for publications, or for permission to reproduce or translate WHO publications – whether for sale or for noncommercial distribution – can be obtained from Publishing and Sales, World Health Organization, Regional Office for South-East Asia, Indraprastha Estate, Mahatma Gandhi Marg, New Delhi 110 002, India (fax: +91 11 23370197; e-mail: [publications@searo.who.int](mailto:publications@searo.who.int)).

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.

All reasonable precautions have been taken by the World Health Organization to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall the World Health Organization be liable for damages arising from its use.

This publication does not necessarily represent the decisions or policies of the World Health Organization.

Printed in India

## Contents

### Page

Executive Summary .....	v
1. Introduction.....	1
2. Opening session.....	2
3. Action taken on the recommendations of the Eighth RPRG meeting (2011) held in Colombo, Sri Lanka .....	5
4. Updates on global and regional programme for elimination of LF.....	10
5. Updates from Glaxo-Smith-Kline.....	13
6. Progress made by Member States.....	13
6.1 Bangladesh.....	13
6.2 India.....	15
6.3 Indonesia .....	16
6.4 Maldives.....	18
6.5 Myanmar.....	19
6.6 Nepal .....	20
6.7 Sri Lanka .....	21
6.8 Thailand.....	23
6.9 Timor- Leste .....	24
7. Technical discussions and updates on programme implementation in relation to regional strategic plans .....	25
7.1 Historical developments in LF elimination .....	25
7.2 Filariasis test available for assisting with the LF elimination programme.....	25
7.3 Ongoing operational research studies under the Gates grant.....	26

7.4	Transmission Assessment Survey and capacity building .....	27
7.5	Group discussions.....	27
8.	Conclusions and general recommendations.....	29

**Annexes**

1.	Historical perspective of lymphatic filariasis and its control Prof C.P. Ramachandran.....	34
2.	Agenda .....	42
3.	List of participants .....	45

## Executive Summary

Lymphatic filariasis (LF) is one of the leading causes of permanent disability leading to causing socioeconomic problems. Of the estimated 120 million people affected with LF, globally, 50% are in the South-East Asia Region (SEAR). Out of the 1.39 billion globally at risks, 63% live in 9 of the 11 Member States of the SEA Region, requiring mass drug administration (MDA) with diethyl carbamazine citrate (DEC) and albendazole. Albendazole is donated by Glaxo-Smith-Klein (GSK) through WHO. As a result of effective implementation of MDA, 490 implementation units (IUs) out of 1100 IUs reached a microfilarial (Mf) rate of less than 1% after completing five or more MDA rounds and 290 IUs stopped MDA. Maldives and Sri Lanka initiated verification of LF elimination in 2011 and Thailand is moving towards elimination.

Since launching the global programme to eliminate LF in the SEA Region in 2000, the nine LF endemic countries made significant progress by 2011. To review the progress of implementation, identify problems and find solutions as well as to recommend the annual need of albendazole, the ninth meeting of the Regional Programme Review Group (RPRG) for elimination of LF was organized by WHO-SEARO in Yangon, Myanmar from 30 April to 1 May 2012.

The meeting approved a total of 710.7 million albendazole treatments for the 2012 MDA round of which 457.44 million will be supplied as donation by WHO. In addition, 46 million DEC tablets of 200 mg from Sanofi Phama will be supplied to Myanmar for the 2012 MDA round. The meeting also recommended a regional capacity-building workshop to plan and implement on transmission assessment survey in the eligible implementation units to decide about stopping MDA. The meeting also recommended initiating verification of LF elimination in Thailand.

The RPRG appreciated the efforts made by WHO-SEARO and the Member States towards achieving elimination of LF by 2020.



# 1. Introduction

Lymphatic filariasis (LF) is one of the leading causes of permanent disabilities causing socioeconomic problems. Out of the 1.39 billion globally at risk, 63% live in 9 of the 11 Member States of the South-East Asia Region (SEAR), requiring mass drug administration (MDA) with DEC and albendazole. Albendazole is donated by Glaxo-Smith-Kline (GSK) through WHO. As a result of effective implementation of MDA, 490 out of 1100 implementation units (IUs) reached microfilarial (Mf) rate of less than 1% after completing five or more MDA rounds and 290 IUs stopped MDA. Maldives and Sri Lanka initiated verification of LF elimination in 2011 and Thailand is moving towards elimination.

The Ninth Meeting of the Regional Programme Review Group (RPRG) for Elimination of Lymphatic Filariasis (ELF) in the WHO South-East Asia (SEA) Region was held in Yangon, Myanmar from 30 April to 1 May 2012. The agenda and the list of participants are given in Annexes 1 and 2, respectively.

The objectives of the meeting were to:

- (1) review the reapplication submitted by endemic countries for free supply of albendazole and the annual report received from the countries and recommend to the Regional Director, WHO/SEAR, on the quantity of free supply of this drug for Mass Drug Administration (MDA) and further request the donor for the supply of the required quantity;
- (2) review the progress of lymphatic filariasis (LF) elimination in the nine endemic countries of the Region with a view to identifying and making recommendations on operational and technical issues including research; and
- (3) review strategies and emerging technical issues with a view to providing technical advice to the Regional Director, WHO/SEAR.

## 2. Opening session

Prof. A.P. Dash, Regional Adviser, Vector-Borne and Neglected Tropical Diseases Control (VBN), WHO-SEARO, welcomed the participants. Dr Dash mentioned that the WHO South-East Asia (SEA) Region contributes about 63% of the global burden of lymphatic filariasis. All the nine endemic countries in this Region had demonstrated their commitment towards LF elimination. Free supply of albendazole was ensured to all the implementing units in 2011. Impact assessment had shown tremendous success of this programme in the Region in terms of reduction in microfilarial rate (Mf) prevalence. In 2011, as many as 493 Implementation Units (IUs) were covered and following successful implementation of MDA for at least five rounds, 290 IUs are under maintenance phase. MDA has been stopped in Sri Lanka and Maldives and the process of verification of elimination has been initiated. Thailand will be included in this list. The Member States was able to mobilize funds for operational costs of the programme. Prof. Dash thanked GlaxoSmithKline (GSK) for the in-kind support and timely supply of the required quantity of albendazole tablets for the Region, so as to enable the countries to complete annual treatment rounds of MDA using DEC and albendazole. Prof. Dash also mentioned that this meeting assumes significance in terms of commitment to the programme by the Member States as the Secretary of Health from Nepal and the Director-General of Health Services – Special DGHS (PH), from India are participating in this meeting.

Dr H.S.B. Tennakoon, WHO Representative (WR) to Myanmar delivered the message of Dr Samlee Plianbangchang, Regional Director, WHO South-East Asia. In his message Dr Samlee highlighted that globally an estimated 120 million people were infected with LF in 72 countries in 2010 and about 60 million LF infected people live in the South-East Asia Region. An estimated 1.39 billion people live in areas where filariasis is endemic and mass drug administration (MDA) is required. About 876 million (63%) of the global population requiring MDA for LF live in the nine endemic countries in the WHO South-East Asia Region. Of them, 34% are children. The major burden is borne by Bangladesh, India, Indonesia and Myanmar. The Region also accounts for approximately 57% of the total global burden of 4.9 million disability-adjusted life years lost due to LF.

All three parasites of LF—namely *Wuchereria bancrofti*, *Brugia malayi*, and *B.timori* are present in the Region, but *W. bancrofti* causes 95% of

infections. *Culex quinquefasciatus* is the main vector transmitting LF infection. *Aedes* and *Anopheles* species act as vectors in few foci. Several species of *Mansonia* and *Anopheles* are responsible for the transmission of Brugian filariasis.

As of 2010, the global programme for elimination of LF (GPELF) had targeted 622 million people and treated 466 million with the two-drug combination of diethyl carbamazine citrate (DEC) and albendazole in 53 countries. In the South-East Asia Region, 476 million people were targeted and 365 million were treated in 2010 contributing to around 80% of global treatment. Since our Region is contributing greatly to the success of the global programme, it is our responsibility to scale-up treatment coverage in the Region through mass drug administration (MDA).

Dr Samlee stated that Bangladesh, India, Indonesia, Myanmar and Nepal are making steady progress in scaling-up MDA to cover the entire endemic population. He also pointed out that Timor-Leste would need additional resources to reinstate MDA which was discontinued in 2007. The country, with the assistance from WHO and the University of Sydney, is gradually preparing to restart MDA.

Maldives and Sri Lanka discontinued MDA in 2009 and 2007, respectively, and have begun the process of verification of LF elimination in 2011 with the assistance of WHO. WHO sent an expert team to initiate the process as per the WHO Transmission Assessment Survey (TAS) guidelines issued in 2011. In addition, the microfilarial rate declined to less than 1% in Thailand and initiation of the first step in verification of LF elimination is planned for later this year. Bangladesh and Nepal stopped MDA in 10 districts after completing the TAS exercise in 2011 and implemented post-MDA surveillance. About 203 districts of the 250 districts in India have already completed more than five rounds of MDA and reached a microfilarial rate of less than 1%. A TAS exercise is being planned to stop MDA in due course. Stopping MDA will result in saving of albendazole tablets and allow the programme to expand MDA to the remaining districts. However, funding to procure immunochromatographic (ICT) kits and mobilizing operational costs including capacity-building is a challenge for Member States. WHO-SEARO is planning a regional capacity-building workshop on TAS in 2012 to enhance the knowledge and skills of programme managers to initiate stopping MDA in the districts.

WHO-SEARO is also building capacity of Member States in the implementation of the integrated vector management (IVM) strategy to hasten the process of control/elimination of vector-borne diseases, including LF.

While appreciating the progress made by the Member States, Dr Samlee acknowledged and congratulated the national programmes for their efforts in strengthening their work with various partners to increase resource mobilization for expansion of MDA. He also informed the participants that uninterrupted and generous donations of albendazole by GSK through WHO to all endemic countries for the MDA initiative is an example of this partnership. Eisai Co. Ltd. joined this public-private partnership network by committing to DEC from 2014 onwards to the LF programme. These donations are very useful for achieving the programme objectives.

Research, monitoring and evaluation are essential in identifying specific issues and to find solutions. Additionally, social, cultural and epidemiological factors are impeding programme performance. A number of challenges remain for successful expansion of MDA implementation in Member States of our Region. Improved MDA coverage in urban areas and among difficult-to-reach populations, intersectoral collaboration among government agencies and appropriate local bodies, social and resource mobilization, sustained political commitment and morbidity management are all needed. Other challenges are streamlining the LF-MDA data, completing the MDA cycle in a given calendar year, drug procurement and supply, utilization and feedback at all levels in each of the endemic countries.

Action plans to integrate the LF elimination programmes with other neglected tropical diseases to deliver preventive chemotherapy or mass drug administration are being finalized in Bangladesh, Indonesia, Myanmar, Nepal and Timor-Leste. Such integrated approaches have many benefits, including significant cost savings. Appropriate expansion of integration, disability prevention and management through community involvement and resource mobilization is also needed. Adopting integrated vector management in LF elimination programme is another challenge.

In concluding, Dr Samlee hoped that the RPRG members would discuss, in depth, all the technical and operational issues and make

recommendations to move forwards and achieve the global target of achieving LF elimination by 2020.

Dr Nirmal K. Ganguly, as the Chairman conducted the proceedings, while Dr K.N. Sein and Dr K. Krishnamoorthy were the rapporteurs.

### **3. Action taken on the recommendations of the Eighth RPRG meeting (2011) held in Colombo, Sri Lanka**

Prof. Dash presented the “Action Taken” by the Member States on the recommendations of the Eighth RPRG meeting, held in Colombo, Sri Lanka from 28 to 29 April 2011. The RPRG noted that all the Member States complied with almost all the recommendations. The group recorded its deep appreciation of all the actions taken by the Member States with the support of WHO-SEARO. A summary of the action taken on the general and specific recommendations of the last RPRG meeting by each of the endemic member countries is given below.

#### ***Bangladesh***

As approved by RPRG, 34.45 million albendazole tablets and 4800 additional ICT cards were utilized during 2011. As recommended, the reasons for the low coverage in some IUs were explored and it was found that lack of IEC activities, disproportionate population to volunteer ratio (1000:1) and inadequate orientation and incentives to volunteers were the causes. A framework for management of severe adverse effects (SAE) including a reliable referral system during MDA campaigns has been developed and the national pharmacovigilance networks included reporting of safety of drugs used. Efforts were made to ensure the quality of distributed drugs through quality control by utilizing the services of drug testing laboratories located in the Region. LF activities have been integrated with STH control to mobilize resources. WHO Transmission Assessment Surveys (WHO, 2011) were carried out in five districts and MDA was stopped. The feasibility of conducting studies on transmission patterns and dynamics in areas where there is a persistence of microfilaraemia (Mf) despite sustained MDA activities was examined and discussed with the

NTD officer from VBN SEARO who visited Bangladesh in February 2012. The programme has proposed to initiate these studies in 2012.

Towards the recommendation of including integrated vector management (IVM) strategies in the elimination programmes to sustain elimination efforts, Bangladesh participated in the IVM training organized by WHO in India in 2011. Community-based morbidity control started in 10 IUs in 2008 and the programme has a plan to expand in other IUs. A National Plan of Action on Integrated NTD control is being developed for the expansion of disability alleviation programmes through integrated approaches for the establishment of foot-care clinics in addition to home-based foot-care programmes.

### ***India***

In addition to free supply of 300 million tablets, an additional 50 million tablets of albendazole were supplied for the MDA round 2011. Provision of funding for the purchase of 150 000 ICT cards to implement TAS to decide about stopping of MDA in some IUs was made in the 12th Five Year Plan. MDA has been expanded to all the endemic districts and efforts have been made to strengthen social mobilization and other activities to enhance compliance in areas of low coverage. Through standard procurement procedures the quality of the locally purchased albendazole is ensured. Steps have been initiated for a critical review of the programme by the Indian Council of Medical Research (ICMR) and its recommendation would be useful to reduce drug requirement and thereby lead to conservation of resources.

Disability alleviation services in LF-endemic districts are expanded by establishing foot-care clinics in addition to the ongoing home-based footcare programmes. LF is already covered under an integrated approach with other national vector-borne disease control programmes.

### ***Indonesia***

Out of 57.06 million tablets of albendazole approved for 2011, 18.47 million tablets were received. National guidelines on MDA have been prepared and disseminated for effective implementation of the programme with high coverage. High level political and budgetary commitments have

been secured to ensure an uninterrupted five-six rounds of MDA in all IUs. Areas endemic for *B. timori* were taken up to strengthen activities to eliminate this focalized infection. A national strategic plan of action has been prepared which considers expansion of the LF elimination programme in contiguous areas. Meetings of the National Task Force with members from universities and the National Institute of Health and Research and Development (NIHRD) were held twice a year and networks were established between researchers and academic institutions to promote operational research relevant to the programme. Additional resources have been mobilized from USAID and RTI through meetings of stakeholders.

A team of experts from CDC Atlanta and RTI conducted meetings with the National LF Committee, programme managers and biostatisticians on monitoring and evaluation (M&E) strategies, TAS and sampling strategies. Guidelines have been developed for the MDA programme, and social and expert committees have been established at all levels to back up the MDA campaign. Through BPOM (Indonesian FDA), the quality of the drugs (DEC) is ensured. Five implementation areas have been identified for TAS in 2012. The LF elimination programme has been integrated with the malaria, long-lasting nets (LLN) campaign in some districts in Kalimantan & Sulawesi, and dengue vector control programmes and resources mobilized. Disability alleviation (home-based foot-care) programmes in endemic areas are implemented through the primary health care approach.

### ***Maldives***

The process for verification of elimination in the country as per the WHO LF TAS Manual (2011) was initiated in June 2011 by a team of WHO experts. A total of 517 children (6-7 years) in 17 islands have been screened by ICT and all were negative for the test. A consultant is being engaged to prepare the country dossier. Home-based foot-care programmes have been developed and implemented.

### ***Myanmar***

The MDA round of 2010 was completed in June 2011 by utilizing the available DEC and albendazole and the annual report on activities submitted. The approved quantity of 17.79 million tablets of albendazole for 2011 were received. The LF programme received USD 35 000 from

GNNTD through WHO to meet the operational costs for distributing MDA drugs, IEC, training and monitoring exercises. The country has prepared an integrated proposal with the STH programme to mobilize resources. WHO recruited one national technical consultant to provide the technical assistance (5 Apr–31 Dec 2011). The NTD officer from VBN unit visited Myanmar twice to monitor the progress and identify bottlenecks. The MoH issued LF guidelines and health workers were trained in identifying severe adverse events (SAE) and referring them for management. It is proposed to conduct TAS during 2012 in 12 IUs where six effective rounds of MDA have taken place and the Mf rate has dropped below 1%, if funds are made available. Efforts have been made to develop a data management system to improve the quality and interpretation of data. State and regional VBDC teams were made responsible for disability alleviation programmes, currently limited at township level.

### ***Nepal***

The national LF programme utilized all the 20 million tablets of albendazole received in December 2011 and conducted the 2011 round of MDA between January and February 2012. The programme investigated all the SAE, which occurred in the last MDA round and the national guidelines for SAE management have been developed. Drugs used in 2011 MDA were retested by the Nepal Department of Drug Administration and approved for quality and safety. In view of the recent SAE incidents, the country conducted the current round of MDA in February 2012. TAS was conducted in 2011 in five districts where the criteria for TAS were met and MDA was stopped. Integration of LF with STH has been done through the neglected tropical diseases (NTD) plan and resources were mobilized for LF elimination. Programme officers participated in the training of trainers on IVM during 2011 towards capacity-building for planning IVM as a supplementary measure to sustain LF elimination efforts. Data management, recording and reporting formats have been standardized for MDA and use of relational database (e.g. MS Access) for better data management has been explored. A rapid treatment coverage survey was carried out through independent agencies and further operational research studies have been planned for 2012–2013. A home-based foot-care programme is being implemented but foot-care clinics are yet to be established for morbidity management.

### ***Sri Lanka***

TAS was implemented as per the WHO TAS Manual (2011) in one district and it was planned to conduct it in the remaining seven districts in 2012 using 13 000 ICT cards supplied by WHO. A WHO expert team initiated the process of verification in June 2011 and approved stopping MDA. The preparation of the country dossier was initiated. Proposals to assess the current status of infection (both Bancroftian and Brugian) in the previously endemic areas are being prepared. Morbidity management is carried out in the control clinics under an antifilarial campaign and regional antifilarial units.

### ***Thailand***

Albendazole tablets (98 000) received for Narathiwat province could not be distributed due to frequent violence in the area. The Brugia Rapid Test was used to detect antibody of Brugian infection since 2011 and was found valid for TAS. Following the completion of five rounds of MDA, further rounds of MDA were stopped in 265 IUs in 10 provinces. Filariasis surveys are being carried out each year covering 25% of the IUs from 2007 to 2010. In 2011, blood surveys were conducted in all 265 IUs among 4-6 year old children using the ICT antigen tests in areas with Bancroftian infection and antibody test in areas with Brugian infection and no infection was detected. Provincial health staff were trained on morbidity management of chronic cases of filariasis. A regional workshop on IVM was held in Chiang Mai to strengthen its implementation in LF elimination.

### ***Timor-Leste***

In order to revive the LF elimination programme, a national strategic plan (2012-17) for integrated NTD control for yaws, STH and LF was prepared in June 2011 with the help of a WHO consultant. Timor-Leste has identified a focal point in the country and another in Indonesia for capacity-building. An integrated NTD control plan resulted in resource mobilization. Some funding for baseline surveys (LF & STH) have been obtained from the University of Sydney and the Rotary Club. WHO-SEARO provided funding for NTD control activities including technical assistance (one national consultant) for 2011, which will continue in 2012. Parasitological training to laboratory technicians both for LF and STH was

conducted by the University of Sydney with WHO support in Dili. It was proposed to remap endemicity for LF and STH in collaboration with WHO and to form a Trust Fund to support these activities

## **4. Updates on the global and regional programme for elimination of LF**

### ***Global***

Dr Kazuyo Ichimori, focal point for LF, Department of NTD, WHO-HQ presented an overview of the NTD roadmap, GPELF roadmap and update, GPELF monitoring and evaluation and cross-cutting issues on preventive chemotherapy. GPELF is now a part of the comprehensive programme of NTD control efforts in which preventive chemotherapy, vector control and morbidity management are increasingly integrated and delivered as multi-intervention packages at the global, national and local levels. GPELF, one of the most rapidly expanding global health programmes in the history of public health was involved in developing guidelines, initiating programmes in every WHO Region where the disease was endemic, and scaling up the programme as rapidly as possible. Besides continuing these efforts, GPELF contributed in operational research, advocacy and partnership, governance, and health system strengthening. Of the 72 countries where LF is currently considered endemic, 53 have started implementing MDA to stop transmission, targeting 63% of the total 1.39 billion people at risk. Of the 53 countries that have implemented MDA, 37 (70%) have completed five or more rounds of MDA in at least some of their endemic areas and 29 (55%) have achieved full geographical coverage. Since 2000, about 3.4 billion treatments have been delivered to a cumulative number of 646 million individuals. The overall economic benefit of the programme is conservatively estimated at US\$ 24 billion.

Substantial progress has been experienced but scaling-up programmes to achieve full geographical coverage is essential, especially in countries that account for approximately 70% of the global burden (Bangladesh, the Democratic Republic of the Congo, India, Indonesia, and Nigeria). Delivering MDA in urban environments will require innovative strategies to ensure adequate coverage. Successfully end of the programme, attention must be given to applying effective tools and strategies for official

verification and to accurately determine whether transmission has been successfully interrupted or not. Strategic objectives have been established for interrupting transmission by 2020. They address the specific challenges of initiating MDA, other interventions, or both, in all endemic areas, scaling-up these interventions to full geographical coverage, stopping interventions when transmission has been interrupted, establishing effective surveillance after stopping MDA and verifying success.

The programme must also focus more broadly on managing chronic morbidity, which typically persists even after transmission has been interrupted. Of the 72 endemic countries, only 27 have active morbidity-management programmes. Strategic objectives have also been established for providing basic care to all people suffering from LF-related morbidity. They address the specific challenges of initiating morbidity-management programmes in all endemic countries, developing guidelines, developing metrics for monitoring and reporting on programmes, and scaling up interventions to provide access to care for all who need it. The first 10 years of GPELF have seen extraordinary growth. The partnerships that made this growth possible will sustain the programme during the coming decade. The goal of eliminating LF will be realized within an integrated programme of NTD control, an approach that holds the promise of developing even greater synergy among programmes to eliminate LF and other health programmes, and of further extending the benefits of GPELF to neglected populations.

Integrated vector management (IVM) is considered as a supplementary strategic approach to enhance the impact of MDA. Currently there has been no direction on this issue and there is no GPELF vector control policy. Monitoring and evaluation is an important component of the programme. Once the LF elimination programme completes  $\geq 5$  rounds of MDA, it requires to assess whether MDA has had an impact on lowering the Mf prevalence to a level where transmission is unlikely to be sustainable. A revised manual for TAS was published by WHO in 2011. The move towards integration of preventive chemotherapy (PC) interventions into the other mass administration disease interventions (e.g. STH) entails the development of joint tools such as an integrated planning and costing tool (Funding Gap Analysis Tool), a joint request for selected PC medicines, a joint reporting form and a Scorecard for preventive chemotherapy. This approach could result in rational utilization of resources.

### ***Regional***

An update of the programme in the SEA Region was presented by Dr C.R. Revankar, NTD Officer, WHO-SEARO. Since the completion of endemicity mapping of LF in 2010 in the Region, there has been a rapid increase in MDA with two drugs to 365 million people in 2010 to 414 million in 2011. The overall reported drug coverage was 87% and the epidemiological drug coverage was 71%. Epidemiological coverage ranged from 41% (Indonesia) to 96% (Thailand). However, the surveyed (assessed) coverage (data from Bangladesh, India, Indonesia, Myanmar and Nepal) was 76% (range: 64-96%) in 2011. Of the 493 implementation units where the Mf rate was less than 1% with more than five effective MDA rounds, treatment was stopped in 290 IUs (Bangladesh, Maldives, Myanmar, Nepal, Sri Lanka and Thailand) either following 2005 or 2011 WHO guidelines. The process of verification of elimination of LF was initiated in Sri Lanka and Maldives with the assistance of WHO in 2011. A similar exercise will be initiated in Thailand also in the near future. Lymph oedema and hydrocoele cases have been estimated to be 0.8 and 0.42 million, respectively. About 9000 hydrocoele cases have been operated and 11 000 health workers have been trained on morbidity management in the Region in Member States.

Dr Revankar informed participants that the WHO SEA Regional Strategic Plan for the Control of NTDs: 2012-2016 has been developed. Indonesia, Myanmar, Nepal and Timor-Leste have developed respective country national plans for integrating LF with other NTDS. This programme is being implemented in Indonesia (LF+STH+SCH+LEP+Yaws) and Nepal (LF+STH+trachoma). It is in the preparatory stage in Myanmar and Timor-Leste. Bangladesh will be developing the plan soon.

Dr Revankar drew the attention of RPRG members to the important challenges and issues in the Region to move forward. He touched upon: (i) issues related to stopping MDA and implementing post-MDA surveillance; (ii) scaling up MDA; and (iii) expanding morbidity management. Some of the critical challenges were mobilizing operational cost for capacity-building and procuring ICT cards for stopping MDA, implementing post-MDA surveillance, scaling up MDA to achieve the target by 2020 due to lack of political commitment and lesser priority in some countries; achieving high treatment coverage, and disability management.

While concluding, Dr Revankar emphasized that mobilizing resources should be accorded priority by strengthening partnerships without which free drugs cannot be provided to the target groups to achieve programme objectives by 2020.

## **5. Updates from Glaxo-Smith-Kline**

Mr Andy Wright, Director, Lymphatic Filariasis Elimination Programme, Global Community Partnerships, Glaxo-Smith-Kline (GSK), stated that 54 countries have commenced MDA to eliminate LF with albendazole. About 2720 million treatments have so far been donated (until March 2012) to 54 countries of which, 66% were supplied to nine countries in the SEA Region. India alone received 1180 million tablets of albendazole as a donation from the Cape Town and Nasik plants between 2000 and 2012.

Mr Wright informed participants that GSK had also signed a MoU with WHO in 2011 to donate albendazole for STH treatment of school-age children. A total of 54 million tablets have so far been supplied for this programme. A new WHO joint application form for STH requests for albendazole has been adopted. He touched upon the “London declaration” on NTDs, at a meeting that was held in January 2012 where partners committed to the WHO roadmap of NTDs 2020. Mr Wright mentioned that new pledges for DEC (Sanofi Aventis and Eisai), and Praziquantel (Merck Serono) has pharma companies to collaborate with DNDi to share compound libraries to look for NTD drugs have been formalized. It has also been recommended for a scorecard to track delivery of commitments and progress towards 2020 targets of NTD control.

## **6. Progress made by Member States**

### **6.1 Bangladesh**

Bangladesh implemented the LF-MDA programme during 2001 and subsequently covered all 19 of the 34 endemic districts with >1% Mf prevalence. A total of 75.96 million people were at risk of infection in 2011. MDA was conducted during November and December 2011 in 14 IUs covering a population of 23.86 million. The coverage was 92.78%. As

many as 2328 health staff were trained on MDA and morbidity management during 2011 through 101 training sessions. External funding was mobilized from CNTD, WHO, USAID and JICA for TAS, advocacy, social mobilization and programme evaluation. Surveyed coverage was assessed in eight districts and the coverage was 69.5%. No severe adverse effects (SAE) to DEC and albendazole administrations were reported. TAS was conducted in seven evaluation units (EUs) covering five IUs and it was found that all recorded below the critical cut-off and were excluded from the ongoing MDA. It is proposed to conduct TAS in 2012 in the districts which recorded less than 1% Mf prevalence.

Bangladesh reported that 15 districts which were considered as endemic based on ICT results were found to be non-endemic during reassessment in 2007-2008 with Mf rate of <1%. The programme would like to consider them as “non-endemic and not requiring MDA”. The programme sought guidance from RPRG.

As many as 89 706 cases have been enlisted with lymphoedema (0.1%) and hydrocoele (0.27%). Hydrocoele survey was done in 300 cases during this year. In its reapplication the country stated that it planned to treat 27 million people in 2012 and requested 27.01 million albendazole besides 67.53 million DEC tablets from the country budget.

### ***Recommendations***

The RPRG:

- Appreciated the efforts of the country in ensuring programme implementation in 19 endemic districts without interruption in the annual rounds of MDA and implementing disability alleviation services.
- Approved the request for 27.01 million albendazole tablets for MDA round 2012.
- Recommended TAS surveys to reassess the current status of 15 districts which were originally “endemic” and currently “non-endemic” with less than 1% Mf prevalence before they are excluded from the endemic list. This is important for generating information that is required for verification of elimination in future.

- Recommended that the country should utilize the available ICT cards before the expiry period.
- Recommended that the programme should continue to explore the reasons for low coverage and compliance in some IUs to develop appropriate measures to bridge the gap.
- Recommended that the programme should undertake studies on the persistent infection in some of the districts despite repeated rounds of MDA.
- Requested the programme to scale up disability prevention activities.

## **6.2 India**

The 642 districts in India, LF is known to be endemic in 250 districts with a target population of 614 million (2011). PELF was started in 2000 on a pilot basis and was expanded by 2004 to all the endemic districts with MDA to achieve the national goal of LF elimination by 2015. Due to irregular availability of albendazole, MDA 2011 is still continuing in some states which will be reported soon. The reported treatment coverage was 82% and the epidemiological coverage was 73%. As many as 171 training sessions were conducted and 4735 health staff were trained. Drug distributors were involved to treat 250 individuals in 50 houses. Drug distributors made three visits to the household to enumerate the population, to motivate them and to distribute the drug on the day fixed for MDA in a given district. Mopping-up was carried out for 2-3 days. Rapid response teams were formed at PHC level to attend to the cases of side-effects. No SAE were reported and none required hospitalization. Independent assessment was carried out in these districts.

The programme conducted impact assessment through Mf surveys both in sentinel and spot-check sites during 2011. The overall Mf rate was 0.38%. As many as 203 units were identified with less than 1% Mf prevalence where five or more MDA rounds had been implemented. Mf prevalence was between 1% and 5 % in 31 IUs, while two IUs recorded more than 5% mf rate.

The country proposed to conduct the 2012 MDA round in all the endemic districts, targeting 560 million. The LF programme requested 400

million albendazole tablets for MDA round 2012; the remaining will be met from the balance or locally procured. The LF elimination programme for the 12<sup>th</sup> five-year plan has a financial outlay of USD 140 million including cost of ICT cards and implementing TAS to stop MDA in qualified districts. With the 3500 ICT cards received from WHO, the country proposed to carry out TAS in two districts and prepared a plan for the remaining 28 districts, with financial requirements including the cost of ICT.

### **Recommendations**

#### **The RPRG:**

- Recorded its appreciation on the efforts made in continuing the MDA programme.
- Strongly recommended TAS in areas that are qualified for TAS for which steps should be initiated to procure the required quantity of ICT cards. It was noted that procurement by the country takes time which warrants an interim arrangement.
- Recommended that the country should proceed with independent appraisal of the LF elimination programme.
- Urged the country to cover all the IUs in 2012 including the IUs where the previous round of MDA was missed and complete it in 3 months.
- Recommended the supply of 400 million albendazole tablets for the 2012 MDA round. While assuring the supply of 300 million tablets, it was recommended that supply of an additional 100 million tablets would be considered favourably.

## **6.3 Indonesia**

The country identified 334 endemic districts, accounting for 67.2% of the total 497 districts. All the three filarial parasites viz., *Wuchereria bancrofti*, *Brugia malayi* and *B. timori* are prevalent in the country. The total population at risk of infection is 124 million and the baseline Mf prevalence ranged from 1% to 43% in different districts. The last MDA round was conducted in 2011 covering 96 districts and the geographical coverage was

28.7% of the endemic districts in the country. The first MDA round was started in 2002. Epidemiological coverage was 41% in 2011, ranging from 12% to 93.5% in different districts. The strategy used for drug delivery to people varied from a house-to-house strategy to setting up of distribution points within communities. In urban areas, special population groups in factories and offices were also targeted. Assessed coverage ranged from 50-80% in different districts. All treated individuals ingested drugs under directly observed treatment (DOT). No SAEs were reported during this round of MDA. Additional external financial support was obtained from USAID/RTI for advocacy and operational cost of MDA in 17 districts during 2011.

The country proposed to conduct MDA in 87 districts (population: 48.6 million) already under MDA. Eight new IUs with a population of 1.8 million will be added in 2012. The total number of districts targeted for 2012 is 95 in 25 provinces. The population in these districts varied from 0.1 to 1.8 million, with a total of 50.5 million. It is also proposed to exclude 23 districts with a population of 5.4 million from MDA and to conduct TAS. Five districts will be covered under TAS in 2012. Mapping of chronic cases has been completed and 12066 cases enlisted.

The country in its reapplication reported having 35.9 million albendazole tablets in stock and requested 14.6 million tablets for 2012.

### ***Recommendations***

The RPRG:

- Appreciated the efforts made by the programme in implementing MDA in complex situations with all the human filarial parasites affecting people in 356 units with a population of 131 million.
- Urged the country to scale-up the programme as the current geographical coverage is only 29%, besides ensuring uninterrupted rounds in the ongoing areas.
- Suggested to involve the local bodies for social mobilization as it was understood that community preparation was not adequate.

- While recommending the proposal of conducting TAS in 23 IUs, recommended to include IUs where geographically complete coverage was achieved.
- Recommended the use of *Brugia Rapid* testkit in Brugia-endemic areas TAS. It was also suggested that the results of the TAS pre-tested in seven units should be used while planning TAS.
- Recommended that while undertaking MDA in newer areas, attention should be paid to adequate preparation to manage severe adverse effects.
- Complimented the country for its efforts in generating funds and integrating LF with other NTDs. It recommended that this mode should continue till the goal of elimination is achieved.
- Recommended that programme should explore the reasons for continued low/partial coverage in 23 IUs and develop appropriate measures to enhance compliance.

## 6.4 Maldives

The country carried out an ICT survey in 2003 among children and found 17.9% to be positive for filarial antigen in one island (Laamu Fonadhoo Island). MDA was implemented from 2004 in this island with a population of 1790. Five rounds were carried out and it was stopped in 2009 since the Mf rate was well below 1% throughout the island. Since then, post-MDA surveillance activities have been implemented. The country started the process of verification of elimination in 2011 with the assistance of WHO. Five atolls have been screened for antigenaemia among children using ICT. The country is preparing the necessary dossier for submission to the next RPRG.

### **Recommendations**

The RPRG:

- Commended the programme for initiating the process of verification of LF elimination.
- Urged the programme to strengthen the surveillance system including vector control and screening of immigrants.

- Recommended gathering of information on morbidity management and scaling-up the programme.
- Recommended that the programme should integrate LF surveillance with other NTDs.

## 6.5 Myanmar

The country completed mapping in 2007 and 45 out of 65 districts were identified as endemic for LF. The population at risk of infection in these 45 districts is 41.93 million. The first MDA was conducted in 2001 and 22 districts were covered by 2011. More than seven rounds of MDA have been completed in 19 districts, covering a population of 17.03 million. A house-to-house drug distribution strategy was adopted and there was one drug distribution team for 50 households and approximately seven days were required to cover the target population. Reported coverage was 90.5% and the surveyed coverage was 90.0%. No SAE was reported. MDA has already been stopped in three districts.

During 2012, the country proposed to carry out MDA in 42 districts with a population of 40.58 million, including 19 previously covered districts and 23 new districts. In 2012, an additional 23.55 million people will be covered. The country has a stock of 27.44 million albendazole tablets and has requested 13.14 million tablets. The MDA will be conducted in November 2012. TAS has been proposed in 11 IUs (9 EUs) where 10 rounds of MDA have been completed and financial support will be sought from MoH and WHO. MDA will be stopped if these districts qualifying in the TAS exercise.

Disability prevention activities were carried out in 42 IUs using 2002 guidelines. Training activities were conducted in all IUs and at the national level.

### **Recommendations**

The RPRG:

- Appreciated the efforts to expand MDA covering an additional 23 units during 2012.

- Approved the request for 13.14 million albendazole tablets from WHO.
- Approved the requested quantity of 46 million (200 mg) DEC tablets to the programme for 2012.
- Recommended the proposed research study in areas where Mf prevalence continues to be high despite repeated rounds of MDA.
- Recommended that the programme take steps to verify whether the full dose is consumed by the community in view of persisting infection in some of the IUs and the disparity in drug audit.

## **6.6 Nepal**

Out of 75 districts, 60 (57 rural and three urban) are known to be endemic for lymphatic filariasis. The total population at the risk of infection has been estimated to be about 25 million. In 2007, MDA was initiated in 16 districts and subsequently in 2010 another 10 districts were added. In 2011, MDA was continued in all the 26 districts and 10 new districts were added. Altogether, 36 districts were covered in 2011 with a target population of 15.5 million. The main treatment strategy was house-to-house visits. In some districts booth distribution was followed and special population groups were treated in community gatherings. Geographical coverage was 60%. Reported coverage ranged from 67.8 % to 91.9% in different IUs. Some districts reported low compliance which was mainly due to population out of station, people who were unaware of the distribution and because of fear of side reactions. Assessment of coverage was done in four districts by interviewing 3773 individuals consumption was reported by 66.8% of the respondents. The consumption ranged between 43.3% and 83.8% in different districts surveyed. The percentage of respondents reporting side reactions ranged from 3.4% to 48.8%. Hospital care was required to manage SAE in the eastern and mid-western regions of the country. The number of lymphoedema cases enumerated is 4017 with 11249 hydrocoele cases. During 2011 only 15 hydrocoele cases were operated.

During 2011, TAS was conducted in five districts as per revised guidelines of 2011 and all 5 were qualified to stop MDA in 2012. Therefore, the number of districts to be re-treated in 2012 would be 41

(21.07 million population), new districts to be added are 9 (2.88 million population). Resources have been mobilized from UN, USAID/RTI, DFID for supporting activities such as ICT survey and monitoring, training of physicians, IEC, mobilization of volunteers and coverage survey during 2012-2014.

In its reapplication, the country requested 24.25 million albendazole tablets for MDA in 2012. The programme had developed an integrated plan of action for control of neglected tropical diseases that included a comprehensive approach for all activities of the LF elimination programme.

### **Recommendations**

The RPRG:

- Appreciated the progress made in implementing the MDA programme covering 55 out of 60 endemic districts and the development of an integrated plan of action for the control of NTDs.
- Also appreciated the programme in intensive social mobilization and advocacy to deal with SAE and recommended its continuation in following MDAs.
- Recommended that the programme should continue to intensify public education, education of media and political persons to improve treatment coverage and reduce SAE.
- Encouraged the programme to procure DEC tablets locally.
- Suggested providing data on STH to GSK which prefers to donate albendazole tablets for STH control.
- Noted that hydrocoele surgeries were less and suggested enhance not in 2012 through an integrated plan for morbidity management.

## **6.7 Sri Lanka**

Following successful implementation of five-six rounds of MDA in eight districts in three provinces, further treatment was stopped in 2007 and post

MDA surveillance conducted. Pooled PCR of human samples indicated an apparent infection (Mf) prevalence of 0.60%. An ELISA-based Ab test was applied to a total of 4784 individuals and prevalence recorded at 8.50%. The results of TAS utilizing 3200 ICT cards showed antigen prevalence below the critical level indicating that the country has achieved elimination status. Now TAS is being conducted continued in eight districts following the revised WHO guidelines. A school-based cluster survey is being conducted as school enrollment is above 75%. The infrastructure available with the anti-filarial campaign is involved in TAS in addition to regular activities. The programme has enlisted 7096 lymphoedema cases and during 2011, 657 cases visited the filarial clinic for treatment and morbidity management. Information on hydrocoele cases and surgeries carried out are available with the hospitals and efforts have been made to compile the data. Five training programmes were conducted and 470 health staff were trained on the LF elimination programme. The process of verification of elimination has already begun following the visit of the WHO expert team. Steps to prepare a country dossier have been initiated with the support of a WHO consultant.

### ***Recommendations***

The RPRG:

- Appreciated the efforts of the antifilarial campaign in initiating the process of verification of LF elimination.
- Advised the programme to complete TAS as planned following the new WHO TAS guidelines of 2011.
- Recommended undertaking steps to assess the current LF situation in originally non-endemic districts and areas adjoining MDA districts.
- Recommended that programme should strengthen surveillance including xeno monitoring and surveys in hotspots.
- Recommended that the existing infrastructure with the anti-filarial campaign should be retained to continue post-MDA surveillance and morbidity management activities.

## 6.8 Thailand

The LF elimination programme in Thailand targeted both *W. bancrofti* and *B. malayi* transmitted by *Aedes*, *Culex* and *Mansonia* group of vectors. The programme identified 355 implementation units (each village unit) as endemic. The PELF programme started in 2002, and MDA was stopped in 2007 in all 268 endemic districts except Narathiwat province, which continued to receive annual MDA in 87 IUs. Out of 593 villages in this province, 87 IUs (villages) with a population of 83 105 were targeted for MDA. The 12<sup>th</sup> MDA round was conducted in 2011 in this region. The reported coverage was 95.9%, ranging from 81% to 100%. Two training programmes were carried out and 200 health staff were trained. An antibody test conducted in these 87 IUs showed prevalence ranging from 1.06% to 33.3%, but the results are constrained with small sample size. Post-MDA surveillance carried out in the districts where MDA was discontinued showed none of the sampled lot of 3000 children in the age group 1–5 years tested positive either by ICT or night-blood smear in Brugian areas. The programme has 98 000 albendazole tablets which would be sufficient to continue MDA in the Narathiwat province in 2012. Morbidity management is being carried out in 87 IUs.

### **Recommendations**

The RPRG:

- Appreciated the country for achieving high levels of coverage and consumption in Narathiwat province where the MDA was continued due to local problems.
- Recommended that the programme should follow the revised guidelines of WHO (2011) for initiating the process of verification of elimination. WHO-SEARO is urged to initiate the process of stopping MDA in Narathiwat province and verification on elimination process in the remaining IUs.
- Recommended that post-MDA surveillance and screening activities be strengthened in non-endemic areas to assess the current status.

- Recommended that the existing infrastructure at all levels continue post-MDA surveillance and morbidity management activities.
- Recommended preparation of a plan of action for post-MDA surveillance through an integrated approach with other NTDs and submission of a report to the RPRG in 2013.
- Recommended that steps be initiated to compile the dossier required for the completion of the certification process.
- Considered the request of the country for technical support from WHO-SEARO by deputing a team of experts to initiate the process of verification of elimination and preparation of dossier.

## **6.9 Timor-Leste**

All the 13 districts are endemic for filariasis in Timor-Leste (baseline Mf rate: 12%). All 3 human filarial parasites are prevalent in this country and the entire population of 1.07 million is at risk of filarial infection. The PELF was initiated in 2005 in four IUs covering 310 000 people under an integrated approach with STH. MDA was continued for two more years and discontinued in 2008. About 1700 albendazole tablets are available which will be expiring in 2014. Following the visit of VBN from WHO-SEARO the MoH is willing to revitalize the LF MDA programme with external financial and technical support.

### ***Recommendations***

The RPRG:

- Recommended that the country should explore the opportunity to revitalize the discontinued MDA as all the three filarial parasites are endemic, which has a bearing on the global LF elimination goal.
- Recommended that the country continue its efforts to mobilize external financial support including resource mobilization through integrating LF with STH and yaws.
- Urged WHO-SEARO to provide technical and financial support to reinitiate MDA.

## **7. Technical discussions and updates on programme implementation in relation to regional strategic plans**

### **7.1 Historical developments in LF elimination**

Prof. C.P. Ramachandran presented a detailed account of the history and research activities related to filariasis control. He covered various aspects of filarial disease, its transmission, genesis of the filariasis elimination programme, drugs and treatment strategies, hospital and community-based drug trials, vector management and its impact on filariasis control and basic as well as applied research studies. A summary of his presentation is given in Annex 1.

### **7.2 Filariasis test available for assisting with the LF elimination programme**

Dr Leanne Fox from CDC, Atlanta presented an overview of diagnostic tests to assist the LF elimination programme. Diagnostic tools are necessary to detect infection in an individual and beyond which it is needed to determine when the prevalence levels have decreased to a point that MDA campaigns can be discontinued without the threat of recrudescence. The diagnostics are classified based on the targets viz., the parasite, the parasite product (antigen) and host response (antibody). The results of a six-country study, conducted to assess the performance of seven diagnostic tests, including tests for microfilariae (blood smear, PCR), parasite antigen (ICT, Og4C3) and antifilarial antibody (Bm14, PanLF, Urine SXP) were presented. One community survey and one school survey were performed in each country. A total of 8513 people from the six countries participated in the study, 6443 through community surveys and 2070 through school surveys. Specimens from these participants were used to conduct 49 585 diagnostic tests. Each test was seen to have both positive and negative attributes, but overall, the ICT test was found to be 76% sensitive in detecting microfilaremia and 93% specific in identifying individuals negative for both microfilariae and antifilarial antibody; the Og4C3 test was 87% sensitive and 95% specific. It was concluded that ICT should be the primary tool recommended for decision-making about stopping MDAs. As a point-of-

care diagnostic, ICT is relatively inexpensive, requires no laboratory equipment, has satisfactory sensitivity and specificity and can be processed in 10 minutes—qualities that are consistent with programmatic use. Og4C3 provides a satisfactory laboratory-based diagnostic alternative. Antibody tests will be useful to assess the exposure to infection. The Brugia rapid test is recommended for assessing the exposure in Brugia-endemic areas. The advantages are its rapidity and higher sensitivity but with a disadvantage of variability in commercially manufactured kits. Bm14 ELISA can be used for both Bancroftian and Brugian infections and the merits are its high sensitivity and use of dried blood samples collected on filter paper. However, low specificity and demand for laboratory support are its limitations. Luminex multiplex is useful in detecting the filarial antibody from a very small volume (1 $\mu$ l) of blood and multiple antigens simultaneously. This also requires laboratory support and equipment. Currently recommended tools for TAS include ICT in *W. bancrofti* endemic areas, the Brugia Rapid Test for *Brugia* spp. endemic areas, and in areas endemic for both *W. bancrofti* and *Brugia* spp. both diagnostic tests should be used; testing evaluated separately against critical cut-off thresholds. The ongoing research to address these issues at CDC includes analysis of the relationship between antigen and antibody responses in the context of additional TAS surveys. The operational research needs are to address whether antibody responses are indicative of focal transmission, ELISA vs. multiplex comparison, and what is needed to help us interpret multiplex data.

### **7.3 Ongoing operational research studies under the Gates grant**

Dr Eric Ottesen, Director, LF Support Centre, Atlanta, provided an overview of activities being undertaken under the Gates grant towards resolving the critical challenges facing GPELF. The studies initiated in 2006 and expected to be completed by 2012 were designed to address the research questions: (i) when can MDA be stopped and how can we be sure of its success ;(ii) are there supplementary tools that can ensure success; and (iii) can we identify innovative financing strategies? The outcome of a multi-centric study on diagnostics under field conditions showed that the tests performed more poorly than expected, demanding better standardization and quality control of test kits, better training for test-readers and lab technicians. Concordance among the tests was poor. Point-of-care diagnostics are preferred for these programmes than lab-based

diagnostics and ICT Brugia Rapid test has been recommended. Field trials with TAS procedure showed that diagnostic tools were reliable and accurate, the target sample size was reached with consistency, and notable efficiencies were gained with school surveys, cost per TAS approx \$8,000-\$10,000 (excluding the cost of ICT) and the time required to complete the survey was 2-3 weeks. For post MDA surveillance, currently two strategies/tools viz., repeated TAS at 2-3 year intervals and xeno-surveillance are being tested. The major issues that remain to be resolved include, can one sample school children even in EUs where school attendance is <75%?, How does sampling adults compare with sampling children? How does shaping or sizing EUs affect outcome? What is the most effective way to sample for 'hotspots'? and whatever best mosquito-sampling strategies? From the view point of epidemiology the research questions are what happens to those who test positive in the TAS? and what are the implications of 'hotspots'? Efforts are also made in developing data capture and management system including a tool for integrated planning and costing of the programme.

#### **7.4 Transmission Assessment Survey and capacity building**

Dr Kazuyo Ichimori presented the strategic plan for GPELF proposed for 2012. A protocol is being prepared for morbidity management which will be available by end-2012; the plan also included development of a framework for IVM as a tool to prevent re-establishment of infection. Integration of diseases such as malaria, LF and STH under preventive chemotherapy could solve operational and financial problems. Dr Ichimori presented the components of TAS and proposed regional workshops for capacity building in TAS.

#### **7.5 Group discussions**

During group discussions, the RPRG discussed some of the following important issues related to LF elimination.

Prof. Ramachandran discussed the need of studies to understand infection persistence despite MDA. High instances of SAE in Nepal were reported to be one of the reasons for low compliance. Dr Pradhan highlighted that intensive awareness programmes and advocacy could

overcome these operational limitations and through this strategy high coverage was achieved in 2011.

Dr Ganguly discussed the importance of screening of tourists in vulnerable areas during post-MDA surveillance. He also emphasized that surveillance should be sustained and can be integrated with other diseases. Remapping is also necessary before initiating verification of elimination.

Dr K.N. Sein suggested that the diseases under NTD should be identified for consideration by RPRG. He mentioned that LF needs to be integrated with leprosy for morbidity management. The disability prevention strategy was debated at length and most of the participants felt that it has to be implemented effectively so as to derive benefit of enhancing compliance.

Dr Rashmi suggested that DoT should be adopted to ensure high rates of coverage and compliance. She felt that staggering MDA dates could solve some operational problems.

Dr Chusak discussed the benefits of integrated vector management (IVM) and highlighted the advantages in terms of avoiding duplication of efforts, rational utilization of resources and partnership. This can be a potential tool to sustain the gains during the post-MDA period. The concept was further discussed and Dr Krishnamoorthy mentioned that IVM, in simple terms, was a location-specific strategy to manage vectors.

Dr Krishnamoorthy mentioned that health-related quality of life is an appropriate indicator to assess the impact of morbidity management. The instrument has already been developed and can be used following validation under operational settings.

Treatment of antigen-positive cases was discussed and the group suggested that RPRG can identify the appropriate regimen of drugs.

Prof. Dash suggested that Brugia Rapid Test has to be used in the TAS in areas with Brugia infection particularly in Indonesia, Thailand and Timor-Leste. The Regional Office will arrange capacity-building of Member States on TAS. Prof. Dash also mentioned that the draft plan for Integrated NTD control for 2012-16 has been finalized for Asia.

Dr Revankar informed the RPRG that the Region has initiated steps to support countries that are in the process of verifying elimination and preparation of a dossier on LF status. This year such support will be extended to Thailand. He also informed participants that integrated NTD control plans have been developed by Indonesia, Myanmar, Nepal and Timor-Leste. Bangladesh will be developing it soon. The Regional Strategic Plan for Integrated NTD control 2012-2016 is ready to be shared.

The meeting also discussed the restructuring of RPRG to review applications for STH treatment. It suggested that RPRG should maintain its current structure since LF elimination is the main goal. The Group also recommended that the team to verify elimination should have expertise in the relevant field. The scope for operational research to be carried out within programmes to improve their functioning and evaluation was also discussed by the members of the RPRG.

The conclusions and recommendations arising out of these group discussions were incorporated into the recommendations of the meeting.

## **8. Conclusions and general recommendations**

### ***Conclusions***

All the Member States of the Region are implementing the LF elimination programme and have scaled it up during 2011. It was appreciated that some countries were stopping MDA and implementing post-MDA surveillance. The group commended Maldives and Sri Lanka for initiating verification of LF in 2011 and development of country dossiers. The programmes are receiving free albendazole and support from many partners in some countries. Problems in expanding MDA and morbidity management consequent to limited resources are encountered by some Member States. Indonesia and Nepal are receiving additional support from USAID/RTI for the integrated NTD control programme.

Morbidity management (MM) remains mostly in its infancy, except for line listing and training of health workers. Efforts need to be made to implement and monitor MM at community level through an appropriate strategy. Management of adverse reactions in MDA programmes has to be given priority as fear of side reactions is the major reason for limiting the

compliance in many situations. The revised WHO protocol has to be followed to carry out TAS for making a decision to stop MDA.

### ***General recommendations***

- Countries are encouraged to scale-up MDA programmes to cover all the endemic units so as to converge all the efforts towards elimination process. While expanding programmes, adequate funds and resources should be ensured to complete the required number of MDA rounds.
- Endemic countries are urged to continue the process of ensuring the quality of distributed drugs procured internally through quality control by utilizing the services of drug testing laboratories located in the Region.
- Strict vigilance over population movement and migration is required particularly in areas where MDA is discontinued.
- Continued support in terms of funding and technical assistance would be required for Timor-Leste and Myanmar.
- Management of SAE is crucial to ensure high compliance as the fear of side reactions is a major limiting factor for compliance in some countries. More attention is required while implementing MDA in newer areas.
- IUs with a minimum five to six effective (~65% treatment coverage) rounds of MDA and less than 1% microfilaria rate are to be included for TAS for decision-making towards stopping MDA. TAS is encouraged as the cost of assessment is three times less than a round of MDA in an IU with 1-2 million population.
- Countries are encouraged to examine the status of "non-endemic" and endemic units with less than 1% Mf prevalence by carrying out TAS to ensure absence of current transmission.
- Countries are urged to update the progress of their programmes towards elimination of lymphatic filariasis. The results of TAS could be included in the advocacy and social mobilization packages to improve programme coverage and compliance.

- Countries with foci of *Brugia* infection are encouraged to follow the *Brugia* Rapid test protocol for verification of elimination. Both the Wb specific ICT test and *Brugia* Rapid tests are to be carried out in areas with mixed infection.
- As the Member States are progressing towards consolidation, data quality and interpretation of results should be ensured towards making evidence-based decisions. Countries are encouraged to strengthen LF elimination monitoring (LEM) to monitor progress of MDA including impact and identify bottlenecks.
- Countries are encouraged to expand disability alleviation programmes by promoting and monitoring home-based foot-care practices. Data on surgical corrections of hydrocoele have to be updated by compiling data from public and private hospitals.
- Resource mobilization efforts by endemic countries should be continued, and should be based on funding gap analysis, adoption of a transparent mechanism for tracking funds and development of plans that attract funding from in-country sources. Integrating LF into other NTDs should be considered to mobilize resources.
- Countries are urged to implement IVM strategy in areas under post-MDA surveillance to sustain the gains achieved through MDA.
- The Group recommended that expert teams should be sent to the countries that have stopped MDA and are in the process of verification of elimination.

### ***Regional Strategic Plan***

The RPRG noted with satisfaction that WHO-SEARO has brought out a Regional Strategic Plan for Integrated Neglected Tropical Disease Control. Since many NTD-endemic countries in South-East Asia are bordering The Western Pacific Region, it is recommended that a bi-regional Asia Pacific Strategy for Integrated NTD control be developed.

**Table 1.** Summary of albendazole requirement of countries in the SEA Region approved by the Ninth RPRG meeting held at Yangon, Myanmar, 30 April-1 May 2012

Country	No. of treatments approved (in millions)	No. of Albendazole tablets to be shipped (in millions)	Expected arrival date of drugs in country	MDA scheduled for 2012	Remarks
Bangladesh	27.00	Available already	Not applicable	Nov. 2012	25000 ICT cards required; 800 already available (available ICT cards should be used before July 2012)
India	560.72	400.00	To be communicated	Nov. 2012	RPRG strongly recommends procurement of required ICT cards. Since procurement may take some time, an interim arrangement may be made. RPRG recommends free supply of 400 million tablets of albendazole. GSK assured supply of 300 million and will favourably consider additional supply for 100 million to India
Indonesia	56.00	20.00	Jun. 2012	Jul. 2012	
Maldives	-	-	-	-	-

Country	No. of treatments approved (in millions)	No. of Albendazole tablets to be shipped (in millions)	Expected arrival date of drugs in country	MDA scheduled for 2012	Remarks
Myanmar	40.58	13.14	Sept. 2012	Nov. 2012	46 million (200mg) DEC from WHO
Nepal	26.40	24.30	Sept. 2012	Nov. 2012	
Sri Lanka	-	-	-	-	-
Thailand	-	-	-	-	-
Timor-Leste	-	-	-	-	-
Total	710.7	457.44			

WHO will be supplying additional 50 million to India

## Annex 1

# Historical perspective of lymphatic filariasis and its control

## Professor C.P. Ramachandran

Lymphatic filariasis is one of the oldest group of parasitic diseases recorded in our medical history. The disease was known first in Egypt – among Egyptian mummies and the Indian physician Surushtra has written about this disease in 200 BCE. Also, records of this disease are seen in the carvings of the sun temple in Konarak in Orissa. This disease has been reported in China from ancient times.

Lymphatic filariasis is one of the most disabling and ostracizing diseases of man, and the World Health Organization in 1998 classified it as the world's number 2 disabling disease. (Number one being mental illness). In the year 2000, WHO estimated that there were 120 million people in some 83 countries inflicted with this disease of which over 50 million had overt clinical disease. The word asymptomatic was used for those with microfilaria only in their bloodstream - a terminology we now know is incorrect.

I would like to look at the historical perspective of lymphatic filariasis from four angles:

- (1) chemotherapy
- (2) diagnosis
- (3) pathogenesis
- (4) disease burden.

### **1. Chemotherapy**

In 1947, diethylcarbamazine (DEC) was discovered and formulated. Dr Frank Hawking (father of astrophysicist Dr Stephen Hawking) in London was the first to test DEC as a single dose treatment for lymphatic filariasis in

Brazil in the early 1950s. Later, he followed the trial with DEC by mixing it with common salt. Wilson, Edeson and Laing in 1955 carried out hospital-based dose-finding clinical trials in Kuala Lumpur among patients with *Brugia malayi* as well as *Wuchereria bancrofti* microfilariae in their bloodstream. They concluded from their studies that spaced out dosage over several weeks gives better efficacy than a single dose at any one time and recommended 5 mg/per kilogram/once a week for six weeks for mass chemotherapy among infected communities in endemic areas. They also recommended a daily dose of 6 mg/per kilo body weight for 12 days as individual treatment of patients which until today is being followed as the WHO recommendation. In the Pacific islands like Samoa and others, Kessell and his colleagues used single dose DEC chemotherapy once a year in endemic communities to control filariasis. This was followed in French Polynesia also. In India, in 1957, the National Institute of Communicable Diseases (NICD), now known as the National Centre for Disease Control (NCDC), introduced DEC single dose for mass chemotherapy followed by Sri Lanka about the same time. Sri Lanka, however, resorted to selective treatment of infected persons rather than mass drug administration. At this time, many countries including Malaysia (1960) posed the question of selective treatment versus mass treatment as the ideal strategy and studies in many parts of the world indicated that mass chemotherapy is much more effective in bringing down microfilaraemia in communities and is more cost effective and less labour intensive. Taking a cue from the earlier studies of Frank Hawking, Rick Davis in Tanga in Tanzania and C.K. Rao in India carried out studies using 0.2-0.4% DEC in common salt to treat parasitaemia in populations. These classical studies done in Lakshadweep, Karaikal and Pondicherry in India clearly showed that the DEC-salt approach to treat can be an effective way of controlling lymphatic filariasis. However, until today, no country has used this strategy because of various regulatory obstacles. The Republic of China was the only country that used this strategy in their control efforts besides Sasa who introduced it in the Okinawa Islands of Japan.

This situation of using DEC single dose as well as spaced (multiple) doses continued from about 1960 for the next 20-25 years in various parts of the world. Malaysia carried out spaced-out dosage of 5mg /per kilo/once a week for six weeks from 1960 in endemic populations; so also Thailand and Fiji (Mataika). Sri Lanka continued with selective treatment until around 1969 (Munasinghe). India around 1967 abandoned single dose mass chemotherapy due to side reactions (Basu and Ramakrishnan) and just

carried out *Culex* vector control in urban settings for years to come which had very little impact if any on the prevalence of infection. At this time we had much less information from the African continent as well as from Latin America particularly from Brazil. The problem in Africa was complicated with the onchocerciasis endemic in many countries and the severe side reaction produced by the use of DEC. Suramin, a drug initially used for onchocerciasis was also found to be toxic for use in humans.

In 1975, TDR was established in Geneva, with the support of WHO, UNDP and the World Bank, which brought in lots of impetus for research in tropical diseases under the leadership of its first Director, Dr A.O. Lucas. A Filariasis Steering Committee to spearhead research in all aspects of onchocerciasis and lymphatic filariasis control was formed with Dr Goodwin as the Committee's first Chairman and Dr Brian Duke as its first Secretary. This committee put together a strategic plan for research and development in a comprehensive manner commencing from drug development, chemotherapy, diagnosis, pathogenesis, disease burden and control strategies. I was fortunate to join TDR as one of its pioneer Medical Scientists and worked closely with Brian Duke and Dr Eric Ottesen who later took over as Chair of the Committee from Goodwin. During the next 10-18 years, this TDR Steering Committee carried out numerous clinical studies and trials all over the world using existing drugs as well as newer drugs. Animal models for screening various drugs at the primary, secondary and tertiary level were established and at the same time Phase I to Phase IV multi-centric clinical trials in humans were initiated in various endemic countries. Many drugs were screened in cats, dogs, monkeys, rats and other animals in London (Denham), Georgia (Macall), Japan (Tanaka), Switzerland (Heini), Indonesia, (Bintari), Malaysia (Mak), Sri Lanka (Mahroof Ismail) and Ghana (Awadzi). Screening of compounds such as CGP 20376 and many others for toxicity and efficacy was carried out both in animals as well as in hospital based phase I studies in India (Kumaraswami and Vijayasekharan). In addition, Dr Awadzi in Ghana carried out many of these early clinical studies in volunteers both for onchocerciasis as well as for lymphatic filariasis. One of the drugs that showed some promise as a microfilaricide in screening was Ivermectin and the Onchocerciasis Control programme (OCP) of West Africa which was established in the late 1970s as a Simulium Vector Control Programme was looking for a suitable antifilarial drug to bring down infections in the endemic communities. TDR supported Phase I to Phase IV clinical trials along with Dr Mohd Aziz and Ken Brown in many parts of Africa in collaboration with OCP (Drs Samba, Thylefors, Yankum

Dadzie and Hans Remme). Investigators such as Drs Hugh Taylor, Bruce Green, Jeff Williams, Eric Ottesen, Rene Leberre and French investigators like Dr Boussinesq in Cameroon and Drs Gabon, Abiose and Salako in Nigeria, Prof. Mohd in Sudan as well as many others in Tanzania with the support of WHO staff Brian Duke, Rick Davis, Ramachandran, Stanley Dissanaiké, and others carried out these extensive studies and showed Ivermectin as a superb Oncho microfilaricide to suppress microfilaraemia with little or no adverse side reactions. This was hailed as a major breakthrough for onchocerciasis control and sooner OCP adopted chemotherapy using ivermectin in its control strategy. At this time a delegation from WHO-TDR with Drs Davis, Lucas, Brian Duke and Samba as well as from outside with Eric Ottesen, and others from the London and Liverpool Schools of Tropical Medicine, and many eminent French workers approached MSD for the drug to be made available at a reasonable cost to the Ministry of Health for oncho control. MSD unable to reduce its production cost came up with a welcome statement under Dr Roy Vegelos, CEO of MSD to donate the drug free of charge to all countries as long as they need it under the auspices of WHO. This was a major breakthrough in the public/private partnership of collaboration between a pharmaceutical company and WHO which has been maintained to date and has reduced onchocerciasis to eliminable levels in the world today.

Around this time, two eminent medical scientists (Dr Eric Ottesen and DrKumaraswami) carried out a hospital-based study in Chennai, India, using ivermectin for treatment of bancroftian microfilaraemic patients and showed unequivocally that ivermectin at a dosage as low as 10 microgram can clear microfilaraemia very fast with little or no side reactions. This was a major finding which resulted in TDR carrying out multicentric clinical trials for brugian and bancroftian filariasis in many parts of the world such as in Bhubaneswar (Kar) Pondicherry (Rajagopalan, Dhanda, Das and Pani), Chennai (Kumaraswami ,and Vijayasekharan), Kerala (Shenoy), Kenya (Mugambi), Tanzania (Kilama), Ghana (Geypong), Indonesia (Partno) Malaysia (Mak and Navaratnam), Sri Lanka (Ismail), Papua New Guinea (Kazura and Moses), French Polynesia (Moulat Pelat) and Brazil (Gerusa).

OCP in collaboration with WHO established a macrofil unit in Geneva in order to search for a macrofilaricide towards the control of onchocerciasis with Dr Colin Ginger heading this unit. This unit worked closely with the TDR Steering Committee on filariasis and shared much of the scientific information in the quest for seeking a suitable macrofilaricide

for lymphatic filariasis and onchocerciasis. It was also at this time the efficacy of a single dose DEC was compared with a single dose of ivermectin for lymphatic filariasis and established that a single dose of both were equally efficacious in clearing microfilaraemia from the peripheral blood. A workshop supported by TDR held in Hamburg under Dr Buttner showed that ivermectin has no or little effect on adult worms of oncho and this was later found to be the same by Gerusa in lymphatic filariasis.

In 1994, a TDR meeting convened in Penang, Malaysia, brought together researchers in lymphatic filariasis from all over the world to discuss control strategies and the meeting came up with a clear strategy for global control of lymphatic filariasis. Around this time two important studies carried out by Ismail and Horton in Sri Lanka using albendazole and Eric Ottesen and colleagues in limited trials showed albendazole as a good drug showing some macrofilaricidal activity. Eric Ottesen and his group further showed that a combination of DEC with albendazole and ivermectin with albendazole as a single dose is far more efficacious in clearing microfilaraemia than by a single drug by itself. This was another breakthrough which helped WHO to put together a global strategy for control and possible elimination of lymphatic filariasis as a public health problem. In 1996 Dr Eric Ottesen along with Ramachandran mooted a WHA resolution to eliminate lymphatic filariasis as a public health problem and this resolution with the endorsement of Dr Ralph Henderson (then ADG of WHO) was passed by the World Health Assembly in May 1997. The Global Programme for the Elimination of Lymphatic Filariasis was launched by WHO in 2000. Dr Ottesen along with colleagues from WHO as well as from other interested groups with the help of Dr John Horton from GSK was able to negotiate with GSK to make the drug albendazole available for ministries of health in endemic countries and the second major donation of a drug by a pharmaceutical company—GSK—in giving albendazole free, came into being.

TDR's search for a macrofilaricidal drug is still ongoing and trials with moxidectin and more recently with new formulations of flubendazole under GVA with Dr Charles Mackenzie are underway.

## ***2. Diagnostics***

Night blood examination was the order of the day for diagnosis of lymphatic filariasis throughout the world—be it periodic, sub-periodic, non-

periodic or otherwise. Usually a 20 cmm thick blood film is taken from a person, stained and examined. Edeson and colleagues in Malaysia in the late 1950s showed that 20cc blood films are insensitive and recommended a 60 cmm, or 100 cmm blood films which can detect low-grade microfilaremia. We also had the Knott's technique which was a lab-based diagnosis for low microfilaraemics. Then came the millipore filter method – which again was a laboratory based technique (Desowitz) in Papua New Guinea in picking up mf positives. Until today night blood with 60 cmm blood remains as the main diagnostic tool for lymphatic filariasis.

A variety of immunological tests have been used in the past 50 years or more for diagnosis. They include many antibody tests such as complement fixation, haemagglutination, and also included the Sawada skin test made from *Dirofilaria immitis* antigen. Many workers such as Drs Willy Piessens, Nikki Weiss, Gary Weil, Eric Ottesen, Patric Lammie, Rick Maizels, Graham White, Brigitte Ogilve, Harinath Subramaniam and many others had used a variety of immunological tests for diagnosis. Many times they were all right for hospital-based patients but other times gave negative or false positive results. It was around 1985 when Bruce Copeman in Townsville in Australia found that antigens from the cattle filariae *Onchocerca gibsoni* acted with high specificity and sensitivity when used as an antibody against *W. bancrofti* microfilaraemics and infected persons. This was initially developed as an ELISA-based and later developed in the United States as an immunochromatographic card test (ICT) which was highly specific and sensitive in detecting *W. bancrofti* infections in the community and can be tested any time during day or night thus doing away with the need to taking blood samples at night. This antigen test kit known as ICT test kit has been widely used today by control programmes for mapping as well as for detecting positives after mass drug administration for bancroftian filariasis throughout the world especially in detecting early infections in children.

In the case of brugia infections – we have an antibody test developed by Dr Rahmah and colleagues using Bm14 antigen which is highly specific and sensitive. This again is currently used for mapping as well as for follow-up surveillance after MDA. Dr Gary Weils' studies in Egypt have thrown light as to the length of persistence of both antigen and antibody in a treated community. More recently PCR technology has been devised to pick up infections in blood by detecting microfilaraemic DNAs. Also xenomonitoring using mosquitoes are being developed to pick up residual

infections in communities. Recent studies indicate future diagnostics will be heavily based on antibody detection in communities which appear to be more reliable and accurate.

### ***3. Lymphatic pathology***

For decades, parasitologists and pathologists have believed that the adult worms of lymphatic filariae lodged in the lymphatic system of persons are the main cause of lymphatic obstruction and pathology leading towards chronic elephantiasis and lymphoedema as well in triggering frequent acute attacks of adenolymphangitis and adenitis due to excretory secretions of the worms and their products. There were, however, some who believed (in India) that bacterial infections played a major role as well. The King Institute in Chennai produced a staphylococcus antibody test which was widely used by physicians to detect filarial infections in suspected patients. However, the pathogenesis of lymphatic filariasis was poorly understood for decades and most people who had inflammation of their limbs were told nothing much can be done for them.

This whole situation changed in the late 1980s and early 1990s when TDR sponsored studies to understand immunopathology of filarial infections started to yield results. Use of new technologies like lymphoscintigraphy as well as Doppler ultrasonography in tracing lymphatics in a patient as well in detecting the presence of adult worms in scrotal lymphatic channels by the presence of filarial dance opened up a whole new frontier in understanding lymphatic pathology. By using these techniques it was clearly established that the so-called asymptomatic microfilariae carrier does not exist anymore as lymphatic damage was detected in all those with microfilaraemias as well as in children positive for antigen assays.

Credit should be given to pioneer workers in this field like Drs Gerusa Dreyer, Shenoy, Kar, Kumaraswami, Jamal, Manoharan, Charles Mackenzie, Eric Ottesen and others who diligently studied lymphoscintigrams and ultrasound images and made important observations to our understanding of lymphatic pathology caused by the infection. A second major finding by these workers was the major role played by secondary bacterial infections in patients with lymphoedema in enhancing the progression of the pathology and in triggering frequent acute attacks of adeno-lymphangitis, adenitis and inflammation of lymph nodes and glands. It has been shown through studies by Gerusa in Brazil, Kar in

Bhubaneswar and Shenoy in Kerala, that by this simple procedure of using soap and water to keep ones limbs clean one can prevent frequent attacks of adenolymphangitis in the infected individuals totally.

These meticulous studies by the workers mentioned above enabled them to devise simple preventive measures for stopping bacterial invasion of lymphatics – by making sure the hands and legs of an elephantiasis or lymphoedema patient are always kept clean by frequent washing (and without any lesions) with soap and water and occasional use of topical and systemic antibiotics. This approach which is today incorporated as the major strategy for the prevention of disability and prevention of acute episodes in the global programmes second objective has brought immense relief to millions of infected people in many parts of the world.

In addition, recent studies by Dr Shenoy in Kerala as well as Drs Kar and Dwibedi in Bhubaneswar have clearly shown that in children lymphatic changes occur very early in their lives, which can be only detected by the use of lymphoscintigrams which show dilatations of lymphatic vessels as well as formation of collaterals – the progression of which can be reversed to normal by early treatment. These are major findings and will go a long way towards the prevention and control of lymphatic pathology in the younger generation and those already afflicted.

#### **4. Global burden of disease**

It was estimated in 2000, when the global programme for the elimination of lymphatic filariasis (GPELF) commenced, that there were some 120 million people infected in nearly 83 countries of which over 50 million had overt clinical disease (Don Bundy and Edwin Michael). The global programme has been on now for 10 years in over 52 countries using mass drug administration as one of its main strategy to bring down prevalence and interrupt transmission. In 2012 (after 10 years of the programme), it is a fair estimate that we have reduced global prevalence of infection to about 55 million or lower and prevented millions more in acquiring new infection and lymphatic pathology.

In conclusion while we can be proud of our success so far, much more needs to be done to face the challenges ahead and cover all the countries globally where lymphatic filariasis is still endemic and in preventing new infections leading towards a world free of filariasis by 2020.

## **Annex 2**

### **Agenda**

#### **30 April 2012 Monday**

Registration	
Opening Session	
Welcome and Objectives of the meeting	Dr A P Dash
RD's Message	WR-Myanmar
Introductions and nomination of Chairperson/Co-chairperson and Rapporteur	WR-Myanmar
Action taken Report on the Recommendations of the 8th RPRG meeting	Dr A.P. Dash
Update on Global Programme for Elimination of Lymphatic Filariasis	Dr Kazuyo Ichimori, WHO, HQ
Regional update on Progress in elimination of Lymphatic Filariasis	Dr C.R. Revankar
Updates from GlaxoSmithKline	Dr Andy Wright
Presentation on Summary on the Member Country LF-Reports of 2011 and Review of Reapplication for Albendazole 2012	
Bangladesh	Dr K Krishnamoorthy
India	Dr Siti Ganefa
Indonesia	Dr P. Chusak
Myanmar	Dr Moazzem Hossain
Nepal	Dr Wichai Satimai

Thailand	Dr K.N. Sein
Maldives	Dr WAS Settinayake
Sri Lanka	Dr Edwin Michael
Timor Leste	Dr Rashmi Arora
Discussion on Country reports	

**1 May 2012 Tuesday**

Technical discussion and updates on programme implementation in relation to Regional Strategic Plans

Historical developments in LF elimination Prof. C.P. Ramachandran

Filariasis tests available in assisting the LF elimination-Progress Dr Leanne Fox, CDC, Atlanta

Ongoing Operational Research studies under the Gates Grant Dr Eric Ottensen, LFSC

Transmission Assessment Survey and capacity building Dr Kazuyo Ichimori

Discussion on:

1. Regulating MDA rounds and methods to improve treatment coverage Chairperson to coordinate
2. Investigating Persistent micro filarial rate
3. Verification of LF non-endemic districts
4. Post-MDA surveillance including xeno monitoring

Discussion continued Chairperson to Coordinate

5. Disability alleviation
6. Integrated Vector Management
7. Operational issues and research needs to be

8. Asia-Pacific Strategic Plan for  
integrated NTD Control 2012-  
2016

Any other item with permission of the  
Chair

Recommendations

Closing

### Annex 3

## List of participants

Prof. Dr Moazzem Hossain  
Institute of Allergy and Clinical Immunology of  
Bangladesh (IACIB)

Dr Rashmi Arora  
Scientist-F  
Ramalingoswamy Bhavan  
Indian Council of Medical Research (ICMR)  
New Delhi -110029  
India (focal point for LF in ICMR)

Dr N.K. Ganguly  
Former Director-General  
ICMR and Professor of Biotechnology  
National Institute of Immunology  
New Delhi, India

Dr K. Krishnamoorthy  
Scientist F  
Vector Control Research Centre  
Pondicherry 605006  
India

Dr S.Y.Kothari  
Special DGHS (PH)  
Dte. General of Health Services  
Ministry of Health and Family Welfare  
Nirman Bhavan

Mrs Dr Siti Genefa Pakki  
Chief Monitoring and Evaluation Section of  
Filariasis and Helminthiasis  
Directorate-General of Disease Control  
and Environmental Health  
Ministry of Health  
Jakarta, Indonesia

Dr Kyaw N Sein  
Fund Management Executive  
United Nations Office for Project Services

Dr Y. V. Pradhan  
Secretary  
Ministry of Health and Population  
Teku, Kathmandu  
Nepal

Dr Praveen Mishra  
Director General  
Department of Health Services  
Ministry of Health and Population  
Kathmandu  
Nepal

Dr W A S Settinayake  
Director (Retd)  
Filariasis Campaign  
Colombo, 5  
Sri Lanka

Dr Chusak Prasittisuk  
Consultant  
Faculty of Tropical Medicine,  
Mahidol University,  
Bangkok 10400 , Thailand

Dr Wichai Satimai  
Director  
Bureau of Vector Borne Disease Control  
Department of Disease Control  
Ministry of Public Health  
Bangkok, Thailand

Prof. E. Michael  
Eck Institute for Global Health  
Department of Biological Sciences  
University of Notre Dame  
Notre Dame, IN 46556-0369  
United States of America

Prof. C.P.Ramachandran  
Kuala Lumpur, Malaysia

**Special Invitees**

Dr Leanne Michelle Fox  
Representative from the Global Technical  
Advisory Group on Neglected Tropical  
Diseases  
CDC, 3005, GA-30341-4133, USA

Dr Eric Albert Ottesen  
Director  
Lymphatic Filariasis Support Centre  
Decatur, Georgia, USA

Mr Andrew Laurence Wright  
Director  
Lymphatic Filariasis Elimination Programme  
Global Community Partnerships  
Glaxo SmithKline

**WHO Secretariat**

Dr Kazuyo Ichimori  
Focal point for Lymphatic Filariasis  
Department of Neglected and  
Tropical Diseases  
WHO, Geneva

Dr A.P. Dash  
Regional Adviser  
Vector-borne and Neglected  
Tropical Diseases Control (VBN)  
WHO-SEARO, New Delhi

Dr C.R. Revankar  
Scientist, NTD Officer  
WHO-SEARO, New Delhi

Mr Nitish Mondal  
Secretary  
Vector-borne and Neglected  
Tropical Diseases Control Unit (VBN)  
WHO-SEARO, New Delhi

Dr Krongthong Thimasarn  
Medical Officer  
Malaria Unit  
WHO-SEARO, New Delhi

Lymphatic filariasis (LF) is one of the leading causes of permanent disability affecting socioeconomic growth in many LF endemic countries. The WHO South-East Asia Region accounts for the highest burden of LF in 9 of its 11 Member States. The Ninth meeting of the Regional Programme Review Group (RPRG) for Elimination of Lymphatic Filariasis in the South-East Asia Region was held on 30 April to 1 May 2012, in Yangon, Myanmar. The meeting reviewed the progress of LF elimination in the Region, identified major issues and made technical and operational recommendations to scale-up mass drug administration (MDA) and morbidity management in endemic Member States.

The meeting while appreciating the progress, approved a total of 710.7 million albendazole treatments for the 2012 MDA round out, of which 457.44 million will be supplied as donation by GSK through WHO.

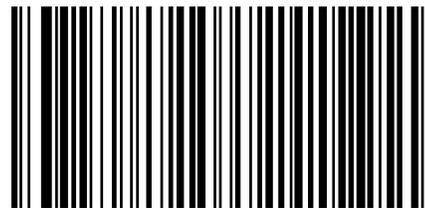
This report presents the synopsis of the deliberations held at the meeting and its recommendations.



**World Health  
Organization**

**Regional Office for South-East Asia**

World Health House  
Indraprastha Estate,  
Mahatma Gandhi Marg,  
New Delhi-110002, India



SEA-CD-261