

## **RBM Program in Sri Lanka: Milestones and Progress So Far**

*Dr. A.N.A. Abeyesundere*

*Consultant, Roll Back Malaria Initiative, World Health Organization*

### Global perspectives

- More than a million people killed annually
- more than 300 million cases a year
- 1/5 of the world's population at risk

### Reasons for the spread of malaria

- Weak health systems
- Large population movements
- Climatic changes
- Uncontrolled development activities
- Technical problems : drug resistance and insecticide resistance
- High cost of malaria control activities (partly due to drug resistance)

### Roll Back Malaria concepts

- Evidence-based decisions
- Rapid diagnosis and treatment
- Multiple prevention
- Focused research to develop new tools
- Well coordinated action for stronger health systems
- Harmonized actions

## **The Sri Lankan Roll Back Malaria initiative**

### Highest political commitment

#### **1998**

Hon. President of Sri Lanka, 1<sup>st</sup> Head of State formally agreed to Roll Back Malaria (RBM) Initiative

The former Minister of Health led the South Asian pledge to include Asia in RBM

**August 24<sup>th</sup> 1999**

RBM approved by Minister of Health

All Chief Ministers, Chief Secretaries have approved RBM

**Milestones****October 1999**

A Malaria Research Committee was formed. Appropriate field research projects were developed.

These include:

- a. Studies on drug resistance—in vitro sensitivity to anti-malarial drugs
- b. Combination drug therapy—Artesunate in combination with Sulphadoxine
- c. Establishment of a computer-based surveillance system for malaria control activities
- d. Study on the effect of insecticide impregnated curtains on the transmission of malaria in a malaria endemic area of Sri Lanka
- e. Water management for malaria control in an area of the Huruluwewa watershed in Anuradhapura District

The total allocation from the World Bank funds amounts to Rs. 11,287,300

**October 1999**

5 Districts: Jaffna, Killinochi, Mullaitivu, Anuradhapura and Moneragala prioritized.

**October-December 1999**

Situation analysis and needs assessment guidelines developed.

**December 1999**

Situation analysis and needs assessment in the 5 districts completed by Provincial and District Authorities.

**January 2000**

National Action Group (NAG) formed. Situation analysis and needs assessment approved. Technical Support Group formed to assist the NAG.

**February 2000**

- Media seminar
- National workshop held

**April 2000**

Uva Province Meeting held, Presided by Chief Minister

**May 2000**

Combined North-Central Province (NCP) and Anuradhapura District Meeting, Chief Minister (NCP) presided

**July 2000**

Moneragala District Meeting, Chairman, Health Secretary Provincial Council—Uva presided

**August 2000**

North-East Province Meeting, Presided by the Provincial Director of Health Services (PDHS).

**August-September 2000**

Preparation of the Strategic Framework by the Technical Support Group (TSG) with the Provincial and District Authorities

**October-December 2000**

Development of the 5 year Strategic Plan

**January 8<sup>th</sup> 2001**

Five-Year Strategic Plan 2001-2005 approved by the National Action Group

**February -April 2001**

Preparation of detailed Plans of Action by District & Provincial Authorities

**26<sup>th</sup> -28<sup>th</sup> March 2001**

Media seminar at national level

**18<sup>th</sup>-20<sup>th</sup> April 2001**

Strengthening of District Health System to facilitate mainstreaming of RBM and development of Joint Action Plans in the Pilot Districts.

**April 2001**

Plans of Action finalized for the 5 Districts

**May 2001**

Plans of Action reviewed and approved by TSG

**June 2001**

NAG to approve Plans of Action

Planned activities to commence in the Districts (mid June)

## **Barriers to Prompt and Effective Care for Malaria in the Uncleared Area**

*Brigg Reilley*

*Epidemiologist, Médecins sans Frontières (MSF)*

The districts of Killinochi and Mullaitivu have some of the highest cases of malaria in Sri Lanka. Public health interventions are difficult due to the deterioration of the infrastructure caused by years of armed conflict.

Médecins sans Frontières (MSF) works in the government health facility in Mallavi, a Peripheral Unit in the Mullaitivu District. Health workers in Mallavi noted a high level of repeat treatment for malaria patients. To better understand the possible reasons for apparent treatment failure, MSF with the AMC desk in Mallavi investigated treatment seeking behavior (how quickly persons come to the Peripheral Unit for treatment) and treatment adherence (do patients take all their anti-malarial drugs). Persons were interviewed after malaria diagnosis and followed up after treatment. In addition, focus group discussions were held with teachers, mothers, and health care workers.

The study found notable levels of treatment delay. About half the patients came to the out patient department within two days of feeling ill. Delay was mostly because people elected to self-treatment, usually paracetamol. Other factors influencing delay included the long waiting time to get seen by a doctor. There were also levels of non-adherence to treatment. This was most often due to the side effects of chloroquine and/or if the malaria symptoms ended. In general it was found that there was a lack of confidence in chloroquine. The drug is believed to not always be effective, and is well known to have toxic side effects which makes it desirable to stop treatment as soon as the symptoms stop, rather than taking the full course of drugs.

The root causes for the apparent treatment failures rest largely with the negative impact of the conflict on the quality and access of care. There has been a huge influx of displaced persons, increasing the population of Mallavi by five times, and thereby increasing the demand on the health services. There is an acute shortage of staff, as most medical staff have fled the conflict, which causes long waiting times for the appointment of a medical consultation. Similarly, a lack of microscopists requires a greater dependence on clinical diagnosis of malaria. The long lines combined with the lack of staff encourage self-treatment and delayed seeking of treatment. Health interventions are difficult in this situation.

There are also significant barriers to prevention. The organization of a proper environmental campaign is problematic due to the lack of infrastructure, materials, staff, and erratic supply lines into the uncleared areas. Populations are semi-mobile, as areas are resettled once they are cleared of landmines. Using personal prevention means have an economic barrier, as bed nets are expensive for most persons. However, there are important non-economic barriers as well, such as bednets not being used because it becomes too hot to sleep under and bed net use is not perceived as significantly reducing one's chances of contracting malaria. Any prevention campaign will need to not only help with supplies but also will need to convince people that prevention measures are effective and will have an impact.

Finally, lower treatment efficacy due to resistance to chloroquine is a possibility. Presently MSF and AMC are working on a small sample of a 28-day follow up of *P. vivax* and *P. falciparum* in an attempt to learn better patterns of resistance in the area.

*PowerPoint slides presentation*

#### Medecins sans Frontiers (MSF)

- Founded 1971 in Paris
- Independent and impartial
- Presently works in over 80 countries
- In 1999 awarded Nobel Peace Prize

#### MSF in Sri Lanka

- First started in Sri Lanka in 1986
- Dutch and French sections
- Work in government hospitals
- Surgical, obstetric, paediatric services
- Works in Vavuniya Batticaloa, Pt. Pedro, Jaffna
- Uncleared area: Madhu, Mallavi  
(Mallavi due to battle of Killinochi 1996)

#### Malaria in uncleared area:

<3% of population has 36% of malaria

- Killinochi and Mullaitivu districts 1999
- 36% total slide positive malaria in Sri Lanka
- 52% of total *P. Falciparum* malaria in Sri Lanka
- 63 of 102 (62%) of deaths

#### Environmental interventions: difficult to maintain

- Supplies irregular
- Lack of trained staff
- Fuel/transport/road difficulties

#### Mallavi Peripheral Unit: outpatient department

- Over 10,000 consultations in typical month
- 2 doctors
- 1 microscopist
- 5 days of treatment both types of malaria

#### Prompt and Effective Care

treatment seeking behaviour &  
treatment adherence

- |                                   |   |
|-----------------------------------|---|
| • Survey                          | • Focus groups                            |
| • Pre and post treatment          | • mothers, teachers, health professionals |
| • limits: underestimate adherence | • limits: not statistical adherence       |

Treatment seeking behaviour  
n = 271

Treatment within 2 days	54%
Treatment within 4 days	84%
Prior to seeking treatment at OPD:	
Self-treatment	92%
Friend/family	12%
Pharmacy	4%
- mainly paracetamol (96%), chloroquine (8%) - obtained from shop (52%), home stock (36%)	

Treatment Delay

- Statistically associated with: self-treatment, consult prior to OPD
- long waiting time, work/house duties: more convenient to take PCT
- not found to be associated with age or distance
- perceived severity of malaria

Treatment adherence  
n=260

Not take full tx:	26%
Reasons: (multiple answers possible)	
Side effects of drugs:	58%
Symptoms went away:	17%
Food shortage:	8%
Save for future illness:	3%
Other:	4%

Interventions

- Increasing staff not possible
- Awareness to promote full treatment
- Packaging/blister packs

Resistance

- 18% in follow up still febrile on day 6
- Small resistance study underway with AMC
- *P. vivax*, *P. Falciparum*

Prevention

personal measures, bednets and coils

- Supplies irregular
- Economic barrier
- Skepticism of effectiveness

## **Water Management for Malaria Control: IWMI's Malaria Research in Sri Lanka**

*Dr. Wim van der Hoek, Theme leader  
Water, Health and Environment, IWMI*

### **Why water management?**

Malaria control is facing major challenges worldwide due to several factors including increasing resistance of the malaria parasites against anti-malarial drugs and resistance of vector mosquitoes against insecticides. With no vaccine available, there is a need to find alternative methods of dealing with the disease. In the first part of the twentieth century, a lot of experience was gained with environmental management methods to control the mosquitoes that transmit malaria. However, this knowledge was done away with when DDT became available after World War II, leading to a global campaign to eradicate malaria by spraying houses with this insecticide. Currently, environmental management plays an insignificant role in malaria control programs but it should become more important in future control activities.

### **Flushing of streams**

Due to the breeding preference of *Anopheles culicifacies* for streams and rivers, water management has long been considered an effective intervention in Sri Lanka. Between 1934 and 1936, experiments were performed with engineering and manual measures to reduce the creation of pools in rivers (Worth 1937). Clearing the stream from falling trees, creating drainage canals along the side of the stream, filling up permanent rock pool formations and constructing special dikes made the stream less conducive for the breeding of the vector mosquitoes. Technical feasibility tests were carried out in a number of rivers and streams using hand operated flushing devices and automatic siphons to flush waterways. Much later flushing activities were carried out in the Mahaweli River below the reservoirs close to Kandy town aimed at reducing the mosquito breeding potential (Wijesundera 1988). However, due to the conflict with other water management objectives, e.g., hydropower generation, this practice was stopped.

Several other countries in Asia, including India, the Philippines, Indonesia, and Malaysia have made extensive use of automatic siphons. Siphons that were constructed in Penang, Malaysia before World War II are still in good operating condition (Jobin 1999).

### **The case of the tank cascade systems in Sri Lanka**

One of the salient features in the landscape of the Sri Lanka dry zone is the water reservoirs. There are an estimated 18,000 of these tanks in Sri Lanka and many are interlinked through canals or natural streams to form cascades. In 1994, IWMI initiated a study in the Huruluwewa watershed