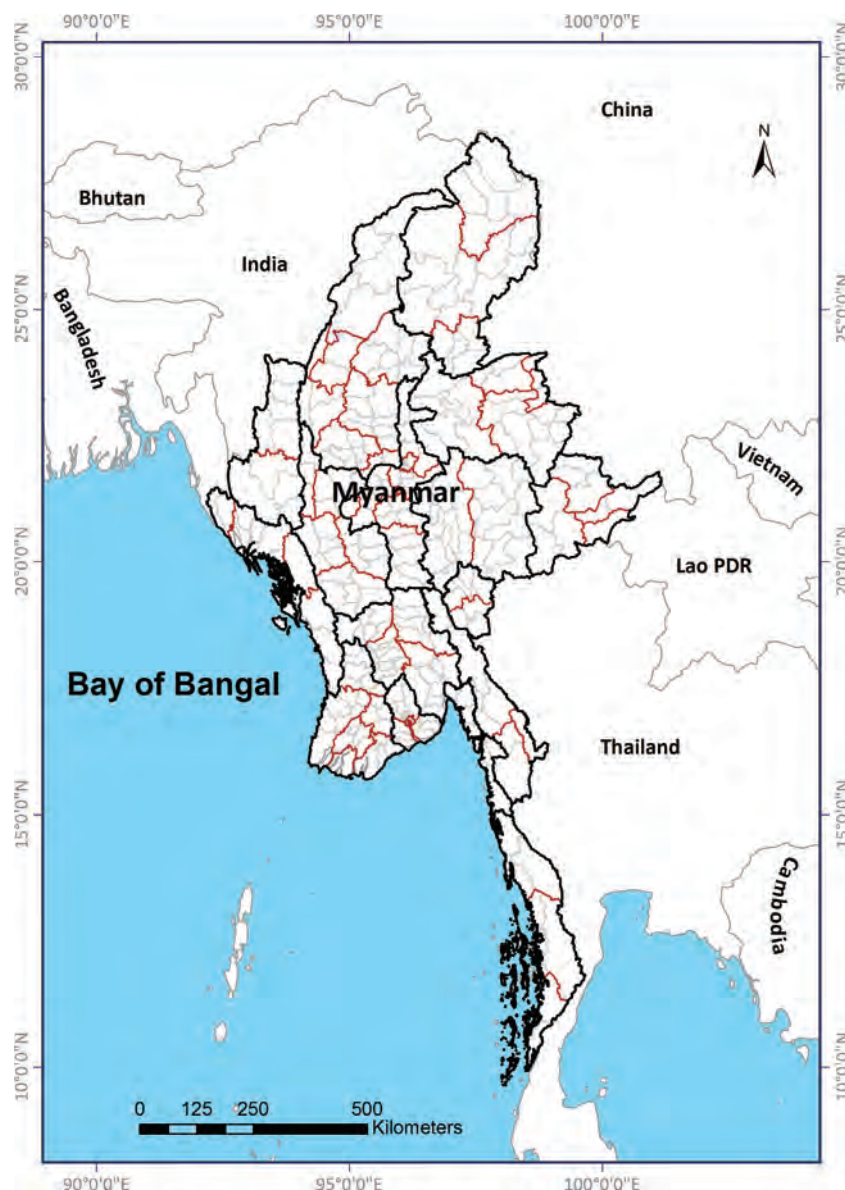


Country Profile of Myanmar



Location

1

Myanmar is the largest country in mainland South-East Asia with a total land area of 676,578 square kilometers. It stretches 2200 kilometers from north to south and 925 kilometers from east-west at its widest point. Lying between 09°32' N and 28°31' N latitudes and 92°10' E and 101°11' E longitudes, it is bounded on the north and north-east by the People's Republic of China, on the east and southeast by the Lao People's Democratic Republic and the Kingdom of Thailand, on the west and south by the Bay of Bengal and Andaman Sea, on the west by the People's Republic of Bangladesh and the Republic of India.

Geography

Administratively, the country is divided into (14) States and Regions. It consists of 67 districts, 330 townships, 82 sub-townships, 3045 wards, 13267 village tracts and 67285 villages. Myanmar falls into three well marked natural divisions, the western hills, the central belt and the Shan plateau on the east, with a continuation of this high land in the Tanintharyi. Three parallel chains of mountain ranges from north to south divide the country into three river systems, the Ayeyarwady, Sittaung and Thanlwin. Myanmar has abundant natural resources including land, water, forest, coal, mineral and marine resources, and natural gas and petroleum. Great diversity exists between the regions due to the rugged terrain in the hilly north which makes communication extremely difficult. In the southern plains and swampy marshlands there are numerous rivers and tributaries of these rivers criss-cross the land in many places.

Climate

Myanmar enjoys a tropical climate with three distinct seasons, the rainy, the cold and the hot season. The rainy season comes with the southwest monsoon, which lasts from mid-May to mid-October. Then the cold season follows from mid-October to mid-February. The hot season precedes rainy season and lasts from mid-February to mid-May. During the 10 years period covering 1999-2008, the average rainfall in the coastal area of the Rakhine and Tanintharyi was over 5000 mm annually. The Ayeyarwady delta had a rainfall of around 3000 mm, the mountains in the extreme north had over 2000 mm and the hills of the east over 1300 mm. The dry zone had between 700 and 1500 mm due to the RakhineYomas (hills) cutting off the monsoon. The average temperature experienced in the delta ranged between 22°C to 33°C, while in the dry zone, it was between 20°C and 34°C. The temperature was between 17°C and 30°C in hilly regions and even lower in Chin state ranging between 10°C and 24°C.

Demography

The population of Myanmar in 2009-2010 is estimated at 59.13 million with the growth rate of 1.29 percent. About 70 percent of the population resides in the rural areas, urban dwellers. The population density for the whole country is 86 per square kilometers and ranges from 15 to 666 per square kilometers.

NATIONAL MALARIA CONTROL PROGRAM , MYANMAR

1. Back ground History

Malaria is one of the major public health problems in Myanmar. It causes high morbidity and mortality leading to socio-economic loss and delay national development. Prior to 1950, malarial control measures were limited to a few places and consisted of anti-larval measures and distribution of antimalarial drugs. As the major Vector Borne Diseases in Myanmar, malaria

was the first against which control efforts were started in 1950 as Anti-malaria Programme. From October 1951 to March 1954, the Government of the Union of Burma (Now The Republic of The Union of Myanmar) and WHO jointly set up a Malaria Control Demonstration Project at Lashio, in the Northern Shan State. At the same time similar pilot projects were also established at Akyab (Sittwe) in Arakan (Rakhine) State and Taunggyi in Southern Shan State with the help of bilateral aid from the United States. The results achieved at the Demonstration Project in Lashio proved the efficacy of DDT – house spraying in controlling transmission of malaria.

In 1953, the Government launched a countrywide malaria control project with the assistance of WHO and UNICEF. During that year, large-scale residual spraying of houses using DDT was carried out which covered about one million population.

In 1957, Malaria Control Programme was converted into Malaria Eradication Programme with the assistance of WHO and UNICEF protecting about 8.8 million populations and using 766 metric tons of DDT. The status of the Malaria Eradication Programme at the end of 1966 was that, out of the total population of 15.5 million, 4.7 million were in non-malarious areas and 20.8 million populations lived in malarious areas. In the malarious area, 10.6 million population were in attack phase, 8.6 million in consolidation phase and 1.6 million were in maintenance phase. In attack phase area, only 6.7 million population could be covered by spraying due to late arrival of DDT and inaccessibility of some places. Malaria mortality rate in 1966 was 3.8 per 100,000 population.

In 1972-73, Malaria Eradication Programme was revised in accordance with the global strategy of malaria and again converted into Malaria Control Programme with the ultimate aim of achieving malaria eradication.

As a result of Country health Programming conducted in 1976, with the assistance of WHO, Vector Borne Diseases Control Programme (VBDC) was developed encompassing malaria, Dengue Haemorrhagic Fever, Lymphatic filariasis and Japanese encephalitis, and the formulated programme was implemented since April 1978. Since from that period, VBDC has been integrated with Basic Health Services for its implementation. In revision for the second phase of People's Health Plan, VBDC was formulated as part of the Diseases Control Programme. In PHP I (1978-82), malaria topped the 51 priority diseases/conditions whereas in PHP II (1982-86), it was second to diarrhea diseases (out of 56 priority diseases/conditions identified). Then in PHP III (1986-1990) it again topped the list of sixty priority diseases/conditions.

In 1992, inter-ministerial level meeting was conducted in Amsterdam and Global Malaria Control Strategy (GMCS) was laid down during that meeting. In July 1993, country working group meeting to implement revised malaria control strategy was conducted. During that meeting, the programme approaches and policies were reviewed, revised and changed according to Global Malaria Control Strategy. In year 1999-2000, Roll Back Malaria concept was also accepted for strengthening partnership. In 2002, new treatment policy was adopted to use and it was revised in 2008.

2. Malaria situation in Myanmar

2.1 Population at risk

Malaria is endemic in 284 out of 330 townships in Myanmar, mainly in rural areas, border areas and in some peri-urban places. Out of estimated total population of (59) Million (2009), 40.4 Million (68.66%) live in malaria risk areas, among them 15.6 Million (26.32%) in high-risk areas 14.3 Million (24.21 %) in moderate risk areas, and 10.7 Million (18.13%) in low risk areas. Apart from those population residing in high-risk areas, the high risk groups are the non-immune internal migrants (laborers in development projects such as dams, irrigations, road, mining, logging, rubber plantation, etc), people who resided in endemic areas, subsistence farmers in the forest and forest fringes, wood and bamboo cutters and other forest related workers. Although these groups are well known, they are very difficult to quantify due to their high mobility, seasonality of their work, lack of organization and coordination among themselves and inadequate coordination between the health sector and the agencies responsible for development projects. Under 5 year children and pregnant women residing in high risk areas are also the most vulnerable groups.

2.2 Situation Analysis of Malaria in Myanmar,

2.2.1 Malaria Morbidity and Mortality

Malaria is one of the major public health problems in Myanmar. In 2011, total confirmed malaria cases from out patient department were 387,963 cases, and from in-patient department were 34,043 and recorded malaria deaths were 564. It is now start to roll back and it needs to be sustained the achievements.

In 2011, the highest malaria cases (total confirmed & probable, OP+IP) was found in Rakhine state (102,237) and Tanintharyi (62,973) region and Sagaing (61,306) and Kachin State (56,312). The lowest malaria cases were found in Eastern Shan State (1843) and Yangon Division (2074). The highest malaria in-patients was found in Sagaing region and Tanintharyi region whereas lowest rates were found in Eastern Shan state.

	2001	2011	% of Reduction
Total Malaria (Out Patient)	574362	495984	13.64
Total Malaria(In-patient)	87111	34043	60.91
Proportion of Malaria Out Patient among total patient attendances at Out Patient Department (%)	11.08	6.61	40.34
Proportion of Malaria In-patient among total admissions in the Hospitals (%)	14.73	4.13	70.34
Total malaria deaths	2814	564	79.95

Case Fatality Rate among all Malaria In-patients	3.23	1.66	48.61
Case Fatality Rate among Severe and Complicated malaria	23.36	9.31	60.14
Malaria Morbidity Rate per1000 population	12.94	10.91	15.68
Malaria Mortality Rate per 100, 000 population	5.50	1.16	78.91

Comparative analysis on malaria in Myanmar during the 2001 and 2011, the most highest reduction was found in malaria deaths(79.95%) and malaria mortality rate (78.91%). The second highest reduction was found in malaria in-patients (60.91%) and case fatality rate among the severe and complicated malaria cases (60.14%) .

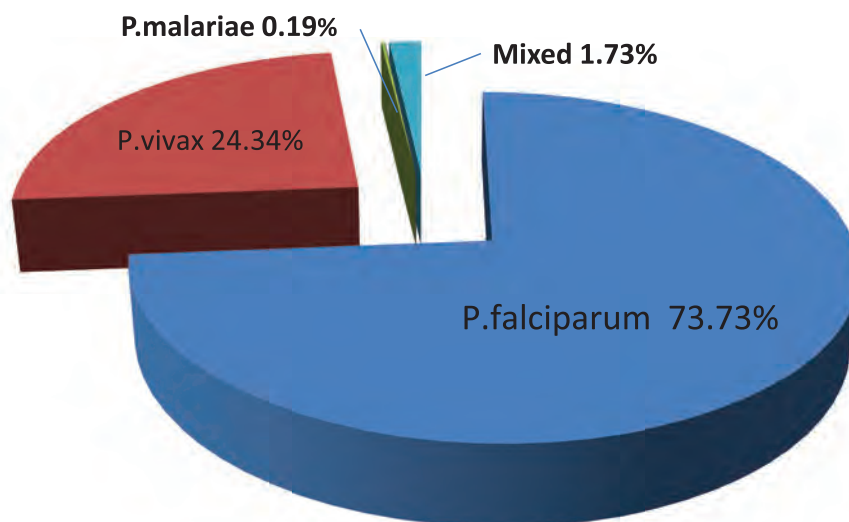
The lowest reduction was found in total malaria out- patient (13.64%) and malaria morbidity rate (15.68%).

Malaria morbidity rate was gradually decrease since 1990 (24.35) upto 1998 (11.57) . Then morbidity rate increased upto 2002 (14.01) . After that morbidity rate declined upto 2006 (9.32). Since 2006 malaria morbidity rate was increased gradually that was in 2008 (10.75 0, in 2009 (10.00), in 2010 (11.28) and in 2011 (11.12) . The National Malaria Control Programme had limited malaria diagnostic facilities by using malaria microscopy in hospitals and some strategic rural health centers. In 2006, The national programme introduced the rapid diagnostic tests as a diagnostic tools for malaria in 10 townships in Mandalay region as a pilot . After that, rapid diagnostic test were used in the all health facilities where there was no malaria microscopy available. The rapid diagnostic test were distributed all health facilities up to the sub rural health centers in the rural areas. In 2008, malaria volunteers were trainedwith the support of UNICEF and these volunteers were allow to use the rapid diagnostic test for malaria diagnosis and gave the treatment for those who are positives. And then Myanmar gained the Global Fund round 9, here the national programme trained again the malaria volunteers and also allow to use the rapid diagnostic test for malaria case detection and treatment for those who are positives. These are the reasons for malaria morbidity rate was increased gradually since 2006. The performances and contribution by Basic Health Staffs and malaria volunteers by malaria case detection in malaria endemic and hard to reach areas also one factor for increasing trend of malaria morbidity since 2006 in Myanmar. Here , increasing trend of malaria morbidity is not real increase in malaria cases, that is due to improvement in malaria case detection by using rapid diagnostic test done by Basic Health staffs and by malaria volunteers in malaria endemic and hard to reach and remote areas. The national programme encouraged the active case detection with mobile clinic and mobile teams in pocket and migrant population in remote and endemic areas.

In 2011, highest malaria morbidity rateper 1000 population was found in Chin(44.64), Tanintharyi (44.86), Kachin (34.75) and Rakhine (32.48). Highest mortality rateper 100,000 population was seen inKachin state (4.2), and Tanintharyi (3.7) Kayah State (3.34), Kayin (3.22).

2.2.2 Malaria Species in Myanmar

Five years average (2007-2011)



The proportion of P.falciparum is more than 73% and P. vivax is more than 24%. The proportion of P. vivax is increasing in nature.

3. Malaria Control Programme Objectives, Strategies, and Activities

3.1 Objectives

3.1.1 General objectives

To reduce mortality and morbidity due to malaria

To reduce socioeconomic loss due to malaria

3.1.2 Specific Objectives

To reduce malaria mortality by 75% in 2015 (baseline 2005) and To achieve MDG by 2015 (To achieve MDG Goal 6 Target 8 - have halted by 2015, and began to reverse the incidence of malaria and other major diseases)

3.2 Strategy

1. Prevention and control of malaria by providing information, education and communication up to the grass root level
2. Prevention and control of malaria by promoting personal protective measures by introducing environmental measures as a principle method and chemical and biological methods in selected areas depending on local epidemiological condition and available resources
3. Prevention, early detection and containment of epidemics

4. Provision of early diagnosis and appropriate treatment
5. To promote capacity building of malaria control program (human, financial and technical)
6. To strengthen the partnership by means of intrasectoral and intersectoral cooperation and collaboration and with public sectors, private sectors, local and international nongovernmental organizations, UN agencies and with neighboring countries for resource generation
7. To intensify community participation, involvement and empowerment
8. To promote basic and applied field research

3.3 Activities of National Malaria Control Program

3.3.1 Information, Education and Communication

Dissemination of messages on malaria is carried out through various media channels with the emphasis on regular use of bed nets (if possible appropriate use of insecticide treated nets) and early seeking of quality diagnosis and appropriate treatment (within 24 hours after onset of fever). Production and distribution of IEC materials is also carried out in different local languages for various ethnic groups and different target groups such as forest related travelers, pregnant women and general population. Advocacy activities are conducted to public and private sectors, NGOs, religious organizations and local authorities at different levels.

3.3.2 Preventive activities

3.3.2a Stratification of Areas for Malaria Control

In 2007, risk area stratification was carried out in 80 endemic townships of 15 States and Regions of Myanmar. 16,178 villages and total population of 10,390,106 was covered by area stratification activity. In 80 endemic townships, 76% of population (7,931,446) was residing in malarious areas, 13% of population (1,306,152) was residing in potential malarious areas and 11% of population (1,152,508) was residing in non-malarious areas. In malarious areas, 25% of population (2,596,030) was residing in high population (2,437,786) was residing in low risk areas. Package of malaria control activity has been given according to the result of risk area stratification that ensures the effective resource allocation.

3.3.2b LLINs Distribution and Impregnation of Existing Bed Net

Selective and sustainable preventive measures are carried out emphasizing on personal protection and environmental management. With limited resources, areas were prioritized for ITN Program either distribution of Long Lasting Insecticidal Nets (LLIN) or impregnation of existing nets. In 2011, 237,609 LLINs were distributed and 781,106 existing nets were impregnated in 6033 villages of 36 endemic townships particularly in hard to reach areas. Total population covered by ITN program was 2,955,453.

Number of Long Lasting Insecticide Treated Nets distributed by NMCP has been scaling up gradually since 2001 in Myanmar. Number of existing bed nets treated with insecticide by NMCP has also risen

Yearly distribution of LLINs and Impregnation of Existing Bednets

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
LLINs Distribution	39802	31029	60895	62631	14295	84546	127384	106459	213027	329421	238709
Impregnation of Bednets	7101	10300	76802	118441	174591	453890	296342	580993	360128	401873	781106

3.3.2c Early diagnosis and appropriate treatment

In 2009, according to the new anti-malarial treatment policy, case management with ACT (Artemisinin based combination therapy) was practiced in all endemic townships. For malaria diagnosis, 700 microscopes were distributed up to rural health center level in high endemic and strategic areas, and RDTs (Rapid Diagnostic Test) were also distributed up to sub-center level.

In 2011, 320,827 blood smears were taken and examined. Among those, 93,387 smears were positive giving rise to slide positivity rate of 29.11%. Total number of 804,060 RDTs were distributed to BHS of those all endemic townships.

Among the examined and read RDTs, 361,300 showed Pf positive and treated with Coartem showing the positivity rate of 44.93%. Malaria mobile teams reached up to rural areas and hard-to reach border areas for improving access to quality diagnosis and effective treatment. Assessment and quality control of malaria microscopy was done by laboratory technicians from Central and State/Regional VBDC team in 2011.

Monitoring therapeutic efficacy of antimalarial drugs particularly ACTs in collaboration with DMR (Lower Myanmar) and DMR (Upper Myanmar). Quality assurances of RDT (Paracheck) were also done in collaboration with DMR (Lower Myanmar). Since 2006 - 2007, Community based Malaria Control Program has been introduced and implemented in some selected townships of Eastern Shan State and Taninthayi Region with the aim of improving access to quality diagnosis and effective treatment in remote areas. Community based Malaria Control Program was expanded in total (23) townships of Sagaing Region, Southern Shan State, Magway Region, Kayin State, Kachin State, Northern Shan, Mon State, Rakhine State and Bago Region in 2011 by training 3725 volunteers.

3.3.3 Monitoring, Supervision & Evaluation

Monitoring & evaluation are two complementary, but separate functions, which often serve distinct purposes. Monitoring is the routine ongoing assessment of activities applied to assess resources invested (inputs) in the programme, service delivered (output) by the programme.

Evaluation is non-routine assessment and will be concerned with programme's outcome and impact on malaria control programme in Myanmar. The purpose of the national M&E plan is to provide guidance on programmatic, logistics and financial M&E within and across implementation levels towards improving programme performance, institutionalizing M&E capacity and foster the critical need for establishing 'ONE agreed country level M&E system' across various in-country partners.

Monitoring & supervision of programme includes;

- (1) Data recording, data collection, data compilation & data analysis
- (2) Drug & logistic supply
- (3) Skill on diagnosis (microscopy & RDT)
- (4) Adherence to treatment guideline (by checking register)

3.3.4 Improving access to and quality of malaria microscopy in the public sector

Microscopy remains the standard method for malaria diagnosis. Malaria microscopy should be established and sustained at all township and station hospitals and all Rural Health Centers (RHCs).

Quality assurance (QA) system for malaria microscopy is essential. The existing quality control mechanisms for malaria microscopy (e.g., cross-checking of the examined slides, feed-back of results, supportive supervision, etc) should be strengthened. The existing training on malaria microscopy should be further improved and follow-up after training should be strengthened. Moreover, a core group of senior laboratory technicians should be trained on advanced repair of microscopes and on quality control of malaria microscopy and they should be supported to carry out these two key activities.

Township hospital laboratories are under the supervision of the National Health Laboratory, the latter should be strengthened to perform its role on quality assurance on malaria microscopy (as well as for other laboratory services).

3.3.5 Improving access to diagnosis through the use of quality assured Rapid Diagnostic Tests (RDTs) for Malaria

In the absence of microscopy, immediate confirmation of malaria diagnosis even in peripheral areas is now feasible with the use of simple diagnostic tool – a rapid

diagnostic test (RDT) for malaria. RDT for malaria diagnosis is recommended for wide-scale use. The priority areas for use of RDTs in order of importance are as follows:

- RHCs without microscopy
- Sub-centers where access to microscopy is difficult
- Endemic villages where access to microscopy is difficult and where Voluntary Health Workers including NGO workers are empowered to use RDTs and treat malaria.
- Township Hospitals
- Selected private clinics

Quality assurance on RDTs should be established in the country in accordance with WHO recommendations (Informal Consultation on Field Trials and Guidelines on Malaria Rapid Diagnostic Tests, Manila, Philippines 20-23 January 2003).

3.3.6 Improving quality of and access to malaria diagnosis and treatment by private medical practitioners

Training and continuing medical education (CME) on malaria case management by medical practitioners being conducted by MMA in collaboration with the VBDC, Department of Health should be strengthened to help ensure good quality of malaria diagnosis and treatment in the private sector.

To improve access to quality-assured RDTs and artemisinin-based combination treatment in the private sector by malaria patients who in general are as poor as those who seek care in the public health facilities, *social marketing and social franchising mechanisms* should be explored and evaluated.

3.3.7. Empowering voluntary health workers (VHW)

It is recognized that public sector health facilities cannot be established in all villages. In almost every village there are voluntary health workers that could be empowered to deliver malaria control services. To improve access to early diagnosis and appropriate treatment in villages that are far from the health facilities,

Voluntary health workers (i.e., community health workers, auxiliary midwives, local NGO workers at grass roots level such as Red Cross and MMCWA members) should be empowered: (1) to use RDTs for early recognition of malaria, (2) to give first line treatment for uncomplicated malaria in accordance the national guidelines for case management of malaria, and (3) for severe cases in hard to reach areas, they may give initial oral dose of first line drugs (if the patient can tolerate) and refer immediately. Empowerment should be done through: (1) training, including development of effective communication skills, (2) provision of guidelines for performance of their tasks on malaria prevention and control, (3) provision of IEC materials, first line drug for malaria

(Artesunate – Mefloquine blister pack for falciparum malaria and chloroquine for non-falciparum malaria) and rapid diagnostic test (RDT), (4) intensive supportive supervision, and (5) by enhancing their visibility and credibility.

In areas where access to Basic Health Staff (BHS) is very difficult, auxiliary midwives should be empowered to provide initial oral dose of first line treatment for pregnant women with malaria and subsequently refer the patient to BHS. Other voluntary health workers / NGO workers are not allowed to give treatment to pregnant women; they should immediately refer them to Auxiliary Midwives or the Basic Health Staff as appropriate.

Voluntary health workers should be supported to educate their respective families and communities to improve treatment seeking behaviour and compliance (as well as to assist in ITN treatment and to promote ITN use). In 2011 National Malaria Control Programme trained 3750 volunteers. Total volunteers trained by national programme are 6250 now. But 60% of the volunteers are functioning. In 2011, these volunteers examined 95867 cases with Rapid Diagnostic Test and 47239 malaria cases were treated.

3.3.8 Indoor Residual Spray

Routine regular indoor residual spray has been suspended since 1993 due to various reasons (i.e. high operational and insecticide cost, vector resistance to insecticide, community acceptability, supervision, environmental pollution etc).

Selective spray is indicated during epidemic outbreak, at new settlements and development projects in malarious areas, epidemic prone situation and multi-drug resistant *P.falciparum* areas.

Conditions to fulfil the indoor residual spray are: vector should be susceptible to insecticides used, spray should be good (total, complete, sufficient), good supervision, acceptance must be assured and spray should be timely.

The continuation or withdrawal of indoor residual spray depends on local epidemiological situation.

INDOOR RESIDUAL SPRAY IN PROJECT AREAS (2009-2011)

Areas	Townships	Camps	Villages	Projects	House-holds	Populations
Rakhine State	1		5		960	5443
Bago Region	4	5	6	3	1502	4243
Magway Region	4	7	2		628	4631
Total	9	12	13	3	3090	14307

Indoor residual spray activities were carried out in project areas during 2009 and 2011 in 9 townships and covered 3090 households and 14307 populations.

