# NATIONAL TUBERCULOSIS PROGRAMME <br> 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 (MWAF), 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 (20062010) 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, PPMDOTS 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 | $\quad$ 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 <br> started in 9 townships |
| MRCS | 3 townships in Yangon Region (Thingungyun, Kungyangone, Twantay) <br> 9 townships in Ayeyarwaddy Region (Dedaye, Pyarpon, Kyaiklatt, Maubin, <br> Laputta, Ngaputaw, Mawlamyaingkyun, Bogalay, Pathein) <br> Multiplier training (Peer Education) for Red Cross Volunters, comprehensive <br> IEC Campaign, Defaulter Tracing, case detection and referral, home based <br> care and support, World TB Day Celebration |
| Name of | $\quad$ Area Coverage and activities |

## 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 $\mathrm{MoH} / \mathrm{DoH}$ and health related Department, all implementing partners, donors and UN organization in December, 2010.

Nationalwide knowledge, attitude and practice on TB control sturvey 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 reestimated 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 is 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) STLSs 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 STLSs. 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 STLSs. For places showing major errors, either Microbiologists or responsible STLSs 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 STLSs (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 <br> Labs | Decentralized <br> Labs | Private <br> Labs | Total | Remarks |
| :--- | ---: | ---: | ---: | ---: | ---: | :---: |
| 2008 | 325 | 294 | 51 | 60 | 405 |  |
| 2009 | 325 | 276 |  | 31 | 60 | 367 |
| 2010 | 325 | 288 |  |  |  |  |
| Sagaing Region \& 10 |  |  |  |  |  |  |
| township labs of |  |  |  |  |  |  |
| Eastern Shan State |  |  |  |  |  |  |
| were dropped due to |  |  |  |  |  |  |
| several reasons |  |  |  |  |  |  |

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 <br> Labs | Total <br> 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 |  | 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 | $\begin{array}{\|l\|} \hline \text { Shan } \\ \text { (Lashio) } \end{array}$ | 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 fasle 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 <br> rechecked | FP (HFP+LFP) | FN (HFN+LFN) | Discordance <br> 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 |



## 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 <br> township |  |
| ---: | :--- | :--- | :--- | :--- |
| Sr.No | Township | Name of RHC | Township | Name of RHC |
|  | Southern Shan State, <br> Hopone | Nankote RHC | Pindaya | Pansit RHC |

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 $\sim 2.75$ 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 |
| :---: | :--- | ---: | ---: |
| $\mathbf{1}$ | Air Pressure Systems | 2 sets | 286,000 |
| $\mathbf{2}$ | Supplies and Equipment (BACTEC <br> 960 MGIT Machine, Thermocycler, DNA <br> work station, Twincubator, 80 KVA <br> Generators, iLED Microscopes, test kits) | 2 sets | 454,000 |
| $\mathbf{3}$ | Trainings (Oversea and In-country) | 1 oversea and 1 <br> in-country, on <br> the job training |  |
| $\mathbf{4}$ | Mentoring visit by FIND Experts | 50,000 |  |

### 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, MWAF, 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 4Fixed 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.MSFHolland 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 ( 500 mA ) and 11 X-ray machines (63200 mA ) 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 Myanamar 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 <br> Microbiologists | Supervision by <br> STLSs |  |  |  |
| :---: | :--- | :---: | :---: | :---: | :---: | :---: |
| 1 | Kachin State | 5 | 10 |  |  |  |
| 2 | Kayah State |  | 4 |  |  |  |
| 3 | Chin State |  | 7 |  |  |  |
| 4 | Sagaing Region |  | 18 |  |  |  |
| 5 | Magway Region |  | 22 |  |  |  |
| 6 | Mandalay Region |  | 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 |  | 20 |  |  |  |
| 13 | Mon State |  | 9 |  |  |  |
| 14 | Rakhine State |  | 14 |  |  |  |
| 15 | Yangon Region |  | 10 |  |  |  |
| 16 | Ayeyarwady Region |  | 8 |  |  |  |
|  | Total |  |  |  | $\mathbf{2 4}$ | $\mathbf{1 8 6}$ |

## 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 Taungngoo 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 <br> 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 |
| Yangon Region | 20.10 .2010 | 116 | with support of JICA |
| 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 <br> 7 townships | Myitkyina <br> township | Taunggyi <br> township | Lashio <br> township | Pakkoku <br> township | Total |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| No. of registered TB <br> patients ( $\geq 15$ years) | 2710 | 1073 | 471 | 649 | 323 | 5226 |
|  <br> HIV tested | 2229 | 550 | 328 | 367 | 323 | 3797 |
| \% of VCCT tested | $82 \%$ | $51 \%$ | $70 \%$ | $57 \%$ | $100 \%$ | $73 \%$ |
| No. of HIV sero positive <br> among tested | 686 | 106 | 45 | 16 | 62 | 915 |
| \% of HIV positive among <br> tested TB patients | $31 \%$ | $19 \%$ | $14 \%$ | $4 \%$ | $19 \%$ | $24 \%$ |
| No. of TB/HIV patients <br> started on CPT * | 663 | 106 | $104^{*}$ | $77^{*}$ | $121^{*}$ | $1071^{*}$ |
| No. of TB/HIV patients <br> 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 $\geq 15$ 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 form 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 eh 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)



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 MDRTB 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 satistactory. If they were alive during treatment, sputum smear conversion rate was $100 \%$ in $6^{\text {th }}$ month for Mandalay and $83 \%$ in $8^{\text {th }}$ month for Yangon. $100 \%$ Culture Conversion Rate was obtained in these patients at $6^{\text {th }}$ month and $8^{\text {th }}$ 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 | $\begin{array}{r\|} \hline 33 \\ 12.5 \% \\ \hline \end{array}$ | $\begin{aligned} & 16 \\ & 6 \% \end{aligned}$ | $\begin{array}{r} 207 \\ 78.4 \% \end{array}$ | $\begin{array}{r} 6 \\ 2.3 \% \end{array}$ | $\begin{array}{r} 1 \\ 0.4 \% \end{array}$ | $\begin{array}{r} 1 \\ 0.4 \% \end{array}$ | 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 byFor 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 <br> 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 <br> Yangon <br> Mandalay | 100\% |
| Refresher training on sputum microscopy for Grade II lab. technicians (3 days course) | 2 courses | 2 courses <br> Yangon <br> 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 <br> Yangon <br> Mandalay | 2courses <br> Yangon <br> Mandalay | 100\% |
| Refresher Training on Management of MDR TB for TB Hospital Staff/ Programme Staff (2 days course) | 2courses <br> Yangon <br> Mandalay | 2courses <br> Yangon <br> 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. <br> 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 . <br> 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 | Kyunhla | 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 | Moenyo | 24.8.10 | 26.8.10 | 14 | 16 | 30 | 3DF |
| 81 | Moenyo | 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 trainings |  | 893 | 1965 | 2858 |  |


| Sr . <br> 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. <br> 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 | $\begin{aligned} & \text { 3DF, } \\ & \text { FIND } \end{aligned}$ |
|  | Sub total |  |  |  |  | 283 |  |


| Sr. <br> 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 Al Khu Sal, Lab.tech., G1, NTRL Daw Aye Myo Khine, Lab. tech., G1, Mdy Daw Nwe Ni, Lab.tech., G1, Mandalay | $\begin{gathered} 11-1-10 \\ \text { to } \\ 22-1-10 \end{gathered}$ | 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) | $\begin{gathered} 5-5-2010 \\ \text { to } \\ 31-7-2010 \end{gathered}$ | Japan Tokyo | Stop TB action training course |
| 3 | Dr. Win Maung, Director (DC) Dr. Thandar Lwin, DD (TB) | $\begin{gathered} 14-8-2010 \\ \text { to } \\ 26-8-2010 \end{gathered}$ | Japan Tokyo | Tender process for JGA project |
| 4 | Daw Lei Yin Win, Lab. Medical Technologist, Mandalay Regional TB center | $\begin{gathered} 21-9-2010 \\ \text { to } \\ 4-12-2010 \\ \hline \end{gathered}$ | Japan Tokyo | Stop TB Hands on Laboratory training for HIV \& MDR-TB |
| 5 | Dr. Win Win Mar, AD (NTP) <br> Dr. Thin Thin Yee, Regional TB Officer, Mandalay | $\begin{gathered} 14-9-2010 \\ \text { to } \\ 17-9-2010 \end{gathered}$ | Sri Lanka Colombo | Regional Meeting of National TB Programme |
| 6 | Dr. Si Thu Aung, AD (NTP) Dr. Cho Cho San, (NTP) | $\begin{gathered} 17-10-2010 \\ \text { to } \\ 21-10-2010 \end{gathered}$ | 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 | $\begin{gathered} \text { 27-9-2010 } \\ \text { to } \\ 1-10-2010 \end{gathered}$ | 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 | $\begin{gathered} 27-9-2010 \\ \text { to } \\ 1-10-2010 \end{gathered}$ | Nepal Kathmandu | Regional workshop on Programmatic management of MDRTB |


| Sr. | Name and Designation | Duration | Country | Attended training/ <br> workshop/ meeting |
| :--- | :--- | :---: | :---: | :---: |
| 9 | Dr. Win Maung, Director (DC) <br> Dr.Thandar Lwin, DD (TB) <br> Dr. Moe Zaw, AD (TB) <br> Dr. Tin Mi Mi Khaing, Regional TB Officer, <br> Yangon | $11-11-2010$ <br> to <br> $15-11-2010$ | Germany <br> Berlin | 41th Union World <br> Conference on Lung <br> Health |
| 10 | Dr. Tin Tin Mar, Consultant Microbiologist <br> (NTRL) <br> Dr. Thin Lei Swe, Microbiologist <br> Mandalay TB Center | $22-11-2010$ <br> to | Thailand <br> Bangkok | Regional workshop on <br> Laboratory Diagnosis <br> 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 fro 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 MDRTB 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, Mahaaungmyay, 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, MWAF, 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 <br> II | Cat <br> 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 | *Mawlamya ing | 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 | Botahtaung | 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 | Ahlone | 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 | $\begin{aligned} & \text { Cat } \\ & \text { II } \end{aligned}$ | 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 <br> 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 and1 patient from Patheingyi) referred to NTP and diagnosed as MDR-TB.

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

| Years | TB suspected <br> cases <br> screened | Cat I (+) | Cat I <br> (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 |
| $\mathbf{2 0 1 0}$ | $\mathbf{1 5 8 5 2}$ | $\mathbf{5 6 4 9}$ | $\mathbf{3 5 1 8}$ | $\mathbf{8 2 5}$ | $\mathbf{6 8 3 7}$ | $\mathbf{1 6 8 2 9}$ |

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. PPMDOTS 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 | $\mathbf{2 0 0 7}$ | $\mathbf{2 0 0 8}$ | $\mathbf{2 0 0 9}$ | $\left.\mathbf{2 0 1 0} \mathbf{( 3}^{\text {rd }} \mathbf{Q}+\mathbf{4}^{\text {th }} \mathbf{Q}\right)$ |
| :--- | :---: | :---: | :---: | :---: |
| 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 | $\mathbf{6 7}$ | $\mathbf{1 3 3}$ | $\mathbf{9 2}$ | $\mathbf{7 3}$ |

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

| Option 4 | $\mathbf{2 0 0 7}$ | $\mathbf{2 0 0 8}$ | $\mathbf{2 0 0 9}$ | $\mathbf{2 0 1 0}$ <br> $\left(\mathbf{3}^{\text {rd }} \mathbf{Q}+\mathbf{4}^{\text {th }} \mathbf{Q}\right)$ |
| :--- | :---: | :---: | :---: | :---: |
| New YGH | 159 | 275 | 223 | 145 |
| East YGH | 63 | 292 | 282 | 140 |
| West YGH | 8 | 91 | 57 | 188 |
| Sanpya <br> hospital | 150 | 80 | 90 | 38 |
| Insein |  |  |  | 75 |
| Total | $\mathbf{3 8 0}$ | $\mathbf{7 4 8}$ | $\mathbf{6 5 2}$ | $\mathbf{5 8 6}$ |

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

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


| $\square$ New smear positive | $\square$ Smear negative | $\square$ Extra-pulmonary |
| :--- | :--- | :--- |$\quad \square$ Relapse

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 <br> Rate | TSR | Case <br> fatality <br> Rate | Failure <br> rate | Defaulter <br> rate | Transfer <br> Out |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| NYGH | $75 \%$ | $75 \%$ | $9 \%$ | $3 \%$ | $6 \%$ | $6 \%$ |
| EYGH | $87 \%$ | $87 \%$ | - | - | $13 \%$ | - |
| Sanpya | $100 \%$ | $100 \%$ | - | - | - | - |
| West <br> 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 PPMDOTS hospitals (2009 cohort)


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

| Indicators | New <br> YGH | West <br> YGH | East <br> YGH | Sanpya <br> Hospital | Insein <br> General <br> Hospital |
| :--- | :---: | :---: | :---: | :---: | :---: |
| No. of TB Patients registered for <br> treatment | 141 | 210 | 368 | 691 | 128 |
| No. of referred TB patients from hospital <br> 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 Myanamr 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 <br> (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 $T B$ 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 $24^{\text {th }}$ 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
 U§Gల\}cceaz". 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 ( $\sim 450$ ) invitees from Ministry of Health, DOH, other ministries, WHO, UN agencies MMCWA ,implementing partners, health staff from Pyinmana 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), Monglatt 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 621850. 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 $(41,374)$ respondants 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 <br> Cough | Traditional <br> Medicine, <br> Pharmacy | Visit Medical <br> facility | Visit Public <br> Facilities |
| :---: | ---: | ---: | ---: |
| Total | 10856 | 8,038 | 4,251 |
| $(41,374)$ | $26 \%$ | $19 \%$ | $10 \%$ |
| TB CASES | 57 | 66 | 36 |
| $(265)$ | $22 \%$ | $25 \%$ | $14 \%$ |
| Symptomatic | 514 | 363 | 197 |
| $(1663)$ | $31 \%$ | $22 \%$ | $12 \%$ |

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 algorism 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. \geq15 yrs``` | 95\% CI | n | ```Prevalence per 100,000 pop. \geq15 yrs``` | 95\% CI | n | $\begin{gathered} \text { Prevalence } \\ \text { per 100,000 } \\ \text { pop. } \\ \geq 15 \mathrm{yrs} \end{gathered}$ | 95\% CI |
| All participan |  | 123 | 242.3 | (186.1-315.3) | 188 | 370.5 | (293.3-468.0) | 311 | 612.8 | (502.2-747.6) |
| Strata | Region State | $\begin{aligned} & 70 \\ & 53 \end{aligned}$ | $\begin{aligned} & 191.6 \\ & 369.0 \\ & \hline \end{aligned}$ | $\begin{aligned} & (137.4-267.3) \\ & (235.6-577.5) \end{aligned}$ | $\begin{array}{r} 122 \\ 66 \\ \hline \end{array}$ | $\begin{aligned} & 331.1 \\ & 469.0 \\ & \hline \end{aligned}$ | $\begin{aligned} & (256.1-428.1) \\ & (288.4-761.8) \end{aligned}$ | $\begin{aligned} & 192 \\ & 119 \\ & \hline \end{aligned}$ | $\begin{aligned} & 522.8 \\ & 838.0 \\ & \hline \end{aligned}$ | $\begin{array}{r} (420.9-649.1) \\ (560.3-1251.5) \\ \hline \end{array}$ |
| Urban/Rural | Urban Rural | $\begin{aligned} & 38 \\ & 85 \\ & \hline \end{aligned}$ | $\begin{aligned} & 330.7 \\ & 216.1 \\ & \hline \end{aligned}$ | $\begin{array}{r} (216.2-505.7) \\ (153.6-304.0) \\ \hline \end{array}$ | $\begin{array}{r} 65 \\ 123 \\ \hline \end{array}$ | $\begin{aligned} & 572.4 \\ & 310.7 \\ & \hline \end{aligned}$ | $\begin{aligned} & (415.0-789.2) \\ & (228.7-422.0) \\ & \hline \end{aligned}$ | $\begin{array}{r} 103 \\ 208 \\ \hline \end{array}$ | $\begin{aligned} & 903.2 \\ & 526.8 \\ & \hline \end{aligned}$ | $\begin{array}{r} (661.8-1231.5) \\ (410.1-676.5) \\ \hline \end{array}$ |
| Sex | Male Female | $\begin{aligned} & 88 \\ & 35 \end{aligned}$ | $\begin{aligned} & 397.8 \\ & 122.2 \end{aligned}$ | $\begin{array}{r} (301.3-524.9) \\ (76.9-194.2) \end{array}$ | $\begin{array}{r} 118 \\ 70 \\ \hline \end{array}$ | $\begin{aligned} & 532.8 \\ & 245.2 \\ & \hline \end{aligned}$ | $\begin{array}{r} (407.2-696.9) \\ (181.7-330.8) \\ \hline \end{array}$ | $\begin{array}{r} 206 \\ 105 \\ \hline \end{array}$ | $\begin{aligned} & 930.6 \\ & 367.4 \\ & \hline \end{aligned}$ | $\begin{array}{r} (742.6-1165.5) \\ (287.7-469.1) \\ \hline \end{array}$ |

[^0]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 | \% |
| Illiness | 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 |
| $\geq 21$ 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 | 1691 | 3.3 | 42 | 34.1 | 24 | 12.8 | 66 | 21.2 |
| cases |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| 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 | $\mathbf{5 8 0 4}$ (77.2\%) |
| Cough for >2-3 weeks | $\mathbf{4 9 8 5 ( 6 6 . 3 \% )}$ |
| Coughing up blood | $\mathbf{2 1 9 5}(\mathbf{2 9 . 2 \% )}$ |
| 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/ <br> Kayin | Rakh | Sag | Shan | Tanin | Ygn | Total <br> $(\%)$ |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| High | 326 | 125 | 28 | 29 | 193 | 303 | 97 | 282 | 354 | 224 | 71 | 269 | 2301 |
|  | $(43.1)$ | $(27.8)$ | $(18.7)$ | $(19.3)$ | $(25.7)$ | $(33.7)$ | $(32.2)$ | $(26.9)$ | $(33.6)$ | $(21.2)$ | $(23.7)$ | $(44.5)$ | $(30.6)$ |
| Medium | 291 | 172 | 67 | 78 | 348 | 375 | 128 | 430 | 408 | 463 | 149 | 288 | 3197 |
|  | $(38.5)$ | $(38.3)$ | $(44.7)$ | $(52)$ | $(46.4)$ | $(41.7)$ | $(42.5)$ | $(41)$ | $(38.7)$ | $(43.8)$ | $(49.8)$ | $(47.6)$ | $(42.5)$ |
| Low | 139 | 152 | 55 | 43 | 209 | 222 | 76 | 337 | 292 | 369 | 79 | 48 | 2021 |
|  | $(18.4)$ | $(33.9)$ | $(36.7)$ | $(28.7)$ | $(27.9)$ | $(24.7)$ | $(25.2)$ | $(32.1)$ | $(27.7)$ | $(34.9)$ | $(26.4)$ | $(7.9)$ | $(26.9)$ |
| 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/ <br> 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 $/$ <br> 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, <br> other printed <br> materials |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Health workers | 24.2 | 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 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 $42^{\text {nd }}$ 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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#### 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 $1^{\text {st }}$ line anti- TB drug susceptibility testing at NTRL, Yangon. Among them 218 patients ( $94.8 \%$ ) were resistant to four $1^{\text {st }}$ line anti- TB drugs, 9 patients (3.9\%) were resistant to other three1 ${ }^{\text {st }}$ line anti- TB drugs apart from ethambutol and $3(1.3 \%)$ were resistant to other three $1^{\text {st }}$ line anti- TB drugs apart from streptomycin.

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

| Sr . No. | $\begin{aligned} & 1^{\text {st }} \text { line anti-TB } \\ & \text { drugs } \end{aligned}$ |  |  |  | $2^{\text {nd }}$ line anti-TB drugs |  |  |  |  |  | No. of patients | Identification |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 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 |  |
| $\begin{aligned} & \text { SM - Streptomycin } \\ & \text { INH - Isoniazid } \\ & \text { RFP - Rifampicin } \\ & \text { EMB - Ethambutol } \\ & \text { OFL - Ofloxacin } \end{aligned}$ |  |  |  |  |  | $\begin{array}{r} \text { - Kana } \\ \text { - Cyc } \\ \text { S - Eth } \\ \text { P- C- } \end{array}$ | mycin oserin onam minos eomy | de <br> alicylic <br> in | acid | NA | Not availab |  |

# 2. "Dispensing anti-tuberculosis drugs among the pharmacies in selected township, Myanmar", 

Si Thu Aung ${ }^{1}$, Poe Poe Aung², Thae Maung Maung², Saw Saw², Wai Wai Han², Thant Zin Aung ${ }^{3}$, Thandar Lwin ${ }^{1}$<br>1 National Tuberculosis Programme 2 Department of Medical Research (Lower Myanmar) 3 Myanmar Medical Association

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

> Poe Poe Aung ${ }^{1}$, Saw Saw, ${ }^{2}$ Thae Maung Maung ${ }^{1}$, Si Thu Aung ${ }^{3}$, Thandar Lwin ${ }^{3}$, Wai Wai Han ${ }^{4}$, Thant Zin Aung ${ }^{5}$
> 1 Epidemiology Research Division, Department of Medical Research (Lower Myanmar)
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> 5 PPM DOTS TB Project, Myanmar Medical Association
> It will be presented in $42^{\text {nd }}$ 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 semistructured 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"

Si Thu Aung ${ }^{1}$, Tin Mi Mi Khaing ${ }^{2}$, Thin Thin Yee ${ }^{3}$ Hiroyuki Nishiyama ${ }^{4}$, Thandar Lwin ${ }^{1}$<br>1 National TB Programme<br>2 Yangon Regional TB Centre<br>3 Mandalay Regional TB Centre<br>4 Major Infectious Disease Control Project, JICA

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 $42^{\text {nd }}$ Union World Conference on Lung Health, 2011.

## 4. "TB situation in Lepers and families in Madayar and Sagaing townships of Myanmar"

Thin Thin Yee ${ }^{1}$, Myat Kyaw Thu ${ }^{1}$, Tin Maung So ${ }^{2}$, Kyaw Myint ${ }^{2}$, Thandar Lwin ${ }^{1}$

1. National TB Programme, Department of Health, Ministry of Health, Myanmar 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 $42^{\text {nd }}$ 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" 

Saw Saw ${ }^{1}$, Moe Zaw ${ }^{2}$, Thandar Lwin ${ }^{2}$, Win Maung ${ }^{3}$, Aung Thu ${ }^{4}$, Soe Moe Myat ${ }^{1}$ and Thandar Minn ${ }^{1}$<br>1 Health Systems Research Division, Department of Medical Research (Lower Myanmar)<br>2 National TB Programme, Department of Health<br>3 Department of Health<br>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"

Aung-Thu ${ }^{1}$, Ohnmar ${ }^{2}$, Han-Win ${ }^{3}$, Min-Than-Nyunt ${ }^{4}$, Thandar-Lwin ${ }^{5}$, $\mathrm{Ti}^{-T i}{ }^{5}$, WinMaung ${ }^{5}$, Khin-Myat-Tun ${ }^{3}$<br>${ }^{1}$ Public Relation Officer, Programme Management Unit, Myanmar Medical Association.<br>${ }^{2}$ Epidemiology Research Division, Department of Medical Research (Lower Myanmar)

${ }^{3}$ Clinical Research Division, Department of Medical Research (Lower Myanmar)<br>${ }^{4}$ Occupational Health Division, Department of Health, Myanmar<br>${ }^{5}$ National 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. Fourty 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

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> * WHO, TB unit, Myanmar
> ** Department of Medical Research (Lower Myanmar)
> *** 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 $\mathrm{Oo}^{1}$, Wai Wai Han ${ }^{1}$, Saw Saw ${ }^{1}$, Tin Mi Mi Khine ${ }^{2}$, Cho Cho Myint ${ }^{1}$, Thandar Min ${ }^{1}$, Aye Win Khaing ${ }^{1}$ and Soe Moe Myat ${ }^{1}$<br>${ }^{1}$ Department of Medical Research (Lower Myanmar)<br>${ }^{2}$ 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 $/ \mu$ were significantly more likely to suffer from drug resistance than those without (Crude $\mathrm{OR}=9,95 \% \mathrm{Cl}=2.1-28.3, \mathrm{P}=0.004 ; \mathrm{Crude} \mathrm{OR}=4,95 \% \mathrm{Cl}=1.1-15.4, \mathrm{P}=0.074$, 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"

${ }^{1}$ Tin Mi Mi Khaing, ${ }^{1}$ Thin Thin Yee, ${ }^{1}$ Tin Maung Swe, ${ }^{2}$ Myat Myat Moe,
${ }^{2}$ Saw Saw, ${ }^{1}$ Si Thu Aung, ${ }^{1}$ Win Maung \& ${ }^{3}$ Aye Htun
${ }^{1}$ National Tuberculosis Programme, Department of Health
${ }^{2}$ Department of Medical Research (Lower Myanmar)
${ }^{3}$ JICA (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 Saw ${ }^{1}$, Thandar Lwin ${ }^{2}$ and Hans Kluge ${ }^{3}$

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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" 

${ }^{1}$ Thida, ${ }^{2}$ Saw Saw, ${ }^{3}$ Kyaw Zaw, ${ }^{1}$ Kyaw Zin Thant<br>${ }^{1}$ Department of Medical Research (Upper Myanmar)<br>${ }^{2}$ Department of Medical Research (Lower Myanmar)<br>${ }^{3}$ 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 pervious 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 $\mathbf{2 9 \%}$ 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-toreach 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 Saw ${ }^{1}$, Thandar Lwin ${ }^{2}$, Thida ${ }^{3}$ and Wai Wai Han ${ }^{3}$

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 Aungmyaetharzan 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 PPMDOTS 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 GPsrecent 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.


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

Saw Saw ${ }^{1}$, Tin Mi Mi Khaing ${ }^{2}$, Nay Htut Ko Ko ${ }^{3}$, Wai Wai Han ${ }^{1}$ and Thandar Lwin ${ }^{2}$

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 (KIls); 7 indepth 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 ( $1^{\text {st }}$ April-30 $0^{\text {th }}$ September), 187 and 214 TB suspects were referred to public health centre by SHGs from Thanbyuzayat and Hlaingtharyar respectively. In Thanbbyuzayat (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
8. 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 semiurban 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. <br> No. | Sentinel sites | $\mathbf{2 0 0 5}$ | $\mathbf{2 0 0 6}$ | $\mathbf{2 0 0 7}$ | $\mathbf{2 0 0 8}$ | $\mathbf{2 0 0 9}$ | $\mathbf{2 0 1 0}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 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 |  | $11 \%$ | $\mathbf{1 0 . 7 0 \%}$ | $9.33 \%$ | $8.7 \%$ | $11.3 \%$ |
| 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 | $\mathbf{1 0 . 3 0 \%}$ | $\mathbf{1 0 . 9 0 \%}$ | $\mathbf{9 . 8 0 \%}$ | $\mathbf{1 1 . 1 0 \%}$ | $\mathbf{9 . 1 5 \%}$ | $\mathbf{1 0 . 4 \%}$ |

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 $7^{\text {th }}$ 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 <br> Dr. Norio Yamada <br> Dr. Philipe Glaziou | $\begin{gathered} \text { 10.12.2010 to } \\ 20.12 .2010 \end{gathered}$ | 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 $2^{\text {nd }}$ 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 (1-907 ) 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 <br> To sustain an all TB patient | mprove the | lity of DOTS s | vices to reach |
| 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 <br> Taunggyi <br> 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 <br> (5 days course) | 2 courses | 2 courses <br> Yangon <br> Mandalay | 100\% |
| Refresher training on sputum microscopy for Grade II lab. technicians <br> ( 3 days course) | 2 courses | 2 courses <br> Yangon <br> 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 | $\begin{gathered} 15 \\ \text { (not done } \\ \text { regularly) } \end{gathered}$ | 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 <br> Myawady <br> Tachileik | 100\% |
| Supervision and Monitoring Visits from Central/ State Levels to Myawady and Tachileik (2 times per year) | 4 <br> (2 times each to Myawady \& Tachileik) | 3 | 75\% |
| Quarterly Supervisory Visits from Township (Myawady \& Tachileik) to 5 Rural Health Centres or Sub Centres | $\begin{aligned} & 40 \text { (20 visits } \\ & \text { per year in } \\ & \text { each township) } \end{aligned}$ | 6 | 15\% |
| Purpose 2 To improve the <br> including those | 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 <br> Yangon <br> Mandalay | 100\% |
| Refresher Training on Management of MDR TB for TB Hospital Staff/ <br> Programme Staff (2 days course) | 2courses <br> Yangon <br> Mandalay | 2courses <br> Yangon <br> 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 <br> TB Hospitals | (2 times per <br> year in Yangon <br> \& Mandalay | 2 <br> (1 time per <br> year in <br>  <br> Mandalay |  |

* 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 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 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.


#### Abstract

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 | $\mathbf{2 0 0 5}$ | $\mathbf{2 0 0 6}$ | $\mathbf{2 0 0 7}$ | $\mathbf{2 0 0 8}$ | $\mathbf{2 0 0 9}$ | $\mathbf{2 0 1 0}$ |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Ayeyarwaddy Region | $\mathbf{7 5 \%}$ | $64 \%$ | $85 \%$ | $84 \%$ | $92 \%$ | $92 \%$ |
| 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 | $76 \%$ | $\mathbf{7 6 \%}$ | $\mathbf{8 9 \%}$ | $\mathbf{8 9 \%}$ | $\mathbf{9 3 \%}$ | $\mathbf{9 3 \%}$ |

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 <br> (Kyats in thousands) | Drugs purchase <br> (Kyats in thousands) | Total <br> (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 |
| $\mathbf{2 0 1 0 - 2 0 1 1}$ | $\mathbf{5 0 6 , 1 9 9}$ | $\mathbf{1 2 0 , 0 0 0}$ | $\mathbf{6 , 2 6 , 1 9 9}$ |

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


Years

### 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 $7^{\text {th }}$ 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 Expandx 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 <br> 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 Yanogn 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 (Tauggyi) | $37 \%$ | $39 \%$ |
| 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 | $83 \%$ | $706 \%$ |
| Ayeyarwaddy Region | $\mathbf{6 2 \%}$ | $78 \%$ |
| Country of Myanmar |  | $76 \%$ |

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. <br> No. | States and Region | No. of township with CDR |  |  |  |  | Total no. of township | No. of tsp did not receive report |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | $\geq 70 \%$ | 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 |  | $\begin{gathered} 122 \\ (38.9 \%) \end{gathered}$ | $\begin{gathered} 48 \\ (15.3 \%) \end{gathered}$ | $\begin{gathered} 37 \\ (11.8 \%) \end{gathered}$ | $\begin{gathered} 41 \\ (13 \%) \end{gathered}$ | $\begin{gathered} 65 \\ (20.7 \%) \end{gathered}$ | $\begin{gathered} 314 \\ (100 \%) \end{gathered}$ | 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. <br> No. | State / Regions | \% of DOTS covered <br> Townships in each <br> Region / State | \% new smear <br> (+) patients out <br> of total new <br> smear (+) TB <br> cases | \% of smear (+) <br> patients out of <br> total smear (+) <br> TB cases |
| ---: | :--- | ---: | ---: | ---: |
| $\mathbf{1}$ | Kachin State | $18 / 18=100 \%$ | $3.4 \%$ | $3.6 \%$ |
| $\mathbf{2}$ | Kayah State | $7 / 7=100 \%$ | $0.4 \%$ | $0.4 \%$ |
| $\mathbf{3}$ | Chin State | $9 / 9=100 \%$ | $0.4 \%$ | $0.4 \%$ |
| $\mathbf{4}$ | Sagaing Region | $37 / 37=100 \%$ | $7.8 \%$ | $7.5 \%$ |
| $\mathbf{5}$ | Magway Region | $25 / 25=100 \%$ | $5.7 \%$ | $5.7 \%$ |
| $\mathbf{6}$ | Mandalay Region | $31 / 31=100 \%$ | $10.1 \%$ | $10.2 \%$ |
| $\mathbf{7}$ | Shan State (Taunggyi) | $21 / 21=100 \%$ | $2.3 \%$ | $2.3 \%$ |
| $\mathbf{8}$ | Shan State <br> (Kyaingtong) | $10 / 10=100 \%$ | $1.7 \%$ | $1.8 \%$ |
| $\mathbf{9}$ | Shan State (Lashio) | $24 / 24=100 \%$ | $3.6 \%$ | $3.6 \%$ |
| $\mathbf{1 0}$ | Kayin State | $7 / 7=100 \%$ | $3.0 \%$ | $2.8 \%$ |
| $\mathbf{1 1}$ | Tanintharyi Region | $10 / 10=100 \%$ | $2.4 \%$ | $2.3 \%$ |
| $\mathbf{1 2}$ | Bago Region (Bago) | $14 / 14=100 \%$ | $5.1 \%$ | $5.2 \%$ |
| $\mathbf{1 3}$ | Bago Region (Pyay) | $14 / 14=100 \%$ | $4.2 \%$ | $4.2 \%$ |
| $\mathbf{1 4}$ | Mon State | $10 / 10=100 \%$ | $4.8 \%$ | $4.7 \%$ |
| $\mathbf{1 5}$ | Rakhine State | $17 / 17=100 \%$ | $6.7 \%$ | $6.4 \%$ |
| $\mathbf{1 6}$ | Yangon Region | $45 / 45=100 \%$ | $24.1 \%$ | $25.3 \%$ |
| $\mathbf{1 7}$ | Ayeyarwaddy Region | $26 / 26=100 \%$ | $14.4 \%$ | $13.7 \%$ |
| $\mathbf{y}$ |  | $325 / 325=100 \%$ |  |  |

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

| CDR |  |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $\geq 70 \%$ | 60-69\% | 50-59\% | 40-49\% | <40\% |  |
| Kachin Shan (Kyaingtong) Yangon Ayeyarwady Mon | $\begin{gathered} \text { Rakhine } \\ \text { Bago (Pyay) } \\ \text { Kayin } \end{gathered}$ | 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 рор. |
| 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 рор. |
| 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 рор. |
| 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 <br> groups | Total |  | Male |  | Females |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | TB patients / <br> pop. ${ }^{*}$ | CNR <br> $/ 100,000$ | TB patients / <br> pop. ** | CNR <br> $/ 100,000$ | TB patients / <br> pop. *** | CNR <br> CNR |
| $1-14$ | $302 / 16085$ | 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 | $\mathbf{4 2 3 1 8} / \mathbf{4 9 1 9 7}$ | $\mathbf{8 6}$ | $\mathbf{2 7 9 6 2} / \mathbf{2 4 4 5 1}$ | $\mathbf{1 1 4 . 4}$ | $\mathbf{1 4 3 5 6 / 2 4 7 4 6}$ | $\mathbf{5 8}$ |

* 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)

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 <br> Cat. I + II + <br> III | Proportion of relapse among all smear positive | Proportion of failure among all smear positive |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Sputum <br> smear positive | Severe form |  | Total | Relapse | Treatment <br> after default | Treatment <br> After failure | Other | Total | Less severe form |  | Total |  |  |  |
|  |  | Smear negative | EP |  |  |  |  |  |  | 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 Nootified 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 |
| TanintharyiRegion | 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 $\mathbf{8 8 \%}$. 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 $3^{\text {rd }}$ month, $8 \%$ ( $3411 / 42318$ ) of total cases were converted only in $3^{\text {rd }}$ month and $3.5 \%$ (1499/42318) still remained smear positive at the end of $3^{\text {rd }}$ month, who can be presumed as treatment failure. The proportion of still remained smear positive at the end of $3^{\text {rd }}$ 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 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | $\begin{gathered} \geq \\ 85 \% \end{gathered}$ | 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 |  | $\begin{gathered} 182 \\ (59 \%) \end{gathered}$ | 110 <br> (35.7\%) | $\begin{gathered} 11 \\ (3.5 \%) \end{gathered}$ | $\begin{gathered} 4 \\ (1.3 \%) \end{gathered}$ | $\begin{gathered} 1 \\ (0.3 \%) \end{gathered}$ | $\begin{gathered} 313^{*} \\ (100 \%) \end{gathered}$ | 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 . <br> No. | States and Region | No. of township with CR |  |  |  |  | Total no. of township | No. of <br> townships <br> did not <br> receive <br> 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 |  | $\begin{gathered} 95 \\ (30.8 \%) \end{gathered}$ | $\begin{gathered} 115 \\ (37.3 \%) \end{gathered}$ | $\begin{gathered} 67 \\ (21.7 \%) \end{gathered}$ | $\begin{gathered} 21 \\ (6.8 \%) \end{gathered}$ | $\begin{gathered} 10 \\ (3.2 \%) \end{gathered}$ | $\begin{gathered} 313^{*} \\ (100 \%) \end{gathered}$ | 12 |

[^1]Table 51. Categories of CR and TSR of new sputum smear positive TB patients of Regions/States (2009 cohort)

| $\geq 85 \%$ |  | 75-84\% |  | 60-74\% |  | 50-59\% |  | < $50 \%$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| CR | TSR | CR | TSR | CR | TSR | CR | TSR | CR | TSR |
|  | Chin <br> Kayah <br> Sagaing <br> Bago (Pyay) <br> Mon <br> Rakhine <br> Yangon <br> Ayeyarwaddy | Sagaing <br> Magway Shan (Taunggyi) Kayin <br> Rakhine Bago (Pyay) <br> Mon <br> Yangon <br> Ayeyarwaddy <br> Kayah | Kachin <br> Magway <br> Shan (Kyaingtong) Shan (Lashio) Kayin <br> Tanintharyi <br> Mandalay <br> Shan <br> (Taunggyi) <br> Bago (Bago) | Kachin <br> Chin <br> Shan <br> (Kyaingtong) Shan (Lashio) <br> Tanintharyi <br> Mandalay <br> Bago (Bago) |  |  |  |  |  |
| 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 TB07, 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 <br> Lymph node enlarge ment | 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 <br> Patients | Cured | Completed | Died | Failure | Defaulted | Transferred <br> out | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Smear positive | 8 <br> $(53 \%)$ | 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 <br> 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\%. Htantalang 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

$\square 60-69 \%$


- 40-49 \%
$\square<40 \%$


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

$\square 60-69 \%$
$\square 50-59 \%$

- 40-49 \%


TSR

प $>=85 \%$
$\square 75-84 \%$60-74 \%
50-59 \%
< $<0$ \%

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 $15 \%$, Taungtha10\%, 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 | $\mathbf{9 4 7}$ | $\mathbf{4 8 7 2}$ | $\mathbf{5 8 1 9}$ | $\mathbf{8 4 3 7}$ | $\mathbf{1 4 2 5 6}$ |

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 <br> Patients | Cured | Completed | Died | Failure | Defaulted | Transferred <br> out | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Smear <br> positive | $13(68 \%)$ | 0 | $4(21 \%)$ | 0 | $2(11 \%)$ | 0 | 19 |
| Smear <br> 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 $C R$ 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
$\square>=70 \%$
$\square$ 60-69 \%

| $\square$ |
| :---: |
| $\square$ |
| $\square$ |$\quad 40-49 \%$



TSR
प >= $85 \%$
$\square$ 75-84 \%
$\square$ 60-74 \%

- 50-59 \%
< 50 \%

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\%, Hppan 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
$\square>=70 \%$

- 60-69 \%
$\square \quad 50-59 \%$
- 40-49 \%


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.


CDR

- >= $70 \%$

<40 \%


TSR


## 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 towhship 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).


CDR
$\square>=70 \%$



TSR


### 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.


CDR



TSR

प>= $85 \%$
$\square 75-84 \%$
$\square$ 60-74 \%

- 50-59 \%
< 50 \%


### 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 ( $25 \%$ ) 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.



CDR
TSR


## Yangon (Northern district)



## CDR

TSR
$>=70 \%$
60-69 \%
50-59 \%
40-49 \%
<40 \%
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 | $\begin{gathered} \text { Non } \\ \text { TB } \end{gathered}$ | 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 | 1530 |
| February | 93 | 115 | 29 | 24 | 11 | 1 | 0 | 0 | 5 | 11 | 371 | 931 | 4 | 0 | 1595 |
| March | 101 | 116 | 32 | 35 | 14 | 0 | 0 | 0 | 5 | 9 | 430 | 1083 | 4 | 5 | 1834 |
| April | 72 | 51 | 38 | 23 | 6 | 0 | 0 | 0 | 15 | 8 | 373 | 675 | 3 | 0 | 1264 |
| May | 83 | 112 | 34 | 25 | 14 | 1 | 1 | 0 | 13 | 14 | 288 | 872 | 0 | 0 | 1457 |
| June | 91 | 102 | 44 | 23 | 25 | 0 | 3 | 0 | 17 | 12 | 367 | 583 | 4 | 4 | 1275 |
| July | 74 | 95 | 29 | 35 | 16 | 3 | 3 | 0 | 18 | 12 | 342 | 734 | 2 | 0 | 1363 |
| August | 110 | 113 | 31 | 31 | 13 | 2 | 1 | 0 | 10 | 15 | 405 | 663 | 8 | 3 | 1405 |
| September | 92 | 104 | 30 | 42 | 0 | 1 | 1 | 1 | 40 | 18 | 380 | 816 | 3 | 0 | 1528 |
| October | 91 | 71 | 34 | 19 | 10 | 0 | 0 | 9 | 45 | 26 | 314 | 655 | 14 | 5 | 1293 |
| November | 57 | 78 | 38 | 28 | 20 | 3 | 3 | 8 | 48 | 10 | 320 | 588 | 13 | 16 | 1230 |
| December | 88 | 110 | 27 | 16 | 26 | 2 | 3 | 4 | 17 | 18 | 379 | 632 | 9 | 8 | 1339 |
| Total | 1019 | 1166 | 388 | 327 | 172 | 13 | 15 | 23 | 241 | 167 | 4309 | 9168 | 64 | 41 | 17113 |

Aungsan TB Diagnostic Center

| UTI, <br> 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 | 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 Pathein 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 (Pathein, Yekyi. Kyaunggon, Thabaung, Hinthada, Kyankin, Ingapu, Myaungmya, Bogalay, Nyaungdon, Pantanaw, Danuphyu, 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.


CDR


TSR


## 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 posivite TB cases less than $\mathbf{8 5 \%}$

- 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 $\mathbf{> 8 5 \%}$ with Case detection rate less than $\mathbf{4 0 \%}$
- 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 $\mathbf{8 0 - 8 5 \%}$ 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 $2^{\text {nd }}, 5^{\text {th }}$ and $6^{\text {th }}$ month of treatment in new smear positive TB patients
- to explain all the staff involving in TB control the crucial importance of followup 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 coinfection 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 20092010, 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

|  | ETB | PZA | S 1 G | S/N | D/W | Cat I Kit | Cat II Kit | Paed. HRZ | Paed. HR | INH 300 mg |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 856 | 16640 | 0 | 40450 | 33900 | 35000 | 1444 | 0 | 0 | 273420 | 134400 |
| 184 | 1354800 | 600 | 209000 | 212000 | 198100 | 79082 | 4678 | 4385880 | 8379270 | 0 |
| 776 | 1299040 | 600 | 239850 | 236300 | 223300 | 67204 | 4649 | 4320000 | 8474400 | 8064 |
| 264 | 72400 | 0 | 9600 | 9600 | 9800 | 13322 | 29 | 65880 | 178290 | 126336 |
|  |  |  |  |  |  | 13322 |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  | 65880 |  |  |
|  |  |  |  |  |  |  | 29 |  | 178290 |  |
|  |  |  |  | 9600 |  |  |  |  |  |  |
|  |  |  | 9600 |  |  |  |  |  |  |  |
|  | 72400 |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  | 9800 |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  | 126336 |
| Balance of First Line Anti-TB Drugs at Upper Myanmar Drug Store (2010) |  |  |  |  |  |  |  |  |  |  |


| Drugs |  | 4FDC | 2FDC | ETB | ETB | PZA | S 1 G | S/N | D/W | $\begin{aligned} & \text { Cat I } \\ & \text { Kit } \end{aligned}$ | Cat II Kit | Paed. HRZ | $\begin{gathered} \hline \text { Paed. } \\ \text { HR } \end{gathered}$ | $\begin{aligned} & \hline \text { INH } \\ & 300 \mathrm{mg} \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 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 |
| Expired Date | 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

| $\begin{aligned} & \text { Sr. } \\ & \text { No } \end{aligned}$ | Items | Opening balance (31-12-2009) | Received 2010 | $\begin{aligned} & \text { Issued } \\ & 2010 \end{aligned}$ | 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 0 | 7 | 0 | 0 | 0 |
| 21 | B.P Phenyl | 258 | 250 | 70 | 438 |

Manpower Situation of National Tuberculosis Programme

| 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
2. Region/State TB Officer
3. Medical Officer
4. Medical Technician
5. Radiographer
6. BC
7. Grade 1 Lab: Technician
8. UD
9. Microbiologist
10.Grade 1 X-ray technician

3 (central)
7 (Taunggyi, Lashio, Kengtong, Sagaing, Magway, Tanintharyi, Myitkyina)
3 (Tarchilake) (Maubin) (Pyinmana)
2 (central) 2 (Mandalay)
1 (Mandalay)
2 (central)
1 (central) 2 (Mandalay) 2 (Yangon)
2 (central)
2 (NTRL)
1 (Mandalay)

Reporting Efriciency 11 Townships
Kachin State (4) Tsps 1. N'ganyan 2. Hsawlaw 3.Khaunglanbu 4.Naungmon
Shan (Lashio) State (6)Tsps 1. Kongyan 2. Panwine 3.Mongmaw 4. Manphant 5. Narphant 6.Pangyan Shan (Kyaingtong) State (1)7 1. Matman
NATIONAL TUBERCULOSIS PROGRAMME
CASE FINDING ACTIVITIES (2010)

| Sr. | TOWNSHIP | Population | Estimated <br> NewS( + ) <br> cases | PULMONARY TUBERCULOSIS |  |  |  |  |  |  |  |  |  |  |  |  | Total |  |  | Total | other |  | TOTAL |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | New Cases |  |  | CDR | Previously treated cases |  |  |  |  |  | Total | SmearNegative |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | R M | $\begin{aligned} & \text { apses } \\ & \hline \end{aligned}$ | $\frac{\text { after D }}{\mathrm{M}}$ | $\frac{\text { Defautt }}{\frac{1}{1}}$ |  | $\begin{aligned} & \text { failure } \\ & \hline \end{aligned}$ | M |  | F | M |  | F |  |  |  | M | F | TOTAL |
| 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 | 12 | 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 | 0 | 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 | Mohynin | 205513 | 216 | 72 | 41 | 113 | 52\% | 9 | 2 | 4 | 0 | 0 | 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 | 15 | 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 | 0 | 1 | 130 | 127 | 123 | 250 | 170 | 121 | 291 | 7 | 0 | 382 | 296 | 678 |
| 8 | Tanai | 39510 | 41 | 38 | 20 | 58 | 140\% | 1 | 3 | 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 | 11 | 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 | 0 | 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 | 4 [ 38 | 26 | 1404 | 931 | 546 | 1477 | 1273 | 925 | 2198 | 136 | 40 | 3285 | 1970 | 5255 |

[^2]| Sr | TOWNSHIP | Population | Estimated NewS（＋ cases | PULMONARY TUBERCULOSIS |  |  |  |  |  |  |  |  |  |  |  |  | Total | Extra <br> Pulmonary Tuberculosis |  | Total | other |  | TOTAL |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  | SMEAI | Previously treated cases |  |  |  |  |  | Total | $\begin{aligned} & \text { Smear } \\ & \text { Negative } \end{aligned}$ |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | New Cases |  |  | CDR |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | M | F | T |  | M | F | M | F | M | F |  | M | F |  | M | F |  | M $/ \mathrm{F}$ |  | M | F | TOTAL |
| Kayah State |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | Bawlake | 10025 | 11 | 8 | 6 | 14 | 133\％ | 1 | 0 | 0 | 0 | 0 | 0 | 15 | 13 | 1 | 14 | 2 | 2 | 4 | 0 | 0 | 24 | 9 | 33 |
| 2 | Masai | 5929 | 6 | 4 | 2 | 6 | 96\％ | 2 | 0 | 0 | 0 | 0 | 0 | 8 | 6 | 1 | 7 | 0 | 1 | 1 | 0 | 0 | 12 | 4 | 16 |
| 3 | Pasaung | 34845 | 37 | 4 | 2 | 6 | 16\％ | 0 | 0 | 2 | 1 | 2 | 2 | 13 | 10 | 8 | 18 | 14 | 14 | 28 | 0 | 0 | 32 | 27 | 59 |
| 4 | Loikaw | 105384 | 111 | 45 | 19 | 64 | 58\％ | 5 | 4 | 0 | 0 | 1 | 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 | 1 | 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 | 0 | 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 | 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 |


|  |  | $\stackrel{\circ}{\sim}$ | $\stackrel{\circ}{\sim}$ | $\stackrel{\text { n }}{\sim}$ | ¢ | $\stackrel{\text {－}}{\sim}$ | $\stackrel{\sim}{\sim}$ | $\stackrel{\text { ® }}{ }$ | $\stackrel{\text { ® }}{\sim}$ | $\stackrel{\text { ¢ }}{ }$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | ¢ | \％ | \％ | $\stackrel{\stackrel{\circ}{\square}}{+}$ | ¢ | N | $\stackrel{\sim}{\square}$ | へ | ¢ | － |
|  | $\stackrel{\square}{\bullet}$ | $\stackrel{+}{+}$ | N | $\stackrel{N}{\square}$ | $\stackrel{\circ}{+}$ | $\stackrel{\text { ® }}{ }$ | $\stackrel{-}{\circ}$ | $\stackrel{\sim}{m}$ | ¢ | ※ |
|  | F | $\stackrel{\square}{6}$ | － | $\checkmark$ | － | $\sim$ | － | － | $\bigcirc$ | 제 |
|  | の | क | $\bigcirc$ | $\sim$ | $\bigcirc$ | $\bullet$ | $\bigcirc$ | $\bigcirc$ | m | ค |
|  | $\stackrel{\circ}{\circ}$ | $\stackrel{\sim}{\circ}$ | ¢ | $\stackrel{\text { ¢ }}{\square}$ | $\stackrel{\%}{\circ}$ | $\stackrel{\sim}{\sim}$ | $\stackrel{ }{\sim}$ |  | $\stackrel{\square}{\square}$ | \％ |
|  | $\stackrel{\sim}{\sim}$ | ¢ | ¢ | $\stackrel{\square}{\circ}$ | $\stackrel{\sim}{\sim}$ | $\stackrel{\text { r }}{\sim}$ | $\bullet$ | $\bigcirc$ | $\stackrel{\square}{\circ}$ | N |
|  | $\stackrel{\sim}{0}$ | ® | 앙 | 「 | ¢ | $\stackrel{\square}{\odot}$ | $\bullet$ | $\bigcirc$ | の | － |
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|  | $\stackrel{\square}{\odot}$ | $\stackrel{\sim}{\sim}$ | F | $\bar{\sim}$ | $\stackrel{\sim}{\sim}$ | ¢ | $\checkmark$ | $\stackrel{\square}{\square}$ | － | $\stackrel{\square}{\circ}$ |
|  | $\stackrel{\sim}{\sim}$ | \％ | $\stackrel{ }{ }$ | $\stackrel{\sim}{\sim}$ | $\stackrel{\llcorner }{\square}$ | ले | の | $\stackrel{\sim}{2}$ | \％ | ल్लّ |
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|  | － | － | － | － | － | － | － | － | $\ulcorner$ | － |
|  | － | － | － | $\sim$ | － | － | $\bigcirc$ | － | － | $\cdots$ |
|  | － | － | $\bigcirc$ | － | － | － | － | $\sim$ | － | ＊ |
|  | － | － | $\bigcirc$ | $\bigcirc$ | － | － | － | － | － | － |
|  | － | － | － | $\sim$ | － | $\sim$ | － | － | － | $\uparrow$ |
|  | － | － | － | $\sim$ | $\bigcirc$ | － | $\bigcirc$ | － | \％ | F |
|  | ¢ | ¢ | $\stackrel{\circ}{\circ}$ | $\stackrel{\circ}{\circ}$ | ¢ | 享 | $\stackrel{\circ}{\circ}$ | $\stackrel{\circ}{\circ}$ | $\stackrel{\stackrel{\rightharpoonup}{\circ}}{\circ}$ | ¢ |
|  | $\stackrel{\square}{6}$ | 각 | $\sim$ | $\stackrel{\infty}{\sim}$ | $\bigcirc$ | $\bar{\sim}$ | $\sim$ | $\stackrel{\square}{\square}$ | ¢ | 츶 |
|  | $\sim$ | － | $\sim$ | $\infty$ | m | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\stackrel{\leftarrow}{\sim}$ | \％ |
|  | m | $\stackrel{\text { ¢ }}{ }$ | $\bigcirc$ | 앋 | $\sim$ | $\stackrel{-}{\bullet}$ | $\ulcorner$ | の | N | $\stackrel{\square}{i}$ |
|  | ก | 8 | is | ふ | ल | \％ | $\stackrel{1}{2}$ | N | \％ | N |
|  | $\overline{\mathrm{N}}$ | $\begin{aligned} & \hline 0 \\ & 0 \\ & 0 \end{aligned}$ | $\begin{aligned} & \text { L్జ } \\ & \text { êin } \end{aligned}$ | $\begin{aligned} & \hline \text { ò } \\ & \text { 万。 } \end{aligned}$ | $\begin{aligned} & \hline \stackrel{\circ}{0} \\ & \hline \mathbf{e} \end{aligned}$ |  | $\begin{aligned} & \hline \text { ल. } \\ & \stackrel{\circ}{-} \end{aligned}$ | $$ | $\begin{aligned} & \hline \stackrel{\circ}{\circ} \\ & \stackrel{\circ}{\circ} \end{aligned}$ | ¢ |
|  |  | $\begin{aligned} & \frac{\pi}{5} \\ & \stackrel{\text { win }}{1} \\ & \hline \end{aligned}$ | $\begin{aligned} & \frac{ᄃ}{0} \\ & \stackrel{\pi}{0} \\ & \stackrel{\pi}{\pi} \\ & \frac{\pi}{ \pm} \end{aligned}$ | $\frac{\varepsilon}{i}$ |  | $\begin{aligned} & \stackrel{H}{\tilde{\pi}} \\ & \stackrel{\rightharpoonup}{c} \\ & \stackrel{y}{\mid c} \end{aligned}$ |  | $\begin{aligned} & \overline{3} \\ & \vec{Z} \\ & \stackrel{0}{0} \end{aligned}$ | $\stackrel{\substack{0 \\ 0 \\ 0}}{\substack{0}}$ | \％ |
|  | － | $\sim$ | m | ＋ | $\bigcirc$ | $\bigcirc$ | $\wedge$ | $\infty$ | の |  |




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| $\stackrel{\square}{\circ}$ | － | － | の | の | $\wedge$ | $\stackrel{ }{\sim}$ | － | － | ＋ | － | － | － | － | － | F | － | － |  |  | 암 | $\checkmark$ |  | $\checkmark$ | $\sim$ | $\stackrel{\infty}{\sim}$ | ¢ | N |
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| $\begin{aligned} & \sum_{0}^{0} \\ & \sum_{2}^{\infty} \\ & \hline \end{aligned}$ |  |  |  |  | $\begin{aligned} & 0 \\ & 0 \\ & 0 \\ & 0 \\ & 0 \\ & 0 \\ & 0 \\ & 0 \\ & 0 \\ & \\ & \hline \end{aligned}$ |  | $\begin{aligned} & \circ \\ & \stackrel{0}{0} \\ & \stackrel{0}{\circ} \\ & \underset{\sim}{8} \\ & \hline \end{aligned}$ | $\begin{aligned} & \text { 差 } \\ & \text { in } \\ & \hline \end{aligned}$ |  |  | $\begin{array}{\|l\|l\|} 3 \\ 0 \\ 0 \\ \overleftarrow{5} \\ \hline \end{array}$ | ${ }_{5}^{5}$ |  | $\begin{aligned} & \text { 틀 } \\ & \stackrel{y}{1} \\ & \hline \end{aligned}$ | $\begin{array}{\|l\|l} \substack{c \\ \\ \hline \\ \hline} \\ \hline \end{array}$ |  |  |  |  | $\begin{aligned} & \stackrel{5}{\bar{\sigma}} \\ & \stackrel{\omega}{\omega} \\ & \hline \end{aligned}$ |  | $\begin{aligned} & \frac{\pi}{c} \\ & \substack{c \\ \sum \sum \\ \sum ⿰ 亻 ⿱ 丶 ⿻ 工 二 十} \end{aligned}$ |  |  |  |  | $\stackrel{\text { ¢ }}{\circ}$ |
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Mandalay Region \begin{tabular}{l|l|l|}
\hline 1 \& Amarapura \& 183159 <br>
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\hline 2 \& Aungmyaytharza \& 188537 <br>
\hline 3 \& Chanayetharzan \& 135152 <br>
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\hline 3 \& Chanmyatharzi \& 191823 <br>
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\end{tabular} 5 Maharaungmyae $\quad 221131$ 147982

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 | 7 | Patheingyi |
| :--- | :--- |
| 8 | Meiktilar |

9 Mahlaing
11 Wundwin
12 Myingan

| 13 | Kyaukpa |
| :--- | :--- |
| 14 | Natogyi |


| 14 | Ngazun |
| :--- | :--- |


| 15 | Ngazu |
| :---: | :--- |
| 16 | Taungtha |
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| 16 | Taungtha |
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| 17 | NyaungU |


19 Madayar
20 Mogok

| Sinabeikky |
| :--- | :--- |


| 23 | Yamethin |
| :--- | :--- |
| 24 | Lewei |
| 2 | P俭 |


| 24 | Pyawbwei |
| :--- | :--- |
| 26 | Pyinmana |

27 Tatkone
29 Myittha



| Sr. | TOWNSHIP | Population | Estimated NewS( + ) cases | PULMONARY |  |  |  |  |  |  |  |  |  |  |  |  | Total | Extra <br> Pulmonary <br> Tuberculosis |  | Total | other |  | TOTAL |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | New Cases |  |  | SMEA | R POSITIVE Previously treated cases |  |  |  |  |  | Total | $\begin{aligned} & \hline \text { Smear } \\ & \text { Negative } \end{aligned}$ |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | CDR | Relapses ${ }^{\text {a }}$ ater Default ''after failure |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | M | F | T |  | M | F | M | F | M | F |  | M | F |  | M | F |  | M | F | M | F | OTAL |
| Shan State (Taunggyi) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | Linhkay | 59175 | 62 | 20 | 2 | 22 | 35\% | 2 | 0 | 1 | 0 | 0 | 0 | 25 | 14 | 7 |  | 21 | 3 | 1 | 4 | 0 | 0 | 40 | 10 | 50 |
| 2 | Maukme | 26935 | 28 | 7 | 7 | 14 | 50\% | 1 | 0 | 0 | 0 | 0 | 0 | 15 | 1 | 1 | 2 | 4 | 2 | 6 | 0 | 0 | 13 | 10 | 23 |
| 3 | Monai | 24292 | 26 | 11 | 6 | 17 | 67\% | 0 | 1 | 0 | 0 | 0 | 0 | 18 | 5 | 6 | 11 | 1 | 3 | 4 | 0 | 0 | 17 | 16 | 33 |
| 4 | Mangpang | 16435 | 17 | 4 | 2 | 6 | 35\% | 0 | 1 | 0 | 0 | 1 | 0 | 8 | 5 | 3 | 8 | 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 | 48 | 2 | 3 | 5 | 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 | 87 | 66 | 153 |
| 7 | Kyeethi | 39644 | 42 | 5 | 6 | 11 | 26\% | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 56 | 48 | 104 | 13 | 22 | 35 | 0 | 0 | 74 | 76 | 150 |
| 8 | Laikha | 42074 | 44 | 22 | 5 | 27 | 61\% | 5 | 1 | 0 | 0 | 0 | 0 | 33 | 26 | 23 | 49 | 8 | 9 | 17 | 1 | 0 | 62 | 38 | 100 |
| 9 | Mongaking | 84060 | 88 | 20 | 7 | 27 | 31\% | 0 | 0 | 1 | 2 | 0 | 0 | 30 | 16 | 9 | 25 | 2 | 0 | 2 | 0 | 0 | 39 | 18 | 57 |
| 10 | Mongshu | 59954 | 63 | 10 | 6 | 16 | 25\% | 1 | 0 | 0 | 0 | 0 | 0 | 17 | 22 | 21 | 43 | 23 | 8 | 31 | 0 | 0 | 56 | 35 | 91 |
| 11 | Namsan | 81677 | 86 | 28 | 9 | 37 | 43\% | 6 | 0 | 0 | 0 | 0 | 0 | 43 | 52 | 28 | 80 | 28 | 20 | 48 | 4 | 1 | 118 | 58 | 176 |
| 12 | Taunggyi | 344665 | 362 | 117 | 59 | 176 | 49\% | 12 | 6 | 3 | 2 | 11 | 0 | 210 | 142 | 101 | 243 | 99 | 59 | 158 | 18 | 11 | 402 | 238 | 640 |
| 13 | Hopone | 98364 | 103 | 23 | 8 | 31 | 30\% | 0 | 0 | 2 | 0 | 1 | 1 | 35 | 17 | 9 | 26 | 15 | 8 | 23 | 0 | 0 | 58 | 26 | 84 |
| 14 | Hpekon | 90372 | 95 | 24 | 11 | 35 | 37\% | 2 | 0 | 1 | 0 | 2 | 0 | 40 | 38 | 20 | 58 | 6 | 5 | 11 | 1 | 0 | 74 | 36 | 110 |
| 15 | Hsiseng | 137083 | 144 | 28 | 18 | 46 | 32\% | 2 | 2 | 1 | 0 | 1 | 1 | 53 | 27 | 11 | 38 | 17 | 15 | 32 | 1 | 4 | 77 | 51 | 128 |
| 16 | Kalaw | 148206 | 156 | 56 | 15 | 71 | 46\% | 3 | 1 | 0 | 0 | 8 | 1 | 84 | 47 | 17 | 64 | 16 | 9 | 25 | 1 | 0 | 131 | 43 | 174 |
| 17 | Lauksauk | 129898 | 136 | 26 | 14 | 40 | 29\% | 6 | 1 | 0 | 0 | 0 | 0 | 47 | 44 | 17 | 61 | 10 | 6 | 16 | 2 | 0 | 88 | 38 | 126 |
| 18 | Pindaya | 75470 | 79 | 28 | 12 | 40 | 50\% | 0 | 0 | 0 | 0 | 0 | 0 | 40 | 20 | 13 | 33 | 2 | 3 | 5 | 0 | 1 | 50 | 29 | 79 |
| 19 | Pinlaung | 160486 | 169 | 32 | 16 | 48 | 28\% | 2 | 0 | 0 | 0 | 0 | 0 | 50 | 17 | 7 | 24 | 11 | 10 | 21 | 0 | 0 | 62 | 33 | 95 |
| 20 | Nyaungshwe | 173122 | 182 | 41 | 22 | 63 | 35\% | 2 | 1 | 0 | 0 | 0 | 0 | 66 | 19 | 10 | 29 | 7 | 4 | 11 | 0 | 2 | 69 | 39 | 108 |
| 21 | Ywangan | 76856 | 81 | 5 | 2 | 7 | 9\% | 1 | 0 | 0 | 0 | 1 | 0 | 9 | 19 | 9 | 28 | 1 | 0 | 1 | 0 | 0 | 27 | 11 | 38 |
|  | Total | 2038660 | 2141 | 544 | 258 | 802 | 37\% | 46 | 19 | 10 | 6 | 28 | 6 | 917 | 669 | 408 | 1077 | 277 | 190 | 467 | 29 | 20 | 1603 | 907 | 2510 |


| 1 | Kengtong | 179527 | 189 | 73 | 21 | 94 | 50\% | 17 | 4 | 3 | 1 | 3 | 0 | 122 | 51 | 31 | 82 | 23 | 12 | 35 | 6 | 1 | 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 |
| 3 | Mongyan | 94127 | 99 | 9 | 5 | 14 | 14\% | 0 | 1 | 0 | 0 | 0 | 0 | 15 | 5 | 6 | 11 | 8 | 4 | 12 | 0 | 0 | 22 | 16 | 38 |
| 4 | Monghsat | 76793 | 81 | 93 | 31 | 124 | 154\% | 18 | 7 | 4 | 0 | 6 | 3 | 162 | 126 | 55 | 181 | 5 | 5 | 10 | 34 | 7 | 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 |
| 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 |
| 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 |
| 8 | Mongyaung | 71985 | 76 | 27 | 9 | 36 | 48\% | 1 | 0 | 0 | 0 | 0 | 0 | 37 | 14 | 4 | 18 | 14 | 3 | 17 | 2 | 0 | 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 |
| 10 | Matman |  |  | Nr. |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Total | 738592 | 776 | 426 | 156 | 582 | 75\% | 63 | 31 | 12 | 4 | 15 | 4 | 711 | 670 | 432 | 1102 | 102 | 68 | 170 | 60 | 23) | 1348 | 718 | 2066 |


| Sr. | TOWNSHIP | Population | Estimated NewS( + ) cases | PULMONARY TUBERCULOSIS |  |  |  |  |  |  |  |  |  |  |  |  | Total | Extra <br> Pulmonary <br> Tuberculosis |  | Total | other |  | TOTAL |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | SMEAR POSITIVE |  |  |  |  |  |  |  |  |  | Total | SmearNegative |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | New Cases |  |  | CDR | Previously treated cases |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | M | F | T |  | Rela | F | M ${ }^{\text {fter }}$ | F | M | F |  | M | F |  | M | F |  | M | F | M | F | TOTAL |
| 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 | Kyaukme | 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 | 2659329 | 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

| S | TOWNSHIP | Population | Estimated <br> NewS（＋） <br> cases | PULMONARY TUBERCULOSIS |  |  |  |  |  |  |  |  |  |  |  |  | Total | $\begin{array}{c\|} \text { Extra } \\ \text { Pulmonary } \end{array}$ | Total | other |  | TOTAL |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  | SMEA | POS | SITIVE |  |  |  |  | Total | Smear Negative |  |  |  |  |  |  |  |  |  |
|  |  |  |  | New Cases |  |  | CDR | Rela | Previ | usly tit | reated | ases | failure |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | M | F | T |  |  | F | M | F | M | F |  | M | F |  | F |  |  |  | M | F | 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 |


| $\stackrel{\circ}{\circ}$ | ¢ | N |  | ¢ | $\stackrel{\text { ¢ }}{\sim}$ | $\stackrel{\stackrel{4}{4}}{ }$ | $\stackrel{\circ}{\circ}$ | $\stackrel{\infty}{\sim}$ | $\stackrel{7}{7}$ | $\stackrel{\text { ¢ }}{10}$ |
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| \％ | $\pm$ | ¢ | F | － | $\stackrel{\circ}{\circ}$ | $\stackrel{\text { ¢ }}{+}$ | $\stackrel{\circ}{\sim}$ | N | $\stackrel{\text { ® }}{ }$ | $\stackrel{\square}{2}$ |
| \％ | $\stackrel{\square}{\sim}$ | \％ | $\stackrel{\infty}{\circ}$ | － | ® | ＋ | － | is | $\stackrel{\circ}{\sim}$ | $\stackrel{\text { ¢ }}{\text { ¢ }}$ |
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| ～ | m | － | $\stackrel{\sim}{\sim}$ | \％ | $\stackrel{\sim}{\sim}$ | ® | $\bullet$ | $\stackrel{\square}{6}$ | $\stackrel{\text { er }}{\square}$ | 戓 |
| Э | $\sim$ | 앙 | － | $\stackrel{\square}{6}$ | ～ | $\frac{5}{5}$ | $\infty$ | $\stackrel{\infty}{\sim}$ | $\stackrel{\bullet}{\circ}$ | ুু |
| \％ | $\stackrel{\leftarrow}{\square}$ | 각 | ¢ | へ | \％ | ® | $\stackrel{\sim}{\square}$ | $\overline{\text { ¢ }}$ | ¢ | \％ |
| $\infty$ | － | － | － | － | － | － | － | － | － | の |
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| $\stackrel{\circ}{\circ}$ | $\stackrel{\text { ¢ }}{ }$ | $\uparrow$ | $\stackrel{\sim}{\sim}$ | ¢ | \％ | ¢ | $\stackrel{\sim}{\sim}$ | － | N | － |
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| 출 | $\stackrel{\circ}{+}$ | ＋ | $\stackrel{\bullet}{\circ}$ | 안 | $\stackrel{\circ}{\text { o }}$ | $\stackrel{\sim}{0}$ | $\stackrel{\text { ¢ }}{ }$ | $\stackrel{m}{5}$ | 윧 | $\stackrel{\text { ¢ }}{\text { ¢ }}$ |
| $\begin{aligned} & \stackrel{\rightharpoonup}{\mathrm{N}} \\ & \stackrel{\omega}{n} \end{aligned}$ | $\stackrel{\infty}{\stackrel{\infty}{0}}$ | $\begin{aligned} & \stackrel{\circ}{0} \\ & \stackrel{N}{6} \end{aligned}$ | $\begin{aligned} & \text { N } \\ & \underset{y}{4} \\ & \hline \end{aligned}$ | $\begin{aligned} & \stackrel{N}{N} \\ & \stackrel{\rightharpoonup}{0} \end{aligned}$ | $\begin{aligned} & \stackrel{\circ}{\mathbf{\omega}} \\ & \dot{\sim} \end{aligned}$ | $\begin{aligned} & \text { N} \\ & \text { N} \\ & \hline \mathbf{\circ} \end{aligned}$ | $\begin{aligned} & \hline \stackrel{\circ}{\mathbf{o}} \\ & \stackrel{\circ}{\circ} \end{aligned}$ |  |  | － |
| $\begin{aligned} & \overline{\mathrm{a}} \\ & z_{n} \\ & 0 \end{aligned}$ |  |  | $\begin{aligned} & \stackrel{3}{0} \\ & \underset{\sim}{0} \\ & \hline \end{aligned}$ |  | $\begin{aligned} & \stackrel{5}{2} \\ & \stackrel{0}{0} \\ & \stackrel{y}{\circ} \end{aligned}$ | $\begin{aligned} & \stackrel{\Sigma}{6} \\ & \sum_{\Sigma}^{\omega} \end{aligned}$ | $\begin{aligned} & \overrightarrow{3} \\ & \stackrel{y}{2} \\ & \underline{y} \end{aligned}$ |  | $\begin{aligned} & \frac{3}{n_{0}^{2}} \\ & \frac{\pi}{0} \end{aligned}$ | － |
| － | $\sim$ | m | ＋ | $\llcorner$ | $\bigcirc$ | $\wedge$ | $\infty$ | の | $\bigcirc$ |  |


| Sr | TOWNSHIP | Population | Estimated cases | PULMONARY TUBERCULOSIS |  |  |  |  |  |  |  |  |  |  |  |  | Total |  |  | Total | other |  | TOTAL |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  | CDR | $\mathrm{AR} \text { POS }$ | ITIVE |  |  |  |  | Total | Smear Negative |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | New Cases |  |  |  | Rela | Previ | usty tor | eated | ases | ailure |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | M | F | T |  | M | F | M | F | M | F |  | M | F |  | M | F |  | M | F | M | F | TOTAL |
| 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 |


| ¢ | $\stackrel{\stackrel{\rightharpoonup}{N}}{ }$ | N | $\stackrel{\sim}{\sim}$ | $\stackrel{\sim}{\sim}$ | ！ | $\stackrel{\substack{0}}{\text { ¢ }}$ |  |  | $\stackrel{\text { ® }}{\sim}$ | $\stackrel{\text { ® }}{\sim}$ | $\stackrel{\text { ® }}{\sim}$ | $\stackrel{+}{\text { ¢ }}$ | $\stackrel{\sim}{\sim}$ | $\stackrel{\square}{7}$ |  | 放 |
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| $\begin{array}{\|r\|} \hline \stackrel{\circ}{N} \\ \hline \end{array}$ | $\stackrel{+}{\square}$ | $\stackrel{+}{\square}$ | $\stackrel{+}{\square}$ | ¢ | J | ¢ $\stackrel{\circ}{\square}$ | $\stackrel{\circ}{\square}$ | ® | ® | \％ | $\stackrel{\circ}{\square}$ | N | $\stackrel{\sim}{\sim}$ | $\stackrel{\circ}{\circ}$ |  | $\stackrel{\sim}{\sim}$ |
| $\stackrel{7}{7}$ | $\stackrel{\%}{\sim}$ | ¢ | $\stackrel{\infty}{\sim}$ | $\stackrel{\circ}{\square}$ | $\underset{\sim}{\text { N }}$ | N | $\stackrel{\square}{4}$ 욱 | $\bigcirc$ | $\stackrel{\circ}{\square}$ | $\stackrel{m}{5}$ | $\stackrel{\text { 안 }}{ }$ | $\stackrel{\text { ® }}{\sim}$ | $\stackrel{\circ}{\sim}$ | $\stackrel{\sim}{\sim}$ |  | $\stackrel{0}{0}$ |
| $\sim$ | － | － | － | － | － | － | － | ल | $\cdots$ | － | － | － | － | － |  | F |
| $\checkmark$ | － | － | $\sim$ | m | m | $\sim$ | N | ल | $\cdots$ | － | $\sim$ | － | m |  |  | $\overline{\text { ¢ }}$ |
| \％ | F | $\stackrel{\sim}{\square}$ | ¢ | ¢ |  | $\cdots$－ | $\cdots$ F | ＝ | $\bigcirc$ | $\stackrel{\square}{\circ}$ | $\stackrel{\square}{\circ}$ | ले | － |  |  | Г－ल |
| ～ | $\checkmark$ | の | $\stackrel{\square}{\circ}$ | $\stackrel{m}{\square}$ | － | －${ }^{\circ}$ | ${ }^{\circ} \cdot$ | $\bigcirc$ | $\wedge$ | －0 | $\stackrel{\sim}{\sim}$ | $\stackrel{\sim}{\sim}$ |  | $\cdots$ |  | $\stackrel{\circ}{-}$ |
| $\bar{\sim}$ | $\bullet$ | の | $\stackrel{\sim}{\sim}$ | $\stackrel{\circ}{\circ}$ | F | F | m | $\bigcirc$ | m | $\stackrel{\sim}{0}$ | \％ | $\pm$ |  |  |  | $\stackrel{7}{7}$ |
| $\stackrel{\circ}{\square}$ | $\stackrel{\circ}{\square}$ | $\stackrel{ }{7}$ |  | N |  | N | $\stackrel{\sim}{\sim}$ | $\stackrel{\sim}{\sim}$ | $\stackrel{\sim}{\sim}$ | $\stackrel{6}{6}$ | $\stackrel{+}{+}$ | $\stackrel{\sim}{\sim}$ |  | $\stackrel{\rightharpoonup}{\sim}$ |  | ल్へ్ల |
| $\stackrel{\infty}{\sim}$ | $\stackrel{\%}{6}$ | $\stackrel{\sim}{\circ}$ | $\stackrel{\sim}{\circ}$ | ¢ | $\stackrel{\circ}{\circ}$ | $\stackrel{\circ}{\circ}$ | $\stackrel{\circ}{\circ}$ | \％ | フ | － | $\%$ | $\bigcirc$ | $\stackrel{\square}{8}$ | 악 |  | ¢ |
| $\bar{\sim}$ | ¢ | ® | $\stackrel{\infty}{\sim}$ | $\cdots$ | J | ¢ | ® ${ }_{\text {® }}$ ন | ＋ |  | ¢ | ¢ | $\stackrel{\sim}{\sim}$ |  | F |  | $\stackrel{\circ}{\text { ¢ }}$ |
| $\begin{array}{\|l\|} \hline \underset{\sim}{n} \end{array}$ | 8 | $\stackrel{\sim}{\circ}$ | $\stackrel{ }{\dagger}$ |  |  | の | $\stackrel{\circ}{\sim}$ | 析 |  | $\stackrel{N}{N}$ | $\stackrel{\text { ¢ }}{ }$ | ¢ | $\stackrel{\text { \％}}{+}$ | $\stackrel{\sim}{\square}$ |  |  |
| － | － | － | － | $\sim$ | $\sim$ | $\cdots$ | － | － | $\checkmark$ | － | － | － | － | － |  | $\bigcirc$ |
| $\stackrel{\square}{\square}$ | － | $\sim$ | － | － | $\sim$ | $\stackrel{ }{\sim}$ | $\cdots$ | － | － | － | － | m | － |  |  | ¢ |
| － | － | － | － | － | － | 0 | 0 | 0 | － | － | － | － | － | － |  | － |
| － | － | － | － | － | － | －N | $\sim$ | － | － | － | － | － | $\sim$ |  |  | $\infty$ |
| $\llcorner$ | $\bigcirc$ | $\sim$ | － | m | － | ¢ m | $\cdots$ | $\sim$ | $\sim$ | $\stackrel{\square}{5}$ | $\sim$ | 앙 | $\infty$ |  |  | $\bar{\square}$ |
| ${ }^{\infty}$ | － | － | $\bigcirc$ | m | $\bigcirc$ | －${ }^{\circ}$ | ¢ | $\checkmark$ | $\sim$ | $\cdots$ | $\infty$ | $\stackrel{-}{\square}$ | $\stackrel{\text { N}}{+}$ | $\stackrel{ }{\sim}$ |  | ® |
| 芯 | $\stackrel{\circ}{\circ}$ | กิ้ | 込 | \％ | \％ | $\stackrel{\stackrel{\rightharpoonup}{\circ}}{\stackrel{\circ}{\circ}} \stackrel{\rightharpoonup}{\stackrel{0}{2}}$ | $\stackrel{\stackrel{\rightharpoonup}{c}}{\text { ® }}$ | 운 | ®ํํํ | 年 | \％ | 号 |  | \％i้ |  | ¢ |
| N |  |  |  |  |  |  |  |  |  | ¢ | $\stackrel{\text { N }}{ }$ | ¢ | 춘 | $\stackrel{\text {－}}{ }$ |  | \％ |
| ® | ¢ | \％ |  | － |  | $\stackrel{\sim}{\sim}$ | \％ | $\bigcirc$ |  | $\stackrel{\sim}{\sim}$ | \％ | $\pm$ | ¢ | em |  | \％ |
| ＋ |  | セூ |  |  |  | $\stackrel{\text { ¢ }}{\sim}$ | $\stackrel{\sim}{\sim}$ | $\stackrel{\square}{\sim}$ |  | \％ | － | テ | \％ | ® |  | ঃ |
| ～ | N | $\stackrel{5}{5}$ | フ |  | \％ | ษ | ำ | $\stackrel{9}{ }$ | 운 | $\stackrel{5}{5}$ | $\stackrel{\sim}{\sim}$ | $\stackrel{\text { N}}{ }$ | $\stackrel{\circ}{-}$ | $\stackrel{\sim}{\sim}$ |  | $\stackrel{\sim}{\sim}$ |
| $\begin{aligned} & \hline \stackrel{\rightharpoonup}{0} \\ & \text { O} \end{aligned}$ | $\begin{aligned} & \text { N్ల్ర } \\ & \stackrel{\oplus}{\square} \end{aligned}$ |  | $\begin{aligned} & \stackrel{N}{0} \\ & \text { in } \\ & \end{aligned}$ |  |  |  |  |  |  | $\stackrel{0}{5}$ | $\stackrel{\rightharpoonup}{\circ}$ $\stackrel{\text { N }}{N}$ $\sim$ | $\stackrel{\circ}{\circ}$ | $\begin{aligned} & \text { Bo } \\ & \hline 8 \\ & \hline \end{aligned}$ | $\stackrel{⿳ 亠 丷}{\stackrel{3}{N}}$ |  |  |
| $\begin{aligned} & \vec{a} \\ & 2 \\ & 0 \end{aligned}$ |  |  | $\begin{array}{r} 0 \\ \stackrel{0}{5} \\ \mathbf{0} \\ 0 \\ \hline 0 \end{array}$ | $\begin{array}{l\|l\|l\|l\|l\|l\|} \hline \\ \hline \end{array}$ |  |  |  |  |  |  | $\begin{aligned} & \circ \\ & \stackrel{\circ}{0} \\ & \hline \end{aligned}$ |  |  |  |  | － |
| － |  |  | ＋ |  |  |  |  |  |  | $\bigcirc$ | ＝ |  |  |  |  |  |


| Sr. | TOWNSHIP | Population | Estimated cases | PULMONARY TUBERCULOSIS |  |  |  |  |  |  |  |  |  |  |  |  | Total |  |  | Total | other |  | TOTAL |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | New Cases |  |  | CDR | Previously treated cases |  |  |  |  |  | Total | SmearNegative |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | Rela | F | \|after D | efaut | ''after | F ${ }_{\text {ailure }}$ | M |  | F | M |  | F | M |  |  | M | F | TOTAL |
| Mon State |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | Mawlamyaing | 277250 | 291 | 200 | 81 | 281 |  | 7\% | 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 |
| Rakhine State |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | Kyaukphyu | 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 | Manaung | 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 |



|  | East District |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Botataung | 39564 | 67 | 47 | 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 | 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 | 1 | 8 | 3 | 273 | 98 | 48 | 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 | 0 | 1 | 59 | 38 | 28 | 66 | 5 | 12 | 17 | 6 | 7 | 85 | 70 | 155 |
| 13 | Dagon（E） | 104137 | 177 | 118 | 65 | 183 | 104\％ | 16 | 6 | 2 | 0 | 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 | 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 |


| ${ }_{\sim}^{2}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\stackrel{\sim}{\sim}$ | $\overline{\text { ¢ }}$ | $\stackrel{\text { ¢ }}{\square}$ | $\stackrel{\text { ¢ }}{\sim}$ |  |  | $\stackrel{\text { N}}{ }$ |  | $\infty$ | 융 | \％ |  |  | Ñ |  | \％ |
| ¢ | 냉 | $\stackrel{\sim}{0}$ | $\stackrel{\circ}{\circ}$ |  |  | f |  | － | $\stackrel{9}{9}$ | ¢ |  |  | \％ |  | \％ |
| N | － | － | － |  |  | $\sim$ |  |  | の | $\llcorner$ |  |  |  |  |  |
| $\wedge$ | － | $\infty$ | － |  |  |  |  |  |  |  |  |  |  |  |  |
| \％ | － | ু | $\stackrel{\sim}{\circ}$ | － |  | Fo | N | － | $\stackrel{\sim}{1}$ | F |  | ＝ 8 | 8 |  | $\pm$ |
| $\stackrel{\circ}{\sim}$ | F | \％ | － |  | $\checkmark$ |  | $\stackrel{m}{\square}$ | $\pm$ | Г | － |  | $\bigcirc$ | \％ |  | $\stackrel{\sim}{\sim}$ |
| $\because$ | क | र | $\stackrel{\sim}{\sim}$ | O | $\bigcirc$ | O | の | $\stackrel{\sim}{\sim}$ | ¢ | － | F | F® | $\stackrel{\circ}{\circ}$ |  | \％ |
| ুু | $\stackrel{\sim}{\sim}$ | $\stackrel{\circ}{\circ}$ | \％ | ${ }^{\circ}$ | I | ホ | I | F | － | ¢ |  | \％ | \％ |  |  |
| ले | － | d | ¢ | \％ |  |  |  | \％ | ¢ | N | $\bigcirc$ | $\bigcirc$ | $\bigcirc$ |  | $\stackrel{\text { ¢ }}{\circ}$ |
| $\stackrel{\sim}{0}$ | $\stackrel{\square}{\square}$ | 8 | $\stackrel{\square}{6}$ |  |  | $\bigcirc$ |  | $\stackrel{\sim}{\sim}$ | $\stackrel{\square}{\square}$ | $\bar{\sim}$ |  |  | F |  | $\bigcirc$ |
| $\stackrel{\circ}{\circ}$ |  | $\stackrel{\circ}{\circ}$ |  |  |  | \％ | \％ | ® |  | L |  |  | N |  | \％ |
| － | － | － | － | O | － | 0 | － | $\sim$ | の | $\sim$ |  | － | － |  | $\stackrel{\square}{\square}$ |
| － | － | $\infty$ | － | － | － | － | $\cdots$ | $\sim$ | の | － |  |  |  |  | － |
| － | － | － | － | － | － | － | － | － |  |  |  |  |  |  | $\cdots$ |
| － | 0 | $\cdots$ | $\sim$ | － | 0 | 0 | － | － | m | － |  |  |  |  | $\stackrel{\square}{\square}$ |
| － |  | $\stackrel{\square}{\square}$ |  | － | － | － | － | m | $\bigcirc$ | $\sim$ |  |  |  |  | $\widehat{6}$ |
| $\underset{\sim}{n}$ |  | － | － |  |  |  | \％ |  | $\stackrel{\infty}{\sim}$ |  |  |  | N | － | ป |
| $\begin{array}{\|l\|} \hline \stackrel{\circ}{\circ} \\ \hline \end{array}$ | $\begin{aligned} & \stackrel{\circ}{8} \\ & \stackrel{3}{4} \end{aligned}$ | స̀ |  | $\stackrel{\circ}{\text { Bl }}$ | $\underset{\sim}{\sim}$ |  |  |  |  | 亡ั้ |  |  |  |  | ミ |
| 万 |  |  |  |  |  |  |  |  |  |  |  |  | $\stackrel{8}{5}$ |  |  |
| ¢ |  | \％ |  |  |  |  |  | $\stackrel{\sim}{\sim}$ |  | $\wedge$ |  | $\stackrel{\sim}{\sim}$ | \％ |  | \％ |
| W | N | $\infty$ | \％ |  |  |  |  |  |  | $\stackrel{\square}{\square}$ |  |  | $\stackrel{\sim}{\sim}$ |  | N |
| 낭 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | $\begin{array}{\|l\|} \hline \stackrel{\rightharpoonup}{\mathrm{O}} \\ \hline \end{array}$ |  | $\begin{array}{\|l\|} \hline 8 \\ \hline 0 \\ \hline \end{array}$ |  |  |  |  |  |  |  |  |  |  | （1） |  |
| $$ |  | $\begin{gathered} 0 \\ 0 \end{gathered}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  | $\bigcirc$ |  |  |  |  |  |




| S | TOWNSHIP | Population | Estimated NewS(+ cases | PULMONARY TUBERCULOSISSMEAR POSITIVE |  |  |  |  |  |  |  |  |  | tal |  |  | Total | $\begin{gathered} \text { Extra } \\ \text { Pulmonary } \end{gathered}$ |  | Total | other |  | TOTAL |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | New Cases |  |  | CDR | Rela | Previ | Previously treated cases |  |  | 析 |  | Negative |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | M | F | T |  |  | F | M | F | M | F |  | M | F |  | M | F |  |  |  | M | F | TOTAL |


| 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 Hosipital (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 beded 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 | 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 Sanpya Hos: | 2 | 3 | 5 |  | 2 | 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 | 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 |


AGE AND SEX DISTRIBUTION OF NEW SMEAR POSITIVE TB PATIENTS

ヨWWシy
AGE DISTRIBUTION OF PRIMARY COMPLEX, HILAR LYMPHADENOPATHY AND TB MENINGITIS PATIENTS

|  |  |  |  |  |  |  |  |  |  |  |  | nual |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Sr.No | Region/State | PC and TBM cases by age group |  |  |  |  |  |  |  |  |  |  |  |
|  |  | PC |  |  | Total | Hilar Lymphadenopathy |  |  | Total | TBM |  |  | Total |
|  |  | 0-4 | 5-14 | $\geq 15$ |  | 0-4 | 5-14 | $\geq 15$ |  | 0-4 | 5-14 | $\geq 15$ |  |
| 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

| Sr.No | Block-3 |  |  |  |  |  |  |  |  |  | Annual 2010 |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Region/State | CAT |  |  |  | CAT - 2 |  |  |  |  | CAT - 3 |  |  | TOTAL |
|  |  | Sputum <br> Smear <br> Positive | Sputum <br> Smear <br> Negative |  | Total | Relapses | Treatment after Default | Treatment after Failure | Others <br> (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

| Block-4 |  |  |  |  |  |  | Annual 2010 |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Sr.No | Region/State | A <br> Number of suspects(Dx) examined by microscopy for case finding |  | B <br> Number of smear positive pts detected out of suspcts (Dx) |  |  | C <br> Number of patients examined by microscopy for follow-up |  | D <br> Number of smear positive out of follow-up patients |  | TB suspects per 100,000 |
|  |  | No. of Pts | slides | No. of Pts | Positivity Rate | slides | No. of Pts | slides | No. of Pts | slides |  |
| 1 | Kachin State | 7646 | 22081 | 1611 | 21\% | 4201 | 7009 | 13946 | 425 | 812 | 537 |
| 2 | Kayah State | 1993 | 5803 | 142 | 7\% | 367 | 928 | 1789 | 46 | 83 | 681 |
| 3 | Chin State | 905 | 2709 | 137 | 15\% | 387 | 917 | 1881 | 55 | 109 | 180 |
| 4 | Sagaing Region | 23662 | 69221 | 3156 | 13\% | 8547 | 12159 | 24530 | 497 | 886 | 460 |
| 5 | Magway Region | 12960 | 36305 | 2423 | 19\% | 5572 | 11063 | 22004 | 792 | 1297 | 322 |
| 6 | MandalayRegion | 18200 | 51427 | 3771 | 21\% | 9907 | 20299 | 39672 | 1205 | 2207 | 284 |
| 7 | Shan State (Taunggyi) | 6274 | 16738 | 850 | 14\% | 1973 | 3178 | 6154 | 177 | 309 | 308 |
| 8 | Shan State (Kyaingtong | 3047 | 8033 | 608 | 20\% | 1522 | 2532 | 4622 | 235 | 369 | 413 |
| 9 | Shan State (Lashio) | 6747 | 18947 | 1403 | 21\% | 3494 | 5476 | 10585 | 364 | 687 | 254 |
| 10 | Kayin State | 8051 | 19295 | 1151 | 14\% | 2897 | 6294 | 12492 | 149 | 299 | 526 |
| 11 | Tanintharyi Region | 5282 | 15528 | 914 | 17\% | 2628 | 5032 | 10168 | 243 | 477 | 339 |
| 12 | Bago Region | 10138 | 29555 | 2171 | 21\% | 6210 | 11683 | 18894 | 265 | 545 | 352 |
| 13 | Bago Region (Pyay) | 7342 | 20554 | 1743 | 24\% | 4799 | 8719 | 17144 | 404 | 774 | 372 |
| 14 | Mon State | 14668 | 48819 | 2150 | 15\% | 5630 | 11615 | 22987 | 469 | 889 | 705 |
| 15 | Rakhine State | 12225 | 34526 | 2481 | 20\% | 8440 | 11866 | 23715 | 767 | 1331 | 358 |
| 16 | Yangon Region | 40503 | 117907 | 9001 | 22\% | 23925 | 47780 | 93699 | 2473 | 4772 | 683 |
| 17 | Ayeyarwady Region | 26408 | 75450 | 5402 | 20\% | 14422 | 22661 | 44941 | 810 | 1596 | 399 |
| All Reg | egions \& States Total | 206051 | 592898 | 39114 | 19\% | 104921 | 189211 | 369223 | 9376 | 17442 | 419 |
|  | Other Units | 46760 | 133664 | 8209 | 18\% | 22310 | 30654 | 66030 | 3071 | 6028 |  |
|  | Country | 252811 | 726562 | 47323 | 19\% | 127231 | 219865 | 435253 | 12447 | 23470 | 514 |



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 |  |
| 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 <br> (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 |  |
| 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 |

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

| Kachin State |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Townships | Reg. Pts. | Cured |  | Completed |  | TSR | Died |  | Failure |  | Defaulted |  | Transfered out |  | Total eva. Pts |
| No. |  |  | No | CR | No | Rate |  | No | Rate | No | Rate | No | Rate | No | Rate |  |
| 1 | Bahmo | 81 | 71 | 88\% | 0 | 0\% | 88\% | 4 | 5\% | 3 | 4\% | 0 | 0\% | 3 | 4\% | 81 |
| 2 | Mansi | 56 | 45 | 80\% | 1 | 2\% | 82\% | 4 | 7\% | 2 | 4\% | 3 | 5\% | 1 | 2\% | 56 |
| 3 | Momauk | 27 | 25 | 93\% | 0 | 0\% | 93\% | 1 | 4\% | 1 | 4\% | 0 | 0\% | 0 | 0\% | 27 |
| 4 | Shwegu | 30 | 22 | 73\% | 2 | 7\% | 80\% | 3 | 10\% | 3 | 10\% | 0 | 0\% | 0 | 0\% | 30 |
| 5 | Mohynin | 120 | 89 | 74\% | 4 | 3\% | 78\% | 14 | 12\% | 3 | 3\% | 6 | 5\% | 4 | 3\% | 120 |
| 6 | Kamaing | 190 | 112 | 59\% | 10 | 5\% | 64\% | 7 | 4\% | 7 | 4\% | 38 | 20\% | 16 | 8\% | 190 |
| 7 | Mogaung | 134 | 87 | 65\% | 21 | 16\% | 81\% | 6 | 4\% | 10 | 7\% | 7 | 5\% | 3 | 2\% | 134 |
| 8 | Tanai | 65 | 42 | 65\% | 6 | 9\% | 74\% | 2 | 3\% | 2 | 3\% | 11 | 17\% | 2 | 3\% | 65 |
| 9 | Myitkyina | 371 | 260 | 70\% | 29 | 8\% | 78\% | 7 | 2\% | 33 | 9\% | 27 | 7\% | 15 | 4\% | 371 |
| 10 | Chipway | 6 | 4 | 67\% | 0 | 0\% | 67\% | 1 | 17\% | 0 | 0\% | 1 | 17\% | 0 | 0\% | 6 |
| 11 | Hsawlaw | Nr . |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 | N Jan Yan | Nr . |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 13 | Waingmaw | 108 | 89 | 82\% | 14 | 13\% | 95\% | 1 | 1\% | 3 | 3\% | 0 | 0\% | 1 | 1\% | 108 |
| 14 | PutaO | 67 | 49 | 73\% | 4 | 6\% | 79\% | 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\% | 79\% | 53 | 4\% | 72 | 6\% | 99 | 8\% | 45 | 4\% | 1255 |


| Kayah State |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Bawlake | 9 | 8 | 89\% | 1 | 11\% | 100\% | 0 | 0\% | 0 | 0\% | 0 | 0\% | 0 | 0\% | 9 |
| 2 | Masai | 7 | 6 | 86\% | 1 | 14\% | 100\% | 0 | 0\% | 0 | 0\% | 0 | 0\% | 0 | 0\% | 7 |
| 3 | Pasaung | 20 | 20 | 100\% | 0 | 0\% | 100\% | 0 | 0\% | 0 | 0\% | 0 | 0\% | 0 | 0\% | 20 |
| 4 | Loikaw | 77 | 60 | 78\% | 0 | 0\% | 78\% | 4 | 5\% | 5 | 6\% | 2 | 3\% | 6 | 8\% | 77 |
| 5 | Dimawhso | 14 | 12 | 86\% | 0 | 0\% | 86\% | 0 | 0\% | 1 | 7\% | 0 | 0\% | 1 | 7\% | 14 |
| 6 | Phruhso | 0 |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 |
| 7 | Shataw | 0 |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 |
|  | Total | 127 | 106 | 83\% | 2 | 2\% | 85\% | 4 | 3\% | 6 | 5\% | 2 | 2\% | 7 | 6\% | 127 |



| $\begin{aligned} & \text { Sr. } \\ & \text { No. } \end{aligned}$ | Townships | Reg. Pts. | Cured |  | Completed |  | TSR | Died |  | Failure |  | Defaulted |  | Transfered out |  | Total eva. Pts. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | No | CR | 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 | Yinmabin | 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 |







| $\stackrel{N}{\mathrm{~N}}$ | 6 | N | $\stackrel{\infty}{\sim}$ | ¢ | Э | $\stackrel{\sim}{N}$ | ¢ | － |  | $\frac{8}{5}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| oి | ก인 | ¢0 | ঃ০০ | ঃㅇ | ஃㅇ | ৪ి | ল্লি | $\stackrel{\circ}{\circ}$ |  | $\stackrel{\text { ® }}{ }$ |
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| $\frac{\stackrel{\circ}{5}}{5}$ | ○ి | ু০ | $\stackrel{\stackrel{\circ}{\mathrm{C}}}{\stackrel{-}{2}}$ | $\frac{\circ 0}{\Gamma}$ | $\begin{aligned} & \mathrm{c} \text { • } \\ & \stackrel{y}{c} \end{aligned}$ | ஃ○ | $\stackrel{\circ}{\stackrel{\circ}{-}}$ | $\stackrel{\circ}{\mathrm{c}}$ |  | \％ |
| $\stackrel{\square}{\text { F }}$ | 0 | $\sim$ | 안 | $\checkmark$ | $\bigcirc$ | $\bigcirc$ | 6 | 안 |  | N |
| 氷 | oి | $8$ | ๕๐ | ৪ㅇ | ঃে | $\stackrel{\circ}{\circ}$ | ¿ㅇ | ®응 |  | ¢े |
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| io | ○ి | $\stackrel{\rightharpoonup}{\mathrm{G}}$ | লे০ | io | ஃ) | ஃ○ | ৪ৃ | ¿ㅇ |  | 응 |
| $\bigcirc$ | $\bigcirc$ | $\ulcorner$ | $\sim$ | $\sim$ | m | $\bigcirc$ | m | 안 |  | N |
| $\frac{\vdots}{\infty}$ | 侖 | $\begin{aligned} & \hline \stackrel{0}{\circ} \\ & \hline \infty \end{aligned}$ | ¿े | ঙ্ণ | ㅅํ | ঃঃం | \% | $\begin{array}{\|c\|} \hline-\infty \\ \hline \infty \\ \hline \end{array}$ |  | － |
| $\begin{array}{\|c\|} \hline \stackrel{\circ}{\mathrm{m}} \\ \hline \end{array}$ | $\stackrel{\stackrel{\circ}{\mathrm{C}}}{\stackrel{-}{5}}$ | $\begin{aligned} & \hline \stackrel{\circ}{\circ} \\ & \text { in } \end{aligned}$ | ঃু | ৷্ণ | $\frac{\stackrel{\circ}{\mathrm{N}}}{}$ | ঃণ | oㅇ | $\infty$ |  | $\stackrel{\square}{\circ}$ |
| $\stackrel{-}{\square}$ | $\ulcorner$ | $\stackrel{\square}{\square}$ | N | ద | 안 | $\ulcorner$ | 0 | F |  | $\bigcirc$ |
| © | $\begin{array}{\|l\|} \hline \stackrel{0}{6} \\ \hline \end{array}$ | ৪ిలి | Ò | $\stackrel{\circ}{\stackrel{\circ}{ }}$ | iగి | $\frac{\grave{0}}{6}$ | ©ి | ハి |  | － |
| ¢ | － | 入 | ¢ | N | $\stackrel{\sim}{\sim}$ | $\bar{\sim}$ | N | 앋 |  | － |
| $\stackrel{N}{\mathrm{~N}}$ | $\bigcirc$ | N | $\stackrel{\infty}{\sim}$ | ¢ | へ | N | ¢ | $\stackrel{\mathrm{m}}{\mathrm{~m}}$ | ¿ | － |
| $\begin{array}{\|l\|} \hline 0 \\ 0 \\ 0 \\ \hline 0 \\ 0 \\ \hline \mathbf{y} \\ \hline \end{array}$ | $\begin{array}{\|l\|} \hline \stackrel{0}{0} \\ \frac{2}{0} \\ \vdots \\ \vdots \\ \hline \end{array}$ | $\begin{aligned} & \mathfrak{c} \\ & 0 \\ & 0 \\ & 0 \\ & \vdots \end{aligned}$ | $\begin{aligned} & \stackrel{\rightharpoonup}{0} \\ & \text { N } \\ & \text { N } \\ & \stackrel{0}{\Sigma} \end{aligned}$ |  | $\begin{aligned} & \text { ᄃ } \\ & 0 \\ & 0 \\ & 0 \\ & 2 \end{aligned}$ |  |  |  |  | － |
| － | $\sim$ | ๓ | $\checkmark$ | 10 | $\bullet$ | $\wedge$ | $\infty$ | O | 안 |  |


|  | Townships | Reg. Pts. | Cured |  | Completed |  | TSR | Died |  | Failure |  | Defaulted |  | Transfered out |  | $\begin{array}{\|c\|} \hline \text { Total } \\ \text { eva. Pts. } \end{array}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| No. |  |  | No | CR | No | Rate |  | No | Rate | No | Rate | No | Rate | No | Rate |  |
| Shan State (Lashio) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 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 | Kutkai | 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 |


| $\begin{array}{\|l} \hline \text { Sr. } \\ \text { No. } \\ \hline \end{array}$ | Townships | Reg. Pts. | Cured |  | Completed |  | TSR | Died |  | Failure |  | Defauted |  | Transfered out |  | $\begin{gathered} \hline \text { Total } \\ \text { eva. Pts. } \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | No | CR | 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 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 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 |


| Sr. <br> No. | Townships | Reg. Pts. | Cured |  | Completed |  | TSR | Died |  | Failure |  | Defaulted |  | Transfered out |  | Total eva. Pts. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | No | CR | No | Rate |  | No | Rate | No | Rate | No | Rate | No | Rate |  |
| Bago Region |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | Bago | 399 | 304 | 76\% | 28 | 7\% | 83\% | 18 | 5\% | 9 | 2\% | 32 | 8\% | 8 | 2\% | 399 |
| 2 | Daik-U | 143 | 87 | 61\% | 26 | 18\% | 79\% | 9 | 6\% | 6 | 4\% | 12 | 8\% | 3 | 2\% | 143 |
| 3 | Kawa | 67 | 55 | 82\% | 5 | 7\% | 90\% | 3 | 4\% | 0 | 0\% | 4 | 6\% | 0 | 0\% | 67 |
| 4 | Kyauktaga | 139 | 126 | 91\% | 1 | 1\% | 91\% | 3 | 2\% | 2 | 1\% | 4 | 3\% | 3 | 2\% | 139 |
| 5 | Nyaunglaybin | 98 | 73 | 74\% | 10 | 10\% | 85\% | 4 | 4\% | 2 | 2\% | 8 | 8\% | 1 | 1\% | 98 |
| 6 | Shwekyin | 50 | 33 | 66\% | 10 | 20\% | 86\% | 2 | 4\% | 0 | 0\% | 4 | 8\% | 1 | 2\% | 50 |
| 7 | Thanatpin | 106 | 73 | 69\% | 11 | 10\% | 79\% | 8 | 8\% | 0 | 0\% | 12 | 11\% | 2 | 2\% | 106 |
| 8 | Waw | 146 | 107 | 73\% | 13 | 9\% | 82\% | 13 | 9\% | 3 | 2\% | 9 | 6\% | 1 | 1\% | 146 |
| 9 | Taunggoo | 132 | 104 | 79\% | 0 | 0\% | 79\% | 15 | 11\% | 4 | 3\% | 7 | 5\% | 2 | 2\% | 132 |
| 10 | Kyaukkyi | 68 | 51 | 75\% | 8 | 12\% | 87\% | 7 | 10\% | 0 | 0\% | 2 | 3\% | 0 | 0\% | 68 |
| 11 | Oktwin | 72 | 52 | 72\% | 2 | 3\% | 75\% | 8 | 11\% | 0 | 0\% | 7 | 10\% | 3 | 4\% | 72 |
| 12 | Phyu | 176 | 141 | 80\% | 11 | 6\% | 86\% | 10 | 6\% | 1 | 1\% | 11 | 6\% | 2 | 1\% | 176 |
| 13 | Htantabin | 51 | 46 | 90\% | 3 | 6\% | 96\% | 1 | 2\% | 0 | 0\% | 1 | 2\% | 0 | 0\% | 51 |
| 14 | Yedashe | 117 | 91 | 78\% | 4 | 3\% | 81\% | 9 | 8\% | 9 | 8\% | 3 | 3\% | 1 | 1\% | 117 |
|  | Total | 1764 | 1343 | 76\% | 132 | 7\% | 84\% | 110 | 6\% | 36 | 2\% | 116 | 7\% | 27 | 2\% | 1764 |
| Bago region (Pyay) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | Pyay | 210 | 166 | 79\% | 2 | 1\% | 80\% | 18 | 9\% | 14 | 7\% | 7 | 3\% | 3 | 1\% | 210 |
| 2 | Paukkhaung | 100 | 88 | 88\% | 2 | 2\% | 90\% | 6 | 6\% | 0 | 0\% | 2 | 2\% | 2 | 2\% | 100 |
| 3 | Paungde | 93 | 87 | 94\% | 0 | 0\% | 94\% | 0 | 0\% | 1 | 1\% | 1 | 1\% | 4 | 4\% | 93 |
| 4 | Padaung | 86 | 60 | 70\% | 12 | 14\% | 84\% | 6 | 7\% | 5 | 6\% | 2 | 2\% | 1 | 1\% | 86 |
| 5 | Shwedaung | 101 | 67 | 66\% | 18 | 18\% | 84\% | 1 | 1\% | 2 | 2\% | 12 | 12\% | 1 | 1\% | 101 |
| 6 | Thegon | 108 | 89 | 82\% | 3 | 3\% | 85\% | 6 | 6\% | 2 | 2\% | 6 | 6\% | 2 | 2\% | 108 |
| 7 | Tharyarwady | 179 | 137 | 77\% | 5 | 3\% | 79\% | 18 | 10\% | 15 | 8\% | 3 | 2\% | 1 | 1\% | 179 |
| 8 | Zigon | 68 | 56 | 82\% | 5 | 7\% | 90\% | 6 | 9\% | 0 | 0\% | 0 | 0\% | 1 | 1\% | 68 |
| 9 | Minhla | 98 | 80 | 82\% | 7 | 7\% | 89\% | 5 | 5\% | 5 | 5\% | 0 | 0\% | 1 | 1\% | 98 |
| 10 | Moenyo | 87 | 78 | 90\% | 3 | 3\% | 93\% | 5 | 6\% | 0 | 0\% | 1 | 1\% | 0 | 0\% | 87 |
| 11 | Okpo | 87 | 82 | 94\% | 0 | 0\% | 94\% | 4 | 5\% | 0 | 0\% | 1 | 1\% | 0 | 0\% | 87 |
| 12 | Gyobingauk | 105 | 96 | 91\% | 6 | 6\% | 97\% | 2 | 2\% | 1 | 1\% | 0 | 0\% | 0 | 0\% | 105 |
| 13 | Nattalin | 122 | 87 | 71\% | 17 | 14\% | 85\% | 10 | 8\% | 0 | 0\% | 8 | 7\% | 0 | 0\% | 122 |
| 14 | Latpadan | 144 | 111 | 77\% | 19 | 13\% | 90\% | 8 | 6\% | 0 | 0\% | 5 | 3\% | 1 | 1\% | 144 |
|  | Total | 1588 | 1284 | 81\% | 99 | 6\% | 87\% | 95 | 6\% | 45 | 3\% | 48 | 3\% | 17 | 1\% | 1588 |



|  | akhine Sta |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 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 |



| 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 | Kyeemyintdaing | 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 | Pabadan | 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 | Ahlone | 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 |



| $\begin{gathered} \hline \mathrm{Sr} . \\ \mathrm{No.} \\ \hline \end{gathered}$ | Townships | Reg. Pts. | Cured |  | Completed |  | TSR | Died |  | Failure |  | Defaulted |  | Transfered out |  | $\begin{gathered} \text { Total } \\ \text { eva. Pts. } \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | No | CR | No | Rate |  | No | Rate | No | Rate | No | Rate | No | Rate |  |
| Ayeyarwaddy Region |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | Pathein | 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 | Laymtethna | 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 | Kyaiklatt | 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 <br> (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 |



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 |  |
| 1 | Kachin State | 166 | 116 | 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 |
| $\begin{aligned} & \hline \hline \text { (relapse) TB patients, Unknown HIV } \\ & \text { status (NTP) } \\ & \hline \end{aligned}$ |  | 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 HIVstatus (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 HIVstatus (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 |  |
| 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 |

## Annex-13

NATIONAL TUBERCULOSIS PROGRAMME
TREATMENT OUTCOME OF TREATMENT AFTER DEFAULT

| Sr.No. | Region/State | TOTAL | TREATMINT AFTER DEFAULT |  |  |  |  |  |  |  |  |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Cured |  | Completed |  | Died |  | Failure |  | Defaulted |  | Transfer |  |  |
|  |  |  | 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/o! | 0 | \#DIV/o! | 0 | \#DIV/0! | 0 | \#DIV/o! | 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 HIVstatus (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 HIVstatus (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 HIVstatus (Country) |  | 565 | 285 | 50\% | 109 | 19\% | 53 | 9\% | 28 | 5\% | 65 | 12\% | 25 | 4\% | 565 |

\footnotetext{
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 |

## Annex－14

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 |
| Reg | gions \＆States total | 861 | 468 | 54\％ | 89 | 10\％ | 83 | 10\％ | 125 | 15\％ | 77 | 9\％ | 19 | 2\％ | 861 |
| （TAF）TB patients，Unknown HIV status <br> （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 |


| $\angle 9$ | \％ | 1 | \％01 | L | \％9 | $\checkmark$ | \％\＆\＆ | Zz | \％91 | L1 | \％\＆\＆ | 乙て | $\angle 9$ | ｜ełol |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ES | \％乙 | $\downarrow$ | \％レレ | 9 | \％9 | $\varepsilon$ | \％88 | 02 | \％61 | O1 | \％¢Z | \＆1 | \＆G | St！un גəપ！O | Z |
| カレ | \％0 | 0 | \％L | $\downarrow$ | \％L | $\downarrow$ | \％カレ | Z | \％L | $\downarrow$ | \％t9 | 6 | カレ | $\mathrm{d} \perp \mathrm{N}$ | 1 |
| ｜ełol | әれ¢y | ${ }^{\circ} \mathrm{ON}$ | әұеу | ${ }^{\circ} \mathrm{ON}$ | әృеу | ＇ON | әృ¢ | ${ }^{\circ} \mathrm{ON}$ | әұеу | － O | yכ | ＇ON | $7 \forall 101$ | sḷun бu！puodoy | －0N＇ds |
|  | лә」sueג」 |  | рəұ｜neృəの |  | 2．nl！e」 |  | pe！a |  | рәャə• ${ }^{\text {duos }}$ |  | peano |  |  |  |  |
| SヨSVO ヨy |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

## Annex-15

## Annex－16

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

| 1－2t | Zz | $\varepsilon \downarrow$ | 9 g | 0¢\＆ | 1くt | しく91て | Loz | \％ع | 0tL | LOL | \％S6 | 6z902 | 1L91乙 |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ع8t | 乙z | \＆ | 69 | 6 ¢ | \＆8t | 988Lて | †0Z | \％ع | てヤく | Lé | \％S6 | E0802 | 988L乙 | Kıunoう |  |
| OZ | $\downarrow$ | 0 | 9 | عا | OZ | 018\＆ | 0¢ | \％t | 6SI | OZ | \％¢6 | L09E | 018\＆ |  |  |
| $\dagger$ ¢ | 1 | 0 | 9 | L1 | †て | 8968 | 乙¢ | \％t | 191 | L | \％$\downarrow 6$ | 81LE | 8968 | Stlụ |  |
| LSt | LZ | $\varepsilon \downarrow$ | OG | L\＆є | LSt | 198L1 | LLL | \％ع | 189 | 18 | \％S6 | 8Z021 | 198L1 |  |  |
| 6St | LZ | \＆$\dagger$ | Es | てセを | 6st | 82621 | ZLL | $\% \varepsilon$ | 189 | 06 | \％S6 | 98021 | 8z621 | 1eł이 Soltels 8 suolboy |  |
| 87 | I | 0 | I | †て | 82 | Z0L | － | \％ | L | $\varepsilon$ | \％86 | 169 | Z0L | ио！бәәу КрремлеイәイУ | LL |
| ルレ | 0 | 8 | 8 | S6 | レレレ | 88ヤて | G | \％乙 | 67 | $L$ | \％86 | Lてヤて | 88ちて | uo！bəy uo反ue入 | 91 |
| $6 \varepsilon$ | $\downarrow$ | $L$ | t | LZ | $6 \varepsilon$ | \＆8Zし | Z | \％乙 | 乙\＆ | 8 | \％L6 | しゃてレ | £8Zし |  | S1 |
| い | 0 | 0 | $\varepsilon$ | 8 | レ | 6てヤレ | † | \％\＆ | $9 \varepsilon$ | 9 | \％L6 | E8E1 | 6てヤレ | әㅏㅏ | ャ |
| 21 | 0 | 0 | 1 | L | Z1 | 286 | † | \％t | $8 \varepsilon$ | 9 | \％S6 | †¢6 | Z86 |  | $\varepsilon 1$ |
| ャレ | 0 | $\varepsilon$ | 2 | 6 | カレ | ZSL | 2 | \％S | 0t | 8 | \％と6 | Z0L | ZSL |  | ZL |
| LZ | $\downarrow$ | $\varepsilon$ | 2 | Sl | LZ | $6 \downarrow$ L | L | \％6 | SIL | $\checkmark$ | \％68 | \＆レレレ | 6ヶてし |  | い |
| St | G | 6 | Z | 62 | St | LG6 | 0¢ | \％L | ع9 | Z | \％06 | $9 \mathrm{C8}$ | LS6 |  | OL |
| St | $\downarrow$ | $L$ | † | $\varepsilon \varepsilon$ | St | 01t | † | \％9 | ャて | 9 | \％Z6 | $\angle \angle E$ | 01t | （0！ 0 ¢87）әtels ueys | 6 |
| † | 0 | $\downarrow$ | 0 | $\varepsilon$ | † | L6Z | $\downarrow$ | \％t | \＆1 | $\checkmark$ | \％$\downarrow 6$ | $6 \angle Z$ | L62 |  | 8 |
| t | $\downarrow$ | 0 | 0 | $\varepsilon$ | † | 10t | $\varepsilon$ | \％t | 91 | $\varepsilon$ | \％S6 | $6 \angle \varepsilon$ | 10t | （！K66une＿）әłels ueys | L |
| ¢t | 1 | $\varepsilon$ | S1 | $\downarrow$ ¢ | $\varepsilon t$ | 89ヤて | ゅ¢ | \％t | G6 | OL | \％$\downarrow 6$ | 6乙\＆Z | 89ヶて | uо！бəәу КеןериеW | 9 |
| カt | 9 | $\downarrow$ | t | ャ | カt | 86ヤレ | ı | \％0 | $L$ | レ | \％L6 | 69t1 | 86ヤレ | ио！бәу Кемб匕еW | 9 |
| 81 | $\downarrow$ | 0 | 0 | L | 81 | SL81 | カレ | \％ | ZZ | 8 | \％86 | し¢81 | 9L81 | ио！̣бәу бu！e6́es | † |
| 8 | 0 | 0 | ஏ | † | 8 | ＜8Z | † | \％S | カレ | $\downarrow$ | \％と6 | 892 | L8Z | ә્tels u！ | $\varepsilon$ |
| 9 | $\varepsilon$ | $\downarrow$ | 0 | 2 | 9 | LS9 | 92 | \％ | 9 | 2 | \％S6 | L19 | LS9 | әłets पeイè | Z |
| 9 | 0 | 0 | Z | † | 9 | 902 | 0 | \％乙 | 万 | 2 | \％ 26 | 661 | 902 |  | 1 |
| ¢セłO1 | rəsueıı |  | pe！a | pət <br> əן， |  | 1¢łO1 |  |  |  | рә！ |  |  | $\begin{array}{\|l\|} \hline \text { 'słd } \cdot \text { boy } \\ \text { on Iełon } \\ \hline \end{array}$ | әұеұS／ио！бәу | ON＇•S |
| SILIONINヨW 91 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |



## Annex-17


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. | 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 |  | 0 |  | 0 |  | 0 |  | 0 |  | 0 |
| 3 | Chin State | 0 | 0 | \#DIV/0! | 0 | \#DIV/0! | 0 | \#DIV/0! | 0 | \#DIV/0! | 0 | \#DIV/0! | 0 |
| 4 | Sagaing Region | 643 | 634 | 99\% | 4 | 1\% | 0 | 0\% | 2 | 0\% | 3 | 0\% | 643 |
| 5 | Magway Region | 1023 | 998 |  | 4 |  | 0 |  | 14 |  | 7 |  | 1023 |
| 6 | Mandalay Retion | 856 | 820 | 96\% | 10 | 1\% | 0 | 0\% | 21 | 2\% | 5 | 1\% | 856 |
| 7 | Shan State (Taunggyi) | 174 | 156 | 90\% | 3 | 2\% | 0 | 0\% | 13 | 7\% | 2 | 1\% | 174 |
| 8 | Shan State (Kyaingtong) | 97 | 92 | 95\% | 0 | 0\% | 0 | 0\% | 5 | 5\% | 0 | 0\% | 97 |
| 9 | Shan State (Lashio) | 388 | 350 | 90\% | 5 | 1\% | 0 | 0\% | 32 | 8\% | 1 | 0\% | 388 |
| 10 | Kayin State | 245 | 207 | 84\% | 2 | 1\% | 0 | 0\% | 28 | 11\% | 8 | 3\% | 245 |
| 11 | Tanintharyi Region | 0 | 0 |  | 0 |  | 0 |  | 0 |  | 0 |  | 0 |
| 12 | Bago Region | 55 | 51 | 93\% | 1 | 2\% | 0 | 0\% | 3 | 5\% | 0 | 0\% | 55 |
| 13 | Bago Region (Pyay) | 54 | 51 | 94\% | 0 | 0\% | 0 | 0\% | 2 | 4\% | 1 | 2\% | 54 |
| 14 | Mon State | 491 | 463 | 94\% | 12 | 2\% | 0 | 0\% | 13 | 3\% | 3 | 1\% | 491 |
| 15 | Rakhine State | 383 | 325 | 85\% | 22 | 6\% | 0 | 0\% | 27 | 7\% | 9 | 2\% | 383 |
| 16 | Yangon Region | 378 | 372 | 98\% | 4 | 1\% | 0 | 0\% | 2 | 1\% | 0 | 0\% | 378 |
| 17 | Ayeyarwaddy Region | 1430 | 1400 | 98\% | 9 | 1\% | 0 | 0\% | 19 | 1\% | 2 | 0\% | 1430 |
| Regions and States total |  | 8048 | 7673 | 95\% | 95 | 1\% | 0 | 0\% | 221 | 3\% | 59 | 1\% | 8048 |
| 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 |

\footnotetext{


| Sr.No. | Reporting units | HILAR LYMPHADENOPATHY TB PATIENTS |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | $\begin{array}{\|l\|} \hline \text { Total No. } \\ \hline \text { Reg. pts. } \\ \hline \end{array}$ | Completed |  | Died |  | Failure |  | Defaulted |  | Transfer |  | Total |
|  |  |  | No. | Rate | No. | Rate | No. | Rate | No. | Rate | No. | Rate |  |
| 1 | NTP | 27 | 23 | 85\% | 4 | 15\% |  | 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)

AGE AND SEX DISTRIBUTION OF NEW SMEAR POSITIVE TB PATIENTS

Other reporting Unit

| Sr.No | Reporting units | CAT - 1 |  |  |  | CAT -2 |  |  |  | CAT - 3 |  |  |  | TOTAL |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Sputum <br> Smear <br> Positive | Sputum <br> Smear <br> Negative | Seriously <br> ill | Total | Relapses | Treatment after Default | Treatment after Failure | Others <br> (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 Hosipital (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)

| Block-4 |  | LABORATORY PERFORMANCE(2010) |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Reporting units | A |  | B |  | C |  | D |  |
| Sr.No |  | No. of suspects(Dx) examined by microscopy for case finding |  | No. of smear positive pts detected out of suspcts (Dx) |  | No. of patientsexamined by microscopyfor 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 Hosipital (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)
Block 5

| Block 5 |  |  |  | Other reporting unit |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Sr.No. | Reporting units | Registered cases | Smear not done at eighter 2or 3 months | Sputum conversion at |  |  |  | Remaining positive at 3 month | TOTAL <br> $2+3+4+5$ |
|  |  |  |  | 2 m |  | 3 m |  |  |  |
|  |  |  |  | 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 Hosipital (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 COHORT)

|  |  | Other reporting |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Sr <br> N | Reporting units | SMEAR POSITIVE CASES |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | Total | Cured |  | Completed |  | TSR | Died |  | Failure |  | Defaulted |  | Transfer out |  | Total |
|  |  |  | 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 ( $\mathrm{N} /$ Okkalapa) | 192 | 105 | 55\% | 3 | 2\% | 56\% | 67 | 35\% | 8 | 4\% | 7 | 4\% | 2 | 1\% | 192 |
| 6 | No.1MBH (PyinOoLwin) | 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 |


| $\begin{aligned} & \text { Sr. } \\ & \text { No } \end{aligned}$ | Reporting units | SMEAR NEGATIVE CASES |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Total | Completed |  | Died |  | Failure |  | Defaulted |  | Transfer out |  | Total |
|  |  |  | 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 Hosipital (N/Okkalapa) | 314 | 176 | 56\% | 112 | 36\% | 5 | 2\% | 16 | 5\% | 5 | 2\% | 314 |
| 6 | No.1MBH (PyinOoLwin) | 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 |


| $\begin{aligned} & \mathrm{Sr} \\ & \mathrm{No} \\ & \hline \end{aligned}$ | TREATMENT OUTCOME OF RELAPSES (2009 COHORT) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Reporting units | RELAPSE CASES |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | Total | Cured |  | Completed |  | Died |  | Failure |  | Defaulted |  | Transfer out |  | Total |
|  |  |  | No | Rate | No | Rate | No | Rate | No | Rate | No | Rate | No | Rate |  |
| 1 | Aung San Hos: | 45 | 6 | 13\% | 4 | 9\% | 4 | 9\% | 9 | 20\% | 17 | 38\% | 5 | 11\% | 45 |
| 2 | Patheingyi Hos: | 31 | 3 | 10\% | 0 | 0\% | 2 | 6\% | 4 | 13\% | 2 | 6\% | 20 | 65\% | 31 |
| 3 | East YGH | 6 | 0 | 0\% | 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\% | 16 |
| 5 | Wabargi Hosipital (N/Okkalapa) | 18 | 8 | 44\% | 3 | 17\% | 4 | 22\% | 3 | 17\% | 0 | 0\% | 0 | 0\% | 18 |
| 6 | No.1MBH (PyinOoLwin) | 52 | 52 | 100\% | 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\% | 2 | 22\% | 9 |
| 8 | MSF-H (Ygn) | 127 | 68 | 54\% | 20 | 16\% | 25 | 20\% | 3 | 2\% | 8 | 6\% | 3 | 2\% | 127 |
| 9 | MSF-H (Kachin) | 58 | 11 | 19\% | 29 | 50\% | 9 | 16\% | 2 | 3\% | 7 | 12\% | 0 | 0\% | 58 |
| 10 | PSI | 394 | 269 | 68\% | 36 | 9\% | 35 | 9\% | 25 | 6\% | 12 | 3\% | 17 | 4\% | 394 |
| 11 | MSF-H (Shan-north) | 32 | 9 | 28\% | 11 | 34\% | 3 | 9\% | 3 | 9\% | 2 | 6\% | 4 | 13\% | 32 |
| 12 | MSF-H (Rakhine) | 9 | 1 | 11\% | 5 | 56\% | 1 | 11\% | 0 | 0\% | 1 | 11\% | 1 | 11\% | 9 |
| 13 | MSF-CH | 54 | 10 | 19\% | 17 | 31\% | 15 | 28\% | 5 | 9\% | 6 | 11\% | 1 | 2\% | 54 |
| 14 | MMA | 50 | 35 | 70\% | 5 | 10\% | 2 | 4\% | 8 | 16\% | 0 | 0\% | 0 | 0\% | 50 |
| 15 | AHRN (Shan North) | 2 | 0 | 0\% | 0 | 0\% | 1 | 50\% | 0 | 0\% | 0 | 0\% | 1 | 50\% | 2 |
| 16 | Thingangyun Sanpya Hos: | 0 |  |  |  |  |  |  |  |  |  |  |  |  | 0 |
| 17 | Central Jail Mandalay | 2 | 2 | 100\% | 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\% | 22 |
| 19 | New YGH | 3 | 1 | 33\% | 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\% | 23 |
|  | Total | 953 | 484 | 51\% | 174 | 18\% | 115 | 12\% | 63 | 7\% | 58 | 6\% | 59 | 6\% | 953 |

TREATMENT OUTCOMES OF TREATMENT AFTER DEFAULTER (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: | 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)

TREATMENT OUTCOME OF HILAR LYMPHADENOPATHY (2009 cohort)

| Sr. |  |  |  |  |  |  |  |  |  | Other repar | orting | unit |  |
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|  | TOWNSHIP | Hilar Lymphadenopathy |  |  |  |  |  |  |  |  |  |  |  |
|  |  | 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: | 0 |  |  |  |  |  |  |  |  |  |  | 0 |
| 2 | Patheingyi Hos: | 0 | 0 | 90\% | 0 | 3\% | 0 | 3\% | 0 | 3\% | 0 | 0\% | 0 |
| 3 | East YGH | 0 |  |  |  |  |  |  |  |  |  |  | 0 |
| 4 | Mingalardon Hos: | 0 |  |  |  |  |  |  |  |  |  |  | 0 |
| 5 | Wabargi Hosipital (N/Okkalapa) | 7 | 4 | 57\% | 2 | 29\% | 0 | 0\% | 1 | 14\% | 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\% | 7 |
| 8 | MSF-H (Ygn) | 0 |  |  |  |  |  |  |  |  |  |  | 0 |
| 9 | MSF-H (Kachin) | 78 | 61 | 78\% | 11 | 14\% | 0 | 0\% | 4 | 5\% | 2 | 3\% | 78 |
| 10 | PSI | 2125 | 2021 | 95\% | 32 | 2\% | 0 | 0\% | 50 | 2\% | 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\% | 75 |
| 14 | MMA | 36 | 36 | 100\% | 0 | 0\% | 0 | 0\% | 0 | 0\% | 0 | 0\% | 36 |
| 15 | AHRN (Shan North) | 7 | 5 | 71\% | 2 | 29\% | 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\% | 2335 |

TREATMENT OUTCOME OFEP (2009 cohort)

| Sr. | TOWNSHIP | EP |  |  |  |  |  |  |  |  |  |  |  |
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|  |  | 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 (PyinOoLwin) | 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)

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

| Sr . <br> No. | Reporting units | PRIMARY COMPLEX |  |  |  |  |  |  |  | TB MENINGITIS |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Total No. Reg pts | Completed |  | Died | Defaulted |  | Transfer out | Total | Total No. | Completed | Died | Defaulted | Transfer out | Total |
|  |  |  | No | Rate |  | No | Rate |  |  | Reg pts |  |  |  |  |  |
| 1 | Aung San Hos: | 0 |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | Patheingyi Hos: | 0 |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | East YGH | 227 | 155 | 68\% | 0 | 65 | 29\% | 7 | 227 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | Mingalardon Hos: | 0 |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | Wabargi Hosipital (N/Okkalapa) | 132 | 103 | 78\% | 25 | 2 | 2\% | 2 | 132 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | No.1MBH (PyinOoLwin) | 77 | 77 | 100\% | 0 | 0 | 0\% | 0 | 77 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | 1000 bedded hospital (Naypyitaw) | 86 | 60 | 70\% | 0 | 23 | 27\% | 3 | 86 | 2 | 2 | 0 | 0 | 0 | 2 |
| 8 | MSF-H (Ygn) | 9 | 9 | 100\% | 0 | 0 | 0\% | 0 | 9 | 4 | 1 | 2 | 0 | 1 | 4 |
| 9 | MSF-H (Kachin) | 1 | 1 | 100\% | 0 | 0 | 0\% | 0 | 1 | 2 | 2 | 0 | 0 | 0 | 2 |
| 10 | PSI | 2962 | 2860 | 97\% | 21 | 64 | 2\% | 17 | 2962 | 11 | 7 | 4 | 0 | 0 | 11 |
| 11 | MSF-H (Shan-north) | 0 |  |  |  |  |  |  | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 12 | MSF-H (Rakhine) | 0 |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13 | MSF-CH | 27 | 25 | 93\% | 1 | 1 | 4\% | 0 | 27 | 1 | 1 | 0 | 0 | 0 | 1 |
| 14 | MMA | 422 | 418 | 99\% | 0 | 4 | 1\% | 0 | 422 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | AHRN (Shan North) | 2 | 1 | 50\% | 0 | 0 | 0\% | 1 | 2 | 2 | 2 | 0 | 0 | 0 | 2 |
| 16 | Thingangyun Sanpya Hos: | 0 |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17 | Central Jail Mandalay | 0 |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18 | Medecins du monde | 0 |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19 | New YGH | 0 |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 | West YGH | 13 | 9 | 69\% | 0 | 2 | 15\% | 2 | 13 | 1 | 1 | 0 | 0 | 0 | 1 |
|  | Total | 3958 | 3718 | 94\% | 47 | 161 | 4\% | 32 | 3958 | 24 | 17 | 6 | 0 | 1 | 24 |

Annual report had not been received from (11)Townships

| Region/State | DOTS <br> 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 |
| Ayeyarwaddy 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\% |

Kachin State (4) Tsps 1. N'ganyan, 2.Hsawlaw, 3.Khaunglanbu, 4. Naungmon Shan (Lashio) State (6)Tsps 1. Kongyan 2. Nanphant 3.Panwine 4.Mongmaw
Shan (Kengtong) State (1)Tsps 1. Matman
NATIONAL TUBERCULOSIS PROGRAMME（Myanmar）
EVALUATION OF TB CONTROL ACTIVITIES IN REGIONS \＆STATES（2009－2010）

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| $\left\lvert\, \begin{gathered} \text { Sr.N } \\ 0 \end{gathered}\right.$ | TOWNSHIP | Population | Estimated <br> New S( + ) <br> cases | Total <br> New Smear <br> Positive detected | Total notified TB cases | $\left\|\begin{array}{c} \text { (CDR) } \\ \text { NTP only } \end{array}\right\|$ | (CDR) <br> NTP + other unit | Prop: of SS(+) <br> pul:TB cases <br> out of all pul: <br> TB cases | Ratio of NSS + <br> to NSS (-)cases and EP cases | Ratio of NSS+ <br> to NSS (-)cases | Sputum <br> Positivity <br> Rate | Sputum <br> Conversion <br> Rate | $\left\|\begin{array}{c} \text { (CR) } \\ \text { NTP only } \end{array}\right\|$ | (CR) <br> NTP+ other unit | (TSR) NTP only | (TSR) <br> NTP + other unit |
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| 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 | Mohynin | 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/o! |  |  |  |  |  |  |  |  |
| 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\% |  |  |  |  |
|  | Total | 1423260 | 1494 | 1186 | 5255 | 79\% | 104\% | 49\% | 0.32:1 | 0.8:1 | 21\% | 85\% | 71\% | 68\% | 79\% | 77\% |

[^3]NATIONAL TUBERCULOSIS PROGRAMME (Myanmar)
EVALUATION OF TB CONTROL ACTIVITIES IN TOWNSHIPS (2009-2010)
Annex-21 (townships list)

| Sr.N | TOWNSHIP | Population | Estimated <br> New S(+) <br> cases | Total New Smear Positive detected | $\begin{array}{\|c\|} \hline \text { Total } \\ \text { notified } \\ \text { TB cases } \end{array}$ | $\begin{gathered} \text { (CDR) } \\ \text { NTP only } \end{gathered}$ | (CDR) NTP + other unit | Prop: of SS(+) <br> pul:TB cases out of all pul: TB cases | Ratio of NSS+ <br> to NSS (-)cases and EP cases | Ratio of NSS+ to NSS (-)cases | $\begin{array}{\|c} \hline \text { Sputum } \\ \text { Positivity } \\ \text { Rate } \end{array}$ |  | $\left\lvert\, \begin{gathered} \text { (CR) } \\ \text { NTP only } \end{gathered}\right.$ | $\begin{gathered} \text { (CR) } \\ \text { NTP+ } \\ \text { other } \\ \text { unit } \end{gathered}$ | $\left\|\begin{array}{c} \text { (TSR) } \\ \text { NTP } \\ \text { only } \end{array}\right\|$ | (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\% | 20\% | 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 | Matupi | 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)

| $\left\|\begin{array}{c} \mathrm{Sr} . \mathrm{N} \\ \mathrm{o} \end{array}\right\|$ | TOWNSHIP | Population | Estimated <br> New S(+) <br> cases | Total <br> New Smear <br> Positive detected | Total notified TB cases | $\begin{array}{\|l\|} \text { (CDR) } \\ \text { NTP only } \end{array}$ | (CDR) <br> NTP + <br> other unit | Prop: of SS(+) <br> pul:TB cases <br> out of all pul: <br> TB cases | Ratio of NSS+ <br> to NSS (-)cases and EP cases | Ratio of NSS + <br> to NSS (-)cases | Sputum <br> Positivity <br> Rate | Sputum <br> Conversion <br> Rate | $\begin{gathered} \text { (CR) } \\ \text { NTP only } \end{gathered}$ | (CR) NTP+ other unit | (TSR) NTP only | (TSR) <br> 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 | Satoketaya | 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 | Kanma | 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)


| $\begin{gathered} \text { Sr. } \mathrm{N} \\ \mathrm{o} \end{gathered}$ | TOWNSHIP | Population | Estimated <br> New S（＋） <br> cases | Total <br> New Smear <br> Positive | Total notified TB cases | （CDR） NTP only | （CDR） <br> NTP＋ <br> other | Prop：of SS（＋） | Ratio of NSS＋ <br> to NSS（－）cases and EP cases | Ratio of NSS＋ to NSS（－）cases | Sputum <br> Positivity Rate | Sputum <br> Conversion Rate | （CR） <br> NTP only | （CR） <br> NTP＋ <br> other <br> unit | （TSR） NTP only | （TSR） <br> NTP＋ <br> other <br> unit |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
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| Shan State（Taunggyi） |  |  |
| ---: | :--- | ---: |
| 1 | Linhkay | 59175 |
| 2 | Maukme | 26935 |
| 3 | Monai | 24292 |
| 4 | Mangpang | 16435 |
| 5 | Loilem | 109047 |
| 6 | Kunhein | 60845 |
| 7 | Kyeethi | 39644 |
| 8 | Laikha | 42074 |
| 9 | Mongkaing | 84060 |
| 10 | Mongshu | 59954 |
| 11 | Namsan | 81677 |
| 12 | Taunggyi | 344665 |
| 13 | Hopone | 98364 |
| 14 | Hpekon | 90372 |
| 15 | Hsiseng | 137083 |
| 16 | Kalaw | 148206 |
| 17 | Lauksauk | 129898 |
| 18 | Pindaya | 75470 |
| 19 | Pinlaung | 160486 |
| 20 | Nyaungshwe | 173122 |
| 21 | Ywangan | 76856 |
|  | Total | 2038660 |



| $\stackrel{\stackrel{\rightharpoonup}{\circ}}{\text { লু }}$ | ৪i | ò | 은 | $\stackrel{\circ}{\infty}$ |  | $\stackrel{\circ}{\circ}$ | $\stackrel{\text { ® }}{\text { N }}$ |  |  |  |  |  | $\frac{\circ}{\infty}$ | ০০̀ | $$ | ু্ত | ৪ী | $\stackrel{\circ}{\circ}$ |
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| $\begin{array}{\|c\|} \hline \stackrel{y y}{\mathrm{~N}} \\ \hline \end{array}$ | \%ì | ঃ- | iగ |  | へ앙 | $\frac{8}{\circ}$ | oi | 응 | $\begin{aligned} & \mathrm{O} \\ & \stackrel{\circ}{\circ} \end{aligned}$ |  | $\stackrel{\circ}{\infty}$ | $\begin{array}{\|c\|c} \hline \stackrel{\circ}{\infty} \\ \stackrel{\circ}{\circ} \\ \hline 1 \end{array}$ | ○ | প্寸 | לి | గ్రిం | © | $\stackrel{\circ}{\circ}$ |
| $\begin{array}{\|c\|} \hline \stackrel{\circ}{\prime} \\ \hline \text { 。 } \end{array}$ | ৪앙 | ㅇㅇㅇ | io | $\mathrm{N}$ | $\stackrel{\circ}{\mathrm{N}}$ | $\frac{\circ}{\circ}$ | oి | O- |  |  |  | $\begin{array}{\|c\|c} \hline \circ & 0 \\ \hline \infty \\ \hline \infty \end{array}$ | Oి | $\begin{array}{\|c} \hline 0 \\ \infty \\ \hline \end{array}$ | $\begin{aligned} & \hline 0 \\ & \infty \\ & \infty \end{aligned}$ | $\begin{aligned} & 20 \\ & 0 \\ & 0 \end{aligned}$ | ৪০ | ¢ |
| Oo | $\stackrel{\circ}{\circ}$ | $\begin{gathered} \circ \\ \infty \\ \infty \end{gathered}$ | Oి | $\sum_{\infty}^{\infty}$ |  | ঃ̀ | なㄴㅊ | Oㅇ | ○○ | $\stackrel{\infty}{\infty} \stackrel{\circ}{\infty}$ | $\frac{0}{\infty}$ | $\stackrel{\circ}{\circ} \stackrel{\circ}{\circ}$ | No | $\begin{array}{\|c} \circ \\ \hline 0 \\ \infty \\ \infty \end{array}$ | $\begin{array}{\|c\|} \hline 0 \\ \infty \\ \infty \end{array}$ | @ | ® |  |
|  | $\stackrel{\circ}{\circ}$ | ஹ○ | 80 | Bo | ఠి ఠి | $\infty$ |  |  | $\bigcirc$ | సे ిे | Oి | ふ๐ | ®잉 | io | $\stackrel{\mathrm{N}}{\circ}$ |  | ஷ্ণి | \％ |

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| $\left\lvert\, \begin{gathered} \mathrm{Sr} . \mathrm{N} \\ \mathrm{o} \end{gathered}\right.$ | TOWNSHIP | Population | Estimated <br> New S(+) <br> cases | Total <br> New Smear <br> Positive <br> detected | Total notified TB cases | (CDR) <br> NTP only | (CDR) <br> NTP + <br> other <br> unit | Prop: of SS(+) <br> pul:TB cases out of all pul: <br> TB cases | Ratio of NSS+ <br> to NSS (-)cases and EP cases | Ratio of NSS+ to NSS (-)cases | Sputum <br> Positivity <br> Rate | Sputum <br> Conversion <br> Rate | (CR) NTP only | (CR) <br> NTP+ <br> other <br> unit | (TSR) NTP only | (TSR) <br> NTP + <br> other <br> 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 | 2792 | 1254 | 3922 | 45\% | 50\% | 52\% | 0.51:1 | 1:1 | 21\% | 80\% | 70\% | 69\% | 79\% | 78\% |

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

| $\left\|\begin{array}{c} \text { Sr.n } \\ 0 \end{array}\right\|$ | TOWNSHIP | Population | Estimated <br> New S（＋） <br> cases | Total <br> New Smear <br> Positive detected | Total notified TB cases | （CDR） NTP only | （CDR） <br> NTP＋ other unit | Prop：of SS（＋） <br> pul：TB cases <br> out of all pul： <br> TB cases | Ratio of NSS＋ <br> to NSS（－）cases and EP cases | Ratio of NSS + <br> to NSS（－）cases | Sputum <br> Positivity <br> Rate | Sputum <br> Conversion <br> Rate | $\left\|\begin{array}{c} \text { (CR) } \\ \text { NTP only } \end{array}\right\|$ | （CR） NTP＋ other unit | （TSR） NTP only | （TSR） <br> NTP＋ other unit |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |


| 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\％ |


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| $\stackrel{\circ}{\infty}$ | $\begin{aligned} & \text { な̊ } \\ & \text { SU } \end{aligned}$ |  | $\begin{aligned} & \hline \stackrel{\text { ®}}{ } \\ & \hline \end{aligned}$ | 80 | oे̀ | 仓̀ | $\stackrel{\text { ®ㅇ }}{6}$ | $\begin{aligned} & \hline \stackrel{\circ}{+} \\ & \infty \end{aligned}$ | $\begin{aligned} & \stackrel{\circ}{6} \\ & \hline \end{aligned}$ | लั |
| $\stackrel{\circ}{\infty}$ | o̊움 | స్ | 응 | ণ̊ | ஷ̀ | ఎం |  | $\begin{aligned} & \text { oे } \\ & \infty \end{aligned}$ | ৯̀ | む． |
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| $\stackrel{\Gamma}{\dot{G}}$ | $\stackrel{\Gamma}{\dot{\theta}}$ | $\stackrel{\Gamma}{-}$ | $\begin{gathered} \bar{\infty} \\ 0 \\ \hline \end{gathered}$ | $\stackrel{\Gamma}{\stackrel{\Gamma}{-}}$ | $\stackrel{\Gamma}{\stackrel{\rightharpoonup}{\square}}$ | $\stackrel{\Gamma}{0}$ | 「ذ் | $\stackrel{\Gamma}{\stackrel{\sim}{r}}$ | $\stackrel{\Gamma}{\dot{m}}$ | － |
| $\stackrel{\stackrel{\rightharpoonup}{\mathrm{N}}}{\dot{\circ}}$ | $\begin{aligned} & \overline{0} \\ & \hat{0} \end{aligned}$ | $\begin{gathered} \dot{\mathrm{M}} \\ \hline \end{gathered}$ |  | $$ | $\stackrel{\Gamma}{\dot{G}} \underset{0}{\dot{0}}$ | $\begin{gathered} \stackrel{\rightharpoonup}{0} \\ \stackrel{0}{0} \end{gathered}$ | $\begin{gathered} \dot{\underset{\sim}{\mathrm{N}}} \end{gathered}$ | $\begin{array}{r} \Gamma \\ \dot{0} \\ 0 \end{array}$ | ָi | － |
| ৷্లి | $\stackrel{\circ}{\circ}$ | ంిం | ঃ০ | ©̀ | ஃ̀ | $\stackrel{\text { N}}{\stackrel{1}{N}}$ | సి | $\frac{\stackrel{\circ}{0}}{}$ | స్ స్ | － |
| 응 | ®ั | $\stackrel{\text { ঃে }}{\text { ষ }}$ | $\stackrel{\circ}{\stackrel{\circ}{ }}$ | $\stackrel{\text { No }}{\text { N }}$ | ঃণ | $\stackrel{\text { Nे }}{\underset{\sim}{2}}$ | 웅 | $\stackrel{\circ}{\mathrm{N}}$ | $\frac{\circ}{5}$ | ¢0 |
| ঃo | ¢ํ | ¢잉 | $\stackrel{\circ}{\stackrel{\circ}{\gtrless}}$ | $\begin{aligned} & \stackrel{\circ}{\circ} \\ & \stackrel{\text { N}}{\sim} \end{aligned}$ | ঃণ | $\begin{aligned} & \text { ঃু } \end{aligned}$ | ํ | $\begin{aligned} & \text { ®̀ } \\ & \text { N } \end{aligned}$ | $\frac{\circ}{5}$ | 웅 |
| $\begin{aligned} & \text { O} \\ & \hline 0 \\ & \hline- \end{aligned}$ | ल | N | 끙 | N゙ | $\stackrel{4}{5}$ | $\begin{aligned} & \hline \text { O} \\ & \text { N } \end{aligned}$ | $\stackrel{\circ}{6}$ | $\stackrel{\infty}{\sim}$ | $\stackrel{\square}{7}$ | $\stackrel{\text { ¢ }}{\stackrel{\circ}{5}}$ |
| 앙 | $\stackrel{m}{\square}$ | ㄷ | $\stackrel{\sim}{\sim}$ | $\stackrel{\text { ¢ }}{\square}$ | F | ¢ | $\stackrel{ }{\sim}$ | $\stackrel{\sim}{\sim}$ | N | － |
| N | $\stackrel{\leftrightarrow}{\leftarrow}$ | $\stackrel{+}{\square}$ | $\stackrel{6}{\square}$ | $\stackrel{\text { ㄱ}}{-}$ | $\stackrel{\infty}{+}$ | N్ల | $\stackrel{\text { ¢ }}{ }$ | $\stackrel{\sim}{\leftarrow}$ | $\stackrel{\circ}{\square}$ | － |
| $\begin{aligned} & \text { N } \\ & \stackrel{N}{N} \\ & \stackrel{N}{N} \end{aligned}$ | $\begin{aligned} & \infty \\ & \stackrel{\infty}{\infty} \\ & \stackrel{\infty}{c} \end{aligned}$ | $\begin{aligned} & \text { O} \\ & \text { N } \\ & \stackrel{N}{N} \end{aligned}$ | $\underset{\sim}{N}$ | $\frac{\stackrel{N}{N}}{\stackrel{\rightharpoonup}{*}}$ |  | $\begin{aligned} & \mathbb{N} \\ & \text { N్ల } \end{aligned}$ | $\begin{aligned} & \text { on } \\ & \stackrel{0}{0} \\ & \stackrel{\circ}{\circ} \end{aligned}$ |  | $\begin{aligned} & \text { N} \\ & \underset{N}{N} \\ & \underset{\sim}{2} \end{aligned}$ |  |
| $\begin{aligned} & \overline{0} \\ & \underset{\sim}{3} \\ & 0 \end{aligned}$ |  |  | $\begin{aligned} & \stackrel{\rightharpoonup}{0} \\ & \stackrel{\rightharpoonup}{\otimes} \end{aligned}$ |  |  | $\stackrel{\stackrel{\rightharpoonup}{\omega}}{\stackrel{\rightharpoonup}{\Delta}}$ | $\begin{aligned} & \text { J } \\ & \stackrel{\text { n }}{\substack{2}} \end{aligned}$ |  | $\begin{aligned} & 3 \\ & \frac{3}{0_{0}^{0}} \end{aligned}$ | － |
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Annex-21 (townships list)

| $\left\|\begin{array}{c} \text { Sr.N } \\ o \end{array}\right\|$ | TOWNSHIP | Population | Estimated <br> New S( + ) <br> cases | Total <br> New Smear <br> Positive <br> detected | Total notified TB cases | (CDR) NTP only | (CDR) <br> NTP + <br> other <br> unit | Prop: of SS(+) <br> pul:TB cases <br> out of all pul: <br> TB cases | Ratio of NSS + <br> to NSS (-)cases and EP cases | Ratio of NSS+ to NSS (-)cases | Sputum <br> Positivity <br> Rate | Sputum <br> Conversion <br> Rate | (CR) NTP only | (CR) NTP+ other unit | (TSR) NTP only | (TSR) NTP + other unit |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |


Annex-21 (townships list)

| $\left\|\begin{array}{c} \text { Sr.N } \\ 0 \end{array}\right\|$ | TOWNSHIP | Population | Estimated <br> New S( + ) <br> cases | Total <br> New Smear <br> Positive <br> detected | Total notified TB cases | $\left\|\begin{array}{c} \text { (CDR) } \\ \text { NTP only } \end{array}\right\|$ | (CDR) NTP + other unit | Prop: of SS(+) <br> pul:TB cases <br> out of all pul: <br> TB cases | Ratio of NSS+ <br> to NSS (-)cases and EP cases | Ratio of NSS + <br> to NSS (-)cases | Sputum <br> Positivity <br> Rate | Sputum <br> Conversion <br> Rate | $\left\|\begin{array}{c} \text { (CR) } \\ \text { NTP only } \end{array}\right\|$ | (CR) NTP+ other unit | (TSR) NTP only | (TSR) NTP + other unit |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |



| $\begin{gathered} \text { Sr.N } \\ 0 \end{gathered}$ | TOWNSHIP | Population | Estimated <br> New S（＋） <br> cases | Total <br> New Smear | Total notified TB cases | $\left\|\begin{array}{\|c\|} \hline \text { (CDR) } \\ \text { NTP only } \end{array}\right\|$ | （CDR） <br> NTP＋ <br> other <br> unit | Prop：of SS（＋） <br> pul：TB cases out of all pul： | Ratio of NSS＋ <br> to NSS（－）cases and EP cases | Ratio of NSS＋ <br> to NSS（－）cases | Sputum <br> Positivity <br> Rate | Sputum <br> Conversion <br> Rate | （CR） <br> NTP only | （CR） <br> NTP＋ <br> other unit | （TSR） NTP only | （TSR） <br> NTP＋ <br> other <br> unit |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
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|  | ¢ㅇํ \％ | \％ | ¢ |  | \％ |  |  |  | \％io |  |  |  | ¢i¢ |  |
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| $\begin{array}{\|c\|} \hline \stackrel{\circ}{\circ} \\ \hline \end{array}$ | \％oㅇㅇㅇ | \％ | ¢ |  | \％ | $3 \times$ | $\stackrel{\circ}{\infty}$ | $\frac{\stackrel{y}{6}}{6}$ | oio | $\frac{\circ}{\circ}$ | $\stackrel{\circ}{9} \stackrel{\circ}{\circ}$ |  | ஃ옹ㅇㅇ | － |
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| ঃি | 웅 | $5$ | !oi | $\frac{\circ}{\circ}$ | ol io | $\stackrel{\circ}{\infty}$ | be | cio | 8ois | ஃ̀ | $\stackrel{\circ}{\circ}$ |  |  | － |
| ¢ | ํํ | \％\％ | $\begin{aligned} & \circ \\ & \hline 8 \end{aligned} \frac{\circ}{\infty}$ |  | \％ | $\stackrel{\circ}{\circ}$ | ¿ํ | Bo | $\circ$ | 8-1 | $\frac{\circ}{\circ}$ |  | సి సి |  |


| 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 | Kyinmyintdine | 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 | Ahlone | 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\％ |


| $\begin{gathered} \text { Sr.N } \\ \text { o } \end{gathered}$ | TOWNSHIP | Population | Estimated <br> New S(+) <br> cases | Total New Smear Positive detected | Total notified TB cases | $\left\|\begin{array}{c} \text { (CDR) } \\ \text { NTP only } \end{array}\right\|$ | (CDR) NTP + other unit | Prop: of SS(+) <br> pul:TB cases <br> out of all pul: <br> TB cases | Ratio of NSS+ <br> to NSS (-)cases and EP cases | Ratio of NSS+ <br> to NSS (-)cases | Sputum <br> Positivity <br> Rate | Sputum <br> Conversion <br> Rate | $\left\|\begin{array}{c} \text { (CR) } \\ \text { NTP only } \end{array}\right\|$ | (CR) <br> NTP+ other unit | $\begin{aligned} & \text { (TSR) } \\ & \text { NTP } \\ & \text { only } \end{aligned}$ | (TSR) <br> NTP + other unit |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| South District |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | Seikkyikanaungt | 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 | Thonegwa | 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 | Hegu | 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\% |  | 88\% |  |
|  | Yangon Region | 5930690 | 10053 | 8296 | 22873 | 83\% | 106\% | 53\% | 0.69:1 | 0.9:1 | 22\% | 91\% | 83\% | 82\% | 88\% | 88\% |


| $\left\|\begin{array}{c} \text { Sr.n } \\ 0 \end{array}\right\|$ | TOWNSHIP | Population | Estimated <br> New S（＋） <br> cases | Total <br> New Smear <br> Positive <br> detected | Total notified TB cases | $\left\lvert\, \begin{gathered} \text { (CDR) } \\ \text { NTP only } \end{gathered}\right.$ | （CDR） <br> NTP＋ other unit | Prop：of SS（＋） <br> pul：TB cases <br> out of all pul： <br> TB cases | Ratio of NSS＋ <br> to NSS（－）cases and EP cases | Ratio of NSS＋ <br> to NSS（－）cases | Sputum <br> Positivity <br> Rate | Sputum <br> Conversion <br> Rate | $\begin{gathered} \text { (CR) } \\ \text { NTP only } \end{gathered}$ | （CR） <br> NTP＋ other unit | （TSR） NTP only | （TSR） <br> NTP＋ other unit |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |



| 発 |  |  | \％） | $\begin{gathered} \stackrel{\circ}{4} \\ \stackrel{y}{\circ} \end{gathered}$ | $\frac{\circ}{5}$ | ๗̀ | $\begin{gathered} \circ \\ \hat{\circ} \end{gathered}$ | $\begin{aligned} & \circ \\ & \hline \end{aligned}$ | $\frac{\circ}{7}$ | $\stackrel{\circ}{4}$ |  |  | 年 | \％ |  | \％ | ¢ |  |  | $\begin{aligned} & \circ \\ & 7 \\ & \hline 6 \end{aligned}$ | ¢ | $\stackrel{\stackrel{\circ}{0}}{ }$ |  | ลํ | ล̀ | \％ | \％ั้ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | \％ |  | సi̊ | ஷi | \％ | ¢ ¢ |  | $\begin{array}{\|c} \hline \stackrel{\circ}{\circ} \\ \stackrel{1}{2} \end{array}$ |  | స్టిర | \％̀ | $\frac{\stackrel{\circ}{\mathrm{C}}}{}$ |  | $\begin{aligned} & \circ \\ & \hline \text { io } \end{aligned}$ | $9$ | $8$ | ※ò | ! | $\begin{aligned} & \hline \mathrm{D} \\ & \hline \end{aligned}$ | $\circ$ | $8$ | Bo io | Bo io | Nio |  | － | $\stackrel{\circ}{\circ}$ |
| $\stackrel{\stackrel{\circ}{\circ}}{\stackrel{\circ}{-}}$ | 윤 |  | $\frac{\stackrel{\circ}{0}}{\stackrel{1}{6}}$ | $\begin{gathered} \circ \circ \\ \hline \infty \\ \hline \end{gathered}$ | $\frac{\circ}{\square}$ | $\begin{gathered} \stackrel{\circ}{\circ} \\ \stackrel{y}{c} \end{gathered}$ | $\stackrel{\circ}{\stackrel{\circ}{\wedge}}$ | $\stackrel{\circ}{\circ}$ | $\begin{array}{\|c\|} \hline \stackrel{\circ}{\circ} \\ \hline \end{array}$ | $\frac{\circ}{5} \frac{\circ}{6}$ | $\stackrel{\circ}{\circ}$ | $\begin{array}{\|l\|l\|} \hline \stackrel{\circ}{\circ} \\ \hline \end{array}$ | $\begin{aligned} & \circ \circ \\ & \stackrel{\circ}{\circ} \end{aligned}$ | $\stackrel{\circ}{\circ}$ | ¿oㅇ | $\frac{\circ}{\circ}$ | 俞 | $\stackrel{\circ}{\circ}$ | Bio | 응 | $\stackrel{\circ}{\circ}$ | oio | Bio | $3 \stackrel{\circ}{\circ}$ |  | － | $\stackrel{\circ}{\circ}$ |
|  | $\stackrel{N}{\stackrel{N}{\sim}}$ |  | \％ | － | － | ¢ | N | $$ | $\stackrel{\otimes}{\infty}$ | $\frac{7}{6}$ | $\stackrel{\tau}{6}$ | ¢ | N్స | $\stackrel{N}{2}$ | $\underset{\sim}{\infty}$ | ¢ | \％ | ¢ | 尔 | + | T | $\stackrel{\sim}{\sim}$ | $\stackrel{\substack{\mathrm{N}}}{\stackrel{\sim}{6}}$ | ¢ | ¢ | － | O |
| 菏 | ¢ |  | $\stackrel{\text { N}}{ }$ | $\stackrel{\text { ¢ }}{\sim}$ | N | $\stackrel{\%}{\sim}$ | N | N | ু | $\stackrel{\text { ¢ }}{\sim}$ | N | N | 4 | $\stackrel{\text { O}}{\sim}$ | O－ | ㅇ | $\stackrel{\infty}{\sim}$ | $\stackrel{\text { N }}{ }$ | ） | N | フ | $\stackrel{\sim}{\sim}$ | － | N | ¢ | 앋 | ¢ |
| $\begin{array}{\|l\|} \hline \text { ® } \\ \hline \end{array}$ | $\stackrel{\varrho}{N}$ |  | － | $\stackrel{\text { t }}{ }$ | － | 亡 | $\stackrel{\sim}{\circ}$ | $\begin{aligned} & \mathbf{g} \\ & \mathrm{m} \end{aligned}$ | 亏－ | ¢ | ผ | $\stackrel{\square}{\circ}$ | $\stackrel{m}{\Gamma}$ | $\underset{\sim}{N}$ | \％ | $\frac{0}{5}$ | $\stackrel{\sim}{\sim}$ | $\stackrel{\infty}{\stackrel{\infty}{N}}$ | \％ | ¢ | orig | $\stackrel{\rightharpoonup}{\mathrm{N}} \stackrel{0}{\mathrm{~N}}$ | O | $\stackrel{\sim}{\sim}$ | $\stackrel{\sim}{\sim}$ | － | ¢ |
|  <br> 0 <br>  |  |  | $\begin{aligned} & \overline{\stackrel{N}{n}} \\ & \stackrel{\circ}{N} \end{aligned}$ | $\begin{gathered} \underset{n}{i n} \\ \stackrel{i}{6} \end{gathered}$ | 商 | $c_{\infty}^{\infty}$ | $\begin{aligned} & 3 \\ & \substack{n \\ \text { On } \\ \text { in } \\ \hline} \end{aligned}$ | $\begin{aligned} & \infty \\ & \infty \\ & \\ & \end{aligned}$ | $\begin{array}{\|l\|l} \hline 0 \\ \hline 0 \\ 0 \\ \hline \end{array}$ | $\stackrel{\infty}{\stackrel{\infty}{\sim}}$ |  |  | $\begin{aligned} & \text { Ni } \\ & \text { Ni } \end{aligned}$ | 䏩 |  | $\frac{\stackrel{\rightharpoonup}{x}}{\bar{m}}$ |  |  |  |  |  |  |  | $\stackrel{i}{\circ}$ |  | $$ | ¢ |
|  |  |  |  |  | $\begin{aligned} & 3 \\ & 0 \\ & 0 \\ & \vdots \\ & \vdots \\ & \vdots \\ & \hline \end{aligned}$ |  |  |  |  |  |  |  |  |  |  | $\begin{array}{r} \hat{3} \\ 0 \\ \vdots \\ \sum_{i}^{2} \\ \hline \end{array}$ |  |  |  |  |  |  |  |  |  |  | － |
| － |  |  | m | ＋ | $\llcorner$ | $\bullet$ | N | $\infty$ | の | $\bigcirc$ | F | $\sim$ | $\stackrel{\sim}{\sim}$ | － | $\stackrel{2}{2}$ | $\bigcirc$ | － | $\stackrel{\circ}{\circ}$ | ？ | $\stackrel{1}{2}$ | － | へ | N | む |  | $\stackrel{\sim}{8}$ |  |

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



|  <br> State | Low CR $\leq 50 \%$ Low CDR $540 \%$ | Low CR $550 \%$ | LowCDR $40 \%$ | $C D R \geq 100 \%$ <br> LowCR | CR 100\% <br> LowCDR | CDR $2100 \%$ | CR100\% | TSR $\geq 85 \%$ CDR $\geq 70 \%$ | Average |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mandalay | 0 | Myitha <br> Mahlaing | Wundwin <br> Natogyi <br> Ngazun <br> Yamethin <br> Sintgine | ${ }_{0}$ | $\square_{0}$ | Pyigyitagonn <br> Chanayetharzan <br> Pyinmana |  | Aungmyaytharzan Chanmyathazi Mahaaungmyae Sintgu, | Mogok, Meiktilar, Lewei, <br> Amarapura,TadaO <br> Tharzi,Taungtha,Thabeilkyin <br> Myingan, Pyawbwei <br> Kyaukse, NyaungU, Tatkone <br> Pyin oo Lwin, Madayar <br> Patheingyi,Kyaukpadaung |
| ShanState <br> (Taunggyi) | 0 |  | Laihkay,Mongkaing,Ywangan Lauksauk,Pinlaung,Loilem Hopone,Hpekon,Hsiseng |  | Mongpang <br> Kyeethi <br> Mongshu | $\bigcirc$ | Monai |  | Maukme,Kunhein,Laikha Namsan, Pindaya, Kalaw Taunggyi ,Nyaungshwe |
| Shan State (Kengtong) <br> 1 tsp not report received | Mongyan | ${ }^{0}$ | Mongkhat | Monghsat |  | Mongton <br> Tachileik | 0 |  | Kengtong, Mongping <br> Monphak, Mongyaung |
| Shan State (Lashio) <br> 6 tsp: not receive report | 0 | Laukkai | Nyaungcho,Kuitai <br> Namtu, Mongreh <br> Namsam,Namkham |  | 0 | 0 | Kunlon ${ }^{\text {r }}$ | Hopan, <br> Hsipaw | Tanyan,Mabein <br> Kyaukme, Mongmeik, <br> Lashio,Muse,Monton,Theinni |
| Kayin 7 | 0 | 0 | Thandaung, Kyarinseikkyi | 0 | 0 | Myawady |  | Papun (Kamamaung) <br> Hppan | Kawkareik,Hlaingbwe |
| Tanintharyi ${ }^{10}$ | 0 | Bokpyin | Launglon, Kyunsu, Yebyu Thayetchaung, Tanintharyi | 0 |  | Dawei,Kawthaung <br> Myeik | 0 |  | Palaw |
| Bago Region  <br>   <br>   <br>  14 | 0 |  | Kyaukkyi | 0 |  | Bago <br> Taungoo |  | Shwekyin | Kawa, Htantabin,Daik-U <br> Nyaunglaybin, ,Waw Thanatpin, Phyu,Kyauktaga Oktwin, Yedashe |



| Region \& State | DOTS TOWNSHIPS |  |  |
| :---: | :---: | :---: | :---: |
|  | High Defaulter Rate $\geq 10 \%$ *means $\geq$ 20\% | Low CR $\leq 50 \%$ with TSR $\geq 70 \%$ | Sputum Conversion Rate < 80\% |
| Kachin | *Kamaing, Tanai,Chipway | Nil | Shwegu, Kamaing, Tanai,Chibwa,Machanbaw, |
| Kayah | Nil | Nil | Bawlake |
| Chin | *Tunzan, Palatwa | Htantalan | Htantalan, 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 <br> Tatkone,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 <br> *Laukkai,Muse, | Nil | Mongmeik, Namsam, laukkai 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 |

Annex-24

Progress of NTP (1994-2010)

| IndicatorlYear | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | $\mathbf{2 0 0 8}$ | $\mathbf{2 0 0 9}$ | $\mathbf{2 0 1 0}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 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)


| $\square$ Cure rate | $\square$ Completion rate | $\square$ Treatment success rate |
| :---: | :---: | :---: |
| $\square$ Death | ——Failure rate | $\triangle$ - Defaulter rate |
| $\cdots$ Transferred out rate | + CDR New SS+ |  |

Targets achievement according to Regions, States and Country (2009-2010)

$100 \%$
$90 \%$
$80 \%$
$70 \%$
$60 \%$
$50 \%$
$40 \%$
$30 \%$
$20 \%$
$10 \%$
$0 \%$
3SI

Case Detection Rate (New Smear Positive) of Regions \& States (2000-2010)

| Region/ | CDR |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| State | 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 | 32 | 38 | 40 | 43 | 48 | 46 | 49 | 37 |
| Shan State (Kyaingtong) | 34 | 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 |  | 79 | 78 | 81 | 73 | 87 | 82 | 83 | 79 | 82 | 58 |
| Bago Region (Pyay) | 59 | 73 | 85 | 81 | 87 | 77 | 91 | 101 | 101 | 105 | 69 |
|  | 57 | 68 | 71 | 74 | 95 | 108 | 93 | 89 | 94 | 114 | 75 |
| 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/ | 2000 |  | 2001 |  | 2002 |  | 2003 |  | 2004 |  | 2005 |  | 2006 |  | 2007 |  | 2008 |  | 2009 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| State | 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 | $\beta 1$ | 75 | 84 | 78 | 85 | 78 | 85 | 77 | 85 | 78 | 85 | 77 | 85 |

Categories of Regions \& States According to Case Detection Rate (2001-2010)


In 2010, estimated new smear positive TB cases is $105 / 100.000$ pop: according to national TB prevalence survey

Annex-28
Categories of Regions \& States According to Treatment Success Rate (2001-2009)


| YEAR | Total Population | DOTS <br> Population | No.of Estimate S(+) cases | CNR CDR <br> All S $(+)$ NS $(+)$ <br> per 100,000  <br> population  |  | PULMONARY TUBERCULOSIS |  |  |  |  |  |  |  |  |  |  |  | EXTRA PULMONARY TB |  | Other |  | Total |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  | SMEAR POSITIVE |  |  |  |  |  |  |  |  | All S(+) <br> cases | SMEAR NEGATIVE |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | NEW CASES |  |  | OLD CASES |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | RELAPSES | TAD |  | TAF |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | M | F | T | M | F | M | F | M | F | total | M | F | M | F | M | F | M | F | T |
| 1994(18Tsp) |  | 3,492,420 | 3,492 | 32 | 33 |  |  |  | 615 | 331 | 946 | 124 | 60 | 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 |  |  | 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 |  |  | 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 |  |  | 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 |  |  | 11,940 | 1,233 | 982 | 326 | 275 |  |  | 9,170 | 5,586 | 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 |  |  | 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 |  |  | 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 |  |  | 24,823 | 8,296 | 5,446 | 2,087 | 1,803 |  |  | 26,800 | 15,655 | 42,455 |
| 2002(310Tsp) | 5,216,455 | 46,044,000 | 34,533 | 63 | 70 | 15,951 | 8,211 | 24,162 | 2,582 | 1,082 | 925 | 306 |  |  | 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 |  |  | 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 |  |  | 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 |  |  | 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 |  |  | 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 | 428 | 49,251 | 24,979 | 16,847 | 22,572 | 17,430 | 1,731 | 737 | 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 | 365 | 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 | 408 | 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 | 467 | 48,783 | 33,924 | 22,916 | 15,722 | 12,254 | 2,601 | 1,203 | 84,801 | 25,602 | 137,403 |



Treatment Outcome of NS（＋），Relapse，NS（－）with HIV（＋）cases（2005－2009），National Tuberculosis Programme

|  | $\begin{aligned} & \stackrel{\circ}{\circ} \\ & \stackrel{y}{\infty} \\ & \stackrel{y}{c} \end{aligned}$ | $\stackrel{\stackrel{\Omega}{7}}{\stackrel{1}{2}}$ | $\begin{gathered} \infty \\ \stackrel{0}{寸} \end{gathered}$ | 승 | $\begin{gathered} \overline{0} \\ \underset{\sim}{y} \end{gathered}$ | $\begin{gathered} 10 \\ \stackrel{0}{0} \\ \div \end{gathered}$ | $\stackrel{\vdots}{\mathbf{O}}$ | $\stackrel{\stackrel{\rightharpoonup}{\sim}}{\sim}$ |  | $\stackrel{\circ}{\sim}$ | $\begin{aligned} & \stackrel{\sim}{4} \\ & \underset{寸}{\text { O}} \end{aligned}$ | $\stackrel{0}{0}$ | $\begin{aligned} & \infty \\ & \stackrel{\sim}{0} \\ & \underset{y}{2} \end{aligned}$ | $\stackrel{i}{7}$ | on | $\stackrel{\sim}{\square}$ |  |  |  |  | $\stackrel{n}{4}$ | $\hat{p}$ | $0$ |  | 边 | ～ |  | $\stackrel{\circ}{\text { N }}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| O. | ลे | ลั | $\stackrel{\circ}{\circ}$ | ๕ั | ¢ें | $\stackrel{\circ}{\circ}$ | ลे | $\stackrel{\circ}{\circ}$ | ¢े | ¢ $\stackrel{\circ}{\circ}$ | ลิ | ¢ัٌ | ลั | ¢ | \％ | 令 | N | ¢๐ | ล |  | ลํ ลั | ลे | － | ลั | ¢ ¢ ¢ ¢ | ¢ั | ¢े | ¢ |
|  | ल | 〒 | $\stackrel{\circ}{\circ}$ | N | ® | $\stackrel{\square}{\circ}$ | $\stackrel{\sim}{\sim}$ | ＇ | $\stackrel{\sim}{\sim}$ | $F$ | 帯 | ¢ | \％ | ¢ |  | － | 先 | ล | \％ |  | 응 | ¢ | ¢ | $\stackrel{\sim}{\sim}$ | $\stackrel{\sim}{\sim}$ | $\wedge$ | ® | $\stackrel{\infty}{\sim}$ |
|  |  | ¢ | ¢ | ๕ | ¢ | ¢ | \％ํ | \％ | ¢ | ¢ั่ | ¢ | $\bigcirc$ | ¢ | $\bigcirc$ | \％ | $\stackrel{\circ}{\circ}$ | $\bigcirc$ | ¢ | \％ |  | $\bigcirc$ | $\stackrel{\text { ® }}{ }$ | \％ | \％ | $\bigcirc$ | 웅 | ¢ | ๕ |
|  | $\begin{aligned} & \stackrel{\infty}{\infty} \\ & \stackrel{1}{*} \end{aligned}$ | ¢ | $\stackrel{\sim}{\sim}$ | $\stackrel{\sim}{\sim}$ | $\stackrel{\bar{\circ}}{\stackrel{\rightharpoonup}{\circ}}$ | － | $\stackrel{\widehat{0}}{\stackrel{\circ}{0}}$ | ※ | $\stackrel{\sim}{\sim}$ | $\infty$ | $\stackrel{\circ}{\circ}$ | $\stackrel{\circ}{\sim}$ | $\stackrel{\rightharpoonup}{N}$ | N | sos |  | $\frac{\infty}{(M)}$ | $\stackrel{\circ}{\sim}$ | $\stackrel{\text { O}}{-}$ |  | O | － | $\stackrel{8}{7}$ | $\stackrel{\infty}{\infty}$ | ¢ |  | $\stackrel{\text { ® }}{\text { ® }}$ | $\stackrel{\llcorner }{\circ}$ |
|  |  |  | \％ | ஃ | ¢̛寸 | ¢ัٌ | ¢ें | ஃ | ๕ | ¢ | $\stackrel{\circ}{\circ}$ | ลั | ¢ ¢ | \％ | － | ¢ ¢ | $\circ \cdot$ | $\stackrel{\circ}{\circ}$ | ¢ั้ |  | ¿ัं | \％ | 윤 | ¢ั | \％\％ | ลั | $\stackrel{\circ}{\circ}$ | $\stackrel{\circ}{\circ}$ |
|  | $\stackrel{\sim}{\infty}$ | $\stackrel{\square}{\sim}$ | ～ | ¢ | $\stackrel{\circ}{+}$ | \％ | $\stackrel{\underset{N}{\mathrm{~N}}}{ }$ | ® | $\stackrel{\sim}{\sim}$ | $\stackrel{\sim}{\sim}$ | 잉 | \％ | $\stackrel{N}{\Gamma}$ | \％ | N |  | ） | $\bar{\sim}$ | ¢ |  | N | $\stackrel{\text { 갇 }}{ }$ | $\stackrel{\sim}{\sim}$ |  | 子 | $\sim$ | $\stackrel{\square}{\sim}$ | $\stackrel{\sim}{\sim}$ |
|  |  | $\stackrel{\circ}{\circ}$ | ஃे | ì | ํ | $\stackrel{\circ}{\mathrm{\circ}}{ }^{\circ} \mid$ | ㅇํ | $\stackrel{\sim}{\circ}$ | ®๐ | ঃ̀ | ๕ | $\stackrel{\stackrel{\circ}{\mathrm{O}}}{\mathrm{~N}}$ | \％ | ลั่ | $\therefore$ | ¢ | $\bigcirc$ | $\stackrel{\circ}{\circ}$ | \％ |  |  | ® | : | $\stackrel{\circ}{\circ}$ | $\stackrel{\circ}{\circ}$ ¢ㅇํ | \％ | \％ | $\stackrel{\text { L }}{\text { L }}$ |
|  | $\begin{aligned} & \infty \\ & \stackrel{\infty}{\infty} \end{aligned}$ | \％ | $\overline{\text { ¢ }}$ | $\stackrel{\square}{\square}$ | $\stackrel{\sim}{N}$ | $\stackrel{\circ}{4}$ | $\begin{aligned} & \stackrel{\infty}{\infty} \\ & \stackrel{\infty}{2} \end{aligned}$ |  | $\frac{\infty}{7}$ | $\stackrel{\circ}{\circ}$ | $\stackrel{0}{\sim}$ | $\stackrel{\sim}{N}$ | $\stackrel{\sim}{\sim}$ | ～ | \％ | is | $\underset{\sim}{\infty} \mid$ | \％ | $\begin{gathered} \infty \\ \stackrel{0}{\circ} \end{gathered}$ |  | ¢ | ָ | N | $\stackrel{\text { ¢ }}{\sim}$ | －0\％ | ® | O | ² |
| $\stackrel{\text { ¢ }}{\substack{\circ}}$ | ஃ) | ลิํ | ๕ㅇํ | ì | ฝั๋ | ஃì | $\stackrel{\circ}{\circ}$ | ஃio | 处 | 合 | $\stackrel{\circ}{\infty}$ | $\stackrel{\stackrel{\circ}{\mathrm{O}}}{\substack{\|\mid}}$ | \％ | $\stackrel{\circ}{\circ}$ | Ro | ¢ ¢ | Con | $\stackrel{\circ}{\circ}$ | \％ | \％ | $\stackrel{\circ}{\circ}$ | ¢ | \％ | ¿ | －\％\％ | ¢े | ¢ ¢ | \％ |
|  |  | ลั | $\stackrel{\circ}{\stackrel{\circ}{7}}$ | $\stackrel{\circ}{\infty}$ | ※̀ | oio | $\stackrel{\circ}{\circ}$ | $\stackrel{\text { ® }}{ }$ | $\stackrel{\circ}{\stackrel{\circ}{+}}$ | స్ | $\stackrel{\vdots}{\infty}$ | な. | $\stackrel{\circ}{\circ}$ | ஃ๐ | － | 단 | © | $\frac{\circ}{6}$ | $\stackrel{\circ}{\circ}$ |  | $\stackrel{\circ}{\stackrel{\circ}{+}}$ | $\left\|\begin{array}{c} \circ \\ \stackrel{\circ}{\infty} \end{array}\right\|$ | $\begin{aligned} & \text { fol } \\ & 0 \end{aligned}$ | $\bigcirc$ | ำ | $\stackrel{\circ}{\circ}$ | － | \％ |
|  | $\begin{aligned} & \stackrel{8}{6} \\ & \stackrel{6}{N} \end{aligned}$ | ¢ | 大 | ¢ | $\stackrel{\dot{\infty}}{\stackrel{\infty}{\infty}}$ | \＆ | $\stackrel{\substack{\infty \\ \sim}}{ }$ | ® | ก | 8 | $\begin{aligned} & \stackrel{\sim}{\mathbf{0}} \\ & \underset{\sim}{m} \end{aligned}$ | $\stackrel{\text { N゙ }}{\mathbf{O}}$ | $\stackrel{\sim}{\infty}$ | N |  | ล | $\stackrel{\rightharpoonup}{\infty}$ | $\stackrel{冃}{\circ}$ | 免 |  | \％ | $\stackrel{0}{\circ}$ | $\left.\begin{array}{\|c} \stackrel{\rightharpoonup}{0} \\ \end{array} \right\rvert\,$ | ¢ | 尔 | 厄 | $\left\|\begin{array}{l} \bar{\infty} \\ 0 \\ 0 \end{array}\right\|$ | 尔 |
|  | $\stackrel{\circ}{\circ}$ | 号 | ¿웅 | స్లి |  |  | $\stackrel{\circ}{\circ}$ | స్లి | $\begin{array}{\|c} \stackrel{\circ}{\text { ¢ }} \end{array}$ | $\frac{\circ}{\mathrm{c}}$ |  |  | N | ¢ | ¢ | ¢ |  |  | $\stackrel{\text { ¢ }}{\substack{2}}$ |  | คำ | \％ | \％i | $\stackrel{\circ}{\circ}$ | \％ | \％ | \％ | \％ |
|  | $\begin{aligned} & \stackrel{0}{0} \\ & \stackrel{N}{\sim} \end{aligned}$ | $\begin{gathered} \overline{0} \\ \end{gathered}$ | $\stackrel{\stackrel{\rightharpoonup}{\sim}}{\underset{\sim}{2}}$ | $\stackrel{\rightharpoonup}{\sim}$ |  |  | $$ | $\stackrel{\circ}{2}$ | $\stackrel{\stackrel{\circ}{\stackrel{\circ}{\sim}} \mid}{ }$ | ® |  |  | $\stackrel{\sim}{\infty}$ | \％ | $\stackrel{\sim}{\circ}$ | $\stackrel{\infty}{\circ}$ |  |  | $\stackrel{\substack{\mathrm{J}}}{\stackrel{y}{m}}$ |  | $\stackrel{\sim}{\sim}$ |  |  | 号 | $\stackrel{\circ}{\circ}$ | $\stackrel{\text { ® }}{ }$ |  |  |
|  | $\begin{aligned} & \stackrel{\circ}{\circ} \\ & \stackrel{\oplus}{\mathrm{j}} \end{aligned}$ | $\begin{aligned} & \stackrel{\circ}{\wedge} \\ & \stackrel{2}{2} \end{aligned}$ | $\stackrel{\infty}{\substack{4 \\ 寸}}$ | $\stackrel{0}{\infty}$ | $\begin{aligned} & \overline{0} \\ & \underset{\sim}{y} \end{aligned}$ | $\begin{aligned} & \stackrel{0}{0} \\ & \stackrel{6}{6} \end{aligned}$ | $\left.\begin{array}{\|c\|} \hline \mathbf{o} \\ \hline \end{array} \right\rvert\,$ | $\stackrel{\underset{\sim}{f}}{\stackrel{y}{c}}$ | $\begin{array}{\|c\|} \hline \frac{m}{\dot{c}} \end{array}$ | $\stackrel{\circ}{2}$ | $\begin{aligned} & \stackrel{\sim}{c} \\ & \underset{\sim}{子} \end{aligned}$ | $\begin{aligned} & \text { ope } \\ & \text { O} \end{aligned}$ | $\stackrel{N}{\mathrm{~N}}$ | $\stackrel{\sim}{-}$ | $\mathfrak{q}$ | $\stackrel{\text { ¢ }}{\sim}$ | $\tilde{\underset{\sim}{*}}$ | $\stackrel{\stackrel{N}{\sim}}{\sim}$ | $\begin{aligned} & \underset{\infty}{\otimes} \\ & \hline \mathbf{e} \end{aligned}$ |  | $\stackrel{5}{7}$ | $\hat{p}$ | $0$ | $\stackrel{\substack{\text { on } \\ \vdots}}{ }$ | $\underset{f}{\circ} \mid$ | N | 会 | $\cdots$ |
|  |  |  |  |  | $\stackrel{T}{\sqrt[n]{n}}$ |  | $\begin{aligned} & \Psi \\ & \frac{7}{20} \\ & \hline \end{aligned}$ |  |  | $\begin{aligned} & \stackrel{\otimes}{\otimes} \\ & \stackrel{0}{0} \\ & \stackrel{\rightharpoonup}{0} \\ & \stackrel{\rightharpoonup}{\infty} \\ & \stackrel{\rightharpoonup}{0} \\ & \stackrel{\rightharpoonup}{0} \end{aligned}$ | $\stackrel{\uparrow}{\stackrel{1}{5}}$ |  | $\begin{gathered} \pm \\ \stackrel{5}{2} \end{gathered}$ | $\begin{aligned} & \substack{z \\ z \\ \underset{1}{1} \\ \stackrel{y}{\omega} \\ \hline \\ \hline} \end{aligned}$ | － |  |  |  | $\begin{gathered} 7 \\ \stackrel{7}{0} \\ \end{gathered}$ |  | $\begin{gathered} \stackrel{\rightharpoonup}{\omega} \\ \stackrel{\omega}{\omega} \\ \stackrel{\rightharpoonup}{心} \end{gathered}$ | $\frac{1}{\square}$ |  | $\stackrel{y}{2}$ | （1） |  | $\frac{1}{\frac{1}{n}}$ | ¢ |
| $\begin{aligned} & \stackrel{\stackrel{r}{4}}{\underset{\sim}{\sim}} \end{aligned}$ |  |  | $\begin{aligned} & \hline \stackrel{\sim}{\circ} \\ & \hline \end{aligned}$ |  |  |  |  |  | $\stackrel{\rightharpoonup}{\mathrm{N}}$ |  |  |  |  |  |  |  |  |  |  |  | ön io |  |  |  |  |  |  |  |

Case notification rate by type of TB patients (1994-2010)


Treatment outcomes of new smear positive TB pateints (1994 to 2009 cohorts)



Treatment outcomes of new smear negative TB patients (1994-2009 cohorts)


Proportion of Relapses among New Smear (+) cases + Relapse cases (1994-2010)


Male Age specific notification rate of new smear positive TB patients (1997-2010) (Country)


Female Age specefic notification rate of new smear positive TB patients (1997-2010) (Country)


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)


Year
$\rightarrow$ TB suspect's examination rate - -Smear positive notification rate

NTP + Other Unit: TB suspect' examinationrate \& All S (+) notification rate (1999-2010)

$\rightarrow$ TB suspect's examination rate $\rightarrow$-Smear positive notification rate



Annex- 37
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 <br> (2006) | Year 2 <br> (2007) | Year 3 <br> (2008) | Year 4 <br> (2009) | Year 5 <br> (2010) |
| 1. | \% of DOTS Covered Population | 95 \% | 2005 | 95 \% | 95 \% | 95\% | 95\% | 95\% | 95\% |
| 2. | Case Detection Rate | 83 \% | 2004 | $\begin{gathered} \text { At least } \\ 70 \% \end{gathered}$ | 86\% | 89\% | 90\% | 95\% | 76\% |
| 3. | Treatment Success Rate | 82 \% | 2004 | $\begin{gathered} \text { At least } \\ 85 \% \end{gathered}$ | 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 <br> 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 |

* Numbers are National Figure including parters' contributions.
Achievement of implementing partners of National TB Programme (2010) Annex - 38
Objective 1.Pursing higjh quality DOTS expansion and enhancement

| No. | Indicators | NTP* | Implementing parnters of NTP |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | PSI | MMA | Union | Pact | WV | AHRN | MSF-H | MSF-Switz | IOM | MDM | Merlin | Malteser |
|  | \% of DOTS covered population | 49197091 |  | 4041310 |  | 2031478 | 415419 |  |  |  | 366540 | 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\% |  |
|  | 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 |  | 4 |
| 14 | No. of patients receiving incentives/patient support | 192 MDR-TB patients | 2289 | 3818 |  |  | 1396 | 290 | 2321 | 0 | 3468 | 332 | 199 | 720 |

Objective 2. Addressing TB/HIV, MDR-TB and other challanges

| 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 |  |  | 10 | 12 | 6 |  | 14 | 4 | 6 | 3 |  |  |
| 17 | No. of laboratory confirmed MDR-TB patients enrolled on treatment | 192 |  |  |  |  |  |  | 32 | 0 |  | 0 |  |  |
| 18 | No. of TB/HIV, MDR-TB management units implementing infection control measures | 16 |  |  | 10 |  |  |  | 25 | 1 |  | 3 |  |  |
| 19 | No. of new smear positive TB patients registered in targeted border townships (Myawaddy, Muse, Kawthaung, Tarchileik) | 638 | 73 | 32 |  |  | 9 |  | 33** | 0 |  |  |  |  |

Numbers are National Figure including parters' contributions.
Objective 3. Contributing to health system strengthening

| No. | Indicators | NTP* | Implementing parnters |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 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 |  |  |  |  | 43 |  | 0 0 |  |  | 92 |  |

* Numbers are National Figure including parters' 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 PPMDOTS |  | 806 | 1022 |  |  |  |  |  |  |  |  |  |  |
| 22 | No. of GPs implementing PPMDOTS |  | 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) -public laboratory -private laboratory | $\begin{array}{r} \hline 415 \\ \\ 353 \\ 62 \end{array}$ | $\begin{aligned} & 167 \\ & 125 \\ & 42 \\ & \hline \end{aligned}$ | $\begin{gathered} 9 \\ 62 \end{gathered}$ |  |  |  |  |  |  | 7 |  |  |  |
| 26 | No. of microscopy centers under External Quality Assessment (EQA) system (PPM-DOTS) -public laboratory -private laboratory | $\begin{array}{r} \hline 415 \\ \\ 353 \\ 62 \\ \hline \end{array}$ | $\begin{gathered} 167 \\ 125 \\ 42 \\ \hline \end{gathered}$ | $\begin{gathered} 9 \\ 62 \\ \hline \end{gathered}$ |  |  |  |  |  |  | 7 |  |  |  |

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 |  |  | 50 |  | 297 | 173 |  |  | 37 | 153 | 741 | 585 |
| 28 | No. of villages where advocacy, communication and social mobilization (ACSM) activities for TB are undertaken |  |  |  |  | 297 | 72 |  |  | 37 | 97 | 989 | 156 |

\footnotetext{
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 |  |  |  |

Annex - 39
Trend on New SS+, New Smear negative, Extra Pulmonary \& All TB cases load of NTP



[^0]:    |  | $\begin{array}{c}\text { Smear positive prevalence / 100,000 } \\ \text { pop. }\end{array}$ | $\begin{array}{c}\text { Smear negative culture positive TB } \\ \text { prevalence } / 100,000 \text { pop. }\end{array}$ | $\begin{array}{c}\text { Bacteriological confirmed TB } \\ \text { prevalence } / \mathbf{1 0 0 , 0 0 0} \text { pop. }\end{array}$ |
    | :--- | :--- | ---: | ---: | ---: |
    | TB prevalence in pop. | 172 |  | 4363 |

[^1]:    *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

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

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

