

NATIONAL TUBERCULOSIS PROGRAMME

ANNUAL REPORT (2010)

1. Introduction

Tuberculosis (TB) is one of the major public health problems in Myanmar. Annual Risk of Tuberculosis Infection (ARTI) was 1.66% (83/100,000 population were sputum smear positive) according to the findings of tuberculin survey conducted in 1972. Sputum positive point prevalence was 104/100,000 population according to Nation-wide survey carried out in 1994. World Health Organization (WHO) estimates the ARTI as 1.5%.

National Tuberculosis Programme (NTP) has been established since 1966. NTP is running with 14 Regional and State TB Centers with (101) TB teams at district and township levels in 2009.

TB control activities have been integrated with Primary Health Care since 1978. The standard regimen containing injection Streptomycin and Isoniazid was replaced with Short Course Chemotherapy and introduced in 18 townships and 8 Regional and State TB Centers in 1994. NTP rapidly expanded up to 144 townships in 1995, another 9 townships in 1996 (total 153 townships) but no further expansion in 1997 and 1998. In 1997, NTP adopted WHO recommended Directly Observed Treatment, Short Course (DOTS) strategy. In 1999, NTP covered 64.9% of country population in 168 townships and implementing DOTS strategy through primary health care approach, in co-ordination with the other governmental sectors and non governmental organizations such as Myanmar Women Affairs Federation (MWAFF), Myanmar Maternal and Child Welfare Association (MMCWA), Myanmar Medical Association (MMA) and Myanmar Red Cross Society (MRCS) etc. In 2000, DOTS coverage extended up to 71% (covered 231 out of 324 townships). In 2001, NTP covered 259 townships (80% out of total townships) and covered 90% of population. In 2002, NTP covered 310 townships (95.7% of total townships) and 95% of population. All 325 townships were covered with DOTS strategy (100% coverage) by the end of 2003.

TB control activities were implemented according to 5-year National TB Strategic Plan and 'Stop TB Strategy' to achieve the global targets and Millennium Development Goals (MDGs). This annual report aims to record the Myanmar TB situation, progress of TB control activities year by year and to evaluate strength, weaknesses, opportunities, threats and challenges which were detected in 2010 for the better achievement.

2. Objectives of NTP

2.1 General objectives

- To reduce the mortality, morbidity and transmission of TB, until it is no longer a public health problem (2050)
- To prevent the development of drug resistant TB
- To have halted by 2015 and begun to reverse incidence of TB

2.2 Specific Objectives

The objectives are set towards achieving the MDGs, 2015.

- To reach the interim targets of halving TB deaths and prevalence by 2015 from the 1990 situation. (MDGs, Goal 6, Target 6.c, Indicator 6.9)

- To reach and thereafter sustain the targets - achieving at least 70% case detection and successfully treat at least 85% of detected TB cases under DOTS (MDGs, Goal 6, Target 6.c, Indicator 6.10)

3. Progress of the Stop TB Strategy

The Stop TB Strategy which was recommended by WHO in 2006 has been initiated in Myanmar since 2007 to achieve the MDGs by 2015.

Activities as planned in 5-Year National Strategic Plan for TB Control (2006-2010) were reviewed and revised to be in line with National Health Plan, new Stop TB Strategy and global plan. A new 5-year National Strategic Plan (2011-2015) was developed and approved by Ministry of Health in 2011.

The 5-Year Strategic plan (2006-2010) had been implemented with the support of the government and funding from (WHO, Global Drug Facility (GDF), International facility for the purchase of drugs and laboratory commodities for HIV/AIDS, Malaria and Tuberculosis (UNITAID), Japan International Cooperation Agency (JICA), Three Diseases Fund (3DF), United States Agency for International Development (USAID) and UNION.

There are 6 components in the **Stop TB strategy, which are as follows:**

1. Pursuing high quality DOTS expansion and enhancement
2. Addressing TB/HIV, MDR-TB and other challenges
3. Contributing to health system strengthening
4. Engaging all care providers
5. Empowering patients and communities
6. Enabling and promoting research

NTP Myanmar is implementing those components and Global TB control targets have been achieved since 2006.

(1) Pursue high-quality DOTS expansion and enhancement

NTP, Myanmar ensures the quality of the 5 components of the DOTS strategy. The government increased the budget for TB control gradually. Case finding activities have been improved by introduction of EQAS (External Quality Assurance System) for sputum for Acid Fast Bacilli (AFB) microscopy since 2006. NTP is taking a step to decentralize DOTS unit or microscopy center up to the strategic Station Hospitals with quality assurance system. The case finding activities were improved by means of mobile teams, sputum collection points, initial home visit and contact tracing. TB patients are treated with WHO recommended treatment regimens using Fixed Dose Combination (FDC) of first line anti-TB drugs in compact Patient's kit under close supervision of Basic Health Staff (BHS). The drugs and supplies are distributed according to schedule without interruption. GDF supported first line anti-TB drugs since 2002 till 2008. Exceptionally, GDF continued the support for one year requirement of the country in 2009 while NTP developed the transitional and sustainability plan for uninterrupted anti-TB drug supplies for the country.

The pre-packed patient kits for Category I and III patients was introduced in 2007 in 38 townships in Yangon and Mandalay Regions and covered the whole country with Cat I & III patient kits since second quarter of 2010 with the support of Three Diseases Fund (3DF). The Japan's Grant Aid (JGA) will provide the first line

anti-TB drugs to fill up the critical gap for 2011. The first line anti-TB drugs will be secured by Global Fund Round 9 for 4 years from 2012 to 2015.

NTP strengthened the program management and supervision activities. Computerized reporting system was introduced with the support of WHO. Standard Operating Procedure (SOP) for drug and supplies management, laboratory external quality assurance system and guideline for childhood TB management, multi-drug resistant TB (MDR-TB) management were developed. Related trainings for drug and supplies management, laboratory EQA system, childhood TB management and MDR-TB management were provided.

Case holding system was improved by introducing innovative activities: quarterly cohort review meeting and quarterly review meeting at low performance townships with high defaulter rate and counseling training for TB Co-ordinators.

Partner's involvement in Public-Public Mix DOTS (PPM) and Public-Private Mix (PPM) DOTS could enhance the TB case finding. The expansion of EQA activity was carried out in phase wise manner and tried to cover private laboratories doing sputum microscopy for AFB. Both public and private laboratories which were under the EQA activity were 415.



World TB Week Activity: H.E Professor Dr. Kyaw Myint, Minister for Health inspecting the TB screening in construction site at Nay Pyi Taw

(2) Address TB/HIV, MDR-TB and other challenges

Human Immunodeficiency Virus (HIV) co-infection rate for TB patients was provided by National AIDS Programme (NAP) from routine HIV Sentinel Surveillance. HIV sero-positive among new TB patients is 10.4% in 20 sentinel sites in 2010.

Guideline for TB-HIV collaborative activities was developed in 2000 and updated. TB/HIV collaborative activities are conducting with 2 models. One is an Integrated HIV Care for TB patients project (IHC) in collaboration with UNION,

funded by Total (Yadana) Oil Company, NAP and NTP. IHC project was started with 5 townships (5 townships in Mandalay district of Mandalay Region) in 2005 and expanded to Patheingyi and Amarapura townships in Mandalay District/Region and Pakkoku township in Magway Region in 2007.

The other model as a minimum package of TB/HIV interim policy and activities are implementing in the area where NAP could provide ART. The technical assistance is provided by WHO. This model is implementing in Myitkyina (Kachin State), Taunggyi (Southern Shan State) and Lashio (Northern Shan State), where Voluntary Confidential Counseling and HIV testing (VCCT) service is providing in TB clinics as well as Co-trimoxazole Preventive Therapy (CPT). NTP and NAP in collaboration with UNION expanded the comprehensive HIV care services to Taunggyi and Lashio townships in 2010 with 3DF funding. Isoniazid Preventive Therapy (IPT) pilot project was implemented in 2009 in collaborative with NAP with the technical support of WHO.

MDR-TB among new and previously treated patients was 4% and 15.5% respectively (2002-03) from country wide drug resistant-TB survey. The second national drug resistant TB survey was conducted in 2007 and results showed 4.2% and 10% of new and previously treatment TB patients were MDR-TB respectively.

The study on drug resistant patterns of Category II failure patients was conducted for the formulation of drug resistant-TB treatment regimen for pilot project. National guideline for management of drug-resistant TB was developed and applied to Green Light Committee (GLC) for second line anti-TB drugs for MDR-TB management in 2007 and approved in 2008.

The MDR-TB management pilot project includes 5 townships each from Yangon Region (Hlaing, Hlaingthayar, Shwepyitha, Insein and Mayangone) and Mandalay Region (Aungmyaythazan, Chanmyathazi, Chanayethazan, Mahaaungmyay and Pyigyitagon). The clinical management of MDR-TB (DR-TB) patients is based at 2 TB hospitals (Aungsan and Patheingyi). DOTS-PLUS pilot project was launched in July, 2009 for treating 275 MDR-TB patients.

TB control activities have been conducted, collaborating with responsible persons from prisons at all levels.

Special activities were set at the Myanmar-Thailand border for improvement of TB control in border area: Myawaddy in Kayin State, Tachileik in Shan State (Kengtong) and Kawthaung in Tanintharyi Region. Meeting for proposal development of cross border health activities for 2011 was held in Bangkok, Thailand in August, 2010.

(3) Contribute to health system strengthening

It is cross cutting with other projects. NTP organization structure was expanded as necessary. There was only 7 Regional/State TB Centers in 1982 and expanded to 14 State/Regional TB centers in 2007 and covering the 17 Regions and States. In line with the human resource development plan, NTP conduct several trainings on "Management of TB at district level" for Township Medical Officer (TMOs), TB Team Leaders and TB coordinators, "Management of TB for Health Facility Staff" for BHS, "Leadership and Management" Training for Township Medical Officers (TMO) and TB team leaders", "Pre-packed patient kit training" for TMO and TB coordinators, new recruit training for sputum smear AFB microscopy and EQA training for laboratory supervisors.

All the township laboratories were equipped with binocular microscopes and sputum microscopy centers were expanded to some station hospitals. The facility for culture and drug susceptibility testing (DST) was upgraded in Upper Myanmar TB Laboratory, Mandalay with the support of FIND, USAID, 3DF and UNION.

(4) Engage all care providers

Public-Private Mix DOTS is implementing with Myanmar Medical Association (MMA) and Population Services International (PSI). Some Private Practitioners (PPs) use the scheme I, which educate about TB and refer the TB suspected patients to TB center. Some PPs prefer to use the scheme II, act as a DOT provider. PSI organizes the PPs and running the "Sun Quality Clinics" as a DOT unit. Majority of Private hospitals are not involved under PPM-DOTS schemes yet.

PSI, Myanmar is implementing PPM-DOTS in 166 townships with (802) PPs are implementing Scheme III. PSI initiated the Sun volunteers in 55 townships and 1289 volunteers are functioning. For diagnosis of TB, PSI is using township laboratories and 41 private laboratories in 2010.

MMA is implementing all 3 schemes with 1,022 PPs in 70 townships. MMA is mostly implementing scheme I in 70 townships after provision of training. Scheme III is functioning in 15 townships involving 118 PPs. Public-Private-Mix (MMA, PPM-DOTS project) is using public laboratories and 9 private laboratories.

JICA used to support for Scheme I implementation in North Okkalapa and Tarmwe townships in Yangon Region and Pyinoolwin and Pyigyitagon townships in Mandalay Region. The activities were absorbed by MMA at the end of 2009.

Myanmar Maternal and Child Welfare Association (MMCWA) is one of the organizations which involve as a care provider. About 33% of TB patients were directly observed by members of MMCWA.

MRCS trained their members to take part in TB suspected patients referral, case holding as DOT providers and defaulter tracing in Yangon and Ayeyarwaddy Region, Nargis hit areas.

MSF-Holland has been treating TB patients especially for TB/HIV co-infected patients. MSF-H covers patient support and incentives since 2004. MSF-H was only one partner involving in MDR-TB management and implementation of DOTS-PLUS pilot project.

Other International Non Governmental Organizations (INGOs) are implementing the TB prevention and control activities with community involvement strategy.

International Organization for Migration (IOM) is implementing PPM-DOTS in 6 townships in Mon State with 6 accredited public laboratories.

Malteser International trained community volunteers for TB/HIV prevention and control activities in Buthedaung and Maungtaw townships of Rakhine State.

Pact Myanmar trained community volunteers and Advocacy Communication and Social Mobilization activities are conducted for community awareness.

Merlin started community base TB care activities in Laputta township of Ayeyarwady Region since March, 2010.

Public-Public Mix DOTS is implementing in 4 hospitals (New Yangon General Hospital (YGH), Thingungyun Sanpya General Hospital, East Yangon General Hospital, West Yangon General Hospital and expanded to Insein General Hospital in 2010. International Standards for TB Care (ISTC) has been started since 2009 and expanded to all Regional and State level general hospitals in 2010.

NTP is also coordinating with hospitals under Ministry of Defense, Ministry of Labor, Ministry of Home Affairs and Ministry of Railway.

Table 1. Implementing partners and activities

Name of NGOs	Area Coverage and activities
MWAF	Case finding, provide health education and provide DOT in all townships
MCWA	Case finding, provide health education and provide DOT in all townships
MMA	PPM-DOTS in 70 Townships, all townships are practicing scheme I, scheme III started in 9 townships
MRCS	3 townships in Yangon Region (Thingungyun, Kungyangone, Twantay) 9 townships in Ayeyarwaddy Region (Dedaye, Pyarpon, Kyaiklatt, Maubin, Laputta, Ngaputaw, Mawlamyaingkyun, Bogalay, Pathein) Multiplier training (Peer Education) for Red Cross Volunteers, comprehensive IEC Campaign, Defaulter Tracing, case detection and referral, home based care and support, World TB Day Celebration
Name of Bilateral agency	Area Coverage and activities
JICA	Support TB control activities in Yangon and Mandalay Regions (76 townships)
Name of INGOs	Area Coverage and activities
PSI	PPM Scheme III is implementing and established sun volunteers to strengthen the case detection and case management. PSI is functioning in 166 townships with 802 PPs and 1289 volunteers in 55 townships are functioning.
Pact Myanmar	Building the commitment to community self-action in health and development Community based TB Case finding and Management System Building the access to resource and service, functioning in dry zone of Myanmar. (Magway Region – Magway, Minbu, Myothit, Salin, Aunglan, Pwintbyu, Chauk, Seikbyu, Mandalay Region – Kyaukpadaung, Myingyan, Sagaing Region – Htigyaik, Pale)
World Vision International	Case finding and provide nutritional support to Childhood TB cases in Hlaingthayar (Yangon Region), Loikaw (Kayah State), Thanphyuzayat (Mon State), Dewei, Myeik (Taninthayi Region). Self Help Group from TB patients was established in project areas and helping for TB suspected cases referral and income raising for patients support.
MSF- Holland (AZG)	Treatment of TB and TB/ HIV patients (Yangon Region, Shan (North), Rakhine & Kachin States) MDR-TB management in Yangon.
Malteser	TB case finding and treatment of TB patients in Rakhine state (Buthedaung, Maungdaw townships)
JATA	Technical support
IUATLD	Support Integrated TB/HIV care in 7 Townships of Mandalay district, Pakkoku township from Magway Region, Taunggyi township and Lashio township from San State.
AHRN	Capacity building, training for health staff, provision of IEC materials and support to TB treatment for intravenous drug users (IDU) in Shan & Kachin States.
IOM	Case finding activities with decentralized sputum collection centers in Mon State, 6 townships (76 villages in Mawlamyine, Belin, Ye, Kyaikmaraw, Mudon, Thanbyuzayat townships)
Merlin	Improving case finding by support of community volunteers in Laputta township in Ayeyarwaddy Region, Homelin and Kalay in Sagaing Region.

(5) Empower people with TB and communities

People with TB are not yet organized for their involvement in TB control broadly. JATA supported the activity to involve registered TB patients in TB control was started in 6 townships in 2008. TB registered patients served as informers in the communities and referring the TB suspected patients to TB centers for diagnosis. However, it was not much effective due to the limited funding support. However, most of the implementing partners started the community based TB care in different areas with the support of 3DF since 2007-2008. Therefore, NTP started the preparation for development of guideline together with WHO. Two central level workshops were conducted in 2010 for development of guideline.

NTP conducted nationwide Knowledge, Attitude and Practice (KAP) Survey to explore the knowledge, attitude and practice of communities related to TB. Based on the findings of KAP survey, NTP developed the Advocacy, Communication and Social Mobilization (ACSM) strategy and materials together with Health Education Bureau of Department of Health, to be used in the ACSM activities at different levels.

NTP has conducted World TB Day/Week commemoration ceremony and activities every year since 1996. Community involvement was strengthened by providing training for DOT provider who is identified from community volunteers and local NGO members. MMA also trained DOT providers selected from community. PSI trained Sun Health Worker for improving case management.



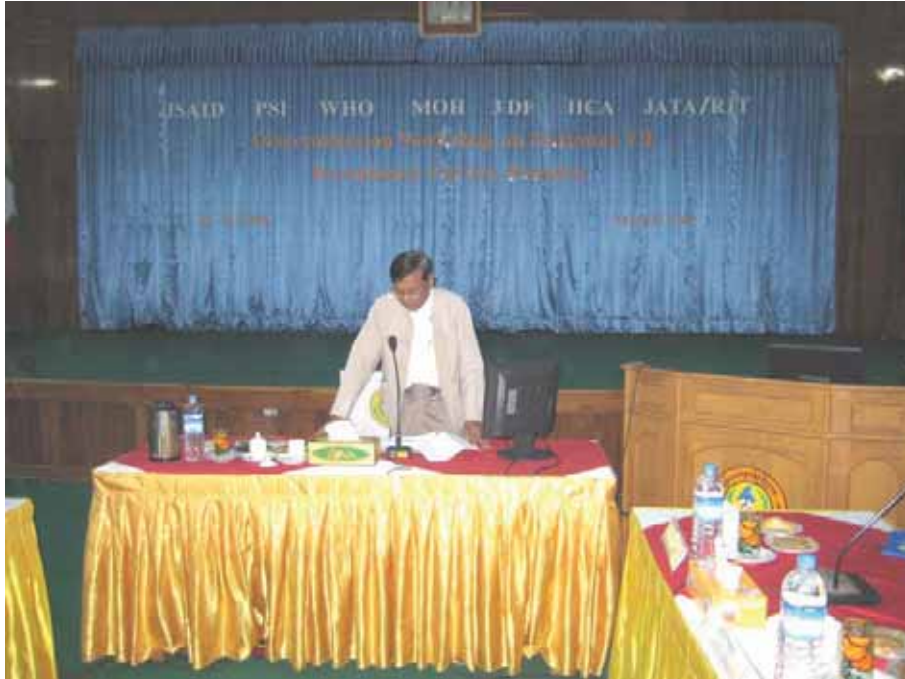
Community volunteers delivering Patients support and conducting home visits

(6) Enable and promote research

As an epidemiological assessment, NTP conducted the National TB prevalence survey in June 2009 and completed in April, 2010 with funding supports of MoH, WHO, 3DF, JICA, JATA, USAID/PSI, Bill and Melinda Gates Foundation. Total 70 clusters were surveyed and the results were disseminated to policies makers from MoH/DoH and health related Department, all implementing partners, donors and UN organization in December, 2010.

Nationwide knowledge, attitude and practice on TB control survey was also conducted in 2010.

Operational researches depending on the problems are conducted as necessary in collaboration with Department of Medical Research and academic Institutions.



H.E. Professor Dr. Mya Oo, Deputy Minister for Health delivering the opening speech on Dissemination of results of National TB Prevalence Survey



National TB Prevalence Survey conducted at Kyu Inn Village (Phyu Township) and Kyaik Kaw Village (Tha Hton Township)

4. Activities of NTP

1. Intensification of health education by using multi-media to increase community awareness about TB
2. BCG immunization to all children under one year
3. Implementing Directly Observed Treatment (DOT) up to grass-root level
4. Early case detection through direct sputum microscopy of chest symptomatic patients attending health services and contact tracing
5. Regular supervision and monitoring of NTP activities at all levels
6. Strengthening partnership
7. Capacity building
8. Promotion of operational research

Above activities were implemented in National Strategic Plan for TB control (2006-2010). In National Strategic Plan (2011-2015), NTP reviewed and revised the activities to be in line with the National Health Plan and the Stop TB Strategy as WHO recommended. Therefore, this report was evaluated the activities included in Stop TB Strategy.

Activities of the Stop TB Strategy

4.1. Pursue high quality DOTS expansion and enhancement

4.1.1 Secure political commitment, with adequate and sustained financing - TB control programme in Myanmar has high political commitment, next to Malaria and HIV/AIDS. The government contribution for drugs is increasing every year and the important human resources were filled up as necessary.

4.1.2 Ensure early case detection and diagnosis through quality assured bacteriology

Case detection

WHO estimated the Annual Risk of Tuberculosis Infection (ARTI) for Myanmar is 1.5%. The national estimate was based on the of national smear positive TB prevalence survey conducted in 1994 (104/100,000 population) using the sputum smear for AFB microscopy after TB symptom screening.

The smear positive TB prevalence survey conducted in Yangon Region (2006) showed 229/100,000 population. The incidence was estimated as 171/100,000 population which is 2.26 times higher than the current estimates using for all townships. Based on that experience, NTP prepared for the nation wide survey to know the real disease burden of country.

With technical and financial support from the Japan International Cooperation Agency, Population Services International, Research Institute of Tuberculosis of Japan, Three Diseases Fund, United States Agency for International Development and the World Health Organization, the national TB prevalence survey was started in June 2009. The National Tuberculosis Programme (NTP) screened 51,367 people

for TB in 70 geographical areas of the country and the challenging field operations were accomplished on time in April 2010. At the end of 2010, the analysis of the data was completed and the findings of the high-quality survey were disseminated at workshops in Nay Pyi Taw and Yangon. Based on the results of the survey, WHO re-estimated the prevalence of TB in Myanmar is 595 cases per 100,000 population. That means the TB prevention and control efforts of Myanmar is needed to be accelerated for reaching the MDG targets of indicator 6.9 by 2015.

NTP is usually doing the passive case finding in all DOTS townships. Chest symptomatic TB suspects from community are referred to the microscopy centers for sputum microscopy. Almost all the Basic Health Staff (BHS) from townships are trained on TB prevention and control strategies during (2005-2010). The BHS are the corner stone of the STOP TB Strategy implementation and also responsible for the early finding of TB suspected cases and refer for the diagnosis and treatment. Apart from BHS, the implementing partners trained the community volunteers and helped for improving case finding. Sputum smear microscopy plays an important role in NTP not only for diagnosis of TB but also to monitor the progress of TB patients during treatment and to determine the cure of TB patients at the end of treatment.

NTP also started active case finding activities with limited resources using mobile teams based in Yangon and Mandalay.



H.E. Professor Dr. Kyaw Myint, Minister for Health inspecting the TB screening among construction workers using X-ray van at Nay Pyi Taw



Active case finding using mobile team with X-ray van

The diagnosis for TB is mainly done by sputum smear microscopy. Sputum Culture is available only at National TB Reference Laboratory (NTRL) Yangon) and Upper Myanmar TB Laboratory in Mandalay.

NTRL has been performed Drug Susceptibility Testing (DST) since 2001. Upper Myanmar TB Laboratory, Mandalay was upgraded to do culture and DST in 2008-2009. After that, NTP simultaneously started the preparations for DOTS - Plus Pilot Project and National TB prevalence survey in 2009-2010. Rapid TB, MDR-TB diagnostic methods: Line probe assay and liquid culture and DST using MIGIT machine were introduced to Myanmar in both TB laboratories in 2010.

Case finding activities are strengthened by radiological examination. All Regional and State TB Centers except Shan State (Kyaingtone), Kayin and Kayah State, have the X-ray facility. The miniature X-ray machine was installed at each Tuberculosis Diagnostic and referral Centers (Union Tuberculosis Institute-Aung San) and the other in Mandalay General Hospital Compound). The necessary training on the use of portable X-ray machines and auto film processors was provided linked to the survey. After survey data collection was completed, then X-ray machines are continue using in respective TB centres and in mobile team activities.

Laboratory performance

Routinely three sputum specimens are collected for diagnosis and two specimens are collected for follow-up in all laboratories performing sputum AFB microscopy. Ziehl-Neelsen (ZN) staining is being used in all TB laboratories and Fluorescence microscopy is being used only in Latha and Aung San TB diagnostic and referral centers and Mandalay (Patheingyi) diagnostic and referral center, with high workload. Township laboratory performances are closely monitored by township medical officer and team leader. The AFB microscopy work performed at Region and State is monitored by Regional and State TB officers, Microbiologists and Senior TB Laboratory Supervisors (STLS).



Sputum smear microscopy

Maintaining the quality of AFB Microscopy

In 1999, the NTP developed the framework for the implementation of quality assessment activities using conventional method in which all positive slides and 10% of the negative slides examined were checked. This method caused the increased workload for NTRL and Regional and State TB Laboratories.

After a pilot study of External Quality Assessment on Lot Quality Assurance System (EQA-LQAS) at Yangon and Mandalay Regions, workshops and trainings were given to (20) STLs assigned by Ministry of Health to reinforce this work. The National Guidelines on EQA-LQAS for AFB Microscopy was developed in October 2007 and orientation training was given in February, 2008 to Regional / State TB Officers, Pathologist/Laboratory Officers from Regional and State Hospitals and STLs. The training focused on random selection of slides per month to be sent to Regional and State TB Centers for blinded re-checking. Timely feedback to peripheral laboratories and supervisory visits for corrective actions are also important components of this new EQA system. Supervisory visits to Regional and State TB laboratories are done by Microbiologists once a year. The quarterly supervisory visits are conducted by STLs. For places showing major errors, either Microbiologists or responsible STLs visit those sites.

Laboratory of Mandalay Regional TB Centre took responsibility for EQA of Kachin State, Sagaing, Magway and Mandalay Regions. In 2007, those Regional and States TB laboratories became stand alone quality control centres. Feed-back together with comments were sent back from Regional/ State level to township level. Quarterly reports of EQA from all Regional and State TB centers submit to central NTP and copy to Consultant Microbiologist. The INGOs (PSI, AZG and IOM) laboratories performing AFB Microscopy also sent QC slides to either Lower or Upper Myanmar TB laboratories.

Panel slides were sent to Regional and State TB centers and TB Hospitals twice a year from National Health Laboratory (NHL) / NTP. Training for newly recruited STLs (5 days) and refresher training for existing STLs (3 days) were provided. For quality performance, of sputum AFB microscopy (5 days) trainings were given to laboratory technicians when they start their job and sputum AFB

microscopy (3 days) refresher trainings were given to technicians once in 3 years service. TB laboratory annual evaluation meeting was also conducted once a year.

EQA system was successfully established with the technical and financial support of JICA (MIDCP). EQA has been introduced in 2007 at 53 townships, 2 hospitals, 1 diagnostic and referral center of Yangon and TB laboratories of Mandalay, Magway, Bago Region (East), Ayeyarwaddy, Shan State (Taunggyi) and Mon/Kayin State. EQA methodology coverage was expanded to 325 townships in 2010 after orientation training by using the National Guidelines on EQA-LQAS for AFB Microscopy. Technicians from Regional and State TB centers or Medical Technologists or Laboratory Officers from the Regional and State General Hospital laboratories are responsible for quality control (QC). Pyapon, Kyaiklatt, Daydaye, Nyaungdone and Bogalay townships of Ayeyarwaddy Region sent QC slides directly to National TB Reference Laboratory (NTRL) for their convenience. The Shan State (Kyaingtong) can not perform EQA till 2010.

Table 1. Laboratory under EQA (2008-2010)

Year	Tsp	Township Labs	Decentralized Labs	Private Labs	Total	Remarks
2008	325	294	51	60	405	
2009	325	276	31	60	367	25 expanded labs of Sagaing Region & 10 township labs of Eastern Shan State were dropped due to several reasons
2010	325	288	65	62	415	

Private Labs = (43) PSI, (5) IOM, (12) MSF-H for the whole country in 2009 (60) labs

(43) PSI, (5) IOM, (12) MSF-H, (2) MDM for the whole country in 2010 (62) labs

Decentralized Labs = Labs of Sub-township and SH

Table 2. EQA Findings in 2010

	Public Labs	Private Labs	Total Labs
EQA Labs	353	62	415
Actively participated EQA Labs	336	39	375
Labs without major Error	278	26	304

Total laboratories put under EQA were 415 in 2010. It increased from 405 in 2008. (Township laboratories = 288, Sub-townships and SH laboratories = 65, Private laboratories = 62). Actively participated laboratories were 375. All laboratories without major error were 304 (81%). Public laboratories without major errors were 83%.

Out of 62 private laboratories, NTP received the slides for EQA only from 39 laboratories in 2010. Private laboratories without major error were 26 (67%) and slide concordance rate was 97.4% in 2010.

Table 3. Major Error and Minor Error in 2010

SN	Region/State	Total sides checked	Major Error		Minor Error			FP	FN	Concordance Rate %
			HFP	HFN	LFP	LFN	QE			
1	Yangon	4396	11	45	1	15	14	12	60	98.4
2	Mandalay	3867	4	45	4	32	31	8	77	97.9
3	Bago (Pyay)	1215	2	1	0	1	2	2	2	99.6
4	Bago	1053	3	4	0	1	12	3	5	99.2
5	Ayeyarwaddy	1997	8	20	1	6	20	9	26	98.2
6	Yakhine	1308	0	7	0	0	11	0	7	99.4
7	Mon	1034	0	1	0	0	1	0	1	99.9
8	Kayin	562	5	1	0	0	9	5	1	98.9
9	Tanintharyi	216	0	0	0	0	0	0	0	100
10	Kachin	1381	14	30	19	41	37	33	71	92.5
11	Sagaing	5536	107	53	9	12	35	116	65	96.7
12	Chin	72	2	3	0	0	2	2	3	93.0
13	Shan	1973	0	3	0	1	3	0	4	99.7
14	Shan (Lashio)	312	0	0	0	0	1	0	0	100
15	Shan (Kyaingtong)	590	11	7	5	1	0	16	8	95.9
16	Magway	2806	1	5	0	7	0	1	12	99.5
17	Kayah	949	1	0	0	1	2	1	1	99.7
		29267	169	225	39	118	180	208	343	98.19

**FP = False positive (HFP = High false positive or LFP = low false positive)
 FN = False negative (HFN= High false negative or LFN = low false negative)
 QE = Quantification error**

The concordance of quality control result of the whole country was (98.1%) in 2010.

STLS and Microbiologists are still needed to closely monitor and visit those townships with major errors in time for corrective actions. In 2010, 7 refresher trainings on sputum smear microscopy were conducted in Shan, Bago, Mandalay , Yangon and Ayeyarwaddy, Sagaing Region 141 laboratory technicians attended. 3 New recruit training for sputum AFB microscopy trainings were also conducted in Mandalay and Yangon in 2010, 58 laboratory technicians attended.

Among 551 errors, false positive was 208 (37.8%) and false negative was 343 (62.3%) in 2010. False negative was more common than the false positive errors and reduced in 2010 compared to 2009 (67.4%).

Table 4. Quality control results for public labs from 2008 to 2010

Year	Slides rechecked	FP (HFP+LFP)	FN (HFN+LFN)	Discordance rate
2008	19,592	155	349	2.6%
2009	19,153	64	175	1.24%
2010	29,267	208	343	1.9%

Table 5. Major errors and Minor errors of Private Labs in 2010

SN	Region/State	Total annual sides checked	Major E		Minor E			FP	FN	Concordance Rate %
			HFP	HFN	LFP	LFN	QE			
1	PSI Mandalay	2137	7	41	6	14	17	13	55	96.8
2	MSF - Holland Kachin	384	0	1	0	0	0	0	1	99.7
3	MDM	72	0	1	0	0	0	0	1	98.6
4	MSF – Holland Rakhaine	216	0	0	2	0	0	2	0	99.0
		2809	7	43	8	14	17	15	57	97.4



Conducting laboratory supervision



Refresher training on EQA

Sputum collection centers

NTP started to decentralize the sputum microscopy center to Station Hospitals since 2005. Due to lack or vacant laboratory technician posts at peripheral areas, it is not possible to have microscopy services in all station hospitals. NTP established sputum collection centers (SCC) at rural health centers or station hospital (RHC/SHU) as the possible solution for this with the expectation of following benefits.

- To detect TB suspected patients as early as possible
- To increase case detection and cure rate of this township
- To improve awareness on sputum collection centre and better utilization
- To upgrade the sputum collection centre into microscopy centre if utilization improved

Advocacy meetings were conducted at Township level and one day training was provided to local BHS including laboratory technician of selected Sputum Collection Centers. Transportation cost was also reimbursed to assigned BHS or messengers who transported sputum specimens to township laboratories.

Table 6. Performance of Sputum Collection Centres in 2010

SCC in Community based activity			SCC in Low performance township	
Sr.No	Township	Name of RHC	Township	Name of RHC
1	Southern Shan State, Hopone	Nankote RHC	Pindaya	Pansit RHC
2	Namsam	Kholem SHU		
3	Magway Region Taungdwingyi	Satthwa RHC		
4	Pwintphyu	Mezali RHC		
5	Yangon Region Thanlyin	Thabyaykan RHC	Kawhmu	Wabalouttauk RHC
			Thonegwa	Katongpaw RHC
6	Ayeyarwaddy Region, Kyonpyaw	Weygi RHC		
7	Mandalay Region Patheingyi	Dahuttaw RHC	Meikhtila	Shan Ma Nge RHC
8	Patheingyi	Sinywagyi RHC	Mahlaing	Sito RHC
9	PyinOoLwin	Pyinsa RHC		
10	NyaungU	Setsetyo RHC		
11	Sagaing Region Minkin	Maukkataw RHC	Yinmabin	Yin Pound Taing RHC
12	Myinmu	Ahletaw SHU		
13	Wuntho	Gyoetaung SHU		
14	Pinlebu	Michaunginn SHU		
15	Kalaywa,	Thetkaikyin RHC		
16	Ayardaw	Naunggyi SHU		
17	Kayah State Demawsoe	Htipokalo RHC		
18	Demawsoe	Dawrawkhu RHC		
19	Farusoe	Tawkhu RHC		
	Shan State (Kyaingtong)		Mongyan	Mongyu RHC
	Shan State (Loikaw)		Kuitkhai	Namphaka RHC
	Rakhine State		Myaypon	Yetchaung RHC
			Pauktaw	Kyauktaung SH

NTP established 30 SCCs since 2006 with the support of 3DF in 2008-2009. Currently 29 SCCs were functioned in 2010 with the funding of 3DF year 3 & 4. They are 7 SCCs in Sagaing Region (Minkin, Ayardaw, Myinmu, Wuntho, Pinlaebu,

Kalaewa, Yinmabin), 6 SCCs in Mandalay Region (Patheingyi, PyinOoLwin, Nyaung U, Meikhtila, Mahlaing), 2 SCCs in Magway Region (Taungdwingyi, Pwintphyu), 3 SCCs in Southern Shan State (Hopone, Namsam, Pindaya), one in Eastern Shan State (Mongyaung), one in Northern Shan State (Kutkhai), 3 SCCs in Yangon Region (Thanlyin, Thonegwa, Kawhmu), one in Ayeyawady Region (Kyonepyaw), 2 SCCs in Rakhine State (Myaepon, Pauktaw) and 2 SCCs in Kayah State (Demawsoe, Phrusoe). Ten SCCs are from 10 low performance townships.

In 2010, SCC could cover 19% of total population in the selected townships. SCCs could detect 1,297 smear positive TB patients out of 10,657 suspected patients in 2010. Contribution of SCCs to smear positive TB cases detection of those townships was (41.2%) (1294/3150). Sputum positivity rate of SCC was about (8%) while it was (15%) at township level. The cost for one examined case was **3,354 Kyats** and there was about **54,857 Kyats** for smear positive case. It seemed to be not cost effective in some areas.

After the review of SCCs activities, NTP assumed highly infectious cases in the community could be reduced by SCCs. SCCs were utilized more by older age group and females. There was still low community awareness and weak utilization and motivation. NTP must improve the standardized recording and reporting system for SCCs.

Human resource situation in TB laboratories

The human resource at the NTRL and Upper Myanmar TB Laboratory is limited to be able to perform the culture and DST work, quality check, supportive supervisory visits and training as necessary. Both laboratories need additional microbiologists and laboratory technicians to do the rapid diagnostic tests.

Regional and State TB Laboratories: Sittwe, Monywa, Myeik, Lashio, Magway, Kyaingtong, Myitkyina and Loikaw have no sanction posts for a Grade I laboratory technician. All Regional and State level TB laboratories should be appointed at least one Grade I and II laboratory technicians. Those townships with TB team have one Grade II laboratory technician. Townships without TB team use a laboratory technician either from NTP or general health services/ township hospital for sputum for AFB microscopy.

For reaching the unreach TB suspected cases, expansion of TB Microscopy services is suggested. Public Health Supervisors II (PHS II) or natives (10th. Standard passed) from those places should be trained for sputum AFB Microscopy and used in expanded microscopy centers.

Biosafety level 3 laboratories and Rapid TB diagnostic tests

In 2008, UNITAID, an international facility for the purchase of drugs and diagnostics for HIV/AIDS, tuberculosis and malaria, approved funding for a project to accelerate access to diagnostics for patients at risk of multidrug-resistant tuberculosis (MDR-TB) in 27 countries, including Myanmar.

The EXPAND-TB (Expanding Access to New Diagnostics for TB) Project has collaboration between the World Health Organization (WHO), the Global Laboratory Initiative (GLI), the Foundation for Innovative New Diagnostics (FIND) and the Stop TB Partnership Global Drug Facility (GDF). To date, UNITAID has contributed with US\$ 87.6 million to EXPAND-TB. The overall goal of the five-year Project is to narrow the huge diagnostic gap in MDR-TB control by expanding and accelerating access to new and rapid diagnostic technologies within appropriate laboratory services at country level, accompanied by the necessary know-how for technology

transfer and ensuring these new technologies are properly integrated within TB control programme. Therefore, Myanmar got a chance to upgrade the diagnosis of TB/MDR-TB rapidly in NTRL and Upper Myanmar TB Reference Laboratory.

On 12-7-2010, Biosafety level 3 TB laboratory (BSL-3 laboratory) was inaugurated at the National Tuberculosis Reference Laboratory, Aung San TB Hospital Compound, Insein, Yangon. H.E Professor Kyaw Myint, Minister, Ministry of Health, chaired the opening ceremony, which was attended by Deputy Minister Professor Paing Soe, Director General, Department of Health, Deputy Director General, Disease Control, Directors, Professors, Medical Superintendents, chairman of the Regional Health Committee (Yangon Region), WHO Acting Representative Ms Margareta Skold, and Dr Giorgio Roscigno, Chief Executive Officer from FIND. The BSL-3 laboratory was also opened in Mandalay.

UNITAID has financially supported the EXPAND-TB project to upgrade the laboratory capacity at the National TB Reference Laboratories in Yangon and Mandalay. The supplies and reagents will be supported for 3 years (2009-2011). FIND allotted budget for Myanmar is ~ 2.75 million USD for 3 years. Infrastructure renovation was contributed by MOH (59,000,000 Kyats). Extensive technical support has been provided by FIND, while WHO has facilitated the importation of all the equipment and supplies and has ensured coordination of the Project in Myanmar.

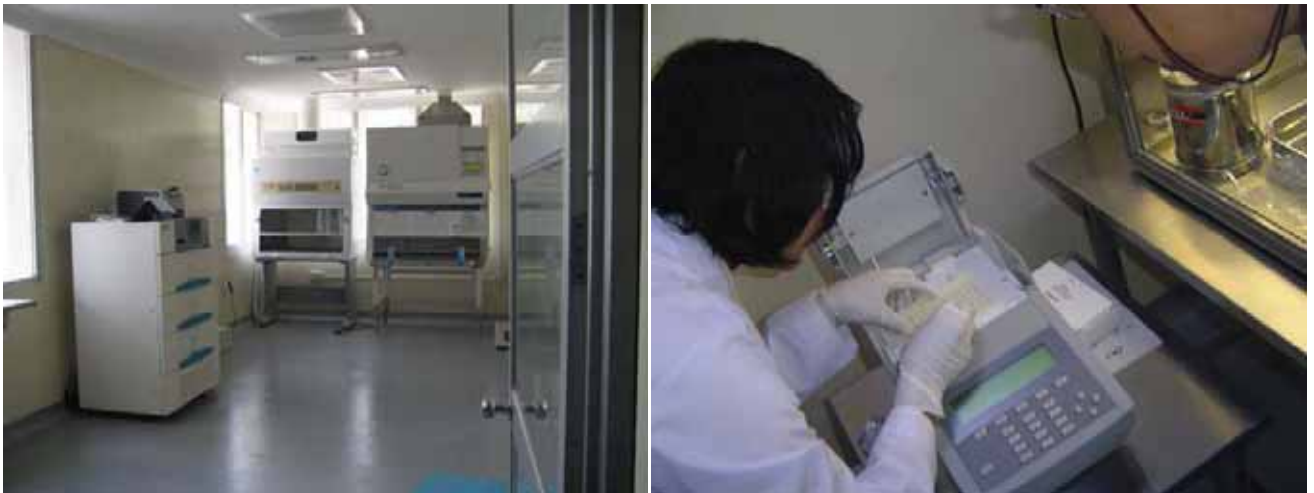
The new TB diagnostic tools include liquid culture, first-line drug susceptibility testing, rapid immunoassay for species identification and line probe assay for rapid diagnosis of MDR-TB. It is beneficial for TB patients since MDR-TB diagnosis can be confirmed within 3 days with line probe assay or within 3 weeks by using liquid media, compared to the 2-3 months by solid culture and drug sensitivity testing.



Opening ceremony of Biosafety Level-3 Laboratory (12-7-2010), Yangon



Handing over ceremony from FIND to Ministry of Health



Liquid culture and drug sensitivity testing laboratory and using Line Probe Assay for detection of MDR-TB

Table 7. Equipment and supplies received from FIND

Sr. No.	Items	No. received	Cost in USD
1	Air Pressure Systems	2 sets	286,000
2	Supplies and Equipment (BACTEC 960 MGIT Machine, Thermocycler, DNA work station, Twincubator, 80 KVA Generators, iLED Microscopes, test kits)	2 sets	454,000
3	Trainings (Oversea and In-country)	1 oversea and 1 in-country, on the job training	50,000
4	Mentoring visit by FIND Experts	2	

4.1.3 Provide standardized treatment with supervision, and patient support

Treatment

In 2010, altogether 325 townships were implementing DOTS strategy. The treatment regimen was changed to category I regimen (2HRZE/4HR) for adult new smear negative TB patients, extra-pulmonary TB patients less severe forms. The category III regimen was remained for treating TB in children as (2HRZ/4HR).

Township Medical Officers (TMOs) and TB coordinators of DOTS townships take all the responsibilities of TB control activities. In townships with TB team, team leaders (Medical Officer or Health Assistant) are serving as TB coordinators and where there are no TB teams, Township Medical Officers or assigned health personnel are serving as TB coordinators.

For each and every patient, there is a DOT provider. DOT providers are selected either from local BHS or Voluntary Health Workers or members of Non Governmental Organization (NGOs), especially MMCWA, MWAFA, MRCS or family members of the TB patients. All BHS and some pre-selected NGO members are trained when the particular township started the DOTS strategy implementation. DOT providers from community could serve as close to the patient as possible to ensure that patient's adherence to the full course of treatment.



Directly observed treatment

The treatment adherence is aimed to be improved when NTP introduced 4-Fixed Dose Combination (FDC) in 2004. BHS are assigned as DOT supervisors and decentralization of the anti-TB drugs is strengthened. Pre-packed patient kits were introduced to 38 townships since 2007. The effective utilization of pre-packed patient kits was evaluated in 2009 and distributed to all over the country in 2010.

Pediatric formulation for management of TB in children has been supported by UNITAID through GDF since 2007. Standard Operation Procedure for management of TB in children was developed and distributed to TMOs, TB coordinators and pediatricians in trainings at central / State/Regional levels.

The adherence of treatment for drug resistant TB patients is more important in pilot DOTS-PLUS project. The BHS took the burden to act as DOTS-PLUS providers for patients on second line anti-TB drugs in 2009-2010.

4.1.4 Ensure effective drug supply and management

Drugs, laboratory supplies and equipment for National Tuberculosis Programme are mainly supplied by WHO, GDF, 3DF and Ministry of Health. Quarterly drug distribution system is using in NTP. Central TB medical store, Yangon distributes to Upper and Lower Myanmar stores according to case load. Upper Myanmar store has to distribute nine Regional and State TB Centers (Mandalay, Magway, Shan (S), Shan (E), Shan (N), Kayah, Chin, Kachin and Sagaing) and Lower Myanmar store distributes seven Regional and State TB Centers (Yangon, Ayeyarwaddy, Mon, Kayin, Bago, Rakhine and Tanintharyi). Upper and Lower Myanmar stores distribute to Regional and State level according to case load of their quarterly reports. The Regional and State level distributes to townships quarterly according to their case load of previous quarter. At township level, TMOs distribute monthly to RHC level. Implementing partner: PSI collects drugs from Lower Myanmar TB store, Yangon and distributes to their PPM Scheme III clinics. MSF-Holland collects drugs from the either Regional and State level or township level where they are implementing.

Standard Operating Procedure (SOP) for Drug and supplies management was developed and conducted training on drug and supplies management for TMOs and TB coordinators in 2008. Drug transportation cost were provided by 3DF (from airport warehouse to central TB store, central store to Upper/Lower Myanmar stores, Upper/Lower Myanmar stores to State/Regional level TB stores and up to township level). Laboratory supplies, reagents and equipment are distributed from Regional and State TB Centers to DOTS townships.

GFATM supported 2 X-ray machines (500mA) and 11 X-ray machines (63-200mA) which were installed at all Regional and States TB Centers except Shan State (Kyaington) TB Centre. X-ray machines at Kachin state and Bago Region (Bago) were not functioning for about one year. X-ray films, fixer and developer were supported by WHO and 3DF to improve case finding.

NTP received first line anti-TB drugs from Global Drug Facility (GDF) for 7 years, which was ended in 2009. The drugs for 2010 were supported by 3DF. The drugs and supplies are distributed in quarterly basis according to the needs based on previous quarter registered case load. The drugs received from all sources are kept in the central TB store, Yangon and distributed to Upper and Lower Myanmar TB stores quarterly, from which Regional and State TB centers are distributed. Townships have to indent to the concerning Regional and State TB centers together with quarterly case finding report.

The supervisors are checked whenever they supervise the township level on effective utilization of drugs and supplies according to the SOP.



Inspection and checking of received drugs under Japanese Grant Aid (2010-2011)

4.1.5 Monitor and evaluate performance and impact

Regional and State TB Centers are led by Regional and State TB Officers and they give technical support to the Regional and State level, district and township level TB control activities. They also give training, on-the-job training, supervision, monitoring and feed back to improve the TB control activities. NTP activities are closely supervised by Central Supervisory Committee for prevention and control of TB chaired by Minister for Health, Ministry of Health.

NTP is using standardized recording and reporting system at all levels. The reports from basic DOTS units send to Township to Region/State level and the Regional/State TB reports are compiled and send to central level. All the reports receive at central level are verified and put into the computer for final compilation. All the implementing partners also provide reports. At the central level, all the reports are monitored, evaluated and provided feedback to the appropriate level. NTP central level also evaluate the performance and impact using long term trends on case finding and notified age and sex distribution of patients.

Regular monitoring of patients' progress is carried out at every DOTS township. Desk top monitoring on case finding, sputum conversion and treatment outcomes through quarterly reports is carried out at all levels. Feed-back mechanism from top to bottom using quarterly assessment form is carried out.

The capacity and skill for proper data management and information management system is improved by providing several training every year.

Supervision

Supervisory visits were conducted by Central/Regional/State and District/Township level supervisors. Laboratory supervision was strengthened by recruiting STLS from general health services.

Supervisors from NTP central supervised to 11 Regional and State TB centers in 2010 and visited to 17 districts, 26 townships and 2 PPM hospitals.

NTP Regional and State level supervisors could conduct 65 supervisory visits to districts and 177 visits to township level and 40 visits to either station hospitals or RHC in 2010 with the support of WHO and 3DF. Microbiologists visited 24 times and STLS visited 186 times. They are doing as a routine and more emphasized on townships with major errors according to feed back from laboratory EQA system.

In 2010, according to the recommendation of National Annual TB Evaluation meeting, NTP tried to strengthen the supervision to the township level with the support of WHO/3DF. 8 Assistant Programme Officers (APO) were hired using WHO/3DF fund and supervised the all TB control activities including 3DF funded activities. APOs could conduct 189 supervisory visits in 2010-2011.



Supervisory visit to Kawthaung District TB team

Table 8. Supervision from Regional and State level (2010)

Sr.No	Supervision from Regional/State level	No. of visits							
		From Region/State level				From District level		Asstant Programme Officer	
		Districts	Township	HC	PPM hospital	Tsp	HC	Tsp	HC
	Central	17	26		2				
1	Kachin State	2	4			3	2	9	
2	Kayah State	2				3		3	
3	Chin State							2	
4	Sagaing Region	3	2	1		7		23	
5	Magway Region	4	7	14				21	1
6	Mandalay Region	6	25	10			0	28	
7	Shan State	3	14			3		14	3
8	Shan State (Kyaingtong)							4	
9	Shan State (Lashio)	5	9	1				12	
10	Kayin State	4	2			1	3	7	4
11	Tanintharyi Region	3	9	1		7	3	7	
12	Bago Region	4	17			25		15	
13	Mon State	1	11	7		3	1	11	1
14	Rakhine State	4	13			13	4		
15	Yangon Region	2	27	4	4			22	
16	Ayeyarwady Region	5	11	2		4	6	11	
	Total	65	177	40	6	69	19	189	9

Table 9. Supervisory visits to laboratories (2010)

Sr. No.	Region/State	Supervision by Microbiologists	Supervision by STLs
1	Kachin State	5	10
2	Kayah State		4
3	Chin State		7
4	Sagaing Region		18
5	Magway Region		22
6	Mandalay Region	7	10
7	Shan State (Taunggyi)		14
8	Shan State (Kyaingtong)		9
9	Shan State (Lashio)		17
10	Kayin State		6
11	Tanintharyi Region		8
12	Bago Region	2	20
13	Mon State		9
14	Rakhine State		14
15	Yangon Region	10	10
16	Ayeyarwady Region		8
	Total	24	186

Evaluation

The half yearly evaluation meetings at Regional and State level, and quarterly evaluation meetings at low performance townships were carried out to assess the TB control activities and seek for the possible solutions at local level. Achievement was also evaluated by Regions and States and townships to identify the problems and constraints facing in different localities at different levels for corrective actions and identified the possible solutions for the future plan.



National annual TB evaluation workshop opening session, 21-7-2010

National annual TB evaluation workshop on NTP activities for 2010

National annual TB evaluation workshop was held at meeting Hall of Ministry of Health, Nay Pyi Taw from **21-7-2010** to **22-7-2010** with the support of WHO/USAID. 117 participants attended the meeting.

The opening speech was delivered by Dr. Thein Thein Htay, Deputy Director General (Public Health) on behalf of Director General, Department of Health. She mentioned about the achievement of NTP regarding the Stop TB Strategy. She mentioned the importance of continuous supply of quality-assured anti-TB, introduction of fluorescent microscopy for TB diagnosis, findings of Laboratory External Quality Assurance System, updates on Culture and Drug Susceptibility Testing (DST), assessment on (30) sputum collection centers, expansion of new microscopy centers to Station Hospitals and mobile team activity in hard to reach areas. She described on the effective usage of patient kits and change of drug regimen to treat new smear negative TB patients, new extrapulmonary patients, not severe forms, adult TB patients and updates on monitoring system for TB control activities.

She also highlighted on TB/HIV collaborative activities conducted in (11) townships and about 2,000 TB/HIV co-infected patients are receiving ART, 10 new VCCT sites established in 2010, progress of Isoniazid Preventive Therapy (IPT) pilot project conducted in 9 project townships and finding of routine TB/HIV sentinel surveillance was conducted in 20 sites. She also mentioned about DOTS – Plus Pilot Project for management of MDR-TB patients which was launched in July, 2009 and more than 100 patients were put on treatment. She pointed about the importance of rapid test to diagnose TB, MDR-TB and provided information on opening of Biosafety level-3 laboratory for liquid culture and drug sensitivity testing for first line drugs.

She also stated the Health System Strengthening activities and manpower development. She described about PPM-DOTS conducting in 4 hospitals in Yangon and expansion to Insein General Hospital. She pointed out that about (1,500) private practitioners involved in TB control activities under PSI, MMA and MSF-Holland and the partner's contribution to TB case detection was about 15%. Regarding the Strategy (5) Empower people with TB and community, she described the activities such as ACSM workshop conducted at Nay Pyi Taw, Community-based DOTS conducted in some townships with other partners. She stressed on the 2 nationwide surveys (National TB Prevalence Survey and Nationwide TB KAP Survey) that NTP could successfully conducted and the important of results of the survey were widely disseminated for the improvement of programme. She pointed out that overall achievement had reached the Global TB target but some Regions and States had not reached the targets yet, and thus she suggested to make more efforts in those Regions/States.

Finally, she insisted on all participants to discuss the experiences as well as to provide the suggestions and personal opinions to strengthen the programme and for future TB control activities.

Recommendations of National Annual TB Evaluation meeting (2010)

1. To conduct supervisory visits at all levels as planned and to be closely monitored and guided by the State/Regional Health Directors
2. To strengthen the laboratory external quality control system related to sputum microscopy in Myanmar

3. To improve the quality of data at the township level and timely reporting of complete TB control information including implementing partners from township level to NTP
4. To strictly follow the SOP on drug and supply management especially for pre-packed patient kits
5. To raise TB control activities in those States: Chin, Kayah, Shan(S) that do not meet the targets by using specific innovative strategies
6. To conduct quarterly township coordinating meeting at township level and report to Region /State and central levels
7. To evaluate the PPM DOTS implementation for future scale up
8. To develop appropriate township micro-plan on TB control activities every year
9. To initiate the community empowerment activities in TB control
10. To conduct joint supervision as well as cross referral linkage between NTP and NAP
11. To provide monthly report on TB control activities from partners to Region/State level

Annual TB laboratory evaluation meeting was conducted at meeting hall of National Health Laboratory, Yangon on 10-9-2010 with the support of JICA(MIDCP), Seventy participants attended the meeting chaired by Dr. Nay Win, Director (Lab.). The performance of STLSs and microbiologists were presented in the meeting and discussed for the future. The meeting recommendations are as follows:



National Annual TB Laboratory evaluation meeting

Date: 10/9/2010 at NHL Yangon

1. To provide additional human resources for NTRL and Upper Myanmar TB Reference Laboratory, Mandalay Region.
2. To fill up the vacant laboratory posts at all level as early as possible. First priority is Taunggoo township, Kawthaung township.
3. To strengthen laboratory supervision as per plan laid down Retreat Meeting to lessen major error rate and send the advanced tour plan and supervision report to Director of National Health Laboratory and Program Manager.
4. To ensure the sending of QC slides monthly and regularly to Regions/State QA center.
5. To include EQA results of all levels in quarterly EQA report. (sub-tsp labs, station hospital labs and expanded microscopy centers)
6. To obtain better utilization, sputum collection centers should be performed rotationally at all rural health centers in respective Regions and States.
7. To strictly follow the laboratory infection control guidelines including waste disposal at all levels

Regional and State TB evaluation meetings

Annual Regional and State level TB evaluation meetings were carried out at all Regions / States. The activities were conducted with the support of WHO/USAID and bi-annual Regional TB evaluation meetings in Yangon and Mandalay Regions with the support of JICA (MIDCP). JICA (MIDCP) also supported Township quarterly evaluation meetings conducted at 10 low performance townships of Yangon and Mandalay Regions.

Some townships also conducted Township quarterly TB evaluation meetings without cost.

Cohort review meetings were also conducted in 30 low performance townships funded by 3DF.



Regional TB evaluation meeting



Township TB evaluation meeting

Table 10. TB Evaluation meetings at Regional /State level (2010)

State/Regional level	Date	No. of participants	Remarks
Kachin State	14.10.2010	33	
Kayah State	8.10.10	14	
Shan State (Taunggyi)	17.9.2010	52	
Shan State (Kyaingtong)	25.10.2010	20	
Shan State (Lashio)	20.11.2010	45	
Mon State	5.10.2010	31	
Kayin State	13.11.2010	16	
Rakhine State	12.10.2010	38	
Mandalay Region	26-27.10.2010	93	Biannual evaluation meetings with support of JICA
Yangon Region	20.10.2010	116	
Sagaing Region	5.10.2010	83	
Magway Region	18.9.2009	59	
Bago Region	16.9.2010	30	
Bago Region (Pyay)	1.10.2010	28	
Ayeyarwaddy Region	7.10.2010	52	
Taninthayi Region	13.10.2010	25	

The quarterly evaluation meeting conducted at the township level is very effective. The HA have to present about their RHC and it's TB control achievement in the quarter and TMO guided according to their needs compared to the other RHCs. BHS can also learn from each other. After one year, improvement was observed,

especially in JICA (MIDCP) supported townships and NTP changed the resources to other low performance townships. However, previous townships continue the meeting without cost.



JICA (MIDCP) supported township quarterly TB evaluation meeting in Taungtha

4.2. Address TB/HIV, MDR-TB and the needs of poor and vulnerable population

4.2.1 Implement collaborative TB/HIV activities

Table 11. TB/HIV collaborative activities (2010)

	Mandalay 7 townships	Myitkyina township	Taunggyi township	Lashio township	Pakkoku township	Total
No. of registered TB patients (≥ 15 years)	2710	1073	471	649	323	5226
No. of VCCT accepted & HIV tested	2229	550	328	367	323	3797
% of VCCT tested	82%	51%	70%	57%	100%	73%
No. of HIV sero positive among tested	686	106	45	16	62	915
% of HIV positive among tested TB patients	31%	19%	14%	4%	19%	24%
No. of TB/HIV patients started on CPT *	663	106	104*	77*	121*	1071*
No. of TB/HIV patients started on ART	639	20	71	0	169	899

* No. of patients on CPT was more than HIV positive detected was due to some patients who tested and positive from other places were included.

Voluntary Counseling and Confidential HIV Testing (VCCT) service is providing in TB clinics of 11 townships and about 24% of TB patients above ≥ 15 years were HIV positive. The number of TB patients tested for HIV was reduced in Mandalay district (it was 91% in 2009) after decentralization to township level. No. of TB/HIV patients started on ART increased from 608 in 2009 to 899 in 2010. However, the recording and reporting is needed to be improved in this area.

Isoniazid Preventive Therapy (IPT) pilot project was implemented 9 townships and 'Annual evaluation meeting on IPT' was conducted on 21-6-2010 and Dr. Puneet Dewan, Consultant from SEARO attended the meeting. The meeting recommendations included to develop standardized TB/HIV recording/reporting, incorporated TB/HIV minimum package at the township level, to circulate the composition of central TB/HIV coordination committee, to develop the infection control plan for both programmes, to conduct joint monitoring visit at least twice a year, to organize internal study tour at TB/HIV sites by NAP&NTP teams. Based on that NTP provided 'Resensitization training on IPT in Mandalay' on 13-8-2010.

Providers' Initiated Counseling and testing was expanded to 10 more sites with the support of 3DF through NAP/UNFPA. They are 4 townships in Yangon (Thanlyin, Insein, North Okkalapa and Kyimyindaing), 3 townships in Bago Region (Bago, Pyay and Tounggu), Monywa from Sagaing Region, Magway from Magway Region and Mawlamyine from Mon State in 2010. HIV tested among registered TB patients was 31% and the HIV positive among tested was 12%.

Table 12. VCCT services in 10 new sites (2010)

	Yangon Region (4 townships)	Bago Region (3 townships)	Sagaing Region (Monywa)	Magway Region (Magway)	Mon State (Mawlamyine)	Total
No. of registered TB patients (>14 years)	1510	2075	106	248	315	4040
No. of VCCT accepted & HIV tested	645	371	51	55	284	1406
% of VCCT tested	42.7%	18%	48%	22%	90%	34.8%
No. of HIV sero positive among tested	64	60	4	5	23	156
% of HIV positive among tested TB patients	9.9%	16%	7.8%	9%	8%	11%
No. of TB/HIV patients started on CPT		76	12	5		93
No. of TB/HIV patients started on ART		8	2			10



Training for expansion of Integrated HIV Care project, NAP/NTP/UNION



Screening using the questionnaire to exclude active TB for Isoniazid prophylaxis



Joint supervision for Integrated HIV Care project

Integrated HIV Care Project (IHC) was expanded to Taunggyi and Lashio townships in 2009 and to Myingyan, Meikhtila and Monywa in 2010.

4.2.2 Implement prevention and management of MDR-TB

TB/ MDR-TB could be prevented by strengthening of the DOTS services at all levels. In 5-year National Strategic Plan for TB, NTP is planning to treat 400, 600, 800, 1000 and 1200 MDR-TB patients in each year totaling 4000 patients by 2015. The second line anti-TB drugs will be supported by Global Fund Round 9 starts from 2011 and will be complemented with MSF-Holland. First cohort started MDR-TB treatment in July 2009 will end up in July 2011 and will see the outcome of the MDR-TB treatment regimen piloted in Myanmar. The second line drug sensitivity testing is doing by sending the specimens to Supra National TB Reference Laboratory of Thailand.

Till end of December, 2010, NTP enrolled (192) MDR-TB patients from 10 pilot townships based in 2 TB hospitals, Aungsan and Patheingyi. From July, 2009 to May, 2011, total 264 MDR-TB patients registered and put on treatment, i.e. Yangon enrolled 229 MDR-TB patients and 35 MDR-TB patients from Mandalay.

The sputum smear and culture conversion rates of MDR-TB patients were satisfactory. If they were alive during treatment, sputum smear conversion rate was 100% in 6th month for Mandalay and 83% in 8th month for Yangon. **100% Culture Conversion Rate was obtained in these patients at 6th month and 8th month in Mandalay and Yangon respectively.**

The overall case fatality rate was 12.5% (11.8% for Yangon and 17.1% for Mandalay) and defaulter rate was 6% in 264 registered patients.

When causes of death were analysed for 39 deaths (33 during treatment, 6 before treatment), 54% was due to respiratory failure, 10% each died of either Haemoptysis or Renal failure or diabetes and it's complications, 5% each died of either encephalopathy or suicide or electrolyte imbalance.

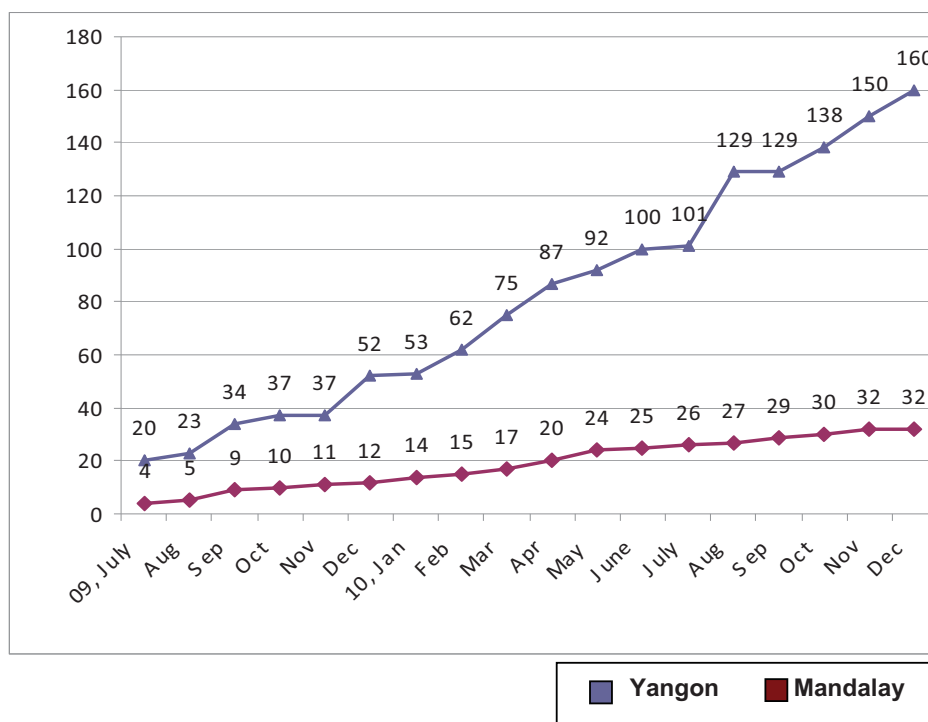


Figure 1. Enrollment of MDR-TB patients by month (July, 2009 to December, 2010)

Table 13. Treatment Status of MDR-TB patients (2009-2010)

	Died	Defaulted	Still on Trt.	Died before Trt.	Refused Trt.	Failure	Total
Yangon 5 townships	27	15	179	6	1	1	229
Mandalay 5 townships	6	1	28	0	0	0	35
Total	33 12.5%	16 6%	207 78.4%	6 2.3%	1 0.4%	1 0.4%	264

4.2.3 Address the needs of TB contacts, poor and vulnerable populations

According to WHO guidance, NTP focuses on treating TB in children and treated 23.6% (32471/137403) children in 2010. NTP also focus on tracing TB contacts by BHS and if they identified TB suspected contacts examined the sputum for AFB.

NTP is providing TB investigation using microscopy and if smear positive, treating with appropriate regimen for prisoners in all TB centers where prisons are located. In some big prison like Insein central prison, sending medical doctor for examination and supervised on treatment. In Taunglaylone prison, Shan State, with the arrangement of State, combined effort of NAP and NTP could initiate the treatment for both TB and HIV.

TB control activities for poor and vulnerable populations like, migrants at border areas (Myawaddy, Tarchileik) with the support of 3DF. BHS and community volunteers were trained to improve case finding. TB case management at the border area was strengthened in collaboration with neighboring countries.

Most of the implementing partners are working for poor and vulnerable populations such as : AHRN for IDUs, Malteser for migrants and poor in Buthedaung and Maungtaw border area, MSF-H in Kachin State (Myitkyina, Pharkant etc.) for migrant workers, IOM for migrants in Mon State and World Vision, Myanmar for childhood TB. They all providing patients' support during treatment to compensate the economic loss of TB patients and their families.

4.3. Contribute to health system strengthening based on primary health care

4.3.1 Improve health policies, human resource development, financing, supplies, service delivery and information

Capacity building of NTP staff

NTP integrated the TB control activities to primary health care services. Trainings on Management of TB at District level and health facility using the translated and revised WHO modules have been conducted since 2006 with the support of GFATM, JICA and WHO. Those trainings were continued in 2007-2010 with the support of 3DF. For capacity building of laboratory technicians, new recruit laboratory technicians were provided refresher training as required.

Regular training on TB control was given at all Medical Universities, Training Schools of midwives and lady health visitors.

For improvement of the quality of DOTS services to reach all TB patients, all of the planned trainings under 3DF were conducted except 2 courses of "Health Leadership and Management Training for TMOs and Disease Control Team Leaders in Region/State" which were shifted to 3DF Year 4 period.



Group work session in training for new recruits on TB control management at district level



Dr. Saw Lwin, Deputy Director General delivering the opening speech on the Training on “TB control management at district level” chaired by

For improving patients’ treatment adherence counseling training were provided after development of guideline for TB counseling. These training could cover not only for TB treatment but also for TB/HIV and MDR-TB treatment.



Counseling training

Table 14. Training activities in 2010 under 3DF funding

TRAINING	Planned	Completed	Achievement
Training on DOTS TB Counseling for Social Workers/Counselors and Nurses (3 days course)	18 courses	26 courses	144%
Training on Management of TB at District level for New Recruit TMO, TB Team Leaders and TB Coordinators (5 days course)	2 courses	2 courses Taunggyi Mandalay	100%
Training on TB Data Management at District Level (3 days course)	2 courses	2 courses Sittwe Mawlamyine	100%
Training on management of TB at health facility level for BHS (3 days course) including additional training conducted with reprogrammed 3DF budget	65 courses	76 courses	117%
Training on sputum microscopy for new recruit lab. technicians (5 days course)	2 courses	2 courses Yangon Mandalay	100%
Refresher training on sputum microscopy for Grade II lab. technicians (3 days course)	2 courses	2 courses Yangon Taunggyi	100%
Training for Senior TB Laboratory Supervisors (STLS) (5 days course)	1 course	1 course Yangon	100%
Training on Cohort Review for TMOs and TB coordinators (2 days course)	2 courses	4 courses Kyaingtong Sittwe Magway Shwebo	200%
Health Leadership and Management Training for TMOs and Disease Control Team Leaders in Region/State (5 days course)	2 courses	NIL	0%
Training on pre-packed patient kits for basic health staff including (2 days course)	17 courses	17 courses	100%
DOTS PLUS – MDR-TB management			
Refresher Training on MDR TB counseling for social workers/counselors and nurses (3 days course)	2 courses Yangon Mandalay	2courses Yangon Mandalay	100%
Refresher Training on Management of MDR TB for TB Hospital Staff/ Programme Staff (2 days course)	2courses Yangon Mandalay	2courses Yangon Mandalay	100%

At the end of 2010, altogether 172 trainings were conducted by NTP under the funding of 3DF, WHO and JICA. Out of which 151 training were funded by 3DF and the others were funded by WHO and JICA. NTP staff also involve in the trainings of other implementing partners as technical experts.

Total number of BHS trained on TB control at health facility level in 2010 was 2,858. Total number of different categories of trainees in all training were 4,998 in 2010.

Table 15. Training Activities of National Tuberculosis Programme (2010)

Sr. No	Venue	Training Period		Participants list			Funding
		from	to	Male	Female	Total	
Training on management of TB at district level for new recruit							
1	Mandalay	15.11.10	19.11.10	12	18	30	3DF
2	Naypyitaw	4.10.10	8.10.10	8	23	31	3DF
3	Naypyitaw	6.12.10	10.12.10	16	14	30	3DF
4	Taunggyi	21.3.10	25.3.10	10	20	30	3DF
5	Yangon	11.10.10	15.10.10	3	21	24	3DF
6	Mandalay	3.5.10	7.5.10	14	16	30	3DF
Sub total				63	112	175	
Training on Management of TB at Health Facility Level for BHS at RHCs							
7	Mongkaing	8.2.10	10.2.10	8	22	30	3DF
8	Paukkaung	25.2.10	27.2.10	9	21	30	3DF
9	Sintkuu	15.2.10	17.2.10	8	22	30	3DF
10	Salin	17.2.10	19.2.10	7	23	30	3DF
11	Paukkaung	18.2.10	18.2.10	7	23	30	3DF
12	Salin	20.2.10	22.2.10	8	22	30	3DF
13	Sintkuu	22.1.10	14.2.10	8	22	30	3DF
14	Kyeethee	22.2.10	24.2.10	7	23	30	3DF
15	Salin	23.2.10	25.2.10	10	20	30	3DF
16	Shweku	15.2.10	17.2.10	6	24	30	3DF
17	Shweku	18.2.10	20.2.10	8	22	30	3DF
18	Kyaungkone	10.3.10	12.3.10	12	26	38	3DF
19	Kyaungkone	13.3.10	15.3.10	15	24	39	3DF
20	Kyaukse	1.3.10	3.3.10	11	19	30	3DF
21	Kyaukse	5.3.10	6.3.10	9	21	30	3DF
22	Kyarinseikkyi	29.3.10	31.3.10	8	22	30	3DF
23	Minhla	8.3.10	10.3.10	18	12	30	3DF
24	Minhla	11.3.10	13.3.10	6	20	26	3DF
25	Gyopingouk	8.3.10	10.3.10	7	23	30	3DF
26	Gyopingouk	11.3.10	12.3.10	10	20	30	3DF

Sr. No	Venue	Training Period		Participants list			Funding
		from	to	Male	Female	Total	
27	Taunggoat	2.3.10	4.3.10	6	24	30	3DF
28	Taunggoat	5.3.10	7.3.10	8	22	30	3DF
29	Gwa	9.3.10	11.3.10	10	20	30	3DF
30	Gwa	12.3.10	14.3.10	10	18	28	3DF
31	Sinpaungwae	1.3.10	3.3.10	5	25	30	3DF
32	Sinpaungwae	4.3.10	6.3.10	7	17	24	3DF
33	Chibwe	3.3.10	5.3.10	10	20	30	3DF
34	Pantanaw	28.4.10	30.4.10	15	29	44	3DF
35	Myitkyina	1.4.10	3.4.10	1	31	32	3DF
36	Magway	5.5.10	7.5.10	15	21	36	3DF
37	Magway	8.5.10	10.5.10	16	23	39	3DF
38	Magway	11.5.10	13.5.10	19	19	38	3DF
39	Homemalin	5.5.10	7.5.10	14	20	34	3DF
40	Homemalin	8.5.10	10.5.10	12	22	34	3DF
41	Phoungpyin	12.5.10	14.5.10	9	33	42	3DF
42	Kantbalu	1.7.10	3.7.10	12	18	30	3DF
43	Madaya	17.5.10	19.5.10	11	22	33	3DF
44	Madaya	20.5.10	22.5.10	15	18	33	3DF
45	Yathedaung	3.5.10	5.5.10	3	22	25	3DF
46	Yathedaung	7.5.10	9.5.10	6	18	24	3DF
47	Kyauktaw	11.5.10	13.5.10	5	25	30	3DF
48	Kyauktaw	14.5.10	16.5.10	4	26	30	3DF
49	Minbya	17.5.10	19.5.10	1	34	35	3DF
50	Minbya	20.5.10	22.5.10	8	25	33	3DF
51	Laukkai	21.5.10	23.5.10	11	14	25	3DF
52	Oakpho	17.5.10	19.5.10	14	16	30	3DF
53	Oakpho	20.5.10	22.5.10	12	18	30	3DF
54	Pantanaw	1.5.10	3.5.10	15	25	40	3DF
55	Nyaungdon	10.5.10	12.5.10	15	17	32	3DF
56	Nyaungdon	13.5.10	15.5.10	17	22	39	3DF
57	Yekyi	24.5.10	26.5.10	14	27	41	3DF
58	Yekyi	27.5.10	29.5.10	16	31	47	3DF
59	Minbya	17.5.10	19.5.10	1	34	35	3DF
60	Yenanchaung	20.5.10	22.5.10	4	20	24	3DF
61	Yenanchaung	23.5.10	25.5.10	9	19	28	3DF
62	Yenanchaung	26.5.10	28.5.10	14	21	35	3DF

Sr. No	Venue	Training Period		Participants list			Funding
		from	to	Male	Female	Total	
63	Thayat	20.5.10	17.5.10	7	22	29	3DF
64	Minhla	21.6.10	23.6.10	12	18	30	3DF
65	Minhla	24.6.10	26.6.10	14	16	30	3DF
66	Maukmal	28.6.10	30.6.10	12	18	30	3DF
67	Aunglan	3.6.10	5.6.10	10	20	30	3DF
68	Aunglan	6.6.10	8.6.10	12	23	35	3DF
69	Myothit	10.6.10	12.6.10	17	13	30	3DF
70	Myothit	13.6.10	15.6.10	15	20	35	3DF
71	Taungdwingyi	25.6.10	27.6.10	14	21	35	3DF
72	Taungdwingyi	28.6.10	30.6.10	13	17	30	3DF
73	Salingyi	9.6.10	11.6.10	7	21	28	3DF
74	Salingyi	14.6.10	16.6.10	11	18	29	3DF
75	Kyuhla	24.6.10	26.6.10	12	17	29	3DF
76	Kantbalu	28.6.10	30.6.10	8	31	39	3DF
77	Loikaw	8.6.10	8.6.10	0	13	13	3DF
78	Danuphyu	5.7.10	7.7.10	21	22	43	3DF
79	Danuphyu	8.7.10	10.7.10	19	26	45	3DF
80	Moenyoo	24.8.10	26.8.10	14	16	30	3DF
81	Moenyoo	27.8.10	29.8.10	6	24	30	3DF
82	Ingapu	13.9.10	15.9.10	15	17	32	3DF
83	Ingapu	16.9.10	18.9.10	12	18	30	3DF
84	Ingapu	19.9.10	21.9.10	16	15	31	3DF
85	Htigyaint	11.10.10	13.10.10	9	18	27	3DF
86	Htigyaint	14.10.10	16.10.10	5	21	26	3DF
87	Indaw	18.10.10	20.10.10	8	29	37	3DF
88	Hintada	14.10.10	16.10.10	7	28	35	3DF
89	Hintada	17.10.10	19.10.10	4	26	30	3DF
90	Hintada	20.10.10	22.10.10	5	28	33	3DF
91	Maungtaw	16.10.10	18.10.10	4	33	37	3DF
92	Maungtaw	19.10.10	21.10.10	6	27	33	3DF
93	Buthitaung	22.10.10	24.10.10	10	25	35	3DF
94	Buthitaung	25.10.10	27.10.10	8	22	30	3DF
95	Pharpon	27.10.10	29.10.10	11	11	22	3DF
96	Phruso	31.8.10	31.8.10	3	24	27	3DF
	Sub total	90		893	1965	2858	
		trainings					

Sr. No	Venue	Training Period		Participants list			Funding
		from	to	Male	Female	Total	
Re- sensitization Training on IPT							
97	Mandalay	13.8.10	13.8.10	15	16	31	3DF
Geographical Information Software (GIS) application training							
98	Naypyitaw	19.8.10	20.8.10	12	16	28	JICA
Training course on TB counseling for social workers /counselors/nurses							
99	Kyaukphyu	10.2.10	12.2.10	9	21	30	3DF
100	Thandwe	15.3.10	17.3.10	14	16	30	3DF
101	Mawlamyine	7.4.10	9.4.10	10	20	30	3DF
102	Magway	28.4.10	30.4.10	9	20	29	3DF
103	Sittwe	8.4.10	10.4.10	14	16	30	3DF
104	Thayet	15.5.10	17.5.10	7	22	29	3DF
105	Taunggyi	17.5.10	19.5.10	6	24	30	3DF
106	Kyaingtong	17.5.10	19.5.10	7	29	36	3DF
107	Myeik	12.5.10	14.5.10	10	20	30	3DF
108	Larshio	3.5.10	5.5.10	10	20	30	3DF
109	Mongyoung	12.5.10	14.5.10	10	17	27	3DF
110	Loimlin	7.6.10	9.6.10	10	20	30	3DF
111	Pakokky	21.6.10	23.6.10	9	21	30	3DF
112	Pahtein	9.6.10	11.6.10	14	16	30	3DF
113	Musel	7.6.10	9.6.10	12	17	29	3DF
114	Thaton	1.7.10	3.7.10	12	18	30	3DF
115	Linkhay	5.7.10	7.7.10	3	27	30	3DF
116	Mandalay region TB center	15.7.10	17.7.10	7	24	31	3DF
117	Meikhtilar	12.7.10	14.7.10	10	25	35	3DF
118	Bago	27.7.10	29.7.10	21	5	26	3DF
119	Yamaethin	2.8.10	4.8.10	14	20	34	3DF
120	Hintada	9.8.10	11.8.10	12	18	30	3DF
121	Dagon(north)	9.8.10	11.8.10	4	28	32	3DF
122	Pyinoolwin	10.8.10	12.8.10	8	23	31	3DF
123	Taunggu	11.8.10	13.8.10	6	23	29	3DF
124	Mandalay	23.8.10	25.8.10	1	29	30	3DF
125	Pyarpon	6.9.10	8.9.10	10	20	30	3DF

Sr. No	Venue	Training Period		Participants list			Funding
		from	to	Male	Female	Total	
126	Yangon region TB center	14.9.10	16.9.10	4	17	21	3DF
127	Pyay	8.9.10	10.9.10	6	22	28	3DF
128	Tharyarwaddy	13.9.10	15.9.10	12	18	30	3DF
129	Myitkyina	11.10.10	13.10.10	15	18	33	3DF
130	Myingyan	13.10.10	15.10.10	18	12	30	3DF
131	Myitkyina	22.11.10	24.11.10	12	18	30	3DF
132	Kalay	2.12.10	4.12.10	5	24	29	3DF
133	Loikaw	6.12.10	8.12.10	4	26	30	3DF
	Sub total			335	714	1049	
Refresher training on AFB Sputum Microscopy for laboratory technicians							
134	Pathein	8.3.10	12.3.10	3	4	7	3DF
135	Taunggyi	6.4.10	9.4.10	11	22	33	3DF
136	Monywa	18.6.10	22.6.10	2	2	4	Merlin support
137	Bago	15.7.10	17.7.10	14	17	31	3DF
138	Yangon (NTRL)	27.7.10	31.7.10	7	13	20	3DF
139	Yangon (NTRL)	28.9.10	30.9.10			21	3DF
140	Mandalay region TB center	28.9.10	30.9.10	9	16	25	3DF
Training for newly recruited laboratory technicians on AFB Sputum Microscopy							
141	Mandalay	27.7.10	31.7.10	5	15	20	3DF
142	Yangon, NTRL	27.7.10	31.7.10			24	3DF
143	Mandalay region TB center	13.9.10	17.9.10	4	10	14	JICA
Refresher training of EQA on sputum microscopy for STLS							
144	Yangon (NTRL)	21.12.10	23.12.10	14	21	35	3DF
EQA training for newly recruited STLSs							
145	Yangon	28.6.10	2.7.10	5	8	13	3DF
Training on post TB prevalence survey case control study							
146	Yangon	2.7.10	3.7.10	8	10	18	PSI
Training on fluorescent microscopy							
147	Yangon	28-2-2010				11	JICA
Training on Rapid tests for culture and drug sensitivity testing							
148	Yangon, NTRL	4-5-2010	8-5-10			7	3DF, FIND
	Sub total					283	

Sr. No	Venue	Training Period		Participants list			Funding
		from	to	Male	Female	Total	
DOTS Providers training							
149	Thanphyuzayat	29.11.10	29.11.10	0	22	22	WV
TB training							
150	Mawlamyine	16.8.10	16.8.10	0	22	22	
151	Yangon	19.8.10	20.8.10	54	0	54	Nurses from military
152	Myeik	27.10.10	27.10.10	0	30	30	WV
153	Loikaw	22.11.10	23.11.10	0	14	14	
Health Leadership and management training for TMO and team leaders							
154	Pyay	27.12.10	30.12.10	14	16	30	3DF
Training on infection control							
155	Shwepyithar	26.8.10	26.8.10	2	28	30	USAID
156	Aungsan TB hospital	27.10.10	27.10.10	10	20	30	USAID
157	Hlaing	28.12.10	28.12.10	12	18	30	USAID
Training on DOT provider							
158	Myeik	21.10.10	21.10.10	0	30	30	
159	Hlaing	29.12.10	29.12.10	7	13	20	USAID
MDR-TB training							
160	Hlaingtharyar	29.6.10	29.6.10	22	37	59	USAID
161	Mandalay	18.10.10	19.10.10	3	17	20	3DF
Refresher training of TB (PPM- DOTS)							
162	Mawlamyine	8.7.10	8.7.10	17	11	28	
163	Paung	9.7.10	9.7.10	5	4	9	
164	Monywa	4.8.10	4.8.10	8	9	17	PSI
Training on contact investigation							
165	Lanmataw	25.8.10	25.8.10	3	13	16	JICA
Refresher training for township TB coordinators							
166	Monywa	3.8.10	5.8.10	1	4	5	Merlin
Training on pre-packed patient kits							
167	Monywa	14.2.10	15.2.10	11	29	40	3DF
168	Monywa	15.2.10	16.2.10	11	31	42	3DF
169	Kyaingtone	20.2.10	21.2.10	10	10	20	3DF
Training on PPM DOTS							
170	Insein general Hospital	9.2.10	10.2.10	12	18	30	3DF

Data management training							
171	Sittwe	4.4.10	8.4.10	8	10	18	3DF
172	Mawlamyine	5.5.10	7.5.10	5	12	17	3DF
Sub total				215	418	633	
Grand Total		172 trainings				4,998	

NTP also provided "Orientation training on TB control" for 6 Assistant Program Officers on 14-6-2010 to 1-6-2010 at Nay Pyi Taw. 8 National Assistant Program Officers were recruited by WHO to assist NTP in implementation of activities under 3DF Year 3 and 4. Those staff were assigned at Regional/State TB centers and mostly involved in monitoring, supervision and evaluation of programme activities at township/district/regional/state levels.

There were 10 international trainings, meetings and workshops attended by NTP staff in 2010. Those who attended the respective courses could contribute their experiences back to the NTP. Training courses consisted of Program management, Planning, Budgeting, laboratory technique/diagnosis for MDR/XDR and their clinical management including HIV/TB mostly benefited to central level TB control management.

Table 16. International trainings/ meetings/ Workshops attended by NTP staff

Sr.	Name and Designation	Duration	Country	Attended training/ workshop/ meeting
1	Dr. Wint Wint Nyunt, Microbiologist. NTRL Daw Ohmar Aung, Lab.tech, G1, NTRL Daw Ai Khu Sal, Lab.tech., G1, NTRL Daw Aye Myo Khine, Lab. tech., G1, Mdy Daw Nwe Ni, Lab.tech., G1, Mandalay	11-1-10 to 22-1-10	Thailand Bangkok	Hands-on training program on liquid culture, species identification and line prove assay for TB&MDR-TB
2	Dr. Myat Myat Moe, TL (Thanlyin)	5-5-2010 to 31-7-2010	Japan Tokyo	Stop TB action training course
3	Dr. Win Maung, Director (DC) Dr. Thandar Lwin, DD (TB)	14-8-2010 to 26-8-2010	Japan Tokyo	Tender process for JGA project
4	Daw Lei Yin Win, Lab. Medical Technologist, Mandalay Regional TB center	21-9-2010 to 4-12-2010	Japan Tokyo	Stop TB Hands on Laboratory training for HIV & MDR-TB
5	Dr. Win Win Mar, AD (NTP) Dr. Thin Thin Yee, Regional TB Officer, Mandalay	14-9-2010 to 17-9-2010	Sri Lanka Colombo	Regional Meeting of National TB Programme
6	Dr. Si Thu Aung, AD (NTP) Dr. Cho Cho San, (NTP)	17-10-2010 to 21-10-2010	Egypt Cairo	Regional workshop on planning and budgeting for scaling up MDR/XDR-TB
7	Dr. Tin Soe, AMS, Aungsan TB Hospital, Dr. Thandar Aung, MO, Patheingyi TB Hospital	27-9-2010 to 1-10-2010	Thailand Bangkok	Training on international course on clinical management of MDR-TB
8	Dr. Moe Zaw, AD (NTP) Dr. Thandar Thwin, TB specialist Mandalay Regional TB center	27-9-2010 to 1-10-2010	Nepal Kathmandu	Regional workshop on Programmatic management of MDR-TB

Sr.	Name and Designation	Duration	Country	Attended training/ workshop/ meeting
9	Dr. Win Maung, Director (DC) Dr. Thandar Lwin, DD (TB) Dr. Moe Zaw, AD (TB) Dr. Tin Mi Mi Khaing, Regional TB Officer, Yangon	11-11-2010 to 15-11-2010	Germany Berlin	41th Union World Conference on Lung Health
10	Dr. Tin Tin Mar, Consultant Microbiologist (NTRL) Dr. Thin Lei Swe, Microbiologist Mandalay TB Center	22-11-2010 to 30-11-2010	Thailand Bangkok	Regional workshop on Laboratory Diagnosis of MDR-TB

4.3.2 Strengthen infection control in health services, other congregate settings and households



Infection control measures in IHC clinic, Mandalay

Infection control measures were installed in health centers where MDR-TB and TB/HIV patients were taking treatment. N95 respirators, gowns and caps were provided for health staff.

With the support of USAID/WHO funding: NTP could strengthen infection control measures in the following health centers:

1. Renovation of TB ward in Aung San TB hospital
2. New building of patient waiting area in Latha TB diagnostic and referral center
3. Separate laboratory room for Mayangone township
4. Separate laboratory room for Insein township
5. Renovation of staff room in Patheingyi TB hospital MDR-TB ward
6. Renovation of Upper Myanmar TB laboratory
7. Renovation of TB diagnostic and referral center in Mandalay
8. Installation of stand fans, exhaust fans in 5 MDR-TB pilot townships' TB centers
9. Running water and wash basin in Pyigyitagon township

14 batches of infection control one day training were also provided in MDR-TB pilot townships, 2 Regional TB Centers and 2 TB hospitals.

4.4. Engage all health care providers

4.4.1 Involve all public, voluntary, corporate and private providers through Public – Private, Public-Public Mix (PPM) approaches

Co-ordination and collaboration with other health sectors, INGOs and local NGOs

The NTP co-ordinates with the other health sectors such as Laboratory, Medical Care and AIDS/STD Prevention and Control Programme to accelerate the NTP activities. The NTP and NAP have been closely collaborated in prevention and control activities of TB and HIV/AIDS since 1998.

Integrated HIV Care for TB patients (IHC) Project was initiated in Mandalay covering 7 townships (Aungmyaethazan, Chanmyathazi, Chanayethazan, Mahaangmyay, Pyigyitagon, Amarapura and Patheingyi townships in Mandalay District) and extended to Pakokku township of Magway Region. The project is supported by the UNION and Total Yadanar oil company. With the funding of 3DF, UNION, IHC project extended to Lashio and Taunggyi and the project could put on ART for waiting list of people living with HIV (PLHIV) within one year.

TB/HIV collaborative prevention and control activities for TB and HIV/AIDS are going on in Myitkyina, Taunggyi and Lashio with the support of WHO. For Myitkyina, ART enrollment could be either NAP or MSF-Holland.

NTP also co-ordinates with the local NGOs such as, MAAF, MMCWA, MMA and MRCS in DOTS implementation. International NGOs co-operating with NTP are UNION, MSF (Holland), PSI, Japan Anti-TB Association (JATA), World Vision, Pact Myanmar, Malteser, Merlin, AHRN and IOM. JICA is supporting the NTP activities in Yangon and Mandalay Regions as a bilateral co-operation agency. MDM is a new partner for treating TB patients especially for PLHIV. Among INGOs, PSI is working PPM-DOTS Scheme III since 2004.

MMA started the PPM –TB project in 2005 and continued expanding the coverage of townships as well as numbers of private practitioners involving in TB control.

In 2010, MMA referred 8,150 (6,449 in 2009) TB suspects and 7,408 patients (91%) got the feedback from 70 township TB centers. Among TB suspect referral who underwent sputum for AFB examination, 2,009 (27%) were smear positive TB and other 2,708 (36.5%) were put on anti-TB treatment.

Contribution of scheme I and II of MMA to NTP notified smear positive TB patients and total TB patients were (4.1%) and (1.9%) respectively.

MMA Scheme III scaled up activities were implementing at (17) townships.

Table 17. Contribution of MMA PPM-DOTS Scheme I (2010)

Sr. No.	Name of Township	No. of TB suspect referred for diagnosis	No. of feedback received	Smear (+) TB patients put on TB treatment		No. of smear(-) TB put on TB treatment			No. of Total TB	No. of Non TB
				Cat I	Cat II	Cat I	Cat II	Cat III		
1	*Insein	451	442	106	17	72	5	19	221	221
2	Kyimyindine	149	147	46	3	26	3	5	83	64
3	North Dagon	149	145	33	2	32	0	2	69	76
4	South Dagon	228	211	63	7	87	11	26	194	17
5	South Okkalapa	253	249	62	12	59	8	21	162	87
6	Shwepyithar	177	160	81	1	51	0	17	150	10
7	Thakata	483	382	169	21	12	1	39	242	140
8	Thanlyin	217	184	45	5	27	2	9	88	96
9	Bago	425	388	46	11	92	11	67	227	161
10	Pyay	170	159	37	2	56	1	19	115	44
11	*Mawlamyaring	287	287	32	6	40	1	46	128	159
12	Taikkyi	260	249	57	2	37	0	16	112	137
13	Hpa-an	170	161	38	0	60	0	44	142	19
14	Sittwe	100	86	21	2	23	1	9	56	30
15	Latha	45	38	12	0	8	0	1	21	17
16	Phyarpon	393	329	130	3	105	5	56	299	30
17	Dawpon	80	51	16	4	2	1	6	29	22
18	Mingalartau ngnunt	57	35	9	0	19	3	4	35	0
19	Bothtaung	48	34	17	1	7	0	2	27	7
20	Pazundaung	25	12	5	2	5	0	0	12	0
21	Lanmadaw	57	43	9	0	12	0	6	27	16
22	Kyauktada	42	36	11	1	6	0	0	18	18
23	Pabedan	42	31	6	1	12	0	4	23	8
24	North Okkalapa	130	130	33	5	37	4	14	93	37
25	Thinungyun	60	60	30	7	7	5	9	58	2
26	San Chaung	33	33	17	0	12	0	0	29	4
27	Ahlonge	14	14	3	2	3	0	0	8	6
28	Kamaryut	48	48	17	0	11	1	7	35	13
29	Mayangone	49	48	24	3	8	0	1	36	12
30	Kyaut Tann	30	27	6	0	5	0	2	13	14
31	Hlaingtharyar	107	103	19	1	20	1	37	78	25
32	Hmawbi	44	41	14	0	6	0	0	21	20
33	Hlegu	23	20	4	0	4	2	4	14	6
34	Tarmwe	15	15	7	0	8	0	0	15	0

Sr. No.	Name of Township	No. of TB suspect referred for diagnosis	No. of feedback received	Smear (+) TB patients put on TB treatment		No. of smear(-) TB put on TB treatment			No. of Total TB	No. of Non TB
				Cat I	Cat II	Cat I	Cat II	Cat III		
35	Dagon Seikka	15	14	6	0	5	0	3	14	0
36	Hlaing	26	26	4	3	12	1	3	23	3
37	East Dagon	31	30	5	0	8	0	3	16	14
38	Mingalardone									
39	Bahan									
40	Waw	6	6	0	1	2	0	0	3	3
41	Tha nut pin	4	4	1	0	1	0	1	3	1
42	Padaung	83	83	24	2	26	0	6	58	25
43	Pauk Khaung	194	192	68	9	80	0	34	191	1
44	Kyaik Latt	96	90	33	1	8	0	31	73	17
45	Hlaing Bwe	85	85	62	0	4	0	13	79	6
46	Paung	41	41	1	0	8	0	22	31	10
47	Kyaw Taw	11	8	0	0	1	0	2	3	5
48	Myauk U									
	Lower Myanmar Total	5453	4977	1429	137	1126	67	610	3374	1603
49	Aung Myay Thar Zan	199	183	35	1	43	4	10	93	90
50	Chan Aye Thar Zan	204	172	57	5	58	7	8	135	37
51	Chan Mya Thar Si	278	259	60	5	38	3	12	118	141
52	Mahar Aung Myay	266	265	68	0	41	3	4	116	149
53	Kyaukse	98	98	41	2	10	0	45	98	0
54	Lashio	291	274	70	6	73	4	29	182	92
55	Maggwe	134	113	40	4	22	4	2	72	41
56	Monywa	242	197	50	3	21	3	20	97	100
57	Pakokku									
58	Myingyan	154	114	33	0	17	1	23	74	40
59	Muse	57	55	12	1	25	0	7	45	10
60	Kyaukme	131	131	31	4	34	0	30	99	32
61	Taunggyi	250	217	19	2	15	2	19	57	160
62	Pyinoolwin	155	153	23	0	12	0	2	37	116
63	*Patheingyi	37	36	5	1	5	0	1	13	23
64	Pyigyitagon	44	44	8	0	4	0	10	22	22
65	Amrapura	90	58	8	1	5	0	11	25	33
66	Nahtogyi	21	17	8	0	5	1	3	17	0
67	Taungthar									

Sr. No.	Name of Township	No. of TB suspect referred for diagnosis	No. of feedback received	Smear (+) TB patients put on TB treatment		No. of smear(-) TB put on TB treatment			No. of Total TB	No. of Non TB
				Cat I	Cat II	Cat I	Cat II	Cat III		
68	Hispaw	4	4	2	0	0	0	0	2	2
69	Namkam	9	8	2	0	5	0	1	8	0
70	Sagaing	33	33	8	0	12	1	12	33	0
	Upper Myanmar Total	2697	2431	580	35	445	33	249	1343	1088
	Grand Total	8150	7408	2009	172	1571	100	859	4717	2691

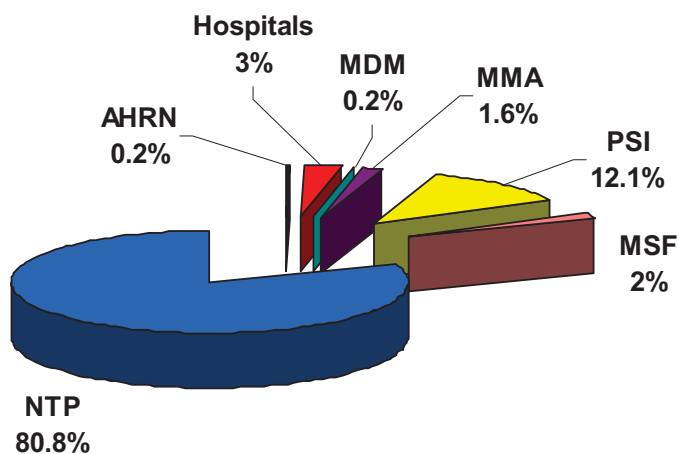
*There are 6 TB patients (2 patients from Insein, 3 patients from Mawlamyaing and 1 patient from Patheingyi) referred to NTP and diagnosed as MDR-TB.

Table 18. Contribution of PSI Myanmar (2004-2010)

Years	TB suspected cases screened	Cat I (+)	Cat I (Neg. & EP)	Cat II	Cat III	Total
2004	3530	840	256	199	927	2222
2005	11048	2262	571	396	2311	554
2006	19798	3560	1200	556	4116	9432
2007	17687	3837	1694	589	4023	10143
2008	17051	4137	1921	598	3683	10339
2009	19943	3978	2171	541	4482	11172
2010	15852	5649	3518	825	6837	16829

Population Services International (PSI) started the collaboration with NTP in March 2004. PSI organizes the Private Practitioners and running the "Sun Quality Clinics" as a DOT unit. New TV spot related to TB was also aired every year. The achievement of PSI is improving while expanding the township coverage.

Figure 2. Proportion of all forms of TB Patients contributed by NTP and partners in 2010



The Case Detection Rate (CDR) of new smear positive cases for 2010 was 76%. 18.7% of detected new sputum smear positive cases and 19.2% of all TB cases were contributed by other reporting unit apart from NTP. Private sector through franchising approach of PSI contributed 13.2% of new smear positive TB cases and 12.1% of all TB cases notified to NTP. MMA contributed 1.5% and 1.6% of new smear positive and all TB cases reported to NTP respectively. MSF-Holland contributed 2.0% of new smear positive cases and 2.1% of all reported TB patients to NTP. Hospitals contributed 1.4% and 3.0% of new smear positive and all TB cases reported to NTP respectively.

NTP started collaboration with Medicines Sans Frontiers (MSF-Holland) since 2001 in Wingman and Moemauk townships in Kachin State. Then, Kachin State TB center, NTP supported the Anti-TB drugs to MSF in November, 2004. Currently, MSF is functioning in Kachin, Rakhine, Northern Shan States and Yangon Region. MSF-H mainly focuses for HIV co-infected TB patients. Thazin clinics provide not only diagnosis and treatment, but also food and patients support during the treatment. Some of the HIV co-infected TB patients were treated with ART in MSF clinics in Kachin State. MSF-Switzerland is also treating TB patients and reported to NTP.

Public-Public Mix DOTS has been launched in 4 specialist hospitals (New YGH, East and West YGH, Thingungyun Sanpya General Hospital) in Yangon with the 3DF bridging fund since May 2007. Public-Public Mix DOTS initiated as a pilot phase aims to strengthen the TB control services through establishing a system link between public hospitals and public TB centers. Advocacy meetings were conducted and followed by the training for hospitals staff on TB control and PPM-DOTS. Hospital DOTS Committees were formed for each hospital chaired by Medical Superintendent and members from heads of clinical disciplines. Assistant Medical Superintendent was assigned as a PPM TB-Coordinator. Roles of laboratory

technicians, nurses, medical social workers and pharmacist were identified. PPM-DOTS in hospitals had identified four options to implement.

Option 1: Diagnosis of TB cases + prescription of treatment regimen in hospital followed by referral to Health Center for DOT, with clinical follow-up at hospital.

Option 2: Same as Option 1 without clinical follow-up at hospital.

Option 3: Diagnosis of TB cases + start Directly Observed Treatment (DOT) in hospital followed by referral to Health Center during treatment.

Option 4: Diagnosis of TB case and provide full treatment (DOT) at hospital.

Public-Public Mix DOTS activities were expanded to Insein General Hospital in 2010. Training on PPM-DOTS and Advocacy meeting were conducted in February 2010. Twenty hospital staff attended the training and 50 staff attended the advocacy meeting.

Currently all hospitals are practicing both option 3 and 4. NTP and WHO conducted joint monitoring and supervisory visits regularly. TB hospitals (Aungsan and Patheingyi), Waibagi Specialist Hospital, Specialist Hospital (Mingaladon), BMH 1, PyinOoLwin, 1000 bedded hospital, Nay Pyi Taw and Workers TB hospital under the Ministry of Labor are also collaborating with NTP.

In 2010, PPM-Hospitals contributed 0.17% of total new smear positive TB patients and 0.43% of total TB cases.

Figure 3. Proportions of new smear positive TB patients contributed by NTP and partners in 2010

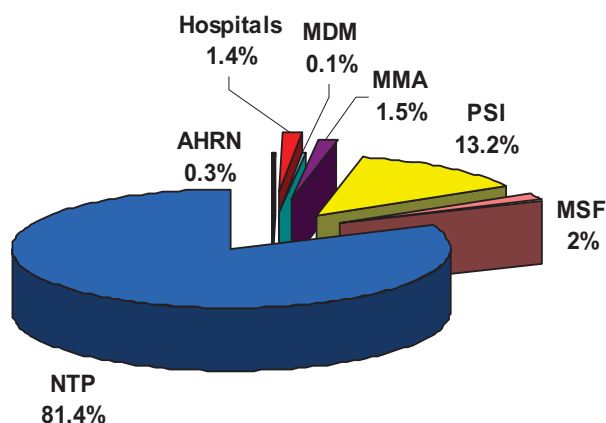


Table 19. Contribution on new smear positive TB patients of PPM DOTS Hospitals (2007-2010) by implementing Option 4

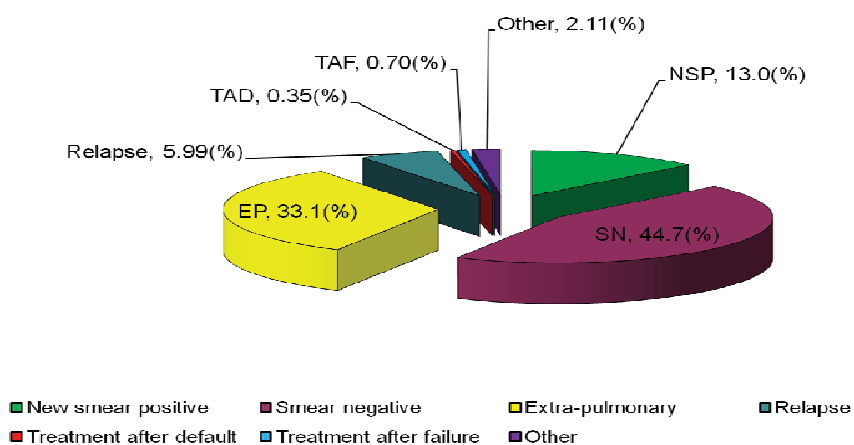
Option 4	2007	2008	2009	2010 (3 rd Q+ 4 th Q)
New YGH	40	65	60	25
East YGH		18	14	11
West YGH	8	15	10	18
Sanpya hospital	19	45	8	5
Insein				14
Total	67	133	92	73

Table 20. Contribution on total TB patients Cases of PPM-DOTS Hospitals (2007-2010) by implementing Option 4

Option 4	2007	2008	2009	2010 (3 rd Q+ 4 th Q)
New YGH	159	275	223	145
East YGH	63	292	282	140
West YGH	8	91	57	188
Sanpya hospital	150	80	90	38
Insein				75
Total	380	748	652	586

Figure 4. Types of TB patients detected by PPM-DOTS hospitals in 2010

More Smear Negative TB patients detected by PPM DOTS (in 2010)



PPM-DOTS hospitals reported more new smear negative TB patients put on treatment.

Table 21. Outcomes of new smear positive TB Patients of PPM-DOTS Hospitals (2009 cohort) by implementing Option 4

Outcome	Cure Rate	TSR	Case fatality Rate	Failure rate	Defaulter rate	Transfer Out
NYGH	75%	75%	9%	3%	6%	6%
EYGH	87%	87%	-	-	13%	-
Sanpya	100%	100%	-	-	-	-
West YGH	90%	90%	-	-	-	10%

Out of 4 PPM-DOTS Hospitals, treatment success rates varied from 75% to 100%. High case fatality rate reported in New YGH and defaulter rate was high in East YGH. The outcome should be carefully interpreted after data verification.

Figure 5. Treatment outcome of new smear positive TB patients from PPM-DOTS hospitals (2009 cohort)

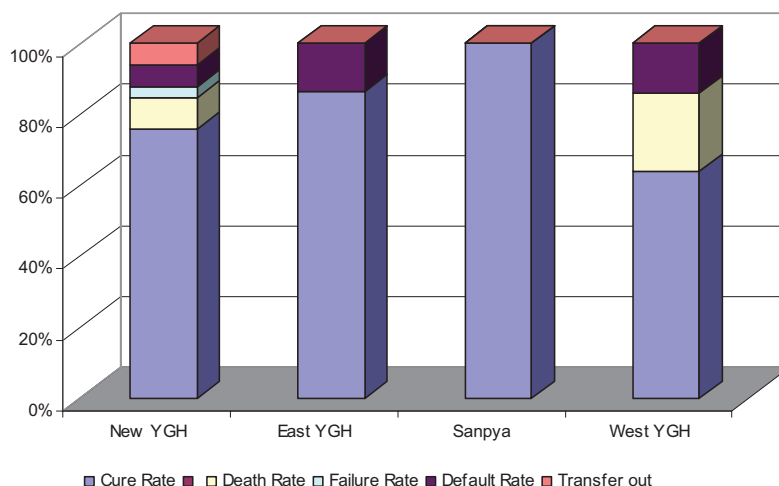


Table 22. Option 3 Cases in PPM-DOTS Hospital in 2010

Indicators	New YGH	West YGH	East YGH	Sanpya Hospital	Insein General Hospital
No. of TB Patients registered for treatment	141	210	368	691	128
No. of referred TB patients from hospital to townships	98	172	332	658	125
No. of referral drop out	43	38	36	33	3

Referral drop out to townships for option 3 cases were high in all hospitals. Some of the patients were residing in other regions and states and there could be some communication weakness of feedback. Thorough counseling of patients when he/she was discharged or referred was needed for strengthening.

Annual evaluation meeting for PPM-DOTS Hospitals was conducted on July 2010 in Yangon and the following recommendation were made.

1. To provide refresher training in PPM hospitals at least one time per year.
2. To conduct International Standard of TB Care training for all physicians, pediatricians, surgeons and medical officers in all PPM-DOTS hospitals.
3. To conduct quarterly supervision and monitoring including laboratory to PPM hospitals by NTP central, regional and WHO
4. To modify and update the objectives of Public Public Mix DOTS

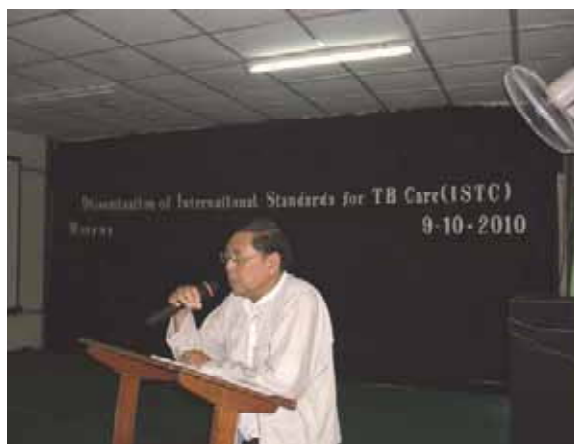
4.4.2 Promote use of the International Standards for Tuberculosis Care (ISTC)

NTP introduced ISTC to Myanmar in 2009 and all the Medical Universities were introduced. The MMA and other professional associations were also disseminated about ISTC with the leading role of MMA.

In 2010, NTP planned to provide 11 advocacy meeting and training for ISTC at Regional and State level. Till end of 2010, NTP has conducted 5 courses in Naypyitaw, Lashio, Monywa, Taunggyi and Mawlamyaing out of 11 regional & state TB center. The rest were completed in 2010.

Table 23. ISTC trainings conducted in 2010

SN	Site	Number of attendees								Total
		Specialists		Assistant Surgeons		House Surgeons		General Practitioners		
		M	F	M	F	M	F	M	F	
1	Nay Pyi Taw 1000 bedded hospital (6.8.2010)	11	16	8	15	0	0	0	0	50
2	Lashio General Hospital (11.8.2010)	7	5	15	9	3	1	4	6	50
3	Monywa General Hospital (9.10.2010)	1	0	9	20	0	5	5	10	50
4	Taunggyi General Hospital (22.10.2010)	3	0	20	27	0	0	0	0	50
5	Mawlamyaing General Hospital (24.12.2010)	4	5	16	25	0	0	0	0	50
	Total	26	26	68	96	3	6	9	16	250



Dissemination workshop on ISTC in Monywa and Lashio

4.5. Empower people with TB and communities through partnership

4.5.1 Pursue advocacy, communication and social mobilization

4.5.1 Health education

IEC materials dissemination

Community awareness concerning TB was accelerated through promoting health education sessions and conducting advocacy meetings at all levels. The IEC materials: new posters, stickers, pamphlets for health talks, health education flip charts were developed based on the results of national KAP survey conducted in 2009-2010.

Pamphlets (166,000), TB billboards (19) and posters (800) were produced and distributed through Regional/State TB centers to all townships up to grass-root level. JICA (MIDCP) supported world TB day poster (20,000), T-shirts (1,900) and (500) copies of health education video clips.

World TB Day and week activities, 2010

World TB Day commemoration ceremony was held on 24.3.2010 at central and at all Regions and States with the support of WHO. The Slogan for the year 2010 was "On the move against Tuberculosis, Innovate to accelerate action".

The Central level World TB Day commemorative ceremony was carried out on 24th March, 2010 at 8:50 AM at the Assembly Hall of Ministry of Health, Nay Pyi Taw. H.E. Professor Dr. Kyaw Myint, Minister for Health, Ministry of Health act as Chairman of the ceremony and delivered the speech. In his opening speech, he pointed out that this year commemoration ceremony was the fifteenth ceremony aiming to highlight on TB problem, he mentioned the global TB burden as 9.4 million TB patients and 1.8 million deaths occur every year and global TB control is rely on discovery of new drugs, new diagnostic tool and vaccines through research. He said, as Myanmar includes in the 22 high TB burden countries, TB control activities are implementing according to the STOP TB Strategy and National TB Programme (NTP) able to treat over 130,000 TB patients in 2009, the global TB control targets were achieved and maintained with national case detection rate as 94% and treatment success rate as 85%. He stressed on the areas to be improved in case detection where few states and divisions those did not meet the targets which were Southern Shan State and Chin State and some townships. The Minister pointed out the need to improve TB case finding in those Regions and States and remote areas, border and rural areas by means of improving collaboration with partners, community involvement and private sector involvement together with improving in community awareness. He stressed that the NTP has covered the whole country since 2003 with the support of Global Drug Facility for first line anti-TB drugs needs. He mentioned that the fixed dose combination has been used since 2004 and later on NTP introduced the single-quota patient kit system. He acknowledged the work done under public-private mix DOTS, contribution of PSI and MMA and International Standard for TB Care (ISTC) trainings were provided as necessary in coordinating with NTP. He mentioned MDR-TB management has started in 2009 and the diagnostic facilities for culture and drug sensitivity testing was improved in Yangon and Mandalay by opening the Biosafety Level-3 laboratories to do liquid culture and line probe assays. He also mentioned about TB/HIV collaborative activities functioning well in 11 townships. Finally, he stressed on the World TB Day slogan

“On the move against Tuberculosis, innovate to accelerate action” which was translated into Myanmar language as “နည်းသစ်တီထွင် အရှိန်မြှင့်တင်၊ တီဘီကင်းစင် မြန်ပြည်တစ်ခွင်”. In conclusion, he mentioned about the activities of NTP for World TB week and he urged on how to accelerate the current activities and to find better ways and means to improve TB control in Myanmar.



World TB Day commemoration ceremony (2010)



World TB Week activities (2010)

After the opening speech of Minister for Health, Dr. Leonard Ortega, Acting WHO Resident Representative read out the message of the Regional Director of WHO Southeast Asia region.

The Minister for Health and the invited guests viewed the World TB Day mini exhibitions presented by National TB Programme, PSI, World Vision, Pact Myanmar, MMA and JICA-MIDCP. There were about (~ 450) invitees from Ministry of Health, DOH, other ministries, WHO, UN agencies MMCWA ,implementing partners, health staff from Pinyin and Lewei townships, NGOs attended the ceremony. The donated materials such as World TB Day pamphlets, posters, bags, T-shirts, handkerchiefs and key chains from JICA, MMA-TB, Pact Myanmar and PSI were distributed in the ceremony.

The main activities carried out during World TB week were funded by MOH, WHO/USAID.

- (1) Community based activities such as health education talk about TB at township level up to Rural Health Centers (RHCs) were carried out by BHS. The activity was followed by identification of TB suspects, referral to the township TB Diagnostic centre, contact tracing and missed dose tracing in their responsible areas.
- (2) Dissemination of knowledge about TB was given through mass media: television, news papers and journals. Health Education programme as discussion session, interviews with Myanmar Radio and Television (MRTV) and Myawady television were broadcasted.
- (3) Mobile team activities were conducted in Nay Pyi Taw in (3) townships as World TB Week Activities.

(2010) World TB Week Activities were conducted in (17) low performance townships.

Health education sessions were also given at low performance area of Regions/States. Low performance townships selected were Thongwa township (Yangon Region), TadaOo township (Mandalay Region), Ayetharyar township (Southern Shan State), Loikaw township (Kayah State), Kangyidaunt township (Ayeyarwady Region), Paung township (Mon state), Waw township (Bago East Region), Paladike RHC, Sittwe township (Rakhine state), Lashio township (Northern Shan State), Monglath Village, Kyaington township (Eastern Shan State), Pale township (Sagaing Region), Myeik township (Tanintharyi Region), Yenanchaung township (Magwe Region), Moenyin township (Kachin State), Hakhar township (Chin State), Tharawady township (Bago West Region), Hlaingbwe township (Kayin state).

As a contribution from implementing partners: **MIDCP** (JICA) supported (400) bags, (300) key chaina, (20000) pamphlets and (800) posters. **MMA-TB** provided (146) bags, (200) T-shirts and organized the World TB day ceremony in 23 townships implementing PPM –DOTS. **Pact Myanmar** gave (100) key chains and also disseminated the TB information through their out reach workers in Kyaukpadaung, Nyaung Oo, Magwe and Chauk townships (Magwe Region). **PSI** contributed TV spots and gave (100) caps, (300) towels. International Organization of Migration (**IOM**) conducted the active case finding with mobile unit in their functioning area of Mon state (25 villages in 6 townships) and 13 sputum positive cases and 49 CXR positive cases were detected and put on anti-TB. **World Vision** developed (146) billboard posters and (47,000) pamphlets to contribute in World TB day 2010 activities. World Vision also participated in Regional and State level World TB Day Ceremony in Yangon Region, Ayeyarwady Region, Tanintharyi Region, Kayah and Mon States. WV posted (72) billboards in coordination with TB campaign and DOH. Other IEC materials produced were T-shirt with World TB Day Slogan,

face towels, masks, hand fans and bags. Community awareness HE sessions were held in (12) townships and total 4895 community members were given TB knowledge and about World TB Day. **Merlin Myanmar** group conducted health training, distributed IEC materials and Vinyl posters in Kalay, Tamu townships of Sagaing Region and Laputta township of Ayeyarwady Region.

4.5.2 Foster community participation in TB care, prevention and health promotion

NTP developed the guideline for community based TB care together with implementing partners and technical support of WHO as an output of “Workshop on Community based TB care” conducted in Yangon on 4-9-2010.



Workshop on Community based TB care” conducted in Yangon on 4-9-2010

Community based TB care activities are implementing by INGOs and mostly the community from rural area are benefited for the TB diagnosis and treatment, patient support and increased in community awareness on TB control.



Joint supervision on community based TB care activities of IOM and Pact

Community home based care and moral support services were started in Yangon and Mandalay Regions with the guidance of MOH. Home visits were made by a team of health staff from NTP, NAP, Leprosy control programme, local NGOs and local authorities and provided nutritional support and vitamins to the selected patients every week. Health education sessions were also conducted by the team.

Table 24. Community home based care in Yangon and Mandalay Regions

	No. of patients visited	Patients support provided
Yangon Region	426	426
Mandalay Region	60	60
Total	486	486



Community home based care in Yangon Region

4.6. Enable and promote research

NTP conducted several researches and presented in internal and international research congress. The abstracts of the presented posters, published paper are recorded.

4.6.1. Surveys

1. National TB Prevalence Survey

NTP had successfully conducted National TB Prevalence Survey in (70) clusters in April 2010. The data analysis completed in December 2010 and findings were disseminated in MOH, Nay Pyi Taw to high authorities and in Yangon to implementing partners, donars and UN agencies.

The survey was funded by MOH, WHO, 3DF, JICA, JATA, Bill and Melinda Gates Foundation / PSI. Technical support was provided by WHO and JATA/JICA.

The National Tuberculosis Programme (NTP) screened 57,608 eligible adults and 51,367 (89.2%) people participated in 70 geographical areas of the country. The average number of study participants per cluster was 728, range 621-850. The participation rate was higher in female, 91.8% than in male, 86.0%. Rural clusters (90.0%) showed a slightly higher participation rate than urban clusters (86.3%). Only four among 70 clusters recorded a participation rate of less than 80%. There was no significant difference in participation rate between age groups.

The survey methodology was first symptom screening with face to face interview was conducted and followed by chest X-ray screening. Chest X-ray (CXR) screening was exempted for pregnancy women and those refused. Those who had TB suspected symptoms and any lesion in CXR had gone through sputum for AFB microscopy and culture at the base laboratories.

The survey identified 123 participants as smear positive TB cases and 188 participants as smear negative culture positive TB cases and altogether there were 311 bacteriologically confirmed pulmonary TB cases. Among these cases, 280 were undetected to the health system (not known as TB nor treated).

The survey results shows in (Table -25). The smear positive TB prevalence was **242.3/100,000 population age 15 years and above** and **bacteriological confirmed TB prevalence was 612.8/100,000 population age 15 years and above**. After the population structure adjusted the smear positive and bacteriological confirm TB prevalence became 172/100,000 population and 434/100,000 population respective.

The smear positive TB prevalence was **higher in States than Regions** (369 vs. 191.6/100,000 population age 15 years and above). The smear positive TB prevalence was also **higher in urban than rural** (330.7 vs. 216.1 / 100,000 population age 15 years and above) and **in male than female** (397.8 vs. 122.2/100,000 population age 15 years and above).

The survey also confirms that the vast majority of TB cases remain undetected. Among study participants having TB suspected symptoms was 3.3% (1691/51367) and any TB symptoms was 37.2%. Among survey detected smear positive TB patients only 34.1% (42/123) had chronic cough symptom (>3 weeks) and 78.9% detected with any symptom (97/123). Any duration of cough symptom could detect 72.4% (89/123) of smear positive TB patients.

Any symptom (37% of subjects) or any duration of cough (24% of subjects) could detect 62% and 51% of bacteriological positive TB patients.

CXR is highly sensitive screening tool and proved as only 164 patients were bacteriological positive out of 762 CXRs were read as active TB. Among 298 bacteriological confirmed TB patients, 80 patients were not expected as having active TB and recorded as either healed TB or other diseases.

The smear positive TB prevalence (2009) was compared with the 2 previous surveys and found about 50% decline of smear positive TB prevalence (1972, 1994) was observed. There was the gap between the prevalence and notification for 2009, however, the smear positive TB with cough more than 3 week prevalence was lower than the smear positive TB notification rate of 2009.

That finding suggested there was a recent decline of notification rate may be due to slow decline of TB incidence and limitations of current case finding strategy. Currently, NTP is removing serious cases from the community and it is significant that NTP has impact on TB mortality, however, the impact of control efforts on TB incidence might not be sufficient

Figure 6. Impact of control efforts decline of S+ with chronic cough

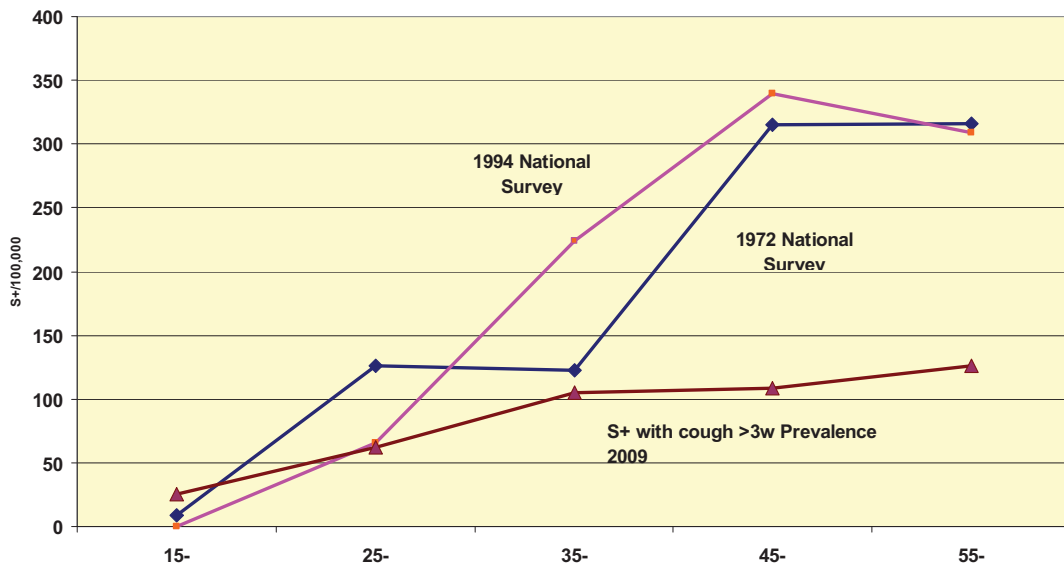


Figure 7. Gap of TB prevalence and notification (2009)

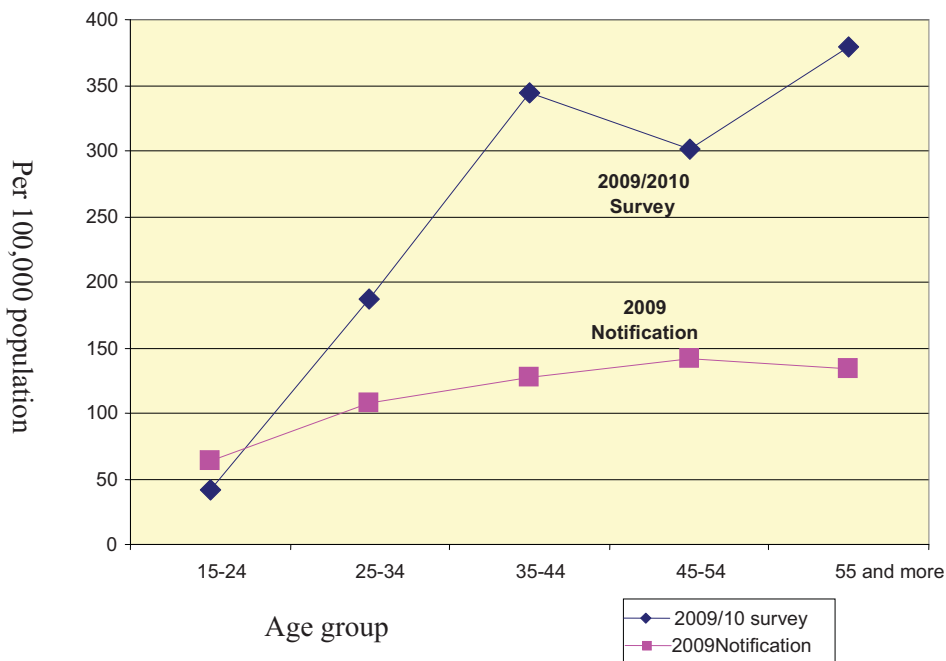
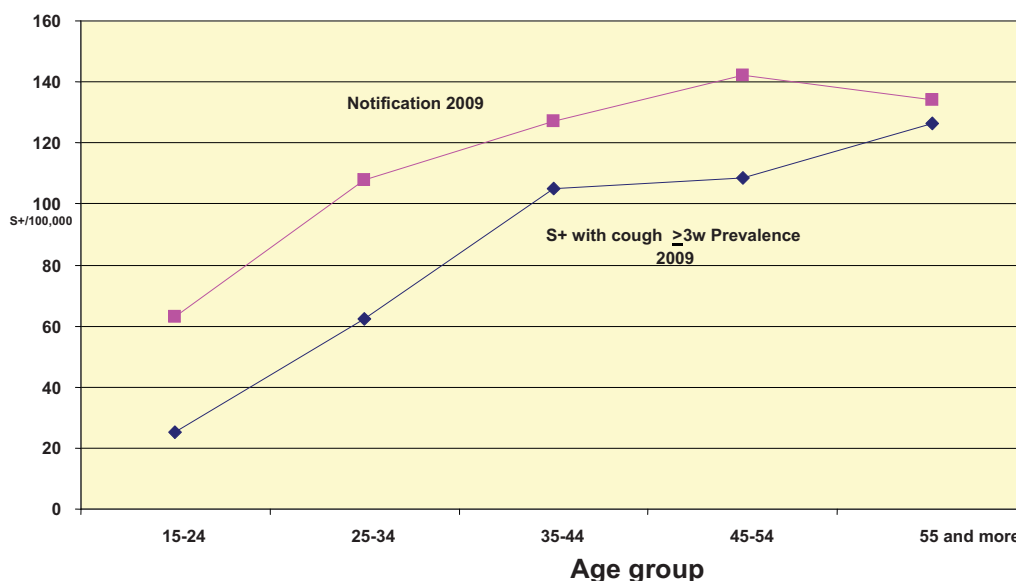


Figure 8. Sputum smear positive TB prevalence and notification (2009)



The survey found 79 patients were currently on treatment and 1,463 patients had previously treated. Among previously treated group, 66% took treatment from public sector and 32% took from private sector, which was improved in the group of patients currently on treatment as 80% from public sector and 18% from private sector.

Concerning the health seeking behaviour on having long duration of cough, 10% of (41,374) respondents first visited to public facilities, 19% to medical facilities and 26% to pharmacy and took medicine. The finding showed visit to medical facilities as first action for chronic cough is not common and difference between urban and rural is large may be due the access problem in rural area.

Table 25. First action for chronic cough

With Chronic Cough	Traditional Medicine, Pharmacy	Visit Medical facility	Visit Public Facilities
Total (41,374)	10856 26%	8,038 19%	4,251 10%
TB CASES (265)	57 22%	66 25%	36 14%
Symptomatic (1663)	514 31%	363 22%	197 12%

Risks and factors associated with being bacteriological positive TB were examined. From crude prevalence, smoking and drinking seemed to be associated to be bacteriological positive TB. However, significance disappeared when it was adjusted with other factors such as age and sex.

Table 26. Factors associated with bacteriological positive cases

Variable	Values	Adjusted OR	95% CI	
Area type	Region rural	Reference		
	State rural	1.53	0.96	2.42
	Region urban	1.74	1.05	2.87
	State urban	2.19	1.11	4.34
Sex	Female	Reference		
	Male	1.87	1.44	2.44
Age groups	15-24 yrs	Reference		
	25-34 yrs	2.77	1.38	5.55
	35-44 yrs	4.06	2.09	7.91
	45-54 yrs	2.96	1.51	5.82
	55-64 yrs	2.39	1.19	4.81
	65 yr and above	2.52	1.27	4.97
Previous TB Treatment	No	Reference		
	Yes	1.49	1.01	2.21
Current TB treatment	No	Reference		
	Yes	2.77	1.38	5.55
Contact	No	Reference		
	Yes	1.66	1.15	2.39
BMI	Continuous variable	1.66	1.15	2.39
Symptom	No symptom	Reference		
	Any symptom other than TB suspected	1.46	1.10	1.92
	TB suspected symptom	3.17	2.21	4.54
CXR	No Shadow in lung	Reference		
	Shadow in lung other than active TB or TB suspect	17.68	10.65	29.37
	Active TB or TB suspected shadow	110.14	71.32	170.08

The recommendations to NTP were as follows:

- 1. To improve access to diagnostic service:**
 - a. NTP needs to focus on the remote States especially hard to reach areas.
 - b. NTP needs to engage pharmacies and traditional healers
 - c. NTP has to establish some mechanism to control TB in congestive urban areas, by flexibility on service hours
- 2. To coordinate and collaborate more with private sector and partners**
 - a. Systematic introduction of active case detection using CXR and new technology by mobile services
 - b. Intensification of TB screening in HIV services and anti-natal care clinics
- 3. To improve TB screening**
 - a. Appropriate use of CXR
 - b. Improving quality of CXR
 - c. Widening CXR screening criteria
 - d. Widening symptom screening criteria (to reduce from 3 weeks to 2 weeks of cough)

4. To improve TB diagnosis

- a. Introduce new molecular technology to detect smear negative TB as well as MDR-TB
- b. Pilot the direct administration of new technology among high risk/predictive TB suspects
- c. Develop and pilot the transportation system of sputum specimens and feedback mechanism
- d. Review diagnostic algorithm of smear negative subjects

The results of the survey are of major importance for gaining a better understanding of the TB burden and the impact of TB control in the past decade. With the results, the NTP will be able to revise control strategies and funding requirements and thus be better equipped to reach the Millennium Development Goals and eventually universal access to TB diagnosis, treatment and care.



**Dissemination workshop on National TB Prevalence Survey,
MOH, Nay Pyi Taw (15-12-2010)**

Table 27. TB prevalence in Myanmar among study participants aged 15 year and more (2009-2010)

	Smear positive cases			Smear negative culture positive cases			Bacteriological confirmed cases		
	n	Prevalence per 100,000 pop. ≥ 15 yrs	95% CI	n	Prevalence per 100,000 pop. ≥ 15 yrs	95% CI	n	Prevalence per 100,000 pop. ≥ 15 yrs	95% CI
All participants	123	242.3	(186.1-315.3)	188	370.5	(293.3-468.0)	311	612.8	(502.2-747.6)
Strata									
Region	70	191.6	(137.4-267.3)	122	331.1	(256.1-428.1)	192	522.8	(420.9-649.1)
State	53	369.0	(235.6-577.5)	66	469.0	(288.4-761.8)	119	838.0	(560.3-1251.5)
Urban/Rural									
Urban	38	330.7	(216.2-505.7)	65	572.4	(415.0-789.2)	103	903.2	(661.8-1231.5)
Rural	85	216.1	(153.6-304.0)	123	310.7	(228.7-422.0)	208	526.8	(410.1-676.5)
Sex									
Male	88	397.8	(301.3-524.9)	118	532.8	(407.2-696.9)	206	930.6	(742.6-1165.5)
Female	35	122.2	(76.9-194.2)	70	245.2	(181.7-330.8)	105	367.4	(287.7-469.1)
TB prevalence in pop.			172			263			434

Table 28. TB prevalence related to TB symptoms

Symptoms	Yes		Smear positive cases		Smear negative culture positive cases		Bacteriological confirmed cases	
	N	%	n	%	n	%	n	%
Illness	9015	17.6	53	43.1	40	21.3	93	29.9
Cough	12268	23.9	89	72.4	71	37.8	160	51.4
1-13 days	10106	19.7	39	31.7	41	21.8	80	25.7
14-20 days	622	1.2	8	6.5	10	5.3	18	5.8
≥21 days	1433	2.8	42	34.1	17	9.0	59	19.0
Sputum	9953	19.4	83	67.5	50	26.6	133	42.8
Haemoptysis	285	0.6	4	3.3	4	2.1	8	2.6
Weight loss	1512	2.9	23	18.7	16	8.5	39	12.5
Fever	3122	6.1	26	21.1	21	11.2	47	15.1
Chest pain	6827	13.3	40	32.5	29	15.4	69	22.2
Others	2490	4.8	7	5.7	11	5.9	18	5.8
TB suspected cases	1691	3.3	42	34.1	24	12.8	66	21.2
Any symptom	19110	37.2	97	78.9	96	51.1	193	62.1
No symptom	32257	62.8	26	20.3	92	48.9	118	37.9
Total	51367		123		188		311	

2. Nationwide TB KAP Survey

Country wide "Knowledge, Attitude and Practice Survey" was conducted in 50 clusters in 2009-2010 to assess knowledge, attitude and practice of community on TB. It also explored stigma, perceived problem for TB and opinion and suggestion of community members for TB control. Based on the research findings, Advocacy, Communication and Social Mobilization (ACSM) materials for TB control were developed in 2011.

Table 29. Knowledge on the TB suspected symptoms

Signs and Symptoms of TB	Total, No (%)
Cough	5804 (77.2%)
Cough for >2-3 weeks	4985 (66.3%)
Coughing up blood	2195 (29.2%)
Fever	1226 (16.3%)
Night Sweating	203 (2.7%)
Loss of appetite	631 (8.4%)
Weight loss	1714 (22.8%)
Chest pain	594 (7.9%)
Shortness of breath	692 (9.2%)
Ongoing fatigue	436 (5.8%)
Do not know	1165 (15.5%)

Table 30. Total TB knowledge score according to resident of respondents

Knowledge score	Urban	Rural	Total
	No (%)	No (%)	No (%)
High	1040 (40.1%)	1261 (25.6%)	2301 (30.6%)
Medium	1135 (43.8%)	2062 (41.9%)	3197 (42.5%)
Low	419 (16.2%)	1602 (32.5%)	2021 (26.9%)
Total	2594	4925	7519

Table 31. Total knowledge score of respondents according to Regions / States

	Aye	Bago	Chin	Kach	Mand	Mag	Mon/ Kayin	Rakh	Sag	Shan	Tanin	Ygn	Total (%)
High	326 (43.1)	125 (27.8)	28 (18.7)	29 (19.3)	193 (25.7)	303 (33.7)	97 (32.2)	282 (26.9)	354 (33.6)	224 (21.2)	71 (23.7)	269 (44.5)	2301 (30.6)
Medium	291 (38.5)	172 (38.3)	67 (44.7)	78 (52)	348 (46.4)	375 (41.7)	128 (42.5)	430 (41)	408 (38.7)	463 (43.8)	149 (49.8)	288 (47.6)	3197 (42.5)
Low	139 (18.4)	152 (33.9)	55 (36.7)	43 (28.7)	209 (27.9)	222 (24.7)	76 (25.2)	337 (32.1)	292 (27.7)	369 (34.9)	79 (26.4)	48 (7.9)	2021 (26.9)
Total	756	449	150	150	750	900	301	1049	1054	1056	299	605	7519

Table 32. Preference of communication channels

	Aye	Bago	Chin	Kach	Mand	Mag	Mon/ Kayin	Rakh	Sag	Shan	Tanin	Ygn	Total
TV/video	39.1	60.6	22.0	34.2	55.5	49.7	39.0	42.8	47.0	38.8	40.7	53.0	45.7
Radio	12.6	27.2	2.0	13.4	39.2	26.6	18.1	32.2	14.6	10.8	6.7	7.8	20.1
Newspapers / magazines	7.4	9.9	0.7	4.0	8.7	8.2	12.6	17.3	8.1	10.0	7.7	10.4	9.9
Billboards	21.2	12.5	5.3	5.4	16.4	20.4	23.1	30.1	22.5	23.5	16.5	15.4	20.6
Pamphlet, posters, other printed materials	24.0	14.7	7.3	21.5	18.3	27.9	15.2	20.6	27.2	28.0	15.1	26.7	22.9
Health workers	24.2	11.1	4.0	14.1	11.9	9.6	40.1	28.5	18.3	26.0	29.1	14.6	19.8
Health education	65.4	56.5	86.7	71.1	51.3	68.7	42.6	57.6	63.4	57.0	58.2	62.3	60.5

Figure 9. Attitude towards TB patients and stigma

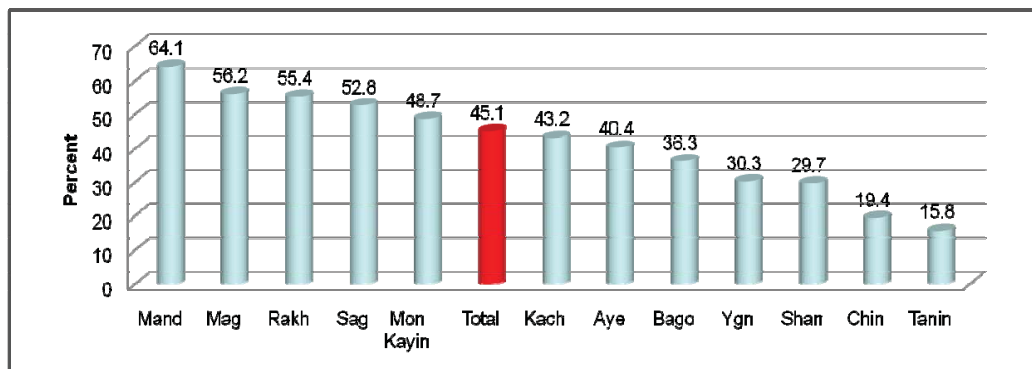
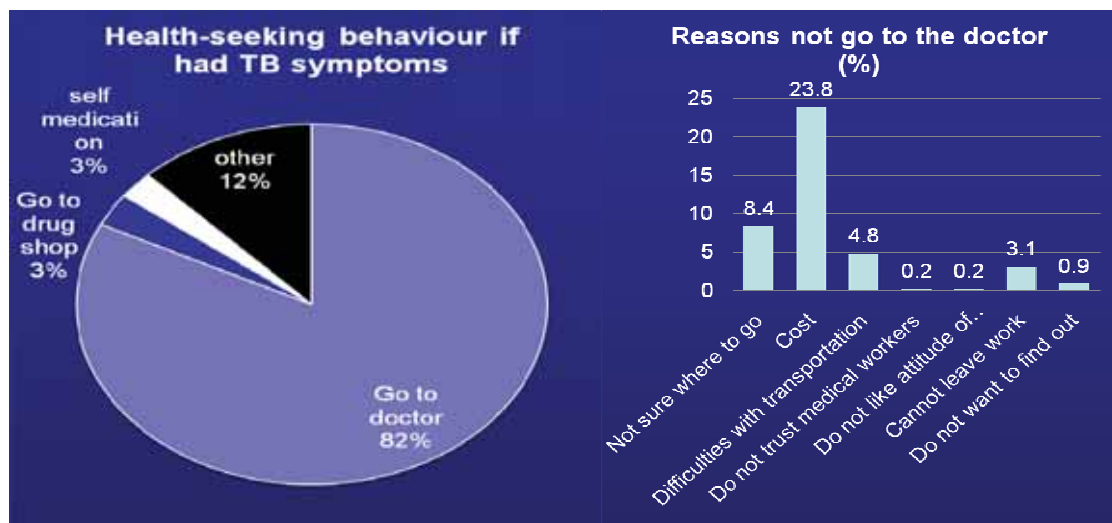


Figure 10. Treatment seeking practice



The findings were presented in Myanmar Health Research Congress 2010 (Myanmar Health Research Congress 2010 Programme and Abstract, January 2011, Page 4) and will be presented in 42nd Union World Conference on Lung Health, 2011.

Evidence for developing Advocacy, Communication and Social Mobilization tools for TB control: knowledge, attitude and practices of community on TB in Myanmar

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2. Health Systems Research Region, DMR (Lower Myanmar)
3. Myanmar Medical Association
4. Department of Health

Abstract

A cross-sectional study using both quantitative and qualitative methods was conducted in rural and urban areas of (50) selected townships in 2009-2010 to assess knowledge, attitude and practices of community on TB. It also explored stigma, perceived problem for TB and opinion and suggestion of community members for TB control. Face-to-face interview with (7,519) community members and (28) Focus Group Discussions (FGDs) were conducted in rural and urban areas of selected townships. Only (9%) of community member had high knowledge; (64%) had median knowledge; and (27%) had low knowledge scores about TB. Only (18%) answered germ and (38%) mentioned smoking as causes of TB respectively. About (65%) knew anti-TB drugs were free of charge and (86.9%) knew that TB was curable. Nearly half (45.9%) of respondents have heard about DOTS. The most common ways as expressed by participants to prevent TB were isolation of TB patients (47.4%), avoidance of smoking (26.9%) and Avoidance of sharing dishes and utensil (22.9%). Some (45.1%) said that they would not invite TB patients to their social events. Only (3.3%) would conceal TB status of their family members. Majority (71%) perceived TB as a public health problem for their locality. Initial actions if one suspected contracting TB were going to doctor (82%), and going to drug shop (3%) and self medication (3%) respectively. Participants from FGD suggested providing health message regarding prevention about TB by using appropriate communication channels for their localities. Based on the research findings, Advocacy Communication and Social Mobilization materials for TB control have being developed.

4.6.2 Abstracts of research conducted and presented

Programmed based research

1. **"Drug Resistant Patterns among Category II Failure Patients attending different TB Centers, Myanmar (2008-2009)"**, supported by WHO Research and Training in Tropical Diseases (TDR) was completed and final report was submitted to Department of Health. Dr. Wint Wint Nyunt is an investigator.

230 Category 2 treatment failure patients were done sputum smear microscopy, culture and 1st line anti- TB drug susceptibility testing at NTRL, Yangon. Among them 218 patients (94.8%) were resistant to four 1st line anti- TB drugs, 9 patients (3.9%) were resistant to other three 1st line anti- TB drugs apart from ethambutol and 3 (1.3%) were resistant to other three 1st line anti- TB drugs apart from streptomycin.

Table 33. Drug resistant patterns of category II failure cases (2009-2010)

Sr. No.	1 st line anti-TB drugs				2 nd line anti-TB drugs						No. of patients	Identif-ication
	S	H	R	E	Ofx	Km	Cs	Eto	PAS	Cm		
1	R	R	R	R	S	S	S	S	S	S	142	MTB
2	R	R	R	S	S	S	S	S	S	S	4	MTB
3	R	R	R	S	S	S	S	S	R	S	1	MTB
4	R	R	R	S	R	S	S	S	S	S	2	MTB
5	R	R	R	R	S	S	S	R	S	S	5	MTB
6	R	R	R	R	S	S	R	S	S	S	1	MTB
7	R	R	R	R	S	S	S	R	R	S	3	MTB
8	R	R	R	R	R	S	S	S	S	S	9	MTB
9	S	R	R	S	S	S	S	S	S	S	2	MTB
10	S	R	R	R	S	S	S	S	S	S	1	MTB
11	R	R	R	R	R	R	S	S	S	S	3	MTB
12	R	R	R	R	R	R	R	S	S	R	1	MTB
13	R	R	R	R	S	R	S	S	S	S	1	MTB
14	R	R	R	R	S	R	S	S	S	R	2	MTB
15	R	R	R	R	S	R	S	S	R	R	3	MTB
16	R	R	R	R	S	R	S	S	R	S	1	MTB
17	R	R	R	R	S	S	S	S	S	R	1	MTB
18	R	R	R	R	S	S	S	S	R	S	5	MTB
19	R	R	R	R	NA	NA	NA	NA	NA	NA	41	MTB
20	R	R	R	R	NA	NA	NA	NA	NA	NA	2	NTM
Total											230	

SM – Streptomycin
INH – Isoniazid
RFP – Rifampicin
EMB – Ethambutol
OFL – Ofloxacin

KM - Kanamycin
CS - Cycloserine
ETH – Ethionamide
PAS – P- aminosalicylic acid
CAP - Capreomycin

NA - Not available

2. “Dispensing anti-tuberculosis drugs among the pharmacies in selected township, Myanmar”,

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It was a cross-sectional descriptive study carried out in the South Okkalapa Township to identify the dispensing practice of anti-TB drugs among the drug shop. Number of drug shops with the presence of anti-TB drug and types and brands of anti-TB drug were determined by check-list. Out of 97 drug shops, 32 had anti-TB drugs. Mystery clients were sent to 22 drug shops which had more than one brand of anti-TB drugs. Ten drug shops which had one brand of single drug were excluded. Five research assistants were trained as mystery clients and one client went to 6 drug shops. Anti-TB drug was not sold directly by drug sellers from selected drug shops for mystery clients with symptoms of TB. Thirteen drug shops (68.4%) sold drugs such as antibiotics, cough suppressant and anti-pyretic to clients with symptoms of TB suspect, symptoms of relapse and mother who has a child with TB symptoms and 11 (57.9%) clients were referred to nearby clinic. They were suggested taking some investigation if they asked. For the client who tried to buy anti-TB drugs showing the empty strip of 4 Fix Dose Combination (4FDC) drug from National Tuberculosis Programme, 4 shops sold more than one anti-TB drugs for one dose. For the client who tried to buy anti-TB drugs showing the AKT-4 strip, AKT-4 strips were sold directly without asking anything. Thus, it is highly recommended to provide information to drug sellers about tuberculosis and importance of drug resistant TB. The funding support for this study was provided from USAID through WHO.

Tuberculosis management at drug shops: knowledge and practice of drug sellers in selected township, Myanmar

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4 Medical Statistics Research Division, Department of Medical Research (Lower Myanmar)

5 PPM DOTS TB Project, Myanmar Medical Association

It will be presented in 42nd Union World Conference on Lung Health, 2011.

A cross-sectional descriptive study was conducted in South Okkalapa Township, Yangon. It determined availability and use of anti-TB drugs among drug shops; knowledge about TB; dispensing anti-TB drugs and opinion on involving TB control activities of drug sellers. A total of 97 drugs sellers involved in semi-structured interview questionnaire. Identification of anti-TB drugs by using check list, validation of dispensing practice of drug sellers by mystery clients and 4 Focus

Group Discussions were conducted. Of them, 32 (35%) drug shops had anti-TB drugs and 38% sold anti-TB drugs during last month. Child combination (R-cinex kid) was found as the most selling drug (61.9%). About 59% of drug shops had first line drugs and the rest had second line drugs. About 79.4% had low knowledge on sign and symptoms of TB (mean knowledge score = 13.8 for 33 items) and 97.9% had low knowledge on anti-TB treatment (mean knowledge score = 3.8 for 21 items). 21.6% of drug sellers said they referred TB suspect cases to nearest health center. The rate of selling anti-TB drugs from the drug shops were significantly decreased after these drugs were given free of charge at the health centre. Most of the drug sellers obtained knowledge about dispensing drugs by on-job training. They would like to attend short training about TB from health personals during weekends. The study highlighted to organize the drug sellers to involve in TB control activities by providing necessary information about TB and process of referral to health centers.

The findings were presented in Myanmar Health Research Congress 2010 as a poster and **won “Third Prize for Best Poster Award”**. Paper was also presented. (Myanmar Health Research Congress 2010, Programme and Abstract, January 2011. Page 24, Page 63-64).

3. “Situation analysis on practice of patient kit management in selected townships of Yangon and Mandalay Regions”

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Background: TB drug management in Myanmar is gradually built in the system. Standard operating procedure (SOP) for TB drugs and supplies management was published. And relevant trainings were given almost all health workers in charge of township level TB control. In Myanmar, TB Patient kits were introduced in 2007 in 38 pilot townships. Before patient kits were introduced to the entire country, NTP needed to review and revise the current SOP and current practice to improve drugs and supplies management. This is the first analysis on practice of patient kit management in Myanmar.

Objectives: 1. To assess the effectiveness of training on patient kit management
2. To explore the needs and weaknesses in patient kit management

Study design: A cross sectional township level treatment unit-based study.

Study area: Four townships randomly selected from 38 pilot townships.

Target population: 51 of TB coordinators and basic health staff

Data analysis: Observation with check lists and face-to-face interview using structured interview questionnaires were conducted. Collected quantitative data were analyzed by Epi-info 6. Descriptive analysis was done by data summarization for continuous variables. Categorical data were described in cross-tabulation.

Results: Majority of the staff correctly responded to questions on contents and quantity of patient kit, except 19 staff who have never seen Category II patient kit. Eighty-eight percent of staff adjusted the number of blisters if the patient is in the lower or higher weight than average. Most of the staff (96%) understood that they

need to return back left over drugs from died or defaulted TB patients to township TB coordinator. Sixty three percent of the staff did not know how to manage supply box and reassembled kits.

Conclusion: In general, appropriate patient kit management is implemented but supply box management should be improved. SOP should be revised and training on patient kit management is to be improved according to the findings.

The research was supported by MIDCP, JICA and the findings will be presented in 42nd Union World Conference on Lung Health, 2011.

4. “TB situation in Lepers and families in Madayar and Sagaing townships of Myanmar”

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2. Leprosy Control Programme, Department of Health, Ministry of Health, Myanmar

Setting : Study was conducted in leper communities, residing in Nantharmyaing village, Madayar and Myayadanar village, Sagaing townships of Myanmar

Objectives : To explore TB situation among leprosy patients and their families

Method : A cross-sectional study was conducted at 2 selected townships in June and ended in July, 2010. The health education sessions were provided prior to the TB screening. TB screening was conducted using TB symptoms, followed by compulsory chest radiological examination. Those who had abnormal Chest X-Ray findings, had gone through sputum smear microscopic examination for AFB by sending 3 sputum specimens.

Results : Of 1,440 lepers and their family members screened with chest radiological examination, 213 (14.8%) had any abnormal opacity in the lungs and sent for sputum smear microscopic examination. Only 2 lepers were found sputum smear positive for AFB and they were all male and one had grade 2 disability. The prevalence of smear positive TB among lepers was 139/100, 000 population. Forty one patients with Chest X-Ray opacities and smear negative were put on Anti-TB treatment. Only 5.6% of patients with any Chest X-Ray opacity had previously treated with Anti-TB drugs.

Conclusion : Although it is lower than smear positive TB prevalence of recent national survey, which was 174/100,000 population in 2009-2010, TB prevalence among lepers was not a small disease burden. The study highlighted National TB Programme has to keep on good collaboration with leprosy control programme to detect and treat all the hidden TB patients in neglected groups like lepers.

The findings will be presented in 42nd Union World Conference on Lung Health, 2011.

5. “Listening to the voice of the community: identifying effective health education channels for TB control in rural and urban areas of Myanmar”

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- 3 Department of Health
- 4 Programme Management Unit, Myanmar Medical Association

This is a collaborative research between National TB programme and Department of Medical Research (Lower Myanmar). The study aims to identify effective health education channels for TB control according to different geographical regions in Myanmar. Face-to-face interviews were conducted with (6911) community members in (50) townships. Preferable and effective methods for health education and their reasons were further explored in-depth by (28) Focus group discussions (FGDs) and pair wise ranking in rural and urban areas of (9) States/Divisions. About (93.9%) have heard about TB and (45.9%) heard about DOTS. The most common source of information about TB was from family members, friends and neighbours (55.6%) television (TV) and video (45%), from health workers (25.2%), and from radio (17.9%) respectively. However, qualitative findings showed health education through TV was the least effective since majority did not watch TV. Survey findings showed (60.5%) of community preferred health education talk to deliver health message on TB although it had some limitations such as most men did not attend and less opportunity to ask questions. Findings from Eastern Shan State showed pamphlets would be more effective since people used to read health message and it was readily kept at home. Majority of participants from FGDs especially in rural areas of states highlighted that radio broadcasting through FM in the local language became popular and accessible for general public. It was suggested as the most practical way to disseminate health messages particularly for ethnic groups in rural areas of Myanmar. The findings from this study were incorporated for developing Advocacy, Communication and Social Mobilization (ACSM) tools and intensifying ACSM strategies for TB control in Myanmar.

This study was presented as poster at Myanmar Health Research Congress 2010 and **won “Second Prize for Best Poster Award”**. (Myanmar Health Research Congress 2010, Programme and Abstract, January 2011. Page 65)

6. “Tuberculosis at factories in Yangon: workers’ knowledge, health seeking behaviour and dismissal from workplace”

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⁴Occupational Health Division, Department of Health, Myanmar

⁵National Tuberculosis Control Programme, Department of Health, Myanmar

A cross-sectional study was undertaken in factories in industrial zones in Yangon in 2007 to assess (i) workers' awareness on tuberculosis (TB), health seeking behaviour, acceptability of TB screening, predictors on approving dismissal of TB patient (ii) prevalence of chest symptoms and identification of undiagnosed TB cases. During survey, 349 workers from 27 factories were interviewed with structured questionnaire followed by 27 in-depth interviews with managers or owners and two focus group discussions with owners. Additionally, 897 workers were screened for chest symptoms followed by radiological examination (CXR) and sputum smear examination among TB suspects. Among 349 workers, 94.6% perceived TB as curable, 50% reported air borne as the main mode of transmission, 67.6% were aware of free treatment, 14.3% had pre-employment medical checkup and 96.3% were willing for contact screening for TB. Forty percent of those having history of cough used doctors' clinic. Thirty-three percent agreed on dismissal of worker with TB, which was associated with lower education, shorter service, no history of TB contact and unwillingness to work with index worker. Among 897 workers, 15.3% had cough, 5 were cases on treatment, 126 were recommended for investigations and the results were available for 49. Five out of six new cases were males. Qualitative findings showed the difficult accessibility of diagnostic facilities and low but the existence of dismissal of workers with TB. Health education, easy accessibility of diagnostic facilities, more active case detection for males, protection of workers with TB from stigmatization and dismissal from workplace are recommended. The study was funded by WHO/TDR small grant from WHO/SEARO.

This paper was presented at Myanmar Health Research Congress 2010. (Myanmar Health Research Congress 2010 Programme and Abstract, January 2011. Page 23)

Knowledge, attitude and practice on tuberculosis in a growing industrialized area in Myanmar

Aung-Thu*, Ohnmar**, Han-Win**, Min-Tha-Nyunt***, Thandar-Lwin***.

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*** Department of Health

SETTING: Factories in industrial zones in Yangon, Myanmar, one of 22 high-burden countries for tuberculosis (TB).

OBJECTIVES: To assess workers' knowledge of TB, their health seeking behaviours, acceptability of TB screening, and predictors for approving the dismissal of TB patients.

DESIGN: In a cross-sectional survey, structured interview with 349 factory workers followed by 27 in-depth interviews and two focus group discussions with employers.

RESULTS: Among 349 workers, 95% perceived TB as being curable, 50% correctly reported air as the main mode of transmission and 68% were aware of free treatment. Despite 88% perceived screening before employment as necessary, only 14% did so. Ninety-six percent were willing to undergo contact screening for TB, but 55% were affordable. Thirty-three percent agreed with the dismissal of workers with TB, which was associated with lower education, shorter service, not having a history

of TB contact and unwillingness to work with an index TB case due to fear and lack of knowledge.

CONCLUSION: More effective communication strategies towards factory workers are needed to increase knowledge on transmission and reduce stigma. Employers should be sensitized to protect TB diseased employees and invest in preventive activities.

Paper was accepted to be published in International Journal of TB and Lung Diseases

7. Referral patterns and diagnosis of TB among TB suspects attending Latha Diagnostic TB Center in Yangon.

Khin Sandar Oo¹, Wai Wai Han¹, Saw Saw¹, Tin Mi Mi Khine², Cho Cho Myint¹,
Thandar Min¹, Aye Win Khaing¹ and Soe Moe Myat¹
¹ Department of Medical Research (Lower Myanmar)
² Yangon Divisional TB Center, National TB Programme

With the aim of exploring referral patterns and treatment category among Tuberculosis (TB) suspect attending Regional TB center, Yangon, a cross-sectional descriptive study was done from January to October 2010. A total of 400 TB suspects were interviewed. They were referred mainly by general practitioners (GP) (24.2%), health staff (23.2%) and Township Health Department (THD) 20% respectively. Main reasons for referral were to do sputum examination (53%), suspecting TB (37.2%), and getting drugs for free of charge (20.5%). More than half of the TB suspects (222, 55.6%) were diagnosed as TB. Among them 196 patients (49.0%) were being treated with Category I, 23 patients (5.8%) with Category II, 2 patients (0.5%) with Category III and 1 patients (0.2%) with Multi-drug Resistant MDR-TB regime. Eighteen patients (4.5%) took anti-TB drugs shortly before attending this TB center. Specialist clinics and GPs were stated as main source of other TB treatment (61.1% and 33.3%) respectively. Among those who were referred by THD, 6.3% sought care at specialist clinics and 2.5% took care at GP clinics before attending Divisional TB Center. It is suggested to advocate specialist about availability of free anti TB drugs at public center and organize them for early referral of TB patients to public TB center. The funding support for this study was provided from DMR (Lower Myanmar).

This study was presented as poster at Myanmar Health Research Congress 2010. (Myanmar Health Research Congress 2010, Programme and Abstract, January 2011. Page 71)

8. “Patterns of anti-tuberculosis drug resistance among HIV patients with pulmonary tuberculosis attending the Specialist Hospital, Waibargi, Yangon”

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The emergence of multi-drug resistant tuberculosis (MDR-TB), TB that exhibits resistance to two potent first-line anti-TB drugs, rifampicin and isoniazid, becomes not only a threat to the global TB control program but also a particular concern among HIV-infected persons. A cross-sectional descriptive study was carried out from November 2007 to January 2009 to determine the magnitude and patterns of anti-TB drug resistance among HIV-TB co-infected patients at the Specialist Hospital, Waibargi, Yangon. A total of 44 *Mycobacterium tuberculosis* culture isolates of HIV patients with pulmonary tuberculosis were tested for susceptibility to streptomycin, isoniazid, rifampicin and ethambutol at National Reference TB Laboratory. Overall resistance to any anti-TB drugs was found in 68.2% (30/44) of isolates. MDR-TB was found in 65.9% (29/44) of isolates. New cases of TB accounted for 31.8% (14/44) of the study group. Drug resistance in this subgroup was 35.7% (5/14) compared to 83.3% (25/30) in previously treated subgroup. Twenty-nine MDR-TB isolates were further tested for susceptibility to pyrazinamide and its resistance was found in 41.4% (12/29) of isolates. Those who had history of previous anti-TB treatment and those with CD4+ count of less than 100 cells/ μ l were significantly more likely to suffer from drug resistance than those without (Crude OR=9, 95% CI=2.1-28.3, P=0.004; Crude OR=4, 95% CI=1.1-15.4, P=0.074, respectively). This study highlighted the magnitude of MDR-TB among HIV patients and the importance of effective management program.

Full paper was published in The Myanmar Health Sciences Research Journal, vol 22 No. 1, 2010 page 25-31.

9. "Service factors related to defaulting TB treatment in Myanmar"

¹Tin Mi Mi Khaing, ¹Thin Thin Yee, ¹Tin Maung Swe, ²Myat Myat Moe,
²Saw Saw, ¹Si Thu Aung, ¹Win Maung & ³Aye Htun

¹National Tuberculosis Programme, Department of Health

²Department of Medical Research (Lower Myanmar)

³JICA (MIDC Project)

This qualitative study was conducted in collaboration with Department of Medical Research (Lower Myanmar), JICA (MIDC Project) and Myanmar National Tuberculosis Program in four townships in Myanmar. It aimed to describe factors for defaulting TB treatment among new pulmonary TB patients. In-depth Interviews (IDIs) were conducted with 11 defaulted TB patients. Eighteen Key Informant Interviews (KIIs) were conducted with Township Medical Officers, TB Coordinators, Midwives and General Practitioners. Majority of the IDI respondents received health education prior to their anti TB treatment by health staff. Although health staff explained key messages of tuberculosis, the provision of information and health education was probably hindered by shortage of health man power, increased work load and difficulty in communication with different ethnic groups, pointed out by key informants. Time spent for doing health education session and content of the session were different and it depended on type of TB patient. A few IDI respondents were not traced and sought by health personnel. Majority of DOT providers were family members but many defaulted TB patients took the drugs by themselves. DOT supervisor was the key person responsible for patient regularly taking drugs, allowing adequate time spent to discuss with family members and checking the blister. It is essential to ensure frequent supervision on DOT provider in order to improve their capacity. The findings highlighted that ensuring effective, complete

pretreatment health education for every TB patients with reference to BHS guideline, conducting initial home visit for every TB patients, motivating BHS for effective DOT, enhancing early missed dose tracing and practicing repeated health education throughout the treatment course were essential for reducing defaulter rates and more effective TB control.

Full paper was published in The Myanmar Health Sciences Research Journal, Vol 22 No. 1, 2010 page 39-45

10. “Review of PPM DOTS initiatives in Myanmar”

Saw Saw¹, Thandar Lwin² and Hans Kluge³

1. Department of Medical Research (Lower Myanmar)
2. National Tuberculosis Programme, Department of Health
3. World Health Organization

This review was based on the information gathered from all partners involved in PPM DOTS—Myanmar Medical Association (MMA), Population Services International/Myanmar (PSI/M), Japanese International Cooperative Agency (JICA)—and the National TB Guidelines, the National TB Programme (NTP) annual reports, Notes for the Records of partner meetings on PPM, WHO monitoring mission reports, presentations at PPM partners meetings and annual evaluation meetings and other available published and unpublished literatures.

The concept of PPM has been broadened. The scope of PPM is to include all public and private health care providers not linked formally to NTP. The term PPM thus represents a comprehensive approach to engage not just the private sector but all relevant health care providers in DOTS implementation. Although the scope of PPM DOTS is broadened, in Myanmar, PPM DOTS was first initiated with private practitioners. Thus, this review only focuses on public-private mix; more specifically on involvement of private practitioners/general practitioners in PPM DOTS through three partners. All partners involved in PPM DOTS and focal person for PPM DOTS from NTP and WHO were contacted and they edited their portion respectively before being finalized. Systematic analysis of relevant documents from three partners for PPM-DOTS was also conducted.

This review was compiled and edited by Department of Medical Research (Lower Myanmar) with contributions from National TB Programme, WHO, PSI, JICA and MMA.

The purposes of this review were:

- to document PPM DOTS initiatives and implementation in Myanmar including lessons learnt from pilot projects of all partners and
- to provide guidance for the scale up of TB control in Myanmar

It is expected that this review will foster the ongoing activities of PPM DOTS and facilitate evidence-based decision making for TB control. Moreover, this review will provide a comprehensive reference for prioritizing and identifying future activities and research for effective PPM DOTS in Myanmar.

Recommendations:

1. To advocate, organize and sensitize all GPs and public staff on concept of PPM DOTS
2. To increase coverage of GPs involved in PPM DOTS
3. To promote better coordination among all partners involved in PPM DOTS by sharing experiences and exchanging knowledge among all partners

4. to establish unified reporting system starts from township to State/Divisional and Central level
5. To promote operational research and utilization of research findings
6. To ensure regular drug supply

11. “Accessibility of community to health services for TB control in selected Township, Northern Shan State, Myanmar”

¹Thida, ²Saw Saw, ³Kyaw Zaw, ¹Kyaw Zin Thant

¹ Department of Medical Research (Upper Myanmar)

² Department of Medical Research (Lower Myanmar)

³ National Tuberculosis Programme, Department of Health

This was a collaborative study with Department of Medical Research (Upper Myanmar), Department of Medical Research (Lower Myanmar) and National Tuberculosis Programme, Department of Health with funding support from WHO. It was conducted during 2010 using both quantitative and qualitative data collection methods to explore the accessibility of health care services among TB patients taking treatment at Kutkai Township Health Department (THD) during 2009. About 12% had previous history of TB, 27.5% had history of TB in their family and 37.5% have aware the presence of TB patients in their community. Distance to the THD ranged from 1 to 70 miles. More than 78% of them lived in areas with primary health facilities (PHF) –rural sub centres, rural health centres and township health department—present locally, and about 21% lived without any PHF. More than 80% of patients from PHF available areas were accessible to the health care services in any season, but nearly 77% of those from PHF non-available villages faced difficulty in rainy season. Forty percent of patients stated that General Practitioners (GPs) were available in their areas and **29% of those private providers were untrained** (quacks). Median duration of symptom development to getting proper anti-TB treatment was 30 days ranged from 1 to 913 days. More than half of the TB patients **(51.7%) sought treatment first at primary health facilities**, 33.3% with General Practitioners (GPs), 9.2% took home remedies, and 5.8% took treatment from drug shop. But qualitative result pointed that most patients have tried home herbal medicine including massaging, doing acupuncture initially. Remote and difficult access to the THD and patient’s poor knowledge on TB associated with taking home treatment and seeking treatment at drug shops. Total family income and duration of symptom inversely associated with initial treatment seeking at GP. Having high level education and feasible access to and ever available of primary health services were positively associated with initial treatment seeking at PHC. Reasons for prolonged symptom as patient’s factors were financial problem, no knowledge about seriousness of the disease, or being treated with traditional herbal medicine; and the services factors were as coincidence with the absence of provider and delayed diagnosis. BHSs and General Practitioners were playing the main role in case finding and it was also contributed by relatives, TB patients and friends to a certain proportion. In qualitative findings, both BHSs and community involved in sending sputum to THD for diagnosis or during treatment and getting anti-TB drugs for patients from remote area.

In light of the above findings, the following recommendations were made:

- Effective way of improving community knowledge on diagnosis and treatment of TB should be explored and applied to reduce the delay in getting treatment and to ensure treatment adherence;
- Untrained health care providers should be included in TB control in hard-to-reach areas;
- GPs in hard-to-reach areas should be involved in TB control in line with NTP;
- All providers of RHCs and SCs should be encouraged in helping patients who are not able to access THD by taking sputum samples on their way to THD.

Paper will be presented at Myanmar Health Research Congress 2011.

4.6.3. Ongoing research

1. “Strengthening township level coordination for PPM DOTS in selected townships, Myanmar: Utilization focused evaluation”

Saw Saw¹, Thandar Lwin², Thida³ and Wai Wai Han³

1. Department of Medical Research (Lower Myanmar)
2. National Tuberculosis Programme, Department of Health
3. Department of Medical Research (Upper Myanmar)

Background: Public-Private Mix DOTS (PPM-DOTS) was established in Myanmar in 2003 with Myanmar Medical Association (MMA) and Population Services International (PSI). But, there is no coordination mechanism among PPM partners, public sector and all General Practitioners (GPs) at the township level.

Objective: to establish township coordination mechanism by participation of National TB Programme (NTP), MMA, PSI and GPs.

Methods: Utilization focused evaluation. This is a cyclical process of conducting assessment and action. All GPs (148) in Aungmyaethazan and North Oakalapa Townships were involved for questionnaire survey and observation of clinics and 23 in-depth interviews with staff from public sector, MMA and PSI were conducted.

Results: During baseline assessment, 48% of GPs were not participating in PPM-DOTS and only 20% of GPs' clinics had TB poster. According to GPs' preference in survey, township coordination meetings were conducted six monthly in the afternoon on weekends. NTP, MMA, PSI and all GPs in study townships were invited and more than 60% of GPs attended. At the meetings, most requested topics from GPs—recent guidelines on TB (80%), side effects of anti-TB drugs (73%) and referral (60.9%)—were discussed. Health education materials, NTP guidelines and curtains printed with key message on TB were distributed for GPs. During intervention, 86.4% of GPs' clinics had TB poster. All GPs suggested discussing other health problems at township coordination meeting.

Conclusion: Township coordination is essential and feasible. This is the first initiative in Myanmar. It should be conducted not only for TB control but also for other diseases.



Conducting Township coordination meetings and distributing IEC materials for GPs

2. “Roles of TB patient self help group in TB control activities in selected townships, Myanmar”

Saw Saw¹, Tin Mi Mi Khaing², Nay Htut Ko Ko³, Wai Wai Han¹ and Thandar Lwin²

1. Department of Medical Research (Lower Myanmar)
2. National TB programme, Department of Health
3. World Vision Myanmar

The study was conducted in collaboration with Department of Medical Research (Lower Myanmar), National TB Programme and World Vision, Myanmar with funding support from 3 Diseases Fund. Data collection for baseline assessment was conducted in October 2010-January 2011 in Hlaingtharyar and Thanbyuzayat Townships in which TB patient Self Help Groups (SHG) activities were implemented. It aimed to describe the process of development of Self Help Groups in addressing TB and related problems. As baseline assessment, it identifies Strengths, Weaknesses, Opportunities and Limitations of SHGs. It was a proxy-experimental design using both quantitative and qualitative methods. End line assessment will be conducted after one year. Face-to-face interview with 237 TB patients and 258 family members were conducted by using semi-structured pre-tested questionnaire. Document review of township TB registers, SHG meeting records; 7 Focus Group Discussions (FGDs) with SHG members; 21 Key informant interviews (KIIs); 7 in-depth interviews (IDIS); and observation of SHG activities were also carried out. Although there was a linkage or coordination between public sector and WVM for its activities in general, formation and activities of SHG were not well informed to public sector specifically. About (115, 42.3%) of TB patients from SHG areas and (15, 6.3%) from non-SHG areas had heard about SHG. But only (66, 57.4%) were invited to involve in SHG. Majority (49, 73.1%) decided to involve as members of SHG. About 34% of SHG members were TB patients, 54% were family members and 12% were volunteers. Nearly half (48%) were being SHG members for more than 6 months. Only 28% obtained capacity building training for SHG. Moreover, they did not get training about the disease (TB) apart from those attended DOT providers' training. Main activities of SHG members included referral, providing DOT and health education. Such activities were mostly carried out by SHG members and volunteers in SHG areas whereas most were conducted by family members in no SHG areas. For the quarter in 2010 (1st April-30th September), 187 and 214 TB suspects were referred to public health centre by SHGs from Thanbyuzayat and Hlaingtharyar respectively. In Thanbyuzayat (49, 26.2%) among 187 TB suspects and in Hlaingtharyar, (130, 60.7%) among 214 TB suspects were diagnosed as TB. Participants pointed out sustainability of SHG depended on several factors such as having interest of SHG members, providing capacity building of SHG members, considering long term benefit for individual members of SHG. Empowering and involving TB patients is context-specific and it is necessary to tailored to a given context and adapted to stakeholders' dynamics. In conclusion, many endeavors (providing nutritional support, livelihood skill, capacity buildings, etc.) tried for involvement and empowerment of TB patients as SHGs. Thus, it is hard to tell which would be the most effective way. However, it can be concluded that this SHG strategy should not be done through uniform implementation of specific intervention. Understanding of contextual factors and close monitoring of process are crucial to make it effective.

In the light of above findings, the following recommendations were drawn:

1. Advocate SHG activities to TB patients, community, local authority and public health sector

2. Strengthen capacity of SHGs for TB knowledge, fund raising, financial management and planning
 3. Establish forum for sharing experiences and exchanging knowledge among all SHGs
 4. Develop individual household development plan for SHG members
 5. Motivate and acknowledge activities of SHGs
 6. Better coordination and linkage with local public health staff, CBOs and other NGOs
 7. Health education to improve knowledge specifically on knowledge about cause of TB, knowledge about transmission and knowledge about monitoring of TB treatment
3. Assessing involvement of community volunteers in TB control activities initiated by INGOs in selected townships, Myanmar (Dr. Le Le Win, Dr. Thandar Lwin, Dr. Tin Mi Mi Khaing, Dr. Saw Saw and Dr. Yin Thet Nu Oo)
 Collaborations: DMR (LM) and NTP
 Grant: WHO/TDR Small Grant from WHO/SEARO
 4. Effectiveness of DOT providers in MMA PPM TB project (Dr. Khin Swe Win, Dr. Saw Saw, Dr. Thandar Lwin, Dr. Tin Aye, Dr. Hnin Wai Lwin Myo, Dr. Yu Yu Lwin, Dr. Thi Thi Kyaw, Dr. Thant Zin Aung, Dr. Thandar Soe)
 Collaborations: MMA PPM DOTS TB project, DMR (LM) and NTP
 Grant: 3DF
 5. Role of informal health care providers in TB management and control in semi-urban and rural areas of Myanmar (Dr. Yin Thet Nu Oo, Dr. Thyn Thyn, Dr. Hnin Wai Lwin Myo, Dr. Saw Saw, Dr. Le Le Win, Dr. Thandar Lwin, Dr. Thandar Soe, Dr. Tin Aye)
 Collaborations: DMR (LM), NTP and MMA PPM DOTS TB Project
 Grant: 3DF
 6. Evaluation of clinical, bacteriological, immunological responses and pharmacokinetics of pulmonary TB (Cat I failure) patients in Yangon (Dr. Khin Chit, Dr. Thandar Lwin, Dr. Khin Saw Aye, Dr. Tin Mi Mi Khaing and Dr. Khin Zaw Latt)
 Collaborations: DMR (LM) and NTP
 Grant: WHO/APW (2010-11)
 7. Clinical validation of rapid TB diagnostic tools based on molecular and microarray nontechnology (Dr. Wah Wah Aung, Dr. Thandar Lwin, Dr. Tin Tin Mar)
 Collaborations: DMR (LM), NTP and Technical counterpart- University of Malaya, Kuala Lumpur, Malaysia

4.6.4. HIV sentinel surveillance among new TB patients

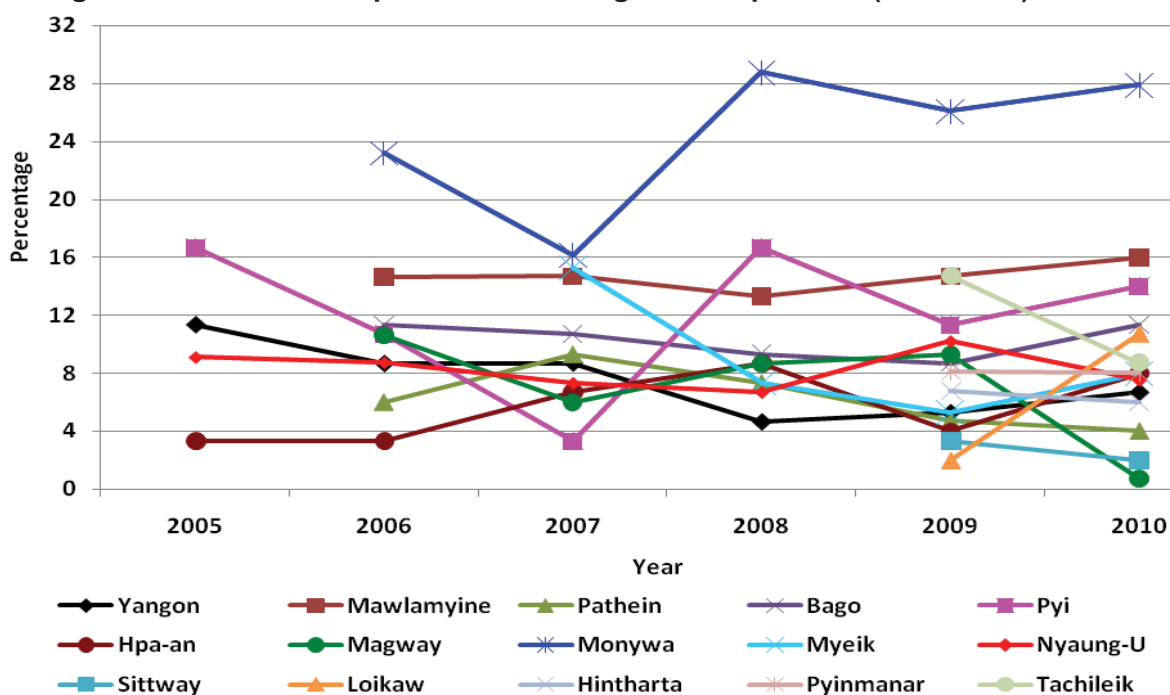
Routine HIV Sentinel Surveillance was conducted by NAP. With the collaboration with NAP, new TB patients were included in 20 selected sites in HSS. The intake period for serum collection was up most 3 months and 150 serum specimens were collected from each site in 2010.

The trends of HIV prevalence among new TB patients are helpful for both NAP and NTP to develop the scale up plan of TB/HIV collaborative activities where HIV prevalence is high. Trends showed Monywa, Pyay and Mawlamyaing districts need to initiate TB/HIV preventive and control activities as soon as possible. NTP planned to conduct in 5 additional sentinel sites for 2011.

**Table 34. HIV prevalence among new TB patients, sentinel surveillance
(2005- 2010)**

Sr. No.	Sentinel sites	2005	2006	2007	2008	2009	2010
1	Yangon	11.30%	8.70%	8.70%	4.67%	5.3%	6.7%
2	Pyay	16.70%	10.70%	3.30%	16.67%	11.3%	14.0%
3	Bago		11%	10.70%	9.33%	8.7%	11.3%
4	Hpa-an	3.30%	3.30%	6.70%	8.67%	4%	8.0%
5	Nyaung U	9%	9%	7.30%	6.67%	10.2%	7.5%
6	Magway		1%	6%	8.67%	9.3%	0.7%
7	Monywa		23%	16.10%	28.77%	26.1%	27.9%
8	Myeik			15.30%	7.33%	5.3%	8.0%
9	Pathein		6%	9.30%	7.33%	4.7%	4.0%
10	Mawlamyine		15%	14.70%	13.33%	14.7%	16.0%
11	Tachileik					14.7%	8.7%
12	Sittway					3.3%	2.0%
13	Loikaw					2%	10.7%
14	Hinthada					6.8%	6.0%
15	Pyinmana					13.4%	8.0%
16	Dawei						5.2%
17	Myingyan						11.0%
18	Taungoo						14.2%
19	Meikhtila						20.7%
20	Bamaw						24.1%
Total		10.30%	10.90%	9.80%	11.10%	9.15%	10.4%

Figure 11. Trend of HIV prevalence among new TB patients (2005-2010)



5. Special occasions

5.1. External technical support

Technical support was provided by WHO and GDF, Green Light Committee, JICA/JATA for NTP, Myanmar.



Visit of GDF and Green Light Committee

Table 35. International visitors in 2010

S.N	Name and Designation	Duration	Remarks
1.	Dr. C. N. Paramasivan Dr. Evan Lee	25.1.2010 to 7.2.2010	TB Laboratory Experts for TB REACH Wave 2 Proposal Development
2.	Dr. Rajeswari Ramachandran Dr. SM Abu Zahid	22.2.2010 to 26.2.2010	GDF Mission for monitoring exceptional 7 th year GDF grant
3.	Ms. NATHANSON, Eva Maria Mr. Casper	22.2.2010 to 26.2.2010	GLC Mission
4.	Ms. Rose Pray	25.4.2010 to 7.5.2010	Expert from WHO (HQ) for Infection Control
5.	Dr. Georgio Roscigno Dr. C. N. Paramasivan	10.7.2010 to 17.7.2010	FIND Mission for BSL.3 opening ceremony
6.	Dr. Valerie Lalende	10.7.2010 to 31.7.2010	Microbiologist from Pasture Institute (France) for Training on Liquid Culture and DST
7.	Dr. Ikushi Onozarki Dr. Norio Yamada	5.6.2010 to 10.8.2010	National TB Prevalence Survey Experts from WHO Headquarter for final survey report
8.	Mr. Tushar Kanti Ray	1.1.2010 to 30.9.2010	Technical Officer from SEARO for Programme Monitoring and Evaluation
9.	Dr. Ikushi ONOZAKI Dr. Norio Yamada Dr. Philippe Glaziou	10.12.2010 to 20.12.2010	Experts from WHO (HQ) and JATA (RIT) for dissemination workshop of National TB Prevalence Survey Findings

5.2. Three Diseases Fund (3DF)

Following the withdrawal of GFATM in August, 2005, a consortium of donors (Australia, European Countries, the Netherlands, Norway, Sweden and the United Kingdom) agreed to work together and developed the concept of the Three Diseases Fund (3DF) and offered Myanmar to continue the critical activities related to three diseases. Coordinating Body (CB) and Technical Strategic Groups (TSG) were organized and developed the 3-year operational plan and Expression of Interest in line with 5-year national strategic plan together with implementing partners.

Total funding for TB under Bridge fund 3DF (2007) was 257,155 USD for NTP component and 347,570 USD for WHO component altogether 604,725 USD received for critical TB control activities.

Bridge Fund (3DF) supported capacity building of lab. technicians and BHS working at the grass root level which is the basic needs for quality of DOTS implementation. The software and data management training was an essential input for central NTP to be able to manage the programme. The support on local drug transportation cost was helpful for the uninterrupted drug supply to the end users. The low performance townships were focused to improve both case detection and case holding by introducing mobile team activities, initial home visits and contact tracing, sputum collection centers, quarterly township cohort review meetings, quarterly evaluation meetings. Community involvement activities were started in Myawaddy at Thailand-Myanmar border, Public-Public Mix DOTS initiated in 4 tertiary hospitals in Yangon. The guideline on childhood TB management, draft guideline for counseling for TB, national framework to manage MDR-TB were also developed and printed/distributed. For MDR-TB management, upgrading of Upper Myanmar TB Laboratory, Mandalay was completed and 2nd drug resistant survey was initiated. TB/HIV sentinel surveillance started. As supplies and equipment: training aids, computers and accessories for X-ray units were also supported.

3DF bridging fund was followed by the first year full funding started from (1-9-07) to (31-8-08). The TB control activities funded by 3DF covered all 325 townships. Total 3DF funding for TB control was 1.8 million USD, out of which NTP received 1.08 million USD, MMA received 0.5 million USD and WHO received 0.22 million USD **for Year 1**. The funding for **Year 2** was the same as Year 1.

3DF also supported 270,000 USD for National TB Prevalence Survey and 3 million USD (**Round 3**) for First Line Anti-TB Drugs to cover the year of 2010. 3DF provided total 3,613,178 USD for **year 3 and 4** for implementation of NTP activities. Year 3 and 4 (2010-2011) could implement continuously till end of August, 2011. Therefore, saving from 2010 will be reprogrammed and used in 2011. The extension of the activities to fill the gap will continue till end of 2011.

Table 36. TB control activities under 3DF (September, 2009 to August, 2010)

TB control activities under 3DF (September, 2009 to August, 2010)			
Activities under NTP component			
Purpose 1	To sustain and improve the quality of DOTS services to reach all TB patients		
TRAINING	Planned	Completed	Achievement
Training on DOTS TB Counseling for Social Workers/Counselors and Nurses (3 days course)	18 courses	26 courses	144%
Training on Management of TB at District level for New Recruit TMO, TB Team Leaders and TB Coordinators (5 days course)	2 courses	2 courses Taunggyi Mandalay	100%
Training on TB Data Management at District Level (3 days course)	2 courses	2 courses Sittwe Mawlamyine	100%
Training on management of TB at health facility level for BHS (3 days course)	65 courses	76 courses	117%
Training on sputum microscopy for new recruit lab. technicians (5 days course)	2 courses	2 courses Yangon Mandalay	100%
Refresher training on sputum microscopy for Grade II lab. technicians (3 days course)	2 courses	2 courses Yangon Taunggyi	100%
Training for senior TB Laboratory Supervisors (STLS) (5 days course)	1 course	1 course Yangon	100%
Training on Cohort Review for TMOs and TB coordinators (2 days course)	2 courses	4 courses Kyaingtong Sittwe Magway Shwebo	200%
Health Leadership and Management Training for TMOs and Disease Control Team Leaders in State/Region (5 days course)	2 courses	NIL, shifted to Year 4	0%
Training on pre-packed patient kits for basic health staff including one TOT (2 days course)	17 courses	17 courses	100%
Special Activities for Low Performance Townships (10 townships)	Planned	Completed or Established	Achievement
Sputum Collection Points in 10 selected townships	10	5 (not done regularly)	50%
Monthly Meeting in Low Performance Townships (12 meetings per year) in 10 selected townships	120	13	11%
Quarterly Cohort Review Meeting in Low Performance Townships (4 meetings per year) in 10 selected townships	40	9	23%
Workshop on Strengthening of Regional TB control Activities of Yangon Region	1	1	100%

Supervision, Monitoring & Evaluation		Planned	Completed	Achievement
Supervisory Visits from State/Regional Level to Township (1 visit per year to 260 townships)		260	83	32%
Laboratory supervision from Central to State / Regional level		17	4	24%
Supervisory Visits from State/Regional Level to Township with Major Errors (100 visits per year)		100	30	30%
Quarterly Cohort Review Meeting in Low Performance Townships (4 meetings per year) in 20 selected townships		80	20	25%
Community Based DOTS		Planned	Established	Achievement
Sputum Collection Points in 20 selected townships		20	15 (not done regularly)	75%
Border Townships Activities (Myanmar-Thai border)		Planned	Completed	Achievement
Initial Home Visit and Contact Tracing for Myawady and Tachileik		750 visits	578	77%
Annual Evaluation Meeting at Myawady and Tachileik		2	2 Myawady Tachileik	100%
Supervision and Monitoring Visits from Central/ State Levels to Myawady and Tachileik (2 times per year)		4 (2 times each to Myawady & Tachileik)	3	75%
Quarterly Supervisory Visits from Township (Myawady & Tachileik) to 5 Rural Health Centres or Sub Centres		40 (20 visits per year in each township)	6	15%
Purpose 2		To improve the treatment success rate among all detected TB patients including those with TB/HIV and MDR-TB		
DOTS PLUS PROJECT		Planned	Completed	Achievement
Refresher Training on MDR TB counseling for social workers/counselors and nurses (3 days course)		2 courses Yangon Mandalay	2courses Yangon Mandalay	100%
Refresher Training on Management of MDR TB for TB Hospital Staff/ Programme Staff (2 days course)		2courses Yangon Mandalay	2courses Yangon Mandalay	100%
MDR TB Patient Support Cost (Nutrition/Travel Allowance) for 175 patients				Provided
DOTS Plus Supervision for Social Support Network (Travel allowance for 100 DOTS Plus supervisors)				Provided
Fees for Laboratory investigations either at private lab. or cost sharing hospital labs.				Provided
Specialized services & injection fees for 100 MDR TB patients (10000 kyats per month)				Provided
Allowance for DOTS Plus Provider for Social Support Network				Provided

DOTS PLUS PROJECT		Planned	Completed	Achievement
Bi-annual Evaluation Meeting for DOTS Plus Pilot at TB Hospitals	4 (2 times per year in Yangon & Mandalay)	2 (1 time per year in Yangon & Mandalay)	50%	
Bi-annual DOTS Plus Committee Meeting	4 (2 times per year in Yangon & Mandalay)	2 (1 time per year in Yangon & Mandalay)	50%	
Car rental for DOT-Plus Pilot at TB Hospitals	2 cars hired each for Yangon & Mandalay	2 cars hired each for Yangon & Mandalay	100%	
Purpose 3	To maintain the case detection rate of estimated new smear positive TB patients above 70%			
Public Public Mix DOTS		Planned	Completed	Achievement
Incentive for assigned TB focal persons and social workers to coordinate between hospital and township TB centres (30000 kyats per month for 3 persons)	12	12	100%	
Travel Allowance for assigned social workers to trace defaulter patients (10000 kyats per month for 2 persons)	8	8	100%	
Quarterly Supervision from Regional TB Centre	16	7	44%	
Quarterly Evaluation Meeting	16	16	100%	
Annual Evaluation Meeting on PPM DOTS	1	1	100%	
Expansion of PPM DOTS to Insein General Hospital	1	1	100%	
Purpose 4	To measure both progress with programme implementation and the impact of interventions towards more accurately determining progress towards the MDGs			
TB and TB/HIV surveys		Planned	Completed	Achievement
Sentinel Surveillance for HIV Prevalence among TB Patients (Blood Glucose Testing and Transport Fees)	20 townships	20	100%	
Isoniazid Preventive Therapy (IPT)		Planned	Completed	Achievement
Quarterly Meeting at Township Level (9 townships) 7 townships in Mandalay District, Lashio and Tachileik		NIL	0%	
Annual Evaluation Meeting for IPT (9 townships)	1	1, Nay Pyi Taw	100%	
Transport Cost for Defaulter Tracing		NIL	0%	
Purpose 5	To strengthen monitoring and evaluation system of National TB Programme and Township Health Departments for effective programme implementation			
Recruitment of Assistant Programme Officers (APO) for strengthening of Monitoring and Evaluation activity under WHO technical assistant to NTP	8 APOs recruited	8 APOs recruited	100%	

* Data source : NTP central unit and WHO TB unit

Purpose 1. To sustain and improve the quality of DOTS services to reach all TB patients: For the purpose 1, there are 10 types of trainings in 2010 and 9 were 100% completed . Only 2 trainings for “Health Leadership and Management Training for TMOs and Disease Control Team Leaders in Region/ State (5 days course)” could not be conducted.

Special activities for 10 low performance townships (Meikhtila, Mahlaing, Pindaya, Moungyoung, Kuitkhai, Myaypon, Pauktaw, Yinmabin, Kawhmu and Thonegwa) were not satisfactory in 2010. It should be followed-up and strengthened in 2011.

For Sputum Collection Points selected in 10 low performance townships, only 50% established (5/10).

Monthly Meeting in low performance townships, which should be 12 meetings per year could not be conducted as planned (11% =13/120). Similarly, Quarterly Cohort Review Meetings, which should be 4 meetings per year were only conducted in 9/40 (23%).

Concerns to supervision, monitoring and evaluation, supervisory visits were less than 35% as planned for Region/state level to townships and townships with laboratory major errors. Supportive supervision is important for solving the real issues in that particular area and on-the-job training, however human resource constraint is the major cause that could not be completed as planned.

Purpose 2. To improve the treatment success rate among all detected TB patients including those with TB/HIV and MDR-TB: refresher trainings could be conducted as planned and able to treat 192 MDR-TB patients.

Purpose 3. To maintain the case detection rate of estimated new smear positive TB patients above 70%: Public Public Mix DOTS program was introduced to Insein General Hospital. All 6 activities could be fully completed except on activity of Quarterly Supervision from Regional TB Centre.

Purpose 4. To measure both progress with programme implementation and the impact of interventions towards more accurately determining progress towards the MDGs : All activities completed except defaulter tracing in IPT which was not necessary.

Purpose 5. To strengthen monitoring and evaluation system of National TB Programme and Township Health Departments for effective programme implementation: Human resource constraint of NTP was solved by recruitment of 8 Assistant Programme Officers (APOs) and assigned at Regional/State TB centers to assist the Regional/State TB Officers and to strengthen the supervision, monitoring and evaluation. The regularity of reporting was also improved.

6. BCG immunization

BCG immunization started in 1951 to those who were tuberculin test negative. In 1963, Freeze Dried BCG Vaccine was introduced. Direct BCG vaccination has been implemented since 1969. BCG Vaccination had become part of the Expanded Programme on Immunization (EPI) and the BCG team of NTP had been integrated into Regional and State Health Department since 1978. The BCG technicians and BCG supervisors are responsible for training of BHS, supervision and evaluation on immunization activities of BHS in each and every Region and State. BCG coverage increased from 76% in 2005 to 93% in 2010. (Source: EPI programme).

Table 37. BCG coverage (2005-2010)

State/Region	2005	2006	2007	2008	2009	2010
Ayeyarwaddy Region	75%	64%	85%	84%	92%	92%
Bago Region (Bago)	74%	81%	89%	94%	95%	94%
Bago Region (Pyay)	90%	90%	94%	86%	95%	96%
Chin State	99%	119%	93%	63%	79%	84%
Kachin State	89%	108%	95%	89%	95%	92%
Kayah State	81%	83%	83%	96%	94%	96%
Kayin State	60%	63%	85%	85%	82%	80%
Magway Region	85%	89%	90%	92%	93%	95%
Mandalay Region	68%	75%	86%	77%	94%	94%
Mon State	86%	80%	94%	92%	96%	97%
Rakhine State	106%	76%	92%	107%	96%	94%
Sagaing Region	88%	83%	91%	94%	94%	98%
Shan State (Kyaingtong)	42%	38%	85%	83%	89%	82%
Shan State (Lashio)	60%	68%	70%	75%	86%	80%
Shan State (Taunggyi)	84%	71%	83%	83%	86%	86%
Taninthayi Region	93%	91%	97%	97%	97%	95%
Yangon Region	61%	65%	94%	92%	98%	97%
Country	76%	76%	89%	89%	93%	93%

Data source: EPI

7. Manpower situation of NTP

NTP has 101 vertical TB teams under the 14 Regional/State TB centers. 47 District TB teams (40 are led by Team Leader medical doctors and 7 led by Health Assistant) and 54 Township TB teams (led by team leader Health Assistants) are implementing TB control activities as well as providing technical support, supervision and monitoring, evaluation of TB control activities at township level.

Currently, one Senior Consultant Microbiologist and one Junior Consultant Microbiologist (Mandalay) are vacant. One attached State TB Officer in Kayah State was also vacant. Nineteen district TB team leader doctors, 12 team leaders (H.A), 16 trained nurses and 52 Grade II Lab. technicians were vacant (**For detail, please see in Annex 3**).

Post graduated course on TB and Chest Diseases (Dip.Med.Sc) has trained 56 doctors in the period of 1998-2019. Attrition of the produced doctors was 6 retired, 11 not in the public services and 39 remain (70%). Among Dip.Med.Sc holding doctors, there are 9 doctors who had Master degree on Public Health and 1 doctor with Degree on Hospital Administration. NTP coordinates with JICA and send candidates for training on TB control management in RIT, Japan and 6 Dip.Med.Sc holding doctors got diploma from RIT.

One epidemiologist was produced from Prince of Songkla University, Hat Yai, Thailand for to be posed at NTP, central unit, to strengthen the Monitoring & Evaluation Section. **Among 56 doctors, 6 were retired, 11 were not working in the public services. Therefore, 39 are working in NTP.**

8. Budget and external technical support

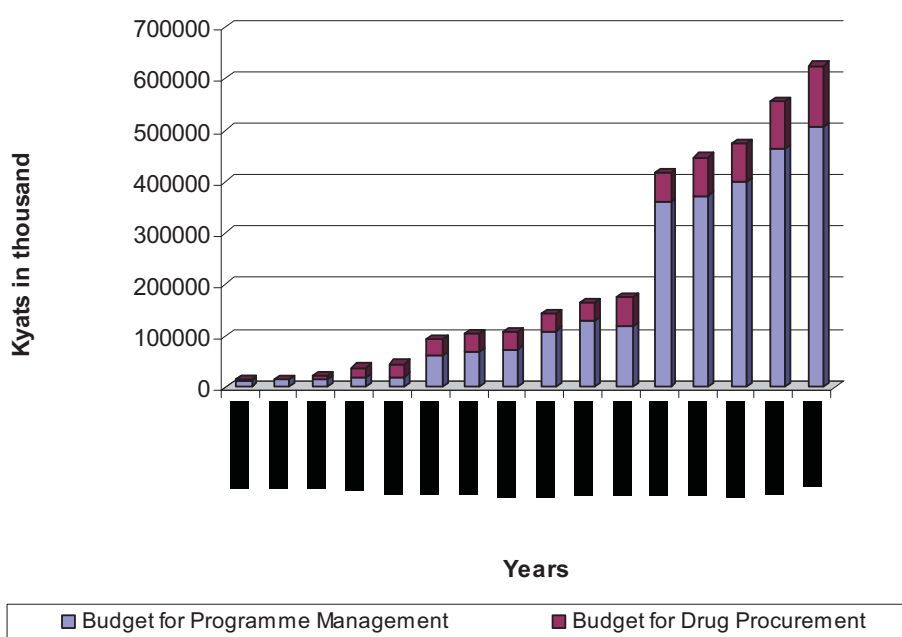
8.1. Government budget for NTP

Government budget was only 14 million Kyats in 1995-1996, and it increased to (626.2) Million Kyats in 2010-2011. 120 Million Kyats were used for drugs purchase in 2010-2011, which increased from only 0.78 million Kyats in 1995-1996.

Table 38. Government budget for NTP

Year	Regular Budget (Kyats in thousands)	Drugs purchase (Kyats in thousands)	Total (Kyats in thousands)
1995-1996	13,711	782	14,493
1996-1997	14,527	1,614	16,141
1997-1998	16,017	5,000	21,017
1998-1999	18,777	19,600	38,377
1999-2000	20,509	25,000	45,509
2000-2001	62,747	30,000	92,747
2001-2002	68,470	35,000	103,470
2002-2003	74,349	35,000	109,349
2003-2004	109,667	35,000	144,667
2004-2005	129,300	35,000	164,300
2005-2006	119,955	55,000	174,955
2006-2007	361,974	55,000	416,974
2007-2008	373,126	74,700	447,826
2008-2009	400,146	74,700	474,846
2009-2010	465,190	90,000	555,190
2010-2011	506,199	120,000	6,26,199

Figure 12. Government contribution for NTP (1995-96 to 2010-11)



8.2. External Financial Support

Up to the end of year 2009, GDF provided first line anti-TB drugs (FLD) (2 Million USD) for Exceptional 7th year. The NTP conducted partners meeting in December 2008 and successfully mobilized from 3DF for one year (2010-2011) (3.1 Million USD) and from Japanese Government through Japan Grant Aid for one year supply of FLD (308 Million Yen) for the year 2011-2012.

UNITAID provided Pediatric formulation (Pediatric HRZ and Pediatric HR) for 3 years (2008-2010) and NTP is preparing to apply for the second term.

Second line anti-TB drugs for MDR-TB was supported by UNITAID and the patients and programme support expenditure were supported by USAID, WHO and 3DF. The establishment of Biosafety Level 3 laboratory with rapid diagnostic test at NTRL and Upper Myanmar TB Laboratory was supported by Expand_x TB Programme (FIND).

After successful grant negotiation with Global Fund (Round 9) NTP will start GF supported activities from January, 2011.



Signing of agreement between DOH and Supplier for first line anti-TB drugs in Japan



TSG-TB meeting for GF Round 9 grant negotiation

Table 39. External Financial support for NTP, Myanmar (2010)

2010	WHO	JICA	UNITAID	3DF		UNION	USAID	Bill Gates	FIND	Other grants Total USD
				Survey	Activities					
First line TB drugs (including Paediatric TB drugs)	43,000		500,000		3,000,000					3,543,000
Staff working for TB control	10,250				114,296		193,000			317,546
Routine programme management and supervision activities	60,250	56,509			782,648		51,200			950,607
Lab. supplies and equipment for smears culture and DST		2,400					63,500		900,000	965,900
PPM: Public-Private Mix DOTS		12,306			13,699					26,005
Collaborative TB/HIV activities	5,000				4,883	200,000				209,883
Second line drugs for MDR-TB			409,250							409,250
Management of MDR-TB					77,861		142,300			220,161
Community involvement	10,000									10,000
ACSM: Advocacy, communication and social mobilization	15,000	73,700								88,700
Operation research		6,600					22,000			28,600
Surveys				175,652				69,947		245,599
Other technical assistant					36,293		43,000			79,293
Total	143,500	151,515	909,250	175,652	4,029,680	200,000	515,000	69,947	900,000	7,094,544

9. Constraints

9.1. Pursuing high-quality DOTS expansion and enhancement

- Limitation of human resource development
- Inadequate access to TB services
- NTP guidelines and SOPs (Drug and supplies management, EQA etc.) are not followed in some areas
- Limitation in supervision especially laboratory services
- Limitation in reaching the un-reach
- Constraints in ensuring patient support
- Limitation of diagnostic existing algorithm to detect smear negative culture positive patients.
- Limitation of data management and utilization of data
- Weak utilization of data based soft ware developed for the use of NTP, Myanmar (DHIS)

9.2. Addressing TB/HIV, MDR-TB and other challenges

- Limited funding to scale up TB/HIV and MDR-TB management
- Limited funding for Infection Control for health facilities and congregate settings

9.3. Contributing to health system strengthening

- Limitation in health financing and health work force
- Limited service delivery in hard to reach area
- Weak coordination mechanism at Regional/ State level and below

9.4. Engaging all care providers

- Limited skills of health care providers
- Limitation to scale-up PPM-DOTS
- Weak mechanism on monitoring of PPM-DOTS especially data verification at township level

9.5. Empowering people with TB, and communities

- Low community awareness
- Weak initiation of community involvement in TB control
- No SOP, guideline for community involvement
- Lack of appropriate materials for ACSM
- Weak technical assistance in new areas (eg. ACSM)

9.6. Enabling and promoting research

- Limited funding for Operational Researches

10. Comments and Recommendations on NTP activities for 2010.

This annual report was based on the Regional and State TB Centre annual reports and quarterly reports from DOTS townships received during 2010 and reports from other reporting units and partners.

10.1. Case finding and case notification

NTP targeted to achieve at least 70% case detection of estimated new smear positive patients in the community. In 2010, NTP covered the whole country populations in 325 DOTS townships. The estimated new smear positive TB patients and all smear positive TB patients were modified for Yangon Region according to the findings of Yangon Regional TB prevalence survey conducted in 2006. For the other Regions/States and Country estimates, we calculated the estimated new smear positive TB patients as 105/100,000 population and only Yangon Region used as 170/100,000 population based on the survey results. Therefore, the whole country was estimated to have 55,482 new smear positive TB patients in 2010.

NTP notified 48,783 smear positive cases including 42,318 new smear positive cases in 2010, so that it achieved **case detection rate of new smear positive cases 76% from 314 townships (including all contribution of partners) in 2010.**

The Case Detection Rates (CDRs) were high above target in 7 Regions/States. CDRs of ten Regions/States achieved were less than 70%, even after of partners' contribution. There were only 5 Regions/States above the target if counted only NTP. Bago region (Bago, Pyay) reached above the target after adding data from other reporting units.

There were 26,429 TB cases reported from other reporting units as Aung San TB Hospital, Patheingyi TB Hospital, Mingaladon Special Disease Hospital, Waibargi Special Diseases Hospital, Defense Hospital (Pyin Oo Lwin), 1000 bedded General Hospital (Nay Pyi Taw), New Yangon General Hospital, Thingungyun Sanpya General Hospital, Yangon General Hospital, East Yangon General Hospital, West Yangon General Hospital, central jail of Mandalay and INGOs: PSI, MSF-H, AHRN, MMA and Medecins du monde. Out of them, 7,904 (29.9%) were new smear positive TB patients and 11830 (34.9%) were smear positive TB patients detected. It showed that partners treated more smear negative, extra-pulmonary (EP) and other cases.

Figure 13. CDR of Regions and States

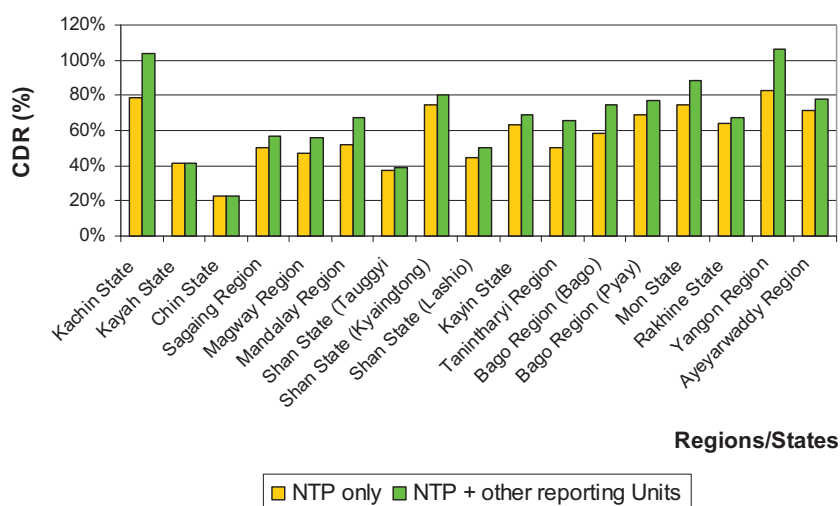


Figure 14. Proportion of all smear positive TB cases detected in Region/State out of COUNTRY total smear positive TB cases in 2010

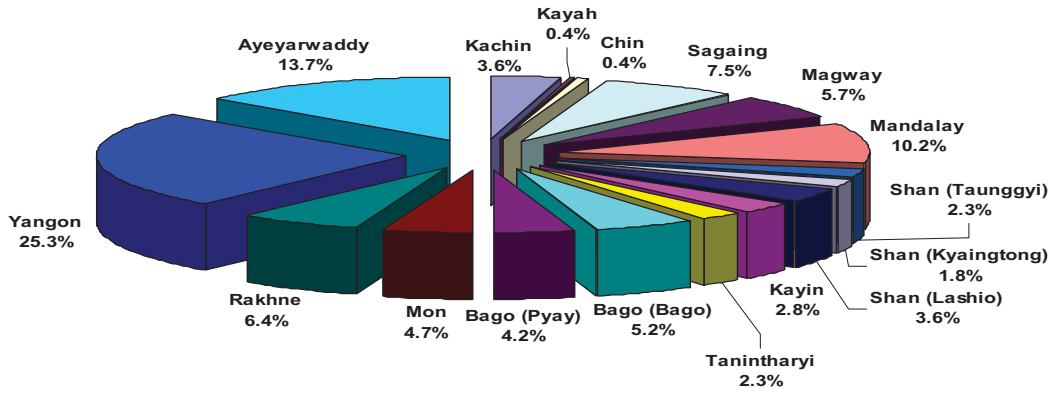


Figure 15. Proportion of all new smear positive TB cases detected in Region/State out of COUNTRY total smear positive TB cases in 2010

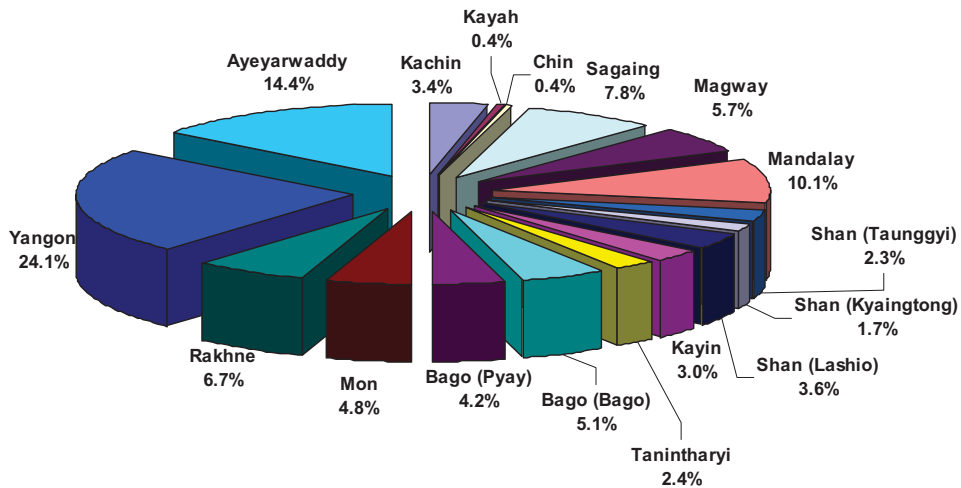


Table 40. Case Detection Rate of Regions and States for 2010

Regions and States	CDR for 2010	
	NTP only	NTP + other reporting Units
Kachin State	79%	104%
Kayah State	41%	41%
Chin State	23%	23%
Sagaing Region	50%	57%
Magway Region	47%	56%
Mandalay Region	52%	67%
Shan State (Taunggyi)	37%	39%
Shan State (Kyaingtong)	75%	80%
Shan State (Lashio)	45%	50%
Kayin State	63%	69%
Tanintharyi Region	50%	66%
Bago Region (Bago)	58%	75%
Bago Region (Pyay)	69%	77%
Mon State	75%	88%
Rakhine State	64%	67%
Yangon Region	83%	106%
Ayeyarwaddy Region	71%	78%
Country of Myanmar	62%	76%

In 2010, CDRs of 314 townships were evaluated and 65 townships (20.7%) had CDRs less than 40% and 122 townships (38.9%) achieved the target ($\geq 70\%$). If NTP alone was counted, only 29.3% reached the target and 25.5% of townships had CDR lower than 40%. That clearly showed the contributions of partner at township level which has to be validated not to overlap.

Those townships reach the target have to increase their targets beyond 70% in their next year micro plan.

Table 41. Categories of CDR in Townships by States and Regions (COUNTRY)

Sr. No.	States and Region	No. of township with CDR					Total no. of township	No. of tsp did not receive report
		≥ 70%	60-69%	50-59%	40-49%	<40%		
1	Kachin State	6	3	2	0	3	14	4
2	Kayah State	2	0	1	0	4	7	
3	Chin State	0	0	0	1	8	9	
4	Sagaing Region	6	6	8	7	10	37	
5	Magway Region	5	3	4	6	7	25	
6	Mandalay Region	11	7	1	7	5	31	
7	Shan State (Taunggyi)	1	2	3	3	12	21	
8	Shan State (Kyaingtong)	5	0	1	1	2	9	1
9	Shan State (Lashio)	7	0	2	4	5	18	6
10	Kayin State	3	2	0	0	2	7	
11	Tanintharyi Region	4	0	1	0	5	10	
12	Bago Region (Bago)	4	4	4	1	1	14	
13	Bago Region (Pyay)	6	5	2	1	0	14	
14	Mon State	6	3	1	0	0	10	
15	Rakhine State	7	4	2	3	1	17	
16	Yangon Region	33	3	4	4	1	45	
17	Ayeyarwaddy Region	16	6	1	3	0	26	
Total		122 (38.9%)	48 (15.3%)	37 (11.8%)	41 (13%)	65 (20.7%)	314 (100%)	11

The proportion of sputum smear positive pulmonary TB cases among all pulmonary TB cases was 46% and the ratio of new sputum smear positive TB cases to new sputum smear negative TB cases was 0.74:1 (Country figure).

If analyzed the NTP data only, NTP treated 47% of all pulmonary cases as smear positive TB patients and the ratio of new smear positive to new negative TB patients was 0.8:1, where as ratio of new smear positive to new smear negative cases and EP cases was 0.5:1. NTP detected more smear positive and other reporting units treated more smear negative patients.

Proportion of sputum smear positive pulmonary TB cases of all pulmonary TB cases was lower than 40% in Kayah, Chin, Shan (Kyaingtong), Kayin, Mon States and Taninthayi Region. They treated more sputum smear negative pulmonary TB cases and the quality of townships laboratories should be confirmed in those Regions and States.

National Tuberculosis Programme

Yangon Region detected (24.1%) of new smear positive cases out of total new smear positive cases, followed by Ayeyarwaddy Region (14.4%), Mandalay Region (10.1%). Three biggest regions: Yangon, Ayeyarwaddy and Mandalay contributed 48.6% of all new smear positive cases.

Out of all notified smear positive TB cases, new smear positive contributed 87%. 9.2% of smear positive pulmonary TB cases were relapse cases. Treatment after default contributed 1% of smear positive TB patients and treatment after failure contributed 2.7%.

40.6% of total notified TB cases were contributed by smear negative TB cases. Extra-pulmonary TB cases were contributed 21.1% of all notified TB cases. Childhood TB cases (32,471) contributed 24.5% of all notified TB cases.

Table 42. Proportions of States and Regional new sputum smear positive and smear positive TB patients out of NTP total (2010)

Sr. No.	State / Regions	% of DOTS covered Townships in each Region / State	% of new smear (+) patients out of total new smear (+) TB cases	% of smear (+) patients out of total smear (+) TB cases
1	Kachin State	18/18=100%	3.4%	3.6%
2	Kayah State	7/7=100%	0.4%	0.4%
3	Chin State	9/9=100%	0.4%	0.4%
4	Sagaing Region	37/37=100%	7.8%	7.5%
5	Magway Region	25/25=100%	5.7%	5.7%
6	Mandalay Region	31/31=100%	10.1%	10.2%
7	Shan State (Taunggyi)	21/21=100%	2.3%	2.3%
8	Shan State (Kyaingtong)	10/10=100%	1.7%	1.8%
9	Shan State (Lashio)	24/24=100%	3.6%	3.6%
10	Kayin State	7/7=100%	3.0%	2.8%
11	Tanintharyi Region	10/10=100%	2.4%	2.3%
12	Bago Region (Bago)	14/14=100%	5.1%	5.2%
13	Bago Region (Pyay)	14/14=100%	4.2%	4.2%
14	Mon State	10/10=100%	4.8%	4.7%
15	Rakhine State	17/17=100%	6.7%	6.4%
16	Yangon Region	45/45=100%	24.1%	25.3%
17	Ayeyarwaddy Region	26/26=100%	14.4%	13.7%
		325/325=100%		

Table 43. Categories of CDR in Regions/States (2010), NTP only

CDR					Total
≥ 70%	60-69%	50-59%	40-49%	<40%	
Kachin Shan (Kyaingtong) Yangon Ayeyarwady Mon	Rakhine Bago (Pyay) Kayin	Sagaing Mandalay Tanintharyi Bago (Bago)	Kayah Magway Shan (Lashio)	Chin Shan (Taunggyi)	
5	3	4	3	2	17

Nine Regions and States, which had less than 50% CDR needs more supportive supervisions. NTP has to set up the appropriate measures to improve the case finding. 185 townships (58.9% of all townships) are needed to improve their case finding by all means.

Case notification rate of **all forms of TB cases and new smear positive TB cases from 314 townships** were 279/100,000 population and 86/100,000 population respectively.

As Region and State wise, the case notification rates of **all TB cases** were high in Yangon Region (386/100,000 population), Kachin State (369/100,000 population), Tanintharyi Region (332/100000), Kayin State (308/100,000) and Mon State (302/100,000 population).

Case notification rate of **new smear positive cases** was high in Yangon Region (140/100,000 population), Kachin State (83/100,000 population), however, Chin, Kayah, Shan States (Taunggyi and Lashio) reported low CNR (< 50/100,000 population). It was not consistent with the finding of National TB prevalence survey as TB prevalence rate was higher in states than in regions. Therefore, NTP has to improve the case finding activities with innovative approaches especially in States.

Table 44. TB case notification rates by Regions and States (2010) (NTP only)

Sr. No.	States / Regions	Case notification rates of new smear (+) TB patients notified to NTP	Case notification rates of all smear (+) TB patients notified to NTP	Case notification rates of all TB patients notified to NTP
1.	Kachin State	83/100,000 pop.	99/100,000 pop.	369/100,000 pop.
2.	Kayah State	43/100,000 pop.	54/100,000 pop.	298/100,000 pop.
3.	Chin State	24/100,000 pop.	30/100,000 pop.	232/100,000 pop.
4.	Sagaing Region	52/100,000 pop.	57/100,000 pop.	161/100,000 pop.
5.	Magway Region	49/100,000 pop.	56/100,000 pop.	179/100,000 pop.
6.	Mandalay Region	54/100,000 pop.	63/100,000 pop.	177/100,000 pop.
7.	Shan State (Taunggyi)	39/100,000 pop.	45/100,000 pop.	123/100,000 pop.
8.	Shan State (Kyaingtong)	79/100,000 pop.	96/100,000 pop.	280/100,000 pop.
9.	Shan State (Lashio)	47/100,000 pop.	54/100,000 pop.	147/100,000 pop.
10.	Kayin State	67/100,000 pop.	72/100,000 pop.	308/100,000 pop.
11.	Tanintharyi Region	53/100,000 pop.	59/100,000 pop.	332/100,000 pop.
12.	Bago Region (Bago)	61/100,000 pop.	71/100,000 pop.	194/100,000 pop.
13.	Bago Region (Pyay)	73/100,000 pop.	84/100,000 pop.	223/100,000 pop.
14.	Mon State	79/100,000 pop.	89/100,000 pop.	302/100,000 pop.
15.	Rakhine State	67/100,000 pop.	74/100,000 pop.	197/100,000 pop.
16.	Yangon Region	140/100,000 pop.	169/100,000 pop.	386/100,000 pop.
17.	Ayeyarwaddy Region	75/100,000 pop.	82/100,000 pop.	191/100,000 pop.
Population of 314 townships = 49,197,091		86/100,000 pop.	99/100,000 pop.	279/100,000 pop.

10.2. Age and sex distribution of new sputum smear positive TB cases

The age and sex distributions of new sputum smear positive TB cases reported to the NTP in 2010 showed that 46% of them were in (25-34) age group and (35-44) age groups. Male to female ratio of those patients was 1.95:1. That could be explained by that mobile and productive age groups are more exposed to infection and easily accessible to health services.

Case notification rate of total new smear positive male TB cases was 114/100,000 and case notification rate of total new smear positive female TB cases was 58/100,000.

But the new sputum smear positive TB patients in the age group 1-14 years was 0.7% (302/42318), and male to female ratio of those patients was observed as (0.54:1), which is reverse of national figure.

Figure 16. Age & Sex distribution of New Smear Positive TB Patients (2010)

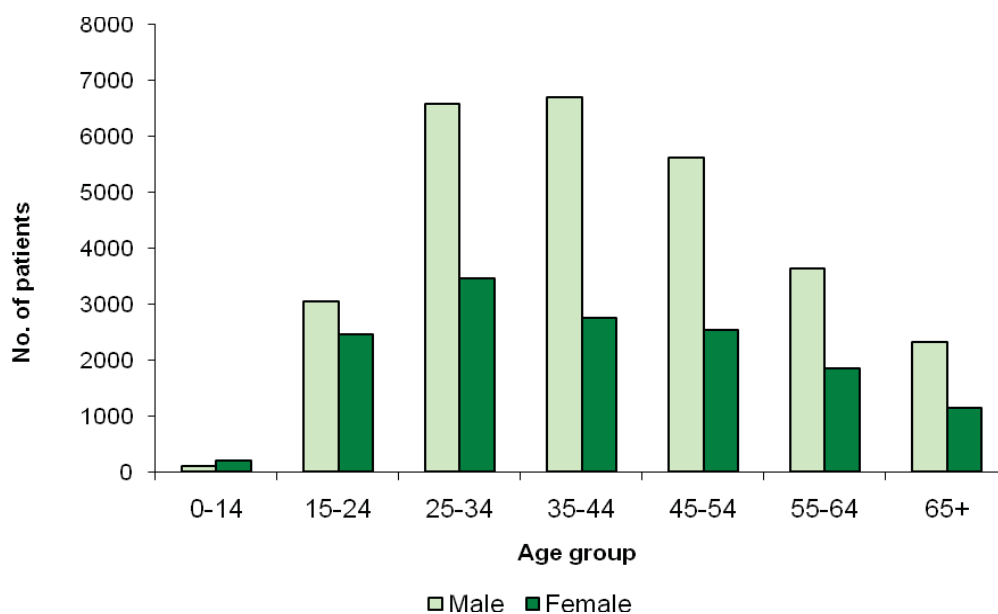


Table 45. Age and sex specific case notification rates of new smear positive cases (2010)

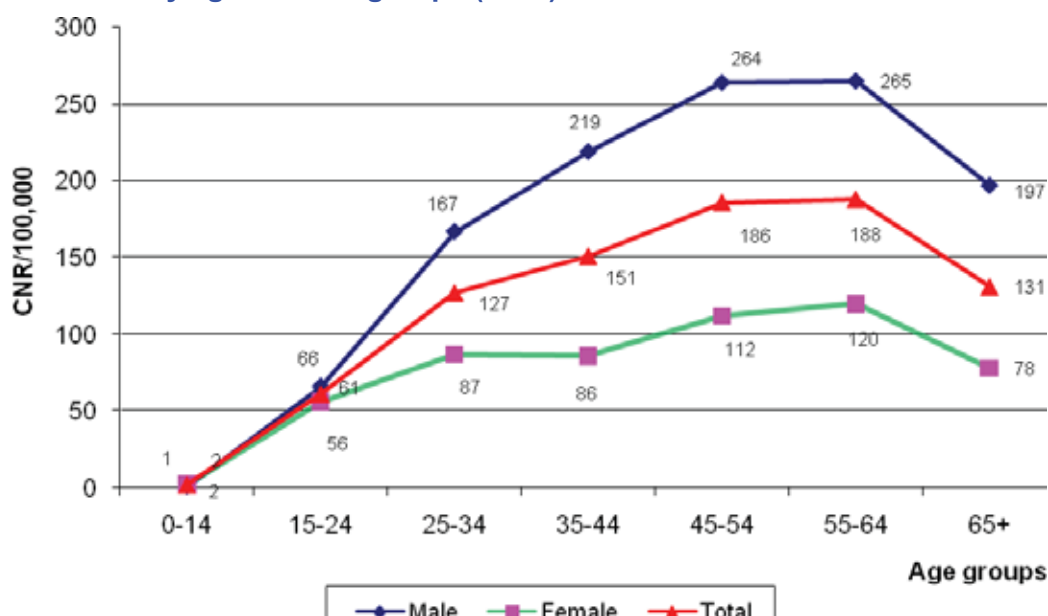
Age groups	Total		Male		Females	
	TB patients / pop. *	CNR / 100,000	TB patients / pop. **	CNR / 100,000	TB patients / pop. ***	CNR / 100,000
1-14	302 / 16085	1.9	106 / 8166	1.3	196 / 7918	2.5
15-24	5495 / 9026	60.9	3042 / 4621	65.8	2453 / 4404	55.7
25-34	10032 / 7921	126.7	6579 / 3936	167.1	3453 / 3984	86.7
35-44	9440 / 6246	151.1	6688 / 3056	218.8	2752 / 3192	86.2
45-54	8132 / 4379	185.7	5607 / 2127	263.6	2525 / 2251	112.1
55-64	5470 / 2904	188.4	3632 / 1369	265.3	1838 / 1534	119.8
65+	3447 / 2633	130.9	2308 / 1173	196.7	1139 / 1460	78
Total	42318 / 49197	86	27962 / 24451	114.4	14356 / 24746	58

* All denominators are populations in thousand.

(Source: 2008 Statistical Year Book, Ministry of National Planning & Economics Department, Central Statistical Organization)

Case notification rate of new smear positive TB patients was highest in (55-64) years age group in male and female patients.

Figure 17. New Smear Positive TB case notification rate/100,000 population by age and sex groups (2010)



For patients with primary complex, the number notified to NTP was reduced to 21,765 from 24,038 in 2008. Total childhood TB (including primary complex, hilar lymphadenopathy, TB meningitis and smear positive pulmonary TB patients <15 Years) registered in 2010 was 32,471 patients, 23.6% of total patients notified. The childhood TB in (0-4) year age group in this year was 10.4% (14231/137403). The high new smear positive notification rate in adult and old ages may be predisposing factor for increasing childhood TB cases.

TB meningitis was reported in 2.6% (838/32471) and smear positive pulmonary TB was reported in 0.9% (302/32471) of total childhood TB (<15 years).

10.3 Categories of anti-TB treatment regimen

Total TB patients (137,403) were reported in TB 07 - block - 1, but (140,737) patients were treated and reported in TB 07, block 3 after counting transferred in cases and others cases. Those who treated with Category II regimen was 7.6% (10,686) of total patients.

According to reports, 60.8% of reported cases were treated with Category I regimen, 7.6% with Category II regimen and 31.6% with Category III regimen. Out of Category I regimen, proportion of new sputum positives, smear negative and extra pulmonary cases were 50%, 41% and 9% respectively.

Among those treating with Category II regimen, 44% were relapse cases, 5% were treatment after default, 14% were treatment after failure, 37% were others cases.

Proportion of relapse, treatment after failure cases and treatment after default among smear positive cases were 9.1% (4456/48783), 3.1% (1495/48783) and 1.1% (514/48783) respectively. High proportions of relapse cases among smear positive

TB patients were observed in Yangon, Mandalay, Bago Regions and Shan State (Kyaingtong), Chin, Kayah and Kachin States. Other reporting units contributed about 18.1% of notified relapse patients. The proportion of relapse in other reporting units was 8.7% of total smear positive TB patients.

Out of total patients, 3.2%, 0.4%, 1.1% and 2.8% were relapse cases, treatment after default, treatment after failure and others cases respectively.

20.3% of total cases was extra-pulmonary TB patients (28,589).

Kachin, Chin, Shan State (Lashio) States and Sagaing, Magway and Taninthayi Regions treated more extra-pulmonary TB cases compared to other States/Regions.

Figure 18. Proportion of total TB patients treated with different regimens

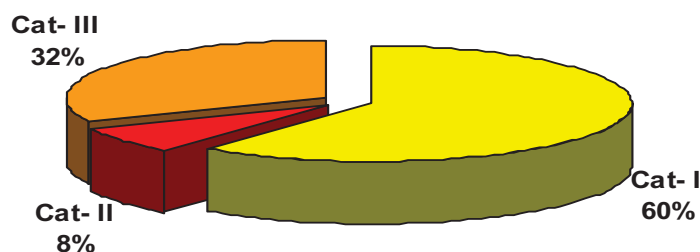
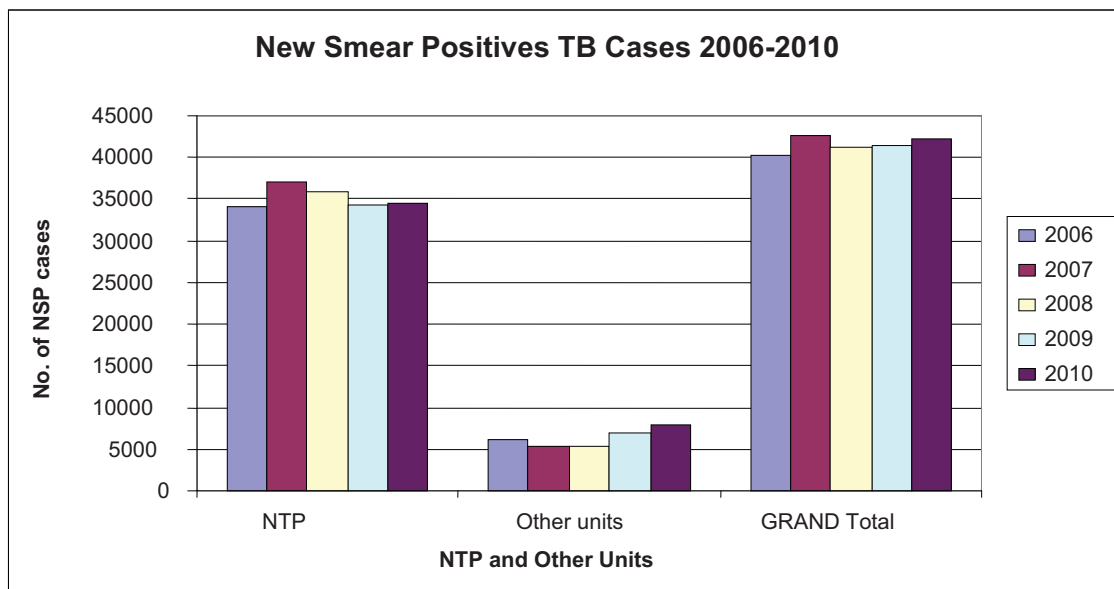


Figure 19. New smear (+) TB cases of NTP and Other Units (2006-2010)



Total number of new smear positives in 2007 increased compared to 2006, however, it was almost stable in 2008 and 2009 and a little bit increase in 2010. Total new smear positives TB patients detected by NTP alone decreased in 2009 but there was gradual increase of new smear positives in other reporting units.

Figure 20. Comparison of notified new smear positive TB patients of Regions and States from Upper Myanmar (2006-2010)

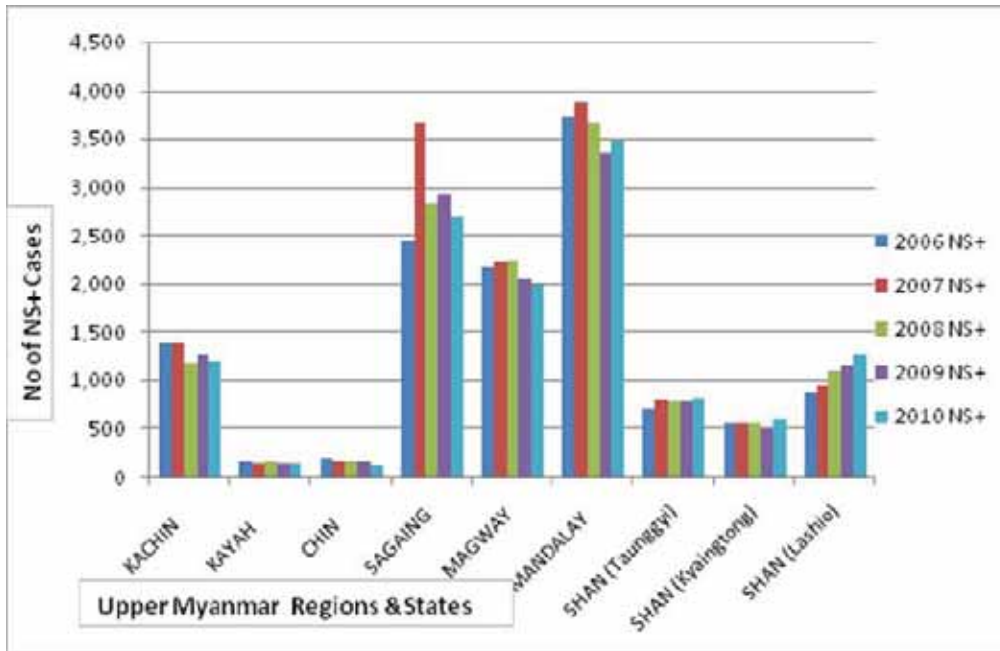
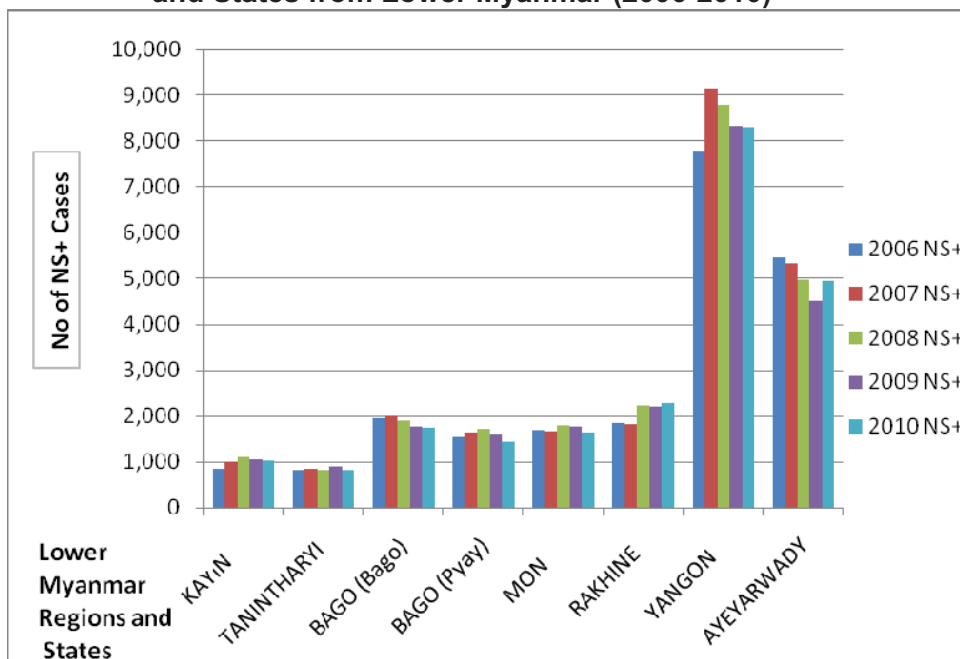
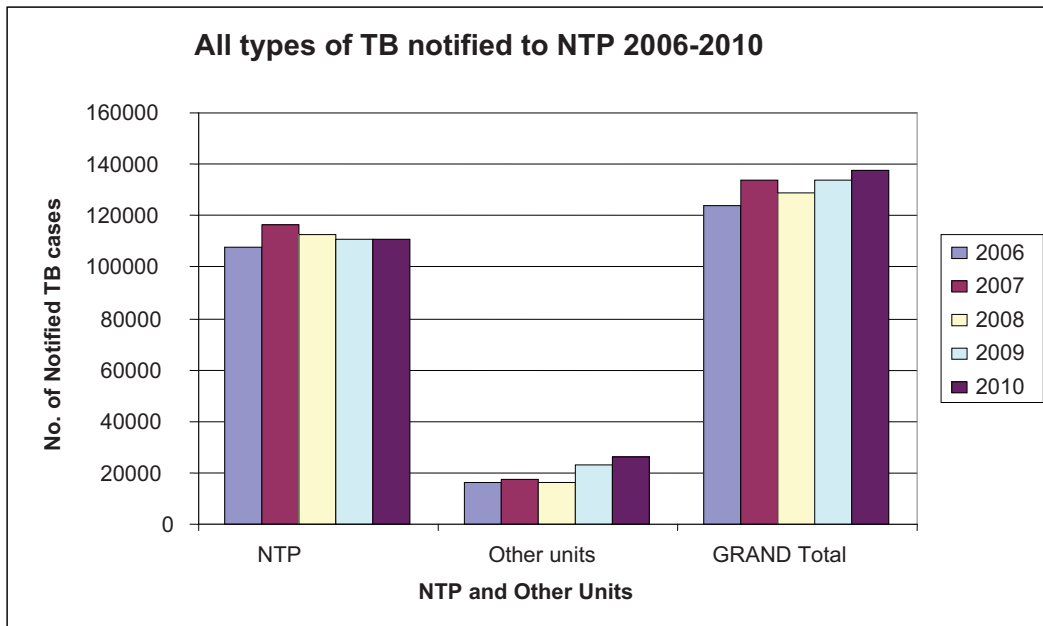


Figure 21. Comparison of notified new smear positive TB patients of Regions and States from Lower Myanmar (2006-2010)



When notified case load of new smear positive TB patients were compared by Regions and States, most of them were having decreasing or static trend and increasing trend was observed only in Shan State (Lashio) and Rakhine state.

Figure 22. All types of TB patients of NTP and Other Units (2006-2010)



The all types of notified TB patients increased in 2007 compared to 2006 and decreased in 2008 and increased after 2008. However, NTP data for 2006-2010 showed static after 2007. The data was gradually increasing for other units.

Figure 23. Comparison of all types of notified TB patients of Regions and States from Upper Myanmar (2006-2010)

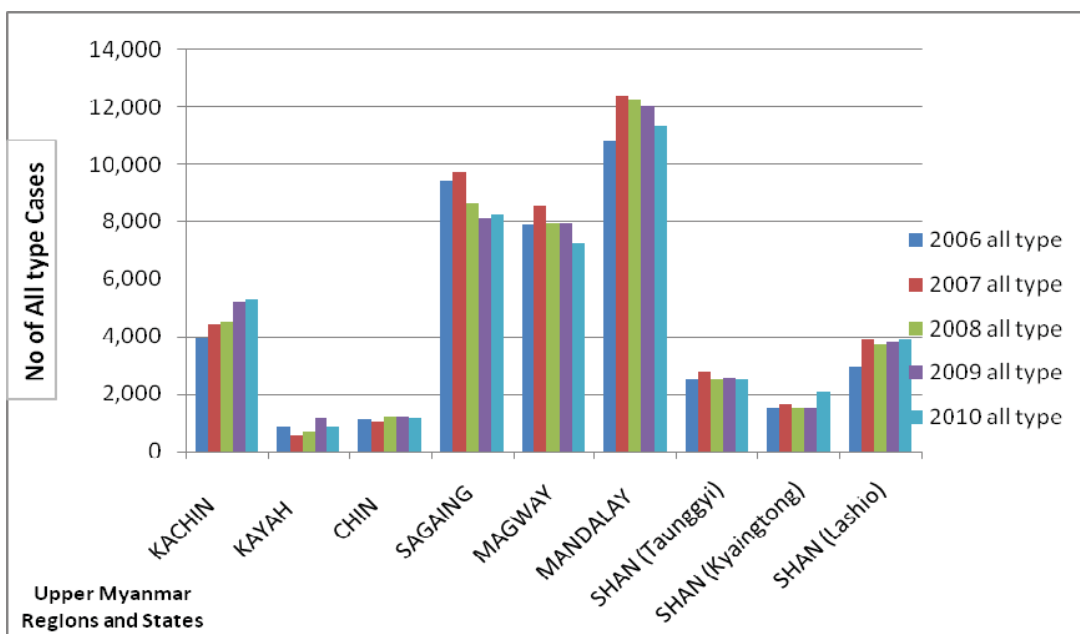
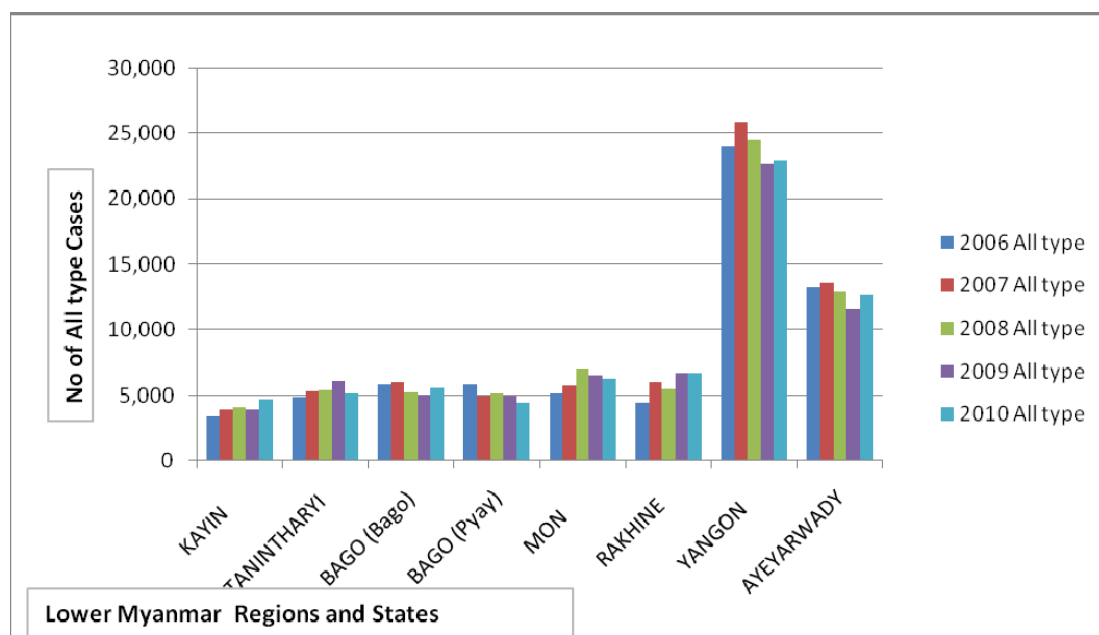


Figure 24. Comparison of all types of notified TB patients of Regions and States from Lower Myanmar (2006-2010)



Notified patients increased year by year in Kachin, Kayin, Shan (Kyaingtong and Lashio) and Rakhine States.

Table 46. Notified New Smear Positive TB Patients and all types of TB patients (2006-2010)

Regions/ States	New Smear Positive TB Patients					Regions/ States	All Types of TB Patients				
	2006	2007	2008	2009	2010		2006	2007	2008	2009	2010
Kachin	1383	1372	1165	1255	1186	Kachin	3959	4408	4471	5169	5255
Kayah	143	127	152	131	127	Kayah	863	565	679	1177	871
Chin	187	143	154	151	121	Chin	1095	1018	1219	1213	1163
Sagaing	2439	3662	2818	2909	2685	Sagaing	9373	9702	8605	8116	8261
Magway	2171	2230	2236	2052	1976	Magway	7894	8546	7932	7900	7208
Mandalay	3735	3871	3650	3360	3481	Mandalay	10793	12355	12234	11991	11303
Shan South	699	797	773	780	802	Shan South	2493	2771	2490	2524	2510
Shan East	545	545	555	483	582	Shan East	1508	1630	1495	1511	2066
Shan North	875	939	1084	1140	1254	Shan North	2924	3859	3701	3781	3922
Kayin	840	1012	1095	1061	1019	Kayin	3382	3920	4092	3940	4709
Tanintharyi	829	842	822	885	824	Tanintharyi	4898	5312	5399	6092	5163
Bago East	1945	1992	1894	1764	1749	Bago East	5831	6000	5203	5008	5583
Bago West	1539	1642	1715	1588	1440	Bago West	5789	4973	5122	4965	4403
Mon	1704	1660	1800	1758	1637	Mon	5107	5755	7026	6508	6291
Rakhine	1845	1816	2230	2199	2292	Rakhine	4403	5962	5473	6698	6737
Yangon	7803	9164	8788	8329	8296	Yangon	23979	25854	24434	22598	22873
Ayeyarwaddy	5472	5327	4966	4507	4943	Ayeyarwaddy	13228	13527	12864	11593	12656
TOTAL	34154	37141	35897	34352	34414	TOTAL	107519	116157	112439	110784	110974
Other units	6087	5447	5351	7037	7904	Other units	16074	17390	16300	23239	26429
GRAND Total	40241	42588	41248	41389	42318	GRAND Total	123593	133547	128739	134023	137403

Table 47. Categories of Treatment Regimens

Years	Category I				Category II				Category III			Total Cat. I + II + III	Proportion of relapse among all smear positive	Proportion of failure among all smear positive	
	Sputum smear positive	Severe form		Total	Relapse	Treatment		Other	Total	Less severe form					Total
		Smear negative	EP			after default	After failure			Smear negative	EP				
2000	16923	2608	313	19844	2600	907	386		3893	6157	1962	8119	31856	13	2
2001	20697	4604	485	25786	3072	1042	363		4477	9166	3383	12549	42812	13	2
2002	24203	8063	866	33132	3661	1242	697		5600	10796	9866	20662	59394	13	2
2003	27295	13537	1693	42525	4453	1454	964		6871	12179	16185	28364	77760	13	3
2004	31551	21098	2938	55587	4820	1293	1522		7635	13627	23267	36894	100116	13	4
2005	38598	23164	6234	67996	4817	976	2024		7817	13309	26158	39467	115280	11	4
2006	40742	30031	5620	76393	5229	1007	2852		9088	13924	29141	43065	128546	11	6
2007	43230	29177	6602	79009	4750	757	1208	2795	9510	13077	33986	47063	135582	9.5	3
2008	41839	27725	6364	75928	4509	633	1140	2954	9236	17306	28897	46203	131367	9.1	2.4
2009	42122	29744	6479	78345	4753	606	1349	3323	10031	22865	26088	48953	137329	9.6	2.8
2010	43061	35312	7220	85593	4658	523	1536	3969	10686	23086	21369	44458	140737	9.1	3.1

10.4. Laboratory performance

252,811 TB suspects were examined for sputum microscopy and 19% of them were sputum smear positive (47,323/252,811) in 2010.

18% of TB suspected cases and 17.3% of sputum positive cases were contributed by other reporting units.

Sputum positivity rates were ranged from 7% to 24%. Sputum positivity rates of Kachin, Mandalay, Shan (Kyaingtong), Shan (Lashio), Bago (Bago), Bago (Pyay), Rakhine, Ayeyarwaddy and Yangon were high \geq 20%.

Country TB suspect notification rate increased from 437/100,000 population in 2008 to 514/100,000 population in 2010. TB suspects notification rates for Chin State, Sagaing Region, Magway State, Mandalay Region, Shan State (Taunggyi), Shan State (Kyaingtong) Shan State (Lashio), Tanintharyi Region, Bago Region (Bago), Bago Region (Pyay), Rakhine State and Ayeyarwaddy Region were lower than 500/100,000 population. NTP and all partners identified only 50% of estimated TB suspects.

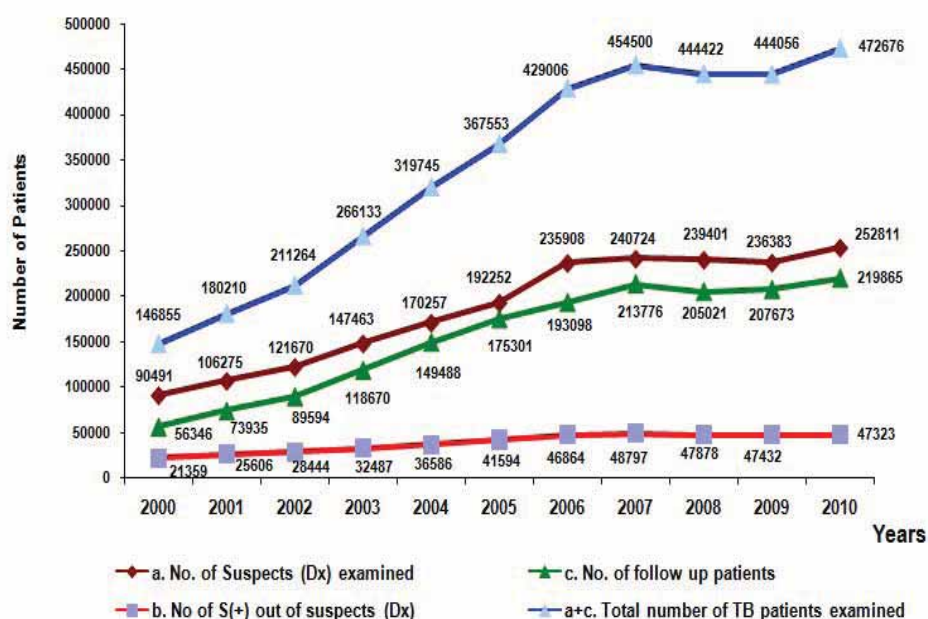
It is needed to improve the identification of more TB suspects and referral for TB diagnosis.

Table 48. TB Suspect Notified in Regions and States (2009, 2010)

Regions/States	2010			2009			
	Population	No. of suspects	% came for Dx.	Population	No. of suspects	% came for Dx.	Compared to 2009
Kahin State	1423260	7646	54	1376067	7735	56	Decrease
Kayah State	292642	1993	68	288919	2421	84	Decrease
Chin State	501463	905	18	508351	1111	22	Decrease
Sagaing Region	5144153	23662	46	6325851	23823	38	Increase
Magway Region	4021912	12960	32	4092771	12718	31	Increase
Mandalay Region	6398695	18200	28	6983424	16790	24	Increase
Shan State (Taunggyi)	2038660	6274	31	2119301	6039	28	Increase
Shan State (Kyaingtong)	738592	3047	41	712093	2905	41	Static
Shan State (Lashio)	2659329	6747	25	2712893	6563	24	Increase
Kayin State	1529733	8051	53	1537453	6621	43	Increase
Tanintharyi Region	1555911	5282	34	1646224	4674	28	Increase
Bago Region (Bago)	2882202	10138	35	2855562	9158	32	Increase
Bago Region (Pyay)	1974521	7342	37	2025688	7664	38	Increase
Mon State	2079864	14668	71	2053149	14426	70	Increase
Rakhine State	3414671	12225	36	3355941	11535	34	Increase
Yangon Region	5930690	40503	68	5782463	38582	67	Increase
Ayeyarwady Region	6610793	26408	40	6531731	21772	33	Increase
Other Units		42255			41846		
Country	49,197,091	248306	50	50,907,881	236383	46	Increase

Figure 25 showed that number of suspects examined and follow-up TB patients were increased in 2010

Figure 25. Laboratory Performance (2000-2010)



10.5. Sputum conversion rate of new smear positive pulmonary TB cases (2010 Cohort)

Sputum conversion rate for 2010 cohort was **88%**. Sputum conversion rate of other reporting units was low as 83%. Sputum conversion rate less than 85% was observed in Chin State (82%) and Tanintharyi Region (84%).

Although, most of the Regions and State had 85% of sputum conversion at the end of 3rd month, 8% (3411/42318) of total cases were converted only in 3rd month and 3.5% (1499/42318) still remained smear positive at the end of 3rd month, who can be presumed as treatment failure. The proportion of still remained smear positive at the end of 3rd month greater than 5% was found in Kayah State, Chin State, Rakhine State, Mandalay Region and other reporting units. Therefore, drug resistant TB preventive activities should be strengthened especially in those areas.

10.6. Treatment outcomes of TB patients (2009 cohort)

Treatment outcomes of the TB patients (2009 cohort) were evaluated from 308 townships (NTP). The cure rate and treatment success rate of new sputum smear positive TB patients for Country were 77% and 85% for 2009 cohort. If NTP data was analysed separately, cure rate and treatment success rate of new smear positive TB patients were 78% and 86% respectively. If cure rate and treatment success rate of new smear positive TB patients of other reporting units were

analysed separately and found their cure rate and treatment success rate were lower than NTP achievement (72% and 82% respectively).

Regarding treatment outcome of new smear positive TB patients were analysed according to known HIV status, cure rate and treatment success rate of HIV positive new smear positive TB patients for Myanmar were 51% and 61% respectively for 2009 cohort.

Table 49. Categories of TSR of new smear positive cases of townships by Region/State (2009 cohort) (Country)

Sr. No.	States and Region	No. of township with TSR					Total no. of township	No. of townships did not receive report
		≥ 85%	75-84%	60-74%	50-59%	<50%		
1	Kachin State	2	7	3	0	0	14*	4
2	Kayah State	4	1	0	0	0	6*	1
3	Chin State	4	3	0	1	0	9*	
4	Sagaing Region	25	11	0	1	0	37	
5	Magway Region	21	3	1	0	0	25	
6	Mandalay Region	12	18	0	1	0	31	
7	Shan State (Taunggyi)	10	9	2	0	0	21	
8	Shan State (Kyaingtong)	2	6	1	0	0	9	1
9	Shan State (Lashio)	6	8	2	1	1	18	6
10	Kayin State	5	1	1	0	0	7	
11	Tanintharyi Region	2	7	1	0	0	10	
12	Bago Region (Bago)	7	7	0	0	0	14	
13	Bago Region (Pyay)	10	4	0	0	0	14	
14	Mon State	7	3	0	0	0	10	
15	Rakhine State	9	8	0	0	0	17	
16	Yangon Region	34	10	0	0	0	45*	
17	Ayeyarwaddy Region	22	4	0	0	0	26	
Total		182 (59%)	110 (35.7%)	11 (3.5%)	4 (1.3%)	1 (0.3%)	313* (100%)	12

*Following 5 townships were not put in any categories due to no cases were reported in 2009.

- 2 townships from Kachin State: Machanbaw and Sunprabum reported nil report
- 1 township from Kayah State : Shadaw reported nil report and no report received from Phruso
- 1 township from Chin State: Kanpalet reported nil report
- 1 township from Yangon Region: Cocogyun reported nil report

In 2009 cohort, NTP received reports from 313 townships, out of which 5 townships sent the report on absence of new sputum smear positive TB patients.

It was noted that only 182 townships (59%) achieved treatment outcome target of TSR ($\geq 85\%$) and one township (0.3%) from Shan State (Lashio) achieved less than 50% of TSR. The 110 townships (35.7%) achieved TSR between 75-85%.

Table 50. Categories of cure rates of new sputum smear positive TB patients of townships by Region/State (2009 cohort) (COUNTRY)

Sr. No.	States and Region	No. of township with CR					Total no. of township	No. of townships did not receive report
		$\geq 85\%$	75-84%	60-74%	50-59%	$<50\%$		
1	Kachin State	0	4	7	1	0	14*	4
2	Kayah State	4	1	0	0	0	6*	1
3	Chin State	1	3	2	1	1	9*	
4	Sagaing Region	13	18	3	1	2	37	
5	Magway Region	11	9	4	0	1	25	
6	Mandalay Region	4	9	11	4	3	31	
7	Shan State (Taunggyi)	9	7	3	2	0	21	
8	Shan State (Kyaingtong)	1	2	3	2	1	9	1
9	Shan State (Lashio)	3	6	4	3	2	18	6
10	Kayin State	1	4	1	1	0	7	
11	Tanintharyi Region	0	3	6	1	0	10	
12	Bago Region (East)	2	5	7	0	0	14	
13	Bago Region (West)	5	6	3	0	0	14	
14	Mon State	5	3	2	0	0	10	
15	Rakhine State	5	5	4	3	0	17	
16	Yangon Region	21	20	2	1	0	45*	
17	Ayeyarwaddy Region	10	10	5	1	0	26	
Total		95 (30.8%)	115 (37.3%)	67 (21.7%)	21 (6.8%)	10 (3.2%)	313* (100%)	12

*Following 5 townships were not put in any categories due to no cases were reported in 2009.

- 2 townships from Kachin State: Machanbaw and Sunprabum reported nil report
- 1 township from Kayah State : Shadaw reported nil report and no report received from Phruso
- 1 township from Chin State: Kanpalet reported nil report
- 1 township from Yangon Region: Cocogyun reported nil report

Table 51. Categories of CR and TSR of new sputum smear positive TB patients of Regions/States (2009 cohort)

≥ 85%		75-84%		60-74%		50-59%		<50%	
CR	TSR	CR	TSR	CR	TSR	CR	TSR	CR	TSR
	Chin	Sagaing	Kachin	Kachin					
	Kayah	Magway	Magway	Chin					
	Sagaing	Shan (Taunggyi)	Shan (Kyaingtong)	Shan (Kyaingtong)					
	Bago (Pyay)	Kayin	Shan (Lashio)	Shan (Lashio)					
	Mon	Rakhine	Kayin	Tanintharyi					
	Rakhine	Bago (Pyay)	Tanintharyi	Mandalay					
	Yangon	Mon	Mandalay	Bago (Bago)					
	Ayeyarwaddy	Yangon	Shan (Taunggyi)						
		Ayeyarwaddy	Bago (Bago)						
		Kayah							
0	8	10	9	7	0	0	0	0	0

Defaulter rate for new smear positive TB cases reduced to 4.7% from 9% of 2003 cohort. The defaulter rate for new smear positive TB/HIV patients reported 5.3% for 2009 cohort.

Case fatality rates (CFR) of new smear positive cases were 4.9% for TB patients with unknown HIV status and 26.3% for TB/HIV co-infected patients. **Treatment failure rates** were same (2.8%) for smear positive TB cases with unknown HIV status or HIV co-infected TB patients respectively.

Treatment Success Rate of new smear positive TB patients for the Country reached the target 85% (2009 cohort). But only 8 Regions and States reached the target (85%).

None of the Regions and States achieved the cure rate target as 85%. The Millennium Development Goal (MDG) target 6.10c is set as cure rate has to achieve 85% by 2015. It is needed to improve counseling for treatment adherence at implementation level.

Note: 2009 cohort : Number of new smear positive TB patients reported in 2009 TB-07, block 1 were checked with the same cohort reported on treatment outcomes in 2010 (TB-08). It was found that 1% of cases were excess in treatment outcome. Reports from Regions and States except other reporting unit, Shan State (Kyaingtong), Sagaing Region and Rakhine State were consistent. The reason for inconsistency could be due to counting of transferred in patients while reporting for treatment outcomes.

Table 52. Treatment outcomes of TB patients with known HIV status & unknown HIV Status (2009 cohort)

Type of TB patients		Total no. evaluated	Cured	Completed	Deaths	Failure	Defaulter	Transferred out	Total no. evaluated
New (+)	HIV (+)	1480	760	150	389	41	79	61	1480
	Unknown HIV status	40331	31556	3096	1971	1110	1883	715	40331
	Total	41811	32316	3246	2360	1151	1962	776	41811
Smear (-)	HIV (+)	3126		2045	742	26	195	118	3126
	Unknown HIV status	37105		30881	2080	214	2962	968	37105
	Total	40231	0	32926	2822	240	3157	1086	40231
Relapse	HIV (+)	222	79	63	58	5	10	7	222
	Unknown HIV status	4515	2966	544	399	227	251	128	4515
	Total	4737	3045	607	457	232	261	135	4737
Other	HIV (+)	347	20	178	117	3	19	10	347
	Unknown HIV status	2602	215	1685	276	47	243	136	2602
	Total	2949	235	1863	393	50	262	146	2949
PC	HIV (+)	215		174	36		2	3	215
	Unknown HIV status	21671		20629	101		740	201	21671
	Total	21886		20803	137		742	204	21886
TBM	HIV (+)	12		9	3		0	0	12
	Unknown HIV status	471		350	56		43	22	471
	Total	483		359	59		43	22	483
TAD	HIV (+)	39	14	9	11	0	5	0	39
	Unknown HIV status	565	285	109	53	28	65	25	565
	Total	604	299	118	64	28	70	25	604
TAF	HIV (+)	67	22	11	22	4	7	1	67
	Unknown HIV status	1183	629	113	103	176	112	50	1183
	Total	1250	651	124	125	180	119	51	1250
EP	HIV (+)	941		709	148	7	47	30	941
	Unknown HIV status	8386		7501	310	11	405	159	8386
	Total	9327		8210	458	18	452	189	9327
Hilar Lymph node enlargement	HIV (+)	116		92	17	0	5	2	116
	Unknown HIV status	10267		9784	129	0	273	81	10267
	Total	10383	0	9876	146	0	278	83	10383
Total	HIV (+)	6565	895	3440	1543	86	369	232	6565
	Unknown HIV status	127096	35651	74692	5478	1813	6977	2485	127096
	Total	133661	36546	78132	7021	1899	7346	2717	133661

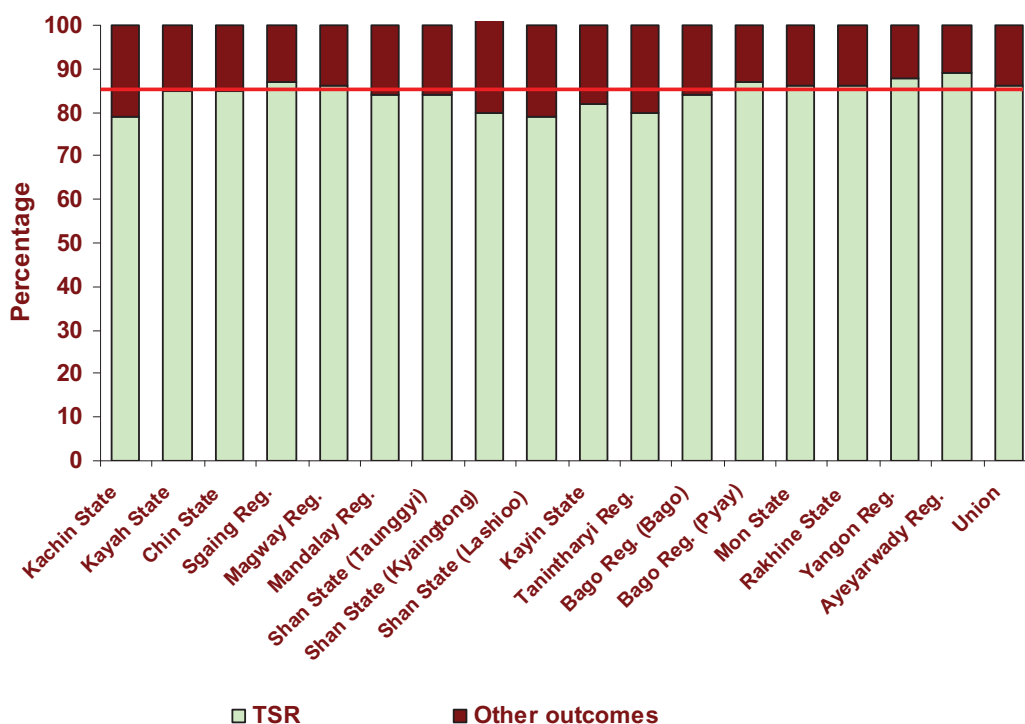
As mentioned in table 52, NTP could evaluate 133,661 TB patients (2009 cohort). Total completion rate and failure rate were 85.8% and 1.4% respectively. However, CFR and defaulter rates were high as 5.3% and 5.5% respectively. It is needed to be recognized by all supervisors at all levels to be able to maintain the current achievement of treatment outcome.

There is the possibility of increasing treatment failure rate of new smear positive TB patients and unfavourable treatment outcome could be more affected by HIV co-infection if TB/HIV prevention and control activities are not adequate or timely intervention could not be started.

For **other reporting units**, treatment outcomes new smear positive TB patients (2009 cohort) was analysed as followed:

- Mingaladon Special Disease Hospital has the highest **case fatality rate** (49%) for new smear positive TB patients and followed by Medecins du Monde (38%), Waibargi Special Disease Hospital (35%), Aungsan TB hospital (26%) and central jail, Mandalay (25%). Those sites were especially treating TB/HIV patients.
- **Defaulter rate** was high in Aung San TB Hospital (19%), MSF-H clinics from Shan State (Lashio) (19%), Medecins du monde clinics (15%), East YGH (13%) and MSF-H clinics from Kachin State (12%).
- **Treatment failure rate** was high in Aungsan TB hospital (13%), whereas no failure cases in Patheingyi TB hospital. Failure rates were high above 5% in MSF-H clinics (Yangon, Kachin, Shan State (Lashio) and MSF-Switzerland and Medecins du Monde.

Figure 53. Treatment Success Rate of New Smear Positive TB patients by Regions and States (2009 cohort)



11. Evaluation of Regional and State level TB control achievement

NTP, Myanmar achieved the global TB control targets for CDR and TSR, which are also MDGs indicators. However, it needs to improve the cure rate to reach in 33% of the townships. CDR must be required to improve in 45% of the townships.

11.1. Kachin State

Kachin State TB center covers 4 districts with 18 townships of Kachin State. The NTP did not receive reports from 4 townships (N'ginyan, Hsawlaw, Naungmun, and Khaunglanbu). One township, Sumprabum reported to NTP in third quarter of 2010. Therefore, reporting efficiency was 78% (14/18). CDR for 2010 was 79% and when added other reporting units like MSF-H, CDR became to 104%. The CR and TSR were 68% and 77% respectively (partners' contribution counted). In Kachin State, there was only two townships achieved the NTP targets namely Bamaw and Waingmaw townships. Sunprabum, Machanbaw townships had low CDR and low TSR. 3 townships (Machanbaw 18%, Sumprabum 7% and Momauk 36%) had low CDR. Defaulter rate for Kachin State was 8%. Defaulter rate was high in 3 townships: Kamaing (20%), Tanai (17%) and Chipway (17%). Treatment failure rate was high above 5% in Shwegu (10%), Mogaung (7%), Myitkyina (9%), PutatO (7%). In Kachin State, high CDR with low TSR, TB/HIV problems, transportation difficulties and human resource shortage were the barriers for target achievement. TB/HIV collaborative activities in Myitkyina township were started in 2005 in collaboration with NAP, NTP, MSF-H and WHO.

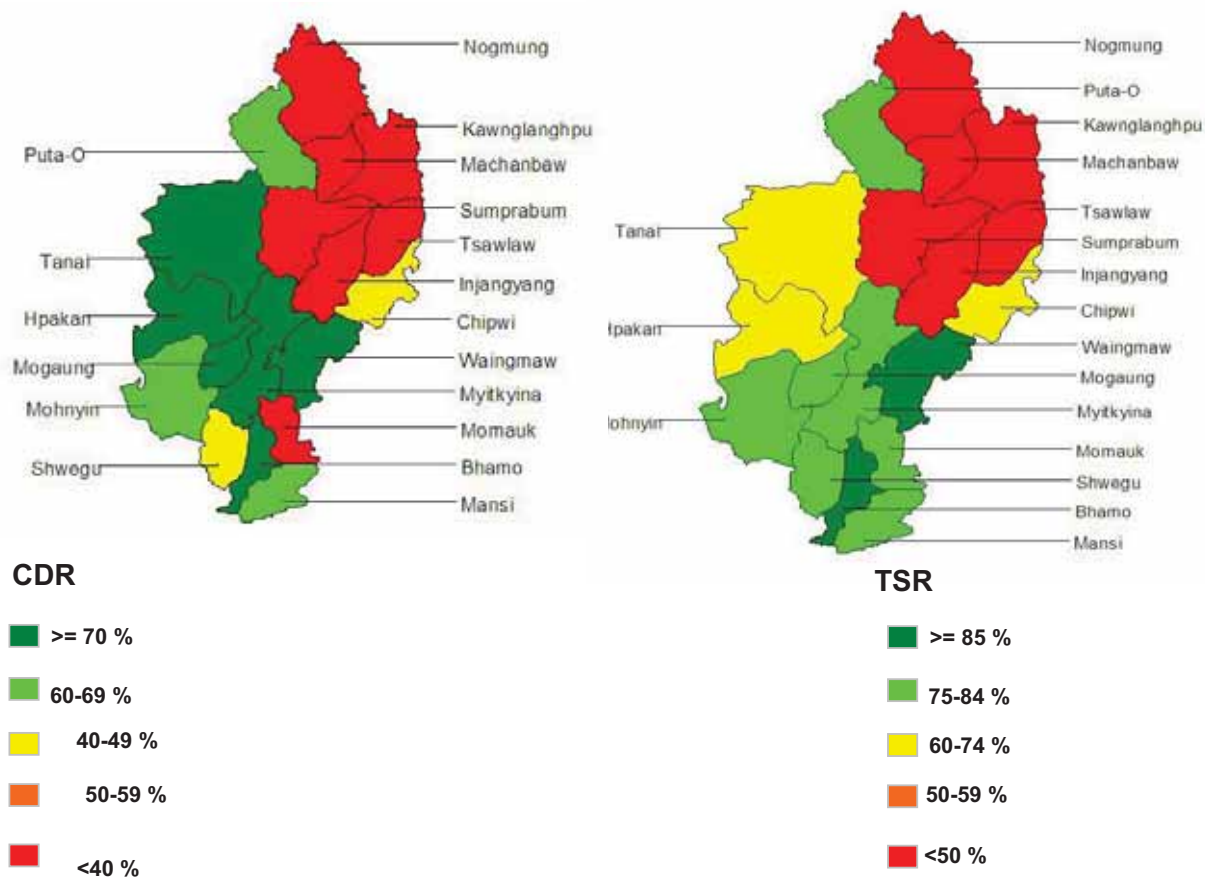
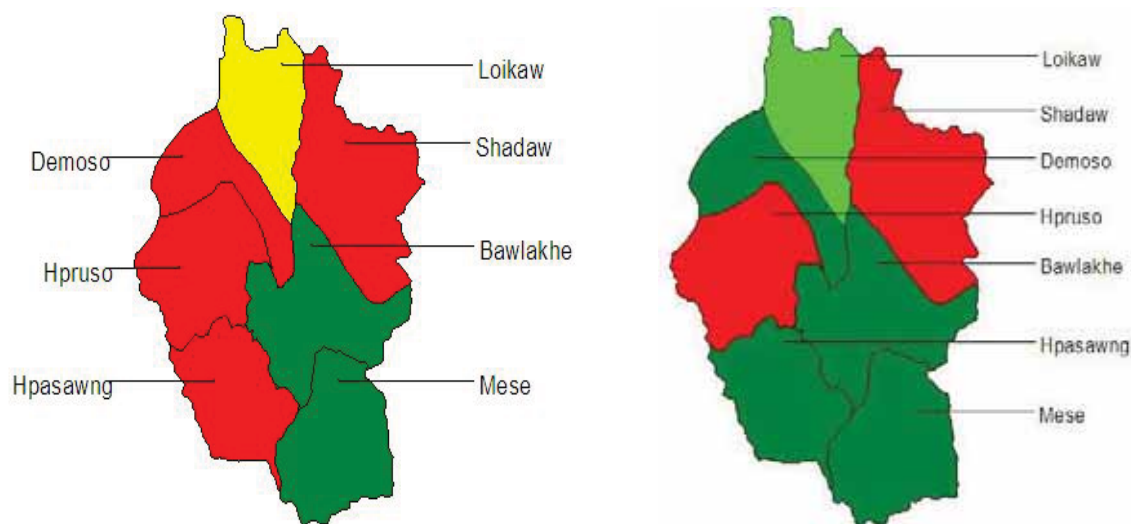


Table 53. Treatment outcomes of TB/HIV patients in Myitkyina township (2009 cohort)

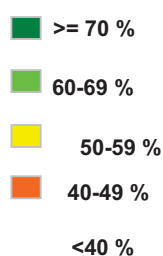
Type of Patients	Cured	Completed	Died	Failure	Defaulted	Transferred out	Total
Smear positive	8 (53%)	0	1	1	2 (13%)	3	15
Smear negative		31 (63%)	7	0	8 (16%)	3	49
EP		11 (73%)	3	0	1 (7%)	0	15
PC		1	0	0	0	0	1
Hilar enlargement		4	0	0	0	0	4
Relapse	1	0	0	0	0	1	2
TAD	0						0
TAF	0						0
Other		3	4	0	0	1	8

11.2. Kayah state

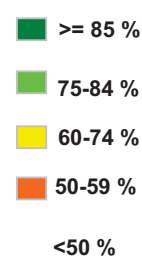
Kayah State has 2 districts with 7 townships. Reporting efficiency was 100%. The CDR was 41%, CR 83% and TSR 85%. No contribution from partners except World Vision. Bawlake and Masai achieved the TB control targets. Demawsoe, Phruso and Shadaw townships had low CDR less than 40% and Phasaung Township had low CDR (16%) with 100% cure rate. Defaulter rate was 2%, failure rate 5%.and case fatality rate 3% in Kayah State. Loikaw and Demawsoe had failure rate of 6% and 7% respectively. The necessity is to fill up the vacant State TB Officer post. Transportation difficulties and security problem are the main constraints of TB control in Kayah State.



CDR



TSR



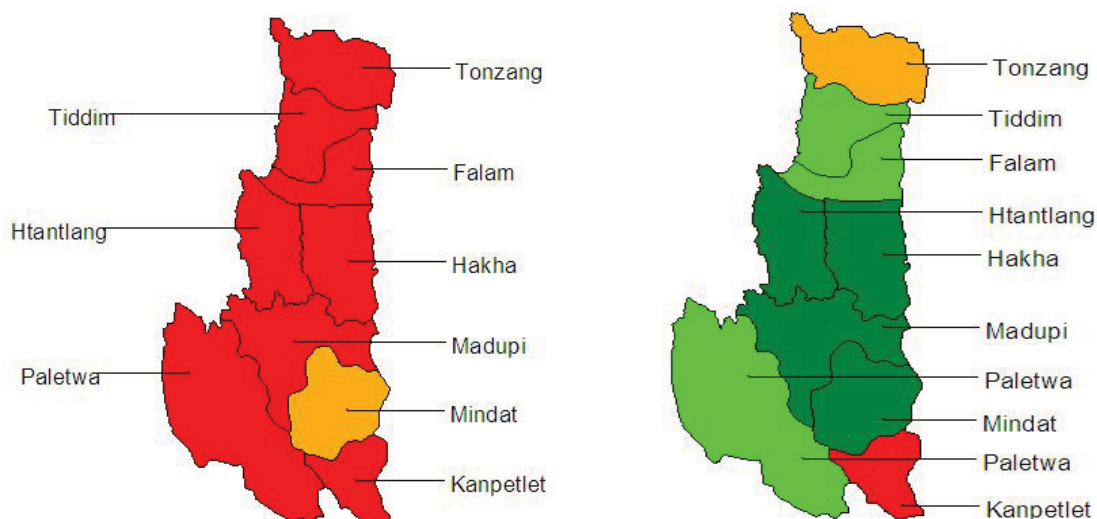
11.3. Chin state

Chin State has 3 districts, 9 townships. Its population was 500,000. 6 townships from Northern Chin State are covered by Sagaing Regional TB Officer. Palatwa township is covered by Rakhine State TB Officer and Mindat, Kanpetlet and Matupi townships from Southern Chin State is covered by Magway Regional TB Officer. The CDR was 23%, CR was 73% and TSR 85%. Reporting efficiency was 100%.

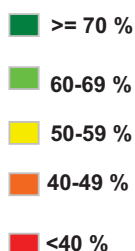
There was no township in Chin State which achieved the TB control targets. However 8 townships had low CDR of less than 40%, Mindat had CDR 49%. Htantlang townships had 20% CR and TSR 100%. Matupi also had 100% TSR.

Defaulter rate was 7%, case fatality rate 5%, failure rate 2% in Chin state. Four townships (Tunzan 25%, Palatwa 13%, Tiddim 7%, Falam 6%) had high defaulter rate. Failure rate was high in Falam 6% and Tunzan 17%. Three townships, Tiddim 11%, Mindat 7% and Falam 6% had high case fatality rate.

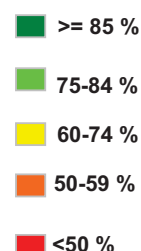
Main constraint is human resource problem and all team leaders are vacant for a long time and no sanction for State TB Officer post. Transportation difficulties and language barrier is also constraints for TB control.



CDR



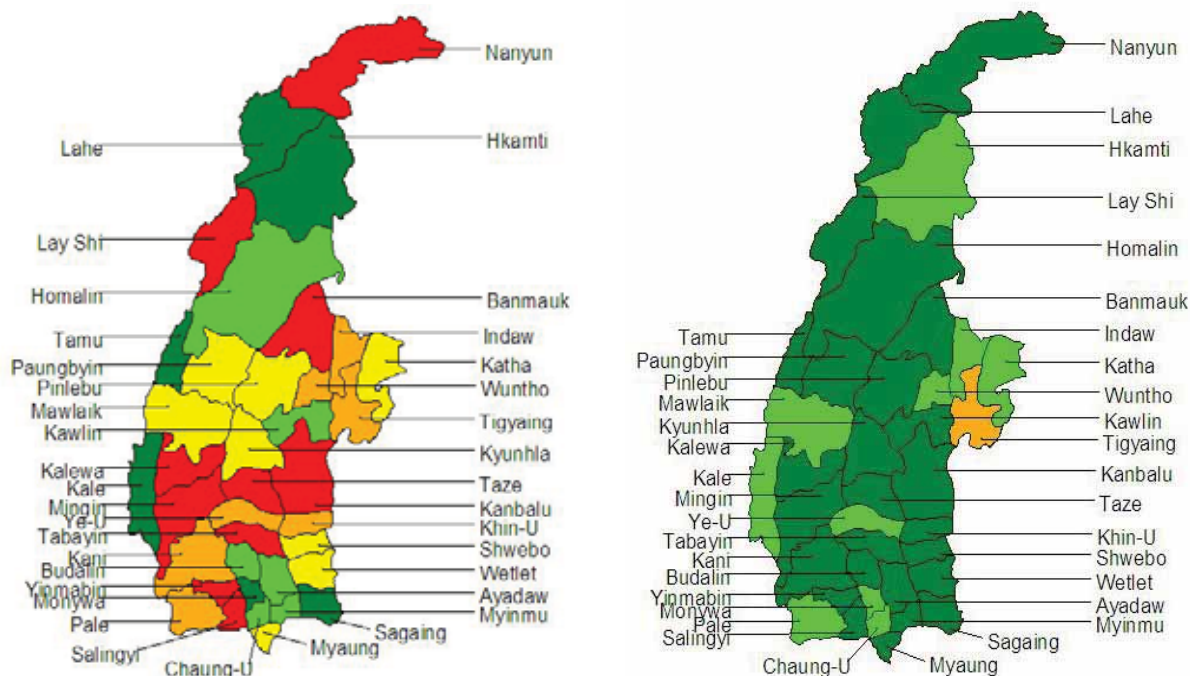
TSR



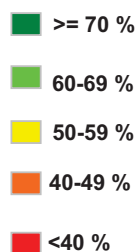
11.4. Sagaing Region

Sagaing Regional TB Centre covers 6 districts with 37 townships in Sagaing Region and 5 townships in Northern Chin State. However, Nanyun township located at the northern part of Sagaing Region is supervised by Kachin State TB center. Population of Sagaing Region was 5.1 millions. Sagaing Region achieved CDR 50%, CR 81%, TSR 87% in 2010. CDR, CR, TSR became 57%, 80% and 87% respectively when contribution of other partners was added. Reporting efficacy was 100%.

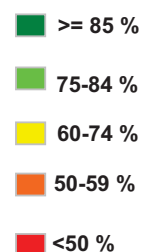
3 townships (Sagaing, Tamu and Lahel) in Sagaing Region achieved the TB control target. Ten townships (Kanbalu, Tabayin, Taze, Salingyi, Yinmabin, Banmauk, Kalaewa, Minkin, Layshi, Nanyun) were fall in category of (low CDR <40%). Cure Rate was very low in Layshi and Mawleik townships. CDR was higher than 100% in Khamti, Lahel and Tamu townships.



CDR



TSR

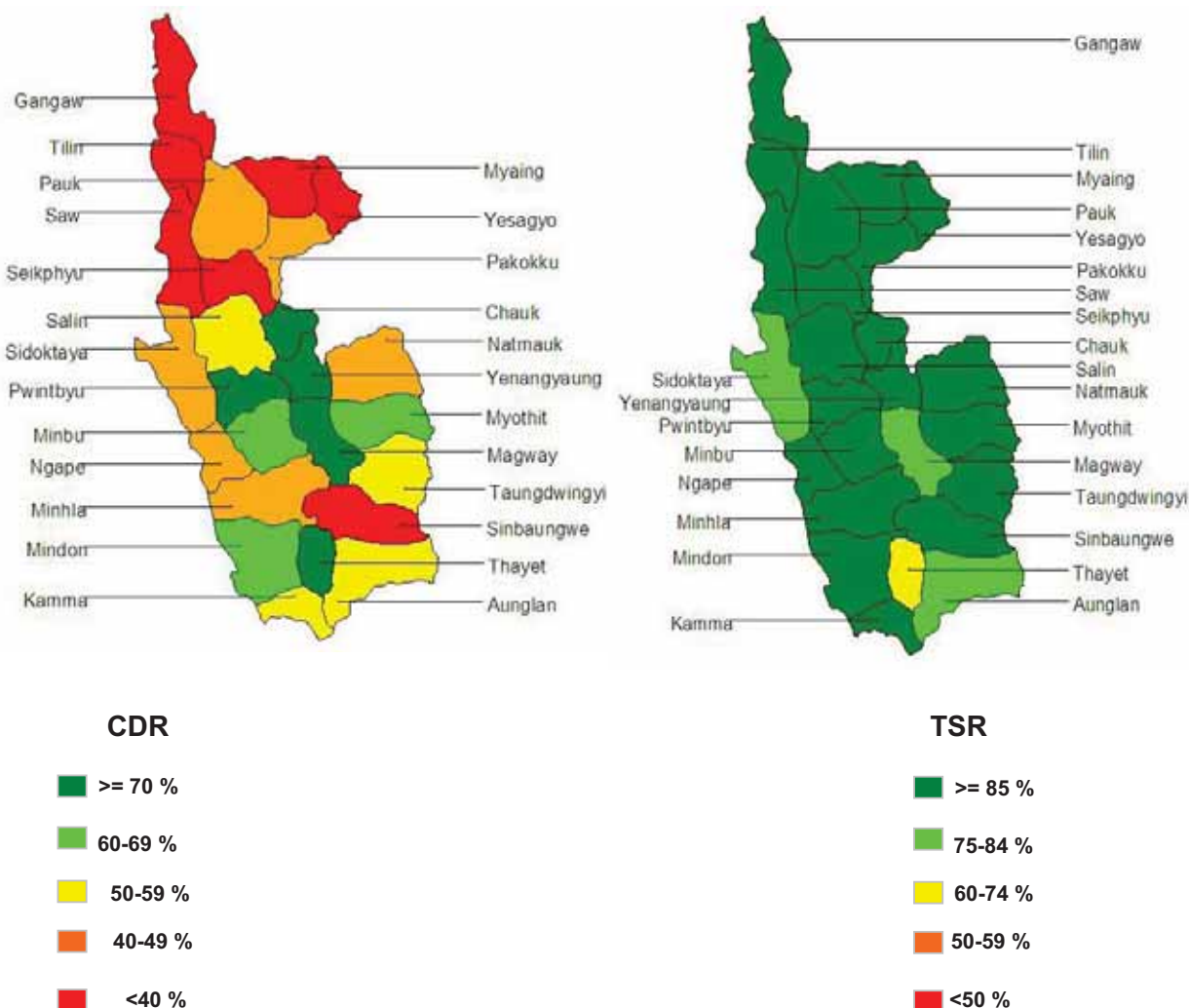


In 2009 cohort, Defaulter rate was 3%, case fatality rate was 7% and treatment failure rate was 2% for Sagaing Region. Defaulter rates were high above 10% in 2 townships in Sagaing Region (Pale 11%, Mawlaik 11%). CFR was high above 10% in Kyunhla 10%, Tabayin 11%, YeU 12%, Monywa 10%, ChaungU 11%, Katha 10%, Banmauk 10%, Htigyaing 18%, Indaw 17%, Pinlebu 10%, Homalin 10%. Treatment failure rate was high in Wuntho (11%).

Major problems of Sagaing Region were identified as transportation difficulty for supervision and delay in reporting, human resource shortage and frequent turn over of trained staff including TMOs, huge work load on regional TB laboratory for Quality Control. HIV co-infection rate was also high in Monywa according to HIV sentinel surveillance.

11.5. Magway Region

Magway Regional TB Centre covers 5 districts with 25 townships in Magway Region. Its population was 4 millions. Regional TB Officer is responsible for Magway region and 3 townships in Southern Chin State. Magway Region achieved CDR 47% and CR 79% and TSR 86%. CDR, CR and TSR became 56%, 78%, 87% respectively when contribution of other reporting units was added. Reporting efficiency was 100%.



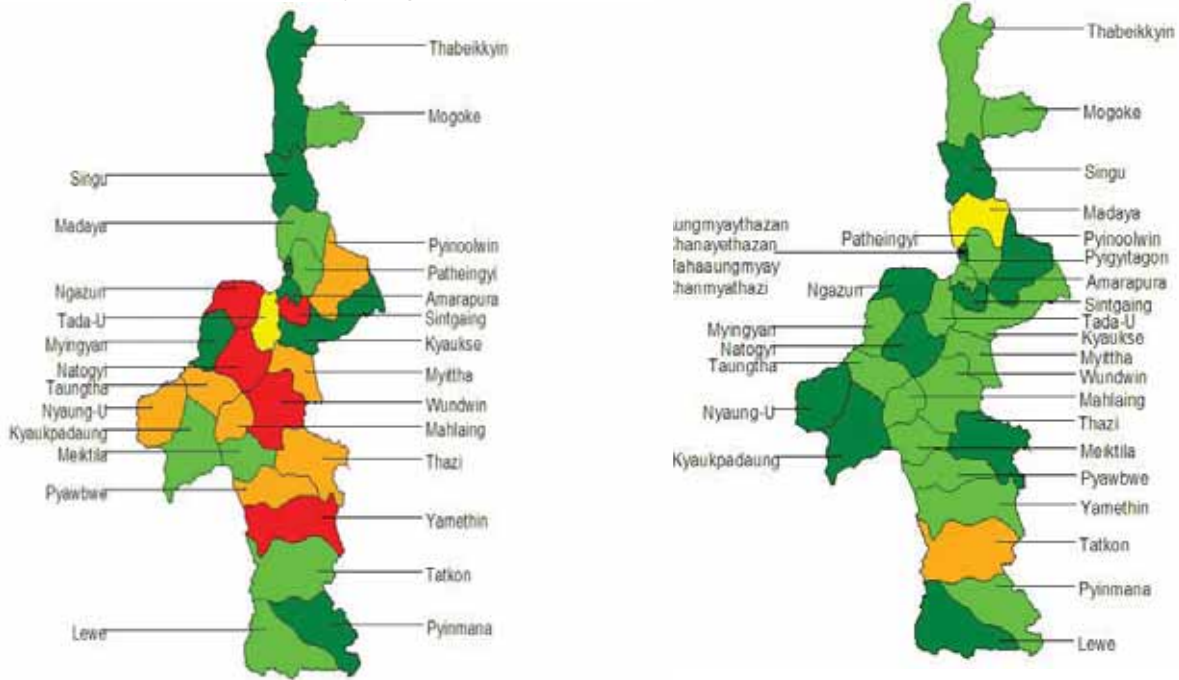
In Magway Region, 3 townships (Chauk, Yenanchaung, Pwintphyu) achieved the TB control targets. CR of low in Saytoketayar township (41%). CDR was lower than 40% in 8 townships (Natmauk, Yesagyo, Myaing, Seikphyu, Gantgaw, Saw and Htillin)

Defaulter rate of Region was 3%. Defaulter rate was more than 5% in Magwe 7%, Minbu 7%, Saytoketaya 6%. CFR for the Region was 6% and it was high in Taundwingyi 11%, Pakokku 10%, Thayet 10% and Aunglan 15%. Treatment failure rate was 3%, high in Thayet (14%).

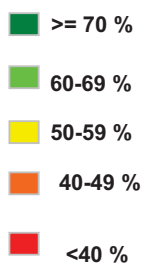
The main problem is low CDR in Magwe Region. Low community awareness, poor accessibility, transport difficulties, low motivation of staff and geographical terrain were identified as problems for Magway Region.

11.6. Mandalay Region

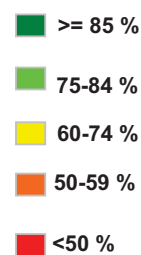
Mandalay Regional TB Centre covers 7 districts with 31 townships of Mandalay Region. Its population was 6.4 millions. Mandalay Region achieved CDR 52%, CR 70% and TSR 84%. CDR, CR and TSR became 67%, 70%, 83% respectively after adding the partners' contribution. It is good to have increased CDR due to partners, however, case holding is needed to be improved. Reporting efficacy was 100% in Mandalay Region.



CDR



TSR



Four townships achieved the TB control targets (Aungmyaetharzan, Chanmyatharzi, Maharaungmyae, Sintgu). Five townships got CDR less than 40% (Wundwin 39%, Natogyi 22%, Ngazun 35%, Yamethin 29%, Sintgine 36%). Cure rate was <50% in Mahlaing and Myittha townships.

Defaulter rate of the Mandalay Region was 4%, however it was high 10% in Mahlaing 15%, Taungtha 10%, Yamethin 10% townships. Failure rate was 3% in Mandalay region and high above 5% in Madayar, Pyinoolwin, Madayar, Thabeikkyin, Kyaukse and TadaOo townships. Case fatality rate was 7% for Mandalay Region. CFR was high above 10% in Aungmyaetharzan, Pyingyitagonn, Wundwin, Natogyi, Moegoke, Thabeikkyin, Myittha and TadaOo townships.

Problems were identified as frequent turn over of trained staff, human resource shortage and inconsistent population data to be used for target setting and monitoring purpose.

Table 54. Performance of Tuberculosis Diagnostic Centre, Mandalay in 2010

Month	New cases			Follow-up	Total
	0-14 year	>15 above	Total		
January	40	376	416	710	1126
February	85	410	495	686	1181
March	80	529	609	757	1366
April	53	318	371	578	949
May	85	409	494	679	1173
June	99	420	519	701	1220
July	97	404	501	646	1147
August	94	412	506	827	1333
September	129	413	542	718	1260
October	73	373	446	683	1129
November	66	386	452	687	1139
December	46	422	468	765	1233
Total	947	4872	5819	8437	14256

Mandalay District (7 townships) is implementing the "Integrated HIV care" Project with the support of MoH (NTP and NAP together with Medical Care unit of Mandalay General Hospital), UNION and Yadana oil company.

11.7. Shan State (Taunggyi)

State TB Centre located in Taunggyi covers 2 districts with 21 townships of Southern Shan State. Its population was 2 millions. Southern Shan State achieved CDR 37%, CR 79% and TSR 84%. After adding the contributions of partners, CDR, CR and TSR became 39%, 78% and 84% respectively. Reporting efficacy was 100%.

In Southern Shan State, there was no township that achieved the TB control targets of both CDR 70% and TSR 85%. Out of 21 townships 12 townships had less than CDR 40% (Linhkay, Mangpang, Loilem, Kyeethi, Mongkaing, Mongshu, Hopone, Hpekon, Hsiseng, Lauksauk, Pinlaung and Ywangan townships). Out of them, Mongpaung, Mongshu and Kyeethi township had treatment success rate of 100%.

Defaulter rate was 5% for Southern Shan State. It was high in 5 townships namely, Namsan 7%, Taunggyi 12%, Hopone 13%, Kalaw 6% and Hsiseng 18%. Case fatality rate was 6% for Shan South State and it was high in Loilem 12%,

Kunhein 9%, Mongkaing 16%, Namsam 12%, Taunggyi 7%, Hsiseng 7%, Lauksauk 8% and Pinlaung 19%. Failure rate was 3% for Shan State (South). 5 townships had Failure rate higher than 5% was in Hopone 9%, Hpekon 14%, Kalaw 8%, Pindaya 8% and Ywangan 25%.

Problems identified in Southern Shan State were low case detection rate, high case fatality rate, high defaulter rate and high failure rate, vacancies of team leaders Medical Officers in Taunggyi and Loilem and laboratory technicians, transport difficulties and language barriers. HIV co-infection is also one of the reasons of high CFR.

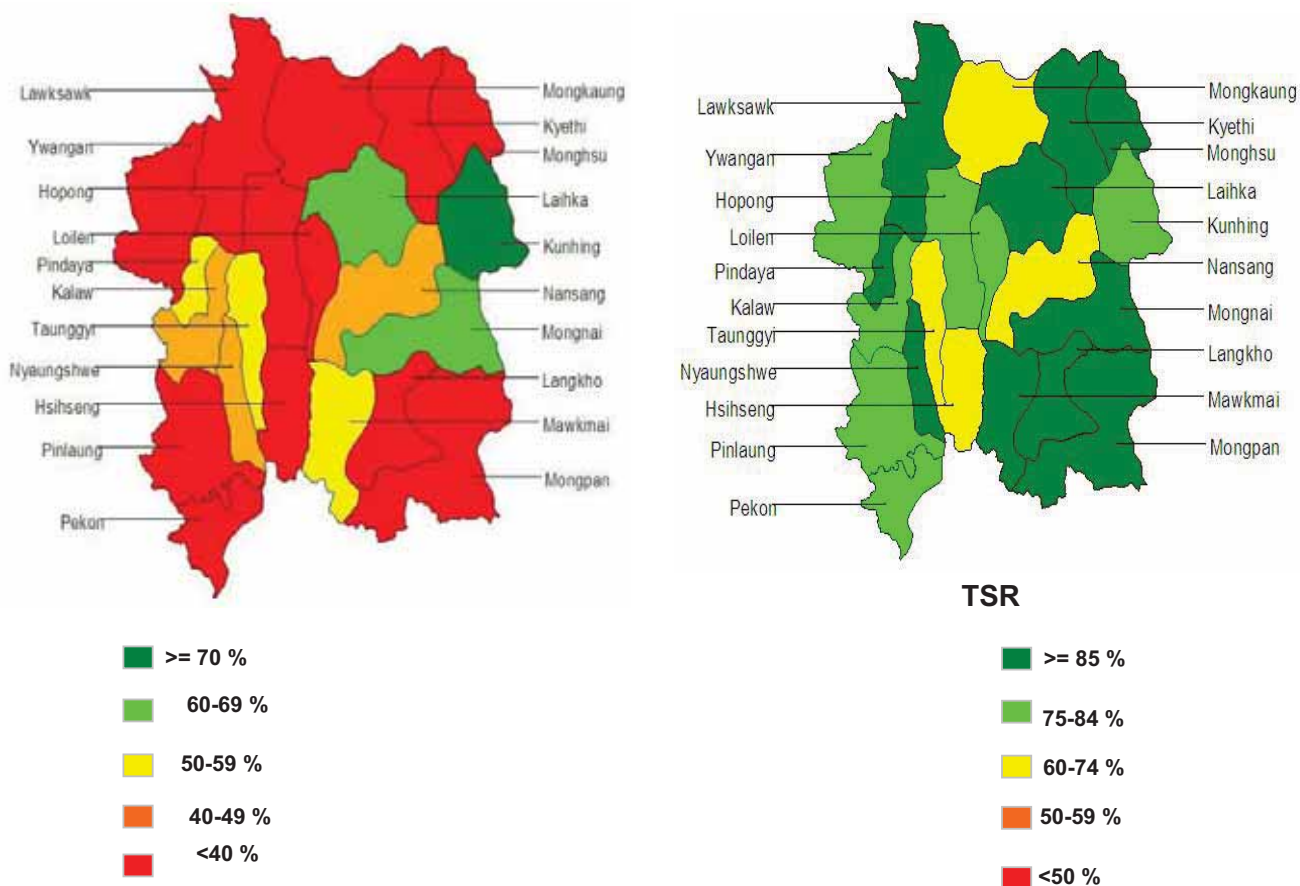


Table 55. Treatment outcomes of TB/HIV patients (Taunggyi Township) (2009 cohort)

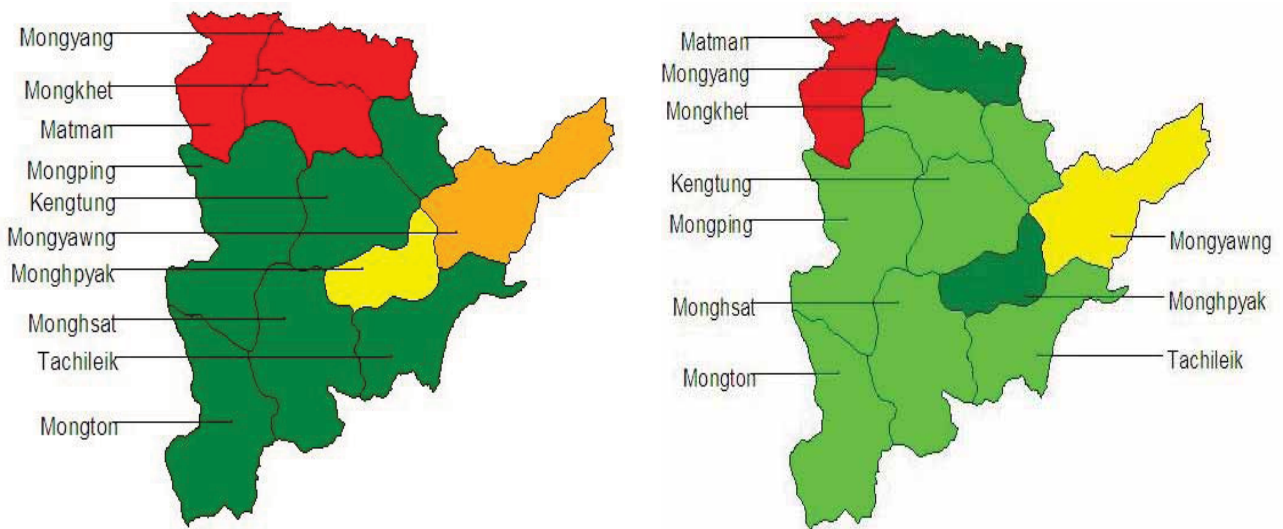
Type of Patients	Cured	Completed	Died	Failure	Defaulted	Transferred out	Total
Smear positive	13 (68%)	0	4 (21%)	0	2 (11%)	0	19
Smear negative		27 (54%)	10 (20%)	1	8 (16%)	4	50
EP		18 (72%)	4 (16%)		1 (4%)	2	25
Relapse	1	0	1	0	0	0	2
TAD	1	1	0	0	0	0	2
TAF	1	0	0	0	0	0	1
Other		1	0	0	1	0	2

Taunggyi Township is implementing the TB/HIV collaborative activities together with NAP, WHO and UNION. TSR of HIV positive, new smear positive TB patients was 68%.

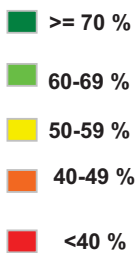
11.8. Shan State (Kyaingtong)

Shan State TB centre located in Kyaingtong covers only Eastern Shan State, which has 4 districts and 10 townships. Total population of the State was 0.7 million. It achieved CDR 75%, CR 64% and TSR 80%. CDR was increased to 80% when contribution of other reporting units was added. Reporting efficacy was 90%. There was no report from Matman.

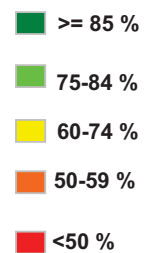
There was no townships achieved the NTP targets. Two townships had low CDR, Mongkhat 8% and Mongyan 14%. Townships had low CR of less than 50%, were Monghsat and Mongyan.



CDR



TSR

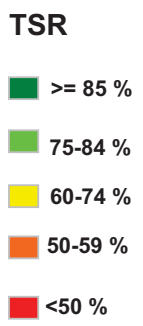
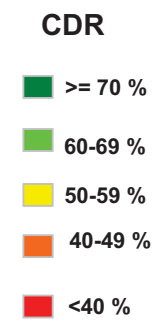
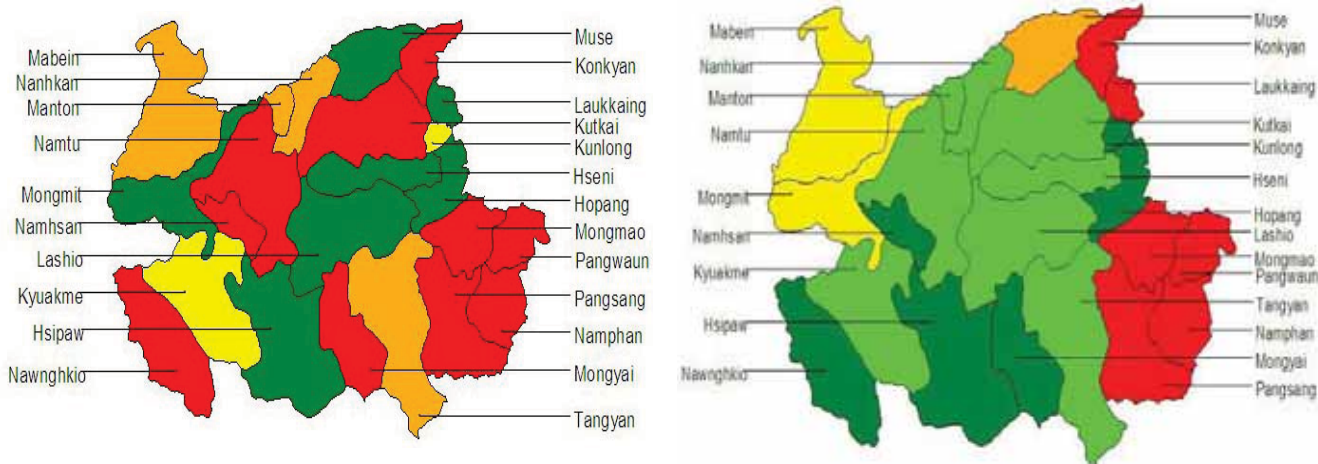


Defaulter rate of the State was 10% and it was higher than 10% in Kengtong (11%), Monghsat (13%), Mongpying (11%), Mongton (13%) and Mongyaung (17%) townships. Case fatality rate of the State was 5% and above 5% in Mongton 6%, Mongyaung 9% and Tachikleik 7%. Failure rate of the state was 3% but Monghsat and Mongyaung had 6%.

Problems identified were shortage of human resources, frequent transfer of health staff, language barrier, difficulties in transportation, low community awareness about TB and lack of infrastructure for proper storage of drugs and supplies and not having X-ray machine for State TB center. HIV co infection is also high. However CDR was **high weak** in case holding was observed due to migration.

11.9. Shan State (North)

Shan State TB Centre located in Lashio covers 5 districts with 24 townships of Northern Shan State which includes Wa special region. Its population was 2.6 millions. It achieved CDR 45%, CR 70% and TSR 79%. The CDR increased to 50% when contribution of other reporting units was added. However CR (69%) and TSR (78%) reduced after adding of partners' contribution. Reporting efficiency was 75% (19/24). NTP cannot provide TB control services to 6 townships, Kongyan, Panwine, Pangyan, Mongmaw, Manphant and Narphant townships.



Hopan and Hsipaw townships achieved the TB control targets. Laukkai had very low CR 19% and TSR 40%. Six townships had low CDR, Namtu 21%, Nyaungcho 33%, Namsam 17%, Mongreh 36%, Kuitai 35%, Namkham 40%.

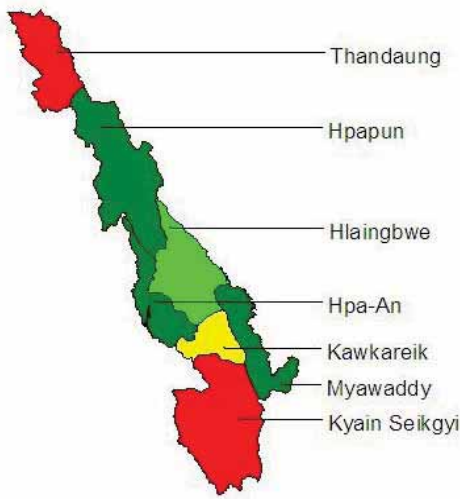
Defaulter rate was 11% and highest rate compared to other Regions and States. The defaulter rate was high $\geq 10\%$ in 7 townships (Manton 23%, Mongmeik 14%, Namtu 10%, Lashio 22%, Theinni 18%, Laukkai 52%, Muse 11%). Case fatality rate for the state was 6% and CFR was high above 10% in Kyaukme 11%, Mabein 26%, Mongmeik 13% and Muse 12%.

The main problems were low CDR, low CR and high defaulter rates. Transportation difficulties, migration, security problems and language barriers are main problems.

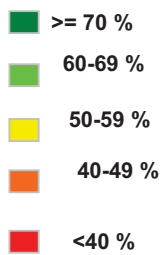
TB/HIV collaborative activities were started in Lashio township in 2007 and the treatment outcomes of the detected TB/HIV patients were reported.

11.10. Kayin State

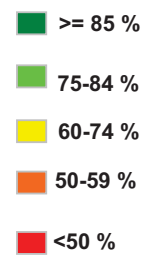
State TB Centre located in Maylamyine covers Mon State and Kayin State: 2 districts in Mon State with 10 townships and 3 districts in Kayin State with 7 townships. Therefore, DOTS is implementing in 17 townships. The population of Kayin State was 1.5 millions.



CDR



TSR



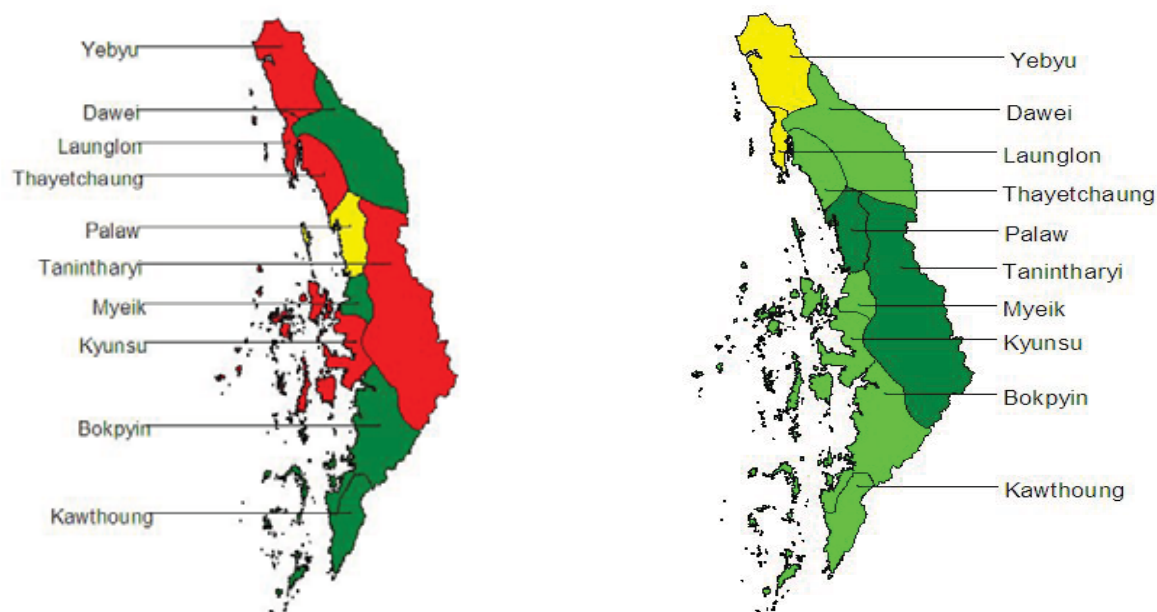
Kayin State achieved CDR 63%, CR 75% and TSR 82%. Reporting Efficacy was 100%. CDR of Kayin State increased to 69% when contribution of PPM –DOTS was considered.

For Kayin State, Hpa-an and Papun (Kammaung) townships reached the TB control targets. 2 townships (Kyarinnseikkyi and Thandaung townships) had low CDR. Defaulter rate of Kayin State was 8% and high in 3 townships in Myawaddy 14%, Hpan 9% and Hlaingbwe 9%. Case fatality rate for Kayin State was 5% and high in Kawkareik 7%, Kyainseikkyi 6%, Myawaddy 9%, Hlaingbwe 7%, Thandaung 17%. Failure rate was as low as 1% and only Thandaung township had 8%.

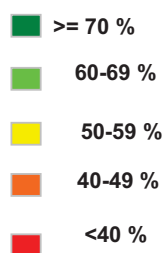
The main problem of Kayin State is having uncovered areas and migration. Special attention should be provided to Myawaddy, Kawkareik and Thandaung townships of Kayin State to improve the overall performance of Kayin State.

11.11 Tanintharyi Region

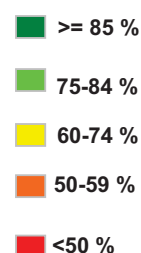
Tanintharyi Regional TB Centre located in Dawei covers only 3 districts with 10 townships and having 1.6 million populations. It achieved CDR 50%, CR 73% and TSR 80%. CDR was increased to 66% when contribution of other reporting units was added. Reporting Efficacy was 100%.



CDR



TSR



None of the township achieved the TB control targets. Longlon, Thayetchaung, Yebyu and Kyunsu and Tanintharyi townships had low CDR (40%). CR was lower than 50% in Bokpyin township only.

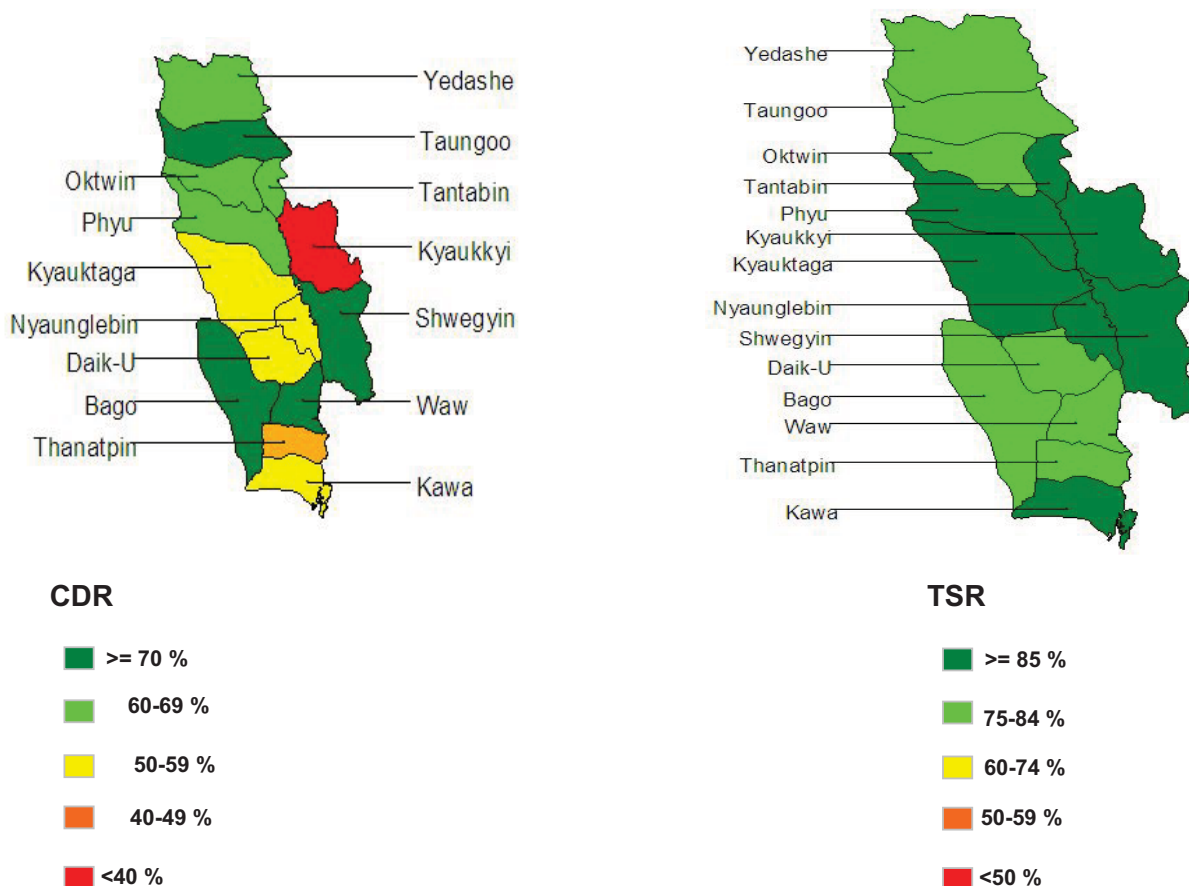
Default rate was 7% for the region and 7 townships had defaulter rate $\geq 10\%$ (Palaw (7%), Bokepyin (17%), Thayetchaung (17%), Yebyu (7%), Kawthaung (9%), Kyunsu (13%), Tanintharyi (7%)).

Transfer out rate in Taninthayi Region was 8%, which was highest compared to other Regions and States. The highest transfer out rate was in Kyunsu (13%) and Myeik (14%). Failure rate for region was 2% but Launglon had 14% and Yebyu had 10% failure rate. These 2 townships has also high death rate of 14% and 7% respectively.

The main problems of Taninthayi Region were low community awareness, high defaulter rate with poor case holding, TB/HIV and migration problems.

11.12. Bago Region

Regional TB Centre located in Bago covers Bago Regions having 28 townships. Regional TB Officer is responsible for 4 districts in Eastern part of Bago Region and 14 townships in Western part of Bago Region.



Bago Region (Bago)

Total population was about 2.9 millions in Bago Region (Bago). The region achieved CDR 58%, CR 76%, and TSR 84%. CDR of Bago Region (Bago) increased to 75% when other reporting units were added where as CR reduced to 74%. Reporting efficacy of the Region was 100%.

Shwekyin township achieved the TB control targets. There was only one towshhip with low CDR, Kyaukkyi 30%. Bago and Taungoo had high CDR > 100%.

Defaulter rate was 7% in Bago Region (Bago). It was higher than 10% in Thanatpin 11% and Oktwin 10%. Case fatality rate was 6% and it was high in Taunggoo (11%), Kyaukkyi (10%) and Oktwin (11%).

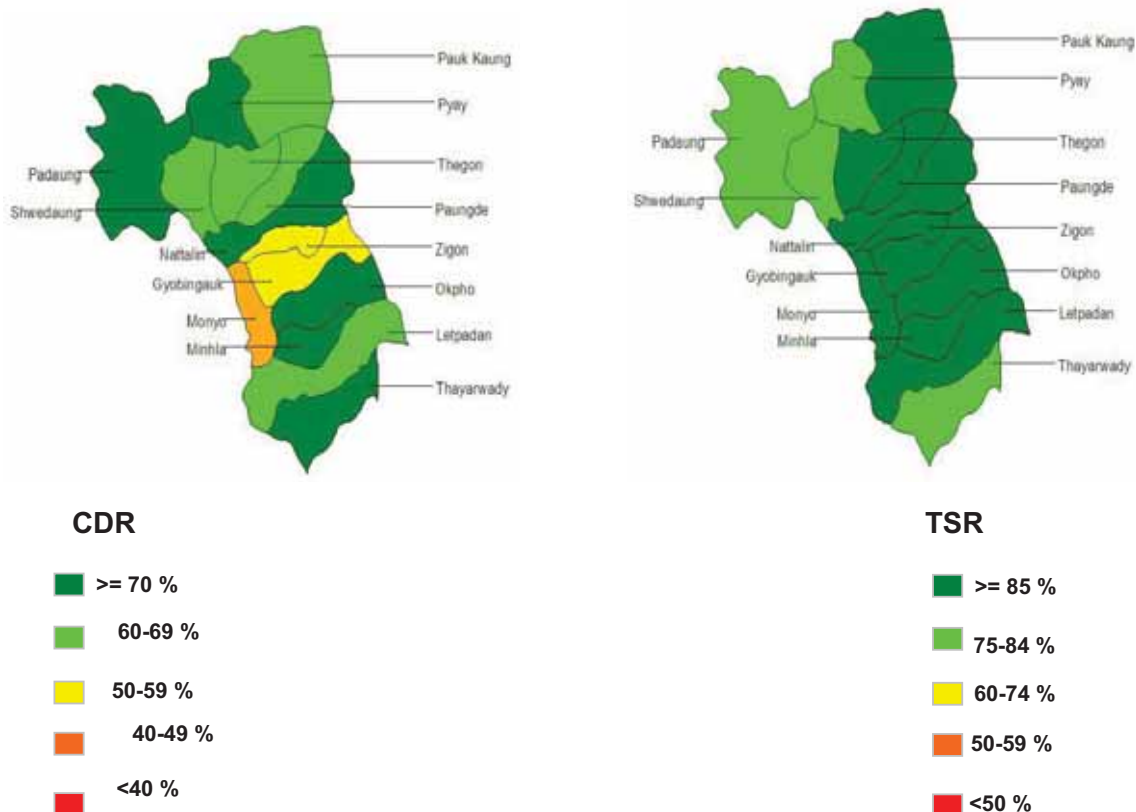
Bago Region (Bago) had less problem compared to others. Vacant laboratory technician in district TB laboratories like Taunggoo, transfer of trained health staff, low community awareness about TB and TB treatment and transport difficulties for supervision were identified as problems.

11.13. Bago Region (Pyay)

Bago Regional TB Officer is responsible for 14 townships in Bago Region (Pyay). Total population was 1.97 million. It achieved CDR 69%, CR 81%, and TSR 87%. CDR of Bago Region (Pyay) increased to 77% when other reporting units were added. Reporting efficacy of the region was 100%.

Three townships (Minhla, Okkpo and Nattalin) achieved the TB control targets. Defaulter rate was 3% and noted higher than 10% in Shwedaung township (12%). Case fatality rate was 6% and it was high in Tharyarwaddy (10%) and Pyay (9%). Treatment failure rate was 3% for the region and high in Thayarwaddy (8%), Pyay (7%) and Padaung (6%).

Bago Region (Pyay) had same constraints as Bago Region (Bago).



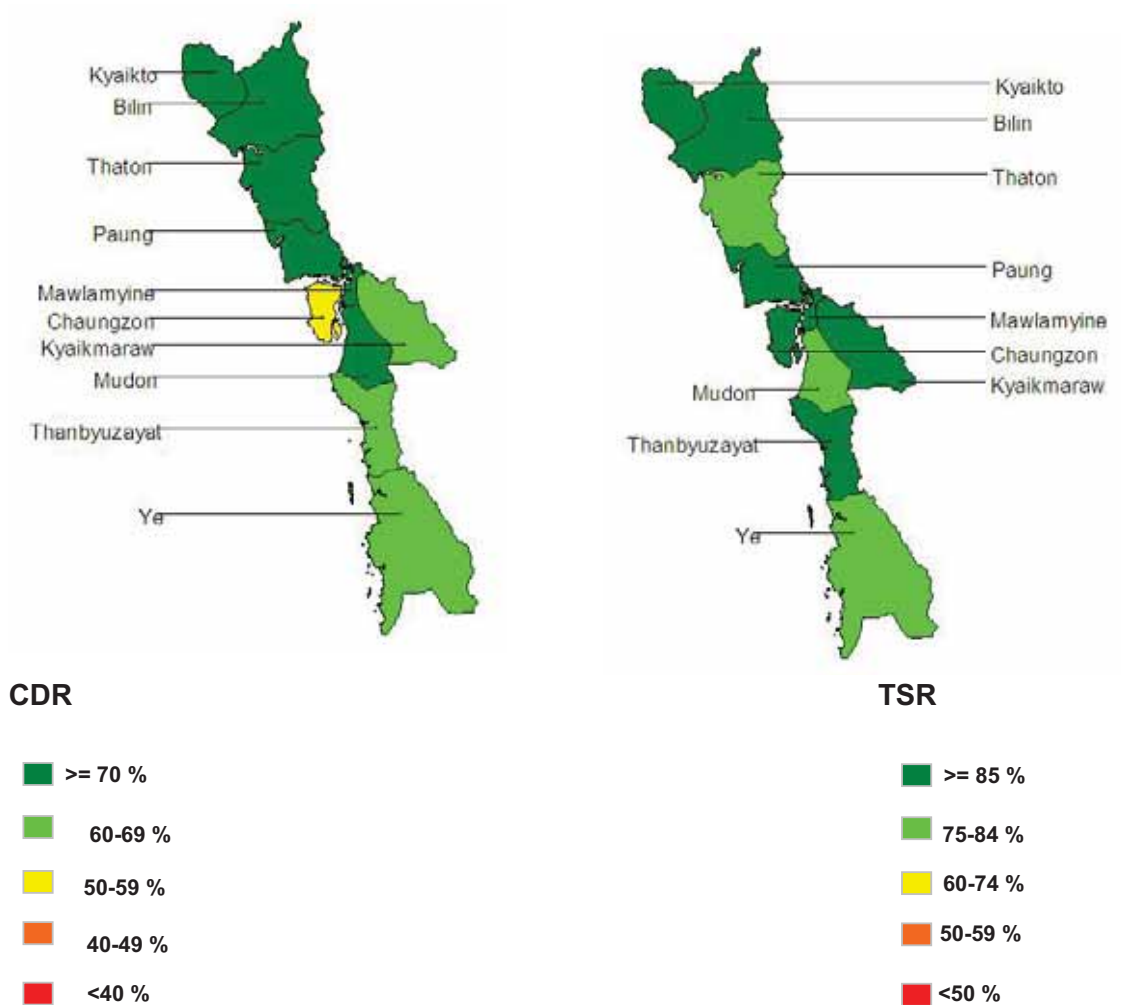
11.14. Mon State

Mon State TB Centre covers Mon State with 2 districts and 10 townships. The population of Mon State was 2 million.

Mon State achieved CDR 75%, CR 80% and TSR 86%. CDR of Mon State increased to 88% when contribution of PPM –DOTS was considered. Reporting efficiency was 100%.

5 townships (Mawlamyaing, Belin, Kyaikhto and Paung) from Mon State achieved the TB control targets. Defaulter rate of Mon State was only 4%. High Defaulter rate in Mudon 6%, Ye 9%, Thaton 7%. Case fatality rate of Mon State was 5%. Case fatality rate over 5% is found in Chaungzon 10%, Mudon 6%, Ye 9%, Thaton 7%. Failure rate was 3 % for the State and high in Mudon 6%.

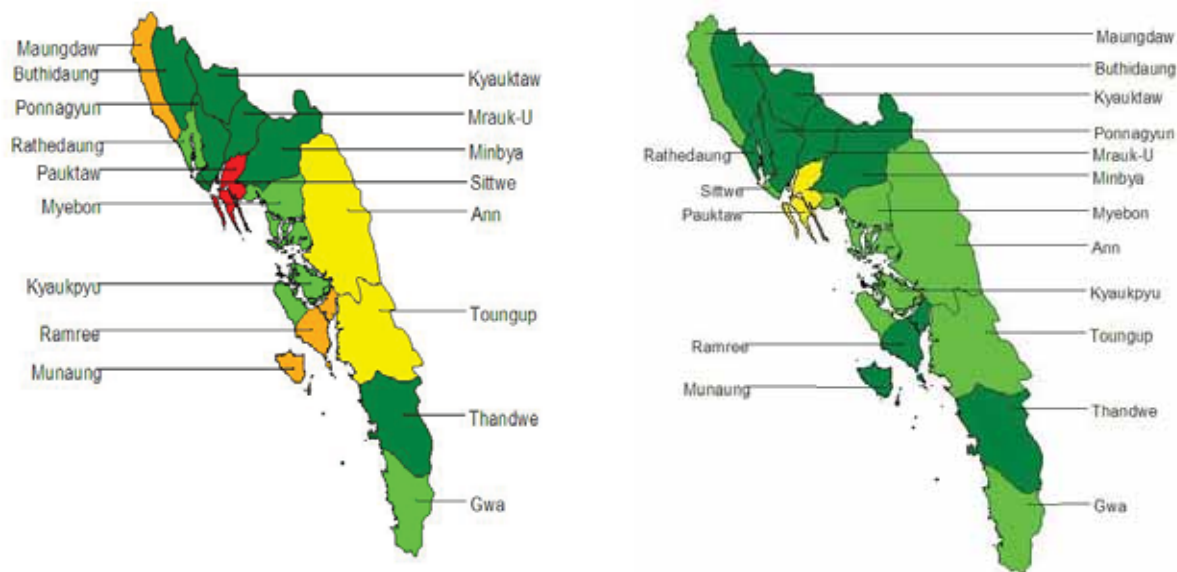
The main problem of Mon State is migration and now, it is much improved due to IOM involvement in TB control in 6 townships of Mon State.



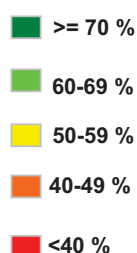
11.15. Rakhine State

Rakhine State TB Centre located in Sittwe covers Rakhine State implementing in 17 townships. It achieved CDR 64%, CR 76% and TSR 86%. CDR increased to 67% when the contribution of partners was added. Reporting efficacy was 100%.

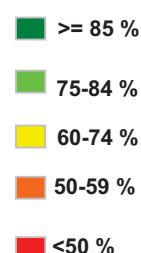
Five townships (Kyauktaw, Minbya, MyaukO, Ponnagyun, Thandwe) in Rakhine State achieved the TB control targets. Two townships had low CDR, Rambye 40% and Pauktaw 38%. Pauktaw had also very low CR with 38%.



CDR



TSR



Defaulter rate of Rakhine State was 5%. There were high defaulter rate above 10% in 3 townships: Kyauk Phyu 12%, Ann 15%, Pauktaw 23%, Myebon 11%. Case fatality rate was 5% in Rakhine State and over 5% case fatality rate was observed in 5 townships: Ann, Maungdaw, Myebon, Gwa and Taunggup townships. Although failure rate of Rakhine State was 2%, failure rate over 2% was found in 4 townships: Kyaukphyu, Maungdaw, Minbya and Taungup.

The main problem of Rakhine State was transportation difficulty and bordering with Bangladesh. Special attention should be provided to Yambye, Maungdaw, Pauktaw and Ann townships. Rakhine State TB Officer is also responsible for Palettwa township of Chin State.

11.16. Yangon Region

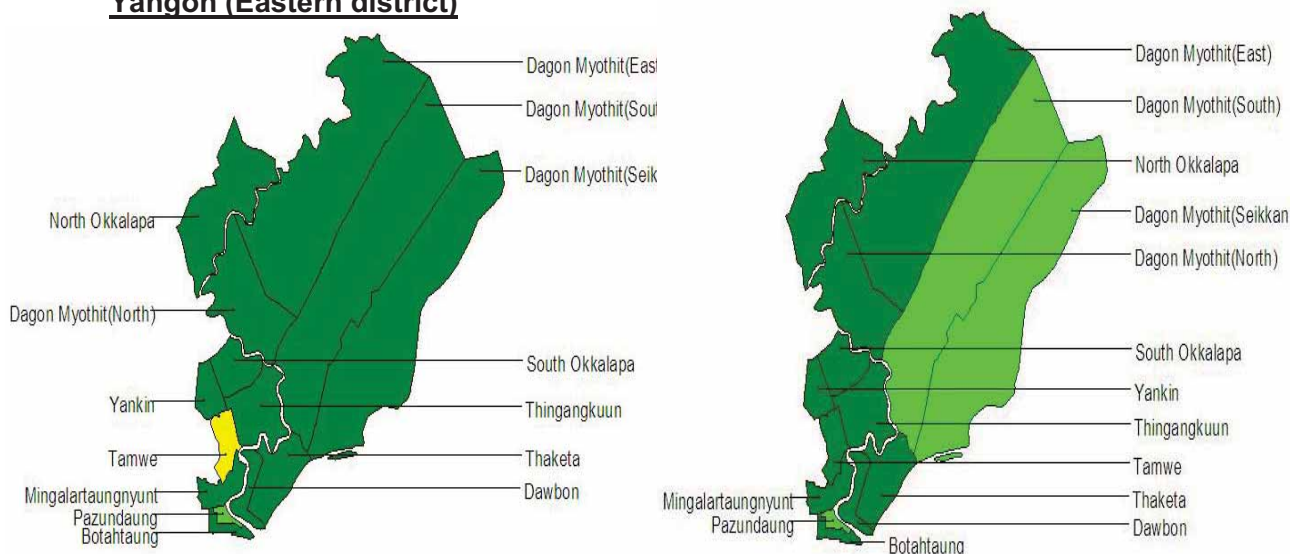
Yangon Regional TB Centre covers 4 districts with 45 townships of Yangon Region. Its population was 5.9 millions. It achieved CDR of 83% and if added the contribution of other reporting units CDR increased to 106%. Cure rate and TSR was 83% and 88%. Cure rate became reduced to 82% after adding contribution of partners. Reporting efficacy was 100%.

The estimated new smear positive TB patients were calculated with 170/100,000 population based on the Yangon Regional TB Prevalence Survey results (2006). Twenty-five townships achieved the TB control targets. There was no township with CDR <40% and Cure rate <50%.

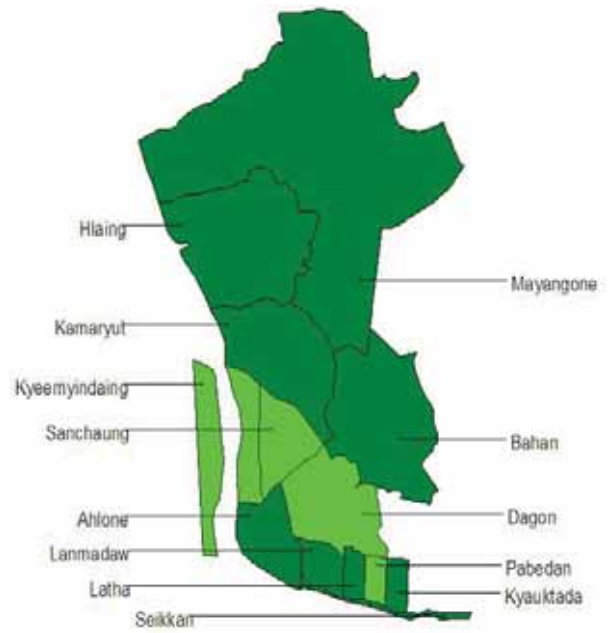
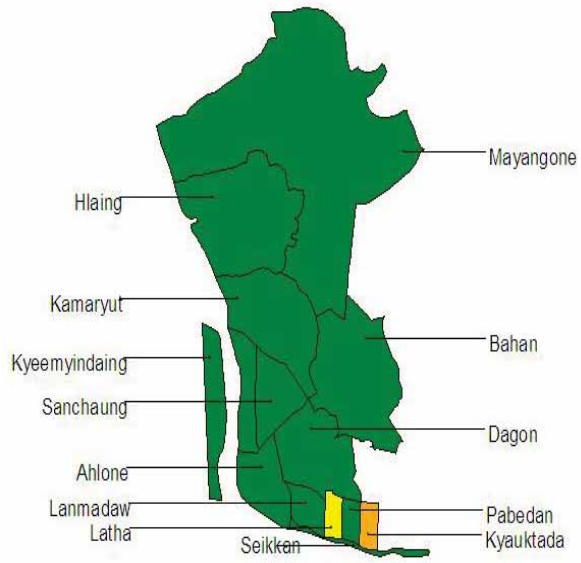
Defaulter rate was reduced to 4%. Defaulter rate was >5% in Dagon (South) 12%, Dagon Seikkan 13%, Sanchaung 7%, Shwepyithar 6%, Htantabin 7%. Although Case fatality rate was 5% in Yangon Region, high (≥5%) in 11 townships: Dagon North, Dagon East, Kyeemyintdaing, Pabetan, Dallah, Kawhmu, Kyauktan, Kungyangone, Thongwa, Thanlyin, Taikkyi townships. Failure rate was 3% in Yangon region but >5% in 6 townships North Okkalapa, Pazundaung, Kyauktada, Kyeemyintdaing, Dagon and Mingalardon townships.

Problems identified in Yangon Region were low performance in southern district, vacant medical officer posts and no laboratory in (14) townships of Yangon Region.

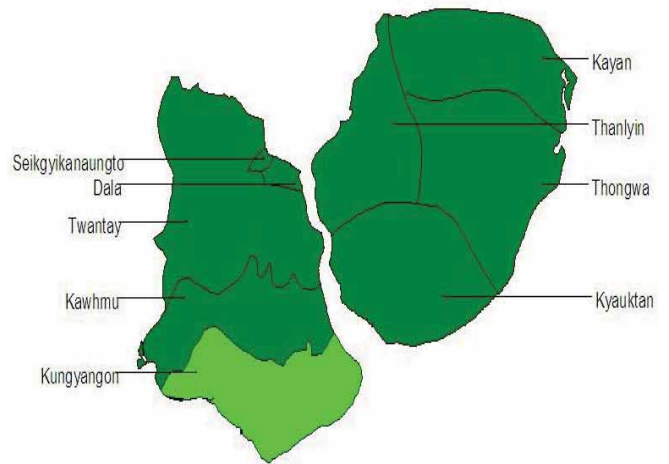
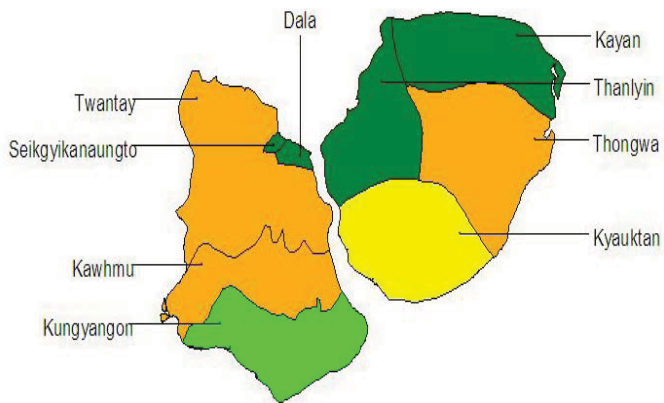
Yangon (Eastern district)



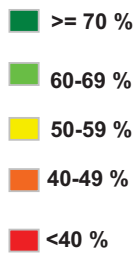
Yangon (Western district)



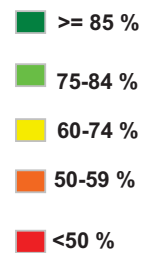
Yangon (Southern district)



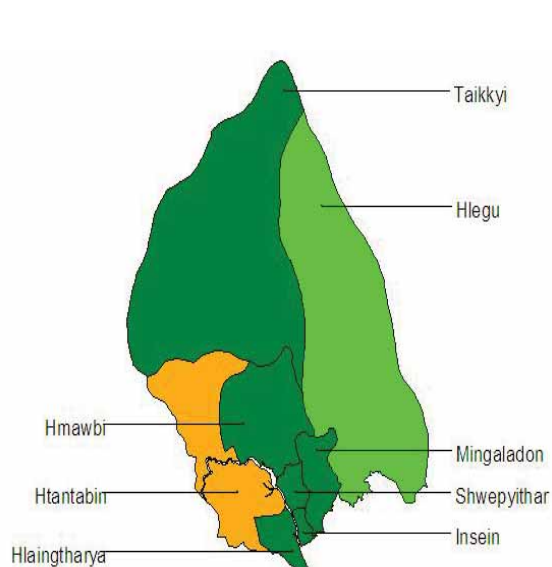
CDR



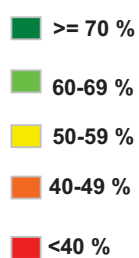
TSR



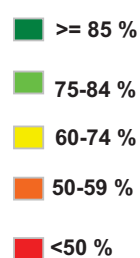
Yangon (Northern district)



CDR



TSR



Tuberculosis Diagnostic Centre (Yangon)

In Yangon, there are 2 diagnostic and referral centers (Latha and UTI Aungsan). The attendants to those centers were recorded and reported in following tables.

Table 56. Performance of TB Diagnostic Centers (Latha and Aungsan) in Yangon Region in 2010

Latha TB Diagnostic Center

Latha center	Category 1			Category 2					Category 3			Follow - up	Non TB	Chronic	HIV +	Total
	Pos	Neg	EP	Rel	Oth	D/F	T/F	PC	P	EP						
January	67	99	22	26	17	0	0	1	8	14	340	936	0	0	0	1530
February	93	115	29	24	11	1	0	0	5	11	371	931	4	0	0	1595
March	101	116	32	35	14	0	0	0	5	9	430	1083	4	5	5	1834
April	72	51	38	23	6	0	0	0	15	8	373	675	3	0	0	1264
May	83	112	34	25	14	1	1	0	13	14	288	872	0	0	0	1457
June	91	102	44	23	25	0	3	0	17	12	367	583	4	4	4	1275
July	74	95	29	35	16	3	3	0	18	12	342	734	2	0	0	1363
August	110	113	31	31	13	2	1	0	10	15	405	663	8	3	3	1405
September	92	104	30	42	0	1	1	1	40	18	380	816	3	0	0	1528
October	91	71	34	19	10	0	0	9	45	26	314	655	14	5	5	1293
November	57	78	38	28	20	3	3	8	48	10	320	588	13	16	16	1230
December	88	110	27	16	26	2	3	4	17	18	379	632	9	8	8	1339
Total	1019	1166	388	327	172	13	15	23	241	167	4309	9168	64	41	41	17113

Aungsan TB Diagnostic Center

UTI, Aungsan	TB Patients															Follow up of TB Patients	Other Chest Disease	Total
	Category 1					Category 2					Category 3							
	Pos	Neg	EP	Rel	Def	Fail	Oth	P	EP	P	Child	EP	P	EP				
															EP			
January	119	129	0	22	4	0	13	5	5	0	27			449	563	1336		
February	122	112	0	22	2	6	2	0	0	1	27			393	531	1218		
March	182	145	0	26	6	4	25	0	2	2	27			522	637	1578		
April	132	108	0	18	1	3	19	0	0	1	11			430	366	1089		
May	187	149	21	24	1	13	30	1	1	2	19			508	537	1493		
June	173	116	15	32	5	6	22	5	8	3	23			515	557	1480		
July	189	139	12	30	1	8	10	0	1	6	17			539	637	1589		
August	177	135	8	38	2	9	24	0	2	25	14			680	469	1583		
September	186	128	17	43	15	9	11	3	3	23	6			787	503	1734		
October	151	112	18	28	5	8	29	0	3	13	17			437	672	1493		
November	170	124	6	27	1	7	23	0	16	1	14			525	691	1605		
December	135	125	10	30	2	15	17	1	10	0	16			666	665	1692		
Total	1923	1522	107	340	45	88	225	15	51	77	218			6451	6828	17890		

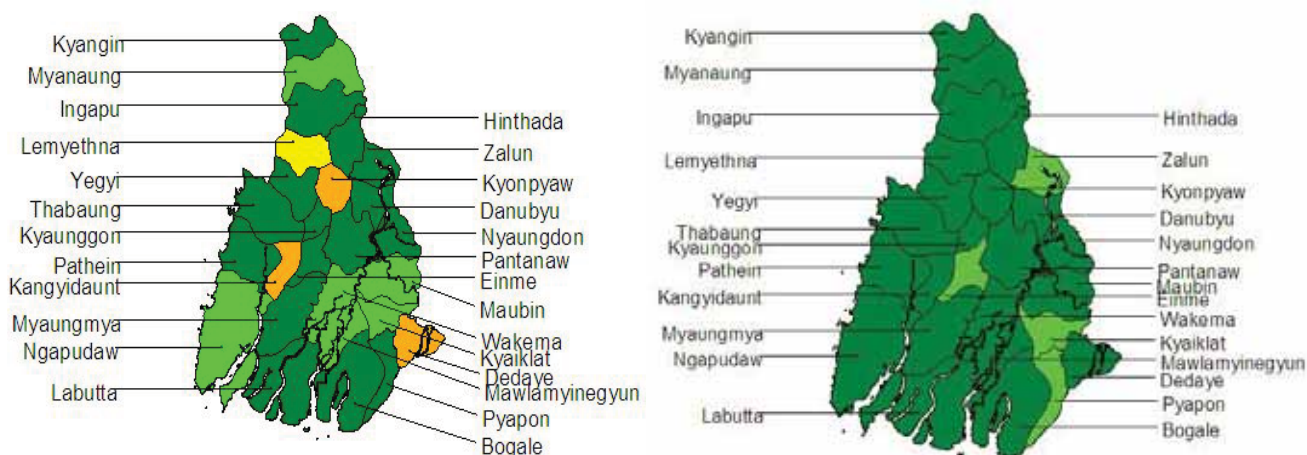
11.17. Ayeyarwaddy Region

Ayeyarwaddy Regional TB centre located in Patheingyi covers only Ayeyarwaddy Region having 5 districts with 26 townships. Total population of the Region was about 6.6 millions. It achieved CDR 71%, CR 82% and TSR 89%. CDR increased to 78%; however, CR became 81% when other reporting units were added. Reporting efficacy was 100%.

Thirteen townships achieved the TB control targets (Patheingyi, Yekyi, Kyaunggon, Thabaung, Hinthada, Kyaukse, Ingapu, Myaungmya, Bogalay, Nyaungdon, Pantanaw, Danubyu, Laputta). There was no township with low CDR and Low CR in Ayeyarwaddy Region.

Defaulter rate of Ayeyarwaddy Region was only 4% but Einme and Pantanaw township had defaulter rate 10%. Case fatality rate for the Region was 5% and CFR of Kangyidaung and Bogalay townships were 10%. Failure rate was only 1% for the whole region but 5% in Wakema and Maubin.

Performance of Ayeyarwaddy region is recognized as the best among 17 States and Regions although the performance was affected due to cyclone Nargis. Problems identified were delay sending of QC slides and weak supervision of BHS.



12. Possible actions to be taken for the problems

A. Case detection rate less than 70%

- to promote community awareness by widespread health education concerning TB with the support of IEC materials
- to identify TB suspected patients in community and refer for proper investigations
- to educate family members of TB patients and promote contact tracing
- to advocate general practitioners and local NGOs to involve in TB control
- to advocate community and registered TB patients to involve in TB control
- to promote early case referral for diagnosis and treatment from GPs
- to assess the laboratory performance, to ensure 3 sputum smear examinations are being done for all chest symptomatic
- to ensure that all smear positive TB patients in the laboratory register are registered and treated
- to ensure that sputum microscopy is done by trained laboratory technician is accessible to patients
- to improve laboratory quality assurance system by close supervision of TMO
- to establish sputum collection points in hard to reach areas
- to improve the skills of health staff who diagnose the TB patients
- to promote TB suspect identification and referral by BHS
- to identify TB suspected patients as early as possible
- to decentralize the sputum microscopy according to the geographical variation
- to initiate active case finding using mobile teams equipped with diagnostic facilities

B. CDR more than 100% and Cure rate less than 50%

- to assess any migrant population in the area
- to assess laboratory quality assessment system which is implementing or not
- to ensure that TB patients reside in the respective township are being treated
- to treat TB patients till cured with DOTS
- to do regular sputum follow-up examination during the treatment
- to check the township actual population
- to evaluate the current situation of TB in terms of prevalence of sputum smear positive TB cases in that particular township and how much it deviates from the national figure (1 sputum positive TB cases per 1000 population)
- To consider HIV co-infection
- to conduct epidemiological surveillance

C. Cure rate of new smear positive TB cases less than 85%

- to ensure that every dose of medication is directly observed i.e. to assign DOT provider for every TB patient put on treatment
- to strengthen health education session for TB patients at the time of registration for treatment and during follow-up visits
- to provide TB counseling to TB patients especially for treatment adherence
- to take accurate history taking for the most effective treatment
- to intensify the follow-up sputum examination during and at the end of treatment
- to give refresher training to DOT supervisors and DOT providers if required
- to consider HIV co- infection and strengthen TB/HIV collaboration
- to use quarterly cohort review meeting for early identification of missed dose patients
- to closely monitor the performance of partners at all level and take timely action especially for partners treating TB/HIV

D. Cure rate >85% with Case detection rate less than 40%

- to maintain CR and raise the CDR as suggestion A.
- to check data quality
- to check laboratory quality

E. Sputum positivity rate less than 10%

- to check quality of laboratory performance whether lab. technician strictly follows the SOP on sputum microscopy
- to ensure that 3 sputum specimens are examined for all TB suspects
- to check whether the TB suspect is correct or not
- to check quality of stains and microscopes using in that microscopy centre
- to improve the accessibility of TB suspects to sputum microscopy centers

F. Sputum Positivity Rate more than 10%

- to evaluate the prevalence of TB in that particular township
- to improve the accessibility of TB suspects to sputum microscopy centers
- to check whether PPs under PPM are using Chest X Ray before sputum examination

G. Sputum conversion rate less than 80-85% in new smear positive TB cases

- to check whether categorization of TB patients based on proper history taking is correct or not
- to check whether that every dose of medication is directly observed
- to ensure sputum microscopy accuracy with quality assurance system
- to monitor the drug resistant TB situation
- to check correctness of TB-07, Block 5
- to explain all the staff involving in TB control about the importance of follow-up sputum examination in TB control
- to provide qualified DOT to every patient

H. Case fatality rate more than 5% in new smear positive TB cases

- to identify and refer TB suspect as early as possible
- to ensure that every dose of medication is directly observed
- to consider HIV prevalence among TB patients
- to advocate and encourage local PPs to refer promptly
- to find out other causes of death other than TB

I. Treatment failure rate more than 5% in new smear positive TB cases

- to check whether categorization of TB patients based on proper history taking is correct or not
- to ensure the quality of anti-TB drugs, stored in appropriate condition and being used before their expiry date
- to ensure that every correct dose of medication is directly observed, especially in initial phase
- to consider the level of primary drug resistance in the community
- to check laboratory quality

J. Defaulter rate more than 10% in new smear positive TB cases

- to consider for migrant population
- to strengthen DOT by supervision and close monitoring
- to educate TB patients concerning TB disease, its treatment and follow-up
- to provide adherence counseling as necessary
- to instruct the DOT supervisors and providers how to take action for patient with missed dose
- to find the patients with missed dose within 1 week (not to miss more than 1-2 doses) and put under DOT again.

K. Transferred out rate more than 5% in new smear positive TB cases

- to ensure that defaulted TB patients are not counted as transferred out cases
- to strengthen the system of proper referral
- to ask for the treatment outcome of transferred out patients from the transferred townships

L. Cure rate less than 85% but Treatment Success Rate more than 85% in new smear positive cases

- to intensify follow-up sputum examination as 2nd , 5th and 6th month of treatment in new smear positive TB patients
- to explain all the staff involving in TB control the crucial importance of follow-up sputum examination in TB control
- to make sure defaulted TB patients are not counted as completed TB patients and misuse of anti-TB drugs

M. Proportion of new smear positive TB patients out of all pulmonary TB cases is less than 55%

- to check that direct sputum microscopy is used as a diagnostic method or not
- to check that 3 sputum smear examinations are being done on all chest symptomatic
- to check quality assessment system of laboratory performance

13. Recommendations

1. To strengthen township health system: e.g. To decentralize DOTS services to appropriate SHU/RHCs, capacity building of BHS
2. To establish standard organization set up at all levels
3. To fill up the vacant posts especially laboratory technicians
4. To ensure adequacy of resources for TB control
5. To strengthen lab. facilities from central to township levels
6. To review and revise the national guidelines according to new strategy
7. To strictly follow SOPs of NTP
8. To develop Advocacy, Communication and Social Mobilization (ACSM)
Strategy appropriate for the Myanmar context
9. To evaluate and scale up the prevention and control activities for TB/HIV co-infection and MDR-TB
10. To evaluate the activities which promote TB case finding especially in hard to reach area and plan for scale up

11. To scale up on Public-Private Mix and strengthen the public-public Mix
12. To cover private laboratories including which are using by PPM-DOTS under the external quality assurance system of NTP
13. To strengthen coordination mechanism related to TB control at all levels
14. To strengthen monitoring, supervision and evaluation on TB control activities
15. To promote OR
16. To strengthen district health information system

14. Conclusion

NTP, Myanmar covered all the townships since November, 2003. NTP achieved case detection rate 76% and treatment success rate 85% in 2010 and reached the global TB control targets since 2006. The achievement should be sustained by implementing innovative approaches in line with Stop TB Strategies and Millennium Development Goals, according to the accessibility status of different location in the country. The National TB Prevalence Survey was conducted in 2009-2010, aiming to measure the magnitude of TB in our country. The survey showed that the prevalence of TB is higher than the estimates used by the NTP (and according to the WHO Global Tuberculosis Control Report of 2008). Based on the outcomes of the survey, WHO estimates that the prevalence of TB in Myanmar is 595 cases per 100,000 populations. The survey findings coincide with the annual notified data and urge for change in diagnostic algorithms. The survey also confirms that the vast majority of TB cases remain undetected.

The results of the survey are of major importance for gaining a better understanding of the TB burden and the impact of TB control in the past decade. The NTP will revise the strategies of NTP and seek for funding to reach the Millennium Development Goals by 2015. Therefore, we must try to improve our case finding activities by innovative approaches. The townships which have not reached the targets, should scale-up their effort with appropriate and innovative strategies. In conclusion, strong political commitment, health system strengthening and partnership are important to maintain the achievement and reaching the MDGs.

Balance of First Line Anti-TB Drugs at NTP Central Drug Store (2010)

Annex-1

Drugs	4FDC	2FDC	ETB-400	PZA-500	S 1 G	S/N	D/W	Cat I Kit	Cat II Kit	Paed. HRZ	Paed: HR
Opening Balance	2536128	9324000	0	0	156950	258000	308100	34509	0	3492990	7327620
Received	0	0	2492000	185100	203800	370000	184900	96671	7138	5939550	11507490
Issued	2536128	8092224	2012000	178600	305950	333000	299100	117624	7138	6580980	12276450
Closing Balance	0	1231776	480000	6500	54800	295000	193900	13556	0	2851560	6558660
Expired Date		1231776									
								4848			
								1700			
								7008			
										2851560	
				6500							6558660
							58800				
						22500					
						70000					
					54800						
			480000								
							135100				

Balance of First Line Anti-TB Drugs at Lower Myanmar Drug Store (2010) Annex-1

Drugs	4FDC	2FDC	ETB	PZA	S 1 G	S/N	D/W	Cat I Kit	Cat II Kit	Paed. HRZ	Paed. HR	INH 300mg
Opening Balance	731136	2417856	16640	0	40450	33900	35000	1444	0	0	273420	134400
Received	1872924	8213184	1354800	600	209000	212000	198100	79082	4678	4385880	8379270	0
Issued	2600304	10471776	1299040	600	239850	236300	223300	67204	4649	4320000	8474400	8064
Closing Balance	3756	159264	72400	0	9600	9600	9800	13322	29	65880	178290	126336
10/2011								13322				
12/2011		159264										
6/2012	3756									65880		
7/2012									29		178290	
11/2012						9600						
7/2013					9600							
10/2013			72400									
11/2013							9800					
11/2013												
8/2014												126336

Balance of First Line Anti-TB Drugs at Upper Myanmar Drug Store (2010) Annex-1

Drugs	4FDC	2FDC	ETB	ETB	PZA	S 1 G	S/N	D/W	Cat I Kit	Cat II Kit	Paed. HRZ	Paed. HR	INH 300mg
Packing Size	672's	672's	672's	100's	672's	50's	100's	100's	1's	1's	90's	90's	672's
Opening Balance	897792	5339712			220416	59000	57300	55500	599	0	441000	881910	180768
Received	1365504	505344			0	56950	101000	101000	40346	2460	2527650	4760460	0
Issued	2114952	4683168			220416	110450	107400	107400	26443	2133	1932030	3589110	194880
Closing Balance	148344	1161888			0	5500	49100	49100	14502	327	1036620	2053260	166656
2/2012	148344												
6/2011									14502				
7/2011		1161888											
8/2014													166656
6/2012						5500					1036620	2053260	
10/2012										327			
11/2013							49100	49100					

Laboratory supplies and equipments (2010)

Annex-2

Sr. No	Items	Opening balance (31-12-2009)	Received 2010	Issued 2010	Closing balance (31-12-2010)
1	Fuchsin Basic (25 gm)	795	805	560	1040
2	Phenol Crystals (500 gm)	618	300	188	730
3	Methylated Spirit (Cans)	7	103	72	38
4	Binocular Microscopes (3DF)	13	0	3	10
5	Binocular Microscopes (JICA)	37	0	11	26
6	Microscope Glass Slides 3600/unit	26	600	555	71
7	Dry Cell	10	0	0	10
8	Inverter	10	0	0	10
9	Xylene (1 Litre)	103	50	108	45
10	Objective lens	101	0	5	96
11	Methylene Blue (25 gm)	187	100	80	207
12	Sulphuric Acid (2.5 L)	210	150	111	249
13	Sulphuric Acid (1 L)	193	0	193	0
14	Sulphuric Acid (500 ml)	100	250	152	198
15	Sputum Containers (bags of 1000)	540	500	790	250
16	Immersion Oil (1 Litre)	66	0	28	38
17	Methanol (1 Litre)	208	150	192	166
18	Glycerine	16	0	3	13
19	Sodium hydroxide (500 gm)	37	15	13	39
20	Auramine O	7	0	0	0
21	B.P Phenyl	258	250	70	438

Manpower Situation of National Tuberculosis Programme

Annex-3

No	Designation	Pay	Sanction	Posted	Vacant
1.	Deputy Director (TB)	140000-2000-150000	1	1	0
2.	Medical Superintendent	140000-2000-150000	1	1	0
3.	Lecture/TB specialist	140000-2000-150000	1	1	0
4.	Assistant Director (TB)	120000-2000-130000	1	1+3*	0
5.	Microbiologist	120000-2000-130000	2	2*	2
6.	Regional/State TB Officer	120000-2000-130000	6	6+7*	0
7.	Medical Officer	100000-2000-110000	56	37+3*	19
8.	Administrative Officer	100000-2000-110000	1	1	0
9.	Superintendent	65000-1000-70000	1	1	0
10.	District Community Health Nurse	65000-1000-70000	2	2	0
11.	Assistant Statistical Officer	59000-1000-64000	2	2	0
12.	Health Assistant	59000-1000-64000	80	64	16
13.	Sister	59000-1000-64000	1	1	0
14.	Public Health Sister	59000-1000-64000	1	1	0
15.	Medical technician	59000-1000-64000	1	1+4*	0
16.	Radiology technician	59000-1000-64000	9	8	1
17.	Radiographer	59000-1000-64000	2	1+1*	1
18.	BC (Budget/Admin)	59000-1000-64000	4	3+2*	1
19.	BCG supervisor	59000-1000-64000	14	11	3
20.	Blue staff	53000-1000-58000	4	4	0
21.	LHV	53000-1000-58000	12	12	0
22.	Trained nurse	53000-1000-58000	122	101	21
23.	Grade 1 lab: technician	53000-1000-58000	11	10+5*	0
24.	Grade 1 X-ray technician	53000-1000-58000	8	7+1*	1
25.	Assistant statistician	53000-1000-58000	5	5	0
26.	BCG technician	53000-1000-58000	60	16	44
27.	UD (Budget/Admin)	53000-1000-58000	11	9+2*	2
28.	Grade 2 lab technician	47000-1000-52000	200	144	56
29.	LD (Budget/Admin)	47000-1000-52000	35	27	8
30.	Compounder	47000-1000-52000	4	3	1
31.	Grade 2 X-ray technician	47000-1000-52000	3	1	2
32.	Steward	47000-1000-52000	1	0	1
33.	Typist	47000-1000-52000	7	5	2
34.	Jr. TB worker	47000-1000-52000	123	71	52
35.	Statistical clerk	47000-1000-52000	100	84	16
36.	Driver	41000-1000-46000	48	7	41
37.	Clinic assistant	35000-1000-40000	2	2	0
38.	Lab. boy and Lab: assistant	35000-1000-40000	7	2	5
39.	Peon	35000-1000-40000	15	6	9
40.	X-ray van assistant	35000-1000-40000	2	0	2
41.	X-ray department assistant	35000-1000-40000	3	1	2
42.	Gardener and Plumber	35000-1000-40000	2	1	1
43.	Night Watch	35000-1000-40000	14	7	7
44.	Sweeper and Manual worker	35000-1000-40000	43	25	18
Total			1028	694+30*	334

*** Attached from other posts**

- | | |
|------------------------------|---|
| 1. Assistant Director | 3 (central) |
| 2. Region/State TB Officer | 7 (Taunggyi, Lashio, Kengtong, Sagaing, Magway, Tanintharyi, Myitkyina) |
| 3. Medical Officer | 3 (Tarchilake) (Maubin) (Pyinmana) |
| 4. Medical Technician | 2 (central) 2 (Mandalay) |
| 5. Radiographer | 1 (Mandalay) |
| 6. BC | 2 (central) |
| 7. Grade 1 Lab: Technician | 1 (central) 2 (Mandalay) 2 (Yangon) |
| 8. UD | 2 (central) |
| 9. Microbiologist | 2 (NTRL) |
| 10. Grade 1 X-ray technician | 1 (Mandalay) |

**NATIONAL TUBERCULOSIS PROGRAMME
CASE FINDING AND ACTIVITIES(2010)**

Block 1

Annual 2010

No. of report received Tsp:	Sr. No	Region/State	Population	Estimated cases	PULMONARY TUBERCULOSIS														Total							
					New Cases				CDR	SMEAR POSITIVE				Old Cases				Smear Negative		Extra Pulmonary TB		Other				
					M	F	T	Total		Relapses		TAD		TAF		M	F	M	F	M	F	M	F			
										M	F	M	F	M	F									M	F	
14	1	Kachin State	1423260	1494	798	388	1186	79%	87	41	22	4	38	26	1404	931	546	1477	1273	925	2198	136	40	3285	1970	5255
7	2	Kayah State	292642	307	80	47	127	41%	9	6	2	2	7	4	157	347	183	530	89	72	161	18	5	552	319	871
9	3	Chin State	501463	527	76	45	121	23%	14	7	1	4	3	1	151	233	165	398	326	237	563	29	22	682	481	1163
37	4	Sagaing Region	5144153	5401	1845	840	2685	50%	124	54	14	2	49	23	2951	1312	766	2078	1803	1289	3092	96	44	5243	3018	8261
25	5	Magway Region	4021912	4223	1272	704	1976	47%	127	67	17	1	56	18	2282	1211	855	2066	1440	1123	2563	193	124	4316	2892	7208
31	6	Mandalay Region	6398695	6719	2375	1106	3481	52%	287	99	34	5	98	42	4046	2493	1411	3904	1653	1295	2948	287	118	7227	4076	11303
21	7	Shan State (Taunggyi)	2038660	2141	544	258	802	37%	46	19	10	6	28	6	917	669	408	1077	277	190	467	29	20	1603	907	2510
9	8	Shan State (Kyaingtong)	738592	776	426	156	582	75%	63	31	12	4	15	4	711	670	432	1102	102	68	170	60	23	1348	718	2066
18	9	Shan State (Lashio)	2659329	2792	872	382	1254	45%	82	25	22	5	25	11	1424	840	458	1298	661	494	1155	32	13	2534	1388	3922
7	10	Kayin State	1529733	1606	640	379	1019	63%	41	17	8	1	4	6	1096	1832	1519	3351	100	122	222	28	12	2653	2056	4709
10	11	Tanintharyi Region	1555911	1634	524	300	824	50%	44	18	11	2	12	9	920	979	741	1720	1360	1078	2438	54	31	2984	2179	5163
14	12	Bago Region	2882202	3026	1182	567	1749	58%	177	75	19	5	23	11	2059	1593	1173	2766	313	294	607	97	54	3404	2179	5583
14	13	Bago Region (Pyaw)	1974521	2073	960	480	1440	69%	99	61	8	0	39	10	1657	1370	1003	2373	171	160	331	31	11	2678	1725	4403
10	14	Mon State	2079864	2184	1077	560	1637	75%	87	50	12	4	46	12	1848	2231	1710	3941	267	205	472	17	13	3737	2554	6291
17	15	Rakhine State	3414671	3585	1422	870	2292	64%	100	41	25	6	49	18	2531	1852	1543	3395	368	303	671	88	52	3904	2833	6737
45	16	Yangon Region	5930690	10053	5534	2762	8296	83%	930	364	96	19	196	107	10008	5393	3391	8784	1664	1512	3176	608	297	14421	8452	22873
26	17	Ayeyarwady Region	6610793	6941	3105	1838	4943	71%	236	120	29	7	45	18	5398	2733	2017	4750	1238	988	2226	186	96	7572	5084	12656
314		All Region & State Total	49197091	55482	22732	11682	34414	62%	2553	1095	342	77	733	326	39540	26689	18321	45010	13105	10355	23460	1989	975	68143	42831	110974
20		Other Unit			5230	2674	7904		593	215	76	19	295	141	9243	7235	4595	11830	2617	1899	4516	612	228	16658	9771	26429
314		Country	49197091	55482	27962	14356	42318	76%	3146	1310	418	96	1028	467	48783	33924	22916	56840	15722	12254	27976	2601	1203	84801	52602	137403

Reporting Efficiency Rate = 97%

(314/325) tpsps

CDR = 76%

CR = 77% TSR = 85%

TAD = Treatment after default

TAF = Treatment after failure

Report had not been received from (11)Townships

Kachin State (4) Tpsps 1. N'ganyan 2. Hsawlaw 3. Khaunglanbu 4. Naungmon

Shan (Lashio) State (6) Tpsps 1. Kongyan 2. Panwine 3. Mongmaw 4. Manphant 5. Narphant 6. Panyan

Shan (Kyaingtong) State (1) Tpsps 1. Matman

**NATIONAL TUBERCULOSIS PROGRAMME
CASE FINDING ACTIVITIES (2010)**

Sr.	TOWNSHIP	Population	Estimated NewS(+) cases	PULMONARY TUBERCULOSIS												Extra Pulmonary Tuberculosis		Total		other		TOTAL			
				New Cases			CDR	SMEAR POSITIVE			Relapses after Default	Previously treated cases after failure			Smear Negative	Total	M	F	M	F	M	F	M	F	
				M	F	T		M	F	M		F	M	F											M
				Total			Total	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
				M	F	T																			
Kachin State																									
1	Bahmo	109327	115	67	37	104	91%	2	1	0	0	3	0	110	59	40	99	77	48	125	4	2	212	128	340
2	Mansi	71490	75	29	22	51	68%	5	2	1	1	2	1	63	25	15	40	20	16	36	5	0	87	57	144
3	Momauk	94823	100	24	9	33	33%	1	1	0	0	1	1	37	33	14	47	26	22	48	2	1	87	48	135
4	Shwegu	83215	87	36	5	41	47%	2	0	0	0	1	1	45	21	9	30	9	5	14	0	0	69	20	89
5	Mohyinin	205513	216	72	41	113	52%	9	2	4	0	2	4	134	65	43	108	86	76	162	7	6	245	172	417
6	Kamaing	159872	168	94	47	141	84%	15	3	4	1	5	3	172	70	33	103	104	82	186	6	1	298	170	468
7	Mogaung	139476	146	62	43	105	72%	9	8	2	0	5	1	130	127	123	250	170	121	291	7	0	382	296	678
8	Tanai	39510	41	38	20	58	140%	1	3	1	1	0	1	65	39	17	56	14	14	28	1	1	94	57	151
9	Myitkyina	217776	229	264	104	368	161%	27	18	8	0	15	12	448	336	161	497	485	351	836	79	22	1214	668	1882
10	Chipway	18606	20	8	3	11	56%	2	0	1	0	0	0	14	6	0	6	7	13	20	0	0	24	16	40
11	Hsawlaw	6736	7	Nr.																					
12	N Jan Yan	8814	9	Nr.																					
13	Waingmaw	117752	124	62	30	92	74%	9	2	0	1	1	1	106	102	64	166	252	158	410	17	4	443	260	703
14	Putao	88763	93	37	27	64	69%	5	1	1	0	3	1	75	48	24	72	21	17	38	8	3	123	73	196
15	Khaunglanbu	14835	16	Nr.																					
16	Machanbaw	20782	22	4	0	4	18%	0	0	0	0	0	0	4	0	2	2	0	0	0	0	0	4	2	6
17	Nogmun	11420	12	Nr.																					
18	Sumprabum	14550	15	1	0	1	7%	0	0	0	0	0	0	1	0	1	1	2	2	4	0	0	3	3	6
Total		1423260	1494	798	388	1186	79%	87	41	22	4	38	26	1404	931	546	1477	1273	925	2198	136	40	3285	1970	5255

* Note* (Nr.) Report had not been received from (4) townships
Nr. 3 Tsp; 1,N'ganyan. 2. Hsawlaw, 3. Khaunglanbu 4.Nogmun

Sr.	TOWNSHIP	Population	Estimated NewS(+) cases	PULMONARY TUBERCULOSIS														TOTAL							
				SMEAR POSITIVE				Previously treated cases				Smear Negative		Extra Pulmonary Tuberculosis		other		TOTAL							
				New Cases		CDR	Relapses after Default	Relapses after failure		Total		Total		M	F	M	F	M	F	M	F				
				M	F	T	M	F	M	F	M	F	M	F	M	F	M	F	M	F					
				M	F	T	M	F	M	F	M	F	M	F	M	F	M	F	M	F					
Kayah State																									
1	Bawlake	10025	11	8	6	14	133%	1	0	0	0	0	15	13	1	14	2	4	0	0	24	9	33		
2	Masai	5929	6	4	2	6	96%	2	0	0	0	0	8	6	1	7	0	1	0	0	12	4	16		
3	Pasaung	34845	37	4	2	6	16%	0	0	2	1	2	13	10	8	18	14	28	0	0	32	27	59		
4	Loikaw	105384	111	45	19	64	58%	5	4	0	0	1	75	285	158	443	70	51	121	16	4	422	237	659	
5	Dimawhso	95499	100	13	11	24	24%	0	1	0	0	3	29	21	8	29	3	2	5	2	1	42	24	66	
6	Phruhso	28000	29	4	4	8	27%	0	0	0	0	1	9	11	6	17	0	2	2	0	0	16	12	28	
7	Shataw	12960	14	2	3	5	37%	1	1	0	1	0	8	1	1	2	0	0	0	0	0	4	6	10	
	Total	292642	307	80	47	127	41%	9	6	2	2	7	4	157	347	183	530	89	72	161	18	5	552	319	871

Chin State																									
1	Falam	49112	52	3	2	5	10%	1	0	0	1	0	7	20	16	36	35	23	58	9	11	68	53	121	
2	Hakha	57306	60	13	4	17	28%	1	0	0	0	1	19	45	25	70	95	58	153	9	5	164	92	256	
3	Htantalan	53825	57	0	2	2	4%	1	0	0	0	0	3	17	11	28	59	36	95	0	0	77	49	126	
4	Tiddim	92709	97	10	8	18	18%	2	2	0	0	2	24	25	21	46	71	68	139	2	4	112	103	215	
5	Tunzan	30560	32	2	3	5	16%	0	1	0	0	0	7	15	12	27	30	23	53	0	0	48	39	87	
6	Mindat	40976	43	16	5	21	49%	4	2	0	0	0	27	37	30	67	16	13	29	6	2	79	52	131	
7	Kanpetlet	18933	20	1	1	2	10%	0	1	0	1	0	4	9	4	13	6	6	12	0	0	16	13	29	
8	Matupi	68406	72	9	5	14	19%	1	1	0	2	0	18	20	14	34	5	5	10	0	0	35	27	62	
9	Paletwa	89636	94	22	15	37	39%	4	0	0	0	0	42	45	32	77	9	5	14	3	0	83	53	136	
	Total	501463	527	76	45	121	23%	14	7	1	4	3	1	151	233	165	398	326	237	563	29	22	682	481	1163

Annex-4(townships list)

Sr.	TOWNSHIP	Population	Estimated NewS(+) cases	PULMONARY TUBERCULOSIS														Smear Negative		Total		Extra Pulmonary Tuberculosis		Total		other		TOTAL									
				New Cases				CDR				SMEAR POSITIVE				Relapses		Previously treated cases		Total	M	F	M	F	M	F	M	F	M	F							
				M	F	T	Total	M	F	CDR	Total	M	F	M	F	M	F	M	F												M	F	M	F			
				M	F	T	Total	M	F	CDR	Total	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F						
				M	F	T	Total	M	F	CDR	Total	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F						
Sagaing Region																																					
1	Sagaing	291236	306	170	62	232	76%	7	3	1	0	2	2	247	84	40	124	87	78	165	16	7	367	192	559												
2	Myaung	110380	116	46	15	61	53%	3	0	0	0	0	0	64	7	9	16	20	12	32	3	2	79	38	117												
3	Myimnu	113868	120	51	24	75	63%	7	2	0	0	0	0	84	24	14	38	29	12	41	0	0	111	52	163												
4	Shwebo	260200	273	77	40	117	43%	6	2	0	0	1	2	128	64	35	99	162	144	306	6	3	316	226	542												
5	Kanbalu	258848	272	37	13	50	18%	6	2	2	0	1	0	61	74	45	119	92	65	157	2	2	214	127	341												
6	Khin-U	176850	186	52	26	78	42%	2	2	0	0	0	0	82	13	5	18	56	31	87	1	1	124	65	189												
7	Kyunhla	86852	91	34	15	49	54%	1	0	0	0	0	0	50	38	21	59	25	12	37	0	0	98	48	146												
8	Tabayin	149055	157	42	16	58	37%	3	0	0	0	0	0	61	22	8	30	39	28	67	1	1	107	53	160												
9	Taze	175084	184	51	10	61	33%	0	1	0	0	2	0	64	25	16	41	11	16	27	1	0	90	43	133												
10	Wetlet	198145	208	66	27	93	45%	12	2	0	0	0	0	107	26	13	39	103	84	187	6	2	213	128	341												
11	Ye-U	133367	140	51	13	64	46%	1	0	0	0	2	4	71	27	18	45	44	31	75	4	3	129	69	198												
12	Monywa	310559	326	119	48	167	51%	7	3	3	0	10	1	191	97	61	158	59	24	83	11	5	306	142	448												
13	Ayadaw	182159	191	64	52	116	61%	1	0	0	0	1	0	118	17	15	32	7	12	19	2	0	92	79	171												
14	Budalin	137703	145	51	35	86	59%	1	2	1	0	5	1	96	17	8	25	78	57	135	3	1	156	104	260												
15	ChaungU	106029	111	42	17	59	53%	5	4	0	0	0	0	68	12	4	16	27	20	47	1	0	87	45	132												
16	Kani	136089	143	39	31	70	49%	5	1	0	0	0	0	76	21	10	31	35	18	53	0	0	100	60	160												
17	Pale	144573	152	52	20	72	47%	0	0	0	0	2	1	75	8	8	16	21	5	26	1	1	84	35	119												
18	Salingyi	133184	140	33	16	49	35%	8	1	1	0	3	0	62	11	5	16	32	23	55	2	1	90	46	136												
19	Yinmabin	143302	150	37	10	47	31%	0	1	0	1	0	0	49	31	20	51	7	8	15	1	2	76	42	118												
20	Katha	154253	162	53	27	80	49%	3	2	0	0	0	0	85	40	17	57	16	10	26	2	0	114	56	170												
21	Banmauk	93283	98	21	11	32	33%	1	0	0	0	0	0	33	5	2	7	1	2	3	2	0	30	15	45												
22	Htigyaing	113417	119	32	17	49	41%	4	1	1	0	3	1	59	23	12	35	11	6	17	1	1	75	38	113												
23	Indaw	119649	126	41	15	56	45%	2	0	0	0	1	0	59	29	14	43	35	22	57	0	1	108	52	160												
24	Kawlin	134584	141	52	19	71	50%	1	1	1	0	1	0	75	34	16	50	10	4	14	5	2	104	42	146												
25	Pinlebu	110045	116	42	17	59	51%	0	0	0	0	0	0	59	34	15	49	10	11	21	1	0	87	43	130												
26	Wuntho	70105	74	19	10	29	39%	0	1	0	0	1	0	31	10	5	15	4	5	9	0	0	34	21	55												
27	Kalay	314108	330	119	55	174	53%	12	3	2	1	7	7	206	135	87	222	497	351	848	3	1	775	505	1280												
28	Kalewa	54876	58	11	10	21	36%	2	2	0	0	1	0	26	12	9	21	23	20	43	0	0	49	41	90												
29	Minkin	107451	113	27	7	34	30%	1	1	0	0	0	0	36	11	3	14	22	12	34	0	0	61	23	84												
30	Tamu	100983	106	92	48	140	132%	10	9	1	0	2	2	164	127	68	195	183	121	304	10	4	425	252	677												
31	Mawlaik	51831	54	15	16	31	57%	1	1	0	0	0	0	33	23	21	44	3	1	4	1	0	43	39	82												
32	Phaungbyin	110904	116	45	17	62	53%	0	1	0	0	2	0	65	21	4	25	15	9	24	0	0	83	31	114												
33	Khamti	35186	37	43	16	59	160%	4	2	0	0	2	1	68	125	88	213	8	6	14	3	3	185	116	301												
34	Homalin	177916	187	73	39	112	60%	4	2	1	0	0	1	120	45	29	74	17	13	30	5	1	145	85	230												
35	Layshi	20543	22	2	1	3	14%	0	0	0	0	0	0	3	7	4	11	4	9	13	0	0	13	14	27												
36	Lahel	50730	53	34	22	56	105%	4	0	0	0	0	0	60	2	5	7	2	3	5	1	0	43	30	73												
37	Nanyun	76806	81	10	3	13	16%	0	2	0	0	0	0	15	11	12	23	8	4	12	1	0	30	21	51												
Total		5144153	5401	1845	840	2685	50%	124	54	14	2	49	23	2951	1312	766	2078	1803	1289	3092	96	44	5243	3018	8261												

Annex-4(townships list)

Sr.	TOWNSHIP	Population	Estimated NewS(+) cases	PULMONARY TUBERCULOSIS														Extra Pulmonary Tuberculosis		TOTAL					
				New Cases				CDR				SMEAR POSITIVE				Smear Negative				Total	Total	M	F	M	F
				M	F	T	Total	M	F	M	F	M	F	M	F	M	F	M	F						
																				Previously treated cases				Relapses after Default	
				M	F	T	Total	M	F	M	F	M	F	M	F	M	F	M	F						
Magwe Region																									
1	Magwe	292798	307	162	109	271	88%	16	16	6	1	11	5	326	146	129	275	124	122	246	40	41	505	423	928
2	Chauk	214450	225	60	50	110	49%	1	3	0	0	0	0	114	78	48	126	56	47	103	12	16	207	164	371
3	Taundwingyi	256483	269	85	50	135	50%	4	3	0	0	1	143	45	17	62	27	24	24	51	11	6	172	101	273
4	Myothit	175087	184	56	55	111	60%	9	7	0	0	0	127	8	10	18	16	15	31	10	6	99	93	192	
5	Natmauk	228416	240	52	34	86	36%	9	6	0	0	0	101	49	36	85	27	29	56	17	8	154	113	267	
6	Yenanchaung	176544	185	71	38	109	59%	7	3	0	0	4	125	42	27	69	18	10	28	8	5	150	85	235	
7	Pakokku	292403	307	75	28	103	34%	12	5	0	0	3	124	103	64	167	116	81	197	23	6	332	185	517	
8	Yesayo	247425	260	59	21	80	31%	4	1	0	0	1	87	64	42	106	31	25	56	5	3	164	93	257	
9	Pauk	170380	179	53	33	86	48%	1	1	0	0	0	88	9	6	15	39	22	61	0	1	102	63	165	
10	Myaing	234333	246	44	25	69	28%	4	2	0	0	1	76	44	30	74	176	131	307	0	0	268	189	457	
11	Seikphyu	100452	105	19	6	25	24%	1	0	0	1	1	28	5	6	11	13	18	31	0	0	39	31	70	
12	Gangaw	126430	133	27	17	44	33%	1	1	2	0	3	51	41	33	74	86	44	130	5	2	165	97	262	
13	Saw	68408	72	16	4	20	28%	0	0	0	0	0	20	20	23	43	1	4	5	4	0	41	31	72	
14	Htinlin	52230	55	9	2	11	20%	0	1	0	0	0	12	7	4	11	12	2	14	0	0	28	9	37	
15	Minbu	182662	192	74	36	110	57%	11	1	0	0	5	129	82	55	137	228	202	430	13	6	413	302	715	
16	Ngape	46710	49	14	7	21	43%	2	2	0	0	0	25	25	17	42	7	5	12	0	1	48	32	80	
17	Pwintphyu	161507	170	42	32	74	44%	0	0	1	0	1	76	22	18	40	13	15	28	4	0	83	65	148	
18	Saytoketaya	42061	44	13	5	18	41%	0	0	0	0	1	19	6	11	17	2	1	3	3	0	24	18	42	
19	Salin	256344	269	89	37	126	47%	10	3	0	0	1	140	59	24	83	40	23	63	5	0	204	87	291	
20	Thayet	100365	105	70	32	102	97%	5	3	0	0	21	133	52	36	88	38	18	56	5	5	191	96	287	
21	Minhla	110860	116	35	14	49	42%	2	2	0	0	2	55	22	11	33	29	14	43	5	2	95	43	138	
22	Kanma	70166	74	27	16	43	58%	5	3	1	0	0	52	34	27	61	28	24	52	0	0	95	70	165	
23	Sinpaukwee	129545	136	28	10	38	28%	2	3	2	0	1	46	32	34	66	11	9	20	11	9	87	65	152	
24	Mindon	60459	63	20	19	39	61%	18	1	0	0	0	58	140	94	234	257	178	435	0	0	435	292	727	
25	Aunglan	225394	237	72	24	96	41%	3	0	5	0	2	107	76	53	129	45	60	105	12	7	215	145	360	
Total			4021912	4223	1272	704	47%	127	67	17	1	56	18	2262	1211	855	2066	1440	1123	2563	193	124	4316	2892	7208

Annex-4(townships list)

Sr.	TOWNSHIP	Population	Estimated NewS(+) cases	PULMONARY TUBERCULOSIS														Extra Pulmonary Tuberculosis		TOTAL						
				SMEAR POSITIVE				Previously treated cases				Smear Negative		Total		Total		other		TOTAL						
				New Cases		CDR		Relapses after Default		after failure		Total		M		F		M		F		M		F		
				M	F	T		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
Mandalay Region																										
1	Amarapura	183159	192	53	35	88	46%	5	2	0	0	0	0	2	97	40	22	62	33	26	59	18	3	149	90	239
2	Aungmyaytharza	188537	198	115	56	171	86%	15	3	1	0	6	3	199	160	105	265	81	67	148	24	9	402	243	645	
3	Chanayetharzan	135152	142	82	41	123	87%	6	4	2	0	2	1	138	106	50	156	67	42	109	23	8	288	146	434	
4	Chanmyatharzi	191823	201	143	65	208	103%	22	5	2	0	4	2	243	165	80	245	63	54	117	19	7	418	213	631	
5	Maharaungmyae	221131	232	115	69	184	79%	15	4	2	0	2	1	208	113	49	162	103	63	166	20	9	370	195	565	
6	Pyigyitagonn	147982	155	96	43	139	89%	7	3	2	1	2	1	155	78	50	128	64	56	120	12	6	261	160	421	
7	Patheingyi	178498	187	71	38	109	58%	10	3	2	0	2	0	126	83	39	122	63	37	100	16	6	247	123	370	
8	Meiktilar	307942	323	95	32	127	39%	23	10	0	0	4	3	167	116	62	178	144	130	274	13	9	395	246	641	
9	Mahlaing	152874	161	40	21	61	38%	6	3	0	0	0	1	71	63	59	122	22	16	38	12	8	143	108	251	
10	Tharzi	202773	213	55	35	90	42%	8	5	0	0	0	0	103	15	13	28	28	30	58	2	1	108	84	192	
11	Wundwin	223324	234	42	26	68	29%	16	2	0	0	0	0	86	18	12	30	24	24	48	3	1	103	65	168	
12	Myingyan	269577	283	107	60	167	59%	13	3	0	0	1	3	187	130	102	232	96	64	160	6	2	353	234	587	
13	Kyaukpadaung	302473	318	43	29	72	23%	6	5	1	0	1	0	85	63	45	108	30	34	64	2	1	146	114	260	
14	Natogyi	179979	189	27	12	39	21%	5	1	0	0	0	0	45	33	20	53	33	28	61	4	3	102	64	166	
15	Ngazun	135838	143	35	15	50	35%	0	0	0	0	1	0	51	16	9	25	27	15	42	2	1	81	40	121	
16	Taungtha	243087	255	67	34	101	40%	3	2	0	0	1	0	107	81	48	129	35	21	56	4	0	191	105	296	
17	NyaungU	272828	286	80	40	120	42%	6	5	5	0	2	0	138	182	152	334	29	38	67	20	10	324	245	569	
18	Pyin oo Lwin	169390	178	54	23	77	43%	5	0	0	0	7	4	93	70	33	103	63	32	95	2	1	201	93	294	
19	Madayar	229796	241	102	35	137	57%	11	5	1	0	7	3	164	66	51	117	44	39	83	7	6	238	139	377	
20	Mogok	190034	200	49	29	78	39%	6	3	3	0	2	1	93	95	43	138	102	95	197	7	8	264	179	443	
21	Sintga	138403	145	65	15	80	55%	21	2	0	0	0	0	103	46	14	60	54	36	90	10	1	196	68	264	
22	Thabeikkyin	115170	121	56	13	69	57%	7	0	3	1	6	1	87	58	34	92	16	17	33	6	0	152	66	218	
23	Yamethin	232595	244	42	29	71	29%	8	8	0	0	0	0	87	72	32	104	56	54	110	9	4	187	127	314	
24	Lewei	280887	295	108	64	172	58%	7	1	1	1	0	1	183	35	21	56	25	22	47	4	1	180	111	291	
25	Pyawbwei	263602	277	77	53	130	47%	10	3	0	0	7	4	154	79	28	107	50	33	83	5	4	228	125	353	
26	Pyinmana	309216	325	221	75	296	91%	25	6	5	0	16	5	353	203	106	309	59	78	137	20	5	549	275	824	
27	Tatkone	240103	252	96	29	125	50%	2	3	1	0	7	2	140	40	17	57	58	24	82	2	0	206	75	281	
28	Kyaukse	230601	242	123	37	160	66%	4	3	2	2	11	3	185	93	34	127	99	63	162	1	2	333	144	477	
29	Myittha	185529	195	35	26	61	31%	7	3	0	0	0	0	71	69	32	101	33	29	62	1	1	145	91	236	
30	Sintgine	127153	134	37	9	46	34%	2	1	1	0	2	1	53	75	33	108	37	19	56	5	1	159	64	223	
31	TadaOo	149239	157	44	18	62	40%	6	1	0	0	5	0	74	30	16	46	15	9	24	8	0	108	44	152	
Total		6398695	6719	2375	1106	3481	52%	287	99	34	5	98	42	4046	2493	1411	3904	1653	1295	2948	287	118	7227	4076	11303	

Sr.	TOWNSHIP	Population	Estimated NewS(+) cases	PULMONARY TUBERCULOSIS												Extra Pulmonary Tuberculosis		Total		other		TOTAL							
				New Cases			SMEAR POSITIVE			Previously treated cases			Smear Negative			Total	M	F	Total	M	F	Total							
				M	F	T	CDR	Relapses after Default		after failure		M	F	Total	M								F						
								M	F	M	F					M	F												
				M	F	T	M	F	T	M	F	M	F	T	M	F	M	F	T	M	F	T							
Shan State (Taunggyi)																													
1	Linkhay	59175	62	20	2	22	35%	2	0	1	0	0	0	0	0	0	25	14	7	21	3	1	4	0	0	0	40	10	50
2	Maukme	26935	28	7	7	14	50%	1	0	0	0	0	0	0	0	0	15	1	1	2	4	2	6	0	0	0	13	10	23
3	Monai	24292	26	11	6	17	67%	0	1	0	0	0	0	0	0	0	18	5	6	11	1	3	4	0	0	0	17	16	33
4	Mangbang	16435	17	4	2	6	35%	0	1	0	0	1	0	0	0	0	8	5	3	8	0	0	0	0	0	0	10	6	16
5	Loilem	109047	114	7	13	20	17%	1	0	1	1	0	2	25	37	11	58	45	37	82	9	3	12	0	1	0	49	30	79
6	Kunhein	60845	64	30	18	48	75%	0	5	0	1	3	1	58	45	37	82	9	3	12	0	1	0	1	0	87	66	153	
7	Kyeethi	39644	42	5	6	11	26%	0	0	0	0	0	11	56	48	48	104	13	22	35	0	0	0	0	0	74	76	150	
8	Laikha	42074	44	22	5	27	61%	5	1	0	0	0	33	26	23	49	8	9	17	1	0	62	38	100	62	38	100		
9	Mongaking	84060	88	20	7	27	31%	0	0	1	2	0	30	16	9	25	2	0	2	0	0	39	18	57	39	18	57		
10	Mongshu	59954	63	10	6	16	25%	1	0	0	0	0	17	22	21	43	23	8	31	0	0	56	35	91	56	35	91		
11	Namsan	81677	86	28	9	37	43%	6	0	0	0	0	43	52	28	80	28	20	48	4	1	118	58	176	118	58	176		
12	Taunggyi	344665	362	117	59	176	49%	12	6	3	2	11	210	142	101	243	99	59	158	18	11	402	238	640	402	238	640		
13	Hopone	98364	103	23	8	31	30%	0	0	2	0	1	35	17	9	26	15	8	23	0	0	58	26	84	58	26	84		
14	Hpekon	90372	95	24	11	35	37%	2	0	1	0	2	40	38	20	58	6	5	11	1	0	74	36	110	74	36	110		
15	Hsiseng	137083	144	28	18	46	32%	2	2	1	0	1	53	27	11	38	17	15	32	1	4	77	51	128	77	51	128		
16	Kalaw	148206	156	56	15	71	46%	3	1	0	0	8	84	47	17	64	16	9	25	1	0	131	43	174	131	43	174		
17	Lauksauk	129898	136	26	14	40	29%	6	1	0	0	0	47	44	17	61	10	6	16	2	0	88	38	126	88	38	126		
18	Pindaya	75470	79	28	12	40	50%	0	0	0	0	0	40	20	13	33	2	3	5	0	1	50	29	79	50	29	79		
19	Pindaung	160486	169	32	16	48	28%	2	0	0	0	0	50	17	7	24	11	10	21	0	0	62	33	95	62	33	95		
20	Nyaungshwe	173122	182	41	22	63	35%	2	1	0	0	0	66	19	10	29	7	4	11	0	2	69	39	108	69	39	108		
21	Ywangan	76856	81	5	2	7	9%	1	0	0	0	1	9	19	9	28	1	0	1	0	0	27	11	38	27	11	38		
Total			2141	544	258	802	37%	46	19	10	6	28	6	917	669	408	1077	190	467	29	20	1603	907	2510	1603	907	2510		

Shan State (Kengtung)																												
1	Kengtung	179527	189	73	21	94	50%	17	4	3	1	3	0	122	51	31	82	23	35	6	1	176	70	246	176	70	246	
2	Mongkhat	48857	51	2	2	4	8%	1	0	0	0	1	0	6	2	0	2	4	3	7	0	0	10	5	15	10	5	15
3	Mongyan	94127	99	9	5	14	14%	0	1	0	0	0	15	5	6	11	8	4	12	0	0	22	16	38	22	16	38	
4	Monghsat	76793	81	93	31	124	154%	18	7	4	0	6	3	162	126	55	181	5	10	34	7	286	108	394	286	108	394	
5	Mongping	53949	57	27	16	43	76%	3	3	1	0	1	0	51	18	9	27	10	12	22	0	0	60	40	100	60	40	100
6	Mongton	54041	57	56	12	68	120%	2	2	2	0	2	0	76	55	43	98	6	5	11	0	1	123	63	186	123	63	186
7	Monpyak	39360	41	12	9	21	51%	2	1	1	0	1	1	27	10	14	24	22	18	40	5	4	53	47	100	53	47	100
8	Mongyaung	71985	76	27	9	36	48%	1	0	0	0	0	37	14	4	18	14	3	17	2	0	58	16	74	58	16	74	
9	Tachileik	119953	126	127	51	178	141%	19	13	1	3	1	0	215	389	270	659	10	6	16	13	10	560	353	913	560	353	913
10	Matman			Nr.																								
Total			776	426	156	582	75%	63	31	12	4	15	4	711	670	432	1102	102	68	170	60	23	1348	718	2066	1348	718	2066

Nr. 1 Tsp, 1 Matman

Annex-4(townships list)

Sr.	TOWNSHIP	Population	Estimated NewS(+) cases	PULMONARY TUBERCULOSIS														Smear Negative		Extra Pulmonary Tuberculosis		Total		other		TOTAL	
				New Cases				CDR				SMEAR POSITIVE						Total		M		F		M		F	
				M	F	T	Total	M	F	CDR	Relapses after Default		Previously treated cases		after failure		M	F	M	F	M	F	M	F			
				M		F		T	Total	M	F	CDR	M	F	M	F	M	F	M	F	M	F	M	F			
				M		F		T	Total	M	F	CDR	M	F	M	F	M	F	M	F	M	F	M	F			
Shan State (Lashio)																											
1	Kunlon	79251	83	30	13	43	52%	4	3	0	0	1	2	53	29	19	48	4	8	12	1	0	69	45	114		
2	Hopan	97298	102	51	27	78	76%	8	1	1	0	0	0	88	16	4	20	19	13	32	0	0	95	45	140		
3	Kyaokme	219636	231	72	30	102	44%	4	1	1	0	0	1	109	107	53	160	20	9	29	1	0	205	94	299		
4	Hsipaw	180396	189	81	33	114	60%	10	4	0	0	2	2	132	46	28	74	28	37	65	3	1	170	105	275		
5	Mabein	37439	39	12	7	19	48%	2	0	0	0	1	0	22	21	11	32	9	12	21	0	0	45	30	75		
6	Manton	40276	42	11	8	19	45%	0	0	0	0	0	0	19	1	1	2	1	1	2	0	0	13	10	23		
7	Mongmeik	78294	82	51	16	67	81%	1	0	0	1	2	0	71	12	8	20	10	7	17	3	3	79	35	114		
8	Namtu	155081	163	23	11	34	21%	5	1	1	0	1	0	42	33	20	53	26	19	45	0	0	89	51	140		
9	Nyaungcho	144041	151	35	11	46	30%	0	1	0	0	2	0	49	28	21	49	38	21	59	0	1	103	55	158		
10	Lashio	295390	310	188	58	246	79%	21	6	10	2	7	0	292	180	75	255	104	80	184	22	7	532	228	760		
11	Namsam	94997	100	10	7	17	17%	1	0	1	0	0	0	19	11	10	21	9	4	13	0	0	32	21	53		
12	Mongmaw	50243	53																								
13	Theinni	80499	85	44	24	68	80%	5	2	4	1	0	0	80	20	22	42	39	34	73	1	0	113	83	196		
14	Mongreh	77571	81	20	9	29	36%	1	1	0	0	1	0	32	13	6	19	78	27	105	0	0	113	43	156		
15	Manphant	69606	73																								
16	Pangyan	90283	95																								
17	Narphant	66681	70																								
18	Panwaing	25000	26																								
19	Tanyan	143071	150	41	21	62	41%	5	2	1	0	0	1	71	101	84	185	50	39	89	1	1	199	148	347		
20	Laukkai	76483	80	40	25	65	81%	0	0	1	0	1	1	68	42	23	65	31	28	59	0	0	115	77	192		
21	Kongyan	49308	52																								
22	Muse	164448	173	73	38	111	64%	7	1	0	1	6	4	130	71	32	103	79	68	147	0	0	236	144	380		
23	Kuitai	210015	221	51	27	78	35%	5	1	2	0	1	0	87	85	34	119	85	64	149	0	0	229	126	355		
24	Namkham	134022	141	39	17	56	40%	3	1	0	0	0	0	60	24	7	31	31	23	54	0	0	97	48	145		
Total			2792	872	382	1254	45%	82	25	22	5	25	11	1424	840	458	1298	661	494	1155	32	13	2534	1388	3922		

* Note* (Nr.) Report had not been received from (6) townships

Nr. (6) tsp: 1.Manphant, 2.Panwaing, 3.Mongmaw, 4.Kongyan, 5.Narphant, 6.Pangyan

Sr.	TOWNSHIP	Population	Estimated NewS(+) cases	PULMONARY TUBERCULOSIS												Extra Pulmonary Tuberculosis		Total		other		TOTAL			
				SMEAR POSITIVE				Previously treated cases				Smear Negative				M	F	M	F	M	F	M	F		
				New Cases		CDR		Relapses after Default		after failure		Total		Total											
				M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F				
				New Cases		CDR		Relapses after Default		after failure		Total		Total											
Kayin State																									
1	Kawkareik	298502	313	121	66	187	60%	15	6	0	0	2	1	211	141	98	239	1	5	6	2	1	282	177	459
2	Kyainseikkyi	270086	284	30	22	52	18%	0	0	2	0	0	0	54	49	48	97	12	8	20	0	0	93	78	171
3	Myawady	90588	95	102	56	158	166%	6	4	5	1	0	3	177	82	63	145	42	48	90	21	9	258	184	442
4	Hpa-an	431617	453	258	130	388	86%	17	6	0	0	0	0	411	1032	792	1824	27	35	62	3	1	1337	964	2301
5	Hlaingbwe	297164	312	88	76	164	53%	2	1	1	0	2	1	171	457	456	913	7	16	23	1	1	558	551	1109
6	Papun(Kamam)	47699	50	31	24	55	110%	0	0	0	0	0	0	55	39	52	91	9	5	14	0	0	79	81	160
7	Thandaung	94077	99	10	5	15	15%	1	0	0	0	0	1	17	32	10	42	2	5	7	1	0	46	21	67
Total		1529733	1606	640	379	1019	63%	41	17	8	1	4	6	1096	1832	1519	3351	100	122	222	28	12	2653	2056	4709

Tanintharyi Division

1	Dawei	218374	229	70	39	109	48%	7	2	2	0	5	8	133	147	122	269	359	290	649	3	2	593	463	1056	
2	Launglon	138718	146	7	6	13	9%	0	1	0	0	1	0	15	2	3	5	8	4	4	12	1	0	19	14	33
3	Thayetchaung	175266	184	13	4	17	9%	0	0	0	0	0	0	17	10	7	17	21	19	40	0	0	44	30	74	
4	Yebyu	157442	165	14	14	28	17%	0	1	1	1	1	1	33	20	15	35	21	12	33	1	0	58	44	102	
5	Kawthaung	101775	107	122	69	191	179%	18	8	0	0	0	0	217	65	49	114	166	145	311	0	0	371	271	642	
6	Bokpyin	45829	48	30	14	44	91%	1	0	0	0	1	0	46	29	12	41	37	30	67	0	0	98	56	154	
7	Myeik	309322	325	197	107	304	94%	10	5	7	0	2	0	328	515	386	901	676	518	1194	47	27	1454	1043	2497	
8	Kyunsu	158979	167	8	4	12	7%	2	0	0	1	0	0	15	8	6	14	11	13	24	1	2	30	26	56	
9	Tanintharyi	107474	113	20	9	29	26%	0	1	1	0	0	0	31	18	5	23	11	12	23	1	0	51	27	78	
10	Palaw	142732	150	43	34	77	51%	6	0	0	0	2	0	85	165	136	301	50	35	85	0	0	266	205	471	
Total		1555911	1634	524	300	824	50%	44	18	11	2	12	9	920	979	741	1720	1360	1078	2438	54	31	2984	2179	5163	

Sr.	TOWNSHIP	Population	Estimated NewS(+) cases	PULMONARY TUBERCULOSIS														Extra Pulmonary Tuberculosis		TOTAL					
				SMEAR POSITIVE				Previously treated cases				Smear Negative		Total		Total		other		TOTAL					
				New Cases		Relapses after Default		Relapses after failure		Total		Total		Total		Total		Total		Total					
				M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F		
				TOTAL	CDR	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%		
Bago Region																									
1	Bago	418152	439	277	115	392	89%	46	21	11	3	12	3	488	297	227	524	104	108	212	22	18	769	495	1264
2	Daik-U	213579	224	82	40	122	54%	10	4	2	0	0	1	139	92	84	176	14	10	24	10	9	210	148	358
3	Kawa	220857	232	65	33	98	42%	5	2	0	1	0	0	106	84	53	137	4	13	17	4	3	162	105	267
4	Kyauktaga	255408	268	91	42	133	50%	17	2	1	0	1	2	156	113	84	197	18	25	43	0	0	241	155	396
5	Nyaunglaybin	237630	250	58	36	94	38%	4	2	0	0	1	0	101	52	34	86	23	11	34	4	1	142	84	226
6	Shwekyin	86107	90	47	17	64	71%	2	2	0	0	0	0	68	52	30	82	4	2	6	0	0	105	51	156
7	Thanatpin	156265	164	48	30	78	48%	11	4	0	0	0	0	93	173	137	310	10	18	28	0	0	242	189	431
8	Waw	201438	212	95	65	160	76%	6	7	1	0	0	0	174	59	66	125	34	30	64	0	0	195	168	363
9	Taunggoo	234003	246	83	45	128	52%	27	6	3	0	4	1	169	152	92	244	44	29	73	37	8	350	181	531
10	Kyaukkyi	104729	110	19	9	28	25%	7	2	0	0	0	0	37	33	46	79	2	8	10	4	5	65	70	135
11	Oktwin	153687	161	59	29	88	55%	14	5	0	1	1	0	109	120	72	192	15	6	21	7	1	216	114	330
12	Phyu	285921	300	132	59	191	64%	10	3	1	0	0	1	206	282	197	479	27	19	46	8	5	460	284	744
13	Htantabin	121589	128	47	17	64	50%	9	11	0	0	0	0	84	56	32	88	10	10	20	1	3	123	73	196
14	Yedashe	192837	202	79	30	109	54%	9	4	0	0	4	3	129	28	19	47	4	5	9	0	1	124	62	186
Total		2882202	3026	1182	567	1749	58%	177	75	19	5	23	11	2059	1593	1173	2766	313	294	607	97	54	3404	2179	5583
Bago Region (Pyay)																									
1	Pyay	240084	252	134	68	202	80%	8	5	0	0	14	4	233	230	178	408	21	22	43	7	2	414	279	693
2	Paukhaung	116532	122	53	30	83	68%	7	6	0	0	0	0	96	87	63	150	6	5	11	0	0	153	104	257
3	Paungde	143663	151	55	38	93	62%	4	2	1	0	2	0	102	62	55	117	9	9	18	0	0	133	104	237
4	Padaung	135012	142	77	28	105	74%	6	4	1	0	1	0	117	78	55	133	23	16	39	2	1	188	104	292
5	Shwedaung	130136	137	51	24	75	55%	3	3	1	0	1	2	85	73	54	127	26	13	39	3	1	158	97	255
6	Thegon	134807	142	54	28	82	58%	6	4	1	0	2	2	97	147	106	253	11	1	12	3	0	224	141	365
7	Tharyarwady	115908	122	123	40	163	134%	8	3	2	0	12	1	189	93	58	151	3	6	9	2	0	243	108	351
8	Zigon	74832	79	24	15	39	50%	3	2	0	0	0	0	44	74	49	123	5	6	11	4	4	110	76	186
9	Minhla	123633	130	69	34	103	79%	2	2	0	0	4	1	112	78	42	120	3	7	10	3	3	159	89	248
10	Moenyoy	144116	151	42	25	67	44%	3	5	0	0	0	0	75	33	32	65	35	30	65	0	0	113	92	205
11	Okpo	121687	128	82	39	121	95%	8	2	0	0	0	0	131	83	66	149	4	12	16	2	0	179	119	298
12	Gyobingauk	115658	121	42	24	66	54%	16	10	0	0	3	0	95	112	70	182	14	23	37	0	0	187	127	314
13	Nattalin	161310	169	66	54	120	71%	13	8	2	0	0	0	143	73	65	138	2	2	4	3	0	159	129	288
14	Latpadan	217143	228	88	33	121	53%	12	5	0	0	0	0	138	147	110	257	9	8	17	2	0	258	156	414
Total		1974521	2073	960	480	1440	69%	99	61	8	0	39	10	1657	1370	1003	2373	171	160	331	31	11	2678	1725	4403

Annex-4(townships list)

Sr.	TOWNSHIP	Population	Estimated NewS(+) cases	PULMONARY TUBERCULOSIS														Extra Pulmonary Tuberculosis		TOTAL					
				SMEAR POSITIVE				Previously treated cases				Smear Negative				Total		M	F	M	F				
				New Cases		Relapses after Default		Relapses after failure		Total		M	F	M	F										
				M	F	M	F	M	F	M	F														
				M	F	T	CDR	M	F	M	F	M	F	M	F	M	F	M	F	M	F	TOTAL			
Mon State																									
1	Mawlamyaing	277250	291	200	81	281	97%	31	19	4	2	8	4	349	498	359	857	55	26	81	5	3	801	494	1295
2	Chanungzon	152757	160	54	26	80	50%	3	3	0	0	2	0	88	134	104	238	4	2	6	0	0	197	135	332
3	Kyaikmaraw	211601	222	81	53	134	60%	7	3	1	1	1	1	148	256	192	448	10	3	13	0	1	356	254	610
4	Mudon	210224	221	98	46	144	65%	2	5	0	0	3	3	157	160	131	291	127	109	236	2	0	392	294	686
5	Thanbyuzayat	166217	175	76	32	108	62%	5	3	0	0	4	2	122	258	175	433	6	10	16	0	1	349	223	572
6	Ye	246026	258	110	66	176	68%	10	3	1	0	18	1	209	257	164	421	10	14	24	7	5	413	253	666
7	Thaton	244501	257	174	76	250	97%	9	6	4	1	4	0	274	95	75	170	22	16	38	1	0	309	174	483
8	Belin	172398	181	110	74	184	102%	11	2	0	0	2	0	199	211	151	362	10	11	21	1	1	345	239	584
9	Kyaikto	154119	162	52	42	94	58%	5	3	1	0	0	0	103	80	53	133	2	6	8	0	0	140	104	244
10	Paung	244771	257	122	64	186	72%	4	3	1	0	4	1	199	282	306	588	21	8	29	1	2	435	384	819
	Total	2079864	2184	1077	560	1637	75%	87	50	12	4	46	12	1848	2231	1710	3941	267	205	472	17	13	3737	2554	6291

Rakine State																									
1	Kyaikphyu	209621	220	85	48	133	60%	1	1	0	1	3	2	141	79	68	147	32	27	59	1	0	201	147	348
2	Ann	127015	133	51	26	77	58%	2	2	0	0	1	1	83	99	71	170	107	75	182	7	5	267	180	447
3	Manauing	106441	112	27	22	49	44%	5	2	0	0	0	0	56	21	20	41	13	8	21	0	0	66	52	118
4	Rambye	157990	166	43	23	66	40%	4	1	1	0	0	0	72	38	20	58	9	6	15	3	2	98	52	150
5	Maungdaw	467399	491	104	52	156	32%	0	0	4	1	8	5	174	80	58	138	10	6	16	0	0	206	122	328
6	Buthidaung	309749	325	129	101	230	71%	30	8	0	0	0	0	268	442	473	915	2	3	5	21	11	624	596	1220
7	Rathedaung	179729	189	81	49	130	69%	3	2	1	1	2	0	139	48	38	86	8	10	18	5	5	148	105	253
8	Sittwe	293260	308	186	85	271	88%	19	6	6	0	10	5	317	320	242	562	56	38	94	14	6	611	382	993
9	Kyauktaw	258014	271	137	88	225	83%	8	5	2	1	1	0	242	158	111	269	8	7	15	6	4	320	216	536
10	Minbya	211338	222	131	79	210	95%	3	3	0	0	16	5	237	40	34	74	18	15	33	3	2	211	138	349
11	Myaukoo	241939	254	115	92	207	81%	7	3	0	0	0	0	217	74	48	122	19	26	45	0	3	215	172	387
12	Myebon	132286	139	59	29	88	63%	3	2	1	0	0	0	94	52	51	103	22	28	50	4	1	141	111	252
13	Pauktaw	173807	182	40	30	70	38%	0	0	4	2	3	0	79	66	48	114	9	7	16	2	2	124	89	213
14	Ponnagyun	142277	149	57	51	108	72%	4	1	2	0	0	0	115	83	97	180	6	9	15	6	1	158	159	317
15	Thandwe	163169	171	76	41	117	68%	3	3	4	0	4	0	131	74	34	108	24	25	49	4	3	189	106	295
16	Gwa	84880	89	44	17	61	68%	1	0	0	0	1	0	63	54	46	100	12	9	21	3	2	115	74	189
17	Taungup	155757	164	57	37	94	57%	7	2	0	0	0	0	103	124	84	208	13	4	17	9	5	210	132	342
	Total	3414671	3585	1422	870	2292	64%	100	41	25	6	49	18	2531	1852	1543	3395	368	303	671	88	52	3904	2833	6737

Annex-4(townships list)

Sr.	TOWNSHIP	Population	Estimated NewS(+) cases	PULMONARY TUBERCULOSIS												Smear Negative		Extra Pulmonary Tuberculosis		Total		other		TOTAL			
				New Cases		CDR		Relapses after Default		Previously treated cases		after failure		Total	M	F	M	F	M	F	M	F	M	F			
				M	F	M	F	M	F	M	F	M	F												M	F	M
				M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
				M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Yangon Region																											
	East District																										
1	Botataung	39564	67	20	67	100%	9	3	0	0	0	2	81	45	34	79	7	10	17	4	2	112	71	183			
2	Dawbon	79973	136	82	41	123	91%	22	5	2	1	3	0	156	62	44	106	26	14	40	12	7	209	112	321		
3	Dagon(N)	168209	285	129	67	196	69%	21	5	3	0	1	226	176	129	305	20	11	31	14	11	363	224	587			
4	Dagon(S)	266273	451	324	177	501	111%	55	20	8	1	18	11	614	302	205	507	147	121	268	50	18	904	553	1457		
5	MingalarTN	125590	213	99	48	147	69%	21	6	1	0	2	3	180	199	127	326	25	32	57	18	10	365	226	591		
6	Okkala(N)	278456	472	233	116	349	74%	39	18	7	2	18	9	442	317	219	536	53	36	89	28	19	695	419	1114		
7	Okkala(S)	161194	273	101	38	139	51%	15	10	3	1	5	5	178	184	121	305	28	25	53	39	19	375	219	594		
8	Thaketa	217369	368	343	186	529	144%	68	26	7	0	3	2	635	138	74	212	104	99	203	21	4	684	391	1075		
9	Thingangyun	180613	306	147	67	214	70%	36	10	1	8	3	273	98	48	146	146	78	68	146	23	7	391	204	595		
10	Yankin	95702	162	90	59	149	92%	30	13	1	0	0	0	193	95	68	163	6	9	15	5	8	227	157	384		
11	Tarmwe	145013	246	68	37	105	43%	34	5	2	0	3	1	150	139	73	212	29	36	65	13	7	288	159	447		
12	Pazundaung	46119	78	30	17	47	60%	6	5	0	0	1	59	38	28	66	6	5	12	17	6	7	85	70	155		
13	Dagon(E)	104137	177	118	65	183	104%	16	6	2	0	1	208	151	96	247	28	21	49	10	8	325	197	522			
14	Dagon Seikkan	93186	158	67	26	93	59%	13	5	0	0	0	111	88	57	145	27	32	59	24	12	219	132	351			
	Total	2001398	3392	1878	964	2842	84%	385	137	37	6	60	39	3506	2032	1323	3355	583	526	1109	267	139	5242	3134	8376		
West District																											
1	Kamayut	62227	105	55	36	91	86%	12	6	0	0	0	109	55	37	92	16	26	42	7	7	145	112	257			
2	Kyauktada	36950	63	22	6	28	45%	5	3	0	1	0	37	18	10	28	9	11	20	0	1	55	31	86			
3	Kyinnvindaing	97098	165	83	36	119	72%	20	14	3	0	8	168	69	34	103	47	45	92	8	6	238	139	377			
4	Sanchaung	75999	129	66	31	97	75%	13	7	2	0	1	120	65	31	96	23	32	55	6	4	176	105	281			
5	Seikkan	2371	4	5	0	5	124%	1	0	0	0	0	6	2	4	6	0	1	1	0	0	8	5	13			
6	Dagon	23710	40	20	8	28	70%	1	0	0	1	0	30	18	6	24	6	5	11	1	2	47	21	68			
7	Pabedan	29446	50	19	14	33	66%	4	4	0	0	3	0	44	17	7	24	9	13	22	4	1	56	39	95		
8	Bahan	77423	131	45	26	71	54%	7	3	1	0	2	86	75	36	111	18	14	32	3	2	151	83	234			
9	Mayangon	146080	248	153	86	239	97%	28	16	3	1	9	305	115	67	182	55	71	126	16	9	379	259	638			
10	Latha	24786	42	15	7	22	52%	9	2	0	0	2	35	21	12	33	7	4	11	2	5	54	32	86			
11	Lanmadaw	36450	62	23	25	48	78%	5	3	1	0	1	59	22	16	38	11	6	17	0	0	63	51	114			
12	Hlaing	115885	196	129	50	179	91%	24	5	3	1	3	216	144	103	247	26	34	60	14	8	343	202	545			
13	Ahlon	48794	83	37	23	60	73%	13	4	2	0	0	79	49	42	91	14	11	25	4	5	119	85	204			
	Total	777219	1317,386	672	348	1020	77%	142	67	15	2	29	19	1294	670	405	1075	241	273	514	65	50	1834	1164	2998		

Annex-4(townships list)

Sr.	TOWNSHIP	Population	Estimated NewS(+) cases	PULMONARY TUBERCULOSIS														Extra Pulmonary Tuberculosis		TOTAL					
				SMEAR POSITIVE				Previously treated cases				Smear Negative		Total		Total		other		TOTAL					
				New Cases		Relapses		after Default		after failure		Total		M		F		M		F		M		F	
				M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
				CDR		%		%		%		%		%		%		%		%		%		%	
South District																									
1	Seikkyikhanaungto	31224	53	29	22	51	96%	4	4	0	0	2	1	62	26	13	39	7	4	11	3	0	71	44	115
2	Dallah	147282	250	117	56	173	69%	14	9	5	2	2	3	208	113	74	187	80	62	142	26	11	357	217	574
3	Cocogyun	996	2	0	0	0	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	Kawhmu	150916	256	31	25	56	22%	9	3	0	0	0	0	68	56	31	87	10	3	13	2	2	108	64	172
5	Kyauktan	157938	268	97	47	144	54%	7	2	0	0	1	1	155	91	80	171	11	9	20	5	4	212	143	355
6	Kunggyangone	115114	195	66	36	102	52%	4	3	0	0	0	0	109	35	35	70	35	33	68	2	0	142	107	249
7	Kayan	162100	275	127	76	203	74%	16	4	0	1	0	0	224	68	57	125	59	52	111	2	0	272	190	462
8	Twantay	264376	448	132	50	182	41%	11	5	1	0	5	1	205	111	65	176	24	23	47	2	2	286	146	432
9	Thonegwa	174215	295	93	41	134	45%	8	5	1	0	5	2	155	62	35	97	27	14	41	15	5	211	102	313
10	Thanlyin	180262	306	199	116	315	103%	26	9	4	0	3	2	359	169	70	239	50	44	94	12	10	463	251	714
Total		1384423	2347	891	469	1360	58%	99	44	11	3	18	10	1545	731	460	1191	303	244	547	69	34	2122	1264	3386

North District																									
1	Mingalardon	199105	337	375	144	519	154%	50	13	13	1	22	13	631	308	152	460	59	51	110	39	15	866	389	1255
2	Shwepyithar	227248	385	244	111	355	92%	47	17	3	1	14	3	440	180	94	274	93	66	159	23	8	604	300	904
3	Hlaingtharyar	358948	608	589	319	908	149%	66	24	5	3	5	7	1018	565	400	965	105	94	199	53	20	1388	867	2255
4	Insein	237667	403	332	164	496	123%	75	19	9	3	28	9	639	277	148	425	86	102	188	43	15	850	460	1310
5	Taikkayi	238363	404	153	58	211	52%	21	10	1	0	7	4	254	212	151	363	17	11	28	20	4	431	238	669
6	Htantabin	144070	244	65	43	108	44%	5	7	1	0	0	0	121	33	24	57	8	13	21	3	3	115	90	205
7	Hmawbi	179559	304	155	77	232	76%	11	14	1	0	6	3	267	146	107	253	23	14	37	13	0	355	215	570
8	Hlegu	182690	310	89	37	126	41%	16	9	0	0	2	0	153	171	104	275	123	95	218	6	3	407	248	655
	U.T.I	0	0	83	24	107		7	2	0	0	3	0	119	59	14	73	13	11	24	5	3	170	54	224
	NTP/Diagnostic	0	0	8	4	12		6	1	0	0	2	0	21	9	9	18	10	12	22	2	3	37	29	66
Total		1767650	2996	2093	981	3074	103%	304	116	33	8	89	39	3663	1960	1203	3163	537	469	1006	207	74	5223	2890	8113
Yangon Region		5930690	10053	5534	2762	8296	83%	930	364	96	19	196	107	10008	5393	3391	8784	1664	1512	3176	608	297	14421	8452	22873

Annex-4(townships list)

Sr.	TOWNSHIP	Population	Estimated NewS(+) cases	PULMONARY TUBERCULOSIS														Extra Pulmonary Tuberculosis		TOTAL						
				New Cases				CDR	SMEAR POSITIVE				Total	Smear Negative				Total	M	F	M	F				
				M	F	T	Total		Relapses after Default		Previously treated cases			M	F	M	F						M	F		
									M	F	M	F													M	F
				M	F	T	Total	M	F	M	F	M	F	M	F	M	F									
Ayeyarwaddy Region																										
1	Patheingyi	380460	399	289	161	450	113%	33	17	8	1	0	0	509	412	278	690	128	84	212	29	21	899	562	1461	
2	Kanyidaung	205042	215	50	35	85	39%	2	8	0	0	0	0	95	35	28	63	7	5	12	2	1	96	77	173	
3	Yekyi	219551	231	144	73	217	94%	12	8	0	0	0	0	237	77	49	126	54	45	99	3	1	290	176	466	
4	Kyaunggon	165579	174	97	48	145	83%	7	4	3	0	2	1	162	81	58	139	28	29	57	4	0	222	140	362	
5	Kyonyaw	285471	300	72	50	122	41%	4	2	0	2	1	0	131	77	51	128	37	35	72	10	4	201	144	345	
6	Ngaputaw	201388	211	81	55	136	64%	4	2	0	0	3	1	146	45	39	84	30	36	66	1	4	164	137	301	
7	Thabaung	150243	158	74	48	122	77%	4	4	0	0	5	1	136	63	39	102	9	5	14	12	8	167	105	272	
8	Hinhada	361282	379	247	130	377	99%	7	3	0	0	0	0	387	252	202	454	94	79	173	3	1	603	415	1018	
9	Kyankin	96589	101	55	37	92	91%	1	0	2	0	1	0	96	73	63	136	28	17	45	5	4	165	121	286	
10	Myanaung	332278	349	136	78	214	61%	21	8	0	0	0	0	243	110	99	209	83	79	162	0	0	350	264	614	
11	Ingapu	240834	253	179	98	277	110%	18	5	0	0	3	1	304	102	83	185	100	78	178	2	2	404	267	671	
12	Zalun	180519	190	79	48	127	67%	7	1	0	0	1	1	137	69	54	123	93	80	173	0	0	249	184	433	
13	Laymeththa	107720	113	38	27	65	57%	4	0	0	0	1	1	71	52	39	91	33	27	60	1	0	129	94	223	
14	Myaungmya	354092	372	161	98	259	70%	9	7	4	2	2	1	284	206	152	358	89	76	165	29	4	500	340	840	
15	Laputta	434231	456	181	119	300	66%	10	7	2	0	0	1	320	103	87	190	31	25	56	9	8	336	247	583	
16	Mawgyun	301107	316	101	69	170	54%	7	4	0	0	2	0	183	60	35	95	43	32	75	5	5	218	145	363	
17	Wakema	307389	323	111	67	178	55%	10	6	3	1	8	3	209	94	87	181	20	16	36	20	14	266	194	460	
18	Einme	208006	218	107	67	174	80%	6	1	0	0	1	0	182	68	60	128	14	5	19	11	3	207	136	343	
19	Pyapon	328848	345	167	92	259	75%	7	3	1	0	3	3	276	216	144	360	45	49	94	9	3	448	294	742	
20	Bogalay	320808	337	157	95	252	75%	18	8	1	1	1	0	281	109	68	177	31	29	60	7	4	324	205	529	
21	Dedaye	215622	226	31	11	42	19%	1	2	2	0	1	0	48	34	28	62	22	12	34	2	1	93	54	147	
22	Kyaiklatt	196286	206	82	41	123	60%	11	1	2	0	2	1	140	47	31	78	36	22	58	1	2	181	98	279	
23	Maubin	345513	363	152	85	237	65%	5	2	1	0	6	3	254	156	77	233	105	64	169	19	4	444	235	679	
24	Nyaungdon	217007	228	78	49	127	56%	7	7	0	0	0	0	141	36	19	55	28	28	56	2	2	151	105	256	
25	Pantanaw	269721	283	124	70	194	69%	6	5	0	0	0	0	205	47	33	80	22	13	35	0	0	199	121	320	
26	Danuphyu	185207	194	112	87	199	102%	15	5	0	0	2	0	221	109	114	223	28	18	46	0	0	266	224	490	
Total				6610793	6941	3105	1838	4943	71%	236	120	29	7	45	5398	2733	2017	4750	1238	988	2226	186	96	7572	5084	12656

Annex-4(townships list)

Sr.	TOWNSHIP	Population	Estimated NewS(+) cases	PULMONARY TUBERCULOSIS																TOTAL							
				New Cases				CDR	SMEAR POSITIVE				Total	Smear Negative				Total		Extra Pulmonary Tuberculosis		other		TOTAL			
				M	F	T			M	F	M	F		M	F	M	F	M	F	M	F	M	F	M	F	M	F
				Previously treated cases				Relapses after Default				after failure															
				M	F	T		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1	Aung San hospital			41	13	54		24	12	11	3	29	16	149	27	15	42	25	13	38	48	6	205	78	283		
2	Patheingyi hospital			19	8	27		12	2	4	1	10	1	57	29	13	42	4	1	5	18	5	96	31	127		
3	East YGH			5	6	11		0	0	0	0	0	0	11	4	4	8	75	46	121	0	0	84	56	140		
4	Mingalardon hospital			46	32	78		10	3	1	0	12	1	105	344	138	482	63	30	93	144	40	620	244	864		
5	Wabargi Hospital (N/Okkalapa)			112	53	165		14	8	0	1	11	4	203	310	155	465	276	148	424	55	25	778	394	1172		
6	No.1MBH (PyinOoLwin)			69	10	79		43	2	0	0	1	0	125	102	17	119	30	12	42	5	0	250	41	291		
7	1000 bedded Hospital (Naypyitaw)			106	44	150		19	4	3	0	3	1	180	233	99	332	156	122	278	37	12	557	282	839		
8	MSF-H (Ygn)			146	73	219		24	13	0	1	9	12	278	142	93	235	152	78	230	87	49	560	319	879		
9	MSF-H (Kachin)			186	90	276		25	7	2	20	7	344	241	159	400	100	54	154	70	23	649	342	991			
10	PSI			3640	1964	5604		318	125	31	7	149	80	6314	4649	3204	7853	1304	1109	2413	55	36	10146	6525	16671		
11	MSF-H (Shan-North)			101	28	129		11	4	2	0	11	4	161	115	75	190	45	29	74	32	14	317	154	471		
12	MSF-H (Rakhine)			38	16	54		1	0	0	0	2	0	57	38	21	59	6	8	14	14	2	99	47	146		
13	MSF-CH			107	58	165		14	5	4	1	12	6	207	62	48	110	42	38	80	0	0	241	156	397		
14	MMA			430	221	651		44	18	5	1	7	5	549	677	433	1110	189	145	240	29	12	1381	835	2216		
15	AHRN (Shan North)			108	26	134		5	1	5	1	11	2	159	45	11	56	48	17	65	9	1	231	59	290		
16	Thingangyun Sampya Hos:			2	3	5		2	0	0	0	0	0	7	14	9	23	1	3	4	2	2	21	17	38		
17	Central Jail Mandalay			12	9	21		3	1	0	0	0	0	25	13	5	18	5	0	5	1	0	34	15	49		
18	Medecins du monde			30	9	39		2	1	2	0	5	1	50	78	17	95	72	15	87	0	0	189	43	232		
19	New YGH			17	8	25		6	3	0	0	2	1	37	44	25	69	14	21	35	4	0	87	58	145		
20	West YGH			15	3	18		16	6	1	1	1	0	43	68	54	122	10	10	20	2	1	113	75	188		
Total				5230	2674	7904	593	215	76	19	295	141	9061	7235	4595	11830	2617	1899	4422	612	228	16658	9771	26429			

**NATIONAL TUBERCULOSIS PROGRAMME
AGE AND SEX DISTRIBUTION OF NEW SMEAR POSITIVE TB PATIENTS**

Sr.No	Region/State	AGE GROUP (YEAR)																								TOTAL		
		0-14		15-24		25 - 34		35 - 44		45 - 54		55 - 64		65 or more		M	F	T										
		M	F	M	F	M	F	M	F	M	F	M	F	M	F													
1	Kachin State	3	12	123	94	228	99	208	74	118	49	68	38	50	22	798	388	1186										
2	Kayah State	1	1	13	6	18	10	15	11	22	7	4	9	7	3	80	47	127										
3	Chin State	0	2	6	8	11	6	23	15	17	7	11	4	8	3	76	45	121										
4	Sagaing Region	10	6	141	88	356	178	467	166	371	177	289	120	211	105	1845	840	2685										
5	Magway Region	2	6	121	93	276	135	280	123	271	139	181	116	141	92	1272	704	1976										
6	Mandalay Region	11	22	291	231	643	292	602	178	403	175	261	143	164	65	2375	1106	3481										
7	Shan State (Taunggyi)	4	6	55	45	142	65	128	49	113	47	68	35	34	11	544	258	802										
8	Shan State (Kyaingtong)	3	4	50	28	102	38	122	37	91	23	39	20	19	6	426	156	582										
9	Shan State (Lashio)	9	7	112	80	214	85	203	70	178	79	107	41	49	20	872	382	1254										
10	Kayin State	0	1	56	31	113	75	130	96	159	68	107	58	75	50	640	379	1019										
11	Tanintharyi Region	0	7	56	52	123	76	129	56	110	44	66	41	40	24	524	300	824										
12	Bago Region	2	5	105	113	264	143	299	110	252	96	152	68	108	32	1182	567	1749										
13	Bago Region (Pyay)	3	4	82	64	209	123	195	84	236	86	145	71	90	48	960	480	1440										
14	Mon State	6	6	87	73	242	123	254	101	216	101	138	93	134	63	1077	560	1637										
15	Rakhine State	8	11	141	96	217	181	307	182	344	204	257	111	148	85	1422	870	2292										
16	Yangon Region	16	38	727	637	1391	714	1339	493	1069	398	606	305	386	177	5534	2762	8296										
17	Ayeyarwady Region	7	17	266	224	610	401	660	403	706	384	568	272	288	137	3105	1838	4943										
All Regions & States Total		85	155	2432	1963	5159	2744	5361	2248	4676	2084	3067	1545	1952	943	22732	11682	34414										
Other Units		21	41	610	490	1420	709	1327	504	931	441	565	293	356	196	5230	2674	7904										
Country		106	196	3042	2453	6579	3453	6688	2752	5607	2525	3632	1838	2308	1139	27962	14356	42318										

**NATIONAL TUBERCULOSIS PROGRAMME
AGE DISTRIBUTION OF PRIMARY COMPLEX, HILAR LYMPHADENOPATHY AND TB MENINGITIS PATIENTS**

Annual 2010

Sr.No	Region/State	PC and TBM cases by age group													
		PC			Hilar Lymphadenopathy			TBM			Total				
		0-4	5-14	≥15	0-4	5-14	≥15	0-4	5-14	≥15	0-4	5-14	≥15	Total	
		Total			Total			Total			Total				
1	Kachin State	17	56	10	83	1040	967	14	2021	4	5	2	11		
2	Kayah State	176	106	52	334	1	0	0	1	0	0	0	0		
3	Chin State	169	126	3	298	109	138	12	259	0	5	5	10		
4	Sagaing Region	935	1148	2	2085	338	306	13	657	12	5	3	20		
5	Magway Region	535	593	16	1144	427	581	95	1103	24	13	11	48		
6	Mandalay Region	734	854	41	1629	497	512	86	1095	28	9	15	52		
7	Shan State (Taunggyi)	158	267	0	425	70	135	20	225	4	4	3	11		
8	Shan State (Kyaingtong)	392	232	2	626	27	39	12	78	0	3	4	7		
9	Shan State (Lashio)	132	231	12	375	247	397	46	690	16	16	10	42		
10	Kayin State	511	752	2	1265	57	64	8	129	5	8	11	24		
11	Tanintharyi Region	547	637	2	1186	151	201	25	377	12	16	13	41		
12	Bago Region	416	606	5	1027	34	45	34	113	7	9	7	23		
13	Bago Region (Pyay)	295	424	2	721	11	36	52	99	6	3	7	16		
14	Mon State	526	1253	25	1804	78	219	34	331	3	4	11	18		
15	Rakhine State	443	968	6	1417	100	173	2	275	10	13	12	35		
16	Yangon Region	995	1213	26	2234	56	104	77	237	207	313	72	592		
17	Ayeyarwady Region	356	724	6	1086	439	807	51	1297	9	14	17	40		
All Regions & States Total		7337	10190	212	17739	3682	4724	581	8987	347	440	203	990		
Other Units		1997	1903	126	4026	845	653	86	1584	23	28	114	165		
Country		9334	12093	338	21765	4527	5377	667	10571	370	468	317	1155		

**NATIONAL TUBERCULOSIS PROGRAMME
NOTIFIED TB PATIENTS ACCORDING TO CATEGORY OF REGIMENS**

Sr.No	Region/State	CAT - 1				CAT - 2				CAT - 3			TOTAL	
		Sputum Smear Positive	Sputum Smear Negative	EP Seriously ill	Total	Relapses	Treatment after Default	Treatment after Failure	Others (Failure)	Total	P	EP		Total
1	Kachin State	1224	1299	142	2665	133	27	66	188	414	238	2098	2336	5415
2	Kayah State	135	236	53	424	18	4	10	26	58	329	126	455	937
3	Chin State	119	271	76	466	20	5	4	52	81	104	489	593	1140
4	Sagaing Region	2722	1714	454	4890	190	16	75	155	436	409	2705	3114	8440
5	Magway Region	2028	1753	480	4261	204	20	78	303	605	436	2212	2648	7514
6	Mandalay Region	3585	2928	983	7496	406	39	146	429	1020	1149	2016	3165	11681
7	Shan State (Taunggyi)	814	494	140	1448	68	16	34	52	170	620	344	964	2582
8	Shan State (Kyaingtong)	595	468	39	1102	95	17	19	88	219	670	137	807	2128
9	Shan State (Lashio)	1278	1098	255	2631	117	27	40	46	230	204	970	1174	4035
10	Kayin State	1046	1288	79	2413	61	9	13	45	128	2139	151	2290	4831
11	Tanintharyi Region	850	1383	163	2396	65	13	22	92	192	398	2307	2705	5293
12	Bago Region	1805	1328	261	3394	275	25	34	163	497	1545	447	1992	5883
13	Bago Region (Pyay)	1486	1347	146	2979	171	8	49	47	275	1132	208	1340	4594
14	Mon State	1672	1336	119	3127	141	15	57	37	250	2693	359	3052	6429
15	Rakhine State	2333	1730	252	4315	143	27	76	144	390	1727	419	2146	6851
16	Yangon Region	8402	6563	1263	16228	1318	118	306	904	2646	2387	1947	4334	23208
17	Ayeyarwady Region	4998	3500	658	9156	363	37	68	290	758	1510	1553	3063	12977
All Regions & States Total		35092	28736	5563	69391	3788	423	1097	3061	8369	17690	18488	36178	113938
Other Units		7969	6576	1657	16202	870	100	439	908	2317	5399	2881	8280	26799
Country		43061	35312	7220	85593	4658	523	1536	3969	10686	23089	21369	44458	140737

**NATIONAL TUBERCULOSIS PROGRAMME
LABORATORY PERFORMANCE**

Annual 2010

Sr.No	Region/State	A		B			C			D		TB suspects per 100,000
		Number of suspects(Dx) examined by microscopy for case finding		Number of smear positive pts detected out of suspects (Dx)		Number of patients examined by microscopy for follow-up		Number of smear positive out of follow-up patients		No. of Pts	slides	
		No. of Pts	slides	No. of Pts	slides	No. of Pts	slides	No. of Pts	slides			
1	Kachin State	7646	22081	1611	4201	21%	7009	13946	425	812	537	
2	Kayah State	1993	5803	142	367	7%	928	1789	46	83	681	
3	Chin State	905	2709	137	387	15%	917	1881	55	109	180	
4	Sagaing Region	23662	69221	3156	8547	13%	12159	24530	497	886	460	
5	Magway Region	12960	36305	2423	5572	19%	11063	22004	792	1297	322	
6	MandalayRegion	18200	51427	3771	9907	21%	20299	39672	1205	2207	284	
7	Shan State (Taunggyi)	6274	16738	850	1973	14%	3178	6154	177	309	308	
8	Shan State (Kyaingtong)	3047	8033	608	1522	20%	2532	4622	235	369	413	
9	Shan State (Lashio)	6747	18947	1403	3494	21%	5476	10585	364	687	254	
10	Kayin State	8051	19295	1151	2897	14%	6294	12492	149	299	526	
11	Tanintharyi Region	5282	15528	914	2628	17%	5032	10168	243	477	339	
12	Bago Region	10138	29555	2171	6210	21%	11683	18894	265	545	352	
13	Bago Region (Pyay)	7342	20554	1743	4799	24%	8719	17144	404	774	372	
14	Mon State	14668	48819	2150	5630	15%	11615	22987	469	889	705	
15	Rakhine State	12225	34526	2481	8440	20%	11866	23715	767	1331	358	
16	Yangon Region	40503	117907	9001	23925	22%	47780	93699	2473	4772	683	
17	Ayeyarwady Region	26408	75450	5402	14422	20%	22661	44941	810	1596	399	
All Regions & States Total		206051	592898	39114	104921	19%	189211	369223	9376	17442	419	
Other Units		46760	133664	8209	22310	18%	30654	66030	3071	6028		
Country		252811	726562	47323	127231	19%	219865	435253	12447	23470	514	

**NATIONAL TUBERCULOSIS PROGRAMME
SPUTUM CONVERSION OF NEW POSITIVE PULMONARY TB PATIENTS**

Sr.no	Region/State	New smear(+) cases Register in previous Q:	Smear not done at eighter 2or 3 months	Sputum conversion at				Remaining positive at 3 month	TOTAL 2+3+4+5	Sputum Conversion Rate
				2 month		3 month				
				No	%	No	%			
				Annual 2010						
1	Kachin State	1186	122	895	75%	119	10%	50	1186	85%
2	Kayah State	127	13	96	76%	11	9%	7	127	84%
3	Chin State	121	15	89	74%	10	8%	7	121	82%
4	Sagaing Region	2685	194	2234	83%	199	7%	58	2685	91%
5	Magway Region	1976	142	1598	81%	152	8%	84	1976	89%
6	Mandalay Region	3481	339	2621	75%	338	10%	183	3481	85%
7	Shan State (Taunggyi)	802	79	651	81%	45	6%	27	802	87%
8	Shan State (Kyaingtong)	582	67	434	75%	62	11%	19	582	85%
9	Shan State (Lashio)	1254	203	890	71%	108	9%	53	1254	80%
10	Kayin State	1019	112	820	80%	78	8%	9	1019	88%
11	Tanintharyi Region	824	110	658	80%	36	4%	20	824	84%
12	Bago Region	1749	152	1542	88%	50	3%	5	1749	91%
13	Bago Region (Pyay)	1440	149	1118	78%	111	8%	62	1440	85%
14	Mon State	1637	127	1342	82%	118	7%	50	1637	89%
15	Rakhine State	2292	192	1662	73%	312	14%	126	2292	86%
16	Yangon Region	8296	462	6937	84%	628	8%	269	8296	91%
17	Ayeyarwady Region	4943	292	4220	85%	357	7%	74	4943	93%
All Regions & States total		34414	2770	27807	81%	2734	8%	1103	34414	89%
Other Units		7904	954	5877	74%	677	9%	396	7904	83%
Country		42318	3724	33684	80%	3411	8%	1499	42318	88%

**NATIONAL TUBERCULOSIS PROGRAMME
TREATMENT OUTCOMES OF NEW SMEAR POSITIVE TB PATIENTS (2009 COHORT)**

Sr.No	Region/State	TOTAL	NEW SMEAR POSITIVE TB PATIENTS														Total
			Cured		Completed		TSR		Died		Failure		Defaulted		Transfer		
			No.	CR	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	
1	Kachin State	1255	895	71%	91	7%	79%	53	4%	72	6%	99	8%	45	4%	1255	
2	Kayah State	127	106	83%	2	2%	85%	4	3%	6	5%	2	2%	7	6%	127	
3	Chin State	151	110	73%	18	12%	85%	7	5%	3	2%	11	7%	2	1%	151	
4	Sagaing Region	2927	2367	81%	173	6%	87%	202	7%	63	2%	87	3%	35	1%	2927	
5	Magway Region	2052	1614	79%	160	8%	86%	127	6%	56	3%	60	3%	35	2%	2052	
6	Mandalay Region	3362	2361	70%	448	13%	84%	230	7%	101	3%	140	4%	82	2%	3362	
7	Shan State (Taunggyi)	782	616	79%	38	5%	84%	49	6%	24	3%	40	5%	15	2%	782	
8	Shan State (Kyaingtong)	514	331	64%	80	16%	80%	27	5%	14	3%	52	10%	10	2%	514	
9	Shan State (Lashio)	1132	795	70%	101	9%	79%	68	6%	28	2%	126	11%	14	1%	1132	
10	Kayin State	1061	795	75%	76	7%	82%	53	5%	10	1%	87	8%	40	4%	1061	
11	Tanintharyi Region	885	644	73%	68	8%	80%	32	4%	15	2%	58	7%	68	8%	885	
12	Bago Region	1764	1343	76%	132	7%	84%	110	6%	36	2%	116	7%	27	2%	1764	
13	Bago Region (Pyay)	1588	1284	81%	99	6%	87%	95	6%	45	3%	48	3%	17	1%	1588	
14	Mon State	1758	1408	80%	111	6%	86%	90	5%	46	3%	70	4%	33	2%	1758	
15	Rakhine State	2215	1694	76%	221	10%	86%	102	5%	50	2%	119	5%	29	1%	2215	
16	Yangon Region	8328	6932	83%	375	5%	88%	378	5%	243	3%	303	4%	97	1%	8328	
17	Ayeyarwaddy Region	4507	3697	82%	313	7%	89%	221	5%	60	1%	180	4%	36	1%	4507	
	Regions & States total	34408	26992	78%	2506	7%	86%	1848	5%	872	3%	1598	5%	592	2%	34408	
	NS(+) TB patients, Unknown HIV status (NTP)	33531	26547	79%	2407	7%	86%	1601	5%	857	3%	1558	5%	561	2%	33531	
	Other Units	7403	5324	72%	740	10%	82%	512	7%	279	4%	364	5%	184	2%	7403	
	NS(+) TB patients, Unknown HIV status (Other units)	6800	5009	74%	689	10%	84%	370	5%	253	4%	325	5%	154	2%	6800	
	Country	41811	32316	77%	3246	8%	85.1%	2360	5.6%	1151	2.8%	1962	4.7%	776	1.9%	41811	
	NS(+) TB patients, unknown HIV status (Country)	40331	31556	78%	3096	8%	86%	1971	5%	1110	3%	1883	5%	715	2%	40331	

TREATMENT OUTCOME OF TB/HIV PATIENTS IN 2010 (2009 COHORT)

Sr.No	Reporting units	TOTAL	NEW SMEAR POSITIVE TB PATIENTS (KNOWN HIV POSITIVE)										Total				
			Cured		Completed		TSR %		Died		Failure			Defaulted		Transfer	
			No.	CR	No.	Rate	No.	Rate	No.	Rate	No.	Rate		No.	Rate	No.	Rate
1	NTP	877	445	51%	99	11%	62%	247	28%	15	2%	40	5%	31	4%	877	
2	Other Units	603	315	52%	51	8%	61%	142	24%	26	4%	39	6%	30	5%	603	
	Total	1480	760	51%	150	10%	61%	389	26%	41	3%	79	5%	61	4%	1480	

**NATIONAL TUBERCULOSIS PROGRAMME
TREATMENT OUTCOMES OF NEW SMEAR POSITIVE TB PATIENTS (2009 COHORT)**

Sr. No.	Townships	Reg. Pts.	Cured		Completed		Died		Failure		Defaulted		Transferred out		Total eva. Pts.
			No	CR	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	
Kachin State															
1	Bahmo	81	71	88%	0	0%	4	5%	3	4%	0	0%	3	4%	81
2	Mansi	56	45	80%	1	2%	4	7%	2	4%	3	5%	1	2%	56
3	Momaik	27	25	93%	0	0%	1	4%	1	4%	0	0%	0	0%	27
4	Shwegu	30	22	73%	2	7%	3	10%	3	10%	0	0%	0	0%	30
5	Mohyint	120	89	74%	4	3%	14	12%	3	3%	6	5%	4	3%	120
6	Kamaing	190	112	59%	10	5%	7	4%	7	4%	38	20%	16	8%	190
7	Mogaung	134	87	65%	21	16%	6	4%	10	7%	7	5%	3	2%	134
8	Tanai	65	42	65%	6	9%	2	3%	2	3%	11	17%	2	3%	65
9	Myitkyina	371	260	70%	29	8%	7	2%	33	9%	27	7%	15	4%	371
10	Chipway	6	4	67%	0	0%	1	17%	0	0%	1	17%	0	0%	6
11	Hsawlaw	Nr.													
12	N Jan Yan	Nr.													
13	Waingmaw	108	89	82%	14	13%	1	1%	3	3%	0	0%	1	1%	108
14	Putao	67	49	73%	4	6%	3	4%	5	7%	6	9%	0	0%	67
15	Khaunglanbu	Nr.													
16	Machanbaw	0													0
17	Nogmun	Nr.													
18	Sumprabum	0													0
	Total	1255	895	71%	91	7%	53	4%	72	6%	99	8%	45	4%	1255
Kayah State															
1	Bawlake	9	8	89%	1	11%	0	0%	0	0%	0	0%	0	0%	9
2	Masai	7	6	86%	1	14%	0	0%	0	0%	0	0%	0	0%	7
3	Pasaung	20	20	100%	0	0%	0	0%	0	0%	0	0%	0	0%	20
4	Loikaw	77	60	78%	0	0%	4	5%	5	6%	2	3%	6	8%	77
5	Dimawhso	14	12	86%	0	0%	0	0%	1	7%	0	0%	1	7%	14
6	Phruhso	0													0
7	Shataw	0													0
	Total	127	106	83%	2	2%	4	3%	6	5%	2	2%	7	6%	127
Chin State															
1	Falam	16	13	81%	0	0%	1	6%	1	6%	1	6%	0	0%	16
2	Hakha	21	20	95%	0	0%	0	0%	0	0%	0	0%	1	5%	21
3	Htantalan	5	1	20%	4	80%	0	0%	0	0%	0	0%	0	0%	5
4	Tiddim	28	19	68%	4	14%	3	11%	0	0%	2	7%	0	0%	28
5	Tunzan	12	7	58%	0	0%	0	0%	2	17%	3	25%	0	0%	12
6	Mindat	27	17	63%	6	22%	2	7%	0	0%	1	4%	1	4%	27
7	Kanpetlet	0													0
8	Matupi	10	8	80%	2	20%	0	0%	0	0%	0	0%	0	0%	10
9	Paletwa	32	25	78%	2	6%	1	3%	0	0%	4	13%	0	0%	32

Annex-10 (townships list)

Sr. No.	Townships	Reg. Pts.	Cured		Completed		TSR		Died		Failure		Defaulted		Transferred out		Total eva. Pts.	
			No	CR	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate		
Sagaing Region																		
1	Sagaing	201	188	94%	1	0%	94%	9	4%	1	0%	2	1%	0	0%	201		
2	Myaung	62	46	74%	7	11%	85%	4	6%	1	2%	3	5%	1	2%	62		
3	Myinmu	88	78	89%	2	2%	91%	7	8%	0	0%	0	0%	1	1%	88		
4	Shwebo	120	98	82%	12	10%	92%	5	4%	0	0%	5	4%	0	0%	120		
5	Kanbalu	111	91	82%	15	14%	95%	5	5%	0	0%	0	0%	0	0%	111		
6	Khin-U	92	82	89%	3	3%	92%	6	7%	1	1%	0	0%	0	0%	92		
7	Kyunhla	50	30	60%	9	18%	78%	5	10%	0	0%	3	6%	3	6%	50		
8	Tabayin	55	48	87%	1	2%	89%	6	11%	0	0%	0	0%	0	0%	55		
9	Taze	76	68	89%	2	3%	92%	4	5%	1	1%	1	1%	0	0%	76		
10	Wetlet	127	110	87%	6	5%	91%	7	6%	0	0%	2	2%	2	2%	127		
11	Ye-U	57	46	81%	0	0%	81%	7	12%	3	5%	1	2%	0	0%	57		
12	Monywa	195	136	70%	13	7%	76%	20	10%	11	6%	12	6%	3	2%	195		
13	Ayadaw	122	119	98%	0	0%	98%	2	2%	1	1%	0	0%	0	0%	122		
14	Budalin	89	76	85%	0	0%	85%	8	9%	3	3%	2	2%	0	0%	89		
15	ChaungU	54	41	76%	4	7%	83%	6	11%	0	0%	3	6%	0	0%	54		
16	Kani	45	42	93%	1	2%	96%	2	4%	0	0%	0	0%	0	0%	45		
17	Pale	46	30	65%	5	11%	76%	4	9%	2	4%	5	11%	0	0%	46		
18	Salingyi	88	71	81%	5	6%	86%	5	6%	3	3%	4	5%	0	0%	88		
19	Yinnabin	43	38	88%	2	5%	93%	1	2%	0	0%	2	5%	0	0%	43		
20	Katha	90	74	82%	0	0%	82%	9	10%	0	0%	6	7%	1	1%	90		
21	Banmauk	31	26	84%	1	3%	87%	3	10%	1	3%	0	0%	0	0%	31		
22	Htigyaing	49	27	55%	2	4%	59%	9	18%	3	6%	4	8%	4	8%	49		
23	Indaw	59	48	81%	0	0%	81%	10	17%	1	2%	0	0%	0	0%	59		
24	Kawlin	74	61	82%	2	3%	85%	3	4%	2	3%	5	7%	1	1%	74		
25	Pinlebu	50	43	86%	0	0%	86%	5	10%	1	2%	0	0%	1	2%	50		
26	Wuntho	36	28	78%	0	0%	78%	3	8%	4	11%	0	0%	1	3%	36		
27	Kalay	233	185	79%	5	2%	82%	12	5%	10	4%	13	6%	8	3%	233		
28	Kalewa	33	30	91%	1	3%	94%	1	3%	1	3%	0	0%	0	0%	33		
29	Minkin	58	53	91%	0	0%	91%	4	7%	1	2%	0	0%	0	0%	58		
30	Tamu	185	124	67%	40	22%	89%	10	5%	3	2%	2	1%	6	3%	185		
31	Mawlaik	27	12	44%	10	37%	81%	2	7%	0	0%	3	11%	0	0%	27		
32	Phaungbyin	54	45	83%	3	6%	89%	3	6%	1	2%	2	4%	0	0%	54		
33	Khamti	74	57	77%	2	3%	80%	4	5%	5	7%	5	7%	1	1%	74		
34	Homalin	111	87	78%	8	7%	86%	11	10%	1	1%	2	2%	2	2%	111		
35	Layshi	3	0	0%	3	100%	100%	0	0%	0	0%	0	0%	0	0%	3		
36	Lahel	35	25	71%	8	23%	94%	0	0%	2	6%	0	0%	0	0%	35		
37	Nanyun	4	4	100%	0	0%	100%	0	0%	0	0%	0	0%	0	0%	4		
Total		2927	2367	81%	173	6%	87%	202	7%	63	2%	87	3%	35	1%	2927		

Annex-10 (townships list)

Sr. No.	Townships	Reg. Pts.	Cured		Completed		TSR		Died		Failure		Defaulted		Transferred out		Total eva. Pts.	
			No	CR	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate		
Magwe Region																		
1	Magwe	330	240	73%	25	8%	80%	15	5%	20	6%	24	7%	6	2%	330		
2	Chauk	122	94	77%	13	11%	88%	10	8%	0	0%	5	4%	0	0%	122		
3	Taundwingyi	132	114	86%	0	0%	86%	14	11%	1	1%	0	0%	3	2%	132		
4	Myothit	129	124	96%	0	0%	96%	4	3%	0	0%	1	1%	0	0%	129		
5	Natnauk	82	47	57%	28	34%	91%	3	4%	0	0%	4	5%	0	0%	82		
6	Yenanchaung	101	76	75%	8	8%	83%	5	5%	6	6%	5	5%	1	1%	101		
7	Pakokku	113	92	81%	6	5%	87%	11	10%	0	0%	0	0%	4	4%	113		
8	Yesagyo	61	54	89%	0	0%	89%	1	2%	2	3%	0	0%	4	7%	61		
9	Pauk	98	93	95%	0	0%	95%	5	5%	0	0%	0	0%	0	0%	98		
10	Myaing	89	64	72%	16	18%	90%	7	8%	0	0%	0	0%	2	2%	89		
11	Seikphyu	22	22	100%	0	0%	100%	0	0%	0	0%	0	0%	0	0%	22		
12	Gantgaw	39	27	69%	9	23%	92%	2	5%	1	3%	0	0%	0	0%	39		
13	Saw	23	22	96%	1	4%	100%	0	0%	0	0%	0	0%	0	0%	23		
14	Htilin	13	11	85%	2	15%	100%	0	0%	0	0%	0	0%	0	0%	13		
15	Minbu	109	71	65%	21	19%	84%	2	2%	5	5%	8	7%	2	2%	109		
16	Ngape	23	20	87%	1	4%	91%	1	4%	0	0%	1	4%	0	0%	23		
17	Pwintphyu	60	53	88%	1	2%	90%	5	8%	1	2%	0	0%	0	0%	60		
18	Saytoketaya	17	7	41%	6	35%	76%	1	6%	1	6%	1	6%	1	6%	17		
19	Salin	82	66	80%	12	15%	95%	4	5%	0	0%	0	0%	0	0%	82		
20	Thayet	111	67	60%	2	2%	62%	11	10%	16	14%	6	5%	9	8%	111		
21	Minhla	68	66	97%	0	0%	97%	1	1%	1	1%	0	0%	0	0%	68		
22	Kanna	50	40	80%	5	10%	90%	4	8%	0	0%	0	0%	1	2%	50		
23	Sinpaukwee	18	16	89%	2	11%	100%	0	0%	0	0%	0	0%	0	0%	18		
24	Mindon	39	36	92%	0	0%	92%	3	8%	0	0%	0	0%	0	0%	39		
25	Aunglan	121	92	76%	2	2%	78%	18	15%	2	2%	5	4%	2	2%	121		
Total		2052	1614	79%	160	8%	86%	127	6%	56	3%	60	3%	35	2%	2052		

Annex-10 (townships list)

Sr. No.	Townships	Reg. Pts.	Cured		Completed		TSR		Died		Failure		Defaulted		Transferred out		Total eva. Pts.	
			No	CR	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate		
Mandalay Region																		
1	Amarapura	94	57	61%	19	20%	81%	5	5%	3	3%	7	7%	3	3%	94		
2	Aungmyaytharzan	219	180	82%	7	3%	85%	23	11%	8	4%	1	0%	0	0%	219		
3	Chanayetharzan	141	106	75%	13	9%	84%	9	6%	4	3%	6	4%	3	2%	141		
4	Chanmyatharzi	247	213	86%	14	6%	92%	10	4%	5	2%	2	1%	3	1%	247		
5	Maharaungmyae	165	152	92%	0	0%	92%	11	7%	0	0%	0	0%	2	1%	165		
6	Pyigyitagonn	133	92	69%	20	15%	84%	13	10%	1	1%	6	5%	1	1%	133		
7	Patheingyi	105	79	75%	8	8%	83%	6	6%	3	3%	7	7%	2	2%	105		
8	Meiktilar	54	34	63%	11	20%	83%	1	2%	2	4%	4	7%	2	4%	54		
9	Mahlaing	46	21	46%	14	30%	76%	1	2%	2	4%	7	15%	1	2%	46		
10	Tharzi	92	71	77%	17	18%	96%	0	0%	0	0%	4	4%	0	0%	92		
11	Wundwin	101	76	75%	7	7%	82%	15	15%	0	0%	1	1%	2	2%	101		
12	Myingan	139	94	68%	23	17%	84%	11	8%	3	2%	6	4%	2	1%	139		
13	Kyaukpadaung	135	100	74%	11	8%	82%	6	4%	4	3%	11	8%	3	2%	135		
14	Natogyi	45	34	76%	4	9%	84%	6	13%	0	0%	1	2%	0	0%	45		
15	Ngazun	46	39	85%	1	2%	87%	3	7%	1	2%	2	4%	0	0%	46		
16	Taungtha	49	27	55%	14	29%	84%	1	2%	1	2%	5	10%	1	2%	49		
17	NyaungU	94	65	69%	14	15%	84%	6	6%	4	4%	3	3%	2	2%	94		
18	Pyin oo Lwin	82	72	88%	2	2%	90%	3	4%	5	6%	0	0%	0	0%	82		
19	Madayar	107	60	56%	18	17%	73%	8	7%	13	12%	8	7%	0	0%	107		
20	Mogok	68	50	74%	5	7%	81%	11	16%	1	1%	0	0%	1	1%	68		
21	Sintgu	114	78	68%	27	24%	92%	3	3%	0	0%	6	5%	0	0%	114		
22	Thabeikkyin	72	41	57%	11	15%	72%	12	17%	7	10%	1	1%	0	0%	72		
23	Yamethin	90	50	56%	24	27%	82%	4	4%	1	1%	9	10%	2	2%	90		
24	Lewei	188	118	63%	56	30%	93%	6	3%	0	0%	8	4%	0	0%	188		
25	Pyawbwei	84	58	69%	11	13%	82%	6	7%	3	4%	4	5%	2	2%	84		
26	Pyinmana	229	146	64%	33	14%	78%	15	7%	9	4%	15	7%	11	5%	229		
27	Tatkhone	109	51	47%	13	12%	59%	10	9%	5	5%	2	2%	28	26%	109		
28	Kyaukse	137	101	74%	3	2%	76%	8	6%	12	9%	4	3%	9	7%	137		
29	Myittha	89	45	51%	25	28%	79%	11	12%	2	2%	6	7%	0	0%	89		
30	Sintgine	54	32	59%	17	31%	91%	0	0%	0	0%	4	7%	1	2%	54		
31	TadaOo	34	19	56%	6	18%	74%	6	18%	2	6%	0	0%	1	3%	34		
Total		3362	2361	70%	448	13%	84%	230	7%	101	3%	140	4%	82	2%	3362		

Annex-10 (townships list)

Sr. No.	Townships	Reg. Pts.	Cured		Completed		TSR		Died		Failure		Defaulted		Transferred out		Total eva. Pts.	
			No	CR	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate		
Shan State (Taunggyi)																		
1	Linkkay	27	25	93%	0	0%	93%	1	4%	0	0%	0	0%	0	0%	1	4%	27
2	Maukme	19	18	95%	0	0%	95%	1	5%	0	0%	0	0%	0	0%	0	0%	19
3	Monai	16	16	100%	0	0%	100%	0	0%	0	0%	0	0%	0	0%	0	0%	16
4	Mangpang	13	11	85%	2	15%	100%	0	0%	0	0%	0	0%	0	0%	0	0%	13
5	Loilem	26	20	77%	1	4%	81%	3	12%	1	4%	1	4%	0	0%	0	0%	26
6	Kunhein	56	43	77%	4	7%	84%	5	9%	2	4%	1	2%	1	2%	1	2%	56
7	Kyeethi	10	10	100%	0	0%	100%	0	0%	0	0%	0	0%	0	0%	0	0%	10
8	Laikha	35	34	97%	0	0%	97%	0	0%	0	0%	1	3%	0	0%	0	0%	35
9	Mongkaing	19	11	58%	3	16%	74%	3	16%	1	5%	1	5%	0	0%	0	0%	19
10	Mongshu	24	24	100%	0	0%	100%	0	0%	0	0%	0	0%	0	0%	0	0%	24
11	Namsan	42	28	67%	1	2%	69%	5	12%	0	0%	3	7%	5	12%	42		
12	Taunggyi	149	101	68%	9	6%	74%	10	7%	4	3%	18	12%	7	5%	149		
13	Hopone	23	18	78%	0	0%	78%	0	0%	2	9%	3	13%	0	0%	0	0%	23
14	Hpekon	21	17	81%	0	0%	81%	0	0%	3	14%	0	0%	1	5%	1	5%	21
15	Hsiseng	45	26	58%	7	16%	73%	3	7%	1	2%	8	18%	0	0%	0	0%	45
16	Kalaw	64	51	80%	1	2%	81%	3	5%	5	8%	4	6%	0	0%	0	0%	64
17	Lauksauk	49	42	86%	3	6%	92%	4	8%	0	0%	0	0%	0	0%	0	0%	49
18	Pindaya	13	11	85%	1	8%	92%	0	0%	1	8%	0	0%	0	0%	0	0%	13
19	Pinlaung	43	28	65%	6	14%	79%	8	19%	0	0%	1	2%	0	0%	0	0%	43
20	Nyaungshwe	76	73	96%	0	0%	96%	3	4%	0	0%	0	0%	0	0%	0	0%	76
21	Ywangan	12	9	75%	0	0%	75%	0	0%	3	25%	0	0%	0	0%	0	0%	12
Total		782	616	79%	38	5%	84%	49	6%	24	3%	40	5%	15	2%	782		

Shan State (Kengtong)																		
Sr. No.	Townships	Reg. Pts.	No	CR	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	Total eva. Pts.	
1	Kengtong	127	87	69%	16	13%	81%	6	5%	4	3%	14	11%	0	0%	0	0%	127
2	Mongkhat	6	4	67%	1	17%	83%	0	0%	0	0%	0	0%	1	17%	6		
3	Mongyan	23	7	30%	13	57%	87%	1	4%	0	0%	2	9%	0	0%	0	0%	23
4	Monghsat	78	36	46%	23	29%	76%	2	3%	5	6%	10	13%	2	3%	2	3%	78
5	Mongping	38	27	71%	5	13%	84%	2	5%	0	0%	4	11%	0	0%	0	0%	38
6	Mongton	47	26	55%	10	21%	77%	3	6%	2	4%	6	13%	0	0%	0	0%	47
7	Monpyak	23	21	91%	1	4%	96%	0	0%	1	4%	0	0%	0	0%	0	0%	23
8	Mongyaung	35	23	66%	0	0%	66%	3	9%	2	6%	6	17%	1	3%	3	3%	35
9	Tachileik	137	100	73%	11	8%	81%	10	7%	0	0%	10	7%	6	4%	6	4%	137
10	Maitan	Nr.																
Total		514	331	64%	80	16%	80%	27	5%	14	3%	52	10%	10	2%	514		

Annex-10 (townships list)

Sr. No.	Townships	Reg. Pts.	Cured		Completed		TSR	Died		Failure		Defaulted		Transferred out		Total eva. Pts.
			No	CR	No	Rate		No	Rate	No	Rate	No	Rate	No	Rate	
1	Kunlon	46	46	100%	0	0%	100%	0	0%	0	0%	0	0%	0	0%	46
2	Hopan	62	51	82%	7	11%	94%	1	2%	0	0%	2	3%	1	2%	62
3	Kyaukme	90	67	74%	7	8%	82%	10	11%	0	0%	6	7%	0	0%	90
4	Hsipaw	111	94	85%	11	10%	95%	4	4%	1	1%	1	1%	0	0%	111
5	Mabein	27	17	63%	1	4%	67%	7	26%	2	7%	0	0%	0	0%	27
6	Manton	13	10	77%	0	0%	77%	0	0%	0	0%	3	23%	0	0%	13
7	Mongmeik	56	32	57%	5	9%	66%	7	13%	2	4%	8	14%	2	4%	56
8	Namtu	50	39	78%	2	4%	82%	4	8%	0	0%	5	10%	0	0%	50
9	Nyaungcho	37	35	95%	0	0%	95%	0	0%	1	3%	1	3%	0	0%	37
10	Lashio	199	134	67%	8	4%	71%	6	3%	6	3%	43	22%	2	1%	199
11	Namsam	24	20	83%	3	13%	96%	1	4%	0	0%	0	0%	0	0%	24
12	Mongmaw	Nr.														
13	Theinni	57	34	60%	13	23%	82%	0	0%	0	0%	10	18%	0	0%	57
14	Mongreh	33	29	88%	4	12%	100%	0	0%	0	0%	0	0%	0	0%	33
15	Manphant	Nr.														
16	Pangyan	Nr.														
17	Narphant	Nr.														
18	Panwaing	Nr.														
19	Tanyan	101	69	68%	14	14%	82%	9	9%	1	1%	8	8%	0	0%	101
20	Laukkai	48	9	19%	10	21%	40%	2	4%	0	0%	25	52%	2	4%	48
21	Kongyan	Nr.														
22	Muse	66	33	50%	5	8%	58%	8	12%	10	15%	7	11%	3	5%	66
23	Kuikai	44	30	68%	5	11%	80%	3	7%	2	5%	3	7%	1	2%	44
24	Namkham	68	46	68%	6	9%	76%	6	9%	3	4%	4	6%	3	4%	68
Total		1132	795	70%	101	9%	79%	68	6%	28	2%	126	11%	14	1%	1132

Annex-10 (townships list)

Sr. No.	Townships	Reg. Pts.	Cured		Completed		TSR		Died		Failure		Defaulted		Transferred out		Total eva. Pts.	
			No	CR	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate		
Kayin State																		
1	Kawkareik	182	150	82%	8	4%	87%	12	7%	0	0%	10	5%	2	1%	182		
2	Kyainseikkyi	54	38	70%	10	19%	89%	3	6%	1	2%	1	2%	1	2%	54		
3	Myawady	170	88	52%	22	13%	65%	15	9%	2	1%	24	14%	19	11%	170		
4	Hpa-an	453	352	78%	31	7%	85%	11	2%	3	1%	40	9%	16	4%	453		
5	Hlaingbwe	141	112	79%	5	4%	83%	10	7%	1	1%	12	9%	1	1%	141		
6	Papun(Kamamaung)	49	46	94%	0	0%	94%	0	0%	2	4%	0	0%	1	2%	49		
7	Thandaung	12	9	75%	0	0%	75%	2	17%	1	8%	0	0%	0	0%	12		
	Total	1061	795	75%	76	7%	82%	53	5%	10	1%	87	8%	40	4%	1061		

Tanintharyi Region																		
Sr. No.	Townships	Reg. Pts.	Cured		Completed		TSR		Died		Failure		Defaulted		Transferred out		Total eva. Pts.	
			No	CR	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate				
1	Dawei	118	95	81%	8	7%	87%	2	2%	2	2%	6	5%	5	4%	118		
2	Launglon	14	9	64%	0	0%	64%	2	14%	2	14%	0	0%	1	7%	14		
3	Thayetchaung	18	12	67%	2	11%	78%	0	0%	0	0%	3	17%	1	6%	18		
4	Yebyu	30	19	63%	3	10%	73%	2	7%	3	10%	2	7%	1	3%	30		
5	Kawthaung	182	126	69%	21	12%	81%	7	4%	3	2%	17	9%	8	4%	182		
6	Bokpyin	30	15	50%	8	27%	77%	1	3%	1	3%	5	17%	0	0%	30		
7	Myeik	354	270	76%	5	1%	78%	14	4%	3	1%	14	4%	48	14%	354		
8	Kyunsu	24	16	67%	2	8%	75%	0	0%	0	0%	3	13%	3	13%	24		
9	Tanintharyi	43	36	84%	2	5%	88%	2	5%	0	0%	3	7%	0	0%	43		
10	Palaw	72	46	64%	17	24%	88%	2	3%	1	1%	5	7%	1	1%	72		
	Total	885	644	73%	68	8%	80%	32	4%	15	2%	58	7%	68	8%	885		

Annex-10 (townships list)

Sr. No.	Townships	Reg. Pts.		Cured		Completed		TSR		Died		Failure		Defaulted		Transferred out		Total eva. Pts.	
		No	CR	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate		
Bago Region																			
1	Bago	399	76%	304	76%	28	7%	83%	18	5%	9	2%	32	8%	8	2%	399		
2	Daik-U	143	61%	87	61%	26	18%	79%	9	6%	6	4%	12	8%	3	2%	143		
3	Kawa	67	82%	55	82%	5	7%	90%	3	4%	0	0%	4	6%	0	0%	67		
4	Kyauktaga	139	91%	126	91%	1	1%	91%	3	2%	2	1%	4	3%	3	2%	139		
5	Nyaunglaybin	98	74%	73	74%	10	10%	85%	4	4%	2	2%	8	8%	1	1%	98		
6	Shwekyin	50	66%	33	66%	10	20%	86%	2	4%	0	0%	4	8%	1	2%	50		
7	Thanatpin	106	69%	73	69%	11	10%	79%	8	8%	0	0%	12	11%	2	2%	106		
8	Waw	146	73%	107	73%	13	9%	82%	13	9%	3	2%	9	6%	1	1%	146		
9	Taunggoo	132	79%	104	79%	0	0%	79%	15	11%	4	3%	7	5%	2	2%	132		
10	Kyaukkyi	68	75%	51	75%	8	12%	87%	7	10%	0	0%	2	3%	0	0%	68		
11	Oktwin	72	72%	52	72%	2	3%	75%	8	11%	0	0%	7	10%	3	4%	72		
12	Phyu	176	80%	141	80%	11	6%	86%	10	6%	1	1%	11	6%	2	1%	176		
13	Htantabin	51	90%	46	90%	3	6%	96%	1	2%	0	0%	1	2%	0	0%	51		
14	Yedashe	117	78%	91	78%	4	3%	81%	9	8%	9	8%	3	3%	1	1%	117		
Total		1764	78%	1343	78%	132	7%	84%	110	6%	36	2%	116	7%	27	2%	1764		
Bago region (Pyay)																			
1	Pyay	210	79%	166	79%	2	1%	80%	18	9%	14	7%	7	3%	3	1%	210		
2	Paukkhaung	100	88%	88	88%	2	2%	90%	6	6%	0	0%	2	2%	2	2%	100		
3	Paungde	93	94%	87	94%	0	0%	94%	0	0%	1	1%	1	1%	4	4%	93		
4	Padaung	86	70%	60	70%	12	14%	84%	6	7%	5	6%	2	2%	1	1%	86		
5	Shwedaung	101	66%	67	66%	18	18%	84%	1	1%	2	2%	12	12%	1	1%	101		
6	Thegon	108	82%	89	82%	3	3%	85%	6	6%	2	2%	6	6%	2	2%	108		
7	Tharyawady	179	77%	137	77%	5	3%	79%	18	10%	15	8%	3	2%	1	1%	179		
8	Zigon	68	82%	56	82%	5	7%	90%	6	9%	0	0%	0	0%	1	1%	68		
9	Minhla	98	82%	80	82%	7	7%	89%	5	5%	5	5%	0	0%	1	1%	98		
10	Moeyo	87	90%	78	90%	3	3%	93%	5	6%	0	0%	1	1%	0	0%	87		
11	Okpo	87	94%	82	94%	0	0%	94%	4	5%	0	0%	1	1%	0	0%	87		
12	Gyobingauk	105	91%	96	91%	6	6%	97%	2	2%	1	1%	0	0%	0	0%	105		
13	Nattalin	122	74%	87	74%	17	14%	85%	10	8%	0	0%	8	7%	0	0%	122		
14	Latpadan	144	77%	111	77%	19	13%	90%	8	6%	0	0%	5	3%	1	1%	144		
Total		1588	81%	1284	81%	99	6%	87%	95	6%	45	3%	48	3%	17	1%	1588		

Annex-10 (townships list)

Sr. No.	Townships	Reg. Pts.	Cured		Completed		TSR		Died		Failure		Defaulted		Transferred out		Total eva. Pts.	
			No	CR	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate		
Mon State																		
1	Mawlamyaing	355	291	82%	16	5%	86%	19	5%	7	2%	17	5%	5	1%	355		
2	Chanungzon	93	78	84%	1	1%	85%	9	10%	2	2%	1	1%	2	2%	93		
3	Kyaikmaraw	105	90	86%	8	8%	93%	2	2%	2	2%	3	3%	0	0%	105		
4	Mudon	163	131	80%	2	1%	82%	9	6%	9	6%	9	6%	3	2%	163		
5	Thanbyuzayat	120	107	89%	0	0%	89%	5	4%	3	3%	1	1%	4	3%	120		
6	Ye	183	119	65%	19	10%	75%	16	9%	9	5%	16	9%	4	2%	183		
7	Thaton	227	143	63%	41	18%	81%	17	7%	3	1%	16	7%	7	3%	227		
8	Belin	201	175	87%	13	6%	94%	7	3%	2	1%	4	2%	0	0%	201		
9	Kyaikto	108	93	86%	3	3%	89%	3	3%	3	3%	3	3%	3	3%	108		
10	Paung	203	181	89%	8	4%	93%	3	1%	6	3%	0	0%	5	2%	203		
Total		1758	1408	80%	111	6%	86%	90	5%	46	3%	70	4%	33	2%	1758		
Rakhine State																		
1	Kyaukphyu	111	81	73%	7	6%	79%	5	5%	5	5%	13	12%	0	0%	111		
2	Ann	60	34	57%	11	18%	75%	5	8%	1	2%	9	15%	0	0%	60		
3	Manaung	47	46	98%	0	0%	98%	1	2%	0	0%	0	0%	0	0%	47		
4	Rambye	52	50	96%	0	0%	96%	1	2%	1	2%	0	0%	0	0%	52		
5	Maungdaw	153	94	61%	27	18%	79%	9	6%	18	12%	3	2%	2	1%	153		
6	Buthidaung	267	248	93%	3	1%	94%	13	5%	0	0%	1	0%	2	1%	267		
7	Rathedaung	146	110	75%	21	14%	90%	8	5%	1	1%	5	3%	1	1%	146		
8	Sittwe	276	175	63%	50	18%	82%	7	3%	9	3%	24	9%	11	4%	276		
9	Kyauktaw	191	176	92%	3	2%	94%	2	1%	1	1%	8	4%	1	1%	191		
10	Minbya	167	139	83%	5	3%	86%	8	5%	6	4%	7	4%	2	1%	167		
11	Myaukoo	181	171	94%	0	0%	94%	5	3%	0	0%	2	1%	3	2%	181		
12	Myebon	74	47	64%	14	19%	82%	5	7%	0	0%	8	11%	0	0%	74		
13	Pauktaw	96	36	38%	33	34%	72%	5	5%	0	0%	22	23%	0	0%	96		
14	Ponnagyun	99	78	79%	13	13%	92%	5	5%	1	1%	1	1%	1	1%	99		
15	Thandwe	123	102	83%	7	6%	89%	3	2%	3	2%	5	4%	3	2%	123		
16	Gwa	50	41	82%	1	2%	84%	5	10%	0	0%	0	0%	3	6%	50		
17	Taungup	122	66	54%	26	21%	75%	15	12%	4	3%	11	9%	0	0%	122		
Total		2215	1694	76%	221	10%	86%	102	5%	50	2%	119	5%	29	1%	2215		

Annex-10 (townships list)

Sr. No.	Townships	Reg. Pts.	Cured		Completed		TSR		Died		Failure		Defaulted		Transferred out		Total eva. Pts.	
			No	CR	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate		
Yangon Region																		
East District																		
1	Botataung	40	36	90%	1	3%	93%	2	5%	0	0%	1	3%	0	0%	40		
2	Dawbon	152	148	97%	0	0%	97%	3	2%	1	1%	0	0%	0	0%	152		
3	Dagon(N)	191	163	85%	2	1%	86%	15	8%	0	0%	9	5%	2	1%	191		
4	Dagon(S)	578	421	73%	30	5%	78%	25	4%	27	5%	72	12%	3	1%	578		
5	MingalarTN	140	127	91%	3	2%	93%	5	4%	3	2%	1	1%	1	1%	140		
6	Okkala(N)	279	233	84%	6	2%	86%	12	4%	18	6%	8	3%	2	1%	279		
7	Okkala(S)	165	144	87%	0	0%	87%	6	4%	4	2%	6	4%	5	3%	165		
8	Tharkata	477	400	84%	19	4%	88%	23	5%	9	2%	21	4%	5	1%	477		
9	Thingangyun	240	225	94%	0	0%	94%	9	4%	6	3%	0	0%	0	0%	240		
10	Yankin	146	131	90%	0	0%	90%	7	5%	2	1%	0	0%	6	4%	146		
11	Tarnwe	119	106	89%	2	2%	91%	6	5%	5	4%	0	0%	0	0%	119		
12	Pazundaung	36	30	83%	0	0%	83%	1	3%	5	14%	0	0%	0	0%	36		
13	Dagon(E)	205	175	85%	8	4%	89%	15	7%	0	0%	5	2%	2	1%	205		
14	Dagon Seikkan	80	65	81%	0	0%	81%	2	3%	3	4%	10	13%	0	0%	80		
Total		2848	2404	84%	71	2%	87%	131	5%	83	3%	133	5%	26	1%	2848		
West District																		
1	Kamayut	77	68	88%	2	3%	91%	3	4%	3	4%	0	0%	1	1%	77		
2	Kyauktada	20	16	80%	1	5%	85%	1	5%	2	10%	0	0%	0	0%	20		
3	Kyeemyindaing	149	119	80%	0	0%	80%	9	6%	9	6%	6	4%	6	4%	149		
4	Sanchaung	83	67	81%	1	1%	82%	3	4%	3	4%	6	7%	3	4%	83		
5	Seikkan	4	4	100%	0	0%	100%	0	0%	0	0%	0	0%	0	0%	4		
6	Dagon	35	29	83%	0	0%	83%	1	3%	2	6%	0	0%	3	9%	35		
7	Pabedan	30	25	83%	0	0%	83%	4	13%	1	3%	0	0%	0	0%	30		
8	Bahan	90	64	71%	13	14%	86%	4	4%	1	1%	4	4%	4	4%	90		
9	Mayangon	225	195	87%	4	2%	88%	8	4%	11	5%	3	1%	4	2%	225		
10	Latha	25	22	88%	1	4%	92%	1	4%	0	0%	1	4%	0	0%	25		
11	Lanmadaw	36	34	94%	2	6%	100%	0	0%	0	0%	0	0%	0	0%	36		
12	Hlaing	184	159	86%	9	5%	91%	7	4%	7	4%	0	0%	2	1%	184		
13	Ahlon	61	50	82%	8	13%	95%	1	2%	2	3%	0	0%	0	0%	61		
Total		1019	852	84%	41	4%	88%	42	4%	41	4%	20	2%	23	2%	1019		

Annex-10 (townships list)

Sr. No.	Townships	Reg. Pts.	Cured		Completed		TSR		Died		Failure		Defaulted		Transferred out		Total eva. Pts.	
			No	CR	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate		
South District																		
1	Seikkyikthanaungto	58	49	84%	8	14%	98%	0	0%	1	2%	0	0%	0	0%	0	0%	58
2	Dallah	179	145	81%	10	6%	87%	12	7%	1	1%	8	4%	3	2%	3	2%	179
3	Cocogyun	0	0															0
4	Kawhmu	60	54	90%	0	0%	90%	4	7%	1	2%	0	0%	1	2%	1	2%	60
5	Kyauktan	134	110	82%	5	4%	86%	13	10%	1	1%	2	1%	3	2%	3	2%	134
6	Kungyangone	104	86	83%	4	4%	87%	9	9%	2	2%	1	1%	2	2%	2	2%	104
7	Kayan	162	143	88%	9	6%	94%	8	5%	0	0%	1	1%	1	1%	1	1%	162
8	Twantay	150	132	88%	2	1%	89%	8	5%	5	3%	3	2%	0	0%	0	0%	150
9	Thonegwa	110	87	79%	7	6%	85%	9	8%	2	2%	5	5%	0	0%	0	0%	110
10	Thanlyin	302	250	83%	8	3%	85%	17	6%	9	3%	15	5%	3	1%	3	1%	302
	Total	1259	1056	84%	53	4%	88%	80	6%	22	2%	35	3%	13	1%	13	1%	1259

North District																		
1	Mingalardon	481	358	74%	37	8%	82%	22	5%	34	7%	22	5%	8	2%	8	2%	481
2	Shwepyithar	376	259	69%	61	16%	85%	10	3%	13	3%	21	6%	12	3%	12	3%	376
3	Hlaingtharyar	959	889	93%	15	2%	94%	23	2%	5	1%	25	3%	2	0%	2	0%	959
4	Insein	512	391	76%	51	10%	86%	26	5%	21	4%	17	3%	6	1%	6	1%	512
5	Taikkyi	220	198	90%	0	0%	90%	13	6%	9	4%	0	0%	0	0%	0	0%	220
6	Htantabin	105	62	59%	31	30%	89%	2	2%	3	3%	7	7%	0	0%	0	0%	105
7	Hmawbi	221	186	84%	9	4%	88%	12	5%	10	5%	3	1%	1	0%	1	0%	221
8	Hlegu	241	229	95%	0	0%	95%	8	3%	1	0%	3	1%	0	0%	0	0%	241
	U.T.I	79	43	54%	4	5%	59%	9	11%	1	1%	17	22%	5	6%	5	6%	79
	NTP (Diagnostic)	8	5	63%	2	25%	88%	0	0%	0	0%	0	0%	1	13%	1	13%	8
	Total	3202	2620	82%	210	7%	88%	125	4%	97	3%	115	4%	35	1%	35	1%	3202
	Yangon Region	8328	6932	83%	375	5%	88%	378	5%	243	3%	303	4%	97	1%	97	1%	8328

Annex-10 (townships list)

Sr. No.	Townships	Reg. Pts.	Cured		Completed		TSR		Died		Failure		Defaulted		Transferred out		Total eva. Pts.	
			No	CR	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate		
Ayeyarwaddy Region																		
1	Pathain	450	333	74%	51	11%	85%	16	4%	4	1%	38	8%	8	2%	450		
2	Kanyidaung	61	46	75%	6	10%	85%	6	10%	0	0%	3	5%	0	0%	61		
3	Yekyi	155	111	72%	23	15%	86%	12	8%	0	0%	9	6%	0	0%	155		
4	Kyaunggon	135	108	80%	21	16%	96%	1	1%	2	1%	2	1%	1	1%	135		
5	Kyonpyaw	142	120	85%	7	5%	89%	9	6%	0	0%	6	4%	0	0%	142		
6	Ngaputaw	159	119	75%	17	11%	86%	12	8%	3	2%	7	4%	1	1%	159		
7	Thabaung	109	91	83%	7	6%	90%	6	6%	2	2%	3	3%	0	0%	109		
8	Hinhada	371	318	86%	16	4%	90%	13	4%	0	0%	16	4%	8	2%	371		
9	Kyankin	76	67	88%	4	5%	93%	3	4%	0	0%	2	3%	0	0%	76		
10	Myanaung	196	175	89%	4	2%	91%	13	7%	2	1%	2	1%	0	0%	196		
11	Ingapu	243	221	91%	1	0%	91%	16	7%	1	0%	1	0%	3	1%	243		
12	Zalun	125	76	61%	28	22%	83%	10	8%	0	0%	11	9%	0	0%	125		
13	Laymthethna	61	49	80%	5	8%	89%	3	5%	0	0%	4	7%	0	0%	61		
14	Myaungmya	232	188	81%	31	13%	94%	4	2%	4	2%	5	2%	0	0%	232		
15	Laputta	213	208	98%	0	0%	98%	1	0%	4	2%	0	0%	0	0%	213		
16	Mawgyun	142	105	74%	27	19%	93%	6	4%	1	1%	1	1%	2	1%	142		
17	Wakema	196	177	90%	3	2%	92%	2	1%	9	5%	5	3%	0	0%	196		
18	Einme	155	124	80%	1	1%	81%	11	7%	3	2%	16	10%	0	0%	155		
19	Pyapon	230	188	82%	1	0%	82%	21	9%	4	2%	9	4%	7	3%	230		
20	Bogalay	218	186	85%	2	1%	86%	21	10%	0	0%	9	4%	0	0%	218		
21	Dedaye	51	32	63%	12	24%	86%	2	4%	1	2%	2	4%	2	4%	51		
22	Kyaikkatt	106	71	67%	15	14%	81%	6	6%	4	4%	7	7%	3	3%	106		
23	Maubin	236	203	86%	2	1%	87%	11	5%	12	5%	8	3%	0	0%	236		
24	Nyaungdon	112	104	93%	0	0%	93%	8	7%	0	0%	0	0%	0	0%	112		
25	Pantanaw	142	95	67%	29	20%	87%	3	2%	1	1%	14	10%	0	0%	142		
26	Danuphyu	191	182	95%	0	0%	95%	5	3%	3	2%	0	0%	1	1%	191		
Total		4507	3697	82%	313	7%	89%	221	5%	60	1%	180	4%	36	1%	4507		

**NATIONAL TUBERCULOSIS PROGRAMME
TREATMENT OUTCOME OF SMEAR NEGATIVE TB PATIENTS (2009 COHORT)**

Sr.No.	Region/State	SMEAR NEGATIVE TB PATIENTS													
		Total No.		Completed		Died		Failure		Defaulted		Transfer		Total	
		Reg. pts.	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate			
1	Kachin State	1436	1169	81%	102	7%	19	1%	104	7%	42	3%	1436		
2	Kayah State	246	183	74%	17	7%	2	1%	12	5%	32	13%	246		
3	Chin State	314	268	85%	12	4%	2	1%	27	9%	5	2%	314		
4	Sagaing Region	1625	1348	83%	149	9%	6	0%	88	5%	34	2%	1625		
5	Magway Region	2255	1979	88%	145	6%	11	0%	69	3%	51	2%	2255		
6	Mandalay Region	3185	2470	78%	294	9%	23	1%	288	9%	110	3%	3185		
7	Shan State (Taunggyi)	666	505	76%	72	11%	4	1%	65	10%	20	3%	666		
8	Shan State (Kyaingtong)	470	379	81%	30	6%	1	0%	50	11%	10	2%	470		
9	Shan State (Lashio)	1126	807	72%	76	7%	5	0%	213	19%	25	2%	1126		
10	Kayin State	1420	1092	77%	49	3%	1	0%	196	14%	82	6%	1420		
11	Tanintharyi Region	2537	1859	73%	76	3%	2	0%	400	16%	200	8%	2537		
12	Bago Region	1602	1315	82%	98	6%	2	0%	165	10%	22	1%	1602		
13	Bago Region (Pyay)	1933	1646	85%	155	8%	3	0%	123	6%	6	0%	1933		
14	Mon State	2373	2008	85%	177	7%	5	0%	140	6%	43	2%	2373		
15	Rakhine State	1614	1415	88%	108	7%	5	0%	75	5%	11	1%	1614		
16	Yangon Region	6928	6012	87%	374	5%	68	1%	361	5%	113	2%	6928		
17	Ayeyarwaddy Region	3388	2901	86%	207	6%	15	0%	209	6%	56	2%	3388		
	Regions & States total	33118	27356	83%	2141	6%	174	1%	2585	8%	862	3%	33118		
	NS(+) TB patients, unknown HIV status (NTP)	31317	26177	84%	1719	5%	165	1%	2473	8%	783	3%	31317		
	Other Units total	7113	5570	78%	681	10%	66	1%	572	8%	224	3%	7113		
	NS(+) TB patients, unknown HIV status (Other units)	5788	4704	81%	361	6%	49	1%	489	8%	185	3%	5788		
	Country	40231	32926	82%	2822	7%	240	1%	3157	8%	1086	3%	40231		
	NS(+) TB patients, unknown HIV status (Country)	37105	30881	83%	2080	6%	214	1%	2962	8%	968	3%	37105		

TREATMENT OUTCOMES OF TB/HIV PATIENTS IN 2010 (2009 COHORT)

Sr.No.	Reporting units	SMEAR NEGATIVE TB PATIENTS													
		Total No.		Completed		Died		Failure		Defaulted		Transfer		Total	
		Reg. pts	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate			
1	NTP	1801	1179	65%	422	23%	9	0%	112	6%	79	4%	1801		
2	Other Units	1325	866	65%	320	24%	17	1%	83	6%	39	3%	1325		
	Total	3126	2045	65%	742	24%	26	1%	195	6%	118	4%	3126		

**NATIONAL TUBERCULOSIS PROGRAMME
TREATMENT OUTCOME OF RELAPSES (2009 COHORT)**

Sr.No.	Region/State	RELAPSE CASES														
		Total		Cured		Completed		Died		Failure		Defaulted		Transferred out		Total
		No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	
1	Kachin State	166	70%	17	10%	9	5%	6	4%	11	7%	7	4%	166		
2	Kayah State	11	8	73%	2	18%	0	0%	0	0%	0	0%	1	9%	11	
3	Chin State	29	19	66%	6	21%	2	7%	0	0%	2	7%	0	0%	29	
4	Sagaing Region	223	139	62%	37	17%	25	11%	7	3%	7	3%	8	4%	223	
5	Magway Region	184	122	66%	29	16%	16	9%	5	3%	6	3%	6	3%	184	
6	Mandalay Region	446	278	62%	76	17%	51	11%	12	3%	18	4%	11	2%	446	
7	Shan State (Taunggyi)	58	44	76%	3	5%	8	14%	1	2%	2	3%	0	0%	58	
8	Shan State (Kyaingtong)	73	52	71%	8	11%	3	4%	2	3%	7	10%	1	1%	73	
9	Shan State (Lashio)	116	77	66%	10	9%	11	9%	10	9%	7	6%	1	1%	116	
10	Kayin State	75	53	71%	4	5%	5	7%	2	3%	7	9%	4	5%	75	
11	Tanintharyi Region	80	38	48%	20	25%	5	6%	3	4%	9	11%	5	6%	80	
12	Bago Region	197	129	65%	20	10%	21	11%	8	4%	17	9%	2	1%	197	
13	Bago Region (Pyay)	148	101	68%	14	9%	13	9%	5	3%	12	8%	3	2%	148	
14	Mon State	164	115	70%	10	6%	11	7%	15	9%	11	7%	2	1%	164	
15	Rakhine State	143	100	70%	15	10%	12	8%	4	3%	5	3%	7	5%	143	
16	Yangon Region	1285	880	68%	134	10%	113	9%	76	6%	66	5%	16	1%	1285	
17	Ayeyarwaddy Region	386	290	75%	28	7%	37	10%	13	3%	16	4%	2	1%	386	
	Regions & States total	3784	2561	68%	433	11%	342	9%	169	4%	203	5%	76	2%	3784	
	(relapse) TB patients, Unknown HIV status (NTP)	3694	2518	68%	419	11%	313	8%	169	5%	201	5%	74	2%	3694	
	Other Units	953	484	51%	174	18%	115	12%	63	7%	58	6%	59	6%	953	
	(relapse) TB patients, Unknown HIV status (Other Units)	821	448	55%	125	15%	86	10%	58	7%	50	6%	54	7%	821	
	Country	4737	3045	64%	607	13%	457	10%	232	5%	261	6%	135	3%	4737	
	(relapse) TB patients, unknown HIV status (Country)	4515	2966	66%	544	12%	399	9%	227	5%	251	6%	128	3%	4515	

TREATMENT OUTCOMES OF TB/HIV PATIENTS IN 2010 (2009 COHORT)

Sr.No.	Reporting units	RELAPSE CASES														
		Total		Cured		Completed		Died		Failure		Defaulted		Transferred out		Total
		No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	
1	NTP	90	43	48%	14	16%	29	32%	0	0%	2	2%	2	2%	90	
2	Other Units	132	36	27%	49	37%	29	22%	5	4%	8	6%	5	4%	132	
	Total	222	79	36%	63	28%	58	26%	5	2%	10	5%	7	3%	222	

**NATIONAL TUBERCULOSIS PROGRAMME
TREATMENT OUTCOME OF TREATMENT AFTER DEFAULT (2009 COHORT)**

Sr.No.	Region/State	TOTAL	TREATMENT AFTER DEFAULT													
			Cured		Completed		Died		Failure		Defaulted		Transfer		Total	
			No.	CR	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate		
1	Kachin State	21	15	71%	2	10%	1	5%	2	10%	0	0%	1	5%	21	
2	Kayah State	5	1	20%	4	80%	0	0%	0	0%	0	0%	0	0%	5	
3	Chin State	0	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	0	
4	Sagaing Region	28	14	50%	10	36%	1	4%	0	0%	3	11%	0	0%	28	
5	Magway Region	14	8	57%	2	14%	4	29%	0	0%	0	0%	0	0%	14	
6	Mandalay Region	54	29	54%	15	28%	4	7%	2	4%	1	2%	3	6%	54	
7	Shan State (Taunggyi)	18	15	83%	0	0%	0	0%	0	0%	3	17%	0	0%	18	
8	Shan State (Kyaingtong)	11	3	27%	6	55%	0	0%	1	9%	1	9%	0	0%	11	
9	Shan State (Lashio)	20	10	50%	3	15%	6	30%	0	0%	1	5%	0	0%	20	
10	Kayin State	21	10	48%	2	10%	3	14%	2	10%	2	10%	2	10%	21	
11	Tanintharyi Region	22	11	50%	4	18%	0	0%	0	0%	5	23%	2	9%	22	
12	Bago Region	26	14	54%	2	8%	3	12%	0	0%	6	23%	1	4%	26	
13	Bago Region (Pyay)	10	7	70%	0	0%	1	10%	1	10%	1	10%	0	0%	10	
14	Mon State	32	18	56%	5	16%	2	6%	1	3%	5	16%	1	3%	32	
15	Rakhine State	27	17	63%	3	11%	2	7%	0	0%	1	4%	4	15%	27	
16	Yangon Region	127	60	47%	23	18%	14	11%	10	8%	18	14%	2	2%	127	
17	Ayeyarwaddy Region	25	13	52%	6	24%	1	4%	1	4%	4	16%	0	0%	25	
Regions & States total			461	245	53%	87	19%	42	9%	20	4%	51	11%	16	3%	461
(TAD) TB patients, Unknown HIV status (NTP)			442	236	53%	82	19%	38	9%	20	5%	50	11%	16	4%	442
Other Units			143	54	38%	31	22%	22	15%	8	6%	19	13%	9	6%	143
(TAD) TB patients, Unknown HIV status (Other units)			123	49	40%	27	22%	15	12%	8	7%	15	12%	9	7%	123
Country			604	299	50%	118	20%	64	11%	28	5%	70	12%	25	4%	604
(TAD) TB patients, unknown HIV status (Country)			565	285	50%	109	19%	53	9%	28	5%	65	12%	25	4%	565

TREATMENT OUTCOME OF TB/HIV PATIENTS IN 2010 (2009 COHORT)

Sr.No.	Reporting units	TOTAL	TREATMENT AFTER DEFAULT CASES													
			Cured		Completed		Died		Failure		Defaulted		Transfer		Total	
			No.	CR	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate		
1	NTP	19	9	47%	5	26%	4	21%	0	0%	1	5%	0	0%	19	
2	Other Units	20	5	25%	4	20%	7	35%	0	0%	4	20%	0	0%	20	
Total			39	14	36%	9	23%	11	28%	0	0%	5	13%	0	0%	39

**NATIONAL TUBERCULOSIS PROGRAMME
TREATMENT OUTCOME OF TREATMENT AFTER FAILURE (2009 COHORT)**

Sr.No.	Region/State	TOTAL	TREATMENT AFTER FAILURE														Total
			Cured		Completed		Died		Failure		Defaulted		Transfer				
			No.	CR	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate			
1	Kachin State	81	49	60%	6	7%	4	5%	9	11%	8	10%	5	6%	81		
2	Kayah State	7	4	57%	1	14%	0	0%	1	14%	0	0%	1	14%	7		
3	Chin State	0	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0		
4	Sagaing Region	84	48	57%	9	11%	13	15%	8	10%	5	6%	1	1%	84		
5	Magway Region	55	33	60%	6	11%	10	18%	4	7%	2	4%	0	0%	55		
6	Mandalay Region	70	34	49%	8	11%	6	9%	14	20%	5	7%	3	4%	70		
7	Shan State (Taunggyi)	38	19	50%	8	21%	6	16%	2	5%	2	5%	1	3%	38		
8	Shan State (Kyaingtong)	20	10	50%	5	25%	3	15%	1	5%	1	5%	0	0%	20		
9	Shan State (Lashio)	26	10	38%	2	8%	1	4%	5	19%	8	31%	0	0%	26		
10	Kayin State	15	11	73%	2	13%	2	13%	0	0%	0	0%	0	0%	15		
11	Tanintharyi Region	22	11	50%	5	23%	0	0%	4	18%	1	5%	1	5%	22		
12	Bago Region	36	18	50%	2	6%	5	14%	5	14%	6	17%	0	0%	36		
13	Bago Region (Pyay)	37	25	68%	3	8%	0	0%	8	22%	1	3%	0	0%	37		
14	Mon State	56	35	63%	4	7%	3	5%	6	11%	5	9%	3	5%	56		
15	Rakhine State	33	17	52%	2	6%	1	3%	4	12%	7	21%	2	6%	33		
16	Yangon Region	225	118	52%	16	7%	22	10%	48	21%	19	8%	2	1%	225		
17	Ayeyarwaddy Region	56	26	46%	10	18%	7	13%	6	11%	7	13%	0	0%	56		
	Regions & States total	861	468	54%	89	10%	83	10%	125	15%	77	9%	19	2%	861		
	(TAF) TB patients, Unknown HIV status (NTP)	847	459	54%	88	10%	81	10%	124	15%	76	9%	19	2%	847		
	Other Units	389	183	47%	35	9%	42	11%	55	14%	42	11%	32	8%	389		
	(TAF) TB patients, Unknown HIV status (Other units)	336	170	51%	25	7%	22	7%	52	15%	36	11%	31	9%	336		
	Country	1250	651	52%	124	10%	125	10%	180	14%	119	10%	51	4%	1250		
	(TAF) TB patients, unknown HIV status (Country)	1183	629	53%	113	10%	103	9%	176	15%	112	9%	50	4%	1183		

TREATMENT OUTCOME OF TB/HIV PATIENTS IN 2010 (2009 COHORT)

Sr.No.	Reporting units	TOTAL	TREATMENT AFTER FAILURE CASES														Total
			Cured		Completed		Died		Failure		Defaulted		Transfer				
			No.	CR	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate			
1	NTP	14	9	64%	1	7%	2	14%	1	7%	1	7%	0	0%	14		
2	Other Units	53	13	25%	10	19%	20	38%	3	6%	6	11%	1	2%	53		
	Total	67	22	33%	11	16%	22	33%	4	6%	7	10%	1	1%	67		

**NATIONAL TUBERCULOSIS PROGRAMME
TREATMENT OUTCOME OF OTHER CASES (2009 COHORT)**

Sr.No.	Region/State	OTHER CASES													
		Total	Cured		Completed		Died		Failure		Defaulted		Transfer out		Total
			No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	
1	Kachin State	175	16	9%	112	64%	16	9%	1	1%	20	11%	10	6%	175
2	Kayah State	43	0	0%	35	81%	3	7%	0	0%	3	7%	2	5%	43
3	Chin State	27	0	0%	21	78%	4	15%	0	0%	1	4%	1	4%	27
4	Sagaing Region	118	4	3%	83	70%	17	14%	2	2%	7	6%	5	4%	118
5	Magway Region	322	1	0%	259	80%	28	9%	0	0%	27	8%	7	2%	322
6	Mandalay Region	417	20	5%	288	69%	58	14%	6	1%	28	7%	17	4%	417
7	Shan State (Taunggyi)	52	5	10%	27	52%	9	17%	0	0%	8	15%	3	6%	52
8	Shan State (Kyaingtong)	27	0	0%	22	81%	0	0%	0	0%	5	19%	0	0%	27
9	Shan State (Lashio)	41	2	5%	27	66%	5	12%	3	7%	2	5%	2	5%	41
10	Kayin State	27	3	11%	12	44%	8	30%	0	0%	3	11%	1	4%	27
11	Tanintharyi Region	72	0	0%	51	71%	5	7%	1	1%	8	11%	7	10%	72
12	Bago Region	30	12	40%	11	37%	2	7%	0	0%	4	13%	1	3%	30
13	Bago Region (Pyay)	23	4	17%	17	74%	1	4%	0	0%	1	4%	0	0%	23
14	Mon State	23	4	17%	12	52%	2	9%	1	4%	4	17%	0	0%	23
15	Rakhine State	117	18	15%	72	62%	13	11%	0	0%	8	7%	6	5%	117
16	Yangon Region	699	103	15%	450	64%	79	11%	5	1%	49	7%	13	2%	699
17	Ayeyarwaddy Region	182	19	10%	119	65%	19	10%	2	1%	20	11%	3	2%	182
	Regions & States total	2395	211	9%	1618	68%	269	11%	21	1%	198	8%	78	3%	2395
	(Other) TB patients, Unknown HIV status (NTP)	2267	201	9%	1542	68%	235	10%	21	1%	192	8%	76	3%	2267
	Other Units	554	24	4%	245	44%	124	22%	29	5%	64	12%	68	12%	554
	(Other)TB patients, Unknown HIV status (Other units)	335	14	4%	143	43%	41	12%	26	8%	51	15%	60	18%	335
	Country	2949	235	8%	1863	63%	393	13%	50	2%	262	9%	146	5%	2949
	(Other) TB patients, unknown HIV status (country)	2602	215	8%	1685	65%	276	11%	47	2%	243	9%	136	5%	2602

TREATMENT OUTCOME OF TB/HIV PATIENTS (2008 COHORT)

Sr.No.	Reporting units	OTHER CASES													
		Total	Cured		Completed		Died		Failure		Defaulted		Transfer out		Total
			No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	
1	NTP	128	10	8%	76	59%	34	27%	0	0%	6	5%	2	2%	128
2	Other Units	219	10	5%	102	47%	83	38%	3	1%	13	6%	8	4%	219
	Total	347	20	6%	178	51%	117	34%	3	1%	19	5%	10	3%	347

**NATIONAL TUBERCULOSIS PROGRAMME
TREATMENT OUTCOME OF PRIMARY COMPLEX AND TB MENINGITIS (2009 COHORT)**

Sr.No.	Region/State	PRIMARY COMPLEX										TB MENINGITIS					
		Total No. Reg. pts.	Completed		Died	Defaulted		Transfer out	Total	Total No. Reg. pts.	Comple- ted	Died	Defaulted	Transfer out	Total		
			No	Rate		No	Rate										
1	Kachin State	205	199	97%	2	4	2%	0	205	6	4	2	0	0	6		
2	Kayah State	651	617	95%	2	6	1%	26	651	6	2	0	1	3	6		
3	Chin State	287	268	93%	1	14	5%	4	287	8	4	4	0	0	8		
4	Sagaing Region	1875	1831	98%	8	22	1%	14	1875	18	17	0	0	1	18		
5	Magway Region	1498	1459	97%	11	7	0%	21	1498	44	34	4	1	5	44		
6	Mandalay Region	2468	2329	94%	10	95	4%	34	2468	43	24	15	3	1	43		
7	Shan State (Taunggyi)	401	379	95%	3	16	4%	3	401	4	3	0	0	1	4		
8	Shan State (Kyaingtong)	297	279	94%	4	13	4%	1	297	4	3	0	1	0	4		
9	Shan State (Lashio)	410	377	92%	5	24	6%	4	410	45	33	4	7	1	45		
10	Kayin State	951	856	90%	2	63	7%	30	951	45	29	2	9	5	45		
11	Tanintharyi Region	1249	1113	89%	4	115	9%	17	1249	21	15	2	3	1	21		
12	Bago Region	752	702	93%	8	40	5%	2	752	14	9	2	3	0	14		
13	Bago Region (Pyay)	982	934	95%	6	38	4%	4	982	12	11	1	0	0	12		
14	Mon State	1429	1383	97%	6	36	3%	4	1429	11	8	3	0	0	11		
15	Rakhine State	1283	1241	97%	8	32	2%	2	1283	39	27	4	7	1	39		
16	Yangon Region	2488	2427	98%	7	49	2%	5	2488	111	95	8	8	0	111		
17	Ayeyarwaddy Region	702	691	98%	3	7	1%	1	702	28	24	2	0	2	28		
Regions & States total		17928	17085	95%	90	581	3%	172	17928	459	342	53	43	21	459		
(PC+TBM) TB patients, Unknown HIV status (NTP)		17861	17028	95%	81	581	3%	171	17861	451	337	50	43	21	451		
Other Units		3958	3718	94%	47	161	4%	32	3958	24	17	6	0	1	24		
(PC+TBM) TB patients, Unknown HIV status (Other units)		3810	3601	95%	20	159	4%	30	3810	20	13	6	0	1	20		
Country		21886	20803	95%	137	742	3%	204	21886	483	359	59	43	22	483		
(PC+TBM) TB patients, unknown HIV status (Country)		21671	20629	95%	101	740	3%	201	21671	471	350	56	43	22	471		

TREATMENT OUTCOME OF TB/HIV PATIENTS IN 2010 (2009 COHORT)

Sr.No.	Reporting units	PRIMARY COMPLEX										TB MENINGITIS					
		Total No. Reg. pts.	Completed		Died	Defaulted		Transfer out	Total	Total No. Reg. pts.	Comple- ted	Died	Defaulted	Transfer out	Total		
			No	Rate		No	Rate										
1	NTP	67	57	85%	9	0	0%	1	67	8	5	3	0	0	8		
2	Other Units	148	117	79%	27	2	1%	2	148	4	4	0	0	0	4		
Total		215	174	81%	36	2	1%	3	215	12	9	3	0	0	12		

**NATIONAL TUBERCULOSIS PROGRAMME
TREATMENT OUTCOME OF EP TB PATIENTS (2009 COHORT)**

Sr.No.	Region/State	EP TB PATIENTS													
		Total No.		Completed		Died		Failure		Defaulted		Transfer		Total	
		Reg. pts.	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate			
1	Kachin State	1959	1852	95%	34	2%	0	0%	48	2%	25	1%	1959		
2	Kayah State	72	48		4		0		1		19		72		
3	Chin State	404	378	94%	6	1%	0	0%	17	4%	3	1%	404		
4	Sagaing Region	782	710	91%	40	5%	3	0%	24	3%	5	1%	782		
5	Magway Region	52	42		6		0		3		1		52		
6	Mandalay Region	1119	935	84%	85	8%	0	0%	73	7%	26	2%	1119		
7	Shan State (Taunggyi)	319	278	87%	21	7%	2	1%	15	5%	3	1%	319		
8	Shan State (Kyaingtong)	171	160	94%	1	1%	0	0%	7	4%	3	2%	171		
9	Shan State (Lashio)	255	210	82%	16	6%	1	0%	24	9%	4	2%	255		
10	Kayin State	80	65	81%	2	3%	0	0%	11	14%	2	3%	80		
11	Tanintharyi Region	0	0		0		0		0		0		0		
12	Bago Region	404	347	86%	25	6%	0	0%	30	7%	2	0%	404		
13	Bago Region (Pyay)	158	152	96%	5	3%	0	0%	1	1%	0	0%	158		
14	Mon State	173	154	89%	8	5%	0	0%	8	5%	3	2%	173		
15	Rakhine State	625	522	84%	19	3%	0	0%	69	11%	15	2%	625		
16	Yangon Region	830	759	91%	17	2%	4	0%	27	3%	23	3%	830		
17	Ayeyarwaddy Region	695	628	90%	28	4%	1	0%	24	3%	14	2%	695		
	Regions & States total	8098	7240	89%	317	4%	11	0%	382	5%	148	2%	8098		
	EP TB patients, Unknown HIV status (NTP)	7757	6974	90%	266	3%	11	0%	364	5%	142	2%	7757		
	Other Units	1229	970	79%	141	11%	7	1%	70	6%	41	3%	1229		
	EP TB patients, Unknown HIV status (Other units)	629	527	84%	44	7%	0	0%	41	7%	17	3%	629		
	Country	9327	8210	88%	458	5%	18	0%	452	5%	189	2%	9327		
	EP TB patients, unknown HIV status (Country)	8386	7501	89%	310	4%	11	0%	405	5%	159	2%	8386		

TREATMENT OUTCOMES OF TB/HIV PATIENTS IN 2010 (2009 COHORT)														
EP TB PATIENTS														
Sr.No.	Reporting units	Total No.		Completed		Died		Failure		Defaulted		Transfer		Total
		Reg. pts.	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate		
		1	NTP	341	266	78%	51	15%	0	0%	18	5%	6	2%
2	Other Units	600	443	74%	97	16%	7	1%	29	5%	24	4%	600	
	Total	941	709	75%	148	16%	7	1%	47	5%	30	3%	941	

**NATIONAL TUBERCULOSIS PROGRAMME
TREATMENT OUTCOME OF HILAR LYMPHADENOPATHY TB PATIENTS (2009 COHORT)**

Sr.No.	Region/State	HILAR LYMPHADENOPATHY TB PATIENTS													
		Total No.		Completed		Died		Failure		Defaulted		Transfer		Total	
		Reg. pts.	No.	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate		
1	Kachin State	1831	1754	96%	19	1%	0	0%	40	2%	18	1%	1831		
2	Kayah State	0	0	#DIV/0!	0	0%	0	0%	0	0%	0	0%	0		
3	Chin State	643	634	99%	4	1%	0	0%	2	0%	3	0%	643		
4	Sagaing Region	1023	998	98%	4	0%	0	0%	14	1%	7	0%	1023		
5	Magway Region	856	820	96%	10	1%	0	0%	21	2%	5	1%	856		
6	Mandalay Region	174	156	90%	3	2%	0	0%	13	7%	2	1%	174		
7	Shan State (Taunggyi)	97	92	95%	0	0%	0	0%	5	5%	0	0%	97		
8	Shan State (Kyaingtong)	388	350	90%	5	1%	0	0%	32	8%	1	0%	388		
9	Shan State (Lashio)	245	207	84%	2	1%	0	0%	28	11%	8	3%	245		
10	Kayin State	0	0	#DIV/0!	0	0%	0	0%	0	0%	0	0%	0		
11	Tanintharyi Region	55	51	93%	1	2%	0	0%	3	5%	0	0%	55		
12	Bago Region	54	51	94%	0	0%	0	0%	2	4%	1	2%	54		
13	Bago Region (Pyay)	491	463	94%	12	2%	0	0%	13	3%	3	1%	491		
14	Mon State	383	325	85%	22	6%	0	0%	27	7%	9	2%	383		
15	Rakhine State	378	372	98%	4	1%	0	0%	2	1%	0	0%	378		
16	Yangon Region	1430	1400	98%	9	1%	0	0%	19	1%	2	0%	1430		
17	Ayeyarwaddy Region	8048	7673	95%	95	1%	0	0%	221	3%	59	1%	8048		
Regions and States total															
Hilar TB patients, Unknown HIV status (NTP)		8021	7650	95%	91	1%	0	0%	221	3%	59	1%	8021		
Other Units		2335	2203	94%	51	2%	0	0%	57	2%	24	1%	2335		
Hilar TB patients, Unknown HIV status (Other units)		2246	2134	95%	38	2%	0	0%	52	2%	22	1%	2246		
Country		10383	9876	95%	146	1%	0	0%	278	3%	83	1%	10383		
Hilar TB patients, unknown HIV status (Country)		10267	9784	95%	129	1%	0	0%	273	3%	81	1%	10267		

TREATMENT OUTCOMES OF TB/HIV PATIENTS IN 2010 (2009 COHORT)

Sr.No.	Reporting units	HILAR LYMPHADENOPATHY TB PATIENTS													
		Total No.		Completed		Died		Failure		Defaulted		Transfer		Total	
		Reg. pts.	No.	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate		
1	NTP	27	23	85%	4	15%	0	0%	0	0%	0	0%	27		
2	Other Units	89	69	78%	13	15%	0	0%	5	6%	2	2%	89		
Total		116	92	79%	17	15%	0	0%	5	4%	2	2%	116		

CASE FINDING ACTIVITIES OF OTHER REPORTING UNITS (2010)

Block-1

Other reporting units

Sr.No.	Reporting units	PULMONARY TUBERCULOSIS														Other reporting units							
		SMEAR POSITIVE														Total							
		New Cases						Previously treated cases						Smear Negative				Total					
		Relapses						TAD						TAF				Total					
		M	F	T	M	F	T	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1	Aung San Hos:	41	13	54	24	12	11	3	29	16	149	27	15	42	25	13	38	48	6	205	78	283	
2	Patheingyi Hos:	19	8	27	12	2	4	1	10	1	57	29	13	42	4	1	5	18	5	96	31	127	
3	East YGH	5	6	11	0	0	0	0	0	0	11	4	4	8	75	46	121	0	0	84	56	140	
4	Mingalardon Hos:	46	32	78	10	3	1	0	12	1	105	344	138	482	63	30	93	144	40	620	244	864	
5	Wabargi Hospital (N/Okkalapa)	112	53	165	14	8	0	1	11	4	203	310	155	465	276	148	424	55	25	778	394	1172	
6	No.1MBH (PynOoLwin)	69	10	79	43	2	0	0	1	0	125	102	17	119	30	12	42	5	0	250	41	291	
7	1000 bedded hospital (Naypyitaw)	106	44	150	19	4	3	0	3	1	180	233	99	332	156	122	278	37	12	557	282	839	
8	MSF-H (Ygn)	146	73	219	24	13	0	1	9	12	278	142	93	235	152	78	230	87	49	560	319	879	
9	MSF-H (Kachin)	186	90	276	25	7	7	2	20	7	344	241	159	400	100	54	154	70	23	649	342	991	
10	PSI	3640	1964	5604	318	125	31	7	149	80	6314	4649	3204	7853	1304	1109	2413	55	36	10146	6525	16671	
11	MSF-H (Shan-north)	101	28	129	11	4	2	0	11	4	161	115	75	190	45	29	74	32	14	317	154	471	
12	MSF-H (Rakhine)	38	16	54	1	0	0	0	2	0	57	38	21	59	6	8	14	14	2	99	47	146	
13	MSF-CH	107	58	165	14	5	4	1	12	6	207	62	48	110	42	38	80	0	0	241	156	397	
14	MMA	430	221	651	44	18	5	1	7	5	731	677	433	1110	189	145	334	29	12	1381	835	2216	
15	AHRN (Shan North)	108	26	134	5	1	5	1	11	2	159	45	11	56	48	17	65	9	1	231	59	290	
16	Thingangyun Sanpya Hos:	2	3	5	2	0	0	0	0	0	7	14	9	23	1	3	4	2	2	21	17	38	
17	Central Jail Mandalay	12	9	21	3	1	0	0	0	0	25	13	5	18	5	0	5	1	0	34	15	49	
18	Medecins du monde	30	9	39	2	1	2	0	5	1	50	78	17	95	72	15	87	0	0	189	43	232	
19	New YGH	17	8	25	6	3	0	0	2	1	37	44	25	69	14	21	35	4	0	87	58	145	
20	West YGH	15	3	18	16	6	1	1	1	0	43	68	54	122	10	10	20	2	1	113	75	188	
	Total	5230	2674	7904	593	215	76	19	295	141	9243	7235	4595	11630	2617	1899	4516	612	228	16658	9771	26429	

AGE AND SEX DISTRIBUTION OF NEW SMEAR POSITIVE TB PATIENTS

Sr.No	Reporting units	AGE GROUP (YEAR)																		Other reporting unit				TOTAL
		0-14		15-24		25-34		35-44		45-54		55-64		≥ 65		M	F	M	F					
		M	F	M	F	M	F	M	F	M	F	M	F											
1	Aung San Hos:	0	0	2	2	8	2	13	2	11	4	5	3	2	0	41	13	54						
2	Patheingyi Hos:	0	0	0	2	8	1	3	1	3	0	4	1	1	3	19	8	27						
3	East YGH	0	0	0	1	0	0	0	1	3	4	1	0	0	0	5	6	11						
4	Mingalardon Hos:	0	0	1	2	28	23	16	7	1	0	0	0	0	0	46	32	78						
5	Wabargi Hospital (N/Okkalapa)	0	0	10	4	54	27	35	16	10	6	2	0	1	0	112	53	165						
6	No.1MBH (PyinOolwin)	0	0	10	2	22	1	25	4	7	2	4	0	1	1	69	10	79						
7	1000 bedded hospital (Naypyitaw)	0	0	12	8	25	12	25	4	23	9	16	5	5	6	106	44	150						
8	MSF-H (Ygn)	1	1	9	10	66	31	45	22	15	6	6	3	4	0	146	73	219						
9	MSF-H (Kachin)	2	4	14	9	75	36	69	25	22	13	3	2	1	1	186	90	276						
10	PSI	17	31	463	372	882	477	871	349	687	325	429	250	291	160	3640	1964	5604						
11	MSF-H (Shan-north)	0	0	11	5	44	10	33	7	10	6	2	0	1	0	101	28	129						
12	MSF-H (Rakhine)	1	1	3	5	12	1	10	7	8	2	1	0	3	0	38	16	54						
13	MSF-CH	0	1	3	7	26	13	31	9	22	17	15	4	10	7	107	58	165						
14	MMA	0	2	49	50	111	55	106	37	79	40	57	19	28	18	430	221	651						
15	AHRN (Shan North)	0	1	17	7	23	6	30	4	22	4	12	4	4	0	108	26	134						
16	Thingangyun Sanpya Hos:	0	0	1	0	1	0	0	2	0	1	0	0	0	0	2	3	5						
17	Central Jail Mandalay	0	0	0	0	5	4	5	3	0	2	1	0	1	0	12	9	21						
18	Medecins du monde	0	0	3	1	20	5	5	2	2	0	0	1	0	0	30	9	39						
19	New YGH	0	0	0	3	4	4	3	1	6	0	3	0	1	0	17	8	25						
20	West YGH	0	0	1	0	6	1	2	1	0	0	4	1	2	0	15	3	18						
	Total	21	41	610	490	1420	709	1327	504	931	441	565	293	356	196	5230	2674	7904						

Block-2

Other reporting unit

PRIMARY COMPLEX AND TB MENINGITIS CASES BY AGE GROUP

Sr.No	Reporting Units	PC and TBM cases by age group										Total			
		PC			Hilar Lymphadenopathy			TBM			Total				
		0-4	<15	≥15	0-4	5-14	≥15	0-4	<15	≥15					
													Total		
1	Aung San Hos:	0	2	0	2	0	0	2	0	0	2	0	0	1	1
2	Patheingyi Hos:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	East YGH	70	50	0	120	0	0	0	0	0	0	0	0	0	0
4	Mingalardon Hos:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	Wabargi Hospital (N/Okkalapa)	88	91	17	196	4	7	0	11	0	0	0	0	0	0
6	No.1MBH (PyinOoLwin)	30	22	0	52	0	0	0	0	0	0	0	0	0	0
7	1000 bedded hospital (Naypyitaw)	90	77	0	167	10	4	15	29	3	4	2	9		
8	MSF-H (Ygn)	7	14	0	21	0	2	5	7	0	0	0	8		
9	MSF-H (Kachin)	12	13	77	102	7	0	1	8	0	0	0	8		
10	PSI	1457	1287	17	2761	704	531	7	1242	19	23	90	132		
11	MSF-H (Shan-north)	0	0	0	0	0	0	0	0	0	0	0	0		
12	MSF-H (Rakhine)	0	0	0	0	0	0	0	0	0	0	0	0		
13	MSF-CH	9	6	0	15	2	6	26	34	0	0	2	2		
14	MMA	190	317	3	510	117	103	14	234	1	0	0	1		
15	AHRN (Shan North)	0	0	0	0	1	0	14	15	0	0	1	1		
16	Thingangyun Sanpya Hos:	7	6	0	13	0	0	1	1	0	0	0	0		
17	Central Jail Mandalay	0	0	0	0	0	0	0	0	0	0	0	0		
18	Medecins du monde	0	0	0	0	0	0	0	0	0	0	0	2		
19	New YGH	0	0	0	0	0	0	0	0	0	0	0	0		
20	West YGH	37	18	12	67	0	0	1	1	0	1	0	1		
Total		1997	1903	126	4026	845	653	86	1584	23	28	114	165		

NOTIFIED TB PATIENTS ACCORDING TO CATEGORY OF REGIMENS (2010)

Other reporting Unit

Sr.No	Reporting units	CAT - 1			CAT - 2				CAT - 3			TOTAL		
		Sputum Smear Positive	Sputum Smear Negative	EP Seriously ill	Total	Relapses	Treatment after Default	Treatment after Failure	Others (Failure)	Total	P		EP	Total
1	Aung San Hos:	54	43	5	102	36	14	45	100	195	0	2	2	299
2	Patheingyi Hos:	27	40	5	72	15	6	11	23	55	1	1	2	129
3	East YGH	11	9	1	21	1	0	0	1	2	0	120	120	143
4	Mingalardon Hos:	75	468	93	636	13	1	7	184	205	0	0	0	841
5	Wabargi Hospital (N/Okkalapa)	169	486	416	1071	22	1	15	97	135	73	27	100	1306
6	No.1MBH (PyinOoLwin)	79	110	8	197	45	0	1	4	50	20	34	54	301
7	1000 bedded hospital (Naypyitaw)	157	293	86	536	24	3	4	50	81	44	190	234	851
8	MSF-H (Ygn)	221	219	230	670	37	1	21	143	202	18	1	19	891
9	MSF-H (Kachin)	283	395	138	816	33	9	27	93	162	13	19	32	1010
10	PSI	5649	3262	256	9167	455	40	236	94	825	4657	2180	6837	16829
11	MSF-H (Shan-north)	132	203	75	410	15	2	15	47	79	0	1	1	490
12	MSF-H (Rakhine)	54	57	10	121	3	0	2	13	18	3	7	10	149
13	MSF-CH	169	111	74	354	42	6	18	0	66	0	0	0	420
14	MMA	655	603	74	1332	61	6	12	30	109	516	296	812	2253
15	AHRN (Shan North)	134	57	59	250	6	6	13	17	42	0	0	0	292
16	Thingangyun Sanpya Hos:	1	3	1	5	1	0	0	4	5	3	0	3	13
17	Central Jail Mandalay	22	18	5	45	4	0	0	1	5	0	0	0	50
18	Medecins du monde	42	87	76	205	27	3	8	0	38	0	0	0	243
19	New YGH	25	66	33	124	12	0	3	4	19	0	2	2	145
20	West YGH	10	46	12	68	18	2	1	3	24	51	1	52	144
	Total	7969	6576	1657	16202	870	100	439	908	2317	5399	2881	8280	26799

Block-4 LABORATORY PERFORMANCE(2010)

Sr.No	Reporting units	A		B		C		D	
		No. of suspects(Dx) examined by microscopy for case finding		No. of smear positive pts detected out of suspects (Dx)		No. of patients examined by microscopy for follow-up		No. of smear positive out of follow-up patients	
		No. of Pts	No. of slides	No. of Pts	No. of slides	No. of Pts	No. of slides	No. of Pts	No. of slides
1	Aung San Hos:	531	1493	331	869	1934	3869	603	1036
2	Patheingyi Hos:	1227	3791	313	773	852	1687	140	482
3	East YGH	218	669	11	33	65	195	8	24
4	Mingalardon Hos:	676	1899	84	204	706	1406	11	22
5	Wabargi Hospital (N/Okkalapa)	2060	5097	174	461	1030	2042	34	68
6	No.1MBH (PyinOoLwin)	544	1711	127	200	698	2092	14	28
7	1000 bedded hospital (Naypyitaw)	599	1656	105	277	635	1263	21	38
8	MSF-H (Ygn)	6147	17704	1271	3294	1770	5087	118	231
9	MSF-H (Kachin)	3835	10613	552	1527	1727	4537	197	388
10	PSI	20357	60564	3599	10175	15166	30377	1321	2430
11	MSF-H (Shan-north)	1910	5730	342	1026	1129	3387	101	303
12	MSF-H (Rakhine)	604	1744	38	105	94	281	7	14
13	MSF-CH	1210	2947	198	426	588	1189	104	207
14	MMA	3778	10267	707	2114	2967	5943	306	605
15	AHRN (Shan North)	1342	3099	160	327	436	823	50	77
16	Thingangyun Sanpya Hos:	11	33	2	6	27	54	8	16
17	Central Jail Mandalay	85	255	25	75	79	237	3	9
18	Medecins du monde	834	2167	84	181	252	574	8	17
19	New YGH	700	1949	76	207	471	931	14	27
20	West YGH	92	276	10	30	28	56	3	6
	Total	46760	133664	8209	22310	30654	66030	3071	6028

SPUTUM CONVERSION OF NEW SMEAR POSITIVE PULMONARY TB PATIENTS (2010)

Sr.No.	Reporting units	Registered cases	Smear not done at eighter 2or 3 months	Sputum conversion at						Remaining positive at 3 month	TOTAL 2+3+4+5
				2 month		3 month		No	%		
				No	%	No	%				
1	Aung San Hos:	54	23	26	48%	2	4%	3	54		
2	Patheingyi Hos:	27	12	12	44%	3	11%	0	27		
3	East YGH	11	0	7	64%	2	18%	2	11		
4	Mingalardon Hos:	78	35	43	55%	0	0%	0	78		
5	Wabargi Hospital (N/Okkalapa)	165	40	124	75%	0	0%	1	165		
6	No.1MBH (PyinOoLwin)	79	9	70	89%	0	0%	0	79		
7	1000 bedded hospital (Naypyitaw)	150	29	104	69%	8	5%	9	150		
8	MSF-H (Ygn)	219	36	162	74%	9	4%	12	219		
9	MSF-H (Kachin)	276	53	153	55%	34	12%	36	276		
10	PSI	5604	635	4238	76%	518	9%	213	5604		
11	MSF-H (Shan-north)	129	21	73	57%	8	6%	27	129		
12	MSF-H (Rakhine)	54	7	16	30%	7	13%	24	54		
13	MSF-CH	165	6	125	76%	0	0%	34	165		
14	MMA	651	28	543	83%	58	9%	22	651		
15	AHRN (Shan North)	134	8	100	75%	17	13%	9	134		
16	Thingangyun Sanpya Hos:	5	0	5	100%	0	0%	0	5		
17	Central Jail Mandalay	21	0	16	76%	4	19%	1	21		
18	Medecins du monde	39	4	30	77%	4	10%	1	39		
19	New YGH	25	3	21	84%	1	4%	0	25		
20	West YGH	18	5	9	50%	2	11%	2	18		
Total		7904	954	5877	74%	677	9%	396	7904		

TREATMENT OUTCOMES OF NEW SMEAR POSITIVE TB PATIENTS(2009 C0HORT)

Other reporting unit

Sr. No	Reporting units	SMEAR POSITIVE CASES														
		Total	Cured		Completed		TSR		Died		Failure		Defaulted		Transfer out	
			No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate
1	Aung San Hos:	70	23	33%	3	4%	37%	18	26%	9	13%	13	19%	4	6%	70
2	Patheingyi Hos:	21	4	19%	1	5%	24%	0	0%	0	0%	1	5%	15	71%	21
3	East YGH	15	13	87%	0	0%	87%	0	0%	0	0%	2	13%	0	0%	15
4	Mingalardon Hos:	69	30	43%	3	4%	48%	34	49%	1	1%	0	0%	1	1%	69
5	Wabargi Hosipital (N/Okkalapa)	192	105	55%	3	2%	56%	67	35%	8	4%	7	4%	2	1%	192
6	No.1MBH (P YinOoLwin)	116	98	84%	0	0%	84%	18	16%	0	0%	0	0%	0	0%	116
7	1000 bedded hospital (Naypyitaw)	134	109	81%	1	1%	82%	2	1%	2	1%	10	7%	10	7%	134
8	MSF-H (Ygn)	120	87	73%	3	3%	75%	14	12%	8	7%	7	6%	1	1%	120
9	MSF-H (Kachin)	181	91	50%	31	17%	67%	13	7%	15	8%	21	12%	10	6%	181
10	PSI	5261	3908	74%	596	11%	86%	239	5%	172	3%	226	4%	120	2%	5261
11	MSF-H (Shan-north)	205	109	53%	13	6%	60%	18	9%	21	10%	38	19%	6	3%	205
12	MSF-H (Rakhine)	46	28	61%	11	24%	85%	4	9%	2	4%	1	2%	0	0%	46
13	MSF- CH	287	198	69%	21	7%	76%	24	8%	22	8%	17	6%	5	2%	287
14	MMA	521	409	79%	47	9%	88%	36	7%	14	3%	11	2%	4	1%	521
15	AHRN (Shan North)	49	30	61%	5	10%	71%	7	14%	2	4%	4	8%	1	2%	49
16	Thingangyun Sanpya Hos:	1	1	100%	0	0%	100%	0	0%	0	0%	0	0%	0	0%	1
17	Central Jail Mandalay	28	21	75%	0	0%	75%	7	25%	0	0%	0	0%	0	0%	28
18	Medecins du monde	13	3	23%	2	15%	38%	5	38%	1	8%	2	15%	0	0%	13
19	New YGH	64	48	75%	0	0%	75%	6	9%	2	3%	4	6%	4	6%	64
20	West YGH	10	9	90%	0	0%	90%	0	0%	0	0%	0	0%	1	10%	10
	Total	7403	5324	72%	740	10%	82%	512	7%	279	4%	364	5%	184	2%	7403

Sr. No	Reporting units	SMEAR NEGATIVE CASES													
		Total		Completed		Died		Failure		Defaulted		Transfer out		Total	
		No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate		
1	Aung San Hos:	40	21	53%	6	15%	0	0%	3	8%	10	25%	40		
2	Patheingyi Hos:	50	12	24%	0	0%	0	0%	5	10%	33	66%	50		
3	East YGH	33	29	88%	0	0%	0	0%	2	6%	2	6%	33		
4	Mingalardon Hos:	344	202	59%	113	33%	2	1%	19	6%	8	2%	344		
5	Wabargi Hospital (N/Okkalapa)	314	176	56%	112	36%	5	2%	16	5%	5	2%	314		
6	No.1MBH (PynOoLwin)	111	110	99%	1	1%	0	0%	0	0%	0	0%	111		
7	1000 bedded hospital (Naypyitaw)	328	192	59%	1	0%	1	0%	102	31%	32	10%	328		
8	MSF-H (Ygn)	209	167	80%	20	10%	3	1%	16	8%	3	1%	209		
9	MSF-H (Kachin)	252	187	74%	29	12%	5	2%	27	11%	4	2%	252		
10	PSI	4285	3556	83%	270	6%	44	1%	312	7%	103	2%	4285		
11	MSF-H (Shan-north)	157	108	69%	24	15%	1	1%	19	12%	5	3%	157		
12	MSF-H (Rakhine)	49	35	71%	12	24%	1	2%	1	2%	0	0%	49		
13	MSF-CH	148	129	87%	13	9%	0	0%	5	3%	1	1%	148		
14	MMA	491	405	82%	46	9%	3	1%	26	5%	11	2%	491		
15	AHRN (Shan North)	34	28	82%	4	12%	0	0%	1	3%	1	3%	34		
16	Thingangyun Sanpya Hos:	0											0		
17	Central Jail Mandalay	6	5	83%	1	17%	0	0%	0	0%	0	0%	6		
18	Medecins du monde	83	66	80%	10	12%	1	1%	4	5%	2	2%	83		
19	New YGH	108	78	72%	17	16%	0	0%	11	10%	2	2%	108		
20	West YGH	71	64	90%	2	3%	0	0%	3	4%	2	3%	71		
	Total	7113	5570	78%	681	10%	66	1%	572	8%	224	3%	7113		

TREATMENT OUTCOME OF RELAPSES (2009 COHORT)

Sr. No	Reporting units	RELAPSE CASES															
		Total		Cured		Completed		Died		Failure		Defaulted		Transfer out			
		No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate		
1	Aung San Hos:	45	6	13%	4	9%	4	9%	4	9%	9	20%	17	38%	5	11%	45
2	Patheingyi Hos:	31	3	10%	0	0%	2	6%	4	13%	4	13%	2	6%	20	65%	31
3	East YGH	6	0	0%	3	50%	3	50%	3	50%	0	0%	0	0%	0	0%	6
4	Mingalardon Hos:	16	5	31%	2	13%	9	56%	0	0%	0	0%	0	0%	0	0%	16
5	Wabargi Hospital (N/Okkalapa)	18	8	44%	3	17%	4	22%	3	17%	3	17%	0	0%	0	0%	18
6	No.1MBH (PyinOoLwin)	52	52	100%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	52
7	1000 bedded hospital (Naypyitaw)	9	2	22%	3	33%	0	0%	1	11%	1	11%	1	11%	2	22%	9
8	MSF-H (Ygn)	127	68	54%	20	16%	25	20%	3	2%	3	2%	8	6%	3	2%	127
9	MSF-H (Kachin)	58	11	19%	29	50%	9	16%	2	3%	2	3%	7	12%	0	0%	58
10	PSI	394	269	68%	36	9%	35	9%	25	6%	12	3%	17	4%	17	4%	394
11	MSF-H (Shan-north)	32	9	28%	11	34%	3	9%	3	9%	2	6%	4	13%	4	13%	32
12	MSF-H (Rakhine)	9	1	11%	5	56%	1	11%	0	0%	1	11%	1	11%	1	11%	9
13	MSF-CH	54	10	19%	17	31%	15	28%	5	9%	6	11%	1	2%	1	2%	54
14	MMA	50	35	70%	5	10%	2	4%	8	16%	0	0%	0	0%	0	0%	50
15	AHRN (Shan North)	2	0	0%	0	0%	1	50%	0	0%	0	0%	0	0%	1	50%	2
16	Thingangyun Sanyya Hos:	0															0
17	Central Jail Mandalay	2	2	100%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	2
18	Medecins du monde	22	2	9%	14	64%	2	9%	0	0%	1	5%	3	14%	3	14%	22
19	New YGH	3	1	33%	0	0%	0	0%	0	0%	0	0%	0	0%	2	67%	3
20	West YGH	23	0	0%	22	96%	0	0%	0	0%	1	4%	0	0%	0	0%	23
	Total	953	484	51%	174	18%	115	12%	63	7%	58	6%	59	6%	59	6%	953

TREATMENT OUTCOMES OF TREATMENT AFTER DEFAULTER (2009 COHORT)

Sr.No.	Reporting units	TOTAL	Other reporting unit												
			Cured		Completed		Died		Failure		Defaulted		Transfer		Total
			No	CR	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	
1	Aung San Hos:	12	0	0%	1	8%	5	42%	3	25%	2	17%	1	8%	12
2	Patheingyi Hos:	2	0	0%	0	0%	0	0%	0	0%	1	50%	1	50%	2
3	East YGH	1	1	100%	0	0%	0	0%	0	0%	0	0%	0	0%	1
4	Mingalardon Hos:	1	0	0%	0	0%	1	100%	0	0%	0	0%	0	0%	1
5	Wabargi Hosipital (N/Okkalapa)	4	1	25%	0	0%	3	75%	0	0%	0	0%	0	0%	4
6	No.1MBH (PyinOolwin)	0													0
7	1000 bedded hospital (Naypyitaw)	4	2	50%	0	0%	0	0%	0	0%	1	25%	1	25%	4
8	MSF-H (Ygn)	16	4	25%	2	13%	6	38%	0	0%	2	13%	2	13%	16
9	MSF-H (Kachin)	8	4	50%	2	25%	2	25%	0	0%	0	0%	0	0%	8
10	PSI	46	32	70%	6	13%	0	0%	3	7%	5	11%	0	0%	46
11	MSF-H (Shan-north)	11	1	9%	3	27%	1	9%	2	18%	2	18%	2	18%	11
12	MSF-H (Rakhine)	1	0	0%	1	100%	0	0%	0	0%	0	0%	0	0%	1
13	MSF-CH	5	2	40%	2	40%	1	20%	0	0%	0	0%	0	0%	5
14	MMA	10	6	60%	1	10%	2	20%	0	0%	0	0%	1	10%	10
15	AHRN (Shan North)	8	1	13%	4	50%	0	0%	0	0%	2	25%	1	13%	8
16	Thingangyun Sanpya Hos:	0													0
17	Central Jail Mandalay	0													0
18	Medecins du monde	6	0	0%	2	33%	1	17%	0	0%	3	50%	0	0%	6
19	New YGH	0													0
20	West YGH	8	0	0%	7	88%	0	0%	0	0%	1	13%	0	0%	8
	Total	143	54	38%	31	22%	22	15%	8	6%	19	13%	9	6%	143

TREATMENT OUTCOMES OF TREATMENT AFTER FAILURE (2009 COHORT)

Sr.No.	Reporting units	TOTAL	Cured		Completed		Died		Failure		Defaulted		Transfer		Total
			No.	CR	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	
1	Aung San Hos:	22	1	5%	1	5%	4	18%	6	27%	6	27%	4	18%	22
2	Patheingyi Hos:	10	1	10%	0	0%	0	0%	0	0%	1	10%	8	80%	10
3	East YGH	0													0
4	Mingalardon Hos:	6	1	17%	1	17%	4	67%	0	0%	0	0%	0	0%	6
5	Wabargi Hosipital (N/Okkalapa)	19	3	16%	1	5%	12	63%	2	11%	1	5%	0	0%	19
6	No.1MBH (PyinOoLwin)	0													0
7	1000 bedded hospital (Naypyitaw)	6	2	33%	0	0%	1	17%	0	0%	3	50%	0	0%	6
8	MSF-H (Ygn)	11	5	45%	1	9%	4	36%	1	9%	0	0%	0	0%	11
9	MSF-H (Kachin)	19	5	26%	6	32%	2	11%	1	5%	4	21%	1	5%	19
10	PSI	193	115	60%	16	8%	11	6%	23	12%	18	9%	10	5%	193
11	MSF-H (Shan-north)	44	18	41%	0	0%	1	2%	12	27%	5	11%	8	18%	44
12	MSF-H (Rakhine)	3	2	67%	1	33%	0	0%	0	0%	0	0%	0	0%	3
13	MSF-CH	30	18	60%	4	13%	3	10%	4	13%	1	3%	0	0%	30
14	MMA	15	8	53%	1	7%	0	0%	6	40%	0	0%	0	0%	15
15	AHRN (Shan North)	4	1	25%	1	25%	0	0%	0	0%	2	50%	0	0%	4
16	Thingangyun Sanpya Hos:	0													0
17	Central Jail Mandalay	0													0
18	Medecins du monde	4	2	50%	1	25%	0	0%	0	0%	1	25%	0	0%	4
19	New YGH	2	1	50%	0	0%	0	0%	0	0%	0	0%	1	50%	2
20	West YGH	1	0	0%	1	100%	0	0%	0	0%	0	0%	0	0%	1
	Total	389	183	47%	35	9%	42	11%	55	14%	42	11%	32	8%	389

TREATMENT OUTCOME OF HILAR LYMPHADENOPATHY (2009 cohort)

Other reporting unit

Sr.	TOWNSHIP	Hilar Lymphadenopathy													
		Total No.		Completed		Died		Failure		Defaulted		Transfer out		Total	
		Reg: pts:	No	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate
1	Aung San Hos:	0													0
2	Patheingyi Hos:	0	0	90%	0	3%	0	3%	0	3%	0	0%	0	0%	0
3	East YGH	0													0
4	Mingalardon Hos:	0													0
5	Wabargi Hospital (N/Okkalapa)	7	4	57%	2	29%	0	0%	1	14%	0	0%	0	0%	7
6	No.1MBH (PyinOoLwin)	0													0
7	1000 bedded hospital (Naypyitaw)	7	6	86%	0	0%	0	0%	1	14%	0	0%	0	0%	7
8	MSF-H (Ygn)	0													0
9	MSF-H (Kachin)	78	61	78%	11	14%	0	0%	4	5%	2	3%	2	3%	78
10	PSI	2125	2021	95%	32	2%	0	0%	50	2%	22	1%	22	1%	2125
11	MSF-H (Shan-north)	0													0
12	MSF-H (Rakhine)	0													0
13	MSF-CH	75	70	93%	4	5%	0	0%	1	1%	0	0%	0	0%	75
14	MMA	36	36	100%	0	0%	0	0%	0	0%	0	0%	0	0%	36
15	AHRN (Shan North)	7	5	71%	2	29%	0	0%	0	0%	0	0%	0	0%	7
16	Thingangyun Sanpya Hos:	0													0
17	Central Jail Mandalay	0													0
18	Medecins du monde	0													0
19	New YGH	0													0
20	West YGH	0													0
	Total	2335	2203	94%	51	2%	0	0%	57	2%	24	1%	24	1%	2335

TREATMENT OUTCOME OF EP (2009 cohort)

Sr.	TOWNSHIP	EP													
		Total No.		Completed		Died		Failure		Defaulted		Transfer out		Total	
		Reg: pts:	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate			
1	Aung San Hos:	5	3	60%	1	20%		0%	0	0%	1	20%	5		
2	Patheingyi Hos:	0	0		0				0		0		0		
3	East YGH	0	0		0				0		0		0		
4	Mingalardon Hos:	51	29	57%	20	39%		0%	2	4%	0	0%	51		
5	Wabargi Hosipital (N/Okkalapa)	330	268	81%	45	14%	2	1%	6	2%	9	3%	330		
6	No.1MBH (P YinOolwin)	4	4	100%	0	0%		0%	0	0%	0	0%	4		
7	1000 bedded hospital (Naypyitaw)	99	71	72%	0	0%		0%	19	19%	9	9%	99		
8	MSF-H (Ygn)	176	139	79%	15	9%	2	1%	11	6%	9	5%	176		
9	MSF-H (Kachin)	169	117	69%	27	16%		0%	16	9%	9	5%	169		
10	PSI	0	0		0				0		0		0		
11	MSF-H (Shan-north)	61	46	75%	10	16%		0%	5	8%	0	0%	61		
12	MSF-H (Rakhine)	37	29	78%	5	14%		0%	3	8%	0	0%	37		
13	MSF-CH	138	113	82%	14	10%	3	2%	6	4%	2	1%	135		
14	MMA	105	103	98%	1	1%		0%	1	1%	0	0%	105		
15	AHRN (Shan North)	13	11	85%	1	8%		0%	1	8%	0	0%	13		
16	Thingangyun Sanpya Hos:	0	0		0				0		0		0		
17	Central Jail Mandalay	0	0		0				0		0		0		
18	Medecins du monde	0	0		0				0		0		0		
19	New YGH	41	37	90%	2	5%		0%	0	0%	2	5%	41		
20	West YGH	0	0		0				0		0		0		
Total		1229	970	79%	141	11%	7	1%	70	6%	41	3%	1229		

TREATMENT OUTCOMES OF OTHER CASES (2009 COHORT)

Sr. No	Reporting units	OTHER CASES															
		Total		Cured		Completed		Died		Failure		Defaulted		Transfer out		Total	
		No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate		
1	Aung San Hos:	93	4%	4	4%	18	19%	9	10%	21	23%	22	24%	19	20%	93	
2	Pathingyi Hos:	63	0%	0	0%	4	6%	6	10%	3	5%	15	24%	35	56%	63	
3	East YGH	0														0	
4	Mingalardon Hos:	153	0%	0	0%	78	51%	63	41%	1	1%	7	5%	4	3%	153	
5	Wabargi Hospital (N/Okkalapa)	34	0%	0	0%	16	47%	15	44%	1	3%	1	3%	1	3%	34	
6	No.1MBH (PyinOoLwin)	0														0	
7	1000 bedded hospital (Naypyitaw)	13	0%	0	0%	8	62%	1	8%	0	0%	3	23%	1	8%	13	
8	MSF-H (Ygn)	73	0%	0	0%	43	59%	19	26%	2	3%	8	11%	1	1%	73	
9	MSF-H (Kachin)	19	53%	10	53%	2	11%	1	5%	1	5%	5	26%	0	0%	19	
10	PSI	49	0%	0	0%	37	76%	6	12%	0	0%	1	2%	5	10%	49	
11	MSF-H (Shan-north)	16	63%	10	63%	5	31%	1	6%	0	0%	0	0%	0	0%	16	
12	MSF-H (Rakhine)	0														0	
13	MSF-CH	0														0	
14	MMA	31	0%	0	0%	26	84%	3	10%	0	0%	1	3%	1	3%	31	
15	AHRN (Shan North)	4	0%	0	0%	2	50%	0	0%	0	0%	1	25%	1	25%	4	
16	Thingangyun Sanpya Hos:	0														0	
17	Central Jail Mandalay	0														0	
18	Medecins du monde	0														0	
19	New YGH	4	0%	0	0%	4	100%	0	0%	0	0%	0	0%	0	0%	4	
20	West YGH	2	0%	0	0%	2	100%	0	0%	0	0%	0	0%	0	0%	2	
	Total	554	4%	24	4%	245	44%	124	22%	29	5%	64	12%	68	12%	554	

TREATMENT OUTCOMES OF PRIMARY COMPLEX & TB MENINGITIS CASES (2009 COHORT)

Sr. No.	Reporting units	PRIMARY COMPLEX						TB MENINGITIS							
		Total No. Regpts		Completed		Died	Defaulted		Total No. Regpts		Defaulted	Died	Completed	Transfer out	Total
		No	Rate	No	Rate		No	Rate	No	Rate					
1	Aung San Hos:	0													
2	Patheingyi Hos:	0													
3	East YGH	227	68%	0	65	29%	7	227	0	0	0	0	0	0	0
4	Mingalardon Hos:	0													
5	Wabargi Hosipital (N/Okkalapa)	132	78%	25	2	2%	2	132	0	0	0	0	0	0	0
6	No.1MBH (PyinOoLwin)	77	100%	0	0	0%	0	77	0	0	0	0	0	0	0
7	1000 bedded hospital (Naypyitaw)	86	70%	0	23	27%	3	86	2	2	0	0	0	0	2
8	MSF-H (Ygn)	9	100%	0	0	0%	0	9	4	1	2	0	1	4	4
9	MSF-H (Kachin)	1	100%	0	0	0%	0	1	2	2	0	0	0	2	2
10	PSI	2962	97%	21	64	2%	17	2962	11	7	4	0	0	11	11
11	MSF-H (Shan-north)	0						0	1	1	0	0	0	1	1
12	MSF-H (Rakhine)	0						0	0	0	0	0	0	0	0
13	MSF-CH	27	93%	1	1	4%	0	27	1	1	0	0	0	1	1
14	MMA	422	99%	0	4	1%	0	422	0	0	0	0	0	0	0
15	AHRN (Shan North)	2	50%	0	0	0%	1	2	2	2	0	0	0	2	2
16	Thingangyun Sampya Hos:	0						0	0	0	0	0	0	0	0
17	Central Jail Mandalay	0						0	0	0	0	0	0	0	0
18	Medecins du monde	0						0	0	0	0	0	0	0	0
19	New YGH	0						0	0	0	0	0	0	0	0
20	West YGH	13	69%	0	2	15%	2	13	1	1	0	0	0	1	1
Total		3958	94%	47	161	4%	32	3958	24	17	6	0	1	24	24

**NATIONAL TUBERCULOSIS PROGRAMME
REPORTING STATUS (2010)**

Region/State	DOTS Townships	1st Quarter 2010			2nd Quarter 2010			3rd Quarter 2010			4th Quarter 2010			Annual 2010		
		Received	%	not received	Received	%	not received	Received	%	not received	Received	%	not received	Received	%	not received
Kachin State	18	13	72%	5	14	78%	5	14	78%	4	13	72%	5	14	78%	4
Kayah State	7	7	100%	0	7	100%	0	7	100%	0	7	100%	0	7	100%	0
Chin State (South)	4	4	100%	0	4	100%	0	4	100%	0	4	100%	0	4	100%	0
Chin State (North)	5	5	100%	0	5	100%	0	5	100%	0	5	100%	0	5	100%	0
Sagaing Region	37	36	97%	1	37	100%	0	37	100%	0	37	100%	0	37	100%	0
Magway Region	25	25	100%	0	25	100%	0	25	100%	0	25	100%	0	25	100%	0
Mandalay Region	31	31	100%	0	31	100%	0	31	100%	0	31	100%	0	31	100%	0
Shan State (Taunggyi)	21	21	100%	0	21	100%	0	21	100%	0	21	100%	0	21	100%	0
Shan State (Kyaingtong)	10	9	90%	1	9	90%	1	9	90%	1	9	90%	1	9	90%	1
Shan State (Lashio)	24	18	75%	6	18	75%	6	18	75%	6	18	75%	6	18	75%	6
Kayin State	7	7	100%	0	7	100%	0	7	100%	0	7	100%	0	7	100%	0
Tanintharyi Region	10	10	100%	0	10	100%	0	10	100%	0	10	100%	0	10	100%	0
Bago Region	14	14	100%	0	14	100%	0	14	100%	0	14	100%	0	14	100%	0
Bago Region (Pyay)	14	14	100%	0	14	100%	0	14	100%	0	14	100%	0	14	100%	0
Mon State	10	10	100%	0	10	100%	0	10	100%	0	10	100%	0	10	100%	0
Rakhine State	17	17	100%	0	17	100%	0	17	100%	0	17	100%	0	17	100%	0
Yangon Region	45	45	100%	0	45	100%	0	45	100%	0	45	100%	0	45	100%	0
Ayeyanwaddy Region	26	26	100%	0	26	100%	0	26	100%	0	26	100%	0	26	100%	0
Total townships	325	312	96%	13	314	97%	12	314	97%	11	313	96%	12	314	97%	11
				4%			4%			3%			4%			3%

Annual report had not been received from (11) Townships

Kachin State (4) Tsps 1. Nganyan, 2. Hsawlaw, 3. Khaungjanbu, 4. Naungmon

Shan (Lashio) State (6) Tsps 1. Kongyan 2. Nanphant 3. Panwine 4. Mongmaw 5. Manphant 6. Pangyan

Shan (Kengtung) State (1) Tsps 1. Matman

**NATIONAL TUBERCULOSIS PROGRAMME (Myanmar)
EVALUATION OF TB CONTROL ACTIVITIES IN REGIONS & STATES (2009-2010)**

No.of Reported Tsp.	No.of total Tsp.	Region/State	Population	Estimated New S(+) cases	Total New Smear Positive detected	Total notified TB cases	(CDR) NTP only	(CDR) NTP + other unit	Prop: of SS(+) pul:TB cases out of all TB cases	Ratio of NSS+ to NSS (-)cases and EP cases	Ratio of NSS+ to NSS (-)cases	Sputum Positivity Rate	Sputum Conversion Rate	(CR) NTP only	(CR) NTP + other unit	(TSR) NTP only	(TSR) NTP + other unit
14	18	Kachin State	1423260	1494	1186	5255	79%	104%	49%	0.32:1	0.8:1	21%	85%	71%	68%	79%	77%
7	7	Kayah State	292642	307	127	871	41%	41%	23%	0.18:1	0.2:1	7%	84%	83%	83%	85%	85%
9	9	Chin State	501463	527	121	1163	23%	23%	28%	0.13:1	0.3:1	15%	50%	73%	73%	85%	85%
37	37	Sagaing Region	5144153	5401	2685	8261	50%	57%	59%	0.52:1	1.3:1	13%	91%	81%	80%	87%	87%
25	25	Megway Region	4021912	4223	1976	7208	47%	56%	52%	0.43:1	1:1	19%	89%	79%	78%	86%	87%
31	31	Mandalay Region	6398695	6719	3481	11303	52%	67%	51%	0.51:1	0.9:1	21%	85%	70%	70%	84%	83%
21	21	Shan State (Taunggyi)	2038660	2141	802	2510	37%	39%	46%	0.52:1	0.7:1	14%	87%	79%	78%	84%	84%
9	10	Shan State (Kyaingtong)	738592	776	582	2066	75%	80%	39%	0.46:1	0.5:1	20%	86%	64%	64%	80%	80%
18	24	Shan State (Lashio)	2659329	2792	1254	3922	45%	50%	52%	0.51:1	1:1	21%	80%	70%	69%	79%	78%
7	7	Kayin State	1529733	1606	1019	4709	63%	69%	25%	0.29:1	0.3:1	14%	88%	75%	75%	82%	82%
10	10	Tanintharyi Region	1555911	1634	824	5163	50%	66%	35%	0.2:1	0.5:1	17%	84%	73%	73%	80%	80%
14	14	Bago Region	2882202	3026	1749	5583	58%	75%	43%	0.52:1	0.6:1	21%	91%	76%	74%	84%	84%
14	14	Bago Region (Pyay)	1974521	2073	1440	4403	69%	77%	41%	0.53:1	0.6:1	24%	85%	81%	81%	87%	87%
10	10	Mon State	2079864	2184	1637	6291	75%	88%	32%	0.37:1	0.4:1	15%	89%	80%	80%	86%	87%
17	17	Rakhine State	3414671	3585	2292	6737	64%	67%	43%	0.56:1	0.7:1	20%	86%	76%	76%	86%	86%
45	45	Yangon Region	5930690	10053	8296	22873	83%	106%	53%	0.69:1	0.9:1	22%	91%	83%	82%	88%	88%
26	26	Ayeyarwaddy Region	6610793	6941	4943	12656	71%	78%	53%	0.71:1	1:1	20%	93%	82%	81%	89%	89%
314	325	Regions and States	49197091	55482	34414	110974	62%		47%	0.5:1	0.76:1	19%	89%	78%		86%	
20		Other Units			7904	26429			44%	0.48:1	0.67:1	18%	83%	72%		82%	
314		Country	49197091	55482	42318	137403	76%		46%	0.5:1	0.74:1	19%	88%	77%		85%	

Annex-21 (townships list)

NATIONAL TUBERCULOSIS PROGRAMME (Myanmar)
EVALUATION OF TB CONTROL ACTIVITIES IN TOWNSHIPS (2009-2010)

Sr.No	TOWNSHIP	Population	Estimated New S(+) cases	Total New Smear Positive detected	Total notified TB cases	(CDR) NTP only	(CDR) NTP + other unit	Prop: of SS(+) pul:TB cases out of all pul: TB cases	Ratio of NSS+ to NSS (-)cases and EP cases	Ratio of NSS+ to NSS (-)cases	Sputum Positivity Rate	Sputum Conversion Rate	(CR) NTP only	(CR) NTP+ other unit	(TSR) NTP only	(TSR) NTP + other unit
Kachin State																
1	Bahmo	109327	115	104	340	91%	134%	53%	0.46:1	1.1:1	47%	93%	88%	82%	88%	85%
2	Mansi	71490	75	51	144	68%	68%	61%	0.67:1	1.3:1	41%	92%	80%	80%	82%	82%
3	Momauk	94823	100	33	135	33%	36%	44%	0.35:1	0.7:1	20%	88%	93%	79%	93%	82%
4	Shwegu	83215	87	41	89	47%	53%	60%	0.93:1	1.4:1	19%	76%	73%	70%	80%	77%
5	Mohyin	205513	216	113	417	52%	67%	55%	0.42:1	1:1	22%	89%	74%	69%	78%	75%
6	Kamaing	159872	168	141	468	84%	128%	63%	0.49:1	1.4:1	37%	79%	59%	59%	64%	66%
7	Mogaung	139476	146	105	678	72%	83%	34%	0.19:1	0.4:1	18%	89%	65%	64%	81%	80%
8	Tanai	39510	41	58	151	140%	140%	54%	0.69:1	1:1	17%	74%	65%	65%	74%	74%
9	Myitkyina	217776	229	368	1882	161%	216%	47%	0.28:1	0.7:1	15%	83%	70%	68%	78%	78%
10	Chipway	18606	20	11	40	56%	56%	70%	0.42:1	1.8:1	12%	64%	67%	67%	67%	67%
11	Hsawlaw	6736	7	Nr.				#DIV/0!								
12	N Jan Yan	8814	9	Nr.				#DIV/0!								
13	Waingmaw	117752	124	92	703	74%	123%	39%	0.16:1	0.6:1	13%	96%	82%	70%	95%	88%
14	Putao	88763	93	64	196	69%	69%	51%	0.58:1	0.9:1	21%	92%	73%	73%	79%	79%
15	Khaunglanbu	14835	16	Nr.				#DIV/0!								
16	Machanbaw	20782	22	4	6	18%	18%	67%	2:1	2:1	23%	50%				
17	Nogmun	11420	12	Nr.				#DIV/0!								
18	Sumprabon	14550	15	1	6	7%	7%	50%	0.2:1	1:1	25%	100%				
T total		1423260	1494	1186	5255	79%	104%	49%	0.32:1	0.8:1	21%	85%	71%	68%	79%	77%

* Note* (Nr.) Report had not been received from townships
Nr. 4 Tsp; 1.N'ganyan. 2. Hsawlaw, 3 Khaunglanbu 4. Nogmun

Annex-21 (townships list)

Sr.No	TOWNSHIP	Population	Estimated New S (+) cases	Total New Smear Positive detected	Total notified TB cases	(CDR) NTP only	(CDR) NTP+ other unit	Prop. of SS(+) pul:TB cases out of all pul: TB cases	Ratio of NSS+ to NSS (-)cases and EP cases	Ratio of NSS+ to NSS (-)cases	Sputum Positivity Rate	Sputum Conversion Rate	(CR) NTP only	(CR) NTP+ other unit	(TSR) NTP only	(TSR) NTP+ other unit
Kayah State																
1	Bawlake	10025	11	14	33	133%	133%	52%	0.78:1	1:1	16%	71%	89%	89%	100%	100%
2	Masai	5929	6	6	16	96%	96%	53%	0.75:1	0.9:1	20%	100%	86%	86%	100%	100%
3	Pasaung	34845	37	6	59	16%	16%	42%	0.13:1	0.3:1	12%	80%	100%	100%	100%	100%
4	Loikaw	105384	111	64	659	58%	58%	14%	0.11:1	0.1:1	6%	83%	78%	78%	78%	78%
5	Dimawhso	95499	100	24	66	24%	24%	50%	0.71:1	0.8:1	8%	83%	86%	86%	86%	86%
6	Phruhso	28000	29	8	28	27%	27%	35%	0.42:1	0.5:1	5%	100%				
7	Shataw	12960	14	5	10	37%	37%	80%	2.5:1	2.5:1	7%	100%				
Total		292642	307	127	871	41%	41%	23%	0.18:1	0.2:1	7%	84%	83%	83%	85%	85%
Chin State																
1	Falam	49112	52	5	121	10%	10%	16%	0.05:1	0.1:1	8%	26%	81%	81%	81%	81%
2	Hakha	57306	60	17	256	28%	28%	21%	0.08:1	0.2:1	10%	50%	95%	95%	95%	95%
3	Htantalan	53825	57	2	126	4%	4%	10%	0.02:1	0.1:1	8%	13%	20%	20%	100%	100%
4	Tiddim	92709	97	18	215	18%	18%	34%	0.1:1	0.4:1	19%	53%	68%	70%	82%	83%
5	Tunzan	30560	32	5	87	16%	16%	21%	0.06:1	0.2:1	26%	36%	58%	58%	58%	58%
6	Mindat	40976	43	21	131	49%	49%	29%	0.22:1	0.3:1	11%	78%	63%	63%	85%	85%
7	Kanpetlet	18933	20	2	29	10%	10%	24%	0.08:1	0.2:1	8%	34%				
8	Miatupi	68406	72	14	62	19%	19%	35%	0.32:1	0.4:1	17%	54%	80%	80%	100%	100%
9	Paletwa	89636	94	37	136	39%	39%	35%	0.41:1	0.5:1	26%	75%	78%	78%	84%	84%
Total		501463	527	121	1163	23%	23%	28%	0.13:1	0.3:1	15%	50%	73%	73%	85%	85%

Annex-21 (townships list)

Sr.No	TOWNSHIP	Population	Estimated New S (+) cases	Total New Smear Positive detected	Total notified TB cases	(CDR) NTP only	(CDR) NTP + other unit	Prop. of SS(+) pul:TB cases out of all pul: TB cases	Ratio of NSS+ to NSS (-)cases and EP cases	Ratio of NSS+ to NSS (-)cases	Sputum Positivity Rate	Sputum Conversion Rate	(CR) NTP only	(CR) NTP+ other unit	(TSR) NTP only	(TSR) NTP + other unit
Sagaing Region																
1	Sagaing	291236	306	232	559	76%	97%	67%	0.8:1	1.9:1	17%	92%	94%	91%	94%	95%
2	Myaung	110380	116	61	117	53%	53%	80%	1.27:1	3.8:1	10%	87%	74%	74%	85%	85%
3	Myinmu	113868	120	75	163	63%	63%	69%	0.95:1	2:1	29%	97%	89%	89%	91%	91%
4	Shwebo	260200	273	117	542	43%	56%	56%	0.29:1	1.2:1	10%	94%	82%	76%	92%	92%
5	Kanbalu	258848	272	50	341	18%	25%	34%	0.18:1	4.3:1	22%	90%	82%	78%	95%	95%
6	Khin-U	176850	186	78	189	42%	47%	82%	0.74:1	4.3:1	8%	99%	89%	86%	92%	92%
7	Kyunhla	86852	91	49	146	54%	56%	46%	0.51:1	0.8:1	11%	80%	60%	60%	78%	78%
8	Tabayin	149055	157	58	160	37%	37%	67%	0.6:1	1.9:1	11%	93%	87%	87%	89%	89%
9	Taze	175084	184	61	133	33%	33%	61%	0.9:1	1.5:1	18%	90%	89%	89%	92%	92%
10	Wetlet	198145	208	93	341	45%	58%	73%	0.41:1	2.4:1	10%	99%	87%	79%	91%	88%
11	Ye-U	133367	140	64	198	46%	47%	61%	0.53:1	1.4:1	8%	88%	81%	81%	81%	81%
12	Monywa	310559	326	167	448	51%	73%	55%	0.69:1	1.1:1	18%	79%	70%	72%	76%	80%
13	Ayadaw	182159	191	116	171	61%	66%	79%	2.27:1	3.6:1	9%	98%	98%	95%	98%	96%
14	Budalin	137703	145	86	260	59%	60%	79%	0.54:1	3.4:1	16%	93%	85%	86%	85%	86%
15	ChaungU	106029	111	59	132	53%	62%	81%	0.94:1	3.7:1	7%	97%	76%	76%	83%	84%
16	Kani	136089	143	70	160	49%	49%	71%	0.83:1	2.3:1	16%	100%	93%	93%	96%	96%
17	Pale	144573	152	72	119	47%	49%	82%	1.71:1	4.5:1	6%	92%	65%	65%	76%	76%
18	Salingyi	133184	140	49	136	35%	36%	79%	0.69:1	3.1:1	7%	94%	81%	81%	86%	86%
19	Yinnabin	143302	150	47	118	31%	34%	49%	0.71:1	0.9:1	5%	98%	88%	89%	93%	93%
20	Katha	154253	162	80	170	49%	52%	60%	0.96:1	1.4:1	17%	91%	82%	82%	82%	82%
21	Banmauk	93283	98	32	45	33%	33%	83%	3.2:1	4.6:1	12%	97%	84%	84%	87%	87%
22	Htigyaing	113417	119	49	113	41%	41%	63%	0.94:1	1.4:1	16%	65%	55%	55%	59%	59%
23	Indaw	119649	126	56	160	45%	47%	58%	0.56:1	1.3:1	17%	91%	81%	81%	81%	82%
24	Kawlin	134584	141	71	146	50%	60%	60%	1.11:1	1.4:1	11%	93%	82%	81%	85%	85%
25	Pinlebu	110045	116	59	130	51%	51%	55%	0.84:1	1.2:1	21%	88%	86%	86%	86%	86%
26	Wuntho	70105	74	29	55	39%	42%	67%	1.21:1	1.9:1	10%	97%	78%	79%	78%	79%
27	Kalay	314108	330	174	1280	53%	94%	48%	0.16:1	0.8:1	19%	83%	79%	76%	82%	81%
28	Kalewa	54876	58	21	90	36%	36%	55%	0.33:1	1:1	3%	95%	91%	91%	94%	94%
29	Minkin	107451	113	34	84	30%	30%	72%	0.71:1	2.4:1	20%	94%	91%	91%	91%	91%
30	Tamu	100983	106	140	677	132%	132%	46%	0.28:1	0.7:1	12%	89%	67%	67%	89%	88%
31	Mawlaik	51831	54	31	82	57%	57%	43%	0.65:1	0.7:1	18%	87%	44%	44%	81%	81%
32	Phaungbyin	110904	116	62	114	53%	53%	72%	1.27:1	2.5:1	19%	95%	83%	83%	89%	89%
33	Khamti	35186	37	59	301	160%	160%	24%	0.26:1	0.3:1	13%	92%	77%	77%	80%	80%
34	Homalin	177916	187	112	230	60%	60%	62%	1.08:1	1.5:1	16%	87%	78%	78%	86%	86%
35	Layshi	20543	22	3	27	14%	14%	21%	0.13:1	0.3:1	8%	50%	0%	0%	100%	100%
36	Lahel	50730	53	56	73	105%	105%	90%	4.67:1	8:1	29%	88%	71%	71%	94%	94%
37	Nanyun	76806	81	13	51	16%	16%	39%	0.37:1	0.6:1	22%	92%	100%	100%	100%	100%
Total		5144153	5401	2685	8261	50%	57%	59%	0.52:1	1.3:1	13%	91%	81%	80%	87%	87%

Annex-21 (townships list)

Sr.No	TOWNSHIP	Population	Estimated New S(+) cases	Total New Smear Positive detected	Total notified TB cases	(CDR) NTP only	(CDR) NTP + other unit	Prop: of SS(+) pul:TB cases out of all pul: TB cases	Ratio of NSS+ to NSS (-)cases and EP cases	Ratio of NSS+ to NSS (-)cases	Sputum Positivity Rate	Sputum Conversion Rate	(CR) NTP only	(CR) NTP+ other unit	(TSR) NTP only	(TSR) NTP + other unit
Magwe Region																
1	Magwe	292798	307	271	928	88%	103%	54%	0.52:1	1:1	22%	77%	73%	71%	80%	81%
2	Chauk	214450	225	110	371	49%	75%	48%	0.48:1	0.9:1	23%	94%	77%	70%	88%	86%
3	Taungdwingyi	256483	269	135	273	50%	52%	70%	1.19:1	2.2:1	17%	92%	86%	86%	86%	87%
4	Myothit	175087	184	111	192	60%	60%	88%	2.27:1	6.2:1	60%	96%	96%	95%	96%	96%
5	Natmauk	228416	240	86	267	36%	40%	54%	0.61:1	1:1	21%	93%	57%	61%	91%	90%
6	Yenanchaung	176544	185	109	235	59%	84%	64%	1.12:1	1.6:1	20%	89%	75%	72%	83%	87%
7	Pakokku	292403	307	103	517	34%	47%	43%	0.28:1	0.6:1	26%	87%	81%	81%	87%	86%
8	Yesagyo	247425	260	80	257	31%	33%	45%	0.49:1	0.8:1	14%	99%	89%	83%	89%	89%
9	Pauk	170380	179	86	165	48%	48%	85%	1.13:1	5.7:1	20%	100%	95%	95%	95%	95%
10	Myaing	234333	246	69	457	28%	28%	51%	0.18:1	0.9:1	11%	87%	72%	72%	90%	90%
11	Seikphyu	100452	105	25	70	24%	30%	72%	0.6:1	2.3:1	11%	96%	100%	96%	100%	96%
12	Gantgaw	126430	133	44	262	33%	36%	41%	0.22:1	0.6:1	20%	82%	69%	69%	92%	92%
13	Saw	68408	72	20	72	28%	28%	32%	0.42:1	0.5:1	16%	95%	96%	96%	100%	100%
14	Htilin	52230	55	11	37	20%	20%	52%	0.44:1	1:1	11%	82%	85%	85%	100%	100%
15	Minbu	182662	192	110	715	57%	69%	48%	0.19:1	0.8:1	14%	82%	65%	65%	84%	85%
16	Ngape	46710	49	21	80	43%	43%	37%	0.39:1	0.5:1	16%	86%	87%	87%	91%	91%
17	Pwintphyu	161507	170	74	148	44%	94%	66%	1.09:1	1.9:1	11%	93%	88%	93%	90%	96%
18	Satuketaya	42061	44	18	42	41%	43%	53%	0.9:1	1.1:1	18%	83%	41%	41%	76%	76%
19	Salin	256344	269	126	291	47%	50%	63%	0.86:1	1.5:1	15%	99%	80%	81%	95%	95%
20	Thayet	100365	105	102	287	97%	102%	60%	0.71:1	1.2:1	28%	62%	60%	61%	62%	63%
21	Minhla	110860	116	49	138	42%	45%	63%	0.64:1	1.5:1	27%	86%	97%	93%	97%	95%
22	Kanna	70166	74	43	165	58%	58%	46%	0.38:1	0.7:1	38%	93%	80%	80%	90%	90%
23	Sinpaukwae	129545	136	38	152	28%	29%	41%	0.44:1	0.6:1	14%	100%	89%	89%	100%	100%
24	Mindon	60459	63	39	727	61%	61%	20%	0.06:1	0.2:1	12%	97%	92%	92%	92%	92%
25	Aunglan	225394	237	96	360	41%	54%	45%	0.41:1	0.7:1	23%	94%	76%	76%	78%	79%
Total		4021912	4223	1976	7208	47%	56%	52%	0.43:1	1:1	19%	89%	79%	78%	86%	87%

Annex-21 (townships list)

Sr.No	TOWNSHIP	Population	Estimated New S (+) cases	Total New Smear Positive detected	Total notified TB cases	(CDR) NTP only	(CDR) NTP + other unit	Prop. of SS(+) pul. TB cases out of all pul. TB cases	Ratio of NSS+ to NSS (-) cases and EP cases	Ratio of NSS+ to NSS (-) cases out of all pul. TB cases	Sputum Positivity Rate	Sputum Conversion Rate	(CR) NTP+ other unit	(TSR) NTP only	(TSR) NTP + other unit
Mandalay Region															
1	Amarapura	183159	192	88	239	46%	85%	61%	0.73:1	1.4:1	18%	92%	61%	67%	83%
2	Aungmyaytharza	186537	198	171	645	86%	118%	43%	0.41:1	0.6:1	20%	85%	82%	79%	85%
3	Chanayetharzan	135152	142	123	434	87%	109%	47%	0.46:1	0.8:1	19%	89%	75%	75%	83%
4	Chanmyatharzi	191823	201	208	631	103%	133%	50%	0.57:1	0.8:1	24%	88%	86%	85%	90%
5	Maharaungmyae	221131	232	184	565	79%	96%	56%	0.56:1	1.1:1	21%	93%	92%	90%	90%
6	Pyigyitagonn	147982	155	139	421	89%	115%	55%	0.56:1	1.1:1	24%	90%	69%	66%	82%
7	Patheingyi	178498	187	109	370	58%	62%	51%	0.49:1	0.9:1	10%	83%	75%	74%	83%
8	Meiktilar	307942	323	127	641	39%	62%	48%	0.28:1	0.7:1	25%	87%	63%	61%	78%
9	Mahlaing	152874	161	61	251	38%	42%	37%	0.38:1	0.5:1	19%	75%	46%	47%	78%
10	Tharzi	202773	213	90	192	42%	44%	79%	1.05:1	3.2:1	27%	97%	77%	76%	95%
11	Wundwin	223324	234	68	168	29%	39%	74%	0.87:1	2.3:1	25%	85%	75%	71%	84%
12	Myingon	269577	283	167	587	59%	78%	45%	0.43:1	0.7:1	23%	85%	68%	67%	83%
13	Kyaukpadaung	302473	318	72	260	23%	64%	44%	0.42:1	0.7:1	20%	85%	74%	77%	86%
14	Natogyi	179979	189	39	166	21%	22%	46%	0.34:1	0.7:1	17%	92%	76%	75%	85%
15	Ngazun	136838	143	50	121	35%	35%	67%	0.75:1	2:1	17%	82%	85%	85%	87%
16	Taungtha	243087	255	101	296	40%	44%	45%	0.55:1	0.8:1	10%	76%	55%	52%	84%
17	NyaungU	272828	286	120	569	42%	42%	29%	0.3:1	0.4:1	15%	83%	69%	67%	85%
18	Pyin oo Lwin	169390	178	77	294	43%	44%	47%	0.39:1	0.7:1	11%	79%	88%	88%	90%
19	Madayar	229796	241	137	377	57%	61%	58%	0.69:1	1.2:1	20%	82%	56%	56%	74%
20	Mogok	190034	200	78	443	39%	68%	40%	0.23:1	0.6:1	16%	87%	74%	74%	84%
21	Sintga	138403	145	80	264	55%	93%	63%	0.53:1	1.3:1	15%	91%	68%	76%	93%
22	Thabeikkyin	115170	121	69	218	57%	93%	49%	0.55:1	0.8:1	31%	80%	57%	68%	79%
23	Yamethin	232595	244	71	314	29%	29%	46%	0.33:1	0.7:1	39%	76%	56%	55%	82%
24	Lewei	280887	295	172	291	58%	65%	77%	1.67:1	3.1:1	34%	90%	63%	64%	92%
25	Pyawbwei	263602	277	130	353	47%	48%	59%	0.68:1	1.2:1	26%	72%	69%	69%	83%
26	Pyinmana	309216	325	296	824	91%	120%	53%	0.66:1	1:1	26%	87%	64%	65%	79%
27	Tatkone	240103	252	125	281	50%	62%	71%	0.9:1	2.2:1	36%	76%	47%	48%	59%
28	Kyaukse	230601	242	160	477	66%	88%	59%	0.55:1	1.3:1	23%	71%	74%	73%	75%
29	Miyitha	185529	195	61	236	31%	43%	41%	0.37:1	0.6:1	18%	90%	51%	47%	75%
30	Sintgine	127153	134	46	223	34%	36%	33%	0.28:1	0.4:1	17%	93%	59%	59%	91%
31	TadaOo	149239	157	62	152	40%	50%	62%	0.89:1	1.3:1	22%	89%	56%	62%	79%
Total		6398695	6719	3481	11303	52%	67%	51%	0.51:1	0.9:1	21%	85%	70%	84%	83%

Annex-21 (townships list)

Sr.No	TOWNSHIP	Population	Estimated New S(+) cases	Total New Smear Positive detected	Total notified TB cases	(CDR) NTP only	(CDR) NTP + other unit	Prop. of SS(+) pul. TB cases out of all pul. TB cases	Ratio of NSS+ to NSS (-) cases and EP cases	Ratio of NSS+ to NSS (-) cases	Sputum Positivity Rate	Sputum Conversion Rate	(CR) NTP only	(CR) NTP+ other unit	(TSR) NTP only	(TSR) NTP + other unit
Shan State (Taunggyi)																
1	Linhkay	59175	62	22	50	35%	35%	54%	0.88:1	1:1	31%	100%	93%	93%	93%	93%
2	Maukme	26935	28	14	23	50%	50%	88%	1.75:1	7:1	27%	100%	95%	95%	95%	95%
3	Monai	24292	26	17	33	67%	67%	62%	1.13:1	1.5:1	8%	88%	100%	100%	100%	100%
4	Mangpang	16435	17	6	16	35%	35%	50%	0.75:1	0.8:1	10%	100%	85%	85%	100%	100%
5	Loilem	109047	114	20	79	17%	20%	34%	0.38:1	0.4:1	16%	85%	77%	77%	81%	81%
6	Kunhein	60845	64	48	153	75%	75%	41%	0.51:1	0.6:1	19%	88%	100%	77%	84%	84%
7	Kyeethi	39644	42	11	150	26%	26%	10%	0.08:1	0.1:1	19%	64%	100%	100%	100%	100%
8	Laikha	42074	44	27	100	61%	63%	40%	0.41:1	0.6:1	8%	96%	97%	97%	97%	97%
9	Mongkaing	84060	88	27	57	31%	31%	55%	1:1	1.1:1	17%	74%	58%	58%	74%	74%
10	Mongshu	59954	63	16	91	25%	25%	28%	0.22:1	0.4:1	17%	100%	100%	100%	100%	100%
11	Namsan	81677	86	37	176	43%	43%	35%	0.29:1	0.5:1	11%	76%	67%	67%	69%	69%
12	Taunggyi	344665	362	176	640	49%	50%	46%	0.44:1	0.7:1	12%	82%	68%	67%	74%	74%
13	Hopone	98364	103	31	84	30%	30%	57%	0.63:1	1.2:1	23%	81%	78%	78%	78%	78%
14	Hpekon	90372	95	35	110	37%	37%	41%	0.51:1	0.6:1	19%	91%	81%	81%	81%	81%
15	Hsiseng	137083	144	46	128	32%	33%	58%	0.66:1	1.2:1	14%	85%	58%	58%	73%	73%
16	Kalaw	148206	156	71	174	46%	46%	57%	0.8:1	1.1:1	9%	82%	80%	78%	81%	83%
17	Lauksauk	129898	136	40	126	29%	32%	44%	0.52:1	0.7:1	15%	85%	86%	84%	92%	92%
18	Pindaya	75470	79	40	79	50%	50%	55%	1.05:1	1.2:1	12%	88%	85%	85%	92%	92%
19	Pinlaung	160486	169	48	95	28%	28%	68%	1.07:1	2:1	13%	98%	65%	65%	79%	79%
20	Nyaungshwe	173122	182	63	108	35%	41%	69%	1.58:1	2.2:1	26%	98%	96%	89%	96%	93%
21	Ywangan	76856	81	7	38	9%	9%	24%	0.24:1	0.3:1	7%	100%	75%	75%	75%	75%
Total		2038660	2141	802	2510	37%	39%	46%	0.52:1	0.7:1	14%	87%	79%	78%	84%	84%
Shan State (Kengtung)																
1	Kengtong	179527	189	94	246	50%	70%	60%	0.8:1	1.1:1	20%	91%	69%	69%	81%	81%
2	Mongkhat	48857	51	4	15	8%	8%	75%	0.44:1	2:1	16%	50%	67%	67%	83%	83%
3	Mongyan	94127	99	14	38	14%	14%	58%	0.61:1	1.3:1	29%	64%	30%	30%	87%	87%
4	Monghsat	76793	81	124	394	154%	155%	47%	0.65:1	0.7:1	19%	78%	46%	46%	76%	76%
5	Mongping	53949	57	43	100	76%	76%	65%	0.88:1	1.6:1	29%	98%	71%	71%	84%	84%
6	Mongton	54041	57	68	186	120%	120%	44%	0.62:1	0.7:1	26%	78%	55%	55%	77%	77%
7	Mongphak	39360	41	21	100	51%	51%	53%	1.03:1	0.9:1	12%	81%	91%	91%	96%	96%
8	Mongyaung	71985	76	36	74	48%	48%	67%	1.03:1	2:1	16%	100%	66%	66%	66%	66%
9	Tachileik	119953	126	178	913	141%	143%	25%	0.26:1	0.3:1	20%	88%	73%	73%	81%	81%
10	Matman	Nf.														
Total		738592	776	582	2066	75%	80%	39%	0.46:1	0.5:1	20%	86%	64%	64%	80%	80%

Annex-21 (townships list)

Sr.No	TOWNSHIP	Population	Estimated New S(+) cases	Total New Smear Positive detected	Total notified TB cases	(CDR) NTP only	(CDR) NTP + other unit	Prop: of SS(+) pul:TB cases out of all pul: TB cases	Ratio of NSS+ to NSS (-)cases and EP cases	Ratio of NSS+ to NSS (-)cases	Sputum Positivity Rate	Sputum Conversion Rate	(CR) NTP only	(CR) NTP+ other unit	(TSR) NTP only	(TSR) NTP + other unit
Shan State (Lashio)																
1	Kunlon	79251	83	43	114	52%	52%	52%	0.72:1	0.9:1	40%	93%	100%	100%	100%	100%
2	Hopan	97298	102	78	140	76%	76%	81%	1.5:1	3.9:1	29%	86%	82%	80%	94%	91%
3	Kyaukme	219636	231	102	299	44%	57%	41%	0.54:1	0.6:1	27%	86%	74%	71%	82%	80%
4	Hsipaw	180396	189	114	275	60%	70%	64%	0.82:1	1.5:1	12%	87%	85%	79%	95%	90%
5	Mabein	37439	39	19	75	48%	48%	41%	0.36:1	0.6:1	22%	68%	63%	63%	67%	67%
6	Manton	40276	42	19	23	45%	45%	90%	4.75:1	9.5:1	35%	83%	77%	77%	77%	77%
7	Mongmeik	78294	82	67	114	81%	91%	78%	1.81:1	3.4:1	15%	75%	57%	57%	66%	66%
8	Namtu	155081	163	34	140	21%	21%	44%	0.35:1	0.6:1	17%	81%	78%	78%	82%	82%
9	Nyaungcho	144041	151	46	158	30%	33%	50%	0.43:1	0.9:1	26%	96%	95%	90%	95%	90%
10	Lashio	295390	310	246	760	79%	95%	53%	0.56:1	1:1	18%	80%	67%	65%	71%	71%
11	Namsam	94997	100	17	53	17%	17%	48%	0.5:1	0.8:1	20%	53%	83%	83%	96%	96%
12	Mongmaw	50243	53													
13	Theinni	80499	85	68	196	80%	82%	66%	0.59:1	1.6:1	27%	91%	60%	59%	82%	81%
14	Mongreh	77571	81	29	156	36%	36%	63%	0.23:1	1.5:1	33%	93%	88%	88%	100%	100%
15	Manphant	69606	73													
16	Pangyan	90283	95													
17	Narphant	66681	70													
18	Panwaing	25000	26													
19	Tanyan	143071	150	62	347	41%	41%	28%	0.23:1	0.3:1	14%	76%	68%	68%	82%	82%
20	Laukkai	76483	80	65	192	81%	81%	51%	0.52:1	1:1	25%	72%	19%	19%	40%	40%
21	Kongyan	49308	52													
22	Muse	164448	173	111	380	64%	83%	56%	0.44:1	1:1	30%	52%	50%	50%	58%	58%
23	Kuitai	210015	221	78	355	35%	38%	42%	0.29:1	0.7:1	27%	88%	68%	66%	80%	77%
24	Namkham	134022	141	56	145	40%	40%	66%	0.66:1	1.8:1	27%	68%	68%		76%	76%
Total			2659329	1254	3922	45%	50%	52%	0.51:1	1:1	21%	80%	70%	69%	79%	78%

* Note* (Nr.) Report had not been received from(6) townships

Nr. (6) tsp: 1.Manphant, 2.Panwaing, 3.Mongmaw, 4.Kongyan, 5.Narphant, 6. Pangyan

Annex-21 (townships list)

Sr.No	TOWNSHIP	Population	Estimated New S(+) cases	Total New Smear Positive detected	Total notified TB cases	(CDR) NTP only	(CDR) NTP + other unit	Prop. of SS(+) pul-TB cases out of all pul-TB cases	Ratio of NSS+ to NSS (-)cases and EP cases	Ratio of NSS+ to NSS (-)cases	Sputum Positivity Rate	Sputum Conversion Rate	(CR) NTP only	(CR) NTP+ other unit	(TSR) NTP only	(TSR) NTP + other unit
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Kayin State

1	Kawkareik	298502	313	187	459	60%	62%	47%	0.76:1	0.8:1	25%	93%	82%	78%	87%	86%
2	Kyainseikkyi	270086	284	52	171	18%	21%	36%	0.44:1	0.5:1	18%	96%	70%	70%	89%	89%
3	Myawady	90588	95	158	442	166%	193%	55%	0.67:1	1.1:1	27%	79%	52%	52%	65%	65%
4	Hpa-an	431617	453	388	2301	86%	87%	18%	0.21:1	0.2:1	12%	90%	78%	78%	85%	85%
5	Hlaingbwe	297164	312	164	1109	53%	64%	16%	0.18:1	0.2:1	8%	85%	79%	81%	83%	85%
6	Papun(Kamamau	47699	50	55	160	110%	110%	38%	0.52:1	0.6:1	31%	93%	94%	94%	94%	94%
7	Thandaung	94077	99	15	67	15%	21%	29%	0.31:1	0.4:1	24%	54%	75%	75%	75%	75%
Total		1529733	1606	1019	4709	63%	69%	25%	0.29:1	0.3:1	14%	88%	75%	75%	82%	82%

Tanintharyi Region

1	Dawei	218374	229	109	1056	48%	109%	33%	0.12:1	0.4:1	17%	84%	81%	74%	87%	81%
2	Launglon	138718	146	13	33	9%	9%	75%	0.76:1	2.6:1	11%	100%	64%	64%	64%	64%
3	Thayetchaung	175266	184	17	74	9%	14%	50%	0.3:1	1:1	13%	82%	67%	67%	78%	78%
4	Yebyu	157442	165	28	102	17%	17%	49%	0.41:1	0.8:1	7%	100%	63%	63%	73%	73%
5	Kawthaung	101775	107	191	642	179%	221%	66%	0.45:1	1.7:1	34%	79%	69%	69%	81%	81%
6	Bokpyin	45829	48	44	154	91%	94%	53%	0.41:1	1.1:1	24%	86%	50%	50%	77%	77%
7	Myeik	309322	325	304	2497	94%	112%	27%	0.15:1	0.3:1	14%	82%	76%	77%	78%	79%
8	Kyunsu	158979	167	12	56	7%	10%	52%	0.32:1	0.9:1	24%	83%	67%	67%	75%	75%
9	Tanintharyi	107474	113	29	78	26%	27%	57%	0.63:1	1.3:1	22%	83%	84%	84%	88%	88%
10	Palaw	142732	150	77	471	51%	51%	22%	0.2:1	0.3:1	19%	97%	64%	64%	88%	88%
Total		1555911	1634	824	5163	50%	66%	35%	0.2:1	0.5:1	17%	84%	73%	73%	80%	80%

Annex-21 (townships list)

Sr.No	TOWNSHIP	Population	Estimated New S(+) cases	Total New Smear Positive detected	Total notified TB cases	(CDR) NTP only	(CDR) NTP + other unit	Prop: of SS(+) pul:TB cases out of all pul: TB cases	Ratio of NSS+ to NSS (-)cases and EP cases	Ratio of NSS+ to NSS (-)cases	Sputum Positivity Rate	Sputum Conversion Rate	(CR) NTP+ other unit	(TSR) NTP only	(TSR) NTP + other unit
Bago Region															
1	Bago	418152	439	392	1264	89%	130%	48%	0.53:1	0.7:1	21%	94%	76%	77%	84%
2	Daik-U	213579	224	122	358	54%	56%	44%	0.61:1	0.7:1	22%	89%	61%	60%	79%
3	Kawa	220857	232	98	267	42%	53%	44%	0.64:1	0.7:1	23%	98%	82%	84%	90%
4	Kyauktaga	255408	268	133	396	50%	56%	44%	0.55:1	0.7:1	20%	88%	91%	87%	90%
5	Nyaunglaybin	237630	250	94	226	38%	54%	54%	0.78:1	1.1:1	19%	96%	74%	69%	85%
6	Shwekyin	86107	90	64	156	71%	71%	45%	0.73:1	0.8:1	17%	91%	66%	66%	86%
7	Thanatpin	156265	164	78	431	48%	49%	23%	0.23:1	0.3:1	26%	92%	69%	70%	80%
8	Waw	201438	212	160	363	76%	83%	58%	0.85:1	1.3:1	20%	96%	73%	70%	83%
9	Taunggoo	234003	246	128	531	52%	116%	41%	0.4:1	0.5:1	21%	88%	79%	70%	79%
10	Kyaukkvi	104729	110	28	135	25%	30%	32%	0.31:1	0.4:1	27%	82%	75%	75%	87%
11	Oktwin	153687	161	88	330	55%	69%	36%	0.41:1	0.5:1	29%	80%	72%	72%	77%
12	Phyu	285921	300	191	744	64%	65%	30%	0.36:1	0.4:1	25%	92%	80%	78%	86%
13	Htantabin	121589	128	64	196	50%	63%	49%	0.59:1	0.7:1	20%	86%	90%	89%	94%
14	Yedashe	192837	202	109	186	54%	65%	73%	1.95:1	2.3:1	21%	85%	78%	78%	81%
Total		2882202	3026	1749	5533	58%	75%	43%	0.52:1	0.6:1	21%	91%	76%	74%	84%
Bago Region (Pyay)															
1	Pyay	240084	252	202	693	80%	117%	36%	0.45:1	0.5:1	16%	81%	79%	79%	81%
2	Paukkhaung	116532	122	83	257	68%	68%	39%	0.52:1	0.6:1	18%	95%	88%	88%	90%
3	Paungde	143663	151	93	237	62%	65%	47%	0.69:1	0.8:1	21%	84%	94%	93%	94%
4	Padaung	135012	142	105	292	74%	87%	47%	0.61:1	0.8:1	24%	85%	70%	71%	84%
5	Shwedaung	130136	137	75	255	55%	63%	40%	0.45:1	0.6:1	24%	88%	66%	67%	84%
6	Thegon	134807	142	82	365	58%	61%	28%	0.31:1	0.3:1	20%	87%	82%	82%	85%
7	Tharyawady	115908	122	163	351	134%	139%	56%	1.02:1	1.1:1	39%	75%	77%	76%	78%
8	Zigon	74832	79	39	186	50%	50%	26%	0.29:1	0.3:1	15%	85%	82%	82%	90%
9	Minhla	123633	130	103	248	79%	79%	48%	0.79:1	0.9:1	18%	87%	82%	82%	89%
10	Moenyo	144116	151	67	205	44%	44%	54%	0.52:1	1:1	49%	78%	90%	90%	93%
11	Okpo	121687	128	121	298	95%	95%	47%	0.73:1	0.8:1	28%	91%	94%	94%	94%
12	Gyobingauk	115658	121	66	314	54%	59%	34%	0.3:1	0.4:1	16%	91%	91%	92%	97%
13	Nattalin	161310	169	120	288	71%	71%	51%	0.85:1	0.9:1	25%	93%	71%	71%	85%
14	Latpadan	217143	228	121	414	53%	62%	35%	0.44:1	0.5:1	59%	85%	77%	77%	90%
Total		1974521	2073	1440	4403	69%	77%	41%	0.53:1	0.6:1	24%	85%	81%	81%	87%

Annex-21 (townships list)

Sr.No	TOWNSHIP	Population	Estimated New S(+) cases	Total New Smear Positive detected	Total notified TB cases	(CDR) NTP only	(CDR) NTP + other unit	Prop: of SS(+) pul:TB cases out of all pul: TB cases	Ratio of NSS+ to NSS (-)cases and EP cases	Ratio of NSS+ to NSS (-)cases	Sputum Positivity Rate	Sputum Conversion Rate	(CR) NTP only	(CR) NTP+ other unit	(TSR) NTP only	(TSR) NTP + other unit
Mon State																
1	Mawlamyaing	277250	291	281	1295	97%	103%	29%	0.3:1	0.3:1	11%	92%	82%	82%	86%	87%
2	Chanungzon	152757	160	80	332	50%	54%	27%	0.33:1	0.3:1	12%	83%	84%	84%	85%	86%
3	Kyaikmaraw	211601	222	134	610	60%	60%	25%	0.29:1	0.3:1	28%	94%	86%	86%	93%	93%
4	Mudon	210224	221	144	686	65%	79%	35%	0.27:1	0.5:1	12%	83%	80%	79%	82%	82%
5	Thanbyuzayat	166217	175	108	572	62%	66%	22%	0.24:1	0.2:1	9%	94%	89%	88%	89%	88%
6	Ye	246026	258	176	666	68%	68%	33%	0.4:1	0.4:1	17%	84%	65%	65%	75%	75%
7	Thaton	244501	257	250	483	97%	138%	62%	1.2:1	1.5:1	21%	89%	63%	65%	81%	83%
8	Belin	172398	181	184	584	102%	106%	35%	0.48:1	0.5:1	10%	95%	87%	87%	94%	93%
9	Kyaikto	154119	162	94	244	58%	118%	44%	0.67:1	0.7:1	23%	90%	86%	88%	89%	91%
10	Paung	244771	257	186	819	72%	79%	25%	0.3:1	0.3:1	20%	85%	89%	89%	93%	93%
Total	2079864	2184	1637	6291	6291	75%	88%	32%	0.37:1	0.4:1	15%	89%	80%	80%	86%	87%
Rakhine State																
1	Kyaukphyu	209621	220	133	348	60%	60%	49%	0.65:1	0.9:1	21%	89%	73%	73%	79%	79%
2	Ann	127015	133	77	447	58%	58%	33%	0.22:1	0.5:1	16%	86%	57%	57%	75%	75%
3	Manaung	106441	112	49	118	44%	44%	58%	0.79:1	1.2:1	28%	98%	98%	98%	98%	98%
4	Rambye	157990	166	66	150	40%	40%	55%	0.9:1	1.1:1	23%	76%	96%	96%	96%	96%
5	Maungdaw	467399	491	156	328	32%	41%	56%	1.01:1	1.1:1	33%	70%	61%	64%	79%	81%
6	Buthidaung	309749	325	230	1220	71%	71%	23%	0.25:1	0.3:1	18%	97%	93%	92%	94%	94%
7	Rathedaung	179729	189	130	253	69%	69%	62%	1.25:1	1.5:1	24%	84%	75%	75%	90%	90%
8	Sittwe	293260	308	271	993	88%	103%	36%	0.41:1	0.5:1	16%	82%	63%	62%	82%	81%
9	Kyauktaw	258014	271	225	536	83%	83%	47%	0.79:1	0.8:1	50%	100%	92%	92%	94%	94%
10	Minbya	211338	222	210	349	95%	95%	76%	1.96:1	2.8:1	22%	77%	83%	83%	86%	86%
11	Myaukoo	241939	254	207	387	81%	81%	64%	1.24:1	1.7:1	30%	95%	94%	94%	94%	94%
12	Myebon	132286	139	88	252	63%	63%	48%	0.58:1	0.9:1	36%	94%	64%	64%	82%	82%
13	Pauktaw	173807	182	70	213	38%	38%	41%	0.54:1	0.6:1	18%	76%	38%	38%	72%	72%
14	Ponnagyun	142277	149	108	317	72%	72%	39%	0.55:1	0.6:1	8%	94%	79%	79%	92%	92%
15	Thandwe	163169	171	117	195	68%	71%	55%	0.75:1	1.1:1	15%	72%	83%	83%	89%	89%
16	Gwa	84880	89	61	189	68%	68%	39%	0.5:1	0.6:1	18%	84%	82%	82%	84%	84%
17	Taungup	155757	164	94	342	57%	59%	33%	0.42:1	0.5:1	19%	82%	54%	54%	75%	75%
Total	3414671	3585	2292	6737	6737	64%	67%	43%	0.56:1	0.7:1	20%	86%	76%	76%	86%	86%

Annex-21 (townships list)

Sr.No	TOWNSHIP	Population	Estimated New S(+) cases	Total New Smear Positive detected	Total notified TB cases	(CDR) NTP only	(CDR) NTP + other unit	Prop: of SS(+) pul:TB cases out of all pul: TB cases	Ratio of NSS+ to NSS (-)cases and EP cases	Ratio of NSS+ to NSS (-)cases	Sputum Positivity Rate	Sputum Conversion Rate	(CR) NTP only	(CR) NTP+ other unit	(TSR) NTP only	(TSR) NTP + other unit
Yangon Region																
East District																
1	Botataung	39564	67	67	183	100%	100%	51%	0.7:1	0.8:1	10%	94%	90%	90%	93%	93%
2	Dawbon	79973	136	123	321	91%	133%	60%	0.84:1	1.2:1	21%	97%	97%	95%	97%	95%
3	Dagon(N)	168209	285	196	587	69%	106%	43%	0.58:1	0.6:1	20%	93%	85%	85%	86%	90%
4	Dagon(S)	266273	451	501	1457	111%	139%	55%	0.65:1	1:1	33%	81%	73%	74%	78%	80%
5	MingalarTN	125590	213	147	591	69%	70%	36%	0.38:1	0.5:1	19%	99%	91%	90%	93%	93%
6	Okkala(N)	278456	472	349	1114	74%	119%	45%	0.56:1	0.7:1	27%	86%	84%	82%	86%	86%
7	Okkala(S)	161194	273	139	594	51%	116%	37%	0.39:1	0.5:1	24%	94%	87%	88%	87%	88%
8	Thaketa	217369	368	529	1075	144%	184%	75%	1.27:1	2.5:1	44%	97%	84%	82%	88%	87%
9	Thingangyun	180613	306	214	595	70%	119%	65%	0.73:1	1.5:1	31%	98%	94%	86%	94%	89%
10	Yankin	95702	162	149	384	92%	95%	54%	0.84:1	0.9:1	30%	95%	90%	90%	90%	90%
11	Tarmwe	145013	246	105	447	43%	56%	41%	0.38:1	0.5:1	15%	100%	89%	86%	91%	89%
12	Pazundaung	46119	78	47	155	60%	60%	47%	0.57:1	0.7:1	21%	91%	83%	80%	83%	80%
13	Dagon(E)	104137	177	183	522	104%	146%	46%	0.62:1	0.7:1	92%	92%	85%	85%	89%	90%
14	Dagon Seikkan	93186	158	93	351	59%	80%	43%	0.46:1	0.6:1	9%	91%	81%	78%	81%	81%
Total		2001398	3392	2842	8376	84%	117%	51%	0.64:1	0.8:1	25%	92%	84%	83%	87%	87%
West District																
1	Kamayut	62227	105	91	257	86%	101%	54%	0.68:1	1:1		97%	88%	86%	91%	90%
2	Kyauktada	36950	63	28	86	45%	45%	57%	0.58:1	1:1		96%	80%	78%	85%	87%
3	Kyimyintdine	97098	165	119	377	72%	117%	62%	0.61:1	1.2:1	31%	82%	80%	78%	80%	79%
4	Sanchaung	75999	129	97	281	75%	82%	56%	0.64:1	1:1	15%	85%	81%	83%	82%	84%
5	Seikkan	2371	4	5	13	124%	124%	50%	0.71:1	0.8:1	16%	80%	100%	100%	100%	100%
6	Dagon	23710	40	28	68	70%	75%	56%	0.8:1	1.2:1	29%	89%	83%	82%	83%	82%
7	Pabadan	29446	50	33	95	66%	70%	65%	0.72:1	1.4:1		88%	83%	84%	83%	84%
8	Bahan	77423	131	71	234	54%	97%	44%	0.5:1	0.6:1		92%	71%	71%	86%	86%
9	Mayangone	146080	248	239	638	97%	136%	63%	0.78:1	1.3:1	11%	90%	87%	85%	88%	87%
10	Latha	24786	42	22	86	52%	55%	51%	0.5:1	0.7:1		100%	88%	85%	92%	89%
11	Lanmadaw	36450	62	48	114	78%	81%	61%	0.87:1	1.3:1		92%	94%	92%	100%	97%
12	Hlaing	115885	196	179	545	91%	104%	47%	0.58:1	0.7:1	25%	93%	86%	86%	91%	91%
13	Ahlong	48794	83	60	204	73%	88%	46%	0.52:1	0.7:1		93%	82%	79%	95%	91%
Total		777219	1317	1020	2998	77%	100%	55%	0.64:1	0.9:1	20%	90%	84%	82%	88%	87%

Annex-21 (townships list)

Sr.No	TOWNSHIP	Population	Estimated New S(+) cases	Total New Smear Positive detected	Total notified TB cases	(CDR) NTP only	(CDR) NTP + other unit	Prop. of SS(+) pul. TB cases out of all pul. TB cases	Ratio of NSS+ to NSS (-) cases and EP cases	Ratio of NSS+ to NSS (-) cases	Sputum Positivity Rate	Sputum Conversion Rate	(CR) NTP only	(CR) NTP+ other unit	(TSR) NTP only	(TSR) NTP + other unit
South District																
1	Seikkikanaungto	31224	53	51	115	96%	96%	61%	1.02:1	1.3:1		98%	84%	85%	98%	98%
2	Dallah	147282	250	173	574	69%	84%	53%	0.53:1	0.9:1	27%	92%	81%	77%	87%	85%
3	Cocogyun	996	2	0	0	0%		0%								
4	Kawhmu	150916	256	56	172	22%	49%	44%	0.56:1	0.6:1	12%	91%	90%	91%	90%	91%
5	Kyauktan	157938	268	144	355	54%	57%	48%	0.75:1	0.8:1	16%	88%	82%	83%	86%	86%
6	Kunggangone	115114	195	102	249	52%	65%	61%	0.74:1	1.5:1	12%	96%	83%	80%	87%	84%
7	Kayan	162100	275	203	462	74%	86%	64%	0.86:1	1.6:1	21%	95%	88%	87%	94%	93%
8	Twantay	264376	448	182	432	41%	48%	54%	0.82:1	1:1	19%	98%	88%	84%	89%	89%
9	Thongwa	174215	295	134	313	45%	46%	62%	0.97:1	1.4:1	26%	90%	79%	79%	85%	85%
10	Thanlyin	180262	306	315	714	103%	124%	60%	0.95:1	1.3:1	25%	94%	83%	83%	85%	85%
	Total	1384423	2347	1360	3386	58%	69%	56%	0.78:1	1.1:1	20%	94%	84%	83%	88%	88%
North District																
1	Mingalardon	199105	337	519	1255	154%	181%	58%	0.91:1	1.1:1	4%	80%	74%	75%	82%	83%
2	Shwepyithar	227248	385	355	904	92%	137%	62%	0.82:1	1.3:1	33%	89%	69%	70%	85%	84%
3	Hlaingtharyar	358948	608	908	2255	149%	178%	51%	0.78:1	0.9:1	20%	96%	93%	91%	94%	93%
4	Insein	237667	403	496	1310	123%	159%	60%	0.81:1	1.2:1	23%	88%	76%	76%	86%	86%
5	Taikkyi	238363	404	211	669	52%	77%	41%	0.54:1	0.6:1	22%	94%	90%	89%	90%	90%
6	Htantabin	144070	244	108	205	44%	46%	68%	1.38:1	1.9:1	58%	94%	59%	59%	89%	89%
7	Hmawbi	179559	304	232	570	76%	91%	51%	0.8:1	0.9:1	20%	89%	84%	84%	88%	88%
8	Hlegu	182690	310	126	655	41%	68%	36%	0.26:1	0.5:1	13%	96%	95%	95%	95%	95%
	U.T.I	0	0	107	224			62%	1.1:1	1.5:1	28%	76%	54%		59%	
	NTP/ Diagnostic	0	0	12	66				0.3:1	0.7:1	18%	83%	63%		88%	
	Total	1767650	2996	3074	8113	103%	126%	54%	0.74:1	1:1	22%	90%	82%	82%	88%	88%
	Yangon Region	5930690	10053	8296	22873	83%	106%	53%	0.69:1	0.9:1	22%	91%	83%	82%	88%	88%

Annex-21 (townships list)

Sr.No	TOWNSHIP	Population	Estimated New S(+) cases	Total New Smear Positive detected	Total notified TB cases	(CDR) NTP only	(CDR) NTP + other unit	Prop. of SS(+) pul:TB cases out of all pul: TB cases	Ratio of NSS+ to NSS (-)cases and EP cases	Ratio of NSS+ to NSS (-)cases	Sputum Positivity Rate	Sputum Conversion Rate	(CR) NTP only	(CR) NTP+ other unit	(TSR) NTP only	(TSR) NTP + other unit
Ayeyarwaddy Region																
1	Pathain	380460	399	450	1461	113%	130%	42%	0.5:1	0.7:1	21%	91%	74%	74%	85%	86%
2	Kanyidaung	205042	215	85	173	39%	42%	60%	1.13:1	1.3:1	43%	92%	75%	73%	85%	85%
3	Yekyi	219551	231	217	466	94%	97%	65%	0.96:1	1.7:1	26%	91%	72%	72%	86%	86%
4	Kyaunggon	165579	174	145	362	83%	86%	54%	0.74:1	1:1	21%	94%	80%	80%	96%	96%
5	Kyonyaw	285471	300	122	345	41%	45%	51%	0.61:1	1:1	14%	93%	85%	82%	89%	90%
6	Ngaputaw	201388	211	136	301	64%	64%	63%	0.91:1	1.6:1	22%	93%	75%	75%	86%	86%
7	Thabaung	150243	158	122	272	77%	78%	57%	1.05:1	1.2:1	20%	84%	83%	83%	90%	90%
8	Hinthada	361282	379	377	1018	99%	108%	46%	0.6:1	0.8:1	24%	96%	86%	86%	90%	90%
9	Kyankin	96589	101	92	286	91%	91%	41%	0.51:1	0.7:1	16%	93%	88%	88%	93%	93%
10	Myanaung	332278	349	214	614	61%	62%	54%	0.58:1	1:1	28%	96%	89%	89%	91%	91%
11	Ingapu	240834	253	277	671	110%	110%	62%	0.76:1	1.5:1	25%	98%	91%	91%	91%	91%
12	Zalun	180519	190	127	433	67%	71%	53%	0.43:1	1:1	28%	91%	61%	59%	83%	81%
13	Laymyathnar	107720	113	65	223	57%	57%	44%	0.43:1	0.7:1	19%	82%	80%	80%	89%	89%
14	Myaungmya	354092	372	259	840	70%	87%	44%	0.5:1	0.7:1	26%	91%	81%	80%	94%	92%
15	Laputta	434231	456	300	583	66%	70%	63%	1.22:1	1.6:1	10%	99%	98%	91%	98%	95%
16	Mawgyun	301107	316	170	363	54%	69%	66%	1:1	1.8:1	10%	91%	74%	72%	93%	91%
17	Wakema	307389	323	178	460	55%	68%	54%	0.82:1	1:1	19%	91%	90%	89%	92%	92%
18	Einme	208006	218	174	343	80%	81%	59%	1.18:1	1.4:1	19%	91%	80%	80%	81%	81%
19	Pyapon	328848	345	259	742	75%	87%	43%	0.57:1	0.7:1	20%	90%	82%	82%	82%	84%
20	Bogalay	320808	337	252	529	75%	75%	61%	1.06:1	1.4:1	30%	93%	85%	85%	86%	86%
21	Dedaye	215622	226	42	147	19%	45%	44%	0.44:1	0.7:1	14%	86%	63%	69%	86%	88%
22	Kyaiklatt	196286	206	123	279	60%	68%	64%	0.9:1	1.6:1	28%	87%	67%	68%	81%	82%
23	Maubin	345513	363	237	679	65%	66%	52%	0.59:1	1:1	26%	88%	86%	86%	87%	89%
24	Nyaungdon	217007	228	127	256	56%	72%	72%	1.14:1	2.3:1	22%	98%	93%	93%	93%	93%
25	Pantanaw	269721	283	194	320	69%	72%	72%	1.69:1	2.4:1	36%	95%	67%	67%	87%	87%
26	Danuphyu	185207	194	199	490	102%	109%	50%	0.74:1	0.9:1	30%	96%	95%	95%	95%	95%
T total		6610793	6941	4943	12656	71%	78%	53%	0.71:1	1.1	20%	93%	82%	81%	89%	89%

EVALUATION OF TB CONTROL ACTIVITIES AT TOWNSHIPS LEVEL (2009-2010)

Region & State	Low CR ≤50% Low CDR≤40%	Low CR ≤50%	LowCDR≤40%	LowCDR≤40%	CDR≥100% LowCR	CR 100% LowCDR	CDR≥100%	CR100%	TSR ≥85% CDR≥70%	Average
Kachin 4 tsp report not receive	14	2	0	1	0	0	3	0	Bahmo Waingmaw	Mansi, Moenyin, Moegaung Shwegu, Chipway, Putao
	7	0	0	3	0	1	0	0		Loikaw
Kayah	7	0	0	3	0	1	0	0	Bawlake, Masai	Loikaw
	9	1	0	7	0	0	0	0		Mindat
Chin	9	1	0	7	0	0	0	0		Mindat
	37	1	1	8	0	1	3	0		Myaung, Myinmu, Shwebo Khin-U, Kyunhla, Ayadaw Wetlet, Phaungbyin Monywa, Pale Budalin, ChaungU, Kani Katha, Homalin Htigyang, Kalay, Ye-U Indaw, Kawlin Pinlebu, Wuntho
Sagaing	37	1	1	8	0	1	3	0	Segaing Tamu Lahel	Myaung, Myinmu, Shwebo Khin-U, Kyunhla, Ayadaw Wetlet, Phaungbyin Monywa, Pale Budalin, ChaungU, Kani Katha, Homalin Htigyang, Kalay, Ye-U Indaw, Kawlin Pinlebu, Wuntho
	25	0	1	8	0	0	2	0	Pwintphyu ,Chauk Yenanchaung.	Taungdwingyi, Myothit Salin, Aunglan, Minhla Pakokku, Kanma, Pauk Minbu, Ngape, Mindom

Region & State	Low CR ≤50% Low CDR≤40%	Low CR ≤50%	LowCDR≤40%	CDR≥100% LowCR	CR 100% LowCDR	CDR≥100%	CR100%	TSR ≥85% CDR≥70%	Average
Mandalay	0	Myitha Mahaing	Wundwin Natogyi Ngazun Yamethin Sintgine	5	0	Pyigyitagonn Chanayetharzan Pyinmana	0	Aungmyaytharzan Chanmyathazi Mahaaungmyae Sintgu,	Mogok, Meiktilar, Lewei, Amarapura, TadaO Tharzi, Taungtha, Thabeikkyin Myingan, Pyawbwei Kyaukse, NyaungU, Tatkone Pyin oo Lwin, Madayar Patheingyi, Kyaukpadaung
31	0	2			0	3	0	4	17
ShanState (Taunggyi)	0		Laihkay, Mongkaing, Ywangan Lauksauk, Pinlaung, Loilem Hopone, Hpekon, Hsiseing	9	0	Mongpang Kyeethi Mongshu	1	0	Maukme, Kunhein, Laikha Namsan, Pindaya, Kalaw Taunggyi, Nyaungshwe
21	0				0	3	1	0	8
Shan State (Kengtong)	Mongyan		Mongkhat	Monghsat		Mongton			Kengtong, Mongping
9	1	0		1	1	2	0	0	4
Shan State (Lashio)		Laukkai	Nyaungcho, Kuitai			Tachileik	0	0	Monphak, Mongyaung
6 tsp: not receive report			Namtu, Mongreh Namsam, Namkham				0	0	4
18	0	1		6	0	0	1	2	8
Kayin			Thandaung, Kyarinseikkyi			Myawady		Papun (Kamamaung) Hppan	Kawkareik, Hlaingbwe
7	0	0		2	0	1	0	2	2
Tanintharyi		Bokpyin	Launglon, Kyunsu, Yebyu Thayetchaung, Tanintharyi			Dawei, Kawthaung Myeik			Palaw
10	0	1		5	0	3	0	0	1
Bago Region			Kyaukkya			Bago Taungoo		Shwekyin	Kawa, Htantabin, Daik-U Nyaunglaybin, Waw Thanatpin, Phyu, Kyauktaga Oktwin, Yedashe
14	0	0		1	0	2	0	1	10

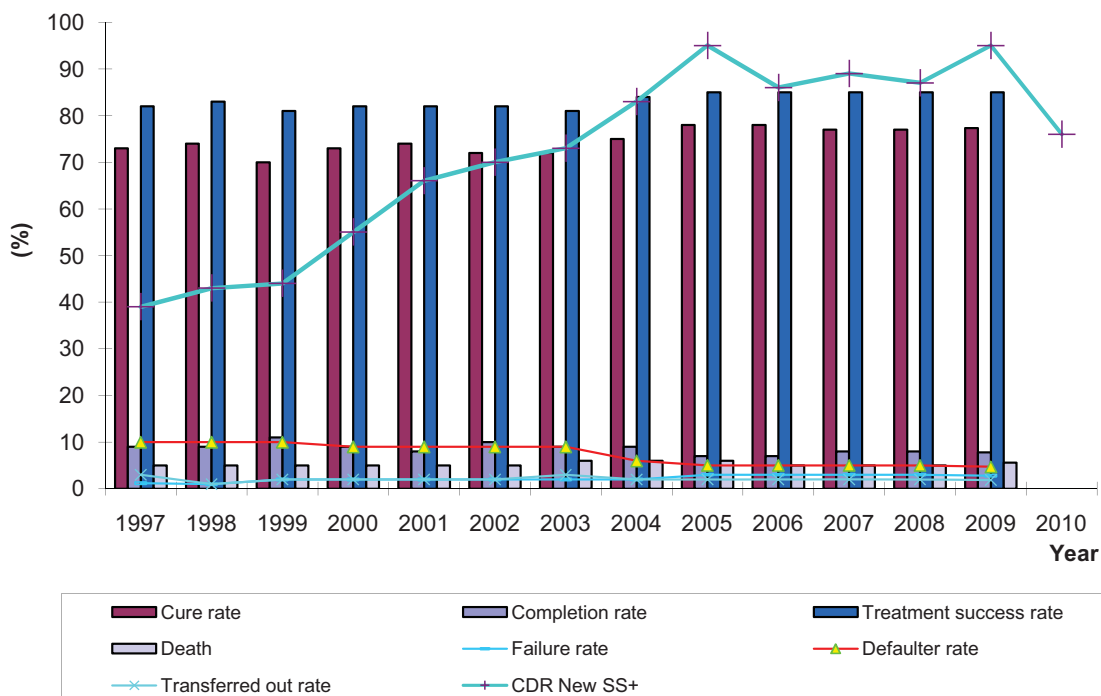
EVALUATION OF TREATMENT OUTCOME OF NEW SMEAR POSITIVE TB PATIENTS (2010)

Region & State	DOTS TOWNSHIPS			Sputum Conversion Rate < 80%
	High Defaulter Rate $\geq 10\%$ *means $\geq 20\%$	Low CR $\leq 50\%$ with TSR $\geq 70\%$		
Kachin	* Kamaing, Tanai, Chipway	Nil	Shwegu, Kamaing, Tanai, Chibwa, Machanbaw,	
Kayah	Nil	Nil	Bawlake	
Chin	* Tunzan, Palatwa	Htantalain	Htantalain, Tunzan, Matupi, Falam, Hakha,	
Sagaing	Pale, Mawleik	Layshi	Mindat, Kanpetlet, Paletwa, Tiddim, Htygyaing, Layshi, Monywa	
Magwe	Nil	Satoketaya	Magwe, Thayet	
Mandalay	Mahlaing, Taungtha, Yamethin	Mahaling, Myittha	Mahlaing, Taungtha, Pyinoolwin, Yamethine, Pyawbwei Taikone, Kyaukse	
Shan State (Taunggyi)	Taunggyi, Hopone, Hsiseng	Nil	Kyethi, Mongkai, Namsan	
Shan State (Kengtong)	Kengtong, Monghsat, Mongping, Mongton Mongyaung	Mongyan, Mongsat	Mongkhat, Mongyan, Monhsat, Mongton	
Shan State (Lashio)	* Manton, Mongmeik, Namtu, * Lashio, Theinn * Laukkai, Muse,	Nil	Mongmeik, Namsam, Iaukkai Mabein, muse, Namkhan, Tanyan	
Kayin	Myawaddy	Nil	Myawaddy, Thandaung	
Tanintharyi	Thayetchaung, Bokepyin, Kyunsu	Bokepyin	Kawthaung	
Bago Region	Thanapin, Oktwin	Nil	Nil	
Bago Region (Pyay)	Shwedaung	Nil	Tharyarwady, Moenyo	
Mon	Nil	Nil	Nil	
Rakhine	Kyaukphyu, Ann, Myebon, * Pauktaw	Pauktaw	Rambye, Maungdaw, Minbya, Pauktaw, Thandwe	
Yangon	Dagon (S), Dagon Seikkan	Nil	Nil	
Ayeyarwady	Einme, Pantanaw	Nil	Nil	

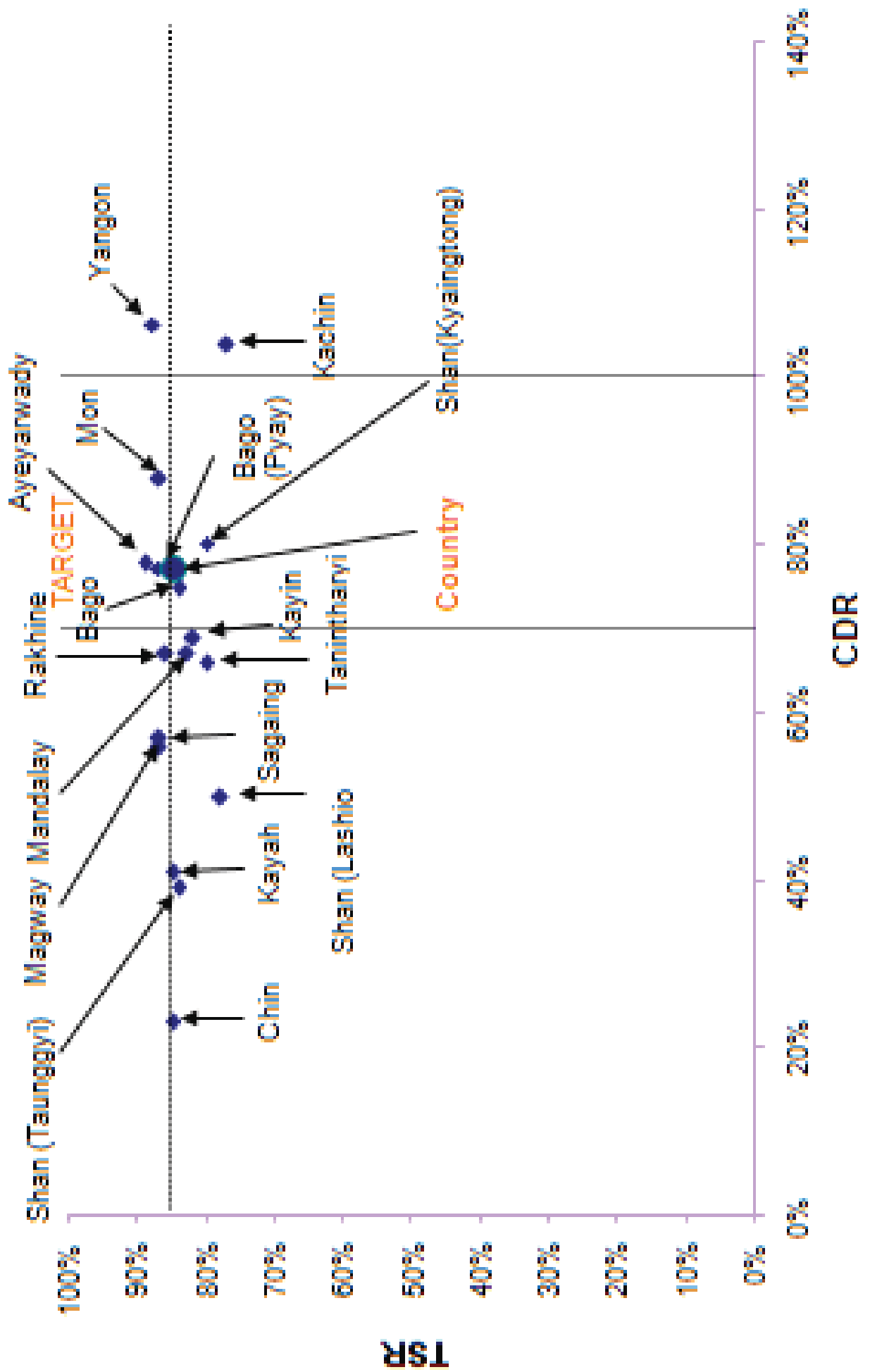
Progress of NTP (1994-2010)

Indicator\Year	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
CDR (New SS+)	33%	35%	39%	39%	43%	44%	55%	66%	70%	73%	83%	95%	86%	89%	87%	95%	76%
CR	61%	54%	75%	73%	74%	70%	73%	74%	72%	72%	75%	78%	78%	77%	78%	77%	
TSR	78%	66%	82%	82%	83%	81%	82%	82%	82%	81%	84%	85%	85%	85%	85%	85%	

Case detection rates with estimated cases as 2006 and treatment outcome (1997-2010)



Targets achievement according to Regions, States and Country (2009-2010)



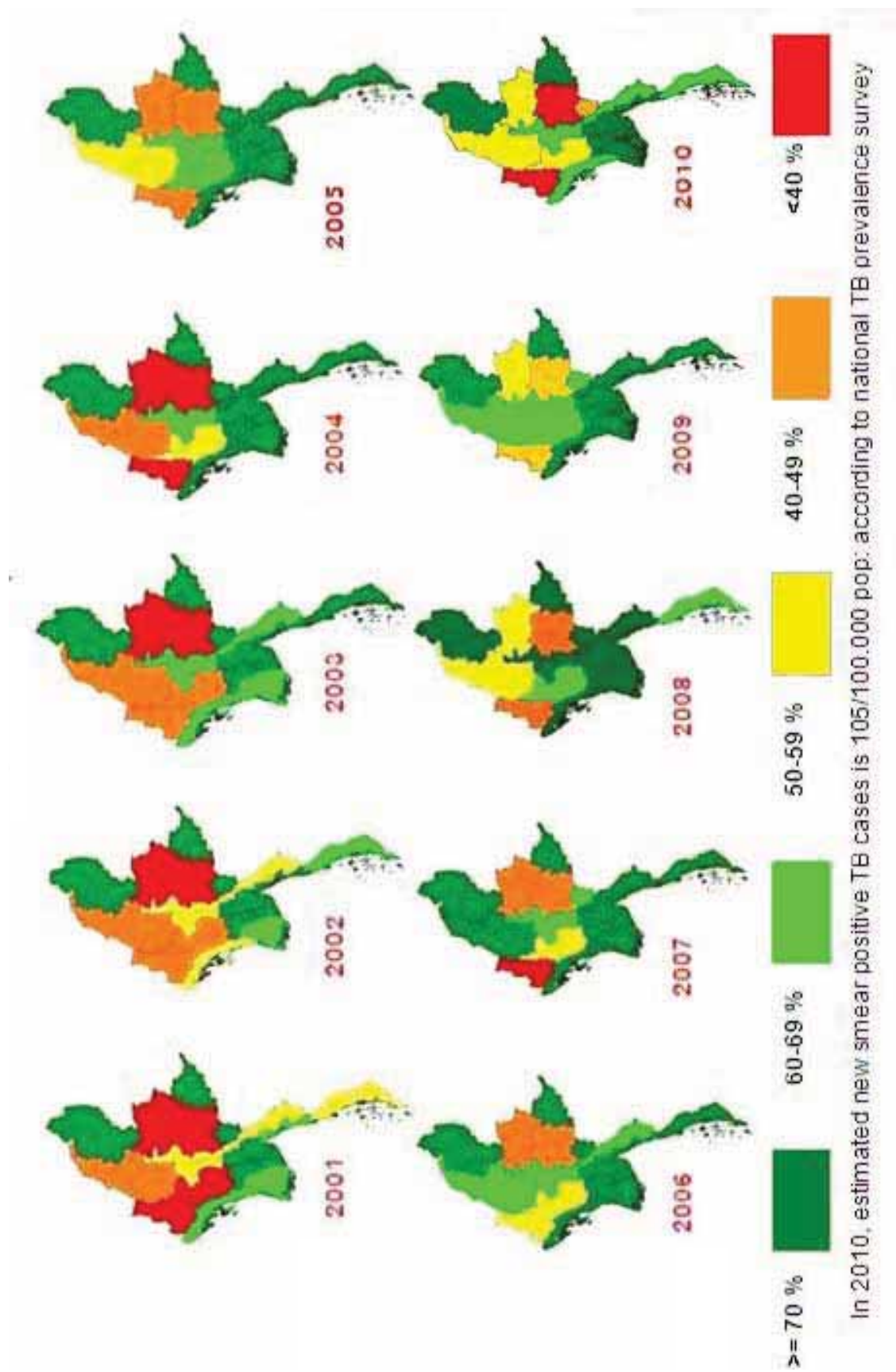
Case Detection Rate (New Smear Positive) of Regions & States (2000-2010)

Region/ State	CDR										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Kachin	79	120	127	118	90	116	131	129	109	122	79
Kayah	81	88	76	71	70	83	79	69	70	60	41
Chin	42	37	45	42	38	42	52	39	41	40	23
Sagaing	41	45	42	45	45	53	60	79	59	61	50
Magway	35	38	48	49	57	65	55	56	68	67	47
Mandalay	45	50	52	60	65	67	65	69	70	64	52
Shan State (Taunggyi)	34	34	34	32	38	40	43	48	46	49	37
Shan State (Kyaingtong)		106	134	87	99	103	102	102	106	90	75
Shan State (Lashio)		23	27	31	34	42	46	49	55	56	45
Kayin	47	55	57	68	72	86	65	79	81	92	63
Tanintharyi	59	54	66	72	76	75	71	72	69	72	50
Bago Region	59	79	78	81	73	87	82	83	79	82	58
Bago Region (Pyay)		73	85	81	87	77	91	101	101	105	69
Mon		57	68	71	74	95	108	93	89	94	114
Rakhine	73	67	54	64	84	83	81	75	90	87	64
Yangon	81	114	131	148	156	158	70	81	76	85	83
Ayeyarwady	56	66	63	67	78	86	96	92	84	92	71
Country	55	66	70	73	83	95	86	89	87	95	76

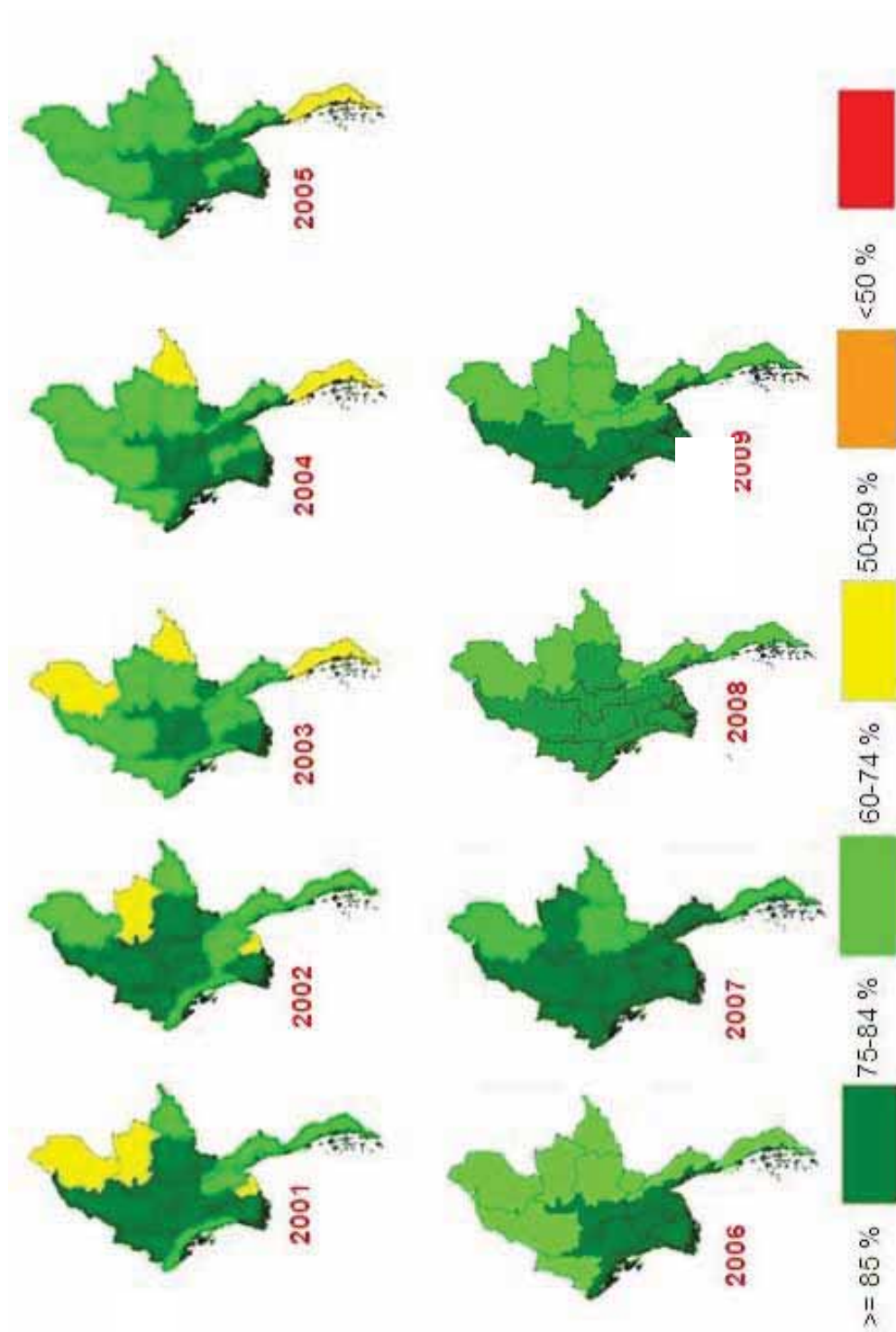
Treatment outcomes of smear positive in Regions & States (2000-2009)

Region/ State	2000		2001		2002		2003		2004		2005		2006		2007		2008		2009	
	CR	TSR	CR	TSR	CR	TSR	CR	TSR	CR	TSR	CR	TSR	CR	TSR	CR	TSR	CR	TSR	CR	TSR
Kachin	77	78	71	74	69	75	67	73	74	78	75	78	73	81	67	77	73	78	71	79
Kayah	95	95	94	95	95	95	92	92	93	94	83	88	76	83	66	78	63	82	83	85
Chin	42	85	66	86	75	85	50	82	68	84	73	84	65	78	72	87	71	90	73	85
Sagaing	60	82	65	87	55	86	56	80	72	80	74	82	74	82	77	86	78	85	81	87
Magway	74	89	84	90	79	91	73	88	77	90	80	89	81	89	77	88	76	86	79	86
Mandalay	79	87	84	88	84	89	83	89	77	87	75	86	79	86	77	86	81	87	70	84
Shan State (Taunggyi)	76	11	86	88	83	85	76	80	79	83	72	83	73	79	74	81	80	86	79	84
Shan State (Kyaingtong)	79	81	74	84	64	78	56	68	64	74	64	78	62	80	64	85	70	84	64	80
Shan State (Lashio)	84	89	66	73	63	71	65	78	69	79	68	81	65	81	68	82	69	80	70	79
Kayin	71	85	66	83	70	78	67	78	68	83	74	83	75	82	78	86	76	83	75	82
Tanintharyi	68	76	72	75	70	76	68	72	56	73	64	73	67	76	71	76	74	79	73	80
Bago Region	81	86	76	82	74	84	80	84	86	88	89	91	84	90	79	87	78	87	76	84
Bago Region (Pyay)	76	90	75	86	69	81	67	78	74	81	74	84	82	86	79	85	80	85	81	87
Mon	69	76	74	80	76	83	76	84	77	87	80	88	79	87	79	87	81	85	80	86
Rakhine	71	82	72	81	70	84	72	83	74	87	81	87	85	91	77	88	74	86	76	86
Yangon	66	75	67	74	66	73	67	76	73	82	78	84	78	85	81	87	82	88	83	88
Ayeyarwady	78	86	82	88	80	87	81	85	83	87	82	88	82	91	83	90	81	88	82	89
Country	73	82	74	82	72	82	72	81	75	84	78	85	78	85	77	85	78	85	77	85

Categories of Regions & States According to Case Detection Rate (2001-2010)



Categories of Regions & States According to Treatment Success Rate (2001-2009)



**National Tuberculosis Programme
Case finding activities (1994 - 2010)**

YEAR	Total Population	DOTS Population	No. of Estimate S(+) cases	CNR All S(+) per 100,000 population	CDR NS(+)	PULMONARY TUBERCULOSIS												EXTRA PULMONARY TB				Other			Total							
						SMEAR POSITIVE						SMEAR NEGATIVE						M		F		M		F		M		F				
						NEW CASES			RELAPSES			OLD CASES			TAD			TAF			total		S(+)		M		F		M		F	
						M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	M	F	M	F	M	F	M	F		
1994(18Tsp)			3,492	32	33	615	331	946	124	60	0	0	0	0	0	1,130	203	154	33	35	975	580	1,555									
1995(144Tsp)	44,302,486	26,180,539	26,182	36	36	4,885	2,692	7,577	1,186	629	0	0	0	0	9,392	4,037	2,797	317	296	10,547	6,461	17,008										
1996(153Tsp)	45,574,135	27,413,310	27,413	39	39	5,648	3,148	8,796	1,251	551	0	0	0	10,598	4,823	3,461	580	493	12,472	7,724	20,196											
1997(153Tsp)	46,402,230	27,744,233	27,744	39	39	5,844	3,170	9,014	1,133	538	0	0	0	10,685	2,719	2,029	383	297	10,079	6,034	16,113											
1998(153Tsp)	47,260,665	28,260,276	28,260	42	43	6,325	3,764	10,089	1,286	565	0	0	0	11,940	1,233	982	326	275	9,170	5,566	14,756											
1999(168Tsp)	48,144,446	31,245,000	31,247	43	44	7,317	4,141	11,458	1,460	643	0	0	0	13,561	2,649	1,942	788	686	12,214	7,412	19,626											
2000(231Tsp)	49,033,261	37,621,000	37,621	55	56	11,196	6,058	17,254	1,818	805	630	233	0	20,740	5,167	3,492	1,289	1,015	20,100	11,603	31,703											
2001(259Tsp)	51,138,000	42,061,000	42,061	59	66	13,473	7,213	20,686	2,203	911	741	282	0	24,823	8,296	5,446	2,087	1,803	26,800	15,655	42,455											
2002(310Tsp)	52,16,455	46,044,000	34,533	63	70	15,951	8,211	24,162	2,582	1,082	925	306	0	29,057	11,228	7,260	5,955	4,743	36,641	21,602	58,243											
2003(324Tsp)	53,207,841	49,667,413	37,251	67	74	18,017	9,431	27,448	3,235	1,259	1,127	360	0	33,429	15,759	10,247	9,858	7,938	47,996	29,235	77,231											
2004(324Tsp)	54,282,182	50,274,570	37,706	74	83	20,783	10,625	31,408	3,318	1,388	979	268	0	37,361	20,969	13,363	14,652	11,564	60,701	37,208	97,909											
2005(324Tsp)	55,367,825	51,412,552	38,559	82	95	24,204	12,337	36,541	3,264	1,351	766	216	0	42,138	22,117	13,484	16,902	13,350	67,253	40,738	107,991											
2006(325Tsp)	56,477,230	54,286,877	46,911	85	86	26,713	13,528	40,241	3,562	1,433	841	280	0	46,357	26,027	16,714	19,392	15,103	76,535	47,058	123,593											
2007(325Tsp)	57,606,774	55,753,816	48,135	88	89	27,927	14,661	42,588	3,307	1,358	588	160	822	49,251	24,979	16,847	22,572	17,430	81,926	51,621	133,547											
2008(325Tsp)	58,758,909	53,752,810	45,789	88	90	27,099	14,149	41,248	3,063	1,245	470	149	763	47,303	26,243	17,791	19,322	15,125	1,954	1,001	78,914	49,825	128,739									
2009(325Tsp)	59,934,088	50,907,881	43,645	94	95	27,386	14,003	41,389	3,255	1,315	460	127	923	47,877	30,372	20,840	17,860	13,821	2,274	979	82,530	51,493	134,023									
2010(325Tsp)	60,982,934	49,197,091	55,482	99	76	27,962	14,356	42,318	3,146	1,310	418	96	1,028	48,783	33,924	22,916	15,722	12,254	2,601	1,203	84,801	25,602	137,403									

TAD = Treatment after Default
TAF = Treatment after Failure

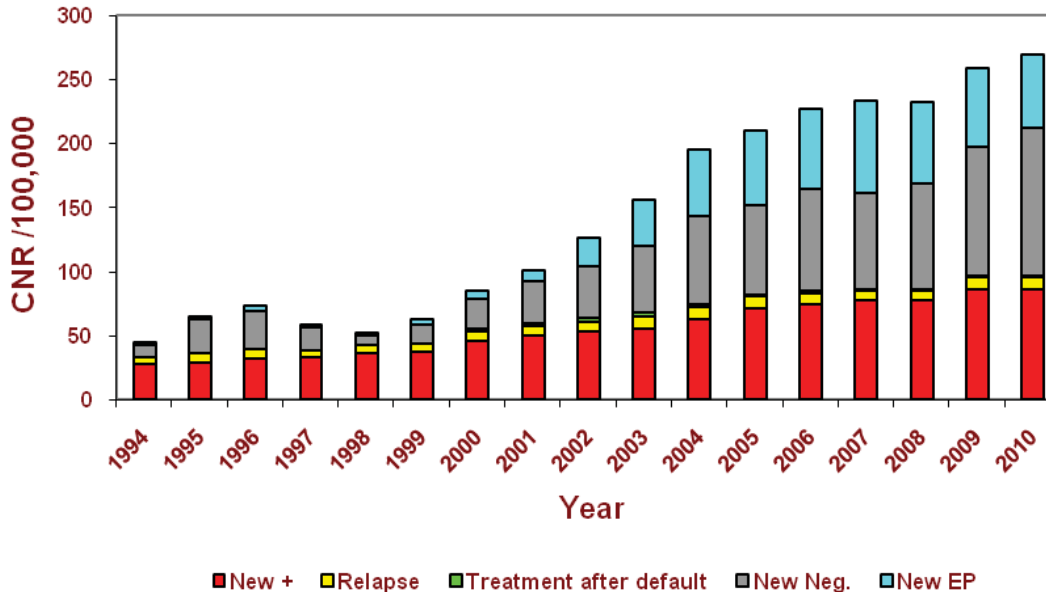
Treatment Outcome of NS(+), Relapse, NS(-) cases (1994 - 2004), National Tuberculosis Programme

YEAR	Type of TB patients	Total registered No. of Pul pts:	CURED		COMPLETED		TSR	DIED		FAILURE		DEFAULTER		TRANSFER OUT		Total Evaluated
			No	CR	No	%		No	%	No	%	No	%	No	%	
1994	NS(+)	1473	899	61%	248	17%	78%	68	5%	16	1%	185	13%	18	1%	1434
	Relapse	536	157	29%	160	30%		10	2%	60	11%	53	10%	96	18%	536
	NS(-)	1440	0		1114	77%		28	2%	4	0%	212	15%	82	6%	1440
1995	NS(+)	6995	3781	54%	837	12%	66%	284	4%	267	4%	1290	18%	536	8%	6995
	Relapse	1443	800	55%	122	8%		57	4%	57	4%	273	19%	134	9%	1443
	NS(-)	6084	0		4662	77%		120	2%	28	0%	974	16%	200	3%	6084
1996	NS(+)	8496	6410	75%	550	6%	81%	364	4%	149	2%	805	9%	218	3%	8496
	Relapse	1697	1236	73%	81	5%		104	6%	58	3%	160	9%	58	3%	1697
	NS(-)	8502	0		7187	85%		318	4%	24	0%	760	9%	213	3%	8502
1997	NS(+)	9232	6732	73%	820	9%	82%	422	5%	114	1%	904	10%	290	3%	9232
	Relapse	1745	1059	61%	236	14%		109	6%	65	4%	198	11%	78	4%	1745
	NS(-)	5609	0		4592	82%		165	3%	14	0%	571	10%	267	5%	5609
1998	NS(+)	10313	7622	74%	879	9%	83%	486	5%	99	1%	1033	10%	194	2%	10313
	Relapse	1791	1201	67%	183	10%		103	6%	53	3%	189	11%	62	3%	1791
	NS(-)	2499	0		1982	79%		130	5%	15	1%	328	13%	44	2%	2499
1999	NS(+)	11641	8153	70%	1240	11%	81%	624	5%	194	2%	1205	10%	225	2%	11641
	Relapse	2041	1281	63%	201	10%		142	7%	77	4%	273	13%	67	3%	2041
	NS(-)	4998	0		4080	82%		230	5%	25	1%	533	11%	130	3%	4998
2000	NS(+)	16792	12214	73%	1581	9%	82%	892	5%	283	2%	1556	9%	266	2%	16792
	Relapse	2704	1795	66%	262	10%		194	7%	88	3%	294	11%	71	3%	2704
	NS(-)	9097	0		7566	83%		431	5%	47	1%	883	10%	170	2%	9097
2001	NS(+)	20922	15394	74%	1622	8%	82%	1094	5%	358	2%	1985	9%	469	2%	20922
	Relapse	3294	2169	66%	337	10%		257	8%	132	4%	283	9%	116	4%	3294
	NS(-)	14539	0		11933	82%		662	5%	53	0%	1511	10%	380	3%	14539
2002	NS(+)	23466	16829	72%	2284	10%	82%	1253	5%	445	2%	2135	9%	520	2%	23466
	Relapse	3648	2476	68%	325	9%		289	8%	126	3%	325	9%	107	3%	3648
	NS(-)	16990	0		14114	83%		907	5%	121	1%	1530	9%	318	2%	16990
2003	NS(+)	27419	19616	72%	2486	9%	81%	1562	6%	564	2%	2480	9%	711	3%	27419
	Relapse	4621	2880	62%	580	13%		402	9%	169	4%	414	9%	176	4%	4621
	NS(-)	26607	0		21445	81%		1356	5%	160	1%	2786	10%	860	3%	26607
2004	NS(+)	31413	23634	75%	2617	8%	84%	1731	6%	697	2%	1961	6%	773	2%	31413
	Relapse	4682	3061	65%	538	11%		407	9%	186	4%	335	7%	155	3%	4682
	NS(-)	34385			27821	81%		2045	6%	188	1%	3048	9%	1283	4%	34385

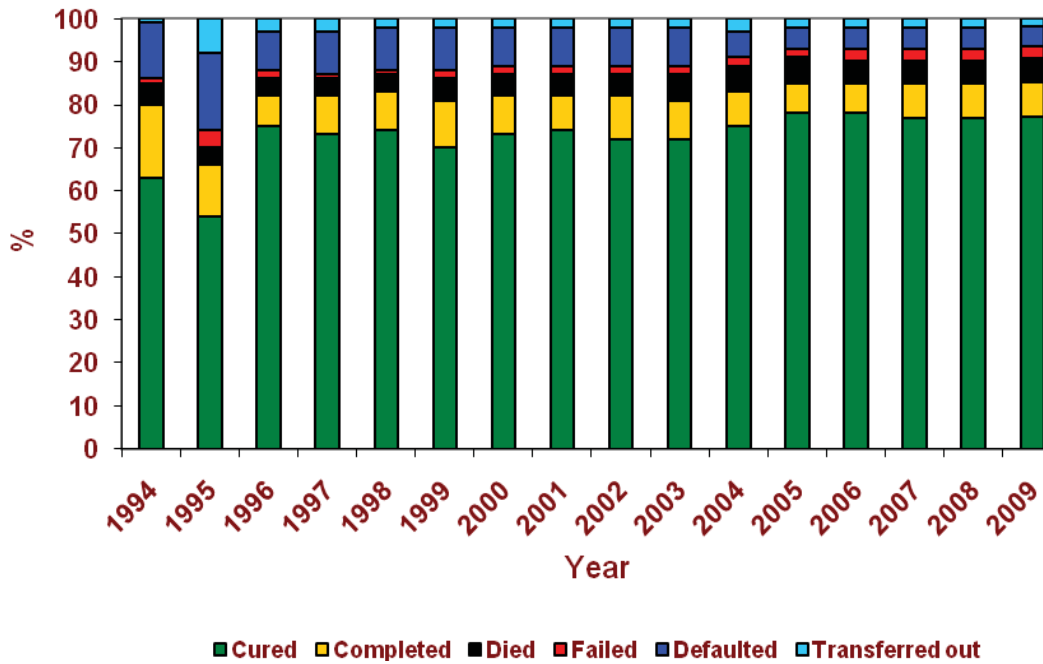
Treatment Outcome of NS(+), Relapse, NS(-) with HIV(+) cases (2005 - 2009), National Tuberculosis Programme

YEAR	Type of TB patients	Total registered No. of PUI pts:	CURED		COMPLETED		TSR	DIED		FAILURE		DEFAULTER		TRANSFER OUT		
			No	CR	No	%		No	%	No	%	No	%	No	%	
2005	NS(+)	34859	27039	78%	2579	7%	85%	1898	5%	825	2%	1787	5%	731	2%	34859
	TB/HIV, NS (+)	1793	1161	65%	41	2%	67%	192	11%	219	12%	139	8%	41	2%	1793
	Relapse	4458	2897	65%	477	11%	76%	401	9%	202	5%	285	6%	196	4%	4458
	TB/HIV, Relapse	370	117	32%	67	18%	50%	111	30%	30	8%	23	6%	22	6%	370
	NS(-)	34281			28184	82%	82%	2275	7%	149	0.4%	2691	8%	982	3%	34281
	TB/HIV, NS(-)	1615			964	60%	60%	406	25%	46	3%	131	8%	68	4%	1615
2006	NS(+)	39004	30365	78%	2873	7%	85%	1883	5%	1211	3%	1937	5%	735	2%	39004
	TB/HIV, NS (+)	1341	700	52%	89	7%	59%	344	26%	79	6%	82	6%	47	4%	1341
	Relapse	4613	2965	64%	512	11%	75%	418	9%	285	6%	280	6%	153	3%	4613
	TB/HIV, Relapse	296	92	31%	66	22%	50%	106	36%	13	4%	8	3%	11	4%	296
	NS(-)	40425			33825	84%	84%	2253	6%	320	0.8%	3093	8%	934	2%	40425
	TB/HIV, NS(-)	3030			1942	64%	64%	723	24%	56	2%	216	8%	93	3%	3030
2007	NS(+)	42738	32855	77%	3502	8%	85%	2339	5%	1174	3%	2104	5%	764	2%	42738
	TB/HIV, NS (+)	1120	622	56%	102	9%	65%	283	25%	30	3%	52	5%	31	3%	1120
	Relapse	4680	2955	63%	578	12%	75%	492	11%	225	5%	279	6%	151	3%	4680
	TB/HIV, Relapse	158	58	37%	27	17%	54%	57	36%	4	3%	6	4%	6	4%	158
	NS(-)	42228			34902	83%	83%	2887	7%	267	0.6%	3318	8%	854	2%	42228
	TB/HIV, NS(-)	2530			1553	61%	61%	649	26%	21	1%	210	8%	97	4%	2530
2008	NS(+)	39984	31427	79%	2944	7%	86%	2038	5%	1043	3%	1907	5%	625	2%	39984
	TB/HIV, NS (+)	1273	640	50%	166	13%	63%	338	27%	22	2%	69	5%	38	3%	1273
	Relapse	4115	2745	67%	470	11%	78%	387	9%	203	5%	209	5%	101	2%	4115
	TB/HIV, Relapse	157	70	45%	32	20%	65%	45	29%	4	3%	3	2%	3	2%	157
	NS(-)	38181			31953	84%	84%	2351	6%	179	0.5%	2859	7%	839	2%	38181
	TB/HIV, NS(-)	2565			1671	65%	65%	632	25%	28	1%	149	6%	85	3%	2565
2009	NS(+)	40331	31556	78%	3096	8%	86%	1971	5%	1110	3%	1883	5%	715	2%	40331
	TB/HIV, NS (+)	1480	760	51%	150	10%	61%	389	26%	41	3%	79	5%	61	4%	1480
	Relapse	4515	2966	66%	544	12%	78%	399	9%	227	5%	251	6%	128	3%	4515
	TB/HIV, Relapse	222	79	36%	63	28%	64%	58	26%	5	2%	10	5%	7	3%	222
	NS(-)	37105			30881	83%	83%	2080	6%	214	0.6%	2962	8%	968	3%	37105
	TB/HIV, NS(-)	3126			2045	65%	65%	742	24%	26	1%	195	6%	118	4%	3126

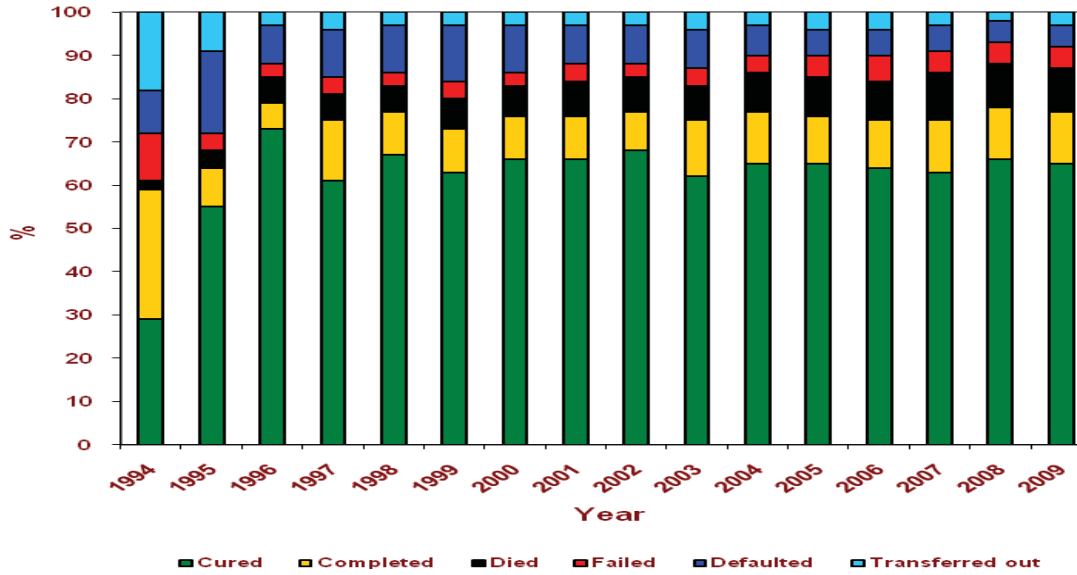
Case notification rate by type of TB patients
(1994 -2010)



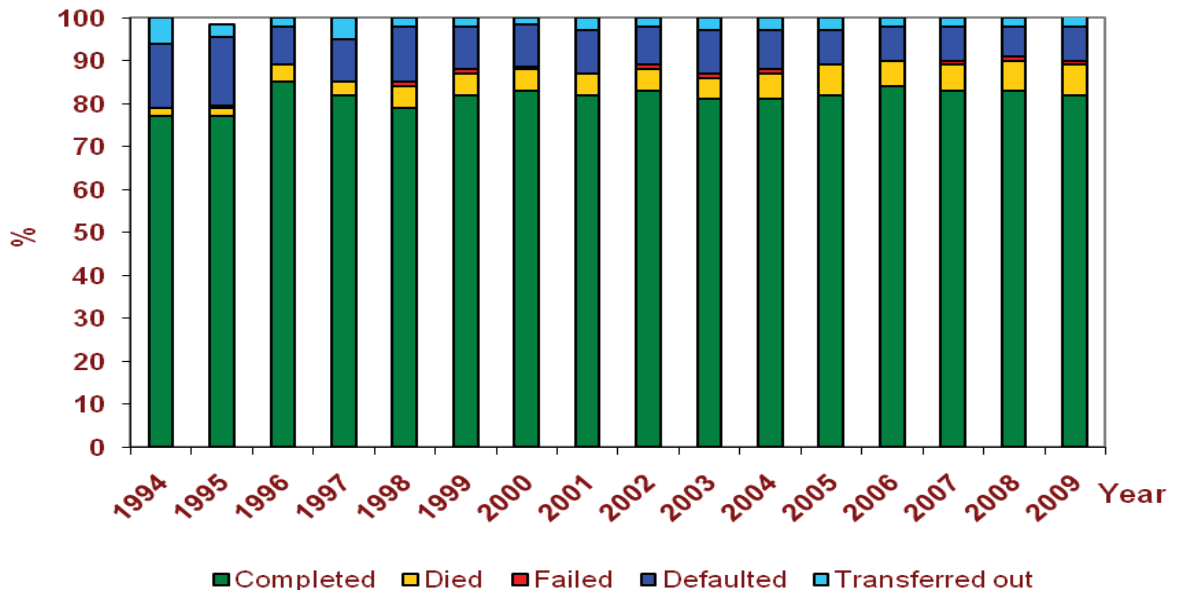
Treatment outcomes of new smear positive TB patients
(1994 to 2009 cohorts)

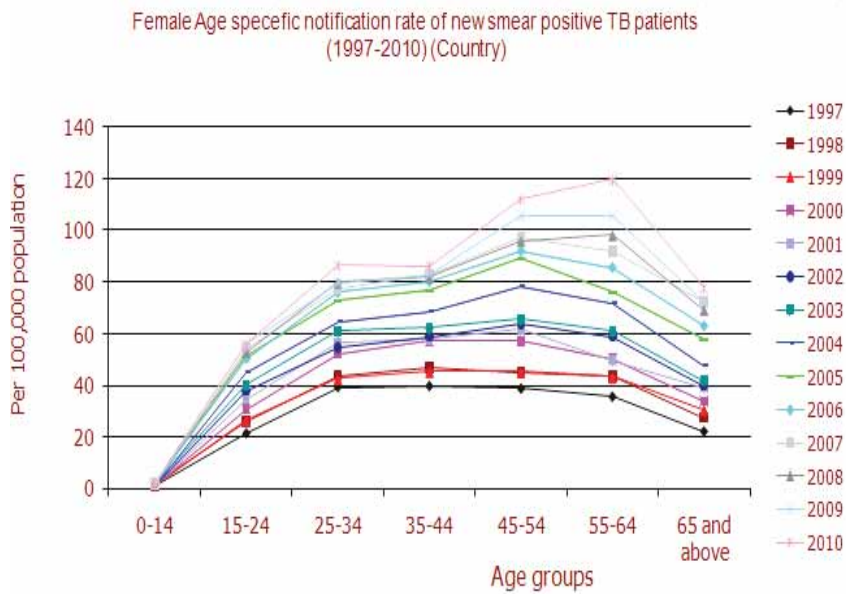
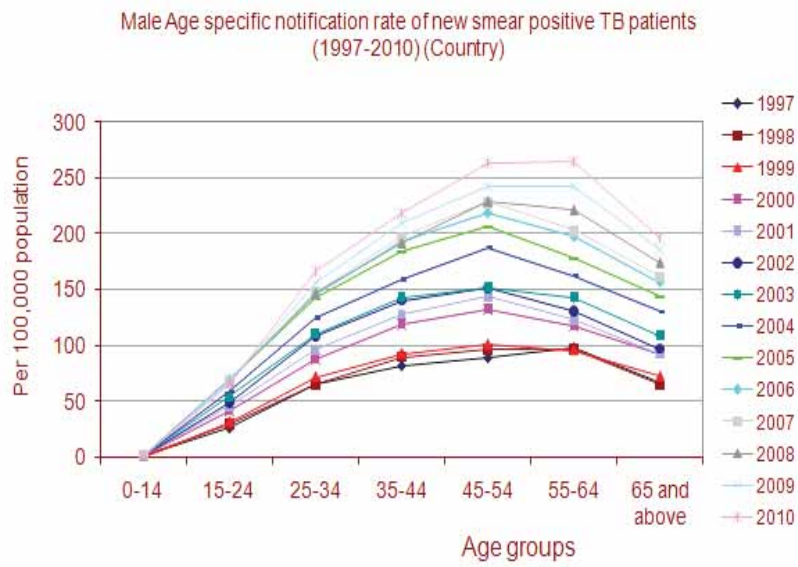
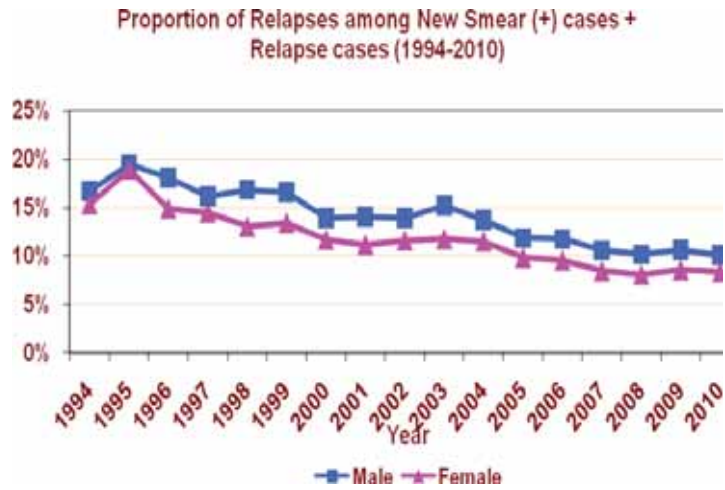


Treatment outcomes of relapse cases (1994 to 2009 cohorts)

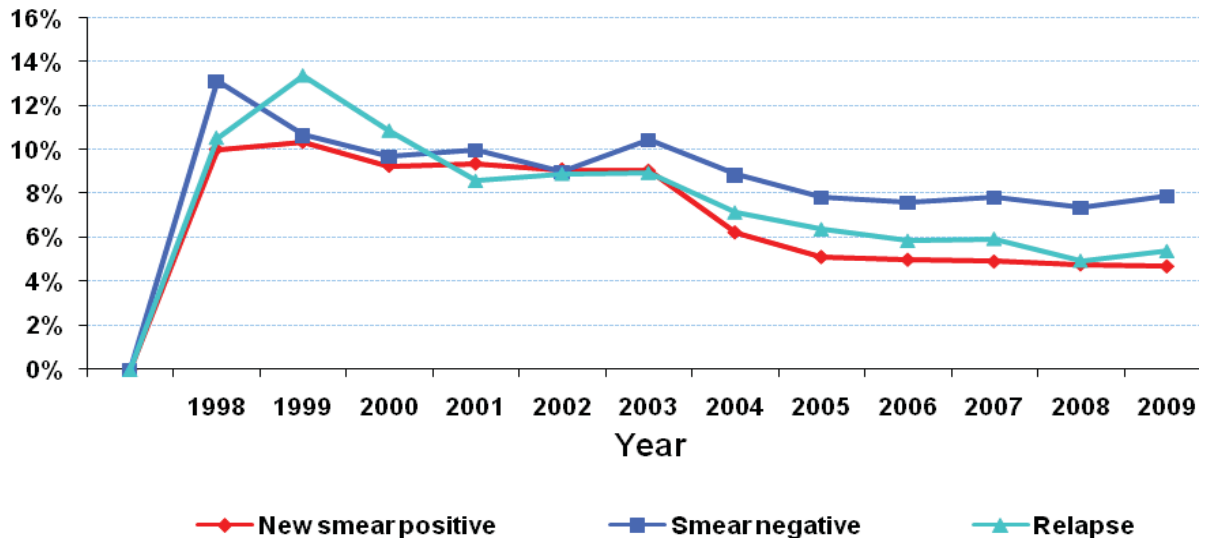


Treatment outcomes of new smear negative TB patients (1994-2009 cohorts)

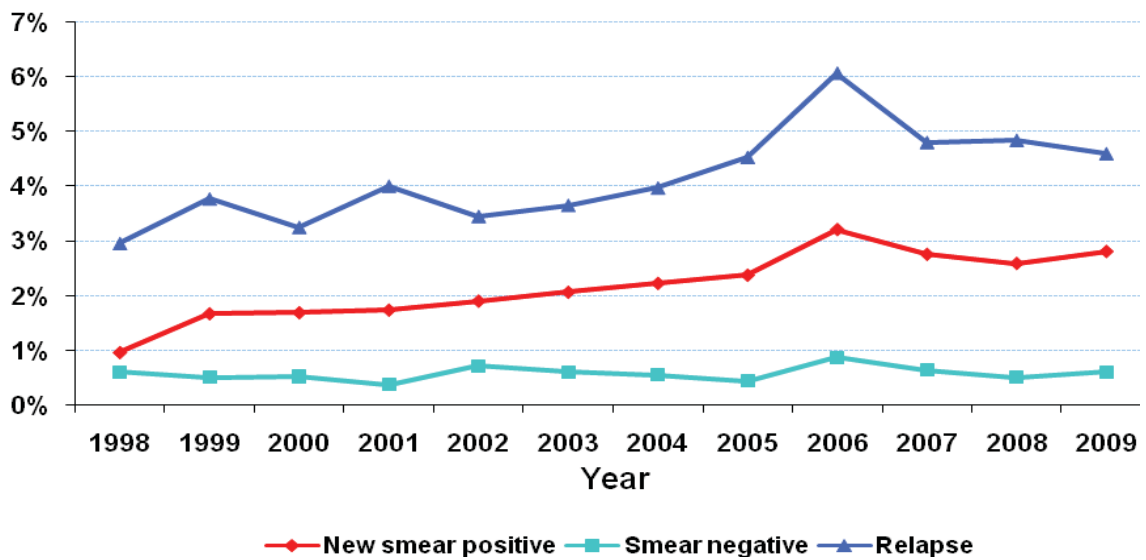




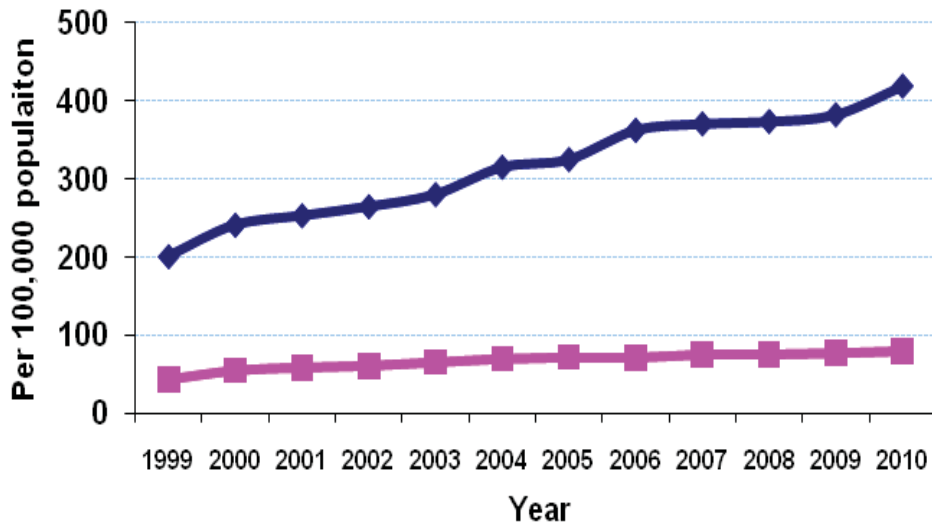
Defaulting of New Smear Positive, Smear Negative and Relapse cases in Myanmar (1998-2009)



Failure Rate of New Smear Positive, Smear Negative and Relapse cases in Myanmar (1998-2009)

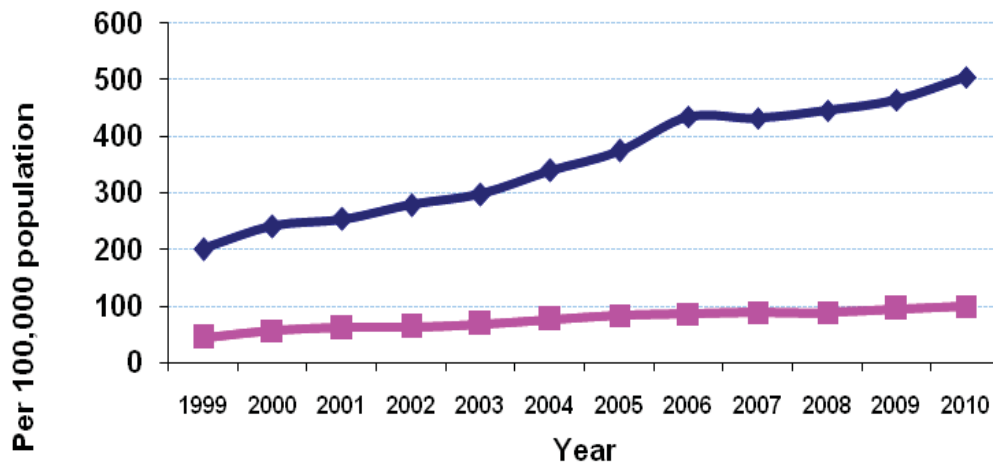


NTP:TB suspect' examination rate & All S (+) notification rate (1999 - 2010)



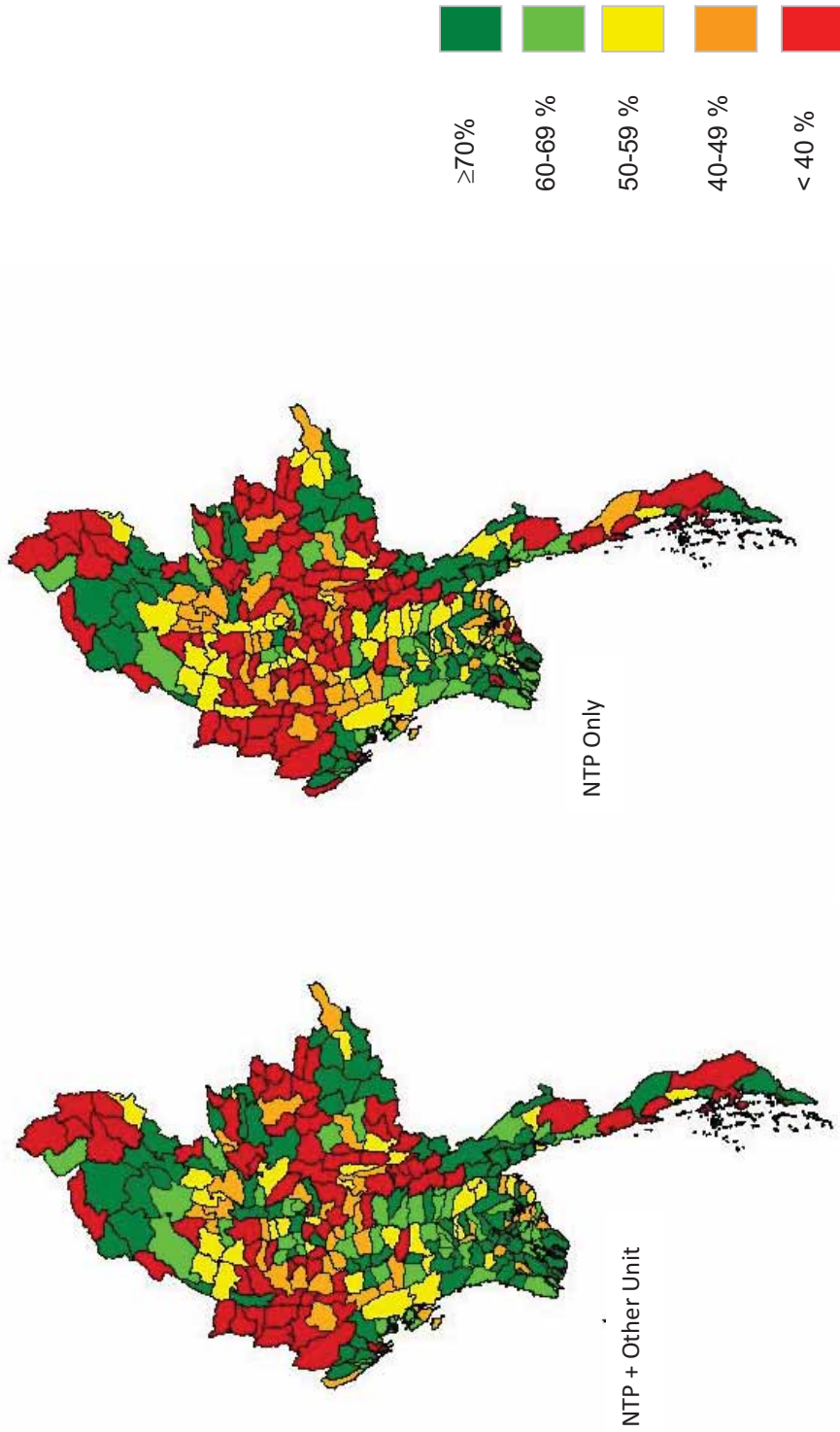
◆ TB suspect's examination rate ■ Smear positive notification rate

NTP + Other Unit: TB suspect' examination rate & All S (+) notification rate (1999-2010)

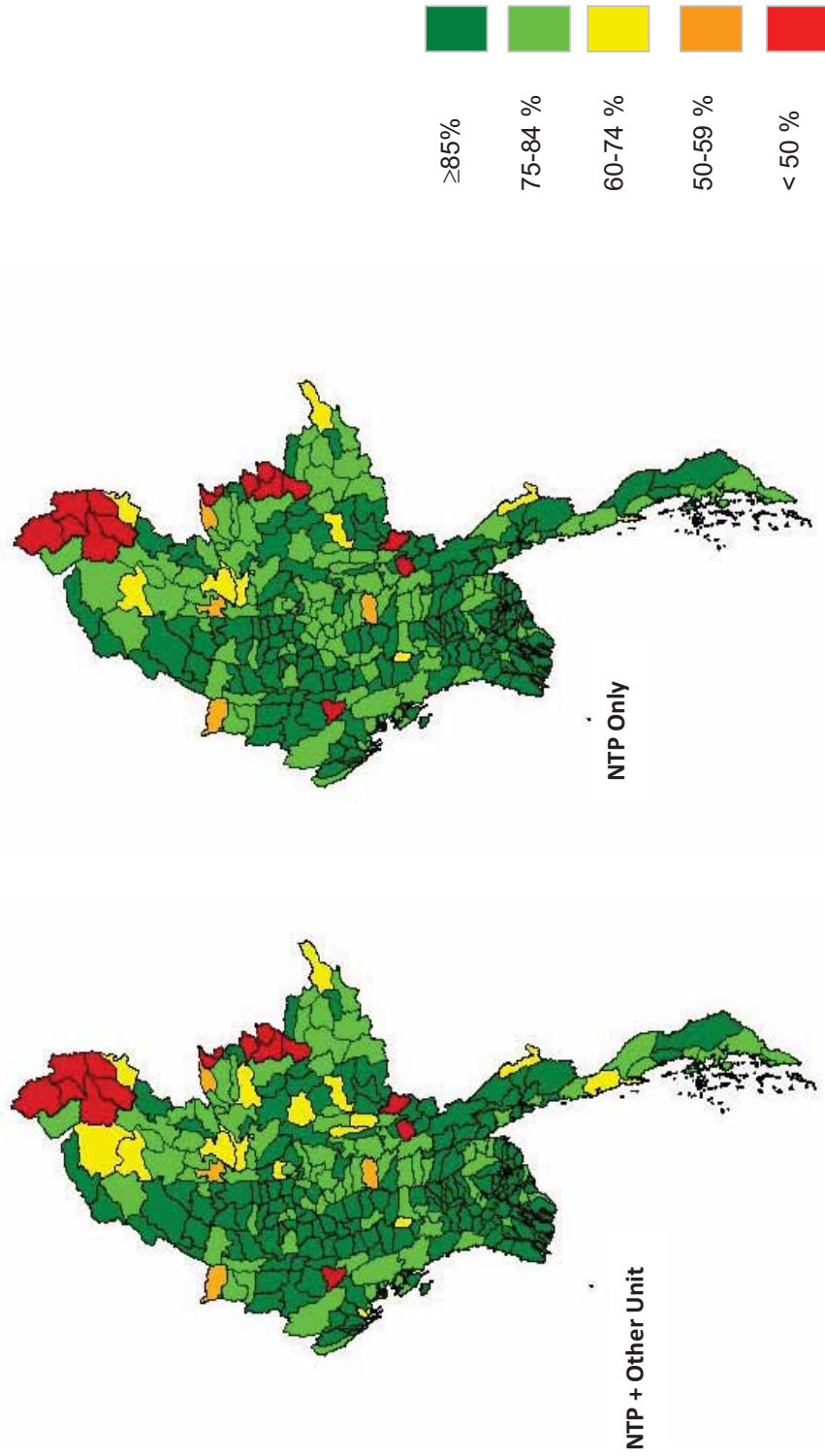


◆ TB suspect's examination rate ■ Smear positive notification rate

Categories of Townships according to Case Detection Rate (CDR) 2010



Categories of Townships according to Treatment Success Rate (TSR) (2009 cohort)



Achievement of NTP according to the indicators and targets set in five years strategic plan (2006-2010)

No	Indicator	Base line		Target	Achievement				
		Value	Year		Year 1 (2006)	Year 2 (2007)	Year 3 (2008)	Year 4 (2009)	Year 5 (2010)
1.	% of DOTS Covered Population	95 %	2005	95 %	95 %	95%	95%	95%	95%
2.	Case Detection Rate	83 %	2004	At least 70 %	86%	89%	90%	95%	76%
3.	Treatment Success Rate	82 %	2004	At least 85 %	85 %	85%	85%	85%	85%
4.	Proportion of sputum smear positive cases out of all pulmonary TB cases	52 %	2003	52%	52%	54%	52%	48%	46%
5.	No. of new smear positive cases detected under DOTS	31405	2004	66,405	40,241	42,588	41, 248	41,389	42,318
6.	No. of additional microscopy centers established	0	2004	30	30	0	0	13	12
7.	No. of microscopy centers under Q/C	194	2003	260	268	290	405	370	375
8.	No. of deaths (all forms of TB) per 100,000 population	27	2005	26	17	13	12.3	13	59
9.	No. of health facilities where both TB and HIV services are available	7	2005	17	7	11	11	11	11
10.	No. of partners (NGOs, CBOS, public, private and others participating in a national stop TB partnership)	15	2005	20	15	15	15	15	15
11.	No. of MDR-TB patients enrolled on treatment	0	2005	0	0	0	0	64	192

Achievement of implementing partners of National TB Programme (2010)

Objective 1.Pursuing high quality DOTs expansion and enhancement

Annex - 38

No.	Indicators	NTP*	Implementing partners of NTP												
			PSI	MMA	Union	Pact	VW	AHRN	MSF-H	MSF-Switz	IOM	MDM	Merlin	Malteser	
1	% of DOTs covered population	49197091		4041310		2031478	415419						3	341372	650833
	No. of Township / No. of Villages covered	314	170tsp.1193 vil	17		12	6	2	15	4	6tsp+97village			3tsp.588vil	2
2	Case Detection Rate (CDR)	76%													
3	No. of new smear positive TB patients detected	42318	5622	654		452	267	134	633	171	275	38	199	391	
4	No. of new TB patients (all forms) registered for treatment	137403	16747	2226			1541	290	2321	427	1,390	229	199	1,528	
5	Proportion of sputum smear positive cases out of all	46%	56.60%	40%				74%	44%	63%	20%	47%			
6	Ratio of male to female among new sputum positive TB cases	1.9:1	1.8:1	2:1			1.8:1	4.1:1	2.3:1	1.5:1	1.96:1	3.2:1	1.5:1	1.5:1	
7	Cure Rate (CR)	77%	74%	78%				61%	55%	68%	90%	36%	39%		
8	Treatment Success Rate (TSR)	85%	85%	88%				71%	66%	74%	96%	43%	50%		
9	No. of deaths (all forms of TB)	7021	617	91			6	15	288	70	20	20	78		
10	No. of microscopy centers using for diagnosis of TB	415	167	17					25	1	7	3	3	3	
11	No. of microscopy centers under External Quality	415	167	17					25	0	7	3	6	3	
12	No. of treatment units reporting no stock out of first line anti TB	325	737	17					25	1		3			
13	No. of township/clinic supervised	Table - 8	168/737	17					15/25	1	6	3			
14	No. of patients receiving incentives/patient support	192 MDR-TB patients	2289	3818			1396	290	2321	0	3468	332	199	720	

* Numbers are National Figure including partners' contributions.

Objective 2. Addressing TB/HIV, MDR-TB and other challenges

No.	Indicators	NTP*	Implementing partners											
			PSI	MMA	Union	Pact	WV	AHRN	MSF-H	MSF-Switz	IOM	MDM	Merlin	Malteser
15	No. of TB patients tested for HIV (11 townships)	3797	1374		3481		51	99	1986	402	54	229	73	1,083
	No. of TB patients (>15 years) in 2010 (11 townships)	5226	11295		3971			284	2138	402	311	229	199	1,083
16	No. of health facilities implementing TB/HIV activities	21												
17	No. of laboratory confirmed MDR-TB patients enrolled on treatment	192					6		14	4	6	3		
18	No. of TB/HIV, MDR-TB management units implementing infection control measures	16							32	0		0		
19	No. of new smear positive TB patients registered in targeted border townships (Myawaddy, Muse, Kawthauung, Tarchileik)	638	73	32				9	33**	0		3		

* Numbers are National Figure including partners' contributions.

Objective 3. Contributing to health system strengthening

No.	Indicators	NTP*	Implementing partners											
			PSI	MMA	Union	Pact	WV	AHRN	MSF-H	MSF-Switz	IOM	MDM	Merlin	Malteser
20	No. of Basic Health Staff (BHS) trained on selected modules of management of TB for health facility staff	2858	1338											92

* Numbers are National Figure including partners' contributions.

Objective 4. Engaging all care providers

No.	Indicators	NTP*	Implementing partners													
			PSI	MMA	Union	Pact	WV	AHRN	MSF-H	MSF-Switz	IOM	MDM	Merlin	Malteser		
21	No. of GPs trained under PPM-DOTS		806	1022												
22	No. of GPs implementing PPM-DOTS		737	980												
23	No. of townships implementing PPM-DOTS		168	71							6					
24	No. of TB patients (all types) registered for treatment in PPM-DOTS (Scheme III)		16747	2226							311					
25	No. of microscopy centers using for diagnosis of TB (PPM-DOTS)	415	167								7					
	-public laboratory	353	125	9												
	-private laboratory	62	42	62												
26	No. of microscopy centers under External Quality Assessment (EQA) system (PPM-DOTS)	415	167								7					
	-public laboratory	353	125	9												
	-private laboratory	62	42	62												

* Numbers are National Figure including partners' contributions.

Objective 5. Empowering patients and communities

No.	Indicators	NTP*	Implementing partners													
			PSI	MMA	Union	Pact	WV	AHRN	MSF-H	MSF-Switz	IOM	Merlin	Malteser			
27	No. of community members or volunteers trained for TB control	0														
28	No. of villages where advocacy, communication and social mobilization (ACSM) activities for TB are undertaken	0		50		297	173			37	153			741	585	
						297	72			37	97			989	156	

* Numbers are National Figure including partners' contributions.

Objective 6. Enabling and promoting research

No.	Indicators	NTP*	Implementing partners													
			PSI	MMA	Union	Pact	WV	AHRN	MSF-H	MSF-Switz	IOM	Merlin	Malteser			
29	No. of Operational Research projects completed	2	2	0			1				0					
30	No. of Survey	2									0					1

* Numbers are National Figure including partners' contributions.

Trend on New SS+, New Smear negative, Extra Pulmonary & All TB cases load of NTP (1994 to 2010)

