

**NATIONAL TUBERCULOSIS PROGRAMME**

**MYANMAR**

**ANNUAL REPORT**

**2013**

**2014**

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**Abbreviations**

ACSM	Advocacy, Communication and Social Mobilization
AD	Assistant Director
AFB	Acid-Fast Bacilli
AIDS	Acquired Immunodeficiency Syndrome
ARTI	Annual Risk of Tuberculosis Infection
BCG	Bacille Calmette Guerin
BHS	Basic Health Staff
CDR	Case Detection Rate
CNR	Case Notification Rate
DD	Deputy Director
DOH	Department of Health
DOT	Directly Observed Treatment
DOTS	Directly Observed Treatment, Short Course
DRS	Drug Resistant Survey
DST	Drug Sensitivity Testing
ELISA	Enzyme-Linked Immuno-solvent Assay
EPI	Expanded Programme of Immunization
ETB	Ethambutol
EQA	External Quality Assessment
FDC	Fixed-dose combination
FLD	First Line Anti -TB Drug
FHI360	Family Health International 360
GDF	Global Drug Facility

GF	Global Fund
GLC	Green Light Committee
GPs	General Practitioners
HIV	Human Immunodeficiency Virus
HA	Health Assistant
HFN	High False Negative
HFP	High False Positive
IEC	Information, Education, Communication
IHC	Integrated HIV Care
INH	Isoniazid
IOM	International Organization for Migration
IPT	Isoniazid Preventive Therapy
IUALTD	International Union Against Tuberculosis and Lung Diseases
JATA	Japan Anti-Tuberculosis Association
JICA	Japan International Cooperation Agency
KAP	Knowledge, Attitude and Practice
LHV	Lady Health Visitor
LQAS	Lot Quality Assurance Sampling
LFN	Low False Negative
LFP	Low False Positive
MDM	Medecins du Monde
MDR-TB	Multi-Drug Resistant Tuberculosis
MDGs	Millennium Development Goals
MGIT	Mycobacterium Growth Indicator Tube

MMA	Myanmar Medical Association
MMCWA	Myanmar Maternal and Child Welfare Association
MO	Medical Officer
MOH	Ministry of Health
MWAF	Myanmar Women's Affairs Federation
MRCS	Myanmar Red Cross Society
MRTV	Myanmar Radio and Television
MS	Medical Superintendent
MSF	Medecins Sans Frontieres
MWs	Midwives
NAP	National AIDS Programme
NGOs	Non- Governmental Organization
NHL	National Health Laboratory
NTM	Non-Tuberculous Mycobacterium
NTP	National Tuberculosis Programme
NTRL	National Tuberculosis Reference Laboratory
OI	Opportunistic infection
PHS II	Public Health Supervisor II
PSI	Population Services International
QC	Quality Control
RHC	Rural Health Centre
RIT	Research Institute of Tuberculosis
RMP	Rifampicin
SCC	Short Course Chemotherapy

SOP	Standard Operational Procedure
STI	Sexually Transmitted Infection
STLS	Senior Tuberculosis Laboratory Supervisor
TB	Tuberculosis
TL	Team leader
TOT	Training of Trainers
TSG	Technical Strategic Group
TSR	Treatment Success Rate
TMOs	Township Medical Officers
TV	Television
UTI	Union Tuberculosis Institute
VCCT	Voluntary Confidential Counseling and HIV Testing
WHO	World Health Organization
XDR-TB	Extensively Drug Resistant Tuberculosis
3MDG	Three Millennium Development Goal Fund

## **NATIONAL TUBERCULOSIS PROGRAMME ANNUAL REPORT (2013)**

### **1. Introduction**

Tuberculosis (TB) is one of the diseases of National Concern and still a major public health problem in Myanmar. Myanmar is one of the 22 TB high burden countries, also 27 MDR-TB high burden and 44 TB/HIV high burden countries. A nationwide TB prevalence survey conducted in Myanmar during 2009-2010 revealed that smear positive TB prevalence as 172 (132 - 225) per 100, 000 population and bacteriologically confirmed TB prevalence as 437 (358-533) per 100, 000 population.

Based on that, World Health Organization (WHO) estimated in Global TB report 2014 that TB incidence in Myanmar was 373 per 100,000 population and TB prevalence was 473 per 100,000 population in 2013. The mortality was described as 49/100,000 population.

Myanmar National Tuberculosis Programme (NTP) has implemented WHO recommended Stop TB Strategy since 2007. NTP is now running with 14 Regional and State TB centres and 101 TB teams at district and township levels. In 2011, NTP expanded TB control activities to additional 5 townships in Naypyitaw Council Area, covering all 330 townships.

TB patients have been treated with WHO recommended regimens using Fixed Dose Combination of first line anti-TB drugs (FDC) since 2004. NTP started using of patient kits in April, 2010 and treatment units in all townships are now using patient kits under close supervision of Basic Health Staff (BHS). The External Quality Assurance System (EQAS) has been introduced since 2006 and currently, 486 public and private laboratories are under EQAS for laboratory performance.

For Drug Resistant Tuberculosis, National Drug-Resistant TB Committee was established in September 2006. DOTS-Plus pilot project was launched in 10 selected townships in Yangon and Mandalay Regions in July, 2009 with approval of Green Light Committee (GLC) and in close collaboration with WHO and Medecins Sans Frontieres-Holland (MSF-H). Total 309 patients were enrolled in this pilot project with the support of UNITAID. Then, MDR-TB management was expanded up to 22 townships in Yangon and Mandalay Regions in 2011 with Global Fund (GF) support. Total number of townships for MDR-TB diagnosis, treatment and care services were scaled up to 38 townships in 2012 and 53 townships in 2013 not only in Yangon and Mandalay regions, but also in Sagaing and Magway Regions as well as Shan (Lashio) and Shan (Taunggyi) States.

Regarding TB/HIV collaborative activity, National TB/HIV coordinating body was organized in 2005 and it was reformed in 2012. TB/HIV collaborative activities were initiated in 7 townships in 2005 and expanded gradually up to 28 townships in 2013.

NTP received Global Fund Round 9 Grant phase I (2011 -2012), covering 289 out of 330 townships and New Funding Model started since July 2013, covering 319 out of 330 townships. Global Fund (GF) mainly supported procurement of drugs, laboratory supplies and reagents as well as health equipment and non-health products.

NTP secures first line and second line anti-TB drugs up to 2016 with the support of Government, Global Fund (GF), 3 MDG, UNITAID through GDF and MSF-H. Anti-TB drugs for children were supported by UNITAID through GDF in 2013.

TB control activities were carried out in line with 5-year National TB Strategic Plan and 'Stop TB Strategy' in order to achieve the global targets and Millennium Development Goals (MDGs). In 2013, NTP achieved Case Detection Rate (CDR) of 78.7% and Treatment Success Rate (TSR) of 85.4%.

## **2. Objectives of NTP**

### **General objectives**

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

### **Specific Objectives**

The objectives are set towards achieving the MDGs, 2015.

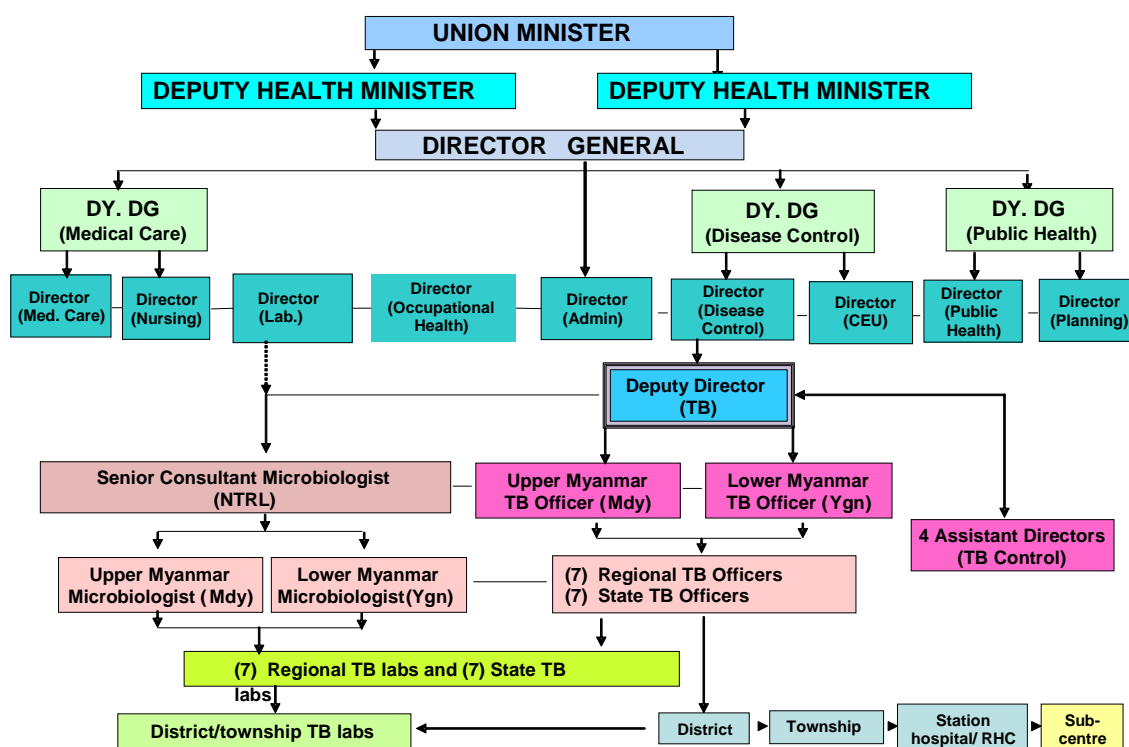
- To reach the interim targets of halving TB deaths and prevalence by 2015 from the 1990 situation. (MDGs, Goal 6, Target 6.c, Indicator 6.9)
- To reach and thereafter sustain the targets - achieving at least 70% case detection and successfully treat at least 85% of detected TB cases under DOTS (MDGs, Goal 6, Target 6.c, Indicator 6.10)



### 3. Human Resources of National TB Programme in Myanmar

NTP is composed of 14 Region/State TB centres with 101 vertical TB teams, 47 District TB teams (40 led by Team Leader medical doctors and 7 led by Health Assistants) and 54 Township TB teams (led by Health Assistants). In 2013, one Senior Consultant Microbiologist, 2 State TB Officers {Kayah and Shan (Kengtong) states}, 10 TB team leaders (medical officers), 5 TB team leaders (Health Assistants), and 58 Grade II Lab. technicians were vacant.

Figure: 1 Organization set up of NTP



### 4. Progress of the Stop TB Strategy

In order to achieve Millennium Development Goals (MDGs) by 2015, NTP has adopted Stop TB Strategy since 2007. National Strategic Plan (2011-2015) was reviewed and revised in line with the National Health Plan and the Stop TB Strategy and it was approved in 2011.

NTP applied the 5-year Strategic Plan (2011-2015) with the support of the government as well as the funding from WHO, Global Drug Facility (GDF), International facility for the purchase of drugs and laboratory commodities for HIV/AIDS, Malaria and Tuberculosis (UNITAID), Global Fund (GF), Japan International Cooperation Agency (JICA),

United States Agency for International Development (USAID) and the UNION. This report includes the evaluation of the activities under Stop TB Strategy.

There are **6 components** in the Stop TB strategy:

1. Pursue high quality DOTS expansion and enhancement
2. Address TB/HIV, MDR-TB and the needs of poor and vulnerable populations
3. Contribute to health system strengthening based on primary health care
4. Engage all care providers
5. Empower people with TB and communities through partnership
6. Enable and promote research

#### **4.1 Pursue high quality DOTS expansion and enhancement**

##### **4.1.1 *Political commitment with increased and sustained financing***

There was high level of political commitment for TB Control Programme at all levels. Myanmar government is increasing the budget for TB control gradually, especially for anti-TB drugs procurement of both first line and second line anti-TB drugs.

##### **4.1.2 *Early case detection through quality-assured bacteriology***

According to the Nationwide TB Prevalence Survey (2009-2010), TB burden was higher than WHO estimate, indicating to improve case finding with innovative ways.

NTP primarily carried out diagnosis of pulmonary TB by sputum smear microscopy. Previously, 3 sputum specimens including one early morning specimen were examined for diagnosis, however, in 2013, only two sputum specimens including one early morning specimen were examined. Binocular microscopes using Ziehl-Neelsen stain were used by NTP in most of TB laboratories countrywide, however, starting from 2012, Fluorescence Microscopes using Auramine stain were used in some high workload areas. For the quality assurance of sputum smear microscopy, NTP has covered External Quality Assurance System (EQAS) in almost all TB laboratories over the country.

Sputum culture is available at National TB Reference Laboratory (NTRL) in Yangon and Upper Myanmar TB Laboratory in Mandalay. Drug Susceptibility Testing (DST) has been available at NTRL since 2001. Upper Myanmar TB Laboratory, Mandalay was upgraded to do culture and DST in 2008- 2009. After that, rapid TB, MDR TB diagnostic methods of line probe assay and liquid culture, DST using MGIT machine were introduced to Myanmar at both laboratories in 2010. In addition, Solid culture laboratory was established in Taunggyi, Shan State (South) in 2013.

NTRL, Yangon and Upper Myanmar TB Laboratory, Mandalay are now performing rapid tests for the diagnosis of MDR-TB cases. But these were confirmed by using liquid

culture, DST and molecular testing. GeneXpert system for rapid diagnostic testing of MDR-TB was started introduced in 2011 at Upper Myanmar TB Laboratory, Mandalay. Then, GeneXpert machines were installed in the remaining Region/State TB centres and District TB centres.

### **Laboratory performance including maintenance of quality for sputum AFB microscopy**

Routinely two sputum specimens are collected and examined for both diagnosis and follow-up at all laboratories performing sputum AFB microscopy using Binocular Microscopes as well as Fluorescence Microscopes.

Township laboratory performances are closely monitored by Township Medical Officer (TMO) and TB Team Leader. In each Region or State, 1 Senior TB Laboratory Supervisor (STLS) is assigned for supervision, monitoring and quality control of Township TB laboratories and private TB laboratories within the respective Region/State. The microbiologists are mainly responsible for supervision and monitoring of Region/State TB laboratories and also for some township laboratories and private laboratories with major error. Panel testing is conducted for STLS by National Health Laboratory (NHL) twice a year.

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

The National Guidelines on EQA-LQAS for AFB Microcopy were developed in October 2007 and Orientation training was given in February, 2008 to Regional/State TB Officers, Pathologists/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 centres for blinded re-checking, timely feedback to peripheral laboratories and supervisory visits for corrective actions were also important components of this new EQA system.

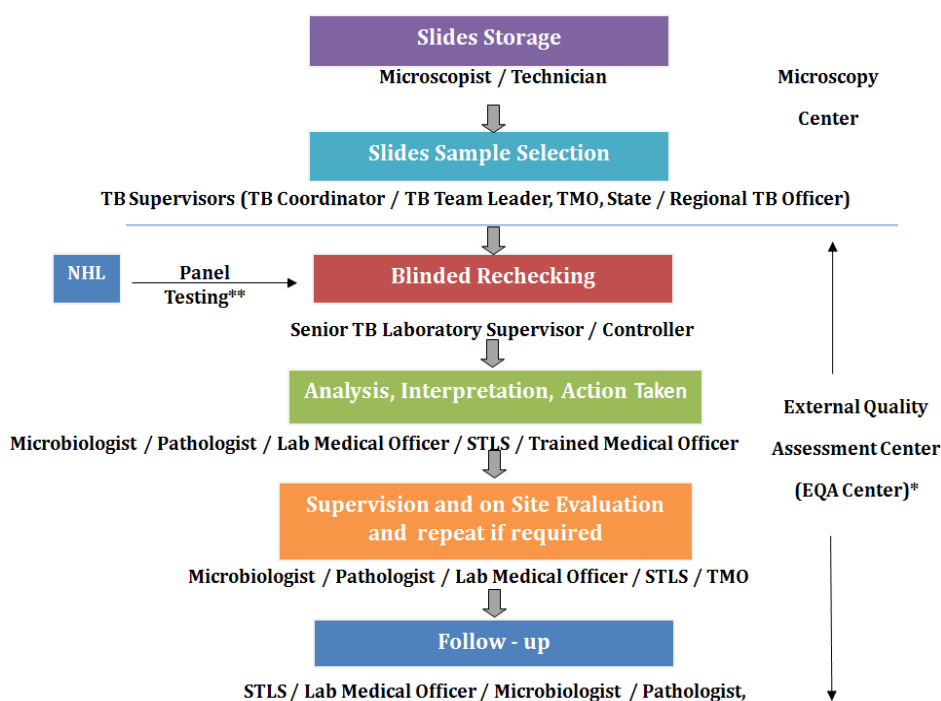
In 2007, Regional and State TB Laboratories became stand-alone quality control centres. Feed-back together with comments was sent back from Regional /State level to township level. Quarterly reports of EQA from all Regional and State TB centres were submitted to central NTP and copied to Consultant Microbiologist of National EQA Management Unit, National TB Reference Laboratory. The INGOs (PSI, MSF-Holland, MDM, Malteser, AHRN, MSF-CH and IOM) and NGO (MMA) laboratories performing AFB Microscopy also sent Quality Control slides to either Lower or Upper Myanmar TB Laboratories.

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 started their job, and for sputum AFB microscopy, 3 days refresher trainings were given to technicians once in 3 year service. TB laboratory annual evaluation meeting was also conducted once a year.

EQA system was successfully established with technical and financial support from JICA (MIDCP). EQA-LQAS was introduced in 2007 at 53 townships, 2 hospitals, 1 diagnostic and referral centre of Yangon and at TB laboratories of Mandalay, Magway, Bago Region (Bago), Ayeyarwaddy, Shan State (Taunggyi) and Mon/Kayin State. EQA methodology coverage was expanded to 325 townships in 2010 after orientation training, using the National Guidelines on EQA-LQAS for AFB Microscopy. Technicians from Regional and State TB centres or Medical Technologists or Laboratory Officers from the Regional and State General Hospital laboratories were responsible for quality control (QC).

For convenience, Pyapon, Kyaiklatt, Daydaye, Nyaungdone and Bokalay townships of Ayeyarwaddy Region sent QC slides directly to NTRL, Yangon. Thandaung township of Kayin state sent QC slides to EQA centre of Bago region, Paletwa township of Chin state to EQA center of Rakhine state, and Mindat, Kanpetlet and Matupi townships to EQA centre of Magway region. Besides, Township laboratories that utilized FM staining method from regions and states of lower Myanmar sent QC slides to National EQA unit, Yangon and those from Upper Myanmar sent to Upper Myanmar TB Laboratory, Mandalay. The first EQA Annual report (2012) could be developed in 2013.

**Figure: 2 Flow Chart of EQA System in Myanmar**



**Table 1. Laboratories under EQA (2008-2013)**

Year	Tsp.	Township Lab.	Decentralized Lab.	Private Lab.	Total	Remark
2008	325	294	51	60*	405	
2009	325	276	31	60*	367	25 expanded labs of Sagaing Region & 10 township labs of Shan State (Kengtong) were dropped due to several reasons
2010	325	298	60	59 <sup>#</sup>	417	
2011	325	303	77	78 <sup>\$</sup>	458	
2012	330	301	85	78 <sup>°</sup>	464	
2013	330	302	97	87 <sup>@</sup>	486	

**Private labs:**

\* 43 (PSI), 5 (IOM), 12 (MSF-H) for the whole country in 2009 (60 labs in total)

<sup>#</sup> 37 (PSI), 4 (IOM), 10 (MSF-H), 3 (MDM) 4 (MMA) and 1 Private Lab (Myodaw) for the whole country in 2010 (59 labs in total)

<sup>\$</sup> 49 (PSI), 4 (IOM), 13 (MSF-H), 1(MSF-CH), 4 (MDM), 1 (Malteser), and 6 (MMA) for the whole country in 2011 (78 labs in total)

<sup>°</sup>44 (PSI), 6 (IOM), 13 (MSF-H), 4 (MDM), , 9 (MMA), 1 (AHRN) and 1(Parami private Lab)for the whole country in 2012 (78 labs in total)

<sup>@</sup> 47 (PSI), 5 (IOM), 14 (MSF-H), 4 (MDM), 13 (MMA), 2 (AHRN) and 1(Parami private Lab) and 1 (MSF-CH ) for the whole country in 2013 (87 labs in total)

**Decentralized Labs:**

<sup>#</sup> 41 station hospitals, 16 PPM hospitals, 3 Diagnostic Centers for the whole country in 2010 (60 labs in total)

<sup>\$</sup> 57 station hospitals, 16 PPM hospitals, 4 Diagnostic Centers for the whole country in 2011 (77 labs in total)

<sup>°</sup> 62 station hospitals, 19 PPM hospitals, 4 Diagnostic Centers for the whole country in 2012 (85 labs in total)

<sup>@</sup>74 station hospitals, 19 PPM hospitals, 4 Diagnostic Centers for the whole country in 2013 (97 labs in total)

**Table 2. EQA Finding in 2013**

	Public Labs	Private Labs	Total Labs
EQA Labs	399	87	486
Actively participated EQA Labs	386 (96.7%)	86	472

Total laboratories put under EQA were 486 in 2013, increasing from 405 in 2008 (Township labs: 300, Decentralized Labs: 86, Private laboratories: 78). Actively participated laboratories were 472/486 (97.1%).

**Table 3. Major and Minor errors of Public and Private Laboratories in 2013**

Sr	Region/State	MCs within R/S	Annual slides for EQA	Major Error		Minor Error			FP	FN	Concordance Rate%
				HFP	HFN	LFP	LFN	QE			
1	Yangon	66	6484	3	27	2	16	6	5	43	99.26
2	Mandalay	61	5796	8	31	5	26	13	13	57	98.79
3	Bago	35	3054	0	17	0	2	22	0	19	99.38
4	Ayeyarwaddy	41	3020	0	13	0	25	5	0	38	98.74
5	Rakhine	23	2016	8	13	1	5	10	9	18	98.66
6	Mon	22	2057	0	0	0	0	4	0	0	100
7	Kayin	11	861	2	2	11	0	11	13	2	98.26
8	Tanintharyi	13	1160	1	12	1	9	2	2	21	98.02
9	Kachin	26	2534	1	37	16	54	24	17	91	95.74
10	Sagaing	67	6828	40	58	32	43	59	72	101	97.47
11	Chin	10	1130	0	4	0	1	3	0	5	99.56
12	Shan	58	5247	5	31	7	16	19	12	47	98.88
13	Magway	32	3466	4	13	4	8	2	8	21	99.16
14	Kayah	7	714	1	1	0	2	0	1	3	99.44
<b>Total</b>		<b>472</b>	<b>44367</b>	<b>73</b>	<b>259</b>	<b>79</b>	<b>207</b>	<b>180</b>	<b>152</b>	<b>466</b>	<b>98.61</b>

FP= False Positive (HFP= High False Positive or LFP= Low False Positive)

FN= False Negative (HFN= High False Negative or LFN= Low False Negative)

QE= Quantification Error

The concordance of quality control result of the whole country was 98.6% in 2013. Among 618 errors (False Positive (FP) and False Negative (FN)) of all laboratories, false positive 152 (24.6%) was less common than false negative 466 (75.4%) in 2013. Discordance rate went down to 1.39% (2013) from 1.70% (2012). Mon State achieved 100%

concordance rate without major error (ME). However, the highest numbers of ME were found in Sagaing Region (29.5%), Mandalay Region (11.7%), and Kachin State (11.4%).

**Table 4. Quality control results for Public and Private Laboratories (2010-2013)**

Year	Annual slides for EQA	FP (HFP+LFP)	FN (HFN+LFN)	Discordance rate
2010	32,515	229	457	2.10%
2011	35,418	113	485	1.70%
2012	36,707	131	494	1.70%
2013	<b>44,367</b>	<b>152</b>	<b>466</b>	<b>1.39%</b>

**Table 5. Major errors and Minor errors of Public Laboratories in 2013**

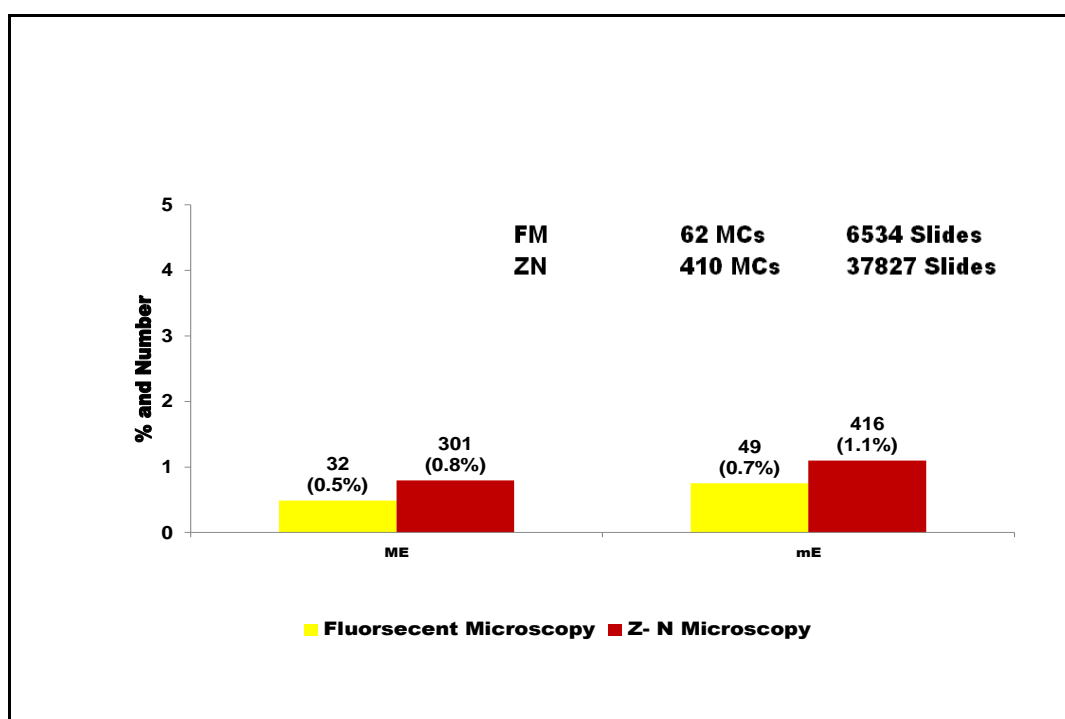
No.	Category	MCs	Annual slides for EQA	Major Error		Minor Error			FP	FN	Concordance Rate %
				HFP	HFN	LFP	LFN	QE			
1.	Township Labs	299	31214	45	199	60	148	131	105	347	98.6
2.	Station Hospital Labs	64	4382	14	21	15	38	30	29	59	97.6
3.	PPM Hospital Labs	19	1881	0	5	0	5	3	0	10	99.5
4.	TB Diagnostic Centres	4	324	0	0	0	0	0	0	0	100
<b>Total</b>		<b>386</b>	<b>37801</b>	<b>59</b>	<b>225</b>	<b>75</b>	<b>191</b>	<b>164</b>	<b>134</b>	<b>416</b>	<b>98.5</b>

Total laboratories under public sector were 399 in 2013 (302 township laboratories, 74 station hospital laboratories, 19 PPM hospital laboratories and 4 TB Diagnostic Centres). Central Jail Hospital, Mandalay and Central Jail Hospital, Yangon were also PPM hospitals participating EQA. Laboratories participated in EQA activity were 386 (96.7%). Slides received from public laboratories were 37801 and their concordance rate was 98.5%.

**Table 6. Major errors and Minor errors of Private Laboratories in 2013**

No.	Category	MCs	Annual slides for EQA	Major Error		Minor Error			FP	FN	Concordance Rate %
				HFP	HFN	LFP	LFN	QE			
1.	PSI	47	3023	11	26	0	10	4	11	36	98.45
2.	MDM	3	432	0	3	4	3	1	4	6	97.69
3.	Parami	1	72	0	0	0	0	0	0	0	100.00
4.	MSF-Holland	14	1586	3	1	0	0	4	3	1	99.75
5.	MMA	13	885	0	4	0	1	4	0	5	99.44
6.	IOM	5	364	0	0	0	0	0	0	0	100.00
7.	AHRN	2	108	0	0	0	0	2	0	0	100.00
8.	MSF-CH	1	96	0	0	0	2	1	0	2	97.92
<b>Total</b>		<b>86</b>	<b>6566</b>	<b>14</b>	<b>34</b>	<b>4</b>	<b>16</b>	<b>16</b>	<b>18</b>	<b>50</b>	<b>98.6</b>

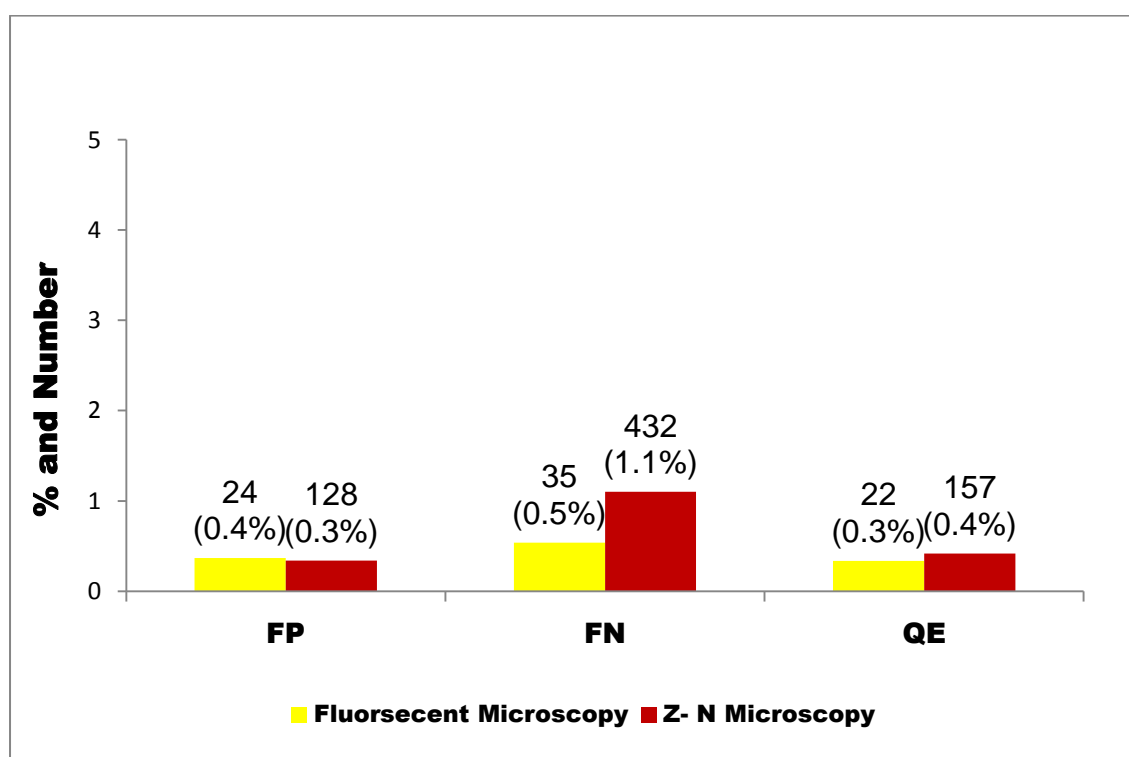
NTP received the slides for EQA from 86 out of 87 private laboratories in 2013. Their slide concordance rate is 98.6%. Among 68 errors of private laboratories, false positive was 18 (26.5%) and false negative was 50 (73.5%). There was no ME in private laboratories of Parami, IOM, AHRN, and MSF-CH. Highest number of ME was found in PSI 11% (37/332), followed by MSF-H and MMA (1.2%) each.

**Figure: 3 Major and minor errors of Fluorescent and Ziehl-Neelsen Microscopy**



There were 62 Fluorescent microscopy sites sent for EQA. A total of 6,534 slides were examined in 2013 and, of which, only 32 slides (0.5%) had major error. From 410 Z-N microscopy sites, 37,827 slides were sent. Among them, 301(0.8%) were found to have major error. The major error with Z-N microscopy was a little bit more than that with Fluorescent microscopy.

**Figure: 4 False Positives, False Negatives and Quantification Errors of Fluorescent Microscopy and Ziehl-Neelsen Microscopy**



Compared to major errors (false positive and false negative) by Fluorescent microscopy and Z-N microscopy, it was noted that the proportions for false positives were more or less the same (0.4% and 0.3% respectively). However, the proportion for false negatives was 2 times higher in Z-N microscopy (1.1%) compared to Fluorescent microscopy (0.5%). Therefore, it was found that Z-N microscopy can miss TB cases when the laboratory technicians cannot examine all fields of the slide very carefully.

Whatever, NTP achieves the improvement of microscopy performance at the moment by covering almost all TB laboratories by EQAS. It might also be due to improved skills of TB laboratory technicians by receiving regular trainings, close monitoring and regular supervision by TMOs, TB team leaders, Region/State TB officers, STLSs and microbiologists together with international experts from JICA. Besides these, EQA feedback from STLSs and microbiologists as well as their follow-up supervisory visits and immediate

actions taken on the findings and recommendations of the laboratory supervisors from NTP also improve the laboratory performances. The performances of private MCs were also improved by joint corrective measure of National EQA centre, Yangon and UMTBL.

In 2013, new recruit training for sputum smear microscopy with Ziehl-Neelsen staining method (5 days course) was conducted 1 time each in Yangon region and Mandalay region. Fluorescent microscopy trainings for newly recruited lab technicians (5 days) were also conducted 3 times in Yangon and 1 time in Mandalay. One time training on STLSs for sputum AFB microscopy was also done in Yangon in 2013.

### Manpower situation of TB Laboratories, 2013

Manpower situation of TB Laboratories can be seen as shown in the following table. The vacant posts will be filled accordingly by priority.

**Table 7. Manpower situation of TB laboratories, 2013**

Posts	Sanction	Appointed	Vacant	Remark
Sr.Consultant Microbiologist	1	0	1	NTRL, Yangon
Jr. Consultant Microbiologist	2	2	0	One at NTRL One at National EQA centre
MO Microbiologists	0	2	0	Attached from other posts One at NTRL One at UMTBC
Medical technologists	1	1	0	NTRL
Grade I technicians	11	11 +6*	0	6 – attached from other posts
Grade II technicians	200	158	42	Grade II technicians are still vacant

### Bio-safety level 3 (BSL 3) laboratories and Rapid TB diagnostic tests

The NTRL Yangon and UMTBL Mandalay were upgraded and strengthened to Bio-Safety Level 3 (BSL-3) laboratories with negative air pressure system to introduce newer and faster diagnostic tests for the detection of multidrug resistant TB (MDR-TB) in July, 2010, with the support of UNITAID. Solid culture TB Laboratory established in Shan State (Taunggyi) in 2013 is planned to upgrade BSL- 3 Laboratory in 2014. Expand TB Project was initiated in a joint collaborative effort between UNITAID, Global Laboratory Initiative (GLI), Global Drug Facility (GDF) and Foundation for Innovative New Diagnostics (FIND).

Routine solid culture and DST takes about 10-12 weeks to have diagnosis of MDR-TB. However, Liquid culture takes about 3 weeks and molecular testing such as Line Probe Assay (LPA) about 3 days only. Therefore, Liquid culture and LPA techniques have been used in NTRL and UMTBL to detect MDR-TB early. However, solid culture is the gold standard. Thus, in some cases which need confirmation, solid culture is still used. The early detection of MDR-TB cases can provide treatment early and can reduce the spread of disease.

### **Liquid culture and Drug susceptibility testing**

#### **(Mycobacterium Growth Indicator Tube-MGIT system) MGIT-960**

This system uses liquid medium which has better recovery and faster growth of mycobacteria. Growth supplement and combination of anti-microbial agents PANTA has to be added to suppress the growth of contaminants. The MGIT tube contains an oxygen-quenched flouochrome embedded in silicone at the bottom of the tube. During bacterial growth, the free oxygen in the media was used up for the fluorescence of the flouochrome. The positive tubes are shown by flashing of red indicator lamp on the screen of the machine drawer. Tubes flagged positive were removed after 24 hours and further test for contamination of *M. tuberculosis*. The fluorescence can also be visualized manually under ultra violet light or can be read with MGIT Tube Reader. **Liquid Culture is done for both AFB smear positive and negative specimens.** Growth can be detected as early as 4 to 12 days. Negative tubes are discarded on the 42nd day.

#### *Identification of M. tuberculosis*

The growth from either solid or liquid media is tested for confirmation of *M. tuberculosis* with the lateral flow assay test strip or device in safety hood. The assay is based on the detection of the presence of the *M. tuberculosis* Complex-specific protein MPT64 in culture isolates. The products used are either Capilla TB rapid diagnostic test (Tauns Laboratories Inc., South Korea) or TB Antigen MPT64 test (SD Biotec, South Korea). The results are available within 2 hours.

#### *Drug susceptibility testing (MGIT DST)*

The drug susceptibility testing is performed in the same MGIT machine. The drugs tested are isoniazid, streptomycin, rifampicin and ethambutol. Results can be available within 3 weeks form the start of culture.

## Molecular Testing

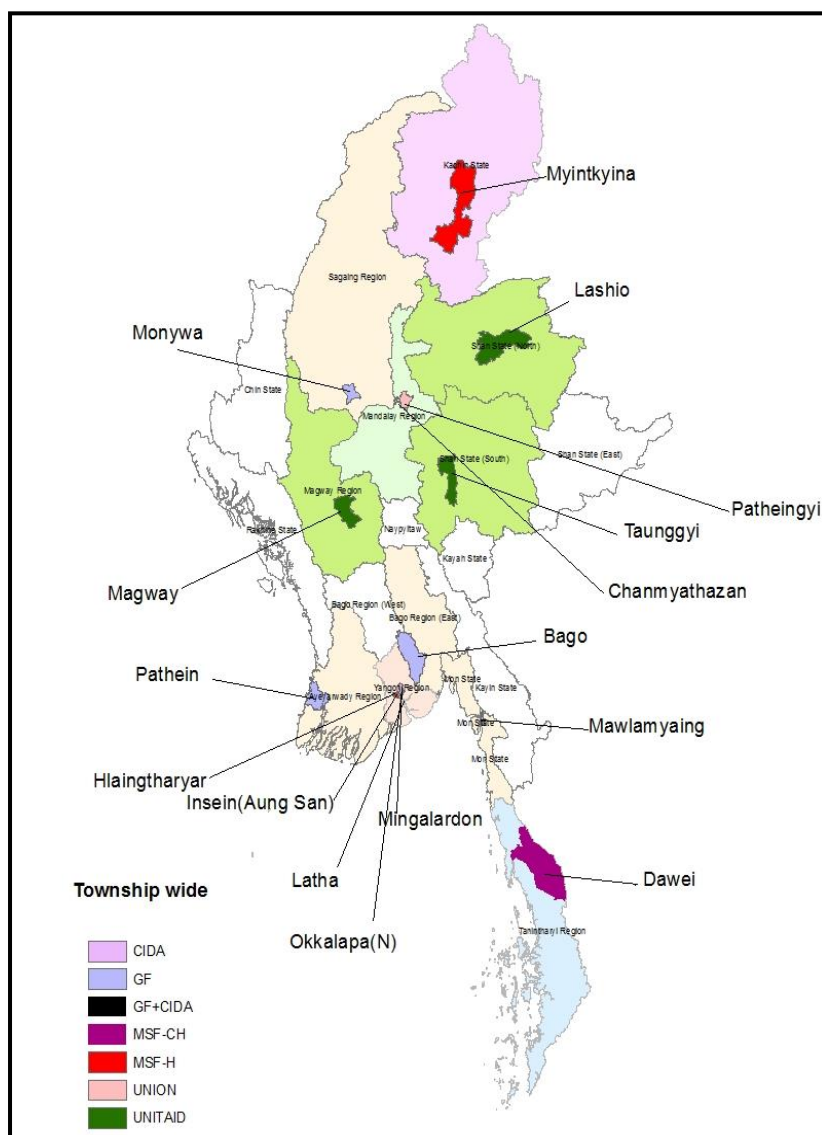
Genotype MTBDR plus Test (Hain Life sciences) is used. This test determined Mycobacterium tuberculosis positivity and rifampicin/isoniazid resistance by Molecular Genetic Assay for identification of resistance to Rifampicin and or isoniazid of the Mycobacterium tuberculosis Complex. The Genotype MTBDR plus assay is based on LPA technology involving polymerase chain reaction (PCR) amplification and binding of amplicons to specific oligonucleotide probes immobilized on a membrane strip. **Testing may be performed on DNA isolated from cultures as well as smear positive direct patient material.**

## GeneXpert

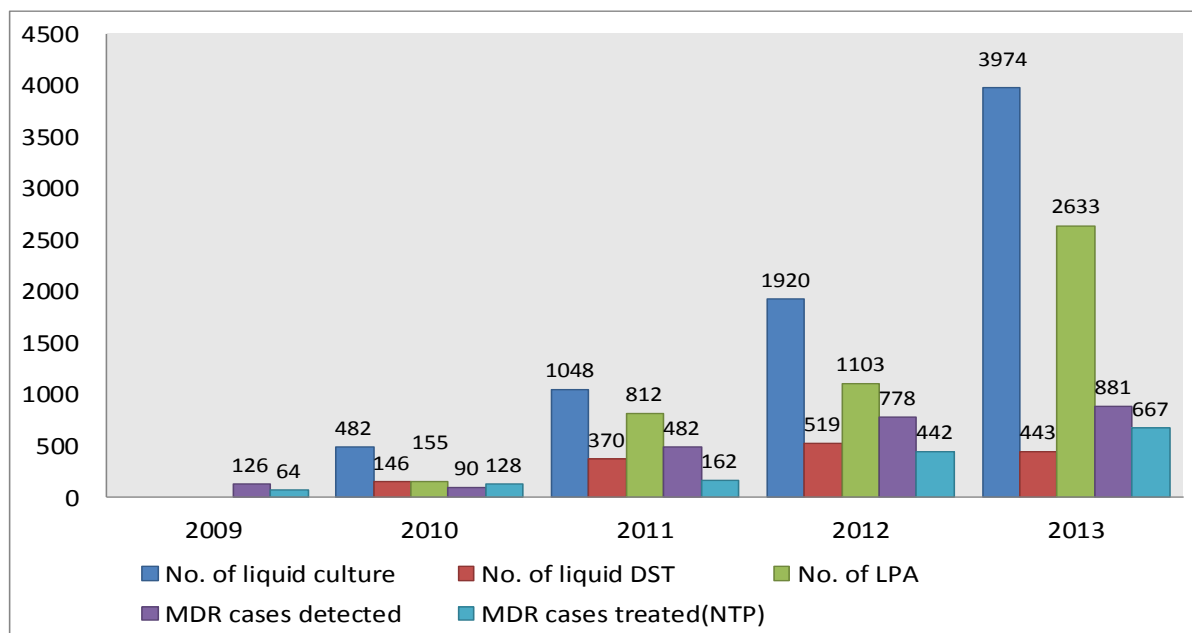
GeneXpert system is intended for rapid detection of TB and rifampicin resistance in sputum samples. **It can be used on both smear positive and smear negative samples.** Instrument is available in 1, 2, 4 or 16 module configuration and is a semi-quantitative nested real – time PCR all within one cartridge. It integrates and automates sample processing, nucleic acid amplification, detection of target sequences using real – time and reverse transcriptase PCR. Primers amplify portion of the rop B gene containing the 81 base pair core region. Probes are able to differentiate sequences associated with Rifampicin resistance.

Two GeneXpert machines were installed at UMTBL (Mandalay) and MGH (Mandalay General Hospital) in late 2011 with the support of PICT project (UNION). In 2012, altogether 8 GeneXpert machines were received: 6 by GF and 2 by Canadian International Development Agency (CIDA). Two GeneXpert machines (CIDA) were set up at Latha TB Diagnostic Centre and NTRL (Aung San) which was later moved to Mingalardon Specialist Hospital. Six GeneXpert machines (GF) were set up at Latha, Union Tuberculosis Institute (UTI) Aung San, Bago, Mawlamyaing, Pathein and Monywa TB centres in 2013.

Altogether additional 13 GeneXpert machines were received in 2013 from USAID, GF and UNITAID. One GeneXpert machine supported by USAID was set up in UTI (Aung San), 4 machines from UNITAID were installed at North Okkalapa District TB centre, Shan State (Taunggyi), Shan State (Lashio) and Magway Regional TB centre in 2013. The remaining 8 machines provided by GF is planned to set up in Thanlyin, Myingyan, Myaungmya, Hinthada, Shwebo, Kalay, Pakokku and Myeik in 2014. One GeneXpert machine was set up in Dawei by MSF-CH, two machines of MSF-H were established in Kachin State and Yangon Region. Therefore, a total of 27 GeneXpert machines could be installed in Myanmar (24 by NTP, 2 by MSF-H and 1 by MSF-CH) in 2013.

**Figure: 5 GeneXpert machines for rapid diagnosis of MTB and Rif-resistant****Table 8. Performance of liquid culture, liquid DST & LPA (2010-2013)**

Tests	2010	2011	2012	2013
No. of liquid culture	482	1,048	1,920	3,974
No. of liquid DST	146	370	519	443
No. of LPA	155	812	1,103	2,633
MDR cases detected	90	482	778	881
MDR TB treated cases	128	162	442	667

**Figure: 6 Performance of liquid culture, liquid DST & LPA (2010-2013)**

*2009- MDR diagnosed (from PMDT sites) by conventional culture*

The figure shows Culture and DST tests which are carried out increasingly years by years. In 2013, 3,974 liquid culture tests, 443 liquid DST and 2,633 LPA tests were done in NTRL (Yangon) and UMTBL (Mandalay). From these tests, total 881 MDR cases could be notified in 2013, and, of which 667 MDR-TB cases received second-line anti-TB treatment during 2013.

**Table 9. Results of liquid culture (MGIT) in 2013**

Quarter	No. of Culture(+)	No. of Culture(-)	No. of Contaminated	Total
1st Q	137	533	121	791
2nd Q	240	708	127	1,075
3rd Q	240	697	121	1,058
4th Q	204	761	85	1,050
<b>Total</b>	<b>821</b>	<b>2,699</b>	<b>454</b>	<b>3,974</b>

Table 10. Among Liquid Culture (+)ve; Results of Liquid DST, 2013

Quarter	All sensitive	Mono-resistant	Poly-resistant but not MDR-TB	MDR-TB	Total
1st Q	24	8	11	60	103
2nd Q	22	7	10	51	90
3rd Q	59	18	11	77	165
4th Q	22	10	7	46	85
<b>Total</b>	<b>127</b>	<b>43</b>	<b>39</b>	<b>234</b>	<b>443</b>

Table 11. Line Probe Assay, 2013

Quarter	All sensitive	Resistant			NTM (TUB(-)ve)	Total
		IR	R	I		
1st Q	97	341	33	17	30	518
2nd Q	120	417	65	41	23	666
3rd Q	185	451	69	60	39	804
4th Q	100	390	62	63	30	645
<b>Total</b>	<b>502</b>	<b>1,599</b>	<b>229</b>	<b>181</b>	<b>122</b>	<b>2,633</b>

Table 12. Conventional Culture and DST Results, 2013

Quarter	All sensitive	Mono-resistant	Poly-resistant but not MDR-TB	MDR-TB	Total
1 <sup>st</sup> Q	143	11	9	121	284
2 <sup>nd</sup> Q	32	4	5	124	165
3 <sup>rd</sup> Q	29	11	4	74	118
4 <sup>th</sup> Q	6	1	3	75	85
<b>Total</b>	<b>210</b>	<b>27</b>	<b>21</b>	<b>394</b>	<b>652</b>

**GeneXPert MTB/RIF Testing Result (2013)****Age & Sex Distribution of tested patients**

Male		Female		Total
< 15 years	> 15 years	< 15 years	> 15 years	
329	8,948	264	4,705	14,246

**Test Results with previous history of TB**

		New	Retreatment	Unknown	Total
<b>Sputum Microscopy</b>	AFB (+)	649	2,262	32	2,943
	AFB (-)	4,854	6,260	136	11,250
	Not done	24	29	0	53
<b>XPert MTB/RIF</b>	Negative	3,923	4,863	109	8,895
	TB with NO Rif-resistance	1,330	2,067	38	3,435
	TB with Rif-resistance	196	1,473	20	1,689
	TB with Rif-Indeterminate	78	148	1	227

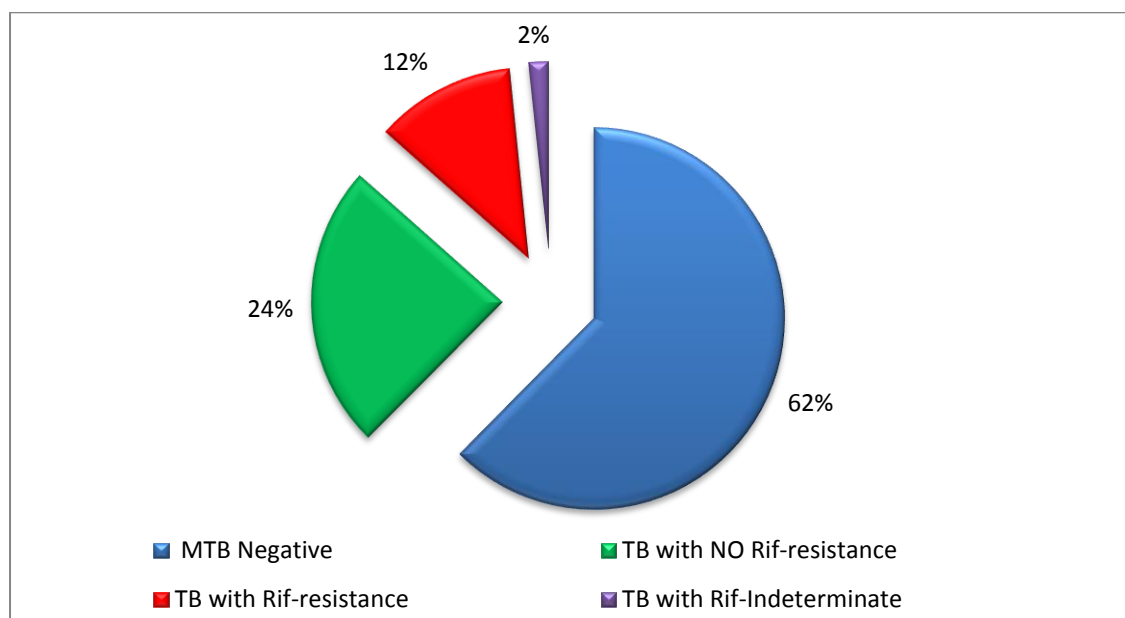
**Test results with HIV status**

		HIV (+)	HIV (-)	Unknown	Total
<b>Sputum Microscopy</b>	AFB (+)	300	497	2,146	2,943
	AFB (-)	2,356	1,320	7,574	11,250
	Not done	6	7	40	53
<b>XPert MTB/RIF</b>	Negative	1,910	948	6,037	8,895
	TB with NO Rif-resistance	595	566	2,274	3,435
	TB with Rif-resistance	107	283	1,299	1,689
	TB with Rif-Indeterminate	50	27	150	227

**GeneXPert versus Sputum Microscopy**

	GeneXPert (+)	GeneXPert (-)	Total
<b>Microscopy AFB (+)</b>	2,838	105	2,943
<b>Microscopy AFB (-)</b>	2,483	8,767	11,250
<b>Microscopy AFB (Not done)</b>	30	23	53



**Figure: 7 GeneXPert MTB/RIF Testing Result (2013)**

Total 14,246 presumptive TB cases were tested with GeneXpert in 2013. Of them, 38% (5,351/14,246) were MTB detected cases and 24% (3,435/ 14,246) were MTB with No Rifampicin Resistance and 12% (1689/14,246) were Rifampicin Resistance cases. Among MTB detected cases (5351), 32% (1689/5351) were MTB with Rif-resistant cases.

### Case detection

NTP routinely conducts passive case finding at all townships but introduces several accelerated case finding activities these years to improve TB case detection. And, new TB definitions of World Health Organization were adopted in Myanmar in late 2013. The word “TB suspect” was replaced with “presumptive TB”. WHO describes presumptive TB as “: a patient who presents with symptoms or signs suggestive of TB”.

Most of the TB laboratories (public and private) used Z-N microscopy; however, Fluorescent microscopy was used in Region/State/District/high workload township TB laboratories. TB case detection was done not only by sputum microscopy but also by Chest X-ray (CXR). CXR facility is available in all Region/State TB centres except Chin and Kayah States. Portable Digital Xray machines were available at Yangon, Mandalay and Sagaing Regions as well as Rakhine and Shan (Taunggyi) States for mobile team activities.

TB case finding was promoted by Accelerated Case Finding (ACF) activities such as mobile teams, sputum collection points in hard to reach areas and contact tracing. The mobile teams were led by region/state TB officers or District TB team leaders and the team also included X-ray technicians, Laboratory technicians and respective Basic Health Staffs

(BHS) led by Township Medical Officer (TMO). The local authorities, community members as well as local NGOs such as MMCWA and MWAFF members also aided in these mobile team activities. Each mobile team visit lasts for 3-5 days. Since 2011, these activities were mainly supported by the GF. In Yangon and Mandalay regions, JICA (MIDCP) also supported for such activities.

At each mobile team visit, the people were firstly screened clinically, then by Chest X-ray (CXR) and sputum microscopy. The people with TB symptoms mainly cough more than 2 weeks and those who had TB contact history were primarily examined. However, other illnesses were also examined, provided treatment and referred to secondary or tertiary hospitals if necessary.

The following table shows mobile team activities conducted over the whole country during 2013. Forty-five missions in 33 townships and 22 missions in 20 prisons were carried out with GF and 1 mission each in Yangon and Mandalay region by JICA (MIDCP). Altogether 1,568 TB cases (all forms) including 428 smear positive TB cases could be detected and provided anti-TB treatment. The contribution of mobile team activities to nationwide case finding was 1.1% (1,568/142,162).

**Table 13. Mobiles Team Activities in 2013**

No. of Townships/ prisons	No. of mobile team missions	No. of smear positive cases	No. of TB cases (All forms)	Funding source
33 townships	45	358	1,162	GF
20 prisons	22	61	369	GF
2 townships	2	9	37	JICA
<b>Total</b>	<b>69</b>	<b>428</b>	<b>1,568</b>	

To improve TB case finding, not only the mobile team activities, but also contact tracing, Sputum Collection Centre (SCC) activities and Community Based TB Care (CBTC) activities could also be carried out in 2013 with the support of GF.

The sputum collection centres were kept through rotatory system among existing rural health centres (RHCs) in each selected township. In 2013, 60 townships were selected for this activity. The BHSs from each RHC conducted sputum collection from potential TB patients, sending specimens to township TB laboratory through messenger, providing anti-TB treatment prescribed by TMO to respective patient if TB is detected. They are also responsible for recording and reporting. This activity lasts for 2-3 weeks in each RHC, then, moved to another RHC. The GF supported advocacy and training for this activity as well as

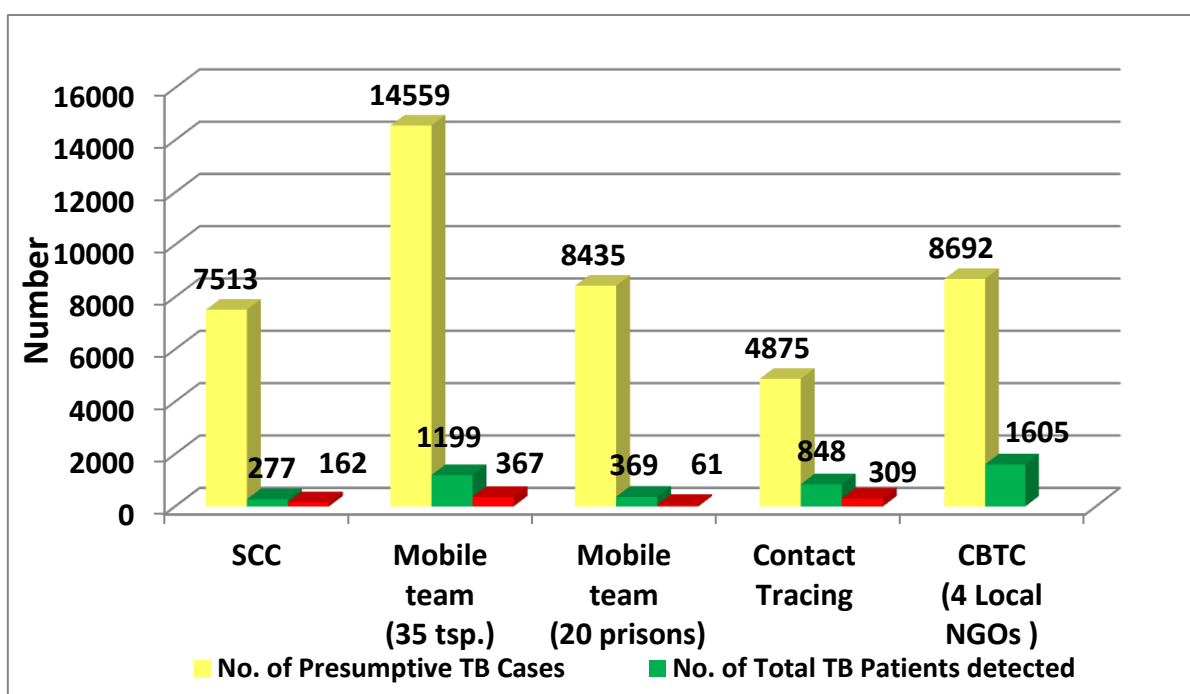
transportation cost for sputum specimens and recording/reporting forms. In 2013, 277 TB patients could be detected from these sputum collection centres.

Contact tracing activity was also conducted by BHSs in each township. This activity was done in 319 townships and GF provided transportation cost for BHS and recording/reporting forms. The contacts/family members of smear positive TB patients and childhood TB cases are traced primarily. Approximately 850 TB patients including 309 smear positive TB cases could be detected and treated through contact tracing activity in 2013.

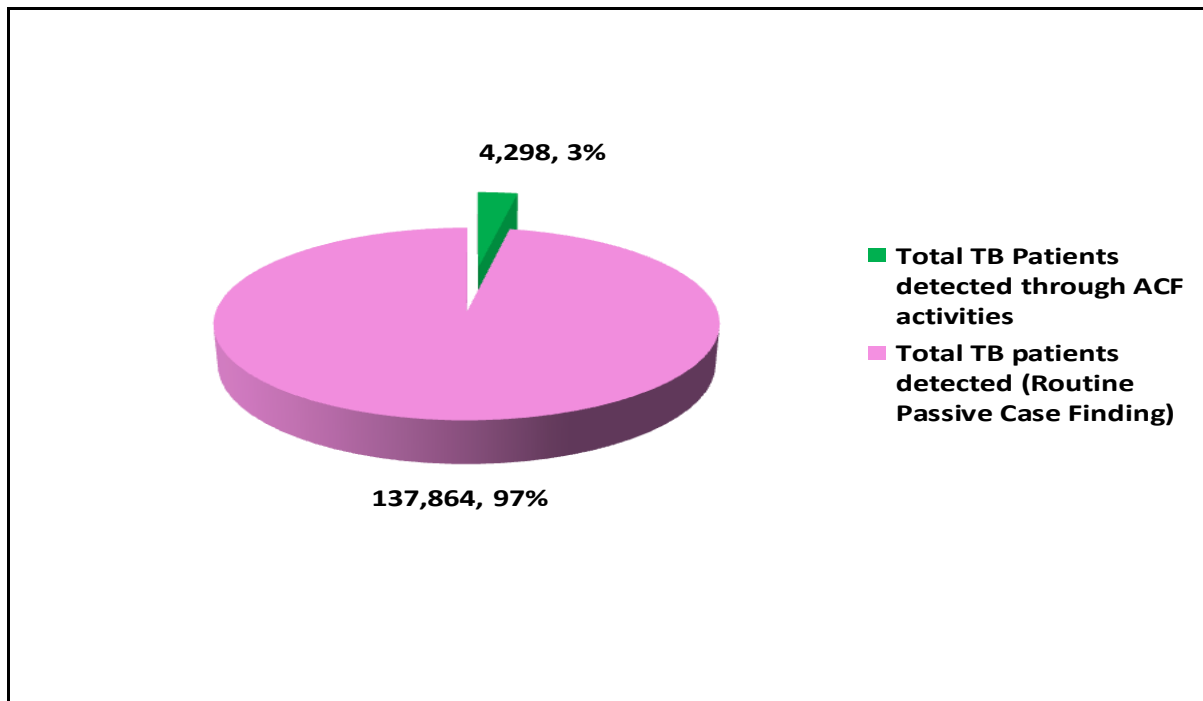
Community Based TB Care activity (CBTC) was carried out by both INGOs and local NGOs. Local NGOs conducting this activity were MMCWA, MWAF, MRCS and MHAA. (MMCWA- Myanmar Maternal and Child Welfare Association, MWAF- Myanmar Women Affairs Federation, MRCS- Myanmar Red Cross Society and MHAA- Myanmar Health Assistant Association). The advocacy and training for this CBTC activity; recording/reporting forms; monitoring and supervision as well as evaluation activities were supported by GF. Through the efforts of volunteers from these 4 local NGOs, about 1600 TB cases could be detected in 2013. The detail results of CBTC activity by INGOs and above local NGOs will be described under the topic of “Empower people with TB and communities through partnership”.

By using these innovative methods, approximately 45,000 people were screened for TB. Among them, nearly 4,300 TB cases (all forms) including 899 sputum smear positive TB cases could be detected early and provided anti-TB treatment all over the country. Contribution of TB case detection by these methods was 3% (4298/142162) in 2013.

**Figure: 8 Accelerated case finding activities in 2013**



**Figure: 9 Proportion of TB case detection (Accelerated Case Finding and Passive Case Finding) (2013)**



#### **4.1.3 Provide standardized treatment with supervision, and patient support**

NTP has utilized FDC to improve compliance of TB patients in Myanmar since 2004 and patient kits to promote drug management since 2010. Guideline for Management of Childhood TB was revised and updated as Rapid Advice from WHO and altogether 17 refresher trainings on childhood TB management were conducted at State and Regional levels.

Directly Observed Treatment (DOT) was provided in a patient-friendly manner by a variety of treatment providers suitable to local conditions. Decentralization of Anti-TB drugs was also strengthened. Township Medical Officers (TMO) and TB coordinators of DOTS townships took all the responsibilities of TB control activities. For each and every patient, there was a DOT provider. DOT providers were selected either from local BHS or trained Voluntary Health Workers or members of Non-Governmental Organization (NGOs), especially MMCWA, MAAF, MRCS or family members of TB patients.

NGOs also supported NTP with provision of appropriate patient education, including information regarding the regimen, duration and treatment adherence as well as patient support in some townships.

#### **4.1.4 *Effective drug supply and management***

Provision of quality assured uninterrupted supply of Anti-TB drugs to every registered TB patients is essential to achieve treatment success rate targets of at least 85%. Delay supply for both first-line and second-line Anti-TB drugs would cause unfavorable outcome such as spread of MDR-TB, XDR-TB and resulting in increased death due to TB. However, it can be prevented by effective drug supply and management.

Drugs, laboratory supplies and equipment for National Tuberculosis Programme are mainly supplied by Government, GDF, GF, UNITAID and WHO. Government's contribution to anti-TB drug budget is increasing and it was 40% in 2013.

NTP supplies drugs and laboratory supplies and equipment in quarterly manner. Central medical store in Yangon distributes Anti-TB drugs to Upper and Lower Myanmar stores based on consumption of drugs and requirement for buffer stocks. Upper Myanmar Store distributes to nine Regions and States TB Centres (Mandalay, Magway, Shan(S), Shan(N), Shan(E), Kayah, Chin, Kachin and Sagaing). Lower Myanmar Store distributes to seven Region and State TB centres (Yangon, Ayeyarwaddy, Bago, Mon, Kayin, Rakhine and Taninthayi). Then, Regional and States TB Centres distribute drugs to townships level quarterly according to their case load of previous quarter and buffer stock. At township level, TMO distribute monthly to RHC level. Drugs transportation cost was provided by GF in 2013. Laboratory supplies, reagents and equipment were also distributed from Regional and State TB Centres to DOTS townships in this way.

NTP also supplies drugs to partners on quarterly by receiving their quarterly reports. PSI collects drugs from Lower Myanmar Store and distributes to their PPM clinics. MSF-Holland collects drugs either from Regional and State level or township level where they are implementing.

SOP for drug and supplies management was already distributed up to township level and refresher trainings were also given once a year.

The drugs received from all sources are kept at the central TB store to be distributed to Regions and States through lower and upper Myanmar TB store.

#### **4.1.5 *Monitoring, Supervision and Evaluation***

Monitoring and Evaluation system was strengthened as it is important to measure both progress with programme implementation and impact of intervention, to reach the MDGs goal.

## **Recording and Reporting**

NTP used standardized recording and reporting format at all levels. In late 2013, NTP developed new TB definitions according to WHO guideline and revised existing recording and reporting forms of NTP. Trainings were given at all Regions and States for revised recording and reporting framework to utilize new recording and reporting forms in 2014.

The reports from basic DOTS units were sent to Townships, then to Region/State level. At Region/State level, these reports were checked, verified and finally put on excel worksheet, compiled and sent to central NTP. All the implementing partners also provided required reports to NTP central and respective region/state TB centres.

At central level, all the reports received were verified, computerized, and after evaluation of these data, appropriate clarification and feedbacks were given to respective region or state. The performance and impact were also assessed at central using long term trends on case finding by notified age and sex distribution of patients.

The capacity and skill for proper data management and information management system was improved by providing trainings at all level every year. The NTP provided adequate standardized recording and reporting forms to ensure timely reporting of all care providers delivering TB care according to the Stop TB Strategy.

### **4.1.5.1 Supervision**

Supervision and monitoring was carried out regularly at all level of the Programme. All regions and states were supervised at least once a year by national level staff. Regional and State level TB officers as well as team leaders and National Technical Officers did supervisory visits to district/township level health facilities.

Laboratory consultants supervised Region and State TB laboratories at least once a year. Senior TB Laboratory Supervisors (STLS) also went to township laboratories for supervision once a year, but if indication such as major error at the township, supervision was done again to these townships.

Supervisory visits by NTP staff to townships implementing TB/HIV collaborative activities were done once a year and to MDR TB townships were done every quarter. NTP also went supervision visits townships implementing PPM activities as well as to PPM hospitals. The detail supervision visits at all levels are as shown in table.

**Table 14. Supervisory visits down to grass root level in 2013**

Level of supervision		No. of townships visited
Central to	Region/State/District TB Centres and TB/HIV, MDR-TB townships	33
	TB/HIV townships	6
	Border townships	3
	PPM hospitals	17
Region and State to townships		235
Microbiologists supervision		6
NTOs supervision		235
STLS supervision		126
CBTBC supervision		71

**4.1.5.2 Evaluation**

Annual evaluation meetings with stakeholders are carried out at national level, followed by regular planning and budgeting meetings. Inter-departmental coordination and collaboration meeting for programme management was conducted every year.

Biannual evaluation meetings at regional and state levels and quarterly evaluation meetings at township level with all implementing partners provide information and support for programme management. Quarterly cohort review meetings are also held at low performance townships to assess the TB control activities, to find out the problems and to give possible solutions.

**National Annual TB Evaluation Meeting, 2013**

National annual TB evaluation meeting was held at Mingalar Thiri Hotel, Naypyitaw on 8<sup>th</sup> to 9<sup>th</sup> May 2014. This meeting was funded by Ministry of Health, Myanmar and Global Fund to fight against AIDS, TB and Malaria.

The objectives of conducting annual evaluation meeting were

- i) To evaluate fulfillment of recommendations of previous annual evaluation (2012)
- ii) To evaluate strength and weakness of TB control activities in Region/State and townships during 2013
- iii) To know the situation of TB control activities by implementing partner (NGOs, INGOs)
- iv) To set future plan for TB control



**Figure:10 The Deputy Director-General (Public Health) delivering the opening speech in National Annual TB Evaluation Meeting (2013)**

The opening speech was delivered by Dr. Win Htay Aung, Deputy Director-General, (Public Health). He mentioned about the history of NTP and achievement/trend in Myanmar. He pointed out that TB incidence and mortality rate were reduced in Myanmar with the effort of NTP and implementing partners. To achieve the MDG targets, active case finding activities would be needed to find out missing cases about 100,000. And collaborative and cooperative activities of all implementing partners are to be continued for the success of TB control program. He also mentioned the increasing budget allocation by the government for health as well as for NTP. Finally, all participants were welcomed to discuss, to suggest and to provide opinions to be able to strengthen the programme performance.

Dr. Si Thu Aung, Deputy Director, National Tuberculosis Programme, presented the accomplishment of recommendations of 2012 annual evaluation meeting, objectives of NTP, targets, strategies and activities, human resource situation, NTP's achievement including partners' contribution in 2013, challenges and future plan of NTP.

Firstly, he presented accomplishment of recommendations of 2012 annual evaluation meeting. Regarding the integrated township health plan, 3MDG supported Coordinated Township Health Plan (CTHP) meeting on 5-6 May 2014, to include TB/Disease control activities in CTHP. For establishment of the electronic database & monitoring system on PMDT linking with laboratory data, 2 Data Assistants were assigned by WHO in Yangon and Mandalay starting computerized case based recording for MDR TB. However, there was human resource limitation especially for monitoring and evaluation of TB control activities.

To improve the Data Quality Assurance of the reports on CBTC, the supervisory visits and evaluation meetings were added in the GF (NFM) activities to improve CBTC activities. Much attention is needed to be provided by Region and State supervisors to get the CBTC reports in time. Regarding childhood TB management recommendation, the workshop on childhood TB management was conducted with the technical assistance of WHO on 19<sup>th</sup>-20<sup>th</sup> August, 2013. Professors of Chest Medicine, Professors of Pediatrics



Medicine and Sr. Consultant Pediatricians attended the workshop and shared their experiences, contributed their opinions and suggestions for childhood TB management in Myanmar.

Relating to infection control measures, proposals for renovation and new infrastructures construction are needed to be put up to Department of Health (DOH) through NTP by Region/State Health Directors and TB Officers. However, NTP did not receive any proposal from regional or state health departments. To fill up the vacant posts and to upgrade the TB teams in border areas such as (Tachileik, Muse, Kawthaung, Myawaddy, Tamu & Maungdaw), NTP has already put up the proposal to DOH for 2 times. Therefore, DOH appointed, Dr. Kan Oo Aung for Tachileik TB Team Leader post, replaced HA Team Leader for Kawthaung, and transferred back TB coordinator Doctor to Myawaddy. NTP also requested to assign one TB specialist in Kalay especially for PMDT project.

Regarding patient support and BHS support for MDR-TB management, it will be increased in 2014 for both patient support and BHS support, and also nutrition support may be provided by World Food Programme in 2014. The revision of TB/HIV guideline was done in December 2013 together with NAP, NTP and WHO. However, it is needed to finalize because of some changes occurred in TB case definitions due to introduction of GeneXpert. The last recommendation from 2012 annual evaluation was to develop laboratory strengthening plan and mobilize necessary resources which was accomplished with the 5% France Initiative support of France Government. Five year Laboratory expansion plan could also be developed and presented to TSG.

The Program Manager also stressed the important vacancies in NTP and achievement in 2013. Then, he presented about TB/HIV collaborative activities, TB/HIV sentinel surveillance result, and MDR-TB management and 2011 MDR-TB cohort report. After that he described about EQA report, Budget, Global Fund activities in regions and states. Finally he presented challenges of NTP.

After that, region/state TB officers and representatives from implementing partners presented their TB control activities, achievements, challenges and future plan. Participants were invited for discussion after the presentations.

Based on the presentation facts and discussion points, the **recommendations for the coming year** were established as follows:

1. Fill up vacant posts at all levels and particularly:
  - Kayah and Shan (Kengtong) State TB Officers
  - 3 microbiologists
  - 10 Medical Officer team leaders

- Full team led by Medical Officer at 5 border townships (Muse, Kalay, Kawthaung, Tachileik and Myawady )
  - 5 Health Assistant team leaders
  - 58 grade II laboratory technicians
2. Conduct a comprehensive TB epidemiological analysis prior to the joint review to take place in December 2014
  3. Ensure regular stakeholder meetings at State/Regional and district/township levels
  4. Ensure implementation of the new TB recording and reporting system by all partners and nationwide (M & E subcommittee –NTP focal persons + R/S TB officers + WHO + partners)
  5. Promote analysis of reports and action taking at local level before sending to higher level
  6. Ensure reports are sent timely by all implementing partners (including active case-finding activities and TB/HIV activities)
  7. Strengthen TB control activities in special populations including urban poor, migrants, displaced people, mine workers, prisoners, diabetics and in border areas
  8. Promote special attention to TB control in Chin State and Northern Sagaing Region, Special Regions, Kayah State and other areas with low TB case detection
  9. Ensure comprehensive diagnosis of childhood TB through bacteriological, clinical, pathological and radiological examination to reduce over-diagnosis
  10. Increase to number of private GPs involved in PPM (MMA and PSI)
  11. Promote operational research:
    - Develop a prioritized operational research agenda
    - Document experiences in active case-finding, MDR-TB and community-based TB care activities and expand the most successful models
  12. Maximize the use of Xpert MTB/RIF and ensure wide dissemination of new diagnostic algorithms
  13. Ensure maximum enrolment of MDR-TB patients and initiate second-line drug procurement timely
  14. Expand community involvement in MDR-TB care
  15. Promote universal PICT of TB patients and among presumptive TB individuals that belong to high HIV risk groups and ensure CPT and ART accessibility for TB/HIV patients
  16. Strengthen integration between TB and other programmes in particular HIV, malaria, MCH, HSS, targeting cross cutting interventions (training, supplies, human resources etc.)

## Regional and State TB evaluation meetings

Annual Regional and State level TB evaluation meetings were carried out at all Regions and States. The activities were conducted with the support of Global Fund, and bi-annual Regional TB evaluation meetings in Yangon and Mandalay Regions as well as township quarterly evaluation meetings at 10 low performance townships of Yangon and Mandalay Regions were carried out with the support of JICA (MIDCP). Some townships conducted township quarterly TB evaluation meetings unfunded.

Cohort review meetings were also conducted at 30 low performance townships with the support of Global Fund. Conducting quarterly evaluation meetings at the township level was also a kind of productive activity. Health Assistants had to present about their RHCs concerning TB control achievement in that quarter and TMOs reset up the guidelines according to their needs. After one year when improvement was observed, NTP changed giving the resources to other low performance townships. However, previous townships would continue the meeting unfunded.

**Table 15. TB Annual Evaluation meetings at Regional/State level (2013)**

Regional/State level	Date	No. of participants
Kachin State	31.10.2013	29
Kayah State	26.12.2013	21
Shan State (Taunggyi)	20.12.2013	40
Shan State (Kengtong)	30.6.2013	23
Shan State (Lashio)	11.12.2013	36
Mon State	24.4.2013	24
Kayin State	28.4.2013	17
Chin State	10.12.2013	24
Rakhine State	12.5.2014	44
Mandalay Region	27-28.12.2013	60
Yangon Region	3-4.7.2013	150
	3-5.2.2014	150
Sagaing Region	18.11.2013	38
Magway Region	27.12.2013	34
Bago Region	23.12.2013	60
Ayeyarwaddy Region	27.12.2013	53
Taninthayi Region	28.4.2014	28

## **4.2 Addressing TB/HIV, MDR-TB and other challenges**

### ***4.2.1 TB/HIV collaborative activities***

National TB-HIV coordinating body was built up in 2005 and reformed in 2012. Current activities were planned for 2011-2015. TB/HIV collaborative activities were initiated in 7 townships since 2005. The project gradually expanded every year and there were 28 townships in 2013. Therefore, all 330 townships are planned to implement TB/HIV collaborative activities in 2016.

In 2013, including data from implementing partners, out of 39,016 registered TB patients, 43% (16,882/39,016) had their HIV status recorded. Of which 32% (5,413/ 16,882) were HIV positive. Total 13.6% (2,296/5,413) of HIV positive TB cases received cotrimoxazole prophylaxis therapy and 23.6% (3,987/5,413) received ART in 2013.

**Table 16. TB/HIV collaborative activities (2013)**

Sr No	Region/State	Township	Registered TB patients		HIV test recorded		HIV Positive		CPT received		ART received	
			< 15 years	≥ 15 years	< 15 years	≥ 15 years	< 15 years	≥ 15 years	< 15 years	≥ 15 years	< 15 years	≥ 15 years
1	Mandalay	Aungmyaetharzan	133	474	0	440	2	81	2	74	0	15
2	Mandalay	Chanayetharzan	83	293	1	265	2	44	2	44	1	9
3	Mandalay	Maharaungmyae	95	443	2	420	2	78	2	78	1	16
4	Mandalay	Chanmyatharzi	110	470	1	469	1	86	1	86	0	5
5	Mandalay	Pyigyitagon	112	344	0	326	0	60	0	60	0	9
6	Mandalay	Patheingyi	114	280	0	276	0	49	0	49	0	14
7	Mandalay	Amarapura	27	293	6	288	1	56	1	56	1	16
8	Kachin	Myitkyina	659	1566	51	1259	35	531	30	464	29	355
9	Shan (S)	Taunggyi	164	523	6	493	6	81	5	77	5	69
10	Shan (N)	Lashio	388	1288	29	1100	22	427	20	406	13	288
11	Magway	Pakokku	177	652	4	612	3	67	1	23	0	12
12	Sagaing	Monywa	66	406	3	346	2	34	2	31	2	25
13	Ayeyawady	whole region	3505	9766	139	1416	19	299	7	147	4	23
14	Magway	Magway	133	729	7	567	5	57	5	57	1	11
15	Shan (E)	Tachileik	124	278	7	199	7	24	3	14	3	13
16	Mon	Mawlamyine	252	898	7	675	7	93	7	93	0	0
17	Bago (W)	Pyay	460	593	37	499	6	110	6	97	0	6
18	Tanintharyi	Dawei	259	350	0	245	0	4	0	8	0	1

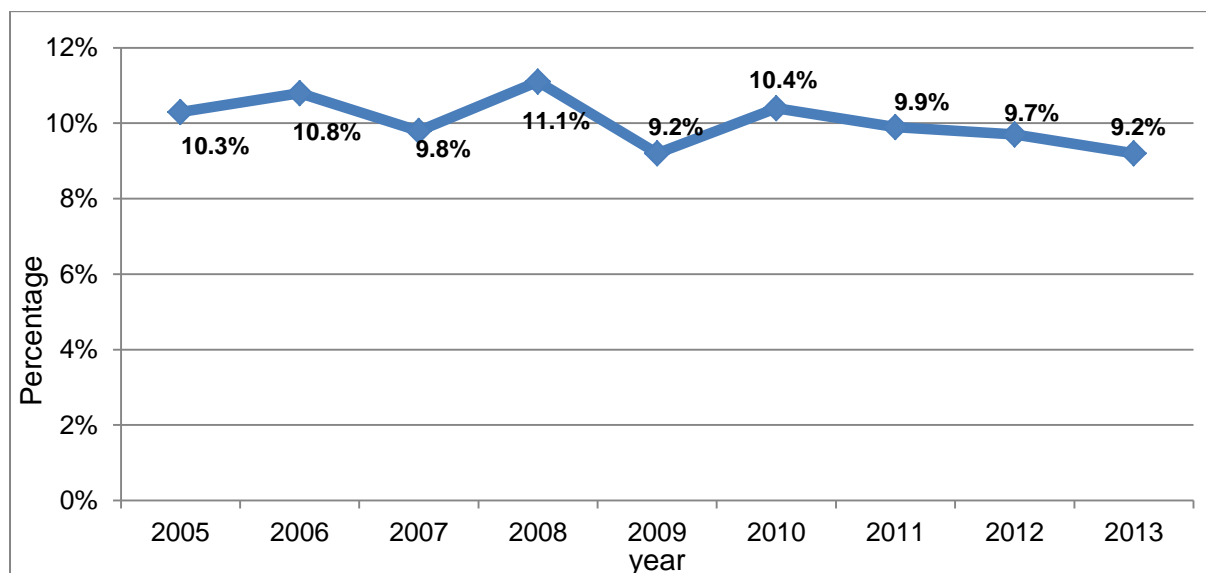
19	Kachin	Banmaw	466	441	12	262	12	191	12	158	10	109
20	Kayin	Hpa-an	224	1159	0	77	0	13	0	10	0	0
21	Tanintharyi	Myeik	575	947	0	553	1	29	0	6	0	0
22	Bago (E)	Bago	413	1013	6	572	3	68	0	29	0	27
23	Mandalay	Pyinmana	76	414	6	292	4	40	4	40	0	5
24	Yangon	Thanlyin	65	756	0	314	0	19	0	0	0	0
25	Yangon	North Okkalapa	48	769	0	586	0	36	0	0	0	0
26	Shan (E)	Kyaington	69	236	0	157	0	35	0	30	0	19
27	Shan (S)	Kalaw	47	239	2	157	2	24	2	24	2	20
28	Yangon	Mingalardon	39	858	0	476	0	36	0	0	0	0
29	Mandalay	Meikhtila (UNION)	145	428	0	313	0	26	1	9	1	11
30	Mandalay	Myingyan (UNION)	125	401	1	345	0	17		13	0	8
31	MSF-H	All ART Project Sites				2556		2556				2482
32	MDM	Yangon & Kachin										95
33	MSF-CH	Yangon & Dawei										251
		Total		<b>39016</b>		<b>16882</b>		<b>5413</b>		<b>2296</b>		<b>3987</b>

### HIV Sentinel Surveillance (HSS)

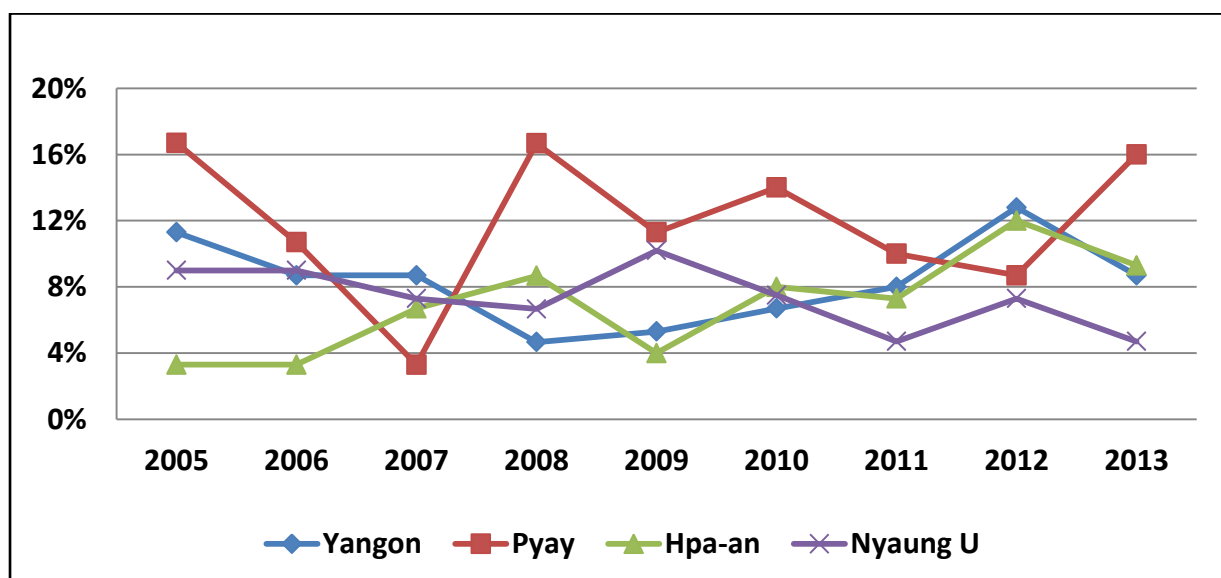
Routine HIV Sentinel Surveillance was conducted by NAP. With the collaboration with NAP, it started to include new TB patients in 2005 at 5 sentinel sites, and expanded to 10 sites each in 2006, 2007 & 2008, then to 15 sites in 2009, 20 sites in 2010 & 2011, 25 sites in 2012 and 28 sites in 2013. However, one expanded township, Kawthaung, has reported with wrong format, so this site was not included in analysis of this year.

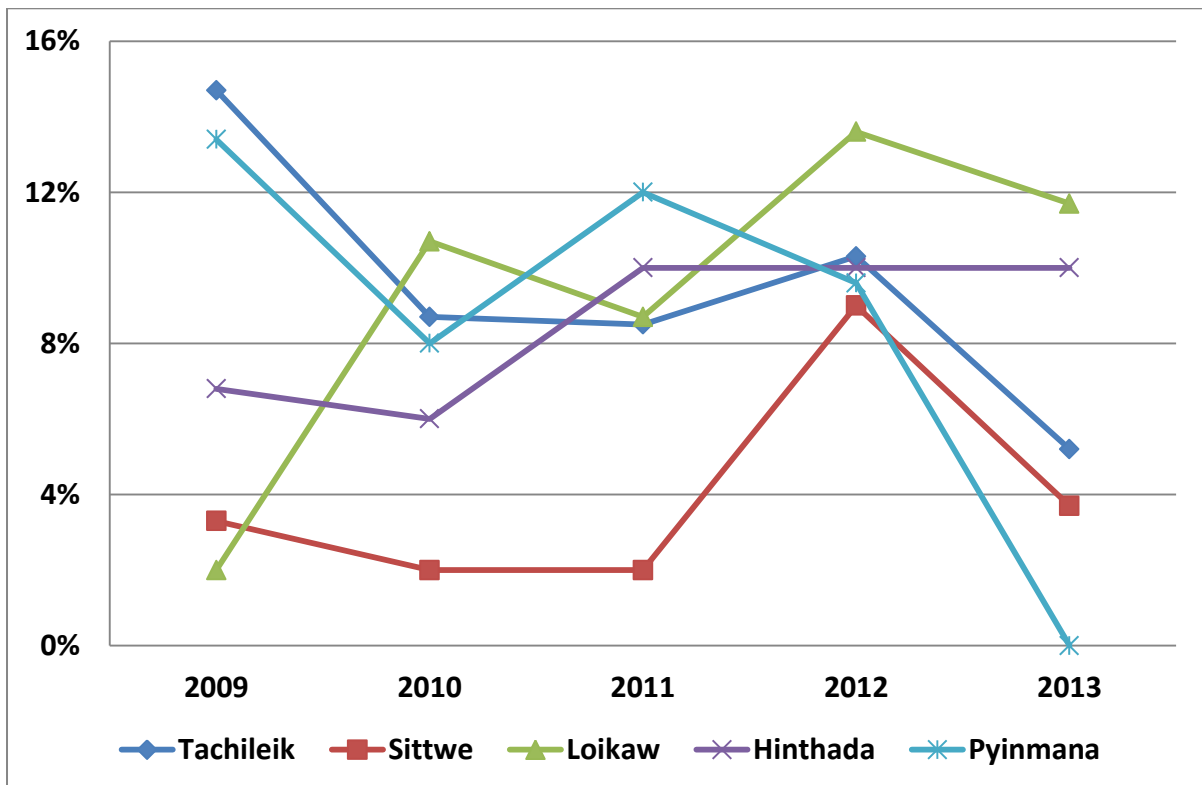
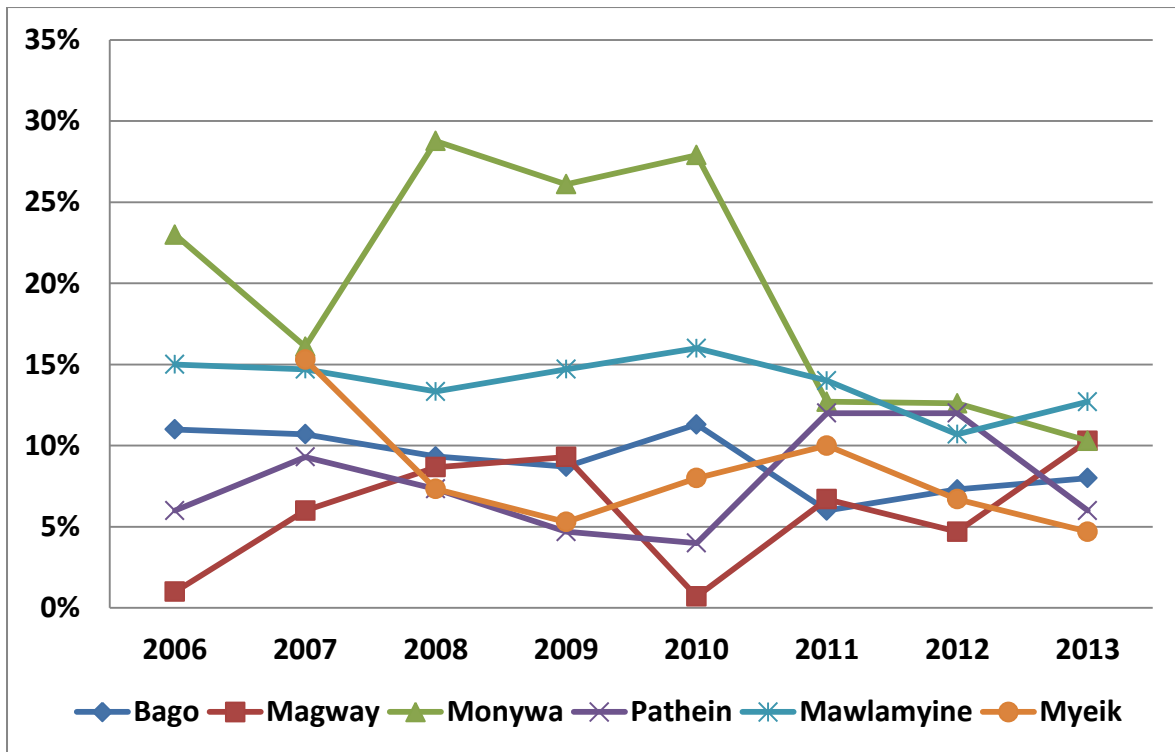
According to the results from 2013 survey, overall HIV prevalence among new TB patients decreased to 9.2% in 2013 from 9.7% in 2012.

**Figure 11. Trend of HIV prevalence among new TB patients (2005-2013)**



**Figure 12 HIV prevalence among TB patients by sites (2005-2013)**







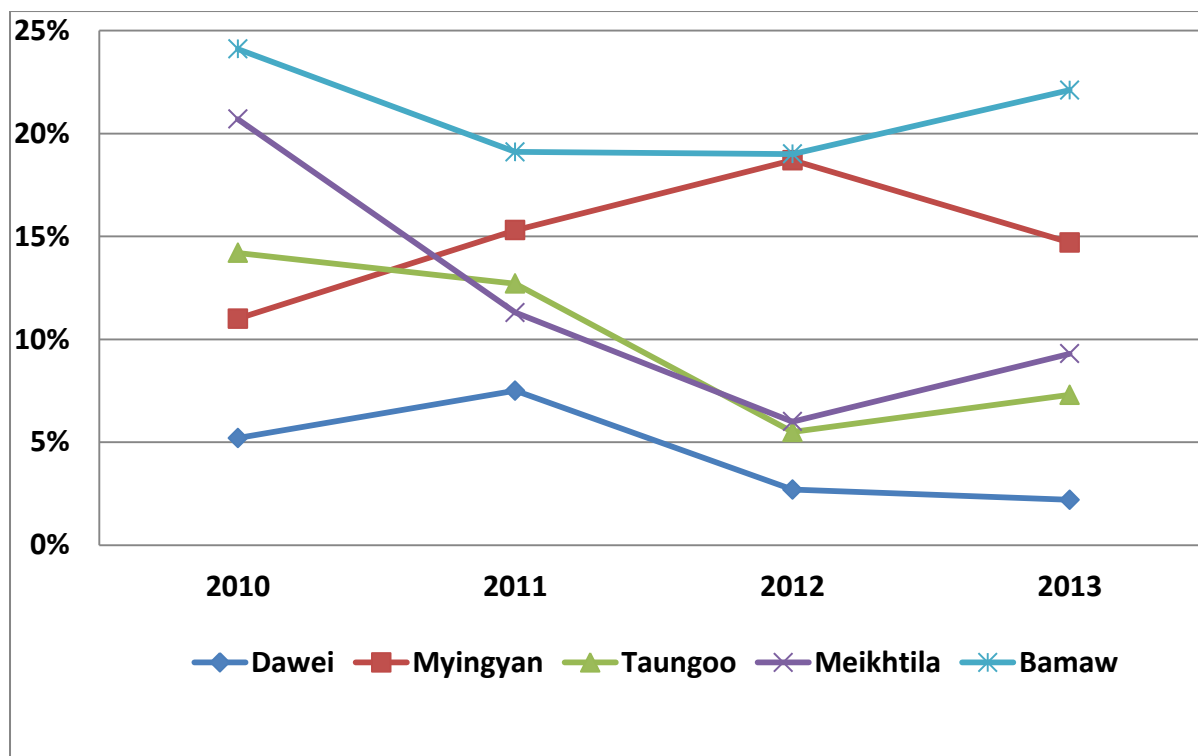


Table 17. HIV prevalence among new TB patients, sentinel surveillance (2005- 2013)

No.	Sentinel sites	2005	2006	2007	2008	2009	2010	2011	2012	2013
1	Yangon	11.30%	8.70%	8.70%	4.67%	5.3%	6.7%	8%	12.8%	8.7%
2	Pyay	16.70%	10.70%	3.30%	16.67%	11.3%	14.0%	10%	8.7%	16.0%
3	Bago		11%	10.70%	9.33%	8.7%	11.3%	6%	7.3%	8.0%
4	Hpa-an	3.30%	3.30%	6.70%	8.67%	4%	8.0%	7.3%	12%	9.3%
5	Nyaung U	9%	9%	7.30%	6.67%	10.2%	7.5%	4.7%	7.3%	4.7%
6	Magway		1%	6%	8.67%	9.3%	0.7%	6.7%	4.7%	10.3%
7	Monywa		23%	16.10%	28.77%	26.1%	27.9%	12.7%	12.6%	10.3%
8	Myeik			15.30%	7.33%	5.3%	8.0%	10%	6.7%	4.7%
9	Patheingyi		6%	9.30%	7.33%	4.7%	4.0%	12%	12%	6.0%
10	Mawlamyine		15%	14.70%	13.33%	14.7%	16.0%	14%	10.7%	12.7%
11	Tachileik					14.7%	8.7%	8.5%	10.3%	5.2%
12	Sittway					3.3%	2.0%	2%	9%	3.7%
13	Loikaw					2%	10.7%	8.7%	13.6%	11.7%
14	Hinthada					6.8%	6.0%	10%	10%	10.0%
15	Pyinmana					13.4%	8.0%	12%	9.6%	0.0%
16	Dawei						5.2%	7.5%	2.7%	2.2%

17	Myingyan						11.0%	15.3%	18.7%	14.7%
18	Taungoo						14.2%	12.7%	5.5%	7.3%
19	Meikhtila						20.7%	11.3%	6%	9.3%
20	Bahmo						24.1%	19.1%	19%	22.1%
21	Myaungmya								7.3%	8.0%
22	Shwebo								8.7%	17.3%
23	Pyinoolwin								10.4%	28.9%
24	Kyaingtong								10.6%	28.9%
25	Maubin								11.3%	13.8%
26	Myawaddy									10.4%
27	Kalay									3.3%
<b>Total</b>		<b>10.30%</b>	<b>10.90%</b>	<b>9.80%</b>	<b>11.10%</b>	<b>9.15%</b>	<b>10.4%</b>	<b>9.9%</b>	<b>9.7%</b>	<b>9.2%</b>

### **Isoniazid Preventive Therapy (IPT)**

Isoniazid Preventive Therapy (IPT) project was started in June, 2009 at 9 townships. Then, it was expanded to 15 townships in 2012 and 28 townships in 2013. The “Workshop on implement IPT in Myanmar” was conducted at Yangon in 2013. Recommendations from this workshop were as follow:

1. IPT workshop strongly recommends to adopt IPT in PLHIV as a national policy in reducing the burden of TB in PLHIV
2. IPT should be implemented by NAP, by incorporation into NAP guidelines for opportunistic infection care and prevention
3. Scale-up of IPT should occur at all townships with NAP team and international NGOs with HIV clinical services incorporating into TB/HIV collaborative township activities
4. To provide logistic drugs, commodities, forms, registers & reports to STD Teams & partners through TB Teams
5. Programmatic M & E should be done by collaborating NAP and NTP together
6. To conduct Operational Research for effectiveness of IPT and outcome of breakthrough TB by NAP/NTP
7. To conduct TB/HIV coordinating meeting at central, state/regional & township level
8. To adapt 6 months IPT to reach nation-wide coverage by 2016 & make detailed scale up plan

#### **4.2.2 Prevention and care of MDR TB**

Programmatic Management of Drug Resistant TB (PMDT) is one of the integral parts of Five Year National Strategic Plan (2011-2015). National Drug Resistant TB committee

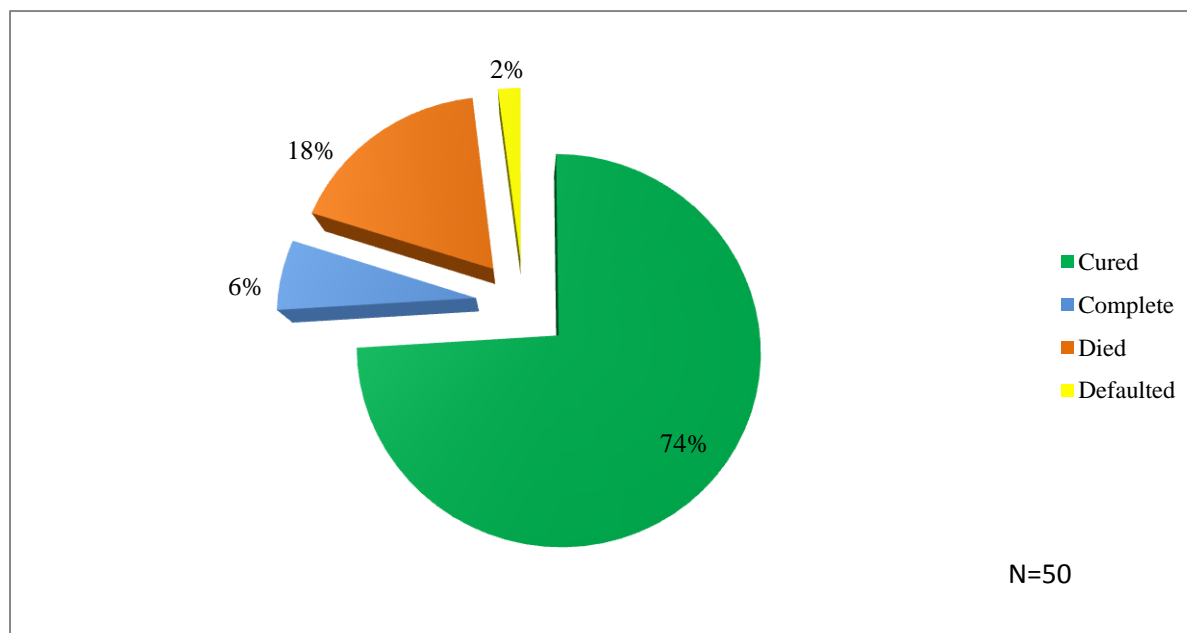
was formed in 2006. National guideline for Programmatic Management of MDR-TB was published in 2013. DOTS-Plus Pilot Project was started in 2009, and concluded in 2011. MDR-TB pilot project could cover 10 townships (5 townships each from Yangon & Mandalay Regions). A total of 309 MDR-TB cases were enrolled.

Total 492 patients could be put on treatment in 2011-2012 from 22 townships (11 townships each from Yangon & Mandalay Regions). PMDT project is applying community based model for uncomplicated cases. In 2013, 53 townships were expanded for treating MDR-TB patients and total 1,468 MDR-TB cases were already enrolled for second line anti TB treatment at the end of 2013. The PMDT project will be scaled up to 108 townships in 2015 including all townships in Yangon region.

Government commitment for Second-line anti-TB drugs were increasing and total 1800 cases will be supported by government budget from 2014-2016. With the scaling up of MDR-TB, MDR-TB treatment will be available to 10,155 MDR-TB patients in 2014-2016.

The first cohort report from PMDT was shown in the following figure. It showed satisfactory performance with cure rate of 74% (37/50).

**Figure 13. MDR-TB Treatment Outcomes (Cohort of 4<sup>th</sup> Quarter 2011)**



#### **4.2.3 Address prisoners, refugees and other high-risk groups and special situations**

Looking inside prisons, TB is a major cause of sickness and death along with HIV, malnutrition, mental illness etc. Thus, NTP initiated TB control activities among prisoners in collaboration with Ministry of Home Affairs (MoHA). Coordinating mechanism for TB in prisons was developed in 2012 between Ministry of Health and Ministry of Home Affairs

(MoHA). As an output, referral/transfer mechanism for continuation of treatment after release and policies and operational guidelines for TB screening among prisoners were developed. Then, NTP started implementation at 3 prisons in 2012. In 2013, the number of prisons increased up to 20 prisons including Kawthaung, Sittwe, Kyaukphyu, Pathein, Myanungmya, Pyay, Taungoo, Tharyawaddy, Myingyan, Mandalay Central Jail, Insein, Myitkyina, Thayet, Mawlamyaing, Taungyi, Lashio, Monywa, Shwebo and Kalay from 7 regions and 6 states with GF support.

In 6 border townships (Tachileik, Myawaddy, Kawthaung, Maungdaw, Tamu and Muse), NTP strengthened community based DOTS under Global Fund. Meeting for proposal development of cross border health activities was held in Bangkok, Thailand. Most of the work on this issue was related to the equity to access TB treatment and care for all migrating people. This activity was also intended to overcome geographical, social and cultural barriers to health care. Special interventions were done in hard to reach areas where there were low case detection rates.

### **Childhood TB**

National Guideline for the management of TB in children was developed in 2007, published and disseminated. However, it was revised in 2012 according to rapid advice of WHO. Not only the development of guideline, but also the trainings for region/state TB officers as well as district TB team leaders and TMOs were provided.

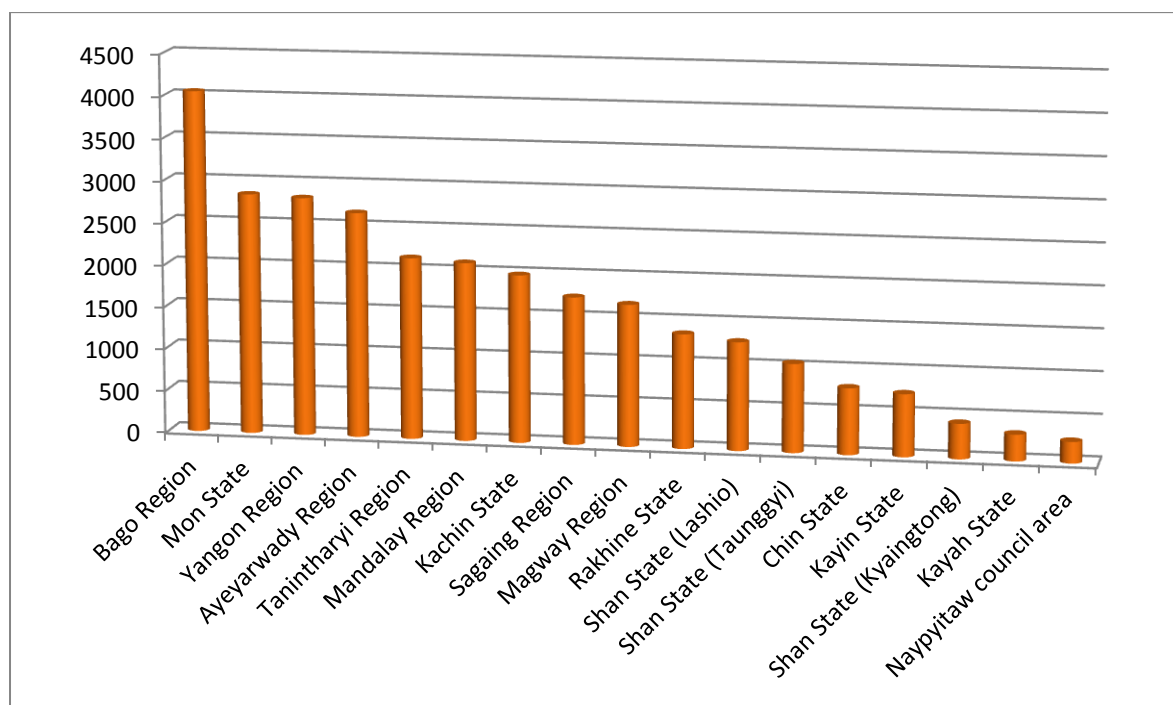
In 2013, 25% (35,813/142,162) were childhood TB cases including new smear positive, primary complex, hilar lymph adenopathy and TB meningitis. Childhood TB cases decreased in 2013 compared to 2012 (28.5%).

“Workshop on Childhood TB Management” was conducted in August 2013. Professor Steven Graham (Consultant Paediatrician) and Dr. Dan Engleman (Paediatrician) from WHO attended this workshop and discussed the Childhood TB Management with Myanmar Consultant Paediatricians and NTP persons. The following recommendations were set up for Childhood TB Management in Myanmar.

1. To review & revise the existing Childhood TB Management Guideline with suggestions from this workshop in coordination with the pediatricians
2. To disseminate the revised guidelines to health care providers giving anti-TB treatment including the pediatric society
3. To advocate the radiologists regarding the CXR opinions to diagnose the childhood TB
4. To conduct the trainings of pediatric CXR on TB for health care providers treating the children with TB
5. To start IPT at accessible area according to the guideline

6. To monitor the adverse effects on high dose regimen
7. To strengthen the contact tracing of child TB cases

**Figure 14. Childhood TB cases detected by Regions & States (2013)**



The figure showed Childhood TB cases detected by regions and states in 2013. The highest number of childhood TB cases was found in Bago region, followed by Mon State, Yangon, Ayeyarwaddy, Tanintharyi and Mandalay regions.

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

Infection control measures were installed at health centres where MDR-TB and TB/HIV patients were taking treatment. N95 respirators, gowns and caps were provided for health staff with the support of GF in 2013.

With the support of GF, NTP could strengthen infection control measures by installation of stand fans, exhaust fans, running water and wash basins, renovation of TB laboratories, patient wards in TB hospitals, outpatient departments and staff rooms.

#### **4.3 Contribute to health system strengthening**

Myanmar Country Coordinating Mechanism (M-CCM) was established in October 2008 to oversee the national response related to the three diseases of HIV, TB and Malaria

as well as related health issues such as maternal, newborn and child health and other health-related Millennium Development Goals. This Governance Manual sets out the guidelines for the M-CCM members to oversee the implementation of national responses for AIDS, TB and Malaria and related health issues including the implementation of the Global Fund grants in Myanmar. It was changed to Myanmar Health Sector Coordinating Committee (MHSCC) in 2013.

The Technical and Strategy Group (TSG) TB coordinates with all implementing partners in monitoring and evaluation of programme implementation every quarter. The National TB programme coordinated with MHSCC, is contributing to health system development in a number of ways.

### **Capacity Building**

Human resource development is essential in achievement of NTP. Trainings and workshops were held within country for all levels of staffs and also sent to international workshops and training according to their area. In 2013, NTP organized several trainings in relating with human resource development.

**Table 18. Training activities in 2013**

<b>Training Topic</b>	<b>No. of trainings</b>
Installation and TOT training of Gene Xpert	5
Training on 'Management of TB at District level	1
Training for BHS on 'Management of TB for health facility staff'	20
Training on Cohort review meeting	30
Training on TB Counselling	20
Training on sputum microscopy for lab. Technicians	2
Training on FLM for lab. Technicians	3
Orientation training on TB control updates for NTP staff	3
Training of NTP/NAP staff from TB/HIV expanded townships	1
TOT training for MDR-TB management	5
Training for MDR-TB management at township level	1
<b>PPM</b>	
Advocacy and Training on PPM DOTS for new expanded hospitals	2
<b>Community based TB Care</b>	
Training for new project area of MRCS volunteer	4
Training for MRCS volunteers in existing implementing townships	4
<b>Total</b>	<b>101</b>

Table 19. Training activities of NTP in 2013 with GF Funding

<b>Training Activities of National Tuberculosis Programme (2013)</b>								
No.	Region/State	Township	Training Period		No. of Attendees			Funding
			From	To	Male	Female	Total	Source
<b>Training for BHS on "Management of TB for health facility staff"</b>								
1	Shan(S)	Moenai	22.1.13	24.1.13	5	24	29	GF
2	Rakhine	Buthitaung	4.3.13	6.3.13	10	30	40	GF
3	Rakhine	Rathedaung	23.4.13	25.4.13			56	GF
4	Mandalay	Tharzi	11.3.13	13.3.13	10	45	55	GF
5	Mandalay	Kyaukpadaung	20.3.13	23.3.13	8	32	40	GF
6	Shan(N)	Namatu	5.3.13	7.3.13	8	28	36	GF
7	Shan(S)	Linkhay	14.5.13	16.5.13	5	25	30	GF
8	Yangon	Hmawbi	29.5.13	31.5.13	9	51	60	GF
9	Ayeyarwaddy	Pathein	23.6.13	25.6.13	8	32	40	GF
10	Mon	Thanbyuzayat	15.5.13	17.5.13	4	36	40	GF
11	Shan(East)	Kyaington	14.8.13	16.8.13	2	32	34	GF
12	Sagaing	Kyunhla	21.8.13	23.8.13	3	28	31	GF
13	Sagaing	Banmauk	28.10.13	30.10.13	7	29	36	GF
14	Kayin	Kawkareik	28.10.13	30.10.13	4	36	40	GF
15	Magway	Salin	30.4.13	2.3.13	9	22	31	GF
16	Kachin	Shwegu	2.12.13	5.12.13	4	34	38	GF
17	Yangon	Thanlyin	20.11.13	22.11.13	10	46	56	GF
18	Bago	Nyaunglaybin	17.12.13	19.12.13		40	40	GF
19	Bago	Padaung	28.12.13	30.12.13	7	33	40	GF
20	Magway	Saydoktaya	3.3.13	5.5.13	4	27	31	GF
<b>Sub Total</b>							<b>803</b>	
<b>Training on Cohort review meeting</b>								
1	Yangon	Shwe pyi thar	24.1.13		5	36	41	GF
2	Ayeyarwaddy	Einme	24.1.13		9	41	50	GF
3	Rakhine	Pauktaw	9.2.13		11	40	51	GF
4	Yangon	N Okkalapa	23.1.13		3	32	35	GF
5	Ayeyarwaddy	Pyarpon	29.1.13		9	41	50	GF
6	Shan(S)	Taunggyi	18.2.13		7	53	60	GF
7	Shan(S)	Linkhay	4.2.13		4	35	39	GF
8	Magway	Pwintphyu	5.3.13		6	44	50	GF
9	Tanintharyi	Myeik	18.2.13		9	49	58	GF
10	Ayeyarwaddy	Bogalay	30.1.13		4	46	50	GF
11	Shan(N)	Tanyan	8.2.13				27	GF
12	Mon	Mudon	28.1.13		10	48	58	GF
13	Mandalay	Saintgaing	5.2.13		8	42	50	GF
14	Mandalay	Sintgu	30.1.13		14	35	49	GF
15	Mandalay	Mahlaing	25.1.13		9	51	60	GF
16	Sagaing	Wattlat	14.2.13		8	42	50	GF
17	Sagaing	Palae	15.2.13		14	36	50	GF
18	Shan (Taunggyi)	Meiyai	7.2.13				28	GF

19	Yangon	Dala	18.2.13				60	GF
20	Bago	Oaktwin	7.2.13		6	22	28	GF
21	Bago	Thegone	19.2.13		8	32	40	GF
22	Ayeyarwaddy	Laymyetnar	21.1.13		5	45	50	GF
23	Kayin	Hlaingbwe	31.1.13				30	GF
24	Chin	Mindat	28.3.13		2	28	30	GF
25	Kachin	Mogaung	27.2.13		13	38	51	GF
26	Kachin	Mohnyin	25.2.13		11	39	50	GF
27	Magway	Seikphyu	11.2.13		9	35	44	GF
28	Yangon	Kyeemyindaing	19.2.13				50	GF
29	Tanintharyi	Thayetchaung					35	
30	Shan (Kengtong)	Mongping	6.2.13				26	GF
<b>Sub Total</b>							1322	
<b>Training on "Management of TB at District Level"</b>								
1	Naypyitaw	Naypyitaw	24.6.2013	28.6.2013	10	19	29	GF
<b>Sub Total</b>								
<b>TOT Training for MDR TB Management</b>								
1	Yangon	Aungsan	6.8.13	8.8.13			20	GF
2	Mandalay	Patheingyi	9.9.13	11.9.13	1	20	21	GF
3	Shan (South)	Taunggyi	9.9.13	11.9.13	5	15	20	GF
4	Shan (South)	Taunggyi	12.9.13	14.9.13	9	11	20	GF
							<b>81</b>	
<b>Training on TB Counseling</b>								
1	Ayeyarwaddy	Dedaeyae	20.2.13	22.2.13			45	GF
2	Rakhine	Pauktaw	6.2.13	8.2.13	6	27	33	GF
3	Shan(S)	Namsan	5.3.13	7.3.13	6	24	30	GF
4	Mandalay	Windwin	18.3.13	20.3.13	4	26	30	GF
5	Kachin	Waimaw	14.3.13	16.3.13	2	28	30	GF
6	Yangon	Latha	9.4.13	11.4.13		30	30	GF
7	Shan(N)	Meiyai	9.3.13	11.3.13			30	GF
8	Shan(S)	Hopone	30.5.13	1.6.13	4	36	40	GF
9	Rakhine	Minbyar	28.5.13	30.5.13			46	GF
10	Bago	Phyu	14.5.13	16.5.13	4	26	30	GF
11	Mon	Kyeikmayaw	28.5.13	30.5.13	5	35	40	GF
12	Bago	Oakpho	28.8.13	30.8.13	10	25	35	GF
13	Sagaing	Shwebo	24.6.13	26.6.13	7	23	30	GF
14	Mandalay	Yamaethin	9.10.13	10.10.13	9	45	54	GF
15	Magway	Chauk	24.4.13	25.4.13	10	21	31	GF
16	Magway	Seikphyu	27.4.13	29.4.13	6	25	31	GF
17	Shan(East)	Techileike	18.9.13		8	34	42	GF
18	Yangon	North Okkalapa	20.8.13	22.8.13	4	26	30	GF
19	Kayin	Hlaingbwe	9.12.13	12.12.13	7	33	40	
20	Sagaing	Tamu	6.12.12	8.12.13	5	25	30	
<b>Sub Total</b>								



<b>Orientation training on TB control update for NTP staff</b>								
1	Naypyitaw		27.9.13	28.9.13			58	GF
2	Shan(East)	Kyaington	16.10.13	17.10.13	1	8	9	
3	Tanintharyi	Dawei	8.6.13	9.6.13			9	
<b>Sub Total</b>								
<b>Training on FLM for Lab. Technicians</b>								
1	Yangon	Insein	25.2.13	1.3.13	8	9	17	GF
2	Yangon	Insein	24.6.13	28.6.13	8	12	20	
3	Mandalay	Patheingyi	24.6.13	28.6.13	10	16	26	
<b>Sub Total</b>								
<b>Training on sputum microscopy for Lab. Technicians</b>								
1	Mandalay	Patheingyi	10.6.13	14.6.13	8	15	23	GF
2	Yangon	Insein	10.6.13	14.6.13	3	13	16	GF
<b>Sub Total</b>								
<b>Training of NTP/NAP staff on TB/HIV from currently implementing townships</b>								
1	Mandalay	Mandalay	1.9.2013	3.9.2013	6	30	36	GF
<b>Sub Total</b>							<b>36</b>	
<b>Training of NTP/NAP staff on TB/HIV from newly expanded townships</b>								
1	Yangon	Latha	18.9.2013	20.9.2013	6	16	22	GF
<b>Sub Total</b>							<b>22</b>	
<b>Training for new project area of MRCS volunteer</b>								
1	Magway	Yesagyo	4.2.2013	6.2.2013	10	13	20	GF
2	Sagaing	Yinmarbin	3.3.2013	5.3.2013	8	12	20	GF
3	Sagaing	YeU	10.3.2013	12.3.2013	2	18	20	GF
4	Sagaing	Shwebo	20.3.2013	22.3.2013	13	7	20	GF
<b>Sub Total</b>							<b>80</b>	
<b>Training for MRCS volunteers in existing implementing townships</b>								
1	Sagaing	Depayin	19.8.2013		17	3	20	GF
2	Naypyitaw	Lewei	28.8.2013		5	13	18	GF
3	Mandalay	Pyawbwe	6.9.2013		10	10	20	GF
4	Mandalay	Saintgaing	17.9.2013		3	15	18	GF
<b>Sub Total</b>							<b>76</b>	
<b>Advocacy and Training on PPM DOTS for newly expanded hospitals</b>								
1	Yangon	Yangon Children Hospital	5.2.2013	7.2.2013			20	GF
2	Yangon	Yankin Children Hospital	26.2.2013	28.2.2013			20	GF
3	Mandalay	550 bedded Children Hospital	6.2.2013	8.2.2013	1	19	20	GF
<b>Sub Total</b>							<b>60</b>	

Table 20. Training activities with other funding sources (2013)

No.	Region/State	Township	Training Period		No. of Attendees			Funding Source
			From	To	Male	Female	Total	
<b>Refresher Training course on TB Control</b>								
1	Naypyitaw	Naypyitaw	12.2.2013	15.2.2013	18	13	31	WHO
2	Naypyitaw	Naypyitaw	18.2.2013	20.2.2013	18	10	28	WHO
3	Naypyitaw	Naypyitaw	1.3.2013	3.3.2013	14	22	36	WHO
<b>Sub Total</b>							<b>95</b>	
<b>Training on Interviewer Skill for collection data of TB Mortality Survey</b>								
1	Yangon	Latha	11.3.2013	13.3.2013	4	20	24	WHO
<b>Sub Total</b>							<b>24</b>	
<b>Training on TB control for phamacists</b>								
1	Mandalay	Chanmyatharzi	16.5.2013	16.5.2013			34	JICA
2	Mandalay	Nahtogyi	14.5.2013	14.5.2013			66	JICA
3	Mandalay	Chanaytharzan	26.6.2013		15	43	58	JICA
<b>Sub Total</b>							<b>158</b>	
<b>Training on TB control for community health volunteers</b>								
1	Mandalay	Ngazun	13.5.2013	13.5.2013			45	JICA
<b>Sub Total</b>							<b>45</b>	
<b>Training for STLS on EQA</b>								
1	Yangon	Latha	20.6.2013	21.6.2013	13	15	28	JICA
<b>Sub Total</b>							<b>28</b>	
<b>Training on MDR TB for new expansion townships</b>								
1	Mandalay	Patheingyi	16.10.13	18.10.13	17	23	40	3 MDG
2	Yangon	Latha	22.10.13	24.10.13	10	19	29	3 MDG
3	Yangon	Latha	28.10.13	30.10.13	11	17	28	3 MDG
<b>Sub Total</b>							<b>97</b>	
<b>MDR TB training for Physicians, TMOs and team leaders</b>								
1	Yangon	Latha	18.12.13	20.12.13			51	3 MDG
<b>Sub Total</b>							<b>51</b>	
<b>Training for BHS on MDR TB management</b>								
1	Bago	Bago	2.12.13	3.12.13	1	34	35	3 MDG
2	Bago	Bago	4.12.13	5.12.13			35	3 MDG
3	Bago	Bago	6.12.13	7.12.13	12	23	35	3 MDG
4	Bago	Pyay	9.12.13	10.12.13	7	28	35	3 MDG
5	Bago	Pyay	11.12.13	12.12.13	10	25	35	3 MDG
6	Bago	Pyay	13.12.13	14.12.13	6	29	35	3 MDG
7	Yangon	Hlegu	23.12.13	24.12.13	5	25	30	3 MDG
8	Yangon	Hlegu	26.12.13	27.12.13	5	30	35	3 MDG
9	Yangon	Hlegu	30.12.13	20.12.13	5	32	37	3 MDG
10	Yangon	Latha	26.12.13	27.12.13	2	27	29	3 MDG
11	Yangon	Latha	29.12.13	30.12.13	4	32	36	3 MDG
12	Tanintharyi	Dawei	9.12.13	10.12.13	1	32	33	3 MDG
13	Tanintharyi	Dawei	11.12.13	12.12.13	5	23	28	3 MDG
<b>Sub Total</b>							<b>438</b>	

**Table 21. International Trainings, Meetings & Workshops attended by NTP staff**

No.	Name and Designation	Duration	Country	Attended training/ workshop/ meeting
1	Dr. Cho Cho San (AD, NTP Central) Dr. Win Naing (RO, Mon & Kayin States) Dr. Lwin Lwin Mon (Team leader, Myeik)	4.6.13 to 6.6.13	Thailand	Forum on International Migration and Health
2	Dr. Tin Maung Swe (RO, Magway) Dr. Aye Aye Thwe (MO, NTP Central)	5.6.13 to 6.6.13	Moroco	Meeting on Strategic and Technical for Tuberculosis Control
3	Dr. Thandar Lwin (DD, NTP Central)	22.3.13 to 29.3.13	Korea	Study Tour on Capacity Building at Department of Medical Research (Lower Myanmar) for Advanced New TB/MDR-TB Diagnosis
4	Dr. Thandar Lwin (DD, Disease control)	17.4.13 to 18.4.13	Indonesia	Workshop for prevention and control of 3 Diseases
5	Dr. Thandar Lwin (DD, Disease control)	23.9.13 to 27.9.13	Thailand	Regional Meeting of National TB Control Programme Managers and Partners
6	Dr. Thandar Lwin (DD, Disease control) Dr. Si Thu Aung (AD, NTP Central) Dr. Mar Mar Htay (RO, Ayeyarwaddy)	30.10.13 to 3.11.13	France	44 <sup>th</sup> Union World Conference on Lung Health
7	Dr. Ko Ko Htwe (MO, Mandalay NTP)	8.5.13 to 3.8.13	Japan	Training on Strengthening of Tuberculosis (TB) control towards MDGs and elimination
8	Dr. Khin Zaw Latt (Consultant Microbiologist, NTRL) Dr. Tin Tin Mar (Consultant Microbiologist, EQA Centre)	10.4.13 to 13.4.13	Vietnam	4 <sup>th</sup> Asia Pacific Region Conference of the International Union against Tuberculosis and Lung Diseases
9	Dr. Thin Lei Swe (Microbiologist, UMTB Laboratory, Mandalay) Dr. Win Win Nyunt (Microbiologist, NTRL, Yangon)	15.4.13 to 18.4.13	France	5 <sup>th</sup> Global Laboratory Initiative (GLI) partners Meeting for Advance in TB Diagnostic Services

10	Dr. Htay Lwin (RO, Tanintharyi Region)	29.4.13 to 11.5.13	Italy	Training on Stop TB Strategy for Managers and Consultants
11	Dr. Cho Cho San (AD, Central NTP) Dr. Aye Aye Thwe (MO, Central NTP)	8.10.13 to 10.10.13	Vietnam	Multi-Country Workshop for analysis of data from Anti-TB DRS
12	Dr. Si Thu Aung (AD, Central NTP) Dr. Aye Thein (RO, Sagaing Region)	24.6.13 to 27.6.13	Thailand	Regional meeting on MDR-TB

#### **4.4 Engaging all care providers**

##### **4.4.1 *Public-Public and Public-Private Mix (PPM) approaches***

There are many non-TB providers who could serve a large number of TB suspects and patients from both public and private sector. Public-Public and Public-Private Mix (PPM) approach strengthen TB prevention and control services in Myanmar.

##### **4.4.2 *Public-Public***

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; then expanded to Insein General Hospital, 1000-bedded Hospital (NayPyiTaw), Mingalardon Specialist Hospital, AungSan TB Hospital and Patheingyi TB Hospital. Public-Public Mix DOTS was initiated as a pilot phase, aiming to strengthen the TB control services between public hospitals and public TB centres.

PPM-DOTS hospitals run with four options:

**Option 1:** Diagnosis of TB cases + prescription of treatment regimen in hospital followed by referral to Health Centre 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 + starting Directly Observed Treatment (DOT) in hospital followed by referral to Health Centre during treatment

**Option 4:** Diagnosis of TB cases + providing full treatment (DOT) at hospital

Currently all hospitals are practicing both option 3 and 4. NTP and WHO conducted joint monitoring and supervisory visits regularly. In 2013, the number of PPM hospitals became increased to twenty-three.

In 2013, PPM-Hospitals contributed 1.6% to total new smear positive TB patients and 3.3% to total all forms of TB cases.

**Table 22. New Smear Positive TB Patients and All Forms of TB Patients of PPM DOTS Hospitals (2013)**

No.	Hospitals	New Smear Positive	Total TB cases
1	Aung San Hos:	45	237
2	Patheingyi Hos:	13	37
3	East YGH	13	121
4	Mingalardon Hos:	142	1290
5	No.1MBH (PyinOoLwin)	37	253
6	1000 bedded hospital (Naypyitaw)	77	303
7	Thingangyun Sanpya Hos:	7	80
8	Central Jail Mandalay	42	140
9	New YGH	29	101
10	West YGH	18	96
11	Tharketa HIV hospital	45	658
12	Insein general hospital	2	34
13	Htantabin TB hospital	11	80
14	Pathein General Hospital	44	296
15	No(1) MBH (Mandalay Nantwin)	3	47
16	300 bedded teaching hospital (Mdy)	32	156
17	North Okkalapa General Hospital	28	198
18	550 bedded child hospital (Mdy)	0	19
19	Hpa-an General Hospital	66	409
20	Myeik general hospital	20	90
21	Mawlamyine general hospital	12	37
22	Yangon Children Hospital	1	66

**Table 23. Outcome of new smear positive TB patients of PPM-DOTS Hospitals implementing Option 4 (2012 cohort)**

No.	Hospitals	Cured	TSR	Died	Failed	Defaulted	Transferred out
1	Aung San Hospital	33%	35%	23%	15%	10%	17%
2	Patheingyi Hospital	67%	79%	4%	8%	8%	0%
3	East YGH	75%	92%	8%	0%	0%	0%
4	Mingalardon Hospital	51%	54%	32%	5%	2%	7%
5	No.1MBH (PyinOoLwin)	62%	67%	4%	16%	2%	11%
6	1000 bedded hospital (Naypyitaw)	83%	92%	1%	1%	5%	0%
7	Thingangyun Sanpya Hospital	69%	69%	8%	23%	0%	0%
8	Central Jail Mandalay	82%	91%	0%	0%	0%	9%
9	New YGH	87%	87%	10%	0%	0%	3%
10	West YGH	53%	82%	0%	6%	12%	0%
11	Tharketa HIV hospital	60%	63%	13%	5%	15%	5%
12	Insein general hospital	80%	80%	20%	0%	0%	0%
13	Htantabin TB hospital	83%	92%	0%	0%	0%	8%
14	Pathein General Hospital	59%	67%	13%	0%	20%	0%
15	No(1) MBH (Mandalay Nantwin)	86%	100%	0%	0%	0%	0%
16	300 bedded teaching hospital (Mdy)	67%	87%	7%	0%	3%	3%
17	North Okkalapa General Hospital	59%	84%	0%	3%	0%	14%

Annual evaluation meeting for PPM-DOTS Hospitals is conducted every year. Annual evaluation meeting for PPM-DOTS Hospitals was conducted in December 2013 at Central Hotel, Yangon. The recommendations from 2013 meeting were as follows:

1. To conduct Training including Revised R&R/ refresher training for newly recruited staff and expanded PPM hospital staff (AMS, MO, Lab technician, pharmacist, social worker) (Central, Region)
2. To conduct Training including Revised R&R/ refresher training for newly recruited staff and expanded PPM hospital staff (AMS, MO, Lab technician, pharmacist, social worker) To conduct Training including Revised R&R/ refresher training for newly recruited staff and expanded PPM hospital staff (AMS, MO, Lab technician, pharmacist, social worker)

3. To reduce dropout rate for option 3 cases by appropriate ways. (MS, AMS, TB Coordinator)
4. To improve TB case finding among all OPD attendance and admitted inpatient case.

### Public-Private

Public-Private Mix (PPM) DOTS is implemented with MMA, PSI and JICA. Some Private Practitioners (PPs) use scheme (I) in which they educate about TB and refer TB suspects to TB centers.

**Table 24. Area coverage and activities of Implementing Partners**

Name of Local NGOs	Area Coverage and activities
<b>MMCWA</b>	Community based TB care at 10 townships in Mon State, 27 townships in Bago Region except Kyaukgyi township, expanded to 26 townships in Mandalay Region, 3 townships (Pyinmana, Tatkone & Iewei) in NayPyiTaw, 2 townships (Pha-an & Hlaingbwe) in Kayin State & one township (Twantay) in Yangon Region.
<b>MWAF</b>	Community based TB care at all 26 townships of Ayeyarwaddy Region, 9 townships in Shan (Kengtong) Region, 2 townships in Kayah Region, 16 in Shan (Lashio) State, 12 in Shan (Taunggyi) & 9 townships in Tanintharyi Region.
<b>MMA</b>	PPM-DOTS activities, mainly scheme I covering altogether 116 townships of which 29 townships were implementing scheme III. MMA was functioning with 1266 GPs for Scheme I and 190 GPs for Scheme III. 77 volunteers were trained & 67 actively participated.
<b>MRCS</b>	Multiplier training (Peer Education) for Red Cross Volunteers, comprehensive IEC Campaign, Defaulter Tracing, case detection and referral, home based care and support at 5 townships (Kungyangon, Kawhmu, Twantay, Thonegwa & Kyauktan) in Yangon Region, 2 townships (Lewei & Takone) in NayPyiTaw Council Area, 3 townships (Yamethin, Pyawbwe & Sintgaing) in Mandalay Region, 4 townships (Depeyin, Yinmarbin, Ye U, Shwebo) in Sagaing Region & 1 township (Yesagyo) in Magway Region.
<b>MHAA</b>	Myanmar Health Assistant Association (MHAA) worked to mobilize and empower the community to reduce the burden of TB at 3 townships (Meiktila, Thazi and Mahlaing) in Mandalay Region and 3 townships (Pakokku, Myaing and Seik Phyu) in Magway Region. In addition, MHAA worked for care and support for MDR-TB, supported by USAID at 2 townships (Hlaingtharya and Insein) in Yangon Region and 7 townships (Patheingyi, Chanaytharzan, Mahaaungmyay, Chanmyathazi, Pyigyitagon, Amarapura and Aungmyaythazan) in Mandalay Region.

Name of Bilateral agency	Area Coverage and activities
<b>JICA</b>	Supported TB control activities at 6 townships (South Dagon, Hlaing, Kyauktan, South Oakkalapa, Taikkyi & Twantay) in Yangon and 5 townships (Chanmyatharzi, Maharaungmyay, Nahtogyi, Ngazun & Pyinmana) in Mandalay Region.
Name of INGOs	Area Coverage and activities
<b>PSI</b>	TB diagnosis & treatment through Sun Quality Health Clinics (SQHC) at 197 townships by 934 Sun Quality Health Providers (SQHP), through active case finding by 1796 Sun Primary Health Providers (SPHP). TB-REACH project at 36 townships by 57 interpersonal communicators (IPC) and at 30 townships by 448 pharmacies. PSI also integrates TB/HIV services as well as performs ACSM activities.
<b>MSF- Holland</b>	Treatment of TB/MDR-TB and TB/ HIV patients at 3 townships (Hlaingtharyar, Insein & Tharketa) in Yangon Region, 5 townships (Myitkyina, Bahmo, Waingmaw, Moegaung, Pharkant) in Kachin State, 3 townships (Lashio, Muse, Mongshu) in Shan (Lashio) State & 3 townships (Sittwe, Butheetaung & Maungdaw) in Rakhine State. MSF-H is only partner of NTP for MDR-TB management. MDR-TB management in Yangon Region and Shan State (Lashio).
<b>MSF- Switzerland</b>	TB/HIV control at all townships of Tanintharyi Region, Dawei District (4 townships) for TB diagnosis and HIV testing.
<b>World Vision International</b>	Conduct case finding and provide nutritional support through volunteers in Hlaingthayar (Yangon Region), Loikaw (Kayah State), Thanphyuzayat (Mon State), Dewei, Myeik, Thayetchaung, Longlon & Kawthaung (Taninthayi Region).
<b>IUATLD</b>	Supported Integrated TB/HIV care at 7 Townships of Mandalay Region, Pakkoku township from Magway Region, Taunggyi township, Lashio township from Shan State, and then expanded to Myingyan and Meikhtilar townships in Mandalay Region, Monywa township in Sagaing Region, and Tharketa township in Yangon Region. IPT initiation in adult HIV positive patients' activity was also carried out in 7 townships of Mandalay Region.
<b>IOM</b>	Care and support to TB patients at 6 townships (Mawlamyaing, Mudon, Kyikmayaw, Thanphyuzayat, Ye & Belin) in Mon State and at one township ( Myawaddy) in Kayin State.
<b>Malteser</b>	Referral of TB patients & giving care to TB patients at Maungdaw & Buthidaung townships in northern Rakhine State.
<b>Pact Myanmar</b>	Community mobilization, behavior change communication and health education session at targeted villages of 3 townships (Pale, Htigyaint & Kawlin) in Sagaing Region & 1 townships (Magway) in Magway Region.



<b>AHRN</b>	Capacity building, training for health staff, provision of IEC materials and support to TB treatment for intravenous drug users (IDU) to reduce the incidence of TB, TB/Drug use related issues and TB/HIV co-infection among drug users at Lashio & Laukkai in Shan (Lashio) State, Pharkant, Waingmaw & Bahmaw townships in Kachin State.
<b>Cesvi</b>	Health education on TB at 90 villages of 5 townships (Kyaukme, Namtu, Mongmeik, Mabein and Hsipaw) townships of Shan (Lashio) State and one township (Madaya) in Mandalay Region for TB control by promoting case finding and referral by trained Voluntary Health Workers.
<b>MDM</b>	TB diagnosis, treatment provision and follow-up at Hlaing township of Yangon Region, and Myitkyina, Moegaung and Mohnyin townships of Kachin State.
<b>FHI360</b>	Provides technical assistance in close collaboration with NTP, building a patient-centered community driven model through implementing partners and capacity development for partners both technical and organizational in 38 PMDT townships for DR TB patients. Implementing partners are MMA covering 18 townships, 8 townships in Yangon (North Okkalapa, South Okkalapa, North Dagon, South Dagon, Insein, Shwepyithar, Tharketa, Thanlyin), 6 townships in Mandalay (Aungmyaytharzan, Chanmyatharzi, Chanaytharzan, Maharaungmyay, Kyaukse, Myeikhtila), 1 township each in Sagaing (Monywa), Magway (Pakokku), Shan State (Lashio) and Mon (Mawlamyaing), Pyi Gyi Khin covering 6 townships in Yangon (Mingalardon, Mayangone, Hlaing, North Dagon, Shwe Pyi Thar and North Okkalapa), Myanmar Health Assistant Association (MHAA) implementing 7 townships in Mandalay (Aungmyaytharzan, Chanayetharzan, Maharaungmyay, Patheingyi, Pyigyitagon, Amarapura and Chanmyatharzi) and 2 townships in Yangon (Insein and Hlaingtharyar) and Myanmar Business Coalition on AID (MBCA) implementing in Monywa Industrial Zone.
<b>Projeto</b>	Nutritional support to TB patients at Magway township.
<b>JATA</b>	Technical support.

Table 25. Contribution of MMA PPM-DOTS Scheme I (2013)

## Main Townships

No.	Name of townships (main)	No. of TB suspects referred for Dx	No. of feedback received	Smear (+) TB patients put on TB treatment		Smear (-) TB patients put on TB treatment			No. of Total TB	No. of Non TB
				Cat I	Cat II	Cat I	Cat II	Cat III		
1	Insein	211	210	59	2	50	3	3	118	92
2	North Dagon	99	99	33	3	17	0	1	54	45
3	South Dagon	237	206	52	9	21	6	15	103	103
4	North Okkalapa	119	115	20	4	17	12	2	55	60
5	South Okkalapa	124	124	31	1	42	0	5	79	45
6	Shwepyitar	49	49	9	2	5	0	3	19	30
7	Thanlyin	164	159	45	1	21	0	3	70	89
8	Thakata	131	128	32	6	19	1	3	61	67
9	Kyimyindine	188	188	45	1	28	0	7	81	107
10	Latha	28	25	10	1	6	0	0	17	8
11	Taikkyi	66	66	11	2	14	2	0	29	37
12	Hlaingtharya	146	114	68	8	1	0	36	113	1
13	Bago	241	216	30	5	74	10	24	143	73
14	Pyay	176	159	31	1	52	2	31	117	42
15	Mawlamyaing	100	100	21	4	16	1	5	47	53
16	Kyeikto	71	68	8	0	0	0	0	8	60
17	Hpa-an	226	209	71	1	112	0	8	192	17
18	Sittway	27	27	8	4	8	0	2	22	5
19	Patheingyi	132	130	23	3	31	3	29	89	41
20	Phyarpone	235	185	76	2	50	1	42	171	14
21	Aungmyay-tharzan	219	215	36	2	28	2	2	70	145

22	Chanayetharzan	59	59	15	0	6	0	0	21	38
23	Chanmyatharzi	51	51	8	0	2	1	0	11	40
24	Maha-aungmyay	127	127	29	1	18	1	0	49	78
25	Kyaukse	69	69	27	0	11	0	23	61	8
26	Myingyan	50	37	7	0	7	1	8	23	11
27	Meiktila	198	171	30	3	19	0	36	88	83
28	Pyinmana	136	117	23	0	4	0	1	28	89
29	Magway	64	64	15	0	17	1	8	41	23
30	Pakokku	136	136	16	0	38	6	17	77	59
31	Monywa	229	154	37	2	18	2	3	62	92
32	Lashio	62	62	11	4	20	2	13	50	12
33	Kyaukme	127	127	64	8	42	0	13	127	0
34	Muse	4	4	1	0	0	0	0	1	3
35	Taunggyi	113	97	14	1	2	1	19	37	60
36	Myitkyinar	101	88	4	2	18	4	34	62	26
<b>Total</b>		4515	4155	102 0	83	834	62	396	2396	1756

### Attached Townships

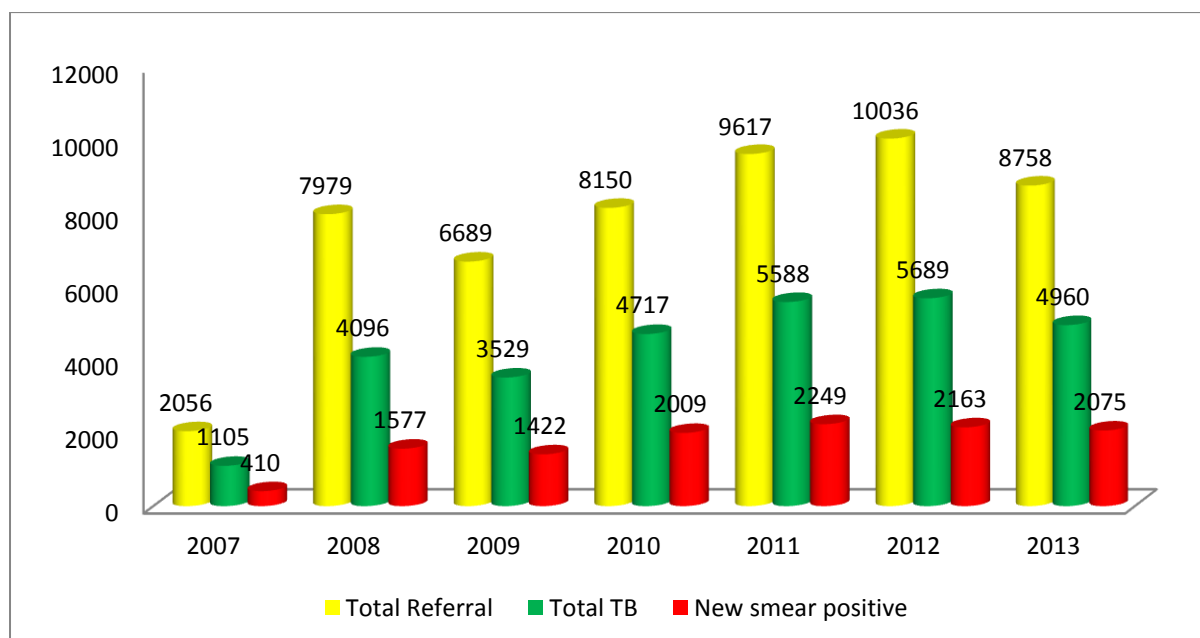
No.	Name of townships (attached)	No. of TB suspect referred for Dx	No. of feedback received	Smear (+) TB patients put on TB treatment		Smear (-)TB patients put on TB treatment			No. of Total TB	No. of Non-TB
				Cat I	Cat II	Cat I	Cat II	Cat III		
1	Mayangon	52	52	10	3	11	1	0	26	26
2	East Dagon	73	73	18	0	20	3	1	42	31
3	Dagon Seikkan	13	9	2	0	3	0	3	8	1
4	Thingangyun	112	112	51	9	39	6	6	111	1
5	Mingalardon	30	24	4	0	5	0	0	9	15
6	Kyauktan	31	31	6	1	5	0	4	16	15

7	Khayan	42	42	18	2	5	0	5	30	12
8	Tonekwa	22	20	9	0	2	0	0	11	9
9	Dawpon	71	70	23	4	13	1	0	41	29
10	Pazuntaung	18	18	5	1	5	1	2	14	4
11	Sanchaung	74	74	31	0	9	0	2	42	32
12	Ahlon	40	40	7	1	4	0	0	12	28
13	Kamaryut	32	32	21	0	6	0	0	27	5
14	Seikkyi- kanaungto	11	11	2	0	0	0	1	3	8
15	Lanmadaw	61	48	9	2	16	0	0	27	21
16	Pabedan	69	49	10	1	19	0	2	32	17
17	Kyauktada	25	22	1	1	9	1	0	12	10
18	Hlaing	154	135	51	6	23	2	12	94	41
19	Hmawbi	49	49	8	0	8	0	2	18	31
20	Hlegu	33	29	3	0	6	0	2	11	18
21	Botahtaung	51	31	14	1	10	1	2	28	3
22	Mingalar- taungnyunt	36	18	5	0	9	1	1	16	2
23	Bahan	67	47	10	1	10	2	0	23	24
24	Tarmwe	96	61	15	0	15	3	2	35	26
25	Dala	81	65	8	1	21	3	9	42	23
26	Twantay	81	60	8	0	9	0	6	23	37
27	Kungyangon	16	10	1	0	0	0	0	1	9
28	Kawhmu	22	20	3	1	4	0	2	10	10
29	Thanutpin	10	10	2	0	5	0	3	10	0
30	Waw	0	0	0	0	0	0	0	0	0
31	Paduang	89	89	25	4	37	2	15	83	6
32	Paukkaung	250	250	104	12	55	3	76	250	0
33	Shwetaung	89	89	39	0	4	0	1	44	45
34	Thayarwaddy	7	6	1	0	0	0	0	1	5
35	Lapatan	50	31	10	0	4	0	0	14	17
36	Minhla	82	66	7	1	5	0	2	15	51
37	Oakpho	0	0	0	0	0	0	0	0	0
38	Gyobingauk	4	3	0	0	0	0	0	0	3
39	Nattalin	8	5	2	0	0	0	0	2	3

40	Zigon	42	37	9	1	1	0	5	16	21
41	Paungde	72	49	11	0	0	0	0	11	38
42	Taungoo	2	2	1	0	0	0	0	1	1
43	DaikOo	142	140	58	8	20	9	32	127	13
44	Oaktwin	42	39	7	0	4	1	10	22	17
45	Phyu	264	247	10	2	32	1	188	233	14
46	Yedashe	57	44	18	1	8	1	1	29	15
47	Paung	7	7	4	0	0	0	3	7	0
48	Mudon	13	13	4	0	0	0	7	11	2
49	Kyeikmayaw	25	25	2	0	5	0	11	18	7
50	Hlaingbwe	136	136	47	5	5	1	75	133	3
51	Pauktaw	0	0	0	0	0	0	0	0	0
52	Kyauktaw	16	16	8	0	7	0	1	16	0
53	MraukU	5	5	5	0	0	0	0	5	0
54	Kangyidauk	91	91	44	2	40	0	3	89	2
55	Kyaiklatt	100	97	30	1	3	2	60	96	1
56	Bogalay	163	107	27	3	8	0	16	54	53
57	Maubin	53	53	19	0	3	1	3	26	27
58	Nyaungtone	0	0	0	0	0	0	0	0	0
59	Pantanaw	0	0	0	0	0	0	0	0	0
60	Kyaunggon	207	207	40	6	8	0	3	57	150
61	Myaungmya	101	101	27	0	18	0	1	46	55
62	Pyinoolwin	123	123	7	0	9	0	2	18	105
63	Amarapura	12	11	0	0	1	0	1	2	9
64	Patheingyi	29	29	3	0	4	0	2	9	20
65	Pyigyitagon	43	43	15	0	1	0	2	18	25
66	Myitthar	81	81	26	0	37	0	18	81	0
67	Sintgaing	74	74	21	3	25	1	24	76	0
68	Taungtar	2	1	0	0	1	0	0	1	0
69	Natogyi	30	29	12	0	13	0	3	28	1
70	Sagaing	18	17	3	3	5	0	2	13	4
71	Naypyitaw (Leiday)	8	8	3	0	0	1	1	5	3
72	Naypyitaw (Tatkone)	13	12	9	0	0	1	1	11	1

73	Wundwin	11	4	0	0	1	0	2	3	1
74	Mahlaing	3	3	1	0	0	0	2	3	0
75	Tharzi	20	9	0	0	0	0	9	9	0
76	Pyawbwe	40	36	14	0	0	0	15	29	7
77	Yamethin	131	115	22	3	21	1	25	72	43
78	Namkan	8	8	4	0	1	0	0	5	3
79	Hsipaw	1	1	1	0	0	0	0	1	0
80	Kalaw	0	0	0	0	0	0	0	0	0
81	Naungshwe	7	7	0	0	0	0	0	0	7
82	Pindaya	0	0	0	0	0	0	0	0	0
83	Pharkhant	0	0	0	0	0	0	0	0	0
<b>Attached Total</b>		4243	3828	1055	90	677	50	689	2564	1266
<b>Main total</b>		4515	4155	1020	83	834	62	396	2396	1756
<b>Grand Total</b>		8758	7983	2075	173	1511	112	1085	4960	3022

**Figure 15. TB Cases Notified by MMA PPM-DOTS Scheme I Program (2007-2013)**



MMA implement Scheme I activities at 119 townships that covers in 7 regions and 5 states. Presumptive TB cases referral, total TB cases and new smear positive cases were increased year by year. It was peak in 2012 and slightly decreased in 2013.

**Table 26. MMA Scheme III Contribution to New Smear Positive Cases & Total TB Cases (2009-2013)**

Years	TB suspected cases screened	Cat I (+)	Cat I (Neg. & EP)	Cat II	Cat III	Total
2009	2,329	558	469	114	654	1,795
2010	3,778	655	677	109	812	2,253
2011	4,902	799	900	149	1148	2,996
2012	4,204	872	904	141	1189	3,106
2013	4,580	1061	1051	163	710	2,985

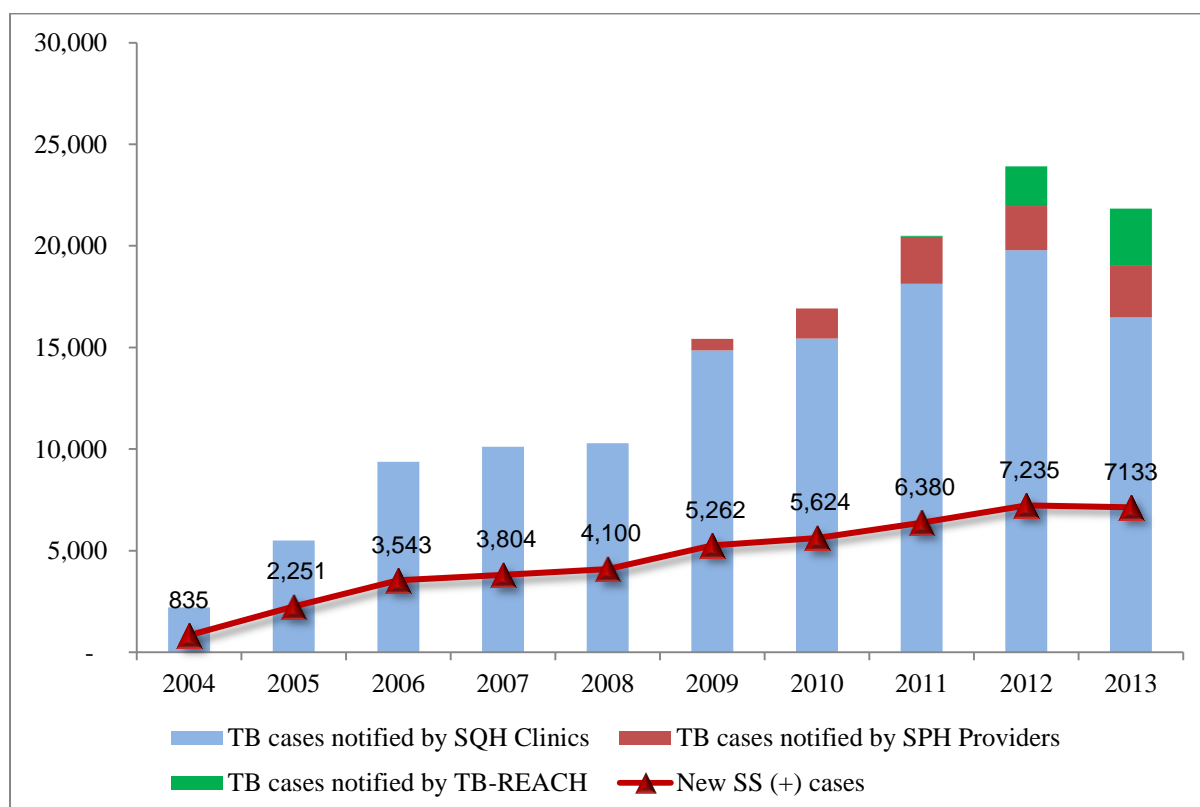
**Figure 16. MMA Scheme III Contribution to New Smear Positive Cases & Total TB Cases (2009-2013)**



Table 27. Contribution of PSI Myanmar (2004-2013)

Years	TB suspected cases screened	Cat I (+)	Cat I (Neg. & EP)	Cat II	Cat III	Total
2004	3,530	840	256	199	927	2,222
2005	11,048	2,262	571	396	2,311	554
2006	19,798	3,560	1,200	556	4,116	9,432
2007	23,607	3,837	1,694	589	4,023	10,143
2008	24,307	4,137	1,921	598	3,683	10,339
2009	31,881	5,262	2,761	694	6,628	15,345
2010	37,076	5,624	3,461	809	6,854	16,748
2011	44,519	6,380	4,223	974	9,055	20,632
2012	58,820	7,235	4,371	1,119	11,186	23,911
<b>2013</b>	<b>73,179</b>	<b>7,195</b>	<b>8,710</b>	<b>1,095</b>	<b>5,060</b>	<b>22,060</b>

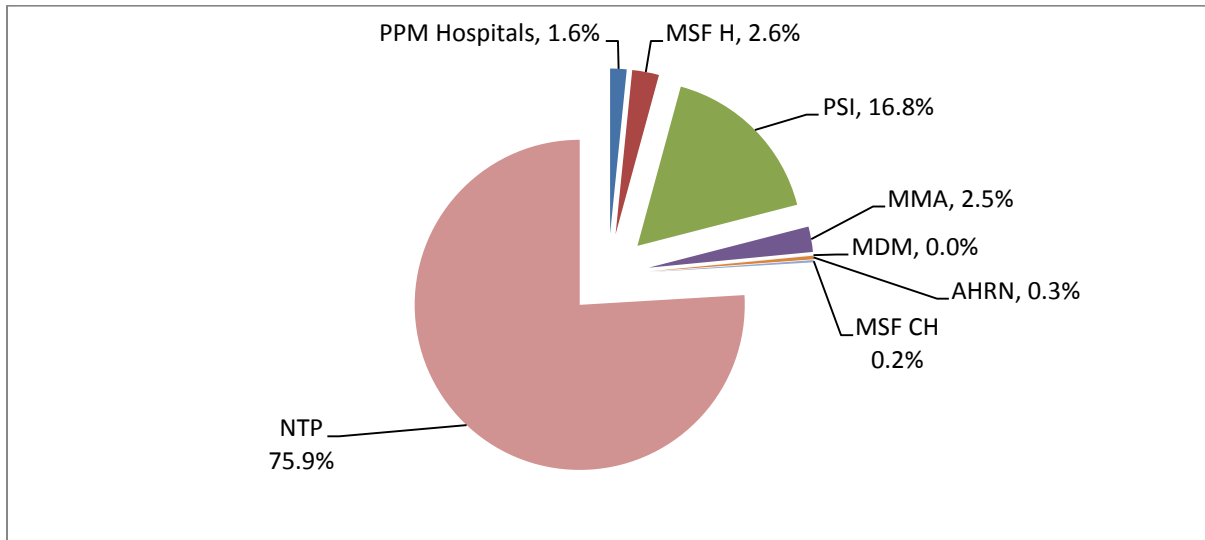
Figure 17. TB Cases Notified by PSI PPM-DOTS Program



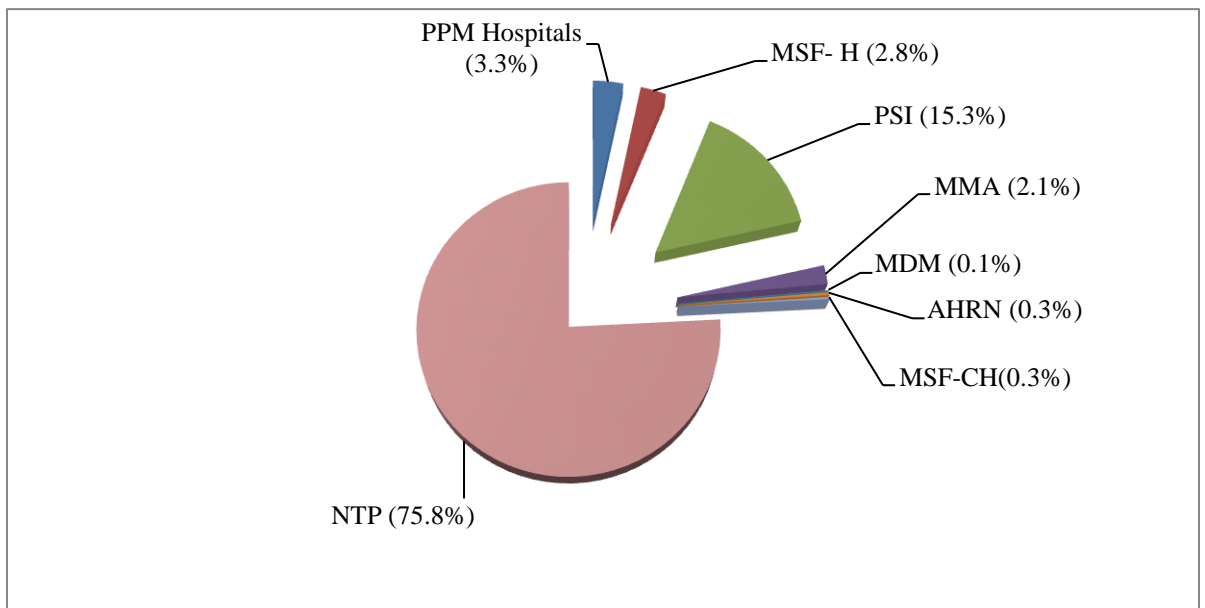


Population Services International (PSI) started collaborating with NTP in March 2004. PSI has organized the Private Practitioners and run the "Sun Quality Health Clinics" (SQHC) as DOT units. In addition, PSI also implement active case finding and referral by "Sun Primary Health Provider" (SPH) started in 2009. TB REARCH project also started in 2011 for active case finding and referral through Interpersonal Communicator (IPC) and Pharmacies.

**Figure 18. Proportion of New smear cases of TB Patients contributed by NTP and Partners (2013)**



**Figure 19. Proportion of All forms of TB Patients contributed by NTP and Partners (2013)**



## **4.5 Empowering patients and communities**

### **4.5.1 Advocacy, communication and social mobilization**

In the context of TB control, the objective of the ACSM is to upscale advocacy, communication and social mobilization for all DOTS components to achieve the targets enshrined in the MDGs.

Based on the findings from nationwide Knowledge, Attitude and Practice (KAP) Survey, NTP developed the Advocacy, Communication and Social Mobilization (ACSM) materials together with Health Education Bureau of Department of Health so that ACSM activities could be held at different levels.

NTP has also commemorated World TB Day/Week ceremony and activities every year since 1996. In 2012, commemoration ceremonies could be carried out at central level, all state and regional levels and district levels.

#### ***World TB Day, 2013***

World TB Day commemoration was held on 24<sup>th</sup> March, 2013 at central and all Regions and States. The Central level World TB Day commemoration ceremony was held on 24<sup>th</sup> March, 2013 at the Assembly hall of Ministry of Health, Nay Pyi Taw. The Slogan for the year 2013 was “Stop TB in my lifetime” and it was translated as “တစ်သက်တာတီဘီကင်းဝေးရေး၊ အားလုံးပါဝင်ဆောင်ရွက်ပေး” in Myanmar language. H.E Dr Thein Thein Htay, Deputy Minister of Health, acted as Chairperson of the ceremony and delivered the opening speech.

In her speech, she pointed out that this year commemoration ceremony was the 18<sup>th</sup> celebration in Myanmar. She also explained about the discovery of TB germs by Heinrich Hermann Robert Koch, a German Scientist, on 24<sup>th</sup> March 1882. Hence, the World honored Dr Robert Koch on March 24, World TB Day. Based on his finding, anti-TB drugs were administered in 1947 and nowadays, Fixed Dose Combination and Patient Kits were used from 6 to 8 months to cure TB. She mentioned that global TB morbidity and mortality was decreasing steadily since 2004, however Global TB burden for 2011 was 8.7 million TB patients and 1.4 million deaths occurred yearly, about 80% are 15-54 age, productive age group. She also pointed out annual case notification for all forms of TB 148,149 (total TB cases) notified by NTP. She highlighted CDR was not achieved target in some States and Regions and these areas should strengthen active case finding for early case detection and prompt treatment.



**Figure 20. The Deputy-Minister for Ministry of Health delivering the opening speech in commemoration ceremony of World TB Day (2013)**



**Figure 21. The Deputy-Minister and invited guests viewing the World TB Day mini exhibitions**

Then, Mrs. Eva Nathanson, WHO Resident Representative, read out the message of the Regional Director of WHO Southeast Asia Region.

The Deputy Minister for Health, and invited guests viewed the World TB day mini exhibitions presented by NTP and implementing partners. Attendees were from Ministry of Health, other Ministries, UN Agencies and implementing partners. The donated materials such as World TB Day pamphlets, posters, bags, T-Shirt, handkerchief from implementing partners were distributed at the ceremony.

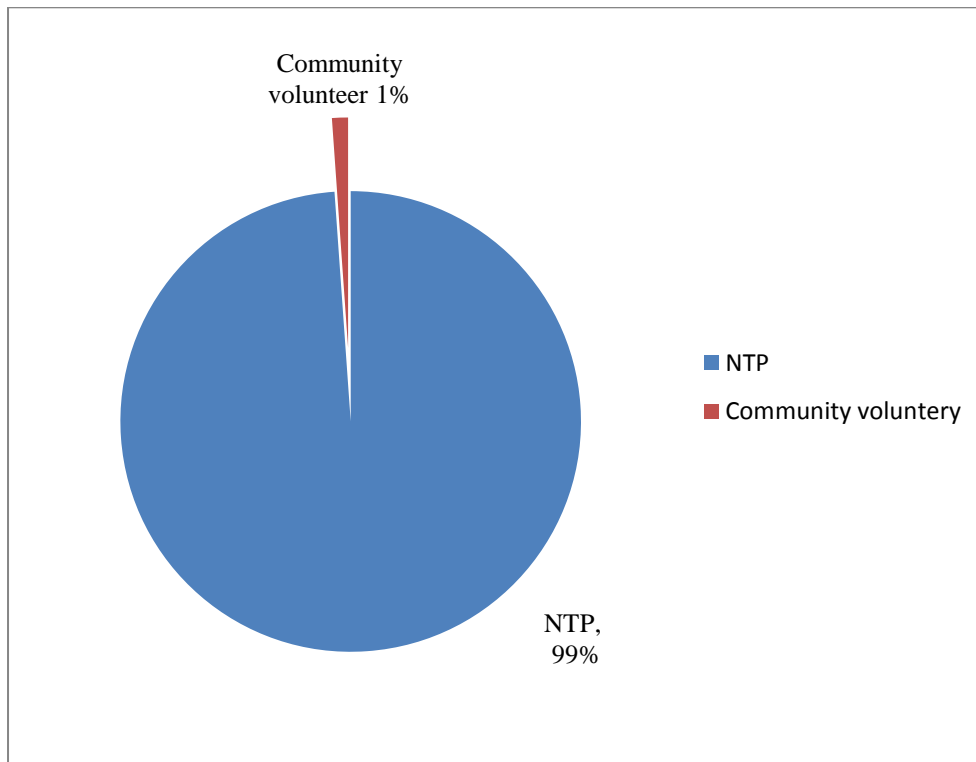
#### **4.5.2 Community participation in TB care**

It is a one of the essential components in effective TB programmes.

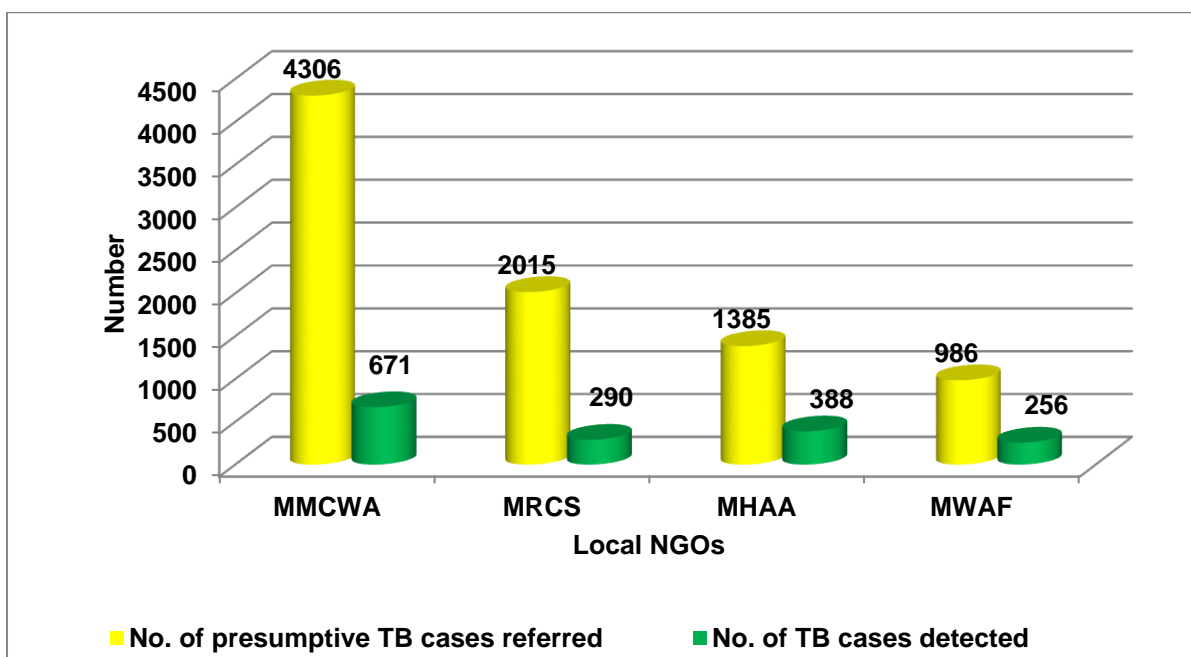
##### **Community-based TB Care**

Community-based TB care activity was introduced in 2011 and currently implemented by all local NGOs and some INGOs under the guidance and support of NTP.

**Figure 22. Contribution by community volunteers to total TB cases (2013)**



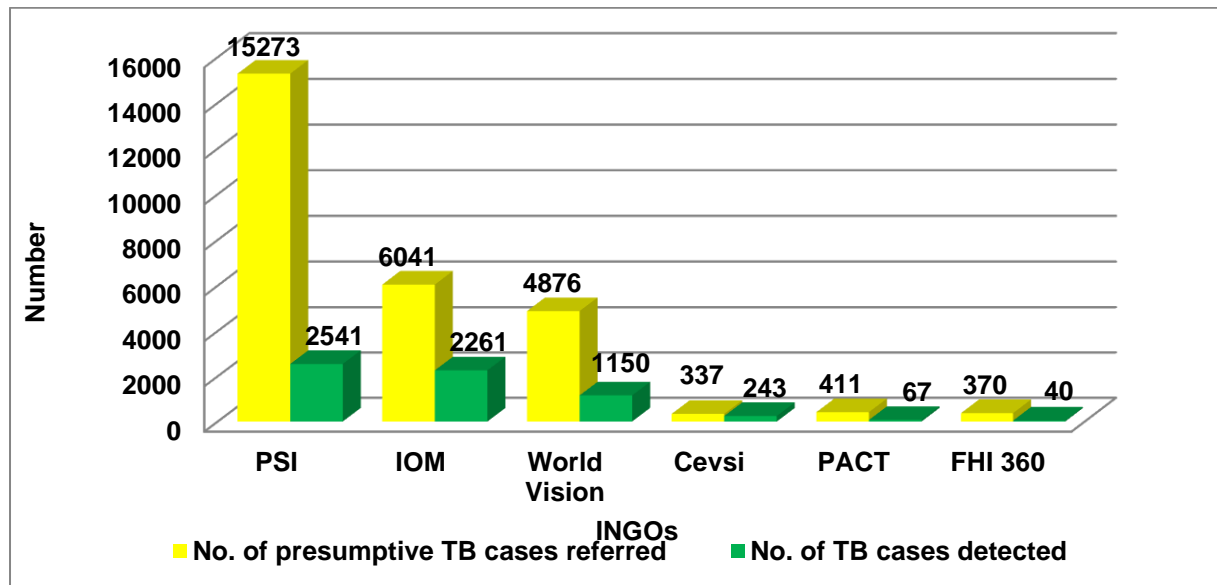
**Figure 23. TB cases finding by CBTC activities of Local NGOs (2013)**



Four local NGOs such as MMCWA, MRCS, MHAA and MWAF conducted community based TB care activities in selected townships. The volunteers were provided training in each township. Then, they carried out TB health talk in the community; contact tracing;

referral of presumptive TB cases and provision of DOT for TB patients. In 2013, altogether 8,692 presumptive TB cases were referred by the trained volunteers of these 4 local NGOs and of them, 1,605 TB cases could be detected and treated.

**Figure 24. TB cases finding by CBTC activities of INGOs (2013)**



Partners implementing for community based TB care were PSI, IOM, World Vision Myanmar, Cevsi, Pact Myanmar and FHI360. Their activities included conducting health education sessions, referral of presumptive TB cases, provision of DOT for TB patients, providing nutrition support for TB/MDR-TB patients and contact tracing. Total 27,308 presumptive TB cases were referred by these INGOs and 23% (6,302/27,308) was diagnosed as TB and treatment was given.

## **4.6 Enabling and promoting research**

### **4.6.1 Programme-based operational research**

The Stop TB Strategy consolidates DOTS implementation and involves the implementation of several new approaches for tackling the challenges facing NTP. Designing and conducting locally relevant operational research can help in identifying problems workable solutions, and planning for the scaling up of activities.

In order to measure progress towards achieving the MDGs, national TB prevalence survey and TB mortality survey will be conducted in 2015. Tuberculosis Mortality Survey was conducted in early 2013 at two sites as a preliminary survey for the nationwide one. Third nationwide drug resistant TB survey was also held in 2012-2013.

In addition, a survey on second line anti-TB drug resistance among MDR-TB cases was performed. TB-HIV annual sentinel surveillance will also be continued, in collaboration with NAP, at 25 sentinel sites and will be expanded up to 40 sites at the end of 2015.

Operational research studies depending on the problems are conducted as necessary in collaboration with Departments of Medical Research and other academic Institutions.

NTP conducted necessary surveys and presented the findings at national and international research congress. The abstracts of the presented posters and published papers are recorded.

**Multidrug-resistant tuberculosis in Myanmar: results of the third nationwide survey (2012-2013)**

Si Thu Aung<sup>1</sup>, Wint Wint Nyunt<sup>2</sup>, Thynn Lei Swe<sup>3</sup>, Aye Aye Thwe<sup>1</sup>, Ti Ti<sup>4</sup>, Thandar Lwin<sup>1</sup>

1 National Tuberculosis Programme, Myanmar

2 National TB Reference Laboratory, Yangon, Myanmar

3 Upper Myanmar TB Laboratory, Mandalay, Myanmar

4 Foundation for Innovative New Diagnostics

**Abstract**

**Background:** Myanmar is one of (27) high Multidrug-resistant tuberculosis (MDR-TB) burdened countries and MDR-TB is a major threat to TB control in Myanmar and globally. Two previous nationwide drug resistance surveys revealed that the proportion of MDR-TB among new and previously treated TB patients was 4.0 and 15.5% in 2002-2003, and 4.2% and 10.0% in 2007-2008. The third nationwide survey was conducted in 2012-2013 to obtain updated information on the magnitude of MDR-TB, determine trends in MDR-TB epidemiology and explore MDR-TB risk factors.

**Methods:** Sputum samples were collected from a nationally representative sample of new sputum smear-positive TB patients registered at public health centers from October 2012 to December 2013 using a weighted cluster sampling method. Culture and drug susceptibility testing to first-line anti-TB drugs were performed at the national TB reference laboratories in Mandalay and Yangon.

**Results:** A total of 1,510 sputum smear-positive cases were enrolled from 30 clusters. Complete results were available for 1,161 (77.7%) patients following removal of mycobacteria other than tuberculosis (15 samples), culture contamination (187 samples) and no culture growth (147 samples). After imputation of missing values, MDR-TB was detected in 5.0% (95%CI 3.1-6.8) of new TB cases and 27.1% (95%CI 15.0-39.2) of retreatment cases. MDR-TB was significantly associated with previous TB treatment (adjusted OR 6.9, 95% CI 3.1–15.0), living in Yangon Region (adjusted OR 3.0, 95% CI 1.5–5.8) and HIV positive status (adjusted OR 4.2, 95% CI 0.9–19.4). MDR-TB among previously treated TB patients was 27.1% which was not significant statistically since sample size was not enough.

**Conclusions:** The third nationwide drug resistance survey (2012-2013) in Myanmar reveals the highest MDR-TB rates in the South East Asian Region. Efforts to diagnose, treat and prevent the spread of MDR-TB need to be urgently scaled-up, particularly in Yangon Region. MDR-TB patients found from this survey were planned to be enrolled in existing programmatic management of MDR-TB for treatment with approval of national expert MDR-TB committee.

(Oral presentation at 45<sup>th</sup> UNION World Conference on Lung Health)

## TB Mortality Survey in two selected townships in Myanmar

Si Thu Aung<sup>1</sup>, Ko Ko Zaw<sup>2</sup>, Thandar Lwin<sup>1</sup>

1 National Tuberculosis Programme, Myanmar,

2 Department of Medical Research (Lower Myanmar)

### Abstract

**Aim:** National TB Programme (NTP) has never assessed TB mortality at the community level. The only information available in the country is the number of TB deaths among cohorts of registered TB patients. Vital registration is covering only one third of the country especially in urban. The aim of this study is to determine adult TB specific mortality rate in two selected townships: Padaung (Bago Region) and Kawkareik (Kayin State).

**Methods:** It is a cross-sectional study to ascertain causes of adult deaths that occurred during 1st January to 31st December 2012. Verbal autopsy interviews of relatives or main care givers of the deceased were done by trained interviewers. All deaths data were identified through death registries at respective Township Health Departments. Data collection was completed in May 2013. Verbal autopsy questionnaires were reviewed independently by 2 physicians to assign the causes of deaths. For discrepancies in diagnoses between these two physicians, 3rd physician gave the final decision. Pulmonary TB mortality per 100,000 populations was estimated by using TB death data from verbal autopsy questionnaires and population data from respective township health management information.

**Results:** Out of total (448) persons aged  $\geq 15$  years, females comprised 61% of all deceased persons. The age of (448) deceased persons ranged from 15 to 99 years with the mean age of 83 years. About 40% of deaths occurred in people under 60 years. Most of deceased were ever married and most of deaths occurred at home. This study showed five leading causes of death: stroke, liver diseases, pulmonary tuberculosis, digestive neoplasms and unspecified cardiac diseases. But 22% of adult deaths had unknown cause. Pulmonary tuberculosis attributed to 7% of all adult deaths, which ranked 3rd in both townships. TB deaths occurred in males more than in females (61% vs. 39% of all adult TB deaths) and in  $\geq 60$  years group more than  $< 60$  years group (61% vs. 39% of all adult TB deaths). TB mortality rate was 51 per 100,000 populations and was higher in older age groups and males.

**Conclusion:** This study reasonably reflects the TB-specific mortality fraction among all deaths but it is confined to two selected townships and estimates of TB mortality per population have high level of uncertainty. However, the finding was quite close to WHO estimate, 48/100,000 population for 2012. Therefore, TB mortality survey of wider scope, a national scale, would not be necessary.

(Poster presentation at 45<sup>th</sup> UNION World Conference on Lung Health, Barcelona, Spain)



### Review of EQA on sputum AFB microscopy in Myanmar

Tin Tin Mar<sup>1</sup>, Thandar Lwin<sup>1</sup>, Tin Mi Mi Khaing<sup>1</sup>, Saw Thein<sup>1</sup>, Thyn Lei Swe<sup>1</sup>,  
Wint Wint Nyunt<sup>1</sup>, Ti Ti<sup>2</sup>, Akiko Fujiki<sup>3</sup>

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2 Foundation for Innovative New Diagnostics

3 JICA (MIDCP), Yangon, Myanmar

#### Abstract

**Background:** Sputum microscopy for Acid Fast Bacilli (AFB) is the crucial tool for tuberculosis (TB) case finding. National Tuberculosis Programme (NTP), Myanmar started the External Quality Assessment (EQA) for sputum smear microscopy applying Lot Quality Assurance Sampling (LQAS) method with the support of JICA-MIDCP in 2007. NTP aimed to ensure the quality of sputum microscopy services and expanded EQA system on 464 microscopy centers (MC) including public and private MCs.

**Objectives:** To review the quality of the MCs doing sputum for AFB microscopy and to identify the factors to be improved in sputum for AFB microscopy.

**Intervention and response:** After 3 years experiences of EQA introduction in Myanmar, this is the first systematic review of EQA reports of 2012. Slides from MCs were selected by township supervisors using LQAS method and sent monthly to Regional EQA centers concerned. Quarterly feedback reports from Regional EQA centers were sent to township supervisors and to the national EQA unit, where the data verification and data management were conducted.

**Results:** Total EQA coverage on TB microscopy was 96% (447/464). Seventeen percent (78/447) of the MCs was under private sector and 83% (369/447) was under public sector. Thirty eight percent (172/447) of MCs had major errors. They were 47% (9/19) of MCs from Public-Public Mix hospitals and 38% (132/350) of MCs from district/township and station hospitals. In private sector, 13% (3/24) of MCs from INGOs and 52% (28/54) of MCs from private MCs had major errors. The improvement of 103 MCs was observed due to EQA feedback, follow-up supervisory visits and immediate action taken on the findings and recommendations of the laboratory supervisors from NTP. However, 68 MC had persistent major errors. The reasons of having major errors were identified as over workload on some laboratory technicians, inadequate refresher training, defect in binocular microscopes and weak supervision by immediate supervisors. Apart from that, the smear preparation could contribute to have major errors while size, thickness and evenness of smears were found not fully qualified.

**Conclusion:** Performance of MCs needs to be strengthened by providing frequent supportive supervision, effective training and reinforcement to follow standard operating procedures (SOP) and provision of good microscopes. It is also important to maintain the quality of MCs with good performance.

(Poster presentation at 45<sup>th</sup> UNION World Conference on Lung Health)

### Treatment outcome of MDR-TB patients treated in pilot phase in Myanmar

Si Thu Aung<sup>1</sup>, Thandar Hmun<sup>2</sup>, Moe Zaw<sup>3</sup>, Yu Yu Wai<sup>3</sup>, Myo Zaw<sup>4</sup>, Thandar Lwin<sup>1</sup>

1 National Tuberculosis Programme, Myanmar

2 Aung San TB Hospital, Yangon, Myanmar

3 Patheingyi TB Hospital, Mandalay, Myanmar

4 World Health Organization

#### Abstract

**Background:** The aim of this study was to evaluate the outcomes of MDR-TB patients treated in pilot phase according to World Health Organization guidelines in Myanmar. DOTS-Plus pilot project was launched in July 2009 at (5) townships in Yangon Region and (5) townships in Mandalay Region.

**Methods:** Data on MDR-TB patients enrolled for treatment between July 2009 and September 2011 in (10) townships of Yangon and Mandalay were studied. A two-year standardized regimen of amikacin, levofloxacin, ethionamide, cycloserine, PAS and pyrazinamide was used for laboratory-confirmed MDR-TB patients with Category (II) failure. Patients were hospitalized for the initial 2-3 months. Thereafter, home-based care was delivered by Township Medical Officer and basic health staff from respective project township. Diagnosis and treatment were provided free of charge, patients received socioeconomic support and patients and treatment providers received enablers.

**Results:** Of the (309) MDR-TB patients assessed, 201 (65%) were males and 108 (35%) were female. The average age of the patients was 35 years (Range: 15-70 years). Total (6) patients died before treatment and (24) patients (8%) were co-infected with HIV (all were on antiretroviral therapy). The most common adverse events were hypothyroidism (75%), nausea/vomiting (61%), arthralgia (60%), hypokalemia (47%), depression (27%), tinnitus (27%), hearing disturbance (21%), psychosis (11%) and rash (6.5%). Out of registered (303) patients evaluated, 216 patients were found "cured" (71%), 52 died (17.3%), 31 defaulted (10.3%), 3 failed (1%) and 1 refused (0.3%). The major causes of death were respiratory failure and HIV co-infection (67% and 37%, respectively).

**Conclusions:** The MDR-TB pilot project has been proven feasible with good cure rates, despite protracted disease among all patients and high frequencies of adverse events. Based on the overall results and pilot experience, MDR-TB diagnosis and treatment eligibility criteria are being expanded and the model of care refined. The treatment regimen was also modified. Earlier detection of MDR-TB case and treatment would save additional lives and reduce transmission.

## TB case finding using mobile team in peri-urban townships of Yangon Region

Tin Mi Mi Khaing<sup>1</sup>, Kyaw Naing<sup>1</sup>, Saw Nwe Nwe Myint<sup>1</sup>,  
Mya Mya Win<sup>2</sup>, Khin Yupar Soe<sup>2</sup>, Min Min Thin<sup>1</sup>, Sandar Lwin<sup>1</sup>, Thandar Lwin<sup>1</sup>

1 National Tuberculosis Program, Myanmar

2 Township Health Department, Myanmar

### Abstract

**Background:** According to WHO Global report 2012 showed that reduction in TB prevalence and mortality was prominent but a slow reduction in TB incidence. The gap remained persistent so that case finding activities should be promoted. The government sector strengthened TB case finding activities by using mobile team in two peri-urban townships in Yangon Region.

**Objectives:** (1) To increase TB case finding by conducting active case finding activities (2) To compare the output of mobile team TB screening activities in same townships.

**Methods:** Firstly, a team was formed with National TB Programme staff, township health staff and local volunteers. The community was informed about mobile team activities during pre-visit. Township Medical Officers with their Basic Health Staff (BHS) played an important role in informing community on the purpose of mobile team and its procedures. Health talks were provided by respective BHS. The community became motivated to participate in TB screening. The persons with presumptive TB identified have been undergone with Chest X-ray screening. If abnormalities were detected, sputum microscopic examination was followed. The persons who diagnosed TB were treated with anti-TB drugs at Township Health Department.

**Results:** From September 2012 to August 2013, two townships were covered by mobile team TB screening activities for 2 times. Total (2,022) individuals were screened by Chest X ray and 405 were examined by sputum AFB microscopy. 169 TB patients including 63 smear positive were detected. Radiological examination rate was 0.3%. Smear examination was done in 20%. Smear positivity rate was 15.6%. The proportion of smear positive pulmonary TB cases and treated TB cases obtained by mobile team were 9.2% (63/682) and 10.2% (169/1655) respectively. Mobile team activities contributed 15% of annual targeted presumptive TB, 5% of annual sputum examined, 2.5% of annual smear positive cases and 2.7% of annual treated TB cases in the region. The comparison between two mobile team activities showed the number of sputum examined, positive cases detected and treated cases were lower in the second than in the first time.

**Conclusion:** The mobile team TB screening contributed to increase the number of annual presumptive TB and sputum examined. This activity should be practiced in peri-urban townships biannually since it could cut TB transmission and can lead to reduction of TB prevalence and incidence in high TB prevalence areas.

(Poster presentation at 45<sup>th</sup> UNION World Conference on Lung Health, Barcelona, Spain)

## **Effectiveness of active case detection using mobile team in selected township in Myanmar**

Saw Thein<sup>1</sup>, NISHIYAMA Hiroyuki<sup>2</sup>, YAMADA Norio<sup>3</sup>, OKADA Kosuke<sup>3</sup>,  
Kyi Kyi Sein<sup>5</sup>, Thandar Lwin<sup>4</sup>

1 Upper Myanmar TB Center, Mandalay, Myanmar

2 Major Infectious Disease Control Project, 3 Research Institute of Tuberculosis,

4 National TB Programme, 5 Township Medical Officer (Ngazun)

### **Abstract**

**Background:** Proposed post 2015 global TB strategy aims decline rate of TB incidence to 10% per year. Only with passive case detection (PCD), such decline rate may not be achieved. Ngazun Township is geographically low migrated area with 137,000 populations. Active case detection (ACD) by mobile team has been widely implemented since 2011. The objective is to examine how notification of TB cases has changed in Ngazun Township after widely implementing ACD.

**Intervention or response:** Between 2011 and 2013, ACD by mobile teams were frequently and thoroughly conducted by local basic health staffs with strong leadership of a township medical officer under guidance of NTP. They included health talk, medical care, drug provision if necessary and sputum collection/ transportation. For presumptive TB, sputum smear examinations were performed. For negative smear, chest x-ray (CXR) was taken at the township health centre. All services were provided free of charge. Mobile team activities were conducted, for example, by township team 30 times and Rural Health Centre team 12 times even just in 2013. The activities were motivated at regular quarterly TB evaluation meeting and the output was recorded and monitored by NTP and JICA. The JICA Project trained 32 community volunteers to detect more TB cases early by community awareness, referral of presumptive TB and sputum collection/transportation to laboratories.

**Results:** The number of presumptive TB increased from 110 in 2010 (before intervention) to 884 in 2011, 834 in 2012 and 880 in 2013 (after intervention). Accordingly, the total number of new smear-positive TB (NSP) notified was 50 in 2010, 103 in 2011, 94 in 2012 and 50 in 2013, while the total number of all forms of TB notified was 121 in 2010, 169 in 2011, 186 in 2012 and 193 in 2013. The contribution rate of NSP detected by mobile team was average 38% in 3 years. The treatment success rate of NSP in 2013 maintained satisfactory with 96% (90/94).

**Conclusions and key recommendations:** Widely implemented ACD may lead to both detection of undiagnosed TB cases and early diagnosis of smear-negative TB in the community. Although careful monitoring and evaluation of notified TB cases are required, thorough ACD in a short period may be effective in accelerating the decline in TB prevalence and incidence.

(Poster presentation at 45<sup>th</sup> UNION World Conference on Lung Health, Barcelona, Spain)

**Estimating cost of TB patient Self Help Groups in Hlaingtharyar Township,  
Myanmar**

Wai Wai Han<sup>1</sup>, Saw Saw<sup>1</sup>, Thandar Lwin<sup>2</sup>, Tin Mi Mi Khaing<sup>2</sup> and Thet Aung<sup>3</sup>

1 Department of Medical Research (Lower Myanmar)

2 National Tuberculosis Programme, Myanmar

3 World Vision Myanmar

**Abstract**

The cross-sectional study was conducted to calculate the cost of establishing four TB patient Self Help Groups (SHG) in Hlaingtharyar Township and explored financial management of those groups. These groups has been established and functioning with the aim of helping TB patients and their families to complete treatment, be cured from TB and lead the community response towards TB. The study was carried out from 2012 to 2013. Cost data were obtained by reviewing records and interviews using tool to categorize cost. Five Focus Group Discussions, nine Key Informant Interviews with SHG leaders, members and World Vision staff and ten coins technique were performed to assess financial management of SHGs. Amount of cost spent for the SHGs for two years ranges from more than two to six million kyats depending on the developmental stages of the SHGs. Average cost per SHG for TB control activities such as referral, health education, providing DOT and nutrition for one year is approximately 250,000 kyats. On average one SHG referred 84 patients and provided DOT for 62 patients per year. Most of the groups cannot perform financial management systematically. As the SHGs have been established for only two years, it is difficult to visualize their effectiveness if it is measured only by TB indicators such as treatment success rate and case detection rate. However, this study found out that implementing SHGs is worthy because of the immediate outcomes such as improving capacity of members for TB prevention and control, increasing members and fund raising activities for the sustainability.

42<sup>nd</sup> Myanmar Health Research Congress (Paper). 2013: p.6  
(Best paper Award for Young Researcher-HSR)

**Phenotypic and genotypic analysis of anti-tuberculosis drug resistance in  
*Mycobacterium tuberculosis* isolates from Myanmar**

Wah Wah Aung<sup>1</sup>, Phyu Win Ei<sup>1</sup>, Wint Wint Nyunt<sup>2</sup>, Thyn Lei Swe<sup>2</sup>, Thandar Lwin<sup>2</sup>,  
Mi Mi Htwe<sup>1</sup>, Kyung Jun Kim<sup>3</sup>, Jong Seok Lee<sup>4</sup>, Chulhum L Chang<sup>3</sup>

1 Department of Medical Research (Lower Myanmar)

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3 Pusan National University, Yangsan Hospital, Korea

4 International Tuberculosis Research Center, Korea

**Abstract**

Tuberculosis (TB), caused by *Mycobacterium tuberculosis* (*M. tuberculosis*), is one of the major public health problems in Myanmar. We determined the drug susceptibility profile of 191 *M. tuberculosis* strains isolated from sputum smear positive new pulmonary tuberculosis patients attending Latha TB Diagnostic Centre, Yangon Region, and Mandalay Regional TB Centre, Myanmar during January to August 2013. Phenotypic drug susceptibility to rifampicin, isoniazid, ethambutol and streptomycin was performed by proportion method at National TB Reference Laboratory (NTRL), Yangon and Upper Myanmar TB Laboratory, Mandalay in Myanmar. GenoType MTBDR<sup>plus</sup> assay was carried out at Pusan National University Yangsan Hospital, Korea for genotypic detection of rifampicin and isoniazid resistance. Common mutations in the *rpoB* gene, *katG* gene and *inhA* gene conferring resistance to rifampicin and isoniazid among drug resistant isolates were determined. Phenotypic analysis showed polyresistant strains (resistant to two or more drug) were 21.5% (41/191) including 18.3% (35/191) of multidrug resistant TB (MDR-TB, resistant to at least rifampicin (RIF) and isoniazid (INH) and 2.6% (5/191) of monoresistant strains (resistant to one drug). Genotypic assay showed 17.3% (33/191) of MDR-TB, 0.5% (1/191) of RIF monoresistance and 5.8% (11/191) of INH monoresistance. Genotypic assay showed 17.3% (33/191) of MDR-TB, 0.5% (1/191) of RIF monoresistance and 5.8% (11/191) of INH monoresistance. The genotypic results were 91.1% (174/191) concordant with the phenotypic susceptibility. Discordant isolates were confirmed by DNA sequencing. Among RIF resistant isolates, S531L mutation was the most common mutation, with 62.5% (20/32) of MDR strains and 100% (1/1) of one RIF mono-resistant strain. H526Y mutation was the second most common accounting for 28.1% (9/32) of MDR strains. Of all INH resistant strains, 93.02% (40/43) (31MDR strains and 9 of INH-mono-resistant strains) had a mutation in the S315T1 region of *katG* gene, and only 4.7% (3/43) (1 MDR strain and 2 INH mono-resistant strains) had a mutation in the C15T region of *inhA* gene. One isoniazid resistant isolate was found to be due to presence of mutation which can be located elsewhere than codon of *katG* and *inhA*. This study highlighted the high prevalence of anti-TB drug resistance among new pulmonary TB cases and provided the preliminary information on gene mutation patterns of drug resistant *M. tuberculosis* strains from Myanmar.

42<sup>nd</sup> Myanmar Health Research Congress (Paper). 2013: p.23-24

**Management of tuberculosis in hard-to-reach area, Laukkai Township, Northern Shan State, Myanmar**

Thida<sup>1</sup>, Saw Saw<sup>2</sup>, Thandar Lwin<sup>3</sup>,

Kyaw Ko Ko Htet<sup>1</sup>, Nwe Nwe Kyaw<sup>1</sup>, Phyu Phyu Khaing<sup>1</sup> and Kyaw Zin Thant<sup>1</sup>

1 Department of Medical Research (Upper Myanmar)

2 Department of Medical Research (Lower Myanmar)

3 National Tuberculosis Program, Myanmar

**Abstract**

This cross-sectional descriptive study was conducted to explore the management of tuberculosis (TB) in Laukkai Township, hard-to-reach area. Fifty-one face-to-face interviews and 12 in-depth interviews were conducted with 37 General Practitioners (GPs) including two in-service GPs and three medical officers from Asian Harm Reduction Network (AHRN), and 14 Basic Health Staff (BHSs) during 2013. All GPs had laboratory, nursing or medical training from three to seven years and 67.6% were Chinese who were trained from China. Compared to BHSs ( $30 \pm 6.5$ ), total mean knowledge score on TB management was significantly low among GPs ( $14 \pm 10.2$ ). About 64% of BHSs and 11% of GPs had exposure on TB training given by National Tuberculosis Programme (NTP) previously. AHRN was providing TB management in line with NTP guideline. Forty percent of GPs were providing anti-TB treatment and diagnosis was made from clinical and Chest X-Ray (CXR) findings. According to qualitative findings, about 100 to 150 TB patients were taking treatment mainly at four GP kings yearly. Anti-TB drugs given by GPs were loose tablets or capsules originated from China. Treatment duration ranged from six months to two years depending on the severity of the disease and follow-up CXR findings. Interval for follow-up examination depended on the severity of the disease and affordability of the patients. No sputum recheck was requested during follow-up examination except CXR. Existing management of TB by GPs in hard-to-reach area was not in line with NTP guideline. Therefore organizing them to involve in TB control under guidance of NTP is essential.

42<sup>nd</sup> Myanmar Health Research Congress (Paper). 2013: p.37

**Positivity of Acid fast Bacilli Culture and Drug sensitivity Pattern in children with Tuberculosis**

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1 Magway Teaching Hospital, Myanmar

2 Yangon Children Hospital, Myanmar

**Abstract**

The purpose of this study was to determine the smear and culture positivity of *M. Tuberculosis* in gastric aspirate samples for the diagnosis of childhood pulmonary tuberculosis and to determine the association between drug sensitivity pattern and AFB positivity. Eighty children who had suspected tuberculosis, were assigned randomly to do gastric aspiration using a nasogastric feeding tube after 4 hours fasting. Gastric aspiration on each of three consecutive mornings was done for each child. Early morning gastric aspirates were sent for smear microscopy and mycobacterial culture to National Tuberculosis Reference Laboratory (Aung San). Gastric aspirate smear positivity was 7(8.75%) out of 80 children and gastric aspirate culture positivity was 8(10%) out of 80 children. Out of 80 children, 7 (8.75%) were positive for both gastric aspirate smear and culture 1 (1.25%) was smear negative but culture positive. All the isolates from this study were not resistant to isoniazid, rifampicin, pyrazinamide and streptomycin. The disadvantage of culture method is taking longer duration. But diagnosis is confirmed if AFB culture is positive. Therefore, gastric aspirate culture and drug sensitivity test should be done all cases of severe extra pulmonary TB and contact with adult MDR TB.

**Source:**42<sup>nd</sup> Myanmar Health Research Congress (Paper). 2013: p.38-39



**Application of fluorescence microscopy in the diagnosis of Tuberculosis**

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Wai Wai Khaing<sup>1</sup>, Yi Yi Myint<sup>1</sup>, Erwin Cooreman<sup>3</sup>, Htun Naing Oo<sup>1</sup>

1 Department of Medical Research (Central Myanmar)

2 National Tuberculosis Programme, Myanmar

3 World Health Organization

**Abstract**

Most of the world's tuberculosis cases occur in low-income countries, where sputum microscopy with conventional light microscope is primary method for diagnosing pulmonary tuberculosis (PTB). Myanmar is among 22 countries with highest burdens of TB. Fluorescence microscopy is credited with increased sensitivity and lower work effort. Therefore, the application of fluorescence microscopy in screening diagnosis of PTB in Myanmar was assessed. It was a cross-sectional comparative study and total 200 randomly selected X-ray diagnosed TB cases, aged between 13-74 years were included. The yields obtained with Papanicolaou-fluorescence microscopy and Auramine fluorescence microscopy and Ziehl-Neelsen (ZN) conventional method; assessed the efficiency of the Pap-fluorescence microscopy in terms of work load and turn-around-time for diagnosis of tuberculosis were compared. Out of the 200 smears, 115/200 (57.5%) and 46/200 (23%) were positive by auramine and ZN stain respectively, of which 31 (15.5%) samples were positive on both stains. Similarly, 97/200 (48.5%) and 46/200 (23%) were positive by Papanicolaou and ZN stain respectively, of which 29 (14.5%) samples were positive on both stains. The results suggest that both auramine and Papanicolaou fluorescence microscopy were more sensitive than ZN staining in screening diagnosis of pulmonary tuberculosis because of shorter turn-around-time and less work effort. This concludes that it is a better tool for diagnosing pulmonary TB. Further and larger studies are required to recommend Papanicolaou staining for TB in public health program.

42<sup>nd</sup> Myanmar Health Research Congress (Poster). 2013: p.86-87

**Accessibility of health services among TB patients in Kutkai Township, Northern Shan State, Myanmar**

Thida<sup>1</sup>, Saw Saw<sup>2</sup>, Kyaw Zaw<sup>3</sup>, Kyaw Zeyar Lynn<sup>1</sup>, Phyu Phyu Khaing<sup>1</sup>, Sandar Htay<sup>1</sup>,  
Nwe Nwe Kyaw<sup>1</sup>, Yee Yee Myint<sup>1</sup>, Kyaw Zin Thant<sup>1</sup>

1 Department of Medical Research (Upper Myanmar)

2 Department of Medical Research (Lower Myanmar)

3 National Tuberculosis Programme, Myanmar

**Abstract**

This cross-sectional descriptive study was conducted to explore accessibility of health service among TB patients from Kutkai Township, hard-to-reach area, who had taken treatment at Kutkai Township Health Department (THD). A total of 120 face-to-face interviews, 23 in-depth interviews and 5 key informant interviews were done in 2010. Most patients were Kachin, Chinese and Palaung; 41.7% were less than 15 years and male-female ratio was 1.07:1. Distance to THD ranged between 1-70 miles. About 32% of the patients found difficulty in accessing THD in rainy seasons and 42% of the patients were from within two-mile catchment areas. More than 29% of the private practitioners were quacks. Although 51.7% of TB patients sought treatment initially at Primary Health Facility (PHF), qualitative findings showed that most of them had tried home remedies and/or sought treatment from nearby drug-sellers. Duration of symptoms ranged from 1-913 days and patients with shortest duration sought treatment at GPs initially. Patient factors—financial constraint, not knowing the severity of disease, or being treated with herbal medicines; service factors—lack of local PHF and missed diagnosis; and geographical factors-remote and difficult access to THD were the reasons for delay in seeking treatment and sought initial treatment at non-PHF. Transportation cost, being away from home, side effect of drugs and symptom relieve were the reasons for treatment default. Among the TB patients, 34.2% were referred by Basic Health Staff and 26.7% by neighbours. Appropriate interventions should be identified to help underserved, hard-to-reach TB patients getting proper treatment without prolonged delay and enhancing treatment adherence.

Myanmar Health Sciences Research Journal. 2013; 25(1): 29-35

## **Community-based TB control in Myanmar: Cost and contribution of TB patient Self Help Groups**

Wai Wai Han<sup>1</sup>, Saw Saw<sup>1</sup>, Thandar Lwin<sup>2</sup>, Thet Aung<sup>3</sup> and Tin Mi Mi Khaing<sup>2</sup>

1 Department of Medical Research (Lower Myanmar)

2 National Tuberculosis Program, Myanmar

3 World Vision Myanmar

### **Abstract**

**Background:** TB patient Self Help Groups (SHG) have been established and functioning in Myanmar to help TB patients and their families to complete treatment, be cured from TB and lead the community response towards TB. Community-based TB control is priority strategy for National TB Programme in Myanmar. Therefore information on the cost of establishing SHGs and their contribution for community-based TB control are necessary to replicate this strategy.

**Objective:** To access the costs of TB patient SHGs and to find out their contributions for TB control

**Methods:** This cross-sectional study was conducted in one of the high TB burden townships, Hlaingtharyar during 2013. Cost data of four SHGs were obtained by reviewing records and interviewing with the tool to categorize cost. Document review, five focus group discussions and nine key informant interviews were performed to find out activities of SHGs for TB control.

**Results:** The SHGs composed of old TB patients, family members of TB patients and volunteers. Costs spent for four SHGs ranged from US\$ 1297 to 2848 per year. Average cost per SHG for TB control activities was approximately US\$257.2 per year. TB control activities of SHGs were referring TB suspects to health centers, providing health education, performing Directly Observed Treatment (DOT) and supporting nutrition for TB patients. On average one SHG referred 72 TB suspects and provided DOT for 64 TB patients per year. Cost for one TB patient to get diagnosis was US\$ 19 and one TB patient to complete treatment was US\$ 23.5. TB control activities of SHGs contributed 46% of case detection in Hlaingtharyar.

**Conclusion:** Although there was some additional cost to conventional DOT, the SHG approach was effective in TB control. Empowerment of the TB patients and improvement in case detection as well as treatment completion has been accomplished simultaneously through this approach.

Presented at International Conference on Research Methodology and Scientific Writing (ICRMSW-2013), at MG University, Kottayam, Kerala, India

## Case notification rate and risk factors for tuberculosis among HIV infected patients after ART initiation in Myanmar

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1 International Union against Tuberculosis and Lung Disease (The Union),

2 National Tuberculosis Program, Myanmar

3 National AIDS Program

### Abstract

**Background:** In 2012, tuberculosis (TB) incidence was 377(322-435)/100,000 persons/year in general population in Myanmar. In HIV infected patients, TB is the most common opportunistic infections. Anti-retroviral treatment (ART) has been shown to reduce the incidence of TB. Isoniazid Prophylaxis Therapy (IPT) and infection control are additional methods implemented by the National TB Program. This study aims to assess the case notification rate (CNR) of TB, the effect of ART on TB CNR and risk factors associated with occurrence of TB among HIV patients enrolled into Mandalay General Hospital.

**Methods:** Retrospective cohort study of patients enrolled between May 2005 and January 2014, followed up for at least 1 month, ART naive, no TB at the time of enrollment, no prior history of TB and TB free during first month after enrollment. Patients' information was extracted from electronic database. TB CNR was calculated. Multivariate logistic regression was done to identify risk factors for TB.

**Results:** Total 3561 patients were enrolled in the study. Median length of follow up was 1.22 years (IQR: 0.5-2.2). Findings were: male 52%, median age: 35 years (IQR:30-41), median baseline BMI:19 kg/m<sup>2</sup>(IQR:17-22), median baseline CD4:142 cells/mm<sup>3</sup> (IQR:71-241), median baseline haemoglobin (Hb):12gm% (IQR:10-13). 35% (1222/3561) received IPT. 117 new TB cases occurred during 5464 Person-Years (PY) of follow up. The overall TB CNR was 2141 per 100,000 PY (95%CI:1774-2561). TB CNR was 7500/100,000 PY (95%CI:5772-9549) within 3 months of ART start, 1753/100,000 PY(95%CI:1202-2466) within 3 months to 1 year of ART start, 724/100,000 PY (95%CI:415-1174) within 1 year to 3 years of ART start and 1406/100,000 PY(95%CI:645-2653) over 3 years of ART start. Risk factors for TB were: male sex(OR:3.12,p < 0.01,95%CI: 1.9-5.14), baseline CD4 less than 100 cells/mm<sup>3</sup> (OR:4.7,p < 0.01,95%CI:1.67 - 13.25), baseline Hb below 10 g%(OR:1.79,p < 0.01,95%CI:1.18-2.73) and WHO stage 3 or 4(OR:3.83,p < 0.01,95%CI:1.97 - 7.45). IPT was protective (OR: 0.11, p<0.01,95%CI:0.04-0.31).

**Conclusion:** TB CNR among HIV infected patients is reduced after 3 months on ART to rebound after 3 years possibly due to ART failure. Male sex, low baseline CD4, anaemia at enrollment, advanced WHO stage were found to be the independent risk factors for TB. IPT has protective effect. Early health seeking, early initiation of ART, diagnosis of first line treatment failure and IPT are required to reduce the risk of TB among HIV patients.

**Source:** Poster presented at The 11<sup>th</sup> International Congress on AIDS in Asia and the Pacific, Bangkok, Thailand (18-22 November 2013)

## **Tuberculosis screening methods used for people living with HIV/AIDS from public sector in Myanmar**

Sai Ko Ko Zaw<sup>1</sup>, Saw Thein<sup>2</sup>, Thandar Lwin<sup>2</sup>, Win Maung<sup>3</sup>, Thet Ko Aung<sup>1</sup>,

Sandra Hla Myint<sup>1</sup>, Myint Shwe<sup>4</sup>, Aye Thida<sup>1</sup>, Philippe Clevenbergh<sup>1</sup>

1 International Union against Tuberculosis and Lung Disease (The Union)

2 National Tuberculosis Program, Myanmar

3 Disease Control

4 National AIDS Program, Myanmar

### **Abstract**

**Background:** In collaboration with Ministry of Health, The Union is implementing the Integrated HIV Care program in Mandalay, Myanmar since 2005. TB screening for people living with HIV/AIDS is done systematically for every patient at each visit and referred to TB diagnostic center. Various TB screening tools are used: (sputum smear examination, chest X ray, FNAC and GeneXpert®). We would like to report outcomes of TB screening in HIV infected patients.

**Methods:** Patients' registers, laboratory registers and treatment registers were reviewed. Baseline socio-demography, clinical and biological data were routinely collected. These data were analyzed by SPSS 20.

**Results:** Between 1st January 2012 and 31st December 2012, 556 HIV-infected patients who had TB symptoms were evaluated for TB diagnosis. Male patients were 349/556 (63%) of a mean age of 36year(SD=±10.2). Sputum smear (Ss) examination results of patients were: Ss positive: 43/556 (8%), Ss negative: 505/556 (91%), not examined: 8/556 (1%). Chest Xray showed abnormal results in 162/556(29%) patients. TB lymphadenitis was diagnosed in 37/38 (97%) of patients who underwent FNAC. GeneXpert® test was done in 368/556(64%) patients and the results were: MTB+/RIF sensitive: 36/368 (10%), MTB+/RIF resistance: 3/368 (0.8%), MTB+/RIF indeterminate: 1/368 (0.3%), Invalid/error: 4/368 (1%), MTB not detected: 324/368 (88%). After clinical and laboratory investigations, 214/556 (38%) patients were started anti-TB treatment among whom 83/214 (39%) are bacteriologically confirmed cases (Ss+ and Ss- & GeneXpert® positive). Patients' types were sputum-positive pulmonary 43/214 (20%), Sputum-negative pulmonary TB 89/214 (41%), and extrapulmonary TB 82/214 (39%).

**Conclusions:** About forty percent of HIV infected patients with presumptive TB are put on TB treatment. GeneXpert® (one sample) doubles the cases of bacteriological proven TB. However, many TB treatments are still provided solely on clinical features.

Poster presented at The 11<sup>th</sup> International Congress on AIDS in Asia and the Pacific, Bangkok, Thailand

## Effect of providing HE message on TB in local language through FM radio in Southern Shan State, Myanmar

Saw Saw<sup>1</sup>, Si Thu Aung<sup>2</sup>, Thida<sup>3</sup>, Khin Su Hlaing<sup>4</sup>, Thandar Lwin<sup>2</sup>,  
Zaw Myint<sup>2</sup> and Khin Sandar Oo<sup>1</sup>

1 Department of Medical Research (Lower Myanmar) 2 National TB programme,  
3 Department of Medical Research (Upper Myanmar) 4 Health Education Bureau, DOH

### Abstract

This is a collaborative study among Department of Medical Research (Lower Myanmar), Department of Medical Research (Upper Myanmar), Central Health Education Bureau (CHEB) and National TB Programme (NTP). An intervention study (before and after design) was conducted in two villages in Hopone Township, Southern Shan State using broadcasting health education messages on TB through Cherry FM Radio as an intervention. It was aimed to assess effect of providing health education message in local language through FM radio in selected township in Southern Shan State. Total of 400 face-to-face interviews, four Focus Group Discussions, five Key Informant Interviews and six In Depth Interviews were conducted. Development of audio script for health messages on TB was done in collaboration with NTP, CHEB and responsible persons from Cherry FM. Baseline assessment was conducted in April 2013 before broadcasting health messages on TB through Cherry FM. Cherry FM broadcasted health messages on TB daily, twice a day (afternoon and evening) for two months both in Myanmar and Pa Oh languages. Endline assessment was carried out in August 2013. More than half of the respondents used Pa Oh language in the community and about 30% used Shan language. According to qualitative findings, although there were Shan in the study area, most of them could speak Pa-Oh. Those who can speak Myanmar language fluently was about 49%. Possession of radio for individual use was 47.3% in baseline and 52.3% in endline. However 81% in baseline and 84% in endline listened to FM radio. About 55.2% in the baseline and 52.4% in the endline listened to the radio in the morning. Qualitative findings showed young people listened to FM radio more than old people. Some stated that they brought portable radio into the farm and listened while working. About 59% in baseline and 71% in endline had heard about TB. Source of information on TB from radio was increased from 37% in baseline to 53.9% in endline. There is increase in number of respondents who have heard about DOTS from 25.2% in baseline to 38% in endline. Total knowledge scores on TB was improved from 18.4% in baseline and 26.4% in endline got high knowledge score ( $p=0.056$ ). There is an association between listening to FM radio and having high knowledge scores ( $p<0.001$ ). Initial action of treatment seeking when getting TB symptoms was also improved—33% in baseline and 70% in endline would seek treatment from public health centre. About 60% of respondents suggested FM radio as an effective way of delivering health messages and most respondents preferred story type of health message because it is easier to understand

and be memorialized. Some respondents commented that duration of current health education programme through Cherry FM was too short and not enough to capture the key messages. However all have positive views towards broadcasting in their language which is understandable to both old and young people. Most respondents suggested broadcasting health messages not only for TB but also for other health problems. It should be mainly in the form of story type in both local and Myanmar languages and broadcasted it twice a day for at least 3 to 4 months through FM radio.

Dissemination of research findings was conducted on 11<sup>th</sup> April 2014 at DMR (LM)

(Poster presentation at 45<sup>th</sup> UNION World Conference on Lung Health, Barcelona, Spain)

### **TB infection control among health staff and MDR-TB patients in Yangon, Myanmar**

Yin Thet Nu Oo<sup>1</sup>, Le Le Win<sup>1</sup>, Thandar Lwin<sup>2</sup>, Saw Saw<sup>1</sup>, San San Shein<sup>2</sup>

1 Department of Medical Research (Lower Myanmar)

2 National Tuberculosis Programme, Myanmar

#### **Abstract**

**Background:** The study found out the situation of TB infection control measures in selected health centers in Yangon, perception and practice of health staff working on MDR TB management, and the knowledge and practice of TB among MDR TB patients.

**Methods:** A cross-sectional descriptive study was carried out in randomly selected 5 DOTS-plus townships in Yangon Region. Study population consisted of midwives and TB teams staff of selected townships and MDR TB patients living in study townships. Face to face interviews and in-depth interviews were done. Results: 94 MDR-TB patients participated and majority knows that the disease is airborne. Regarding knowledge on TB prevention; most of them mentioned covering mouth and nose when another person coughs, however only 11% answered eating nutritious food. Some 40% could mention the smokers and alcoholics, but very few knew that children, elderly and PLHIV are at risk of TB. Only very few mentioned the risk of transmission to health staff. 68% could mention wearing mask and very few could mention lighting and good ventilation to as knowledge prevent transmission. Here is gap in knowledge and practice on preventive measures. Risk of transmission among the family members living together with the patient turns out to be high. Most of the staffs in this study are aware that they are at high risk of TB transmission. Self-protection measures during the sputum processing and sputum examination are weak among the technicians according to the quail findings. However, midwives practice personal protection measures strongly.

**Conclusions:** Based on the findings, it is recommended to plan regular check-up program for those health staff, to strengthen TB infection control plan at the TB clinics. Administrative support and regular training of high risk health staffs is also recommended.

**Assessment of effectiveness of active case detections using mobile team activities in hard-to reach area, Laukkai Township, Northern Shan State, Myanmar**

Thida<sup>1</sup>, Thandar Lwin<sup>2</sup>, Kyaw Oo<sup>1</sup>, Saw Thein<sup>2</sup>, Thandar Thwin<sup>2</sup>, Yee Yee Myint<sup>1</sup>,

Nwe Nwe Kyaw<sup>1</sup>, Sandar Htay<sup>1</sup>, Phyu Phyu Khaing<sup>1</sup>

1 Department of Medical Research (Upper Myanmar)

2 National Tuberculosis Programme, Department of Health

**Abstract**

This was a collaborative study between Department of Medical Research (Upper Myanmar) and National Tuberculosis Programme (NTP), Department of Health. Two Active Case Finding (ACF) activities through mobile team were conducted at TB low performance Laukkai Township, Northern Shan State, during July and October, 2013. Analysis of the information obtained from first and second ACF activities was done to see the effect on number of TB cases notified and Case Notification Rates (CNR) using such methodology in resource limited hard-to reach area. Enhancement of ACF included well convinced local community leaders, provision of TB health talk, telecasting of TB information prior to the activities and obtaining assistance of local Basic Health Staff (BHS), TB Community Health Workers and translators during the activities. Diagnosis of TB was made depending on clinical signs and symptoms, Chest X-Ray findings, sputum microscopy and culture results.

**Findings:** A total of 85 cases (all form) out of 2064 participants at the first ACF giving CNR of all form 4118/100000 population and 41 out of 923 participants at the second providing CNR of all form 4442/100000 population were notified. More male (51.1% vs 40.1%), more symptomatic patients (66.5% vs 63.6%) and people from nearby villages became participated at the second ACF activity. X-ray suggestive of active TB lesion (3.7% vs 2.5%) and TB suspects (13.0% vs 5.3%) were increasingly found at second ACF. Male TB cases were almost double (82 vs 44 cases), peak at 45-54 years. Sex ratio of TB patients was equal at 15-24 year age group and 78.5% of TB patients were from rural area. Treatment taking at Township Health Department among still on TB patients increased at the second ACF (68.3% vs 24.1%). Asymptomatic TB patients were difficult to be convinced to take anti-TB treatment. Some defaulted patients from first ACF were retrieved during the second ACF. CNR of smear positive TB cases at the first ACF was 727/100,000 population (15 out of 2064 participants) and it was 650/100,000 population (6 out of 923 participants) at the second ( $P=0.034$ ). CNR of culture positive TB cases at the first ACF was 775/100,000 population (16 out of 2064 participants) and it was 867/100,000 population (8 out of 923 participants) at the second ( $P=0.000$ ). CNR of bacteriology confirmed TB cases at the first ACF was 1065/100,000 population (22 out of 2064 participants) and it was 1083/100,000 population (10 out of 923 participants) ( $P=0.890$ ). CNR of all form of TB cases at the first ACF was 4118/100,000 population (85 out of 2064 participants) and became 4442/100,000



population (41 out of 923 participants) at the second ACF. Comparison of CNRs of the first and second ACF, participants from villages not included in the first ACF being excluded, was done. CNR of smear positive TB cases at the first ACF was 727/100,000 population (15 out of 2064 participants) and it was 500/100,000 population (4 out of 800 participants) at the second ( $P=0.014$ ). CNR of culture positive TB cases at the first ACF was 775/100,000 population (16 out of 2064 participants) and it was 750/100,000 population (6 out of 800 participants) at the second ( $P=0.000$ ). CNR of bacteriology confirmed TB cases at the first ACF was 1065/100,000 population (22 out of 2064 participants) and it was 875/100,000 population (7 out of 800 participants) ( $P=0.865$ ). CNR of all form of TB cases at the first ACF was 4118/100,000 population (85 out of 2064 participants) and became 3500/100,000 population (28 out of 800 participants) at the second ACF. Combination use of sputum smear and culture techniques show no significance between the first and second ACF highlighted that more cases could be detected by including both methods. Contribution of case notification (all form) in Laukkai District by first ACF was 15.1% and increased to 22.3% with the combination of the second.

**Conclusion:** ACF using two consecutive mobile team activities in a specified resource limited, hard-to-reach area has positive effect on the TB case finding within short duration provided having no language barrier, well convinced local authorities and local BHSs workforce.

#### **Recommendation**

1. Method of using two active case finding through mobile team activities with appropriate enhancement is urgently needed to be applied in hard-to-reach areas of Myanmar every year till the Millennium Development Goal is achieved.
2. It is important to include all age groups and both urban and rural areas from rural area.
3. Associated factors of TB patients are needed to be explored in order to focus on the specific risk group in recruitment during ACF
4. Effectiveness of applying sophisticated machine such as GeneXpert in addition to X-ray, sputum smear and culture should be explored in the future studies.
5. Evaluation of treatment outcomes and reasons for defaulted cases should be followed after intervention.

## Simple Multiplex PCR Assay for Identification of Beijing Family *Mycobacterium tuberculosis* Isolates with a Lineage-Specific Mutation in Rv0679c

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10 Division of Bacteriology, Department of Microbiology and Immunology, Faculty of Medicine, Tottori University, Yonago, Tottori, Japan

The Beijing genotype of *Mycobacterium tuberculosis* is known to be a worldwide epidemic clone. It is suggested to be a possibly resistant clone against BCG vaccination and is also suggested to be highly pathogenic and prone to becoming drug resistant. Thus, monitoring the prevalence of this lineage seems to be important for the proper control of tuberculosis. The Rv0679c protein of *M. tuberculosis* has been predicted to be one of the outer membrane proteins and is suggested to contribute to host cell invasion. Here, we conducted a sequence analysis of the Rv0679c gene using clinical isolates and found that a single nucleotide polymorphism, C to G at position 426, can be observed only in the isolates that are identified as members of the Beijing genotype family. Here, we developed a simple multiplex PCR assay to detect this point mutation and applied it to 619 clinical isolates. The method successfully distinguished Beijing lineage clones from non-Beijing strains with 100% accuracy. This simple, quick, and cost-effective multiplex PCR assay can be used for a survey or for monitoring the prevalence of Beijing genotype *M. tuberculosis* strains.

**Source:** Journal of Clinical Microbiology 2013;51(7):2025-32.

### Research in progress

1. Establishment of molecular strain typing methods for Mycobacterium tuberculosis in Myanmar  
Collaboration: DMR (LM), NTP, Pusan National University  
Grant: Korea International Cooperation Agency (KOICA)
2. Molecular based detection of genitourinary tuberculosis from clinically suspected cases in renal surgical ward of New Yangon General Hospital  
Collaboration: DMR (LM), Urosurgical Unit, NYGH
3. Cutaneous TB: Different clinical types and efficacies of diagnostic tests  
Collaboration: DMR (LM), NTP, Dermatology Department, Yangon

### 5. Special occasions

#### 5.1 External technical support

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

**Table 28 . International visitors in 2013**

No.	Name and Designation	Duration	Remarks
1.	Mr. William Pick (Senior Health Advisor)	15.1.2013 to 16.1.2013	USAID
2.	Dr. Ikushi Onozaki (Team Leader) Dr. Knut Leonnroth (Senior Medical Officer)	12.2.2013 to 21.2.2013	WHO
3.	Dr. Akira SHIMOUCI (Expert on TB Control)	18.2.2013 to 26.2.2013	JICA (MIDCP)
4.	Dr Michael Rich Consultant for MDR TB (Partner in help) Dr Fraser Wares (Medical Officer, WHO)	25.4.2013 to 2.5.2012	GLC mission
5.	Delphine Sculier (TB/HIV Consultant)	16.5.2013 to 22.5.2013	WHO
6.	Dr. C.N. Paramasivan (Head of TB Programme)	25.8.213	FIND
7.	Professor Steven Graham (Consultant Paediatrician) Dr. Dan Engleman (Paediatrician)	18.8.2013 to 21.8.2013	WHO

8.	Dr. Pierre- Yves Norval (Public Health Specialist)	29.8.2013 to 4.9.2013	WHO
9.	Dr. Denis Broun (Executive Director, UNITAID) and team)	8.9.2013 to 12.9.2013	WHO

### **5.2 Global Fund Round 9, NFM**

The Global Fund provided support for the fight against AIDS, TB and Malaria, working with partners to support the most effective prevention and treatment. New advances in science are seized and practical experience is applied to defeat these diseases and remove them as threats to public health.

Myanmar country coordinating mechanism submitted the application with the title of “Scaling up of Tuberculosis control in Myanmar” to Global Fund round 9 grant in June, 2009. The GF round 9 grant included 2 phases, phase I is from 2011 to 2012 and phase II, 2013 to 2015. The concept note for New Funding Model (NFM) was prepared in February 2013 and TB TSG discussed with members and submitted to Executive Working Group (EWG). Then, MHSCC submitted to GF in April 2013 and Technical Review Panel clarification was completed in May 2013.

The grant agreement under NFM was signed between Ministry of Health and GF in June 2013 and NFM was implemented in July 2013, covering 319 out of 330 townships. Global Fund is a performance-based funding which ensures that funding decisions must be based on a transparent assessment of results along with time-bound targets. The total approved fund was USD 82.3 million for NFM.

NTP could achieve 7 out of 8 indicators (above 90%) of GF NFM in 2013. Of 142,162 TB patients notified in 2013, 44,737 patients were bacteriologically confirmed cases. However, GeneXpert reported bacteriologically confirmed cases were only counted in 4<sup>th</sup> quarter of 2013. Totally 35,033 new smear positive TB patients were successfully treated achieving treatment success rate (TSR) of 85.4%. Concerning with Laboratory performance, (413) out of (425) public and private labs sent QC slides for EQA and among them, 388 laboratories showed adequate performance on EQA (94%). In addition, all 344 units (319 townships, 23 hospitals and 2 partners- PSI & MSF-H) 100% reported no stock-out of first-line anti-TB drugs on the last day of the quarter. Beside that 6,271 TB patients (aged 15 years and above) were tested for HIV at TB/HIV collaborative sites. In MDR-TB portion, 442 laboratory confirmed MDR TB patients were enrolled. For Health System Strengthening, 2,757 Basic Health Staff were trained on TB management.

At the end of NFM, NTP's achievement was A1 as shown as below:

### Quantitative Indicator Rating TB Grant → A1

Performance Rating		ALL Indicators rating					
A1	> 100%	Top 10 Indicators Rating	A1	A2	B1	B2	C
A2	100-90%	A1	A1	A2	A2	A2	A2
B1	60-89%	A2	A2	A2	B1	B1	B1
B2	30-59%	B1	A2	B1	B1	B1	B2
C	<30%	B2	B1	B2	B2	B2	B2
AVG performance on Top 10 TRAINING Indicators only	0	C	B2	B2	B2	C	C
AVG performance on TOP TEN Indicators (Including TRAINING)	100%	Intermediate Quantitative Rating result from the Matrix above					
Number of TOP TEN Indicators with B2 or C Rating	0	A1					
TOP TEN Indicators rating	A1	Final Quantitative Rating					
AVG performance ALL Indicators	102%	A1					
ALL Indicators rating	A1						
Intermediary Result for Quantitative indicator rating	See Rating highlighted in the Matrix						

**Table 29. TB control activities in 2013 with GF Funding**

<b>Service Delivery Area : Improving Diagnosis</b>					
<b>Activity</b>	<b>Measurement unit</b>	<b>Planned</b>	<b>Completed</b>	<b>Achievement</b>	<b>Remark</b>
Active case finding using mobile team (periurban and high case load areas)	No. of mobile team missions	45	45	100%	
Cross Sectional TB Screening for Prisoners at 20 Prisons	No. of missions conducted Active case finding	20	20	100%	
Volunteer incentive for X ray operation	No. of townships	9	8	72%	
Transport of sputum samples to Culture labs (NTRL & Upper Myanmar TB Lab) from Regions/States	No. of R/S transporting sputum samples to culture labs	93	68	73%	
Sputum collection centres	No. of townships conducting sputum collection centres	60	60	100%	

Initial home visit and Contact tracing done by Basic Health Staff	No. of townships conducting contact tracing	319	311	97%	
<b>Service Delivery Area : Monitoring and Evaluation</b>					
<b>Activity</b>	<b>Measurement unit</b>				<b>Remark</b>
Technical Strategic Group (TSG) Meeting	No. of meetings conducted	4	4	100%	
Annual Laboratory Evaluation Meeting (National)	No. of meetings conducted	1	1	100%	
Annual TB Evaluation Meeting (National)	No. of meetings conducted	1	1	100%	
State and Regional annual evaluation meeting	No. of meetings conducted	17	17	100%	
Quarterly TB Evaluation meeting at township level (100 selected townships)	No. of meetings conducted	400	373	93%	
Quarterly cohort review meeting at low performance townships	No. of meetings conducted	120	118	98%	120 meetings for 30 townships
<b>Service Delivery Area : Programme Management and Administration</b>					
<b>Activity</b>	<b>Measurement unit</b>				<b>Remark</b>
Advocacy meeting on Gene X pert	No. of meetings conducted	9	4	44%	
Installation, demonstration of on job training for Gene X pert	No. of trainings conducted	9	4	44%	
Supervision from Central to state & divisional level(17 S/D x 1 time)	No. of supervision visits conducted	47	33	70%	
Supervision from Central to TB/HIV townships (once a year)	No. of supervision visits conducted	11	6	55%	

Supervision to border DOTS townships (once a year)	No. of supervision visits conducted	6	3	50%	
Supervision of Microbiologist to States/Regions and districts	No. of supervision visits conducted	17	7	41%	
Supervision from Central to Public Public Mix DOTS hospitals (quarterly)	No. of supervision visits conducted	23	17	74%	
Supervision from Region and State to township (1 time/township) including 22 MDR-TB townships, and Lab. Supervision	No. of supervision visits conducted	290	253	87%	
<b>Service Delivery Area : Human Resource Development</b>					
<b>Activity</b>	<b>Measurement unit</b>				<b>Remark</b>
Training on 'management of TB at district level'	No. of training sessions conducted	1	1	100%	
Orientation training on TB control update for NTP staff	No. of training sessions conducted	4	4	100%	
Training for BHS on 'Management of TB for health facility staff'	No. of training sessions conducted	20	20	100%	
Training on cohort review meeting	No. of training sessions conducted	30	30	100%	
Training on TB counseling	No. of training sessions conducted	20	20	100%	
Training on FLM for lab. technicians	No. of training sessions conducted	3	3	100%	
Training on tuberculin testing	No. of training sessions conducted	1	0	0%	

Training on sputum microscopy for lab. Technicians	No. of training sessions conducted	2	2	100%	
Training of NTP/NAP staff on TB/HIV from currently implementing townships	No. of training sessions conducted	1	1	100%	
Training of NTP/NAP staff on TB/HIV from newly expanded townships	No. of training sessions conducted	1	1	100%	
Training for new project area of MRCS volunteer	No. of training sessions conducted	4	4	100%	
Training for MRCS volunteers in existing implementing townships	No. of training sessions conducted	4	4	100%	
Advocacy and Training on PPM DOTS for new expanded hospitals	No. of training sessions conducted	3	3	100%	
<b>Service Delivery Area : TB/HIV</b>					
<b>Activity</b>	<b>Measurement unit</b>				<b>Remark</b>
Township TB/HIV committee meeting	No. of meetings conducted	110	109	99%	
TB/HIV Sentinel surveillance	No. of sentinel sites	28	28	100%	
Advocacy meeting on TB/HIV activities for newly expanded townships	No. of meetings conducted	10	10	100%	
<b>Service Delivery Area : MDR TB</b>					
<b>Activity</b>	<b>Measurement unit</b>				<b>Remark</b>
MDRTB Patients enrolled and began second line treatment	No. of patients	508	667		108 patients left to be treated from Year 2 included



<b>Service Delivery Area : TB Care for High Risk Groups</b>					
<b>Activity</b>	<b>Measurement unit</b>				<b>Remark</b>
Border Health committee bi-annual meeting	No. of meetings conducted	6	3	50%	
Quarterly evaluation meeting at border townships	No. of meetings conducted	12	12	100%	
Health talk at RHC	No. of townships conducted health talks	24	15	63%	
<b>Service Delivery Area : PPM</b>					
<b>Activity</b>	<b>Measurement unit</b>				<b>Remark</b>
Annual national level meetings(Public - Public Mix)	No. of meetings conducted	1	1	100%	
Miss dose/Defaulter tracing cost for Public Public Mix hospitals	No.of defaulter tracing done by PPM hospitals	72	68	94%	
Incentive for hospital staff	No.of hospitals	18	17	94%	
Initial home visit of hospital staff (Public Public Mix)	No. of hospitals	18	17	94%	
<b>Service Delivery Area : Advocacy, Communication and Social Mobilization (ACSM)</b>					
<b>Activity</b>	<b>Measurement unit</b>				<b>Remark</b>
World TB Day Ceremony at central level	No. of events	1	1	100%	
World TB Day Ceremony at Regional/State levels	No. of events	17	17	100%	
World TB Day Ceremony at district level	No. of events	48	47	98%	

<b>Service Delivery Area : Community Based TB Care</b>					
<b>Activity</b>	<b>Measurement unit</b>				<b>Remark</b>
Health talks at RHC level and urban health center (18 times/qr/township) (Sagaing 8 tsps, Magway 10 tsps)+(9 tsp.in Shan State South & 5 tsp in Shan State North)	No.of Health Talk (times)	128	127	99%	
Annual Evaluation Meeting for community based TB care at Nay Pyi Taw	No. of meetings conducted	1	1	100%	
Evaluation meeting on community based TB control activities using MRCS in Mandalay	No. of meetings conducted	1	1	100%	

## 6. BCG Immunization

BCG immunization was started in 1951 to those who were tuberculin test negative. In 1963, Freeze Dried BCG Vaccine was introduced. Direct BCG vaccination was implemented in 1969. BCG Vaccination has become part of the Expanded Programme on Immunization (EPI) and the BCG team of NTP has been integrated into Regional and State Health Department since 1978.

**Table 30. BCG coverage (2005-2013)**

State/Region	2005	2006	2007	2008	2009	2010	2011	2012	2013
Ayeyarwaddy Region	75%	64%	85%	84%	92%	92%	89%	89%	90%
Bago Region (Bago)	74%	81%	89%	94%	95%	94%	92%	93%	94%
Bago Region (Pyay)	90%	90%	94%	86%	95%	96%	94%	91%	92%
Chin State	99%	119%	93%	63%	79%	84%	84%	60%	93%
Kachin State	89%	108%	95%	89%	95%	92%	77%	74%	82%
Kayah State	81%	83%	83%	96%	94%	96%	80%	91%	100%
Kayin State	60%	63%	85%	85%	82%	80%	91%	79%	81%
Magway Region	85%	89%	90%	92%	93%	95%	110%	81%	95%
Mandalay Region	68%	75%	86%	77%	94%	94%	94%	94%	90%
NayPyiTaw Council Area								91%	91%
Mon State	86%	80%	94%	92%	96%	97%	96%	93%	92%
Rakhine State	106%	76%	92%	107%	96%	94%	97%	70%	66%
Sagaing Region	88%	83%	91%	94%	94%	98%	90%	89%	97%
Shan State (Kengtong)	42%	38%	85%	83%	89%	82%	54%	60%	61%
Shan State (Lashio)	60%	68%	70%	75%	86%	80%	80%	67%	75%
Shan State (Taunggyi)	84%	71%	83%	83%	86%	86%	87%	85%	91%
Taninthayi Region	93%	91%	97%	97%	97%	95%	96%	64%	96%
Yangon Region	61%	65%	94%	92%	98%	97%	97%	103%	93%
<b>Country</b>	<b>76%</b>	<b>76%</b>	<b>89%</b>	<b>89%</b>	<b>93%</b>	<b>93%</b>	<b>93%</b>	<b>87%</b>	<b>88%</b>

## 7. Budget and external technical support

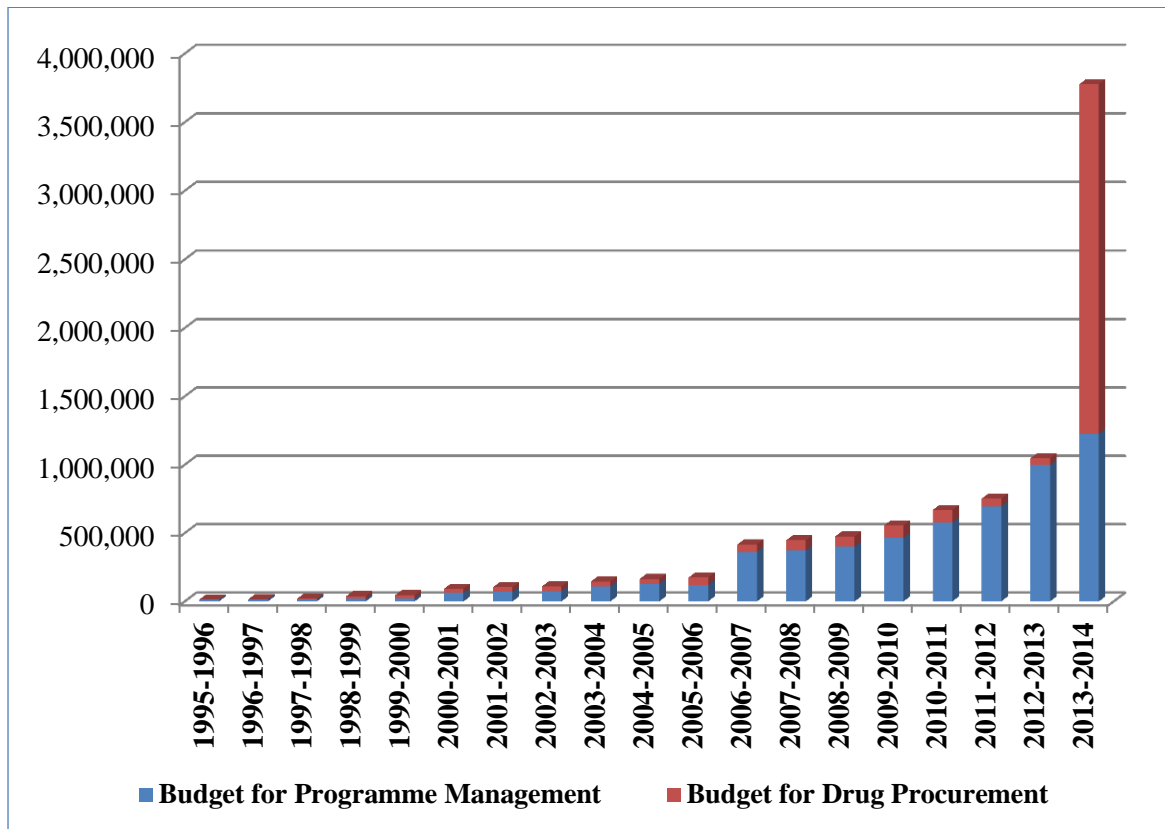
### 7.1. Government budget for NTP

Government budget was only 14 million Kyats in 1995-1996, and increased to 3776 million Kyats in 2012-2013. Government commitment for purchasing drugs especially second line anti-TB was very high and it was 2550 million Kyats in 2013-2014.

**Table 31. Government budget for NTP**

Year	Regular Budget (Kyats in thousands)	Drugs purchase (Kyats in thousands)	Total (Kyats in thousands)
1995-1996	13,711	782	14,493
1996-1997	14,527	1,614	16,141
1997-1998	16,017	5,000	21,017
1998-1999	18,777	19,600	38,377
1999-2000	20,509	25,000	45,509
2000-2001	62,747	30,000	92,747
2001-2002	68,470	35,000	103,470
2002-2003	74,349	35,000	109,349
2003-2004	109,667	35,000	144,667
2004-2005	129,300	35,000	164,300
2005-2006	119,955	55,000	174,955
2006-2007	361,974	55,000	416,974
2007-2008	373,126	74,700	447,826
2008-2009	400,146	74,700	474,846
2009-2010	465,190	90,011	555,201
2010-2011	574,785	94,396	669,181
2011-2012	693,564	58,251	751,905
2012-2013	996,995	50,025	1,047,020
<b>2013-2014</b>	<b>1,225,976</b>	<b>2,550,941</b>	<b>3,776,917</b>

**Figure 25. Government budget for National Tuberculosis Programme (1995-2014)**



**Table 32. External Financial Support for NTP (2013)**

2013	Global Fund	WHO	JICA/JGA	GDF	UNITAID	3MDG	USAID
First line TB drugs (including Paediatric TB drugs)	5,626,161			935,000	197,913		
Human Resource	341,298					6,000	
Routine programme management and supervision activities	2,342,135	55,200	92,569			137,812	90,000
Laboratory supplies and equipment for smear, culture and DST	2,211,282	7,000	38,233				
PPM: Public-Private Mix DOTS	38,086	5,000					
Collaborative TB/HIV activities	260,543	5,000					
Second line drugs for MDR TB	3,296,373						
Management of MDR TB	611,451	10,000				117,761	37,000
Community involvement	218,586	6,250					
ACSM: Advocacy, communication and social mobilization	108,088	10,030					
Operational research		38,520					
Surveys	597,284						
Other technical assistant	83,907						313,000
<b>Total</b>	<b>15,735,193</b>	<b>137,000</b>	<b>935,000</b>	<b>130,802</b>	<b>197,913</b>	<b>261,573</b>	<b>440,000</b>

## **8. Constraints**

### **1. Pursuing high-quality DOTS expansion and enhancement**

- Human resource necessity and staff motivation
- Limitation in reaching to the un-reach
- Huge disease burden and co-infection

### **2. Addressing TB/HIV, MDR-TB and other challenges**

- Rapid scaling up of TB/HIV causes weak coordination at Regional/State level and below
- Utilization of IPT was low
- Emerging Drug-resistant TB
- Limited funding for Infection Control for health facilities and congregate settings

### **3. Contributing to health system strengthening**

- Limitation in health financing and health work force
- Limited service delivery in hard to reach area

### **4. Engaging all care providers**

- Limitation to scale up PPM-DOTS
- Weak mechanism in reporting of PPM-DOTS
- Case holding was one of the challenges in PPM-DOTS

### **5. Empowering people with TB, and communities**

- Low community awareness
- No SOP, guideline for community involvement
- No Sustainability in community participation
- Limited in appropriate materials for ACSM

### **6. Enabling and promoting research**

- Limited funding for Operational Research

## 9. Progress towards MDGs

### 9.1 Millennium Development Goal, targets and indicators for tuberculosis

Goal 6 – Combat HIV/AIDS, malaria and other diseases

Goal of the National Tuberculosis Programme (NTP) – to reduce morbidity, mortality and transmission of TB until it is no longer a public health problem and to prevent the development of drug resistant TB

Target 6.c Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases

Indicator 6.9 – Prevalence and death rates associated with tuberculosis

<b>Tuberculosis Indicator 6.9</b>	<b>1990</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>
Tuberculosis prevalence rate per 100,000 population per year	922	525	506	489	473
Tuberculosis death rate per 100,000 population per year	133	49	48	48	49
Tuberculosis incidence rate per 100,000 population per year	404	384	381	377	373

Indicator 6.10 – Proportion of tuberculosis cases detected and cured under DOTS

<b>Tuberculosis Indicator 6.10</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>
Tuberculosis detection rate under DOTS	76	77	78	79
Tuberculosis treatment success rate under DOTS	86	86	85	85

## 10. Case Finding and Case Holding (2013)

This annual report was based on the quarterly and annual reports received from Region/State TB Centres, other reporting units such as PPM hospitals and implementing partners, Local NGOs and INGOs during 2013.

### 10.1 Case Finding

NTP targeted to achieve at least 70% case detection of estimated new smear positive in the community. In 2013, NTP covered the whole country populations in 330 DOTS townships. The estimated number of new smear positive TB patients in 2013 for the whole country was 54,106. NTP could notify 49,721 cases of smear positive including

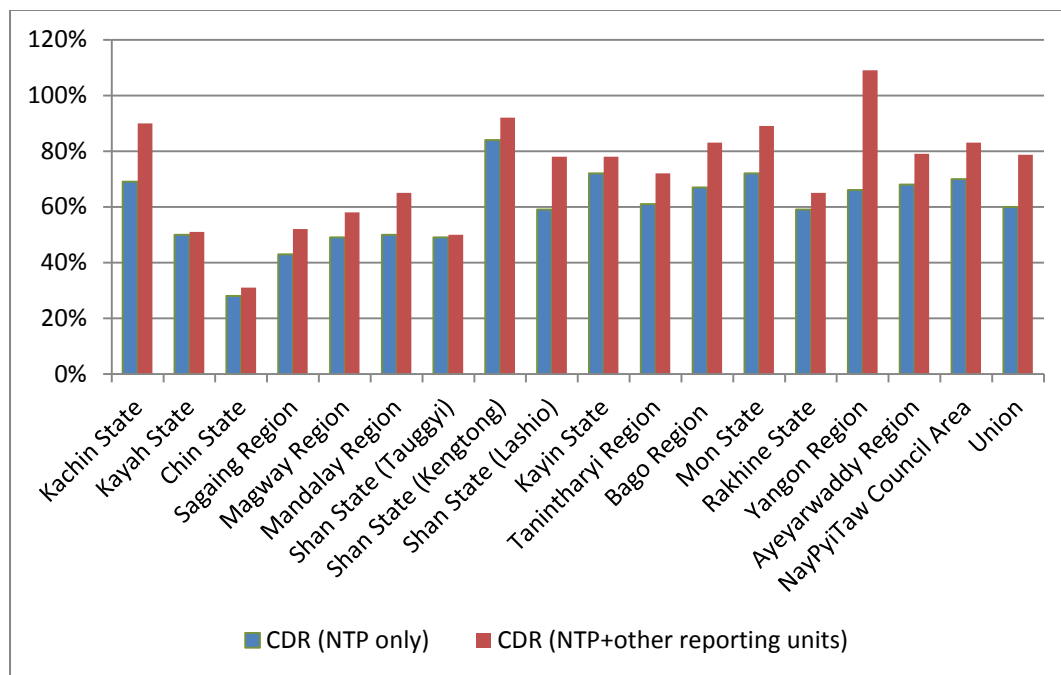


42,595 cases of new smear positive. Case detection rate for smear positive cases for 2013 was 78.7% over 319 reporting townships including partners' contribution.

The case detection rates (CDRs) of 6 Regions and 4 States, including Naypyitaw Council, went beyond the target of 70%. Only Chin State fell into the group of CDR <40%. Kayah State increase CDR to 51% compared to 2012 which only 31% with the effort of both NTP and implementing partners.

Of all 34,466 TB cases (all forms) reported by partners (MMA, PSI, MSF-Holland, MSF-Switzerland, MDM & AHRN) and other reporting units (2 TB specialist hospitals, 1 HIV hospital, 19 PPM hospitals & Mandalay Jail hospital), 10,250 (29.7%) were new smear positive cases, contained in 11,890 (34.5%) smear positive TB cases.

**Figure 26. CDR of Regions & States by NTP alone and NTP with Partners (2013)**

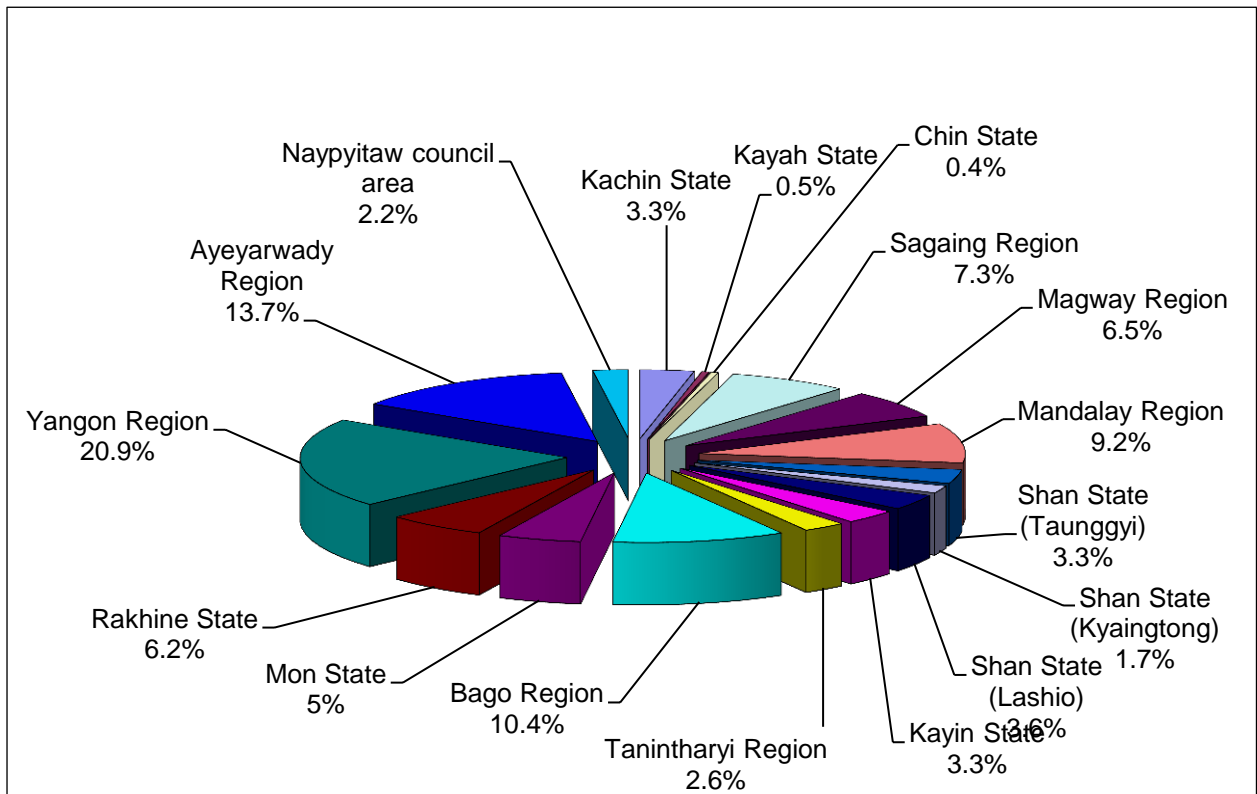


**Table 33. Case Detection Rate by Regions and States for 2013**

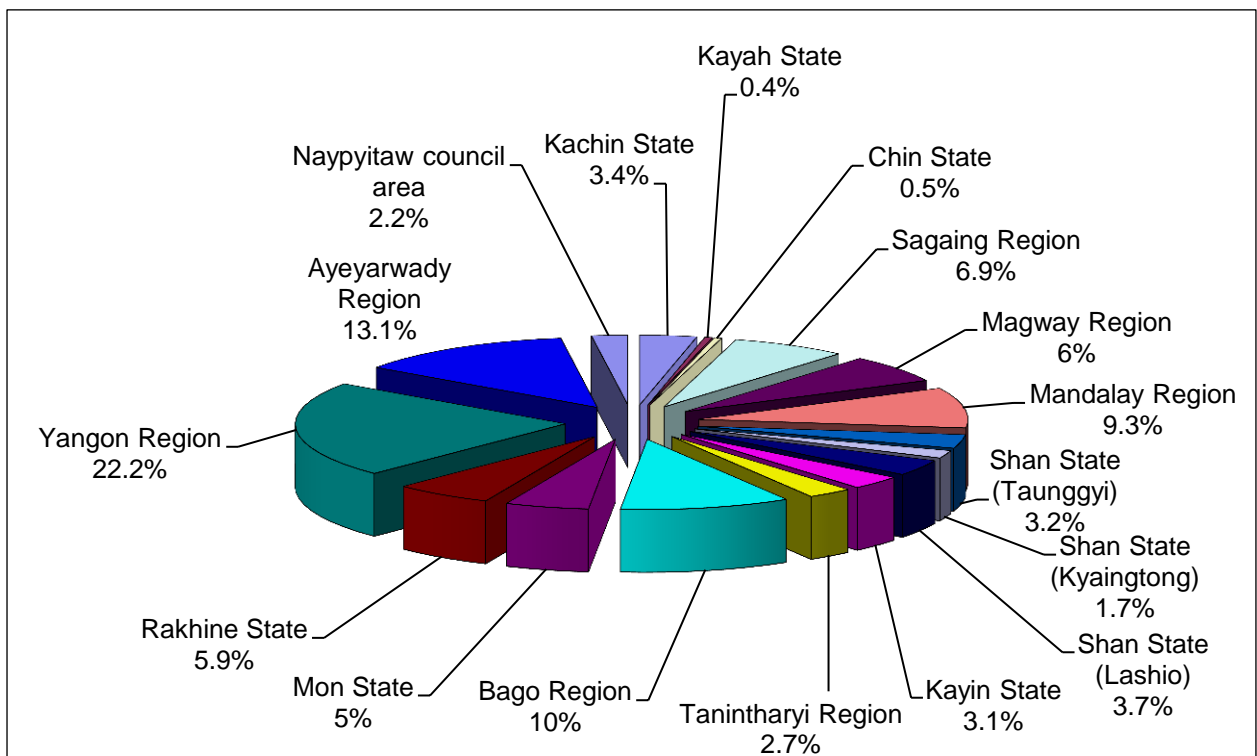
Regions and States	CDR for 2013	
	NTP only	NTP + other reporting Units
Kachin State	69%	90%
Kayah State	50%	51%
Chin State	28%	31%
Sagaing Region	43%	52%
Magway Region	49%	58%
Mandalay Region	50%	65%
Shan State (Taunggyi)	49%	50%
Shan State (Kengtong)	84%	90%
Shan State (Lashio)	59%	78%
Kayin State	72%	78%
Tanintharyi Region	61%	72%
Bago Region	67%	83%
Mon State	72%	89%
Rakhine State	59%	65%
Yangon Region	66%	109%
Ayeyarwaddy Region	68%	79%
NayPyiTaw Council Area	70%	83%
<b>Union</b>	<b>60%</b>	<b>78.7%</b>

In 2011, among 319 reporting townships, 141 townships (44%) achieved the target of  $\geq 70\%$  with the effort of NTP and partners. If NTP alone, only (94) townships (29%) attained the target.

**Figure 27. Proportion of new smear positive TB cases detected in Region/State out of NTP's total new smear positive TB cases in 2013**



**Figure 28. Proportion of all smear positive TB cases detected in Region/State out of NTP's total smear positive TB cases in 2013**



**Table 34. Categories of Townships in States & Regions by CDR (2013)**

No.	States and Region	No. of township with CDR					Total no. of township	No. of tsp. from which reports not received
		≥ 70%	60-69%	50-59%	40-49%	<40%		
1.	Kachin State	8	0	2	1	2	18	5
2.	Kayah State	1	1	2	1	2	7	0
3.	Chin State	0	1	0	0	8	9	0
4.	Sagaing Region	6	2	4	9	16	37	0
5.	Magway Region	6	4	1	5	9	25	0
6.	Mandalay Region	12	3	1	5	7	28	0
7.	Shan State (Taunggyi)	5	2	1	7	6	21	0
8.	Shan State (Kyaingtong)	7	0	0	0	3	10	0
9.	Shan State (Lashio)	9	1	1	1	6	24	6
10.	Kayin State	4	1	0	1	1	7	0
11.	Tanintharyi Region	4	1	1	2	2	10	0
12.	Bago Region	15	4	6	2	1	28	0
13.	Mon State	5	3	2	0	0	10	0
14.	Rakhine State	7	1	5	2	2	17	0
15.	Yangon Region	33	3	5	3	1	45	0
16.	Ayeyarwaddy Region	16	5	4	0	1	26	0
17.	NayPyiTaw Council Area	3	3	0	0	2	8	0
<b>Total</b>		<b>141</b>	<b>35</b>	<b>35</b>	<b>39</b>	<b>69</b>	<b>330</b>	<b>11</b>

Townships which report not received.

Kachin State: 1. N'gyanyan 2.Hsawlaw 3.Khaunglanbu 4.Naungmon 5. Sumprabum

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

The proportion of sputum smear positive pulmonary TB cases among all pulmonary TB cases was 54% and the ratio of new sputum smear positive TB cases to new smear negative TB cases was 0.98:1 (Country figure). If only NTP data were analyzed, proportion of new smear positive to new smear negative was increase to (57%), the ratio was 1:1.

The proportion of sputum smear positive pulmonary TB cases out of all TB cases was lower than 40% in Kachin, Kayah, Kayin, Chin, Mon & Shan (Lashio) States, and Bago and Tanintharyi Regions. They detected and treated more sputum smear negative TB cases, and it is needed to assess if the smear positive TB cases are declining or not. The quality of township laboratories should also be checked in those areas.

Among all notified smear positive TB cases, new smear positive cases occupied 85.7%, and relapse, defaulter and failure cases did 9.8%, 1% and 3.6% respectively. Yangon Region could detect 20.9% of new smear positive cases out of NTP's total new smear positive cases, followed by Ayeyarwaddy Region of 13.7%, then by Bago Region of 10.4% and Mandalay Region of 9.2%. Therefore, three biggest Regions of Myanmar, Yangon, Ayeyarwaddy and Mandalay contributed to 43.8% of new smear positive TB cases.

**Table 35. Contribution of new sputum smear positive and all TB cases by Regions & States to NTP's total (2013)**

No.	State / Regions	DOTS covered Townships in each Region / State	New smear (+) patients out of NTP's total new smear (+) TB cases	All forms of TB cases out of NTP's all TB cases
1.	Kachin State	18/18=100%	3.3%	3.4%
2.	Kayah State	7/7=100%	0.5%	0.4%
3.	Chin State	9/9=100%	0.4%	0.5%
4.	Sagaing Region	37/37=100%	7.3%	6.9%
5.	Magway Region	25/25=100%	6.5%	6.4%
6.	Mandalay Region	28/28=100%	9.2%	9.3%
7.	Shan State (Taunggyi)	21/21=100%	3.3%	3.2%
8.	Shan State (Kengtong)	10/10=100%	1.7%	1.7%
9.	Shan State (Lashio)	24/24=100%	3.6%	3.7%
10.	Kayin State	7/7=100%	3.3%	3.1%
11.	Tanintharyi Region	10/10=100%	2.6%	2.7%
12.	Bago Region	14/14=100%	10.4%	10.0%
13.	Mon State	10/10=100%	5.0%	5.0%
14.	Rakhine State	17/17=100%	6.2%	5.9%
15.	Yangon Region	45/45=100%	20.9%	22.2%
16.	Ayeyarwaddy Region	26/26=100%	13.7%	13.1%
17.	NayPyiTaw Council Area	8/8=100%	2.2%	2.2%

**Table 36. Categories of CDR by Regions and States (2013)**

≥ 70%	60-69%	50-59%	40-49%	<40%	Total
<b>Country</b> Naypyitaw, Yangon, Bago, Ayeyarwaddy, Tanintharyi, Mon, Kayin, Shan (Kyaingtong), Kachin, Shan (Lashio),	Rakhine, Mandalay,	Sagaing, Magway, Kayah, Shan(Taunggyi)		Chin	
10	2	4	-	1	17

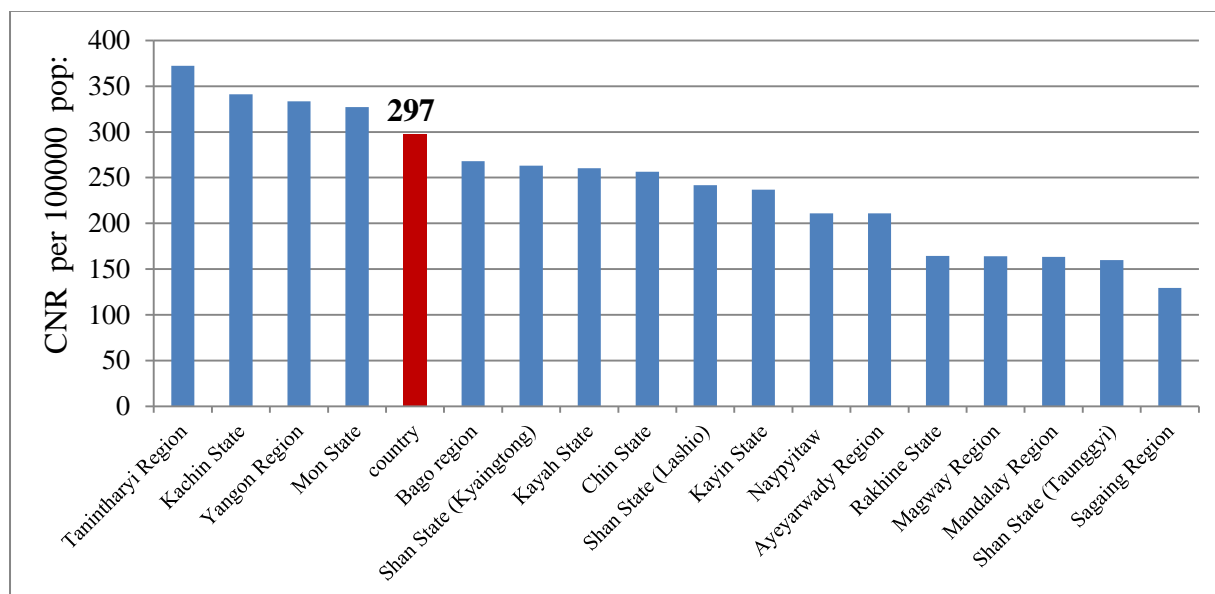
Regions and States with CDR of less than 50% should be supportively supervised more than before. Accelerated Case Finding such as initial home visit and contact tracing, sputum collection points in hard to reach areas, community based TB care activities and mobile team activities should be conducted in order to improve case findings.

Countrywide Case Notification Rate (CNR) for all forms of TB cases was 297/100,000 population, and that for new smear positive TB cases was 89 per 100,000 population.

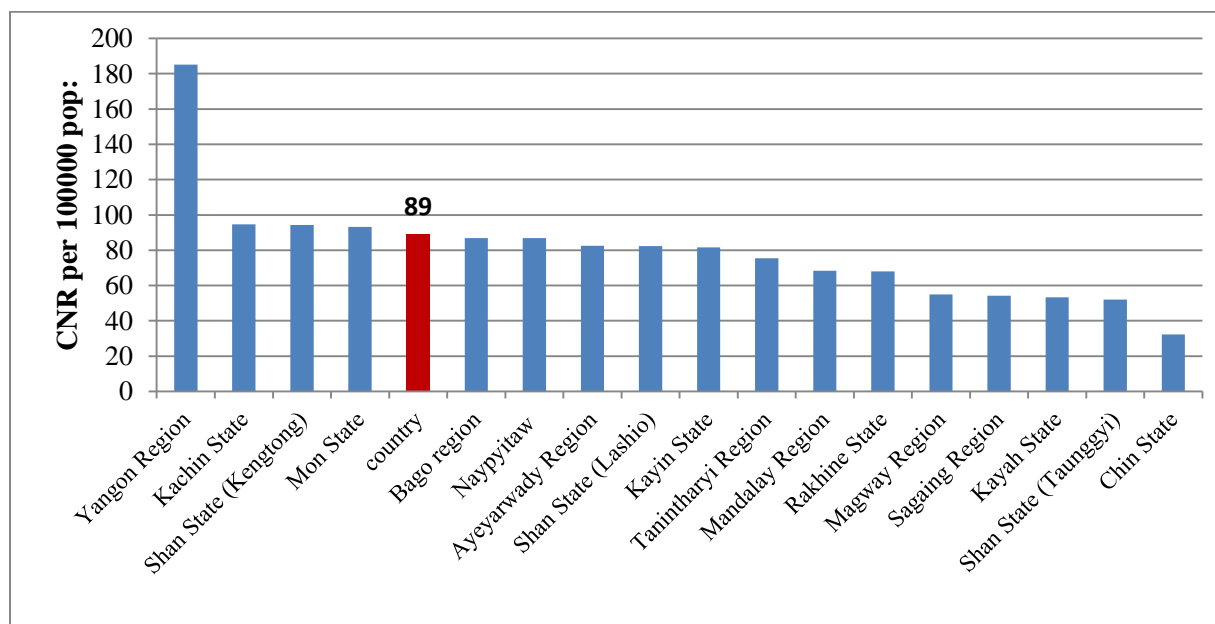
By Regions and States, CNR for all TB cases was the highest in Tanintharyi Region (372/100,000 pop.), followed by Kachin State (341/100,000 pop.), Yangon Region (333/100,000 pop.), and Mon State (327/100,000 pop.).

Regarding CNR for new smear positive cases, it was high in Yangon Region with (185/100,000 pop.), Kachin State with (95/100,000 pop.), Shan (Kengtong) State with (94/100,000 pop.) and Mon State with 93/100,000 population. CNR for new smear positive cases less than 50/100,000 population was only see in Chin State with 32/100,000 population.

**Figure 29. Case Notification Rate (CNR) of All form TB cases per 100000 population by Regions & States (2013)**

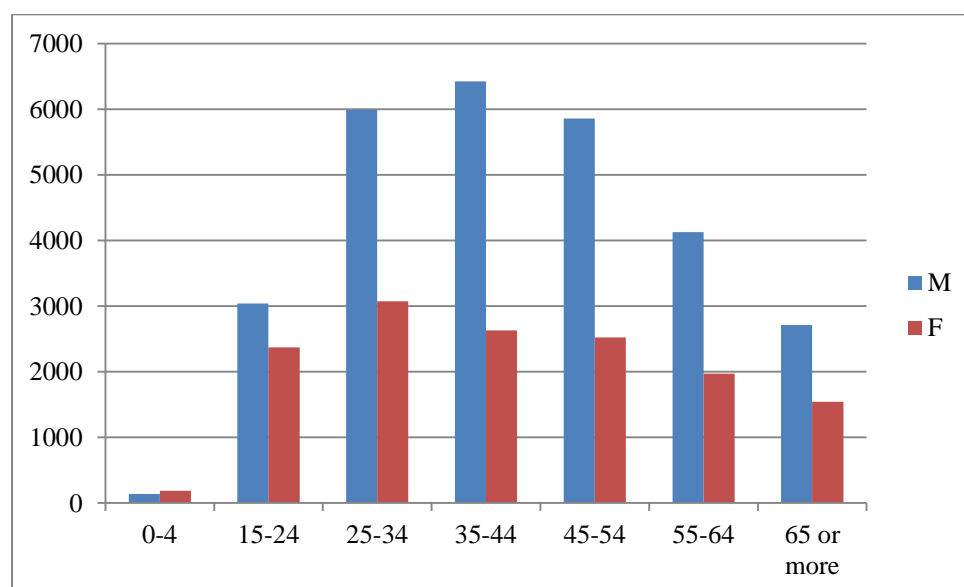


**Figure 30. Case Notification Rate (CNR) of New smear positive TB cases per 100000 population by Regions & States (2013)**



#### **Age and sex distribution of new sputum smear positive TB cases**

The age and sex distribution of new smear positive TB cases reported to NTP in 2013 displayed that 43% of those fell in the group of 25-44 years. Male to Female ratio was 2:1.

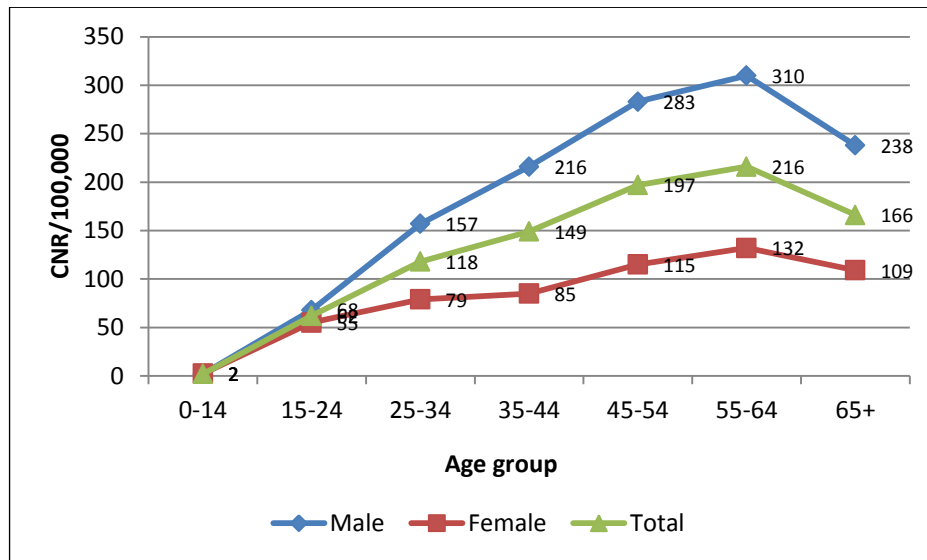
**Figure 31. Age & Sex distribution of New Smear Positive TB Patients (2013)****Table 37. Age and sex specific case notification rates of new smear positive cases (2013)**

Age group	Male		Female		Total	
	TB patients/ pop. *	CNR/ 100,000	TB patients/ pop. **	CNR/ 100,000	TB patients/ pop. ***	CNR/ 100,000
0-14	137/7,934,144	2	188/7,693,345	2	325/15,627,489	2
15-24	3,041/4,489,681	68	2,372/4,279,423	55	5,413/8,769,104	62
25-34	5,990/3,824,543	157	3,074/3,870,714	79	9,064/7,695,257	118
35-44	6,424/2,969,365	216	2,630/3,101,380	85	9,054/6,070,745	149
45-54	5,859/2,066,678	283	2,524/2,187,795	115	8,383/4,254,473	197
55-64	4,125/1,330,276	310	1,974/1,490,586	132	6,099/2,820,862	216
65+	2,715/1,140,236	238	1,542/1,418,460	109	4,257/2,558,696	166
Total	28,291/23,754,924	119	14,304/24,041,703	59	42,595/47,796,627	89

\* All denominators are populations in thousand. (Source: 2008 Statistical Year Book, Ministry of National Planning & Economics Department, Central Statistical Organization)



**Figure 32. New Smear Positive TB case notification rate/100,000 population by age and sex groups (2013)**

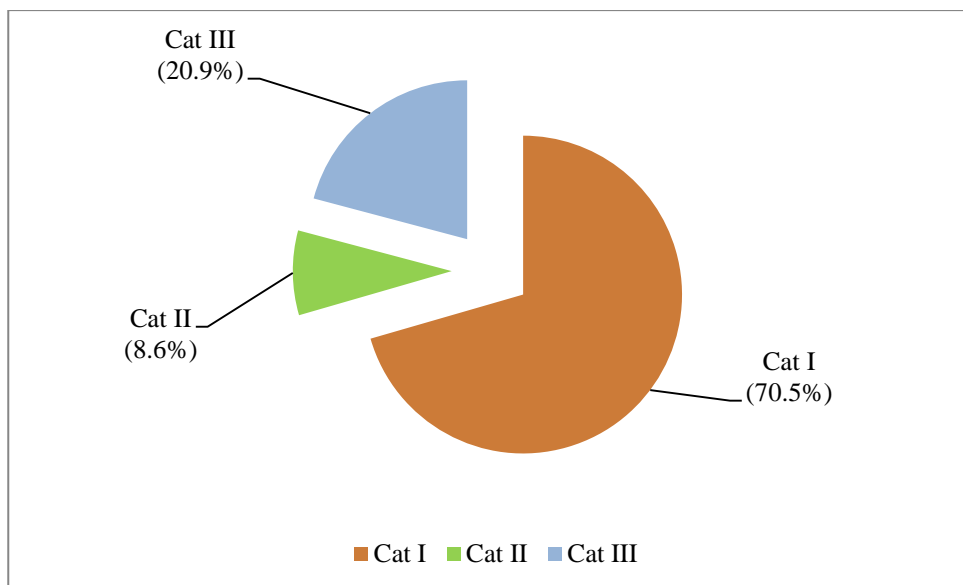


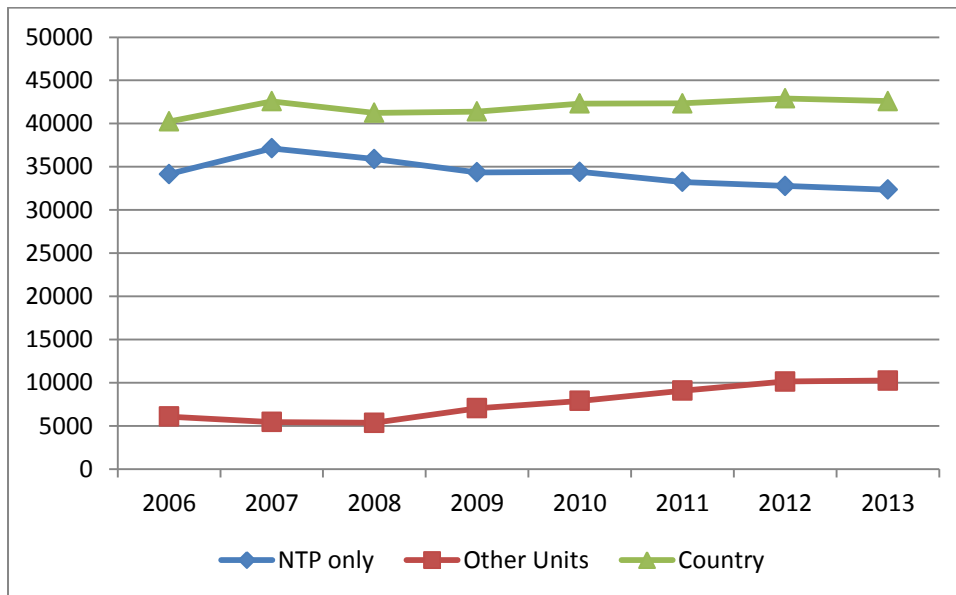
Case Notification Rate of new smear positive TB patients was the highest in the age group of 55-64 years in both sexes.

**Categories of anti-TB treatment regimen**

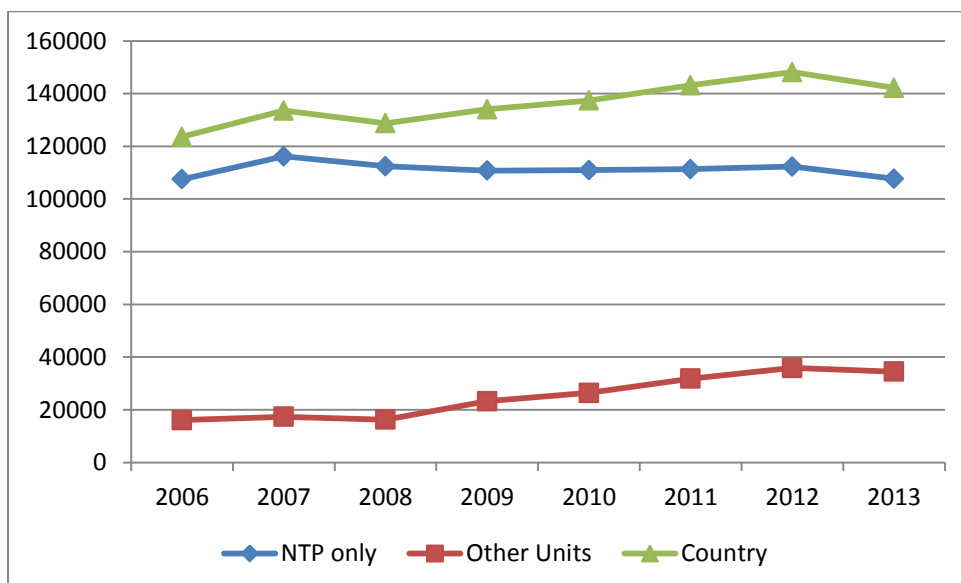
Patients treated with Cat I regimen were 70.5% (101,642/144,127), Cat II of 8.6% (12,405/144,127) and Cat III 20.9% (30,080/144,127).

**Figure 33. Proportion of total TB patients treated with different regimens (2013)**



**Figure 34. New smear positive TB patients of NTP and Other Units (2006-2013)**

By looking at the graph, other units including partners' contribution was increase steadily since 2009; however total new smear positive cases finding was not change so much.

**Figure 35. All forms of TB patients of NTP and Other Units (2006-2013)**

The trend of all forms of TB cases by NTP and Partners was increased steadily from 2008 to 2012. The trend is found to be peak in 2012. The cause might be due to over-diagnosis of childhood TB which was approximately 30% among all TB cases. It was slightly decreased in 2013 (25% of childhood TB cases among all TB cases) after advocacy meeting with paediatricians for diagnosis of childhood TB.

Table 38. Notified New Smear Positive TB Patients and all types of TB patients (2006-2012)

Regions/ States	New Smear Positive TB Patients								All Types of TB Patients							2013
	2006	2007	2008	2009	2010	2011	2012	2013	2006	2007	2008	2009	2010	2011	2012	
Kachin	1383	1372	1165	1255	1186	1068	1011	1059	3959	4408	4471	5169	5255	5266	5235	5000
Kayah	143	127	152	131	127	116	98	149	863	565	679	1177	871	591	721	743
Chin	187	143	154	151	121	109	119	142	1095	1018	1219	1213	1163	1083	971	1229
Sagaing	2439	3662	2818	2909	2685	2760	2493	2357	9373	9702	8605	8116	8261	8234	8299	6727
Magway	2171	2230	2236	2052	1976	1914	1949	2102	7894	8546	7932	7900	7208	7253	6812	6661
Mandalay	3735	3871	3650	3360	3481	3609	3565	2982	10793	12355	12234	11991	11303	11019	11445	9274
Shan (Taunggyi)	699	797	773	780	802	932	906	1056	2493	2771	2490	2524	2510	2919	3051	3309
Shan (Kengtong)	545	545	555	483	582	462	584	559	1508	1630	1495	1511	2066	2084	1862	1676
Shan (Lashio)	875	939	1084	1140	1254	1179	1233	1152	2924	3859	3701	3781	3922	4089	4220	4469
Kayin	840	1012	1095	1061	1019	831	1168	1054	3382	3920	4092	3940	4709	4145	3876	3290
Tanintharyi	829	842	822	885	824	895	895	833	4898	5312	5399	6092	5163	5021	5478	4847
Bago (Bago)	1945	1992	1894	1764	1749	1740	1885	1826	5831	6000	5203	5008	5583	6284	7149	7164
Bago (Pyay)	1539	1642	1715	1588	1440	1511	1592	1552	5789	4973	5122	4965	4403	4656	5432	5722
Mon	1704	1660	1800	1758	1637	1539	1543	1626	5107	5755	7026	6508	6291	6031	6563	7010
Rakhine	1845	1816	2230	2199	2292	2083	1881	1990	4403	5962	5473	6698	6737	6253	4812	5284
Yangon	7803	9164	8788	8329	8296	7672	7249	6774	23979	25854	24434	22598	22873	22547	21863	20107
Ayeyarwaddy	5472	5327	4966	4507	4943	4721	4336	4435	13228	13527	12864	11593	12656	13468	13742	13174
NayPyiTaw						105	270	697						383	740	2010
<b>TOTAL</b>	<b>34154</b>	<b>37141</b>	<b>35897</b>	<b>34352</b>	<b>34414</b>	<b>33235</b>	<b>32777</b>	<b>32345</b>	<b>107519</b>	<b>116157</b>	<b>112439</b>	<b>110784</b>	<b>110974</b>	<b>111326</b>	<b>112271</b>	<b>107696</b>
Other Units	6087	5447	5351	7037	7904	9089	10132	10250	16074	17390	16300	23239	26429	31838	35878	34466
<b>GRAND Total</b>	<b>40241</b>	<b>42588</b>	<b>41248</b>	<b>41389</b>	<b>42318</b>	<b>42335</b>	<b>42909</b>	<b>42595</b>	<b>123593</b>	<b>133547</b>	<b>128739</b>	<b>134023</b>	<b>137403</b>	<b>143164</b>	<b>148149</b>	<b>142162</b>

**Table 39. Categories of Treatment Regimens**

Years	Category I				Category II					Category III			Total Cat. I + II + III	Proportion of relapse among all smear positive	Proportion of failure among all smear positive
	Sputum smear positive	Severe form		Total	Relapse	Treatment after default	Treatment 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	10	3
2008	41839	27725	6364	75928	4509	633	1140	2954	9236	17306	28897	46203	131367	9	2
2009	42122	29744	6479	78345	4753	606	1349	3323	10031	22865	26088	48953	137329	10	3
2010	43061	35312	7220	85593	4658	523	1536	3969	10686	23086	21369	44458	140737	9	3
<b>2011</b>	<b>43070</b>	<b>35668</b>	<b>7391</b>	<b>86129</b>	<b>4820</b>	<b>551</b>	<b>1565</b>	<b>4433</b>	<b>11369</b>	<b>27785</b>	<b>21055</b>	<b>48840</b>	<b>146338</b>	<b>10</b>	<b>3</b>
<b>2012</b>	<b>43650</b>	<b>34836</b>	<b>7615</b>	<b>86101</b>	<b>4703</b>	<b>540</b>	<b>1697</b>	<b>4603</b>	<b>11543</b>	<b>38830</b>	<b>14311</b>	<b>53141</b>	<b>150785</b>	<b>8</b>	<b>3</b>
<b>2013</b>	<b>43203</b>	<b>28730</b>	<b>6341</b>	<b>78274</b>	<b>4997</b>	<b>522</b>	<b>1784</b>	<b>5102</b>	<b>12405</b>	<b>19240 (Cat I NSN less severe)</b>	<b>4128 (Cat I EP less severe)</b>	<b>30080 (Cat III childhood TB)</b>	<b>144127</b>	<b>10</b>	<b>4</b>

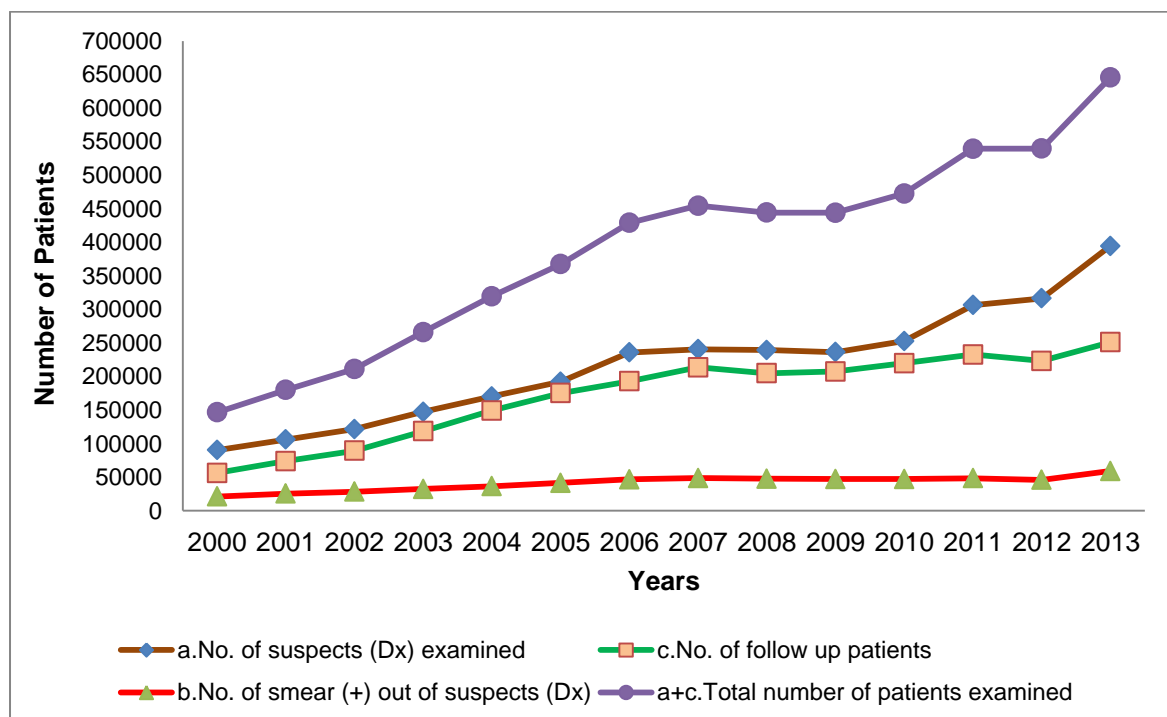
NSN –new smear negative

### Laboratory performance

Laboratory performance was found to be increased year by year with limited human resources. In 2013, approximately 400,000 presumptive TB cases were examined for sputum microscopy. Among them, about 60,000 smear positive cases (15%) could be detected. Sputum positivity rates ranged from 8% to 33%. It was the highest in Yangon Region (33%), followed by Naypyitaw Council Area (20%), Tanintharyi Region (19%) and Shan State (Kengtong), Rakhine State and Ayeyarwaddy Region (18%).

Smear positivity rate among follow up sputum examination cases was 7% which was more or less the same with previous year (6.5%).

**Figure 36. Laboratory Performance (2000-2013)**



**Table 40. TB Suspects Notified in Regions and States (2012, 2013)**

Region/State	2012			2013*			Compared to 2012
	Population	No. of presumptive TB cases	% came for Dx.	Population	No. of presumptive TB cases	% came for Dx.	
Kachin State	1,464,154	9,031	62	1465364	8772	60	decreased
Kayah State	299,679	1,829	61	285371	1903	67	increased
Chin State	493,684	1,707	35	478958	1660	35	
Sagaing Region	5,212,668	29,834	57	5193199	29011	56	decreased
Magway Region	4,148,020	16,895	41	4059425	19164	47	increased
Mandalay Region	6,370,123	35,791	56	5672704	40366	71	increased
Shan State (Taunggyi)	2,066,678	9,067	44	2068600	11085	54	increased
Shan State (Kengtong)	693,542	3,006	43	636719	2935	46	increased
Shan State (Lashio)	2,181,745	8,857	41	1849708	9258	50	increased
Kayin State	1,435,686	6,763	47	1389274	7538	54	increased
Tanintharyi Region	1,340,978	7,945	59	1301784	7203	55	decreased
Bago Region (Bago)	2,856,857	11,199	39	2874449	30117	105	Increased
Bago Region (Pyay)	2,010,935	10,777	54				
Mon State	2,127,556	16,435	77	1934427	16829	87	Increased
Rakhine State	3,225,070	11,744	36	2141928	12573	59	increased
Yangon Region	5,969,277	47,508	80	3213668	39434	123	increased
Ayeyarwaddy Region	6,316,979	25,063	40	6030053	32196	53	increased
Nay Pyi Taw	317,847	29	1	6249174	3479	6	decreased
Other Units		63,050			120921		
<b>Country</b>	<b>48,531,478</b>	<b>316,530</b>	<b>65</b>	<b>47796627</b>	<b>394444</b>	<b>83</b>	<b>Increased</b>

*Townships from which reports were not received:*

Kachin State: 1. N'gyanyan 2.Hsawlaw 3.Khaunglanbu 4.Naungmon 5. Sumprabum

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

Presumptive TB examination rate was increased in most region/state, except Kachin State, Sagaing and Tanintharyi Regions, and Naypyitaw Council Area. Therefore, nationwide presumptive TB examination rate was also increased to 83% in 2013.

### **Sputum conversion rate of new smear positive pulmonary TB cases**

In 2013, the sputum conversion rate was calculated only from first 3 quarters of 2013 as reporting format was changed in early 2014 in which sputum conversion report was not included. The sputum conversion rate of new smear positive TB cases in 2013 was 85% (27577/32426) at the end of initial intensive phase (2 or 3 month) over the whole country. The remaining positive rate was 5% (1609/32026) and proportion of sputum examination not done at 2-3 months was 10% (3240/32026).

Sputum conversion rate < 85% was found in Mandalay and Tanintharyi Regions, Kachin, Kayah, Shan (Kengtong), Shan (Lashio) and Rakhine States. However, the rate was not very much decreased.

The regions/states where remaining smear positive at 3 month above 5% were Tanintharyi, Magway, Mandalay Regions, Shan (Kengtong), Kachin, Kayah, Rakhine State and Naypyitaw Council Area.

### **10.2 Treatment outcome of TB patients (2012 cohort)**

Treatment outcome of the TB patients (2012 cohort) were evaluated from 319 townships (NTP). Cure rate and treatment success rate (TSR) of new sputum smear positive TB patients for Country (National Figure) were 73.8% (30,262/41,033) and 85.4% (35,033/41,033) for 2012 cohort. Looking at NTP data only, cure rate was 76.2% (30,867/23508) with TSR of 86.4% (26,671/30,867).

**Table 41. Categories of TSR (new smear positive TB patients) of townships by Region/State (2012 cohort) (Country)**

No.	Regions/States	No. of township with TSR					Total no. of townships	No. of tsps. from which reports not received
		≥85%	75-84%	60-74%	50-59%	<50%		
1.	Kachin State	6	4	2	0	1	18	5
2.	Kayah State	3	1	1	0	2	7	0
3.	Chin State	6	3	0	0	0	9	0
4.	Sagaing Region	28	9	0	0	0	37	0
5.	Magway Region	20	4	1	0	0	25	0
6.	Mandalay Region	17	10	1	0	0	28	0
7.	Shan State (Taunggyi)	13	6	2	0	0	21	0
8.	Shan State (Kyaingtong)	2	4	3	0	0	10	1
9.	Shan State (Lashio)	8	3	6	0	1	24	6
10.	Kayin State	4	2	1	0	0	7	0
11.	Tanintharyi Region	2	7	1	0	0	10	0
12.	Bago Region	22	6	0	0	0	28	0
13.	Mon State	8	2	0	0	0	10	0
14.	Rakhine State	10	3	4	0	0	17	0
15.	Yangon Region	31	11	1	0	2	45	0
16.	Ayeyarwaddy Region	19	6	1	0	0	26	0
17.	NayPyiTaw Council Area	3	5	0	0	0	8	0
<b>Total</b>		<b>202</b> <b>(63.5%)</b>	<b>86</b>	<b>24</b>	<b>0</b>	<b>6</b> <b>(1.9%)</b>	<b>330</b>	<b>12</b>

*Townships from which reports were not received:*

Kachin State: 1. N'gyanyan 2.Hsawlaw 3.Khaunglanbu 4.Naungmon 5.Sumprabum

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

Shan State (Kengtong) 1. Matman



In 2012 cohort, 318 townships reported to NTP. It was found that 202 townships (63.5%) achieved the target of TSR  $\geq$  85%. However, there were 6 townships (1.9%) which had TSR  $<$  50% in 3 States (Kachin, Kayah, Shan State (Lashio)) and Yangon Region. 110 townships (34.6%) gained TSR of between 60-84%.

**Table 42. Categories of cure rates of new sputum smear positive TB patients of townships by Region/State (2011 cohort) (COUNTRY)**

No.	Regions/States	No. of townships with CR					No. of tpsps from which reports received	No. of tpsps. from which reports not received
		$\geq$ 85%	75-84%	60-74%	50-59%	$<$ 50%		
1.	Kachin State	1	4	3	4	0	14	5
2.	Kayah State	2	0	3	0	2	7	0
3.	Chin State	5	1	2	0	1	9	0
4.	Sagaing Region	12	13	5	3	4	37	0
5.	Magway Region	7	10	8	0	0	25	0
6.	Mandalay Region	3	10	11	4	0	28	0
7.	Shan State (Taunggyi)	7	8	3	1	2	21	0
8.	Shan State (Kengtong)	0	3	3	2	2	9	1
9.	Shan State (Lashio)	3	3	3	5	4	18	6
10.	Kayin State	2	2	3	0	0	7	0
11.	Tanintharyi Region	1	4	3	2	0	10	0
12.	Bago Region	3	12	8	4	1	28	0
13.	Mon State	4	1	5	0	0	10	0
14.	Rakhine State	4	3	3	4	3	17	0
15.	Yangon Region	7	25	10	1	2	45	0
16.	Ayeyarwaddy Region	2	7	15	1	1	26	0
17.	NayPyiTaw Council Area	0	3	5	0	0	8	0
<b>Total</b>		<b>63</b> <b>(19.8%)</b>	<b>109</b>	<b>93</b>	<b>31</b>	<b>22</b> <b>(6.9%)</b>	<b>318</b>	<b>12</b>

*Townships from which reports were not received:*

Kachin State: 1. N'gyanyan 2.Hsawlaw 3.Khaunglanbu 4.Naungmon 5. Sumprabum

Shan (Lashio) State: 1.Kongmyan 2.Panwine 3.Mongmaw 4.Manphant 5.Narphant 6.Pangyan

Shan (Kengtong) State: 1.Matman

When CRs of townships were reviewed, only 19.8% of townships (63/318) achieved the 85% target while 22 townships (6.9%) were having CR of <50%. The townships which have CR < 50% were found in Kayah, Chin, Shan (Lashio), Shan (Taungyi), Shan (Kengtong), Rakhine states and Sagaing, Bago, Ayeyarwaddy and Yangon regions. Among 318 reporting townships 233 townships had CR of between 50-84%.

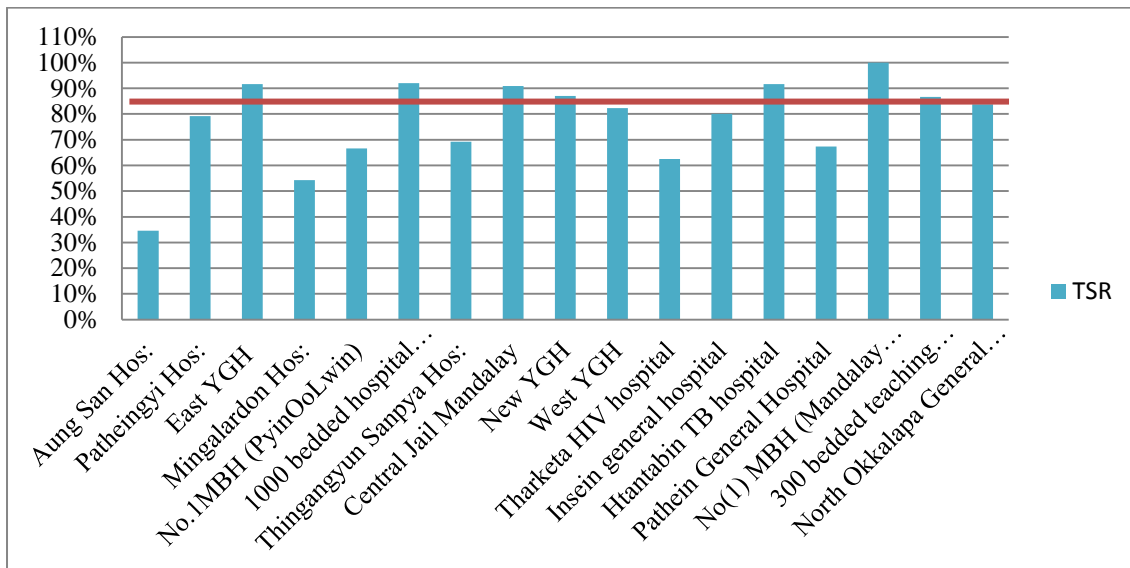
**Table 43. Categories of CR and TSR (new sputum smear positive TB patients) of Regions/States (2012 cohort)**

≥ 85%		75-84%		60-74%		50-59%		<50%	
CR	TSR	CR	TSR	CR	TSR	CR	TSR	CR	TSR
	Yangon, Bago, Ayeyarwaddy, Sagaing, Magway, Mon, Kayin, Mandalay, Naypyitaw, Shan (Taunggyi), Chin	Chin, Sagaing, Magway, Kayin, Mon, Yangon	<b>Country</b> Shan (Lashio), Tanintharyi, Shan (Kyaingtong), Kachin Kayah, Rakhine≥	<b>Country</b> Kachin Kayah, Mandalay, Shan (Taungyi), Shan (Kengtong), Shan (Lashio), Tanintharyi, Bago, Rakhine, Ayeyarwaddy, Naypyitaw					
<b>0</b>	<b>11</b>	<b>6</b>	<b>6</b>	<b>11</b>					

Nationwide TSR of new smear positive TB patients was 85.4% (2012 cohort). Although none of the Regions and States achieved the cure rate target of 85%, total 11 regions/states including Naypyitaw Council Area could achieve TSR of ≥ 85%.

Regarding the unfavourable outcomes, defaulter rate for new smear positive TB cases in 2012 cohort was 5% (1,958/41,033) and treatment failure rates were 4% (1,461/41,033) which were increased compared to 2011 cohort. Case fatality rate (CFR) of new smear positive case was 5% (1948/41,033) and it was the same with 2011 cohort.

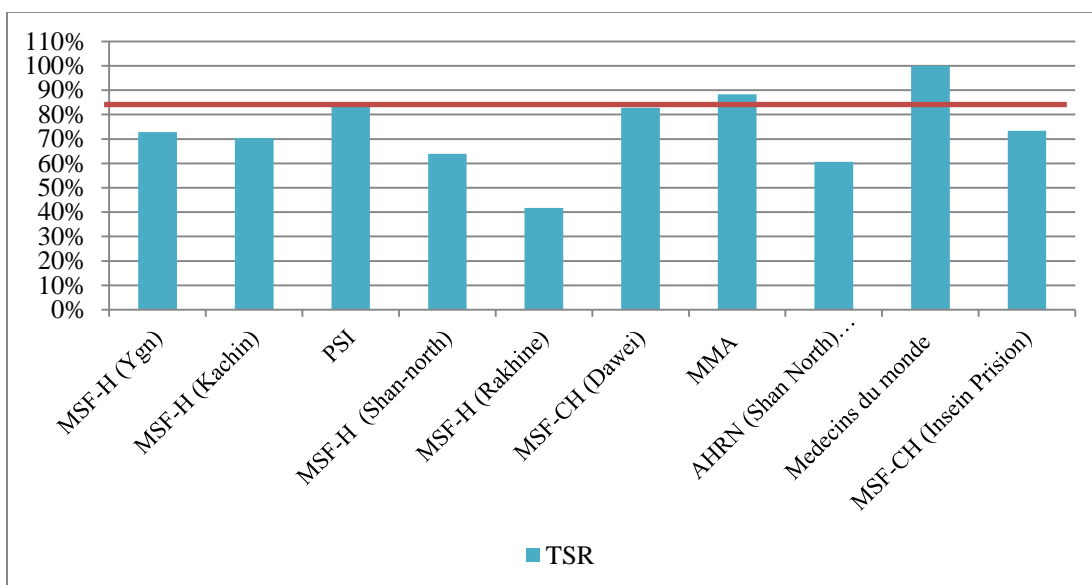
**Figure 37. Treatment Success Rate of New Smear Positive by PPM Hospitals**



Regarding treatment outcome of new smear positive patients in 2012 cohort, East YGH, 1000 bedded hospital (Naypyitaw), Central Jail Mandalay, New YGH, Htantabin TB hospital, No (1) MBH (Mandalay Nantwin) and 300 bedded teaching hospital (Mandalay) could achieve TSR of  $\geq 85\%$ .

Case fatality rate was highest in Mingalardon Specialist Hospital (32%) due to TB/HIV co infection and followed by Aung San TB Hospital (23%) and Insein General Hospital (20%). Treatment failure rate was the highest in Thingangyun Sanpya Hospital (23%) followed by No (1) MBH (Pyinoolwin) and Aung San Hospital with 16% and 15% respectively. It was also noted that defaulter rate was highest in Pathein General Hospital (20%), and second highest was Therketa Specialist Hospital (15%).

**Figure 38. Treatment Success Rate of New Smear Positive Cases by partners**



In 2012 cohort of implementing partners, only MMA and MDM achieved TSR of  $\geq 85\%$ . PSI achieved TSR 84%, MSF-CH got 83% in Dawei, however, only 73% in Insein Prison. TSR of MSF-H in Rakhine State was  $< 50\%$  due to social conflicts in this state.

**Figure 39. Treatment Success Rate of New Smear Positive TB patients by Regions and States (2012 cohort)**



**Table 44. Treatment outcome of TB patients with known HIV status & unknown HIV Status (2012 cohort)**

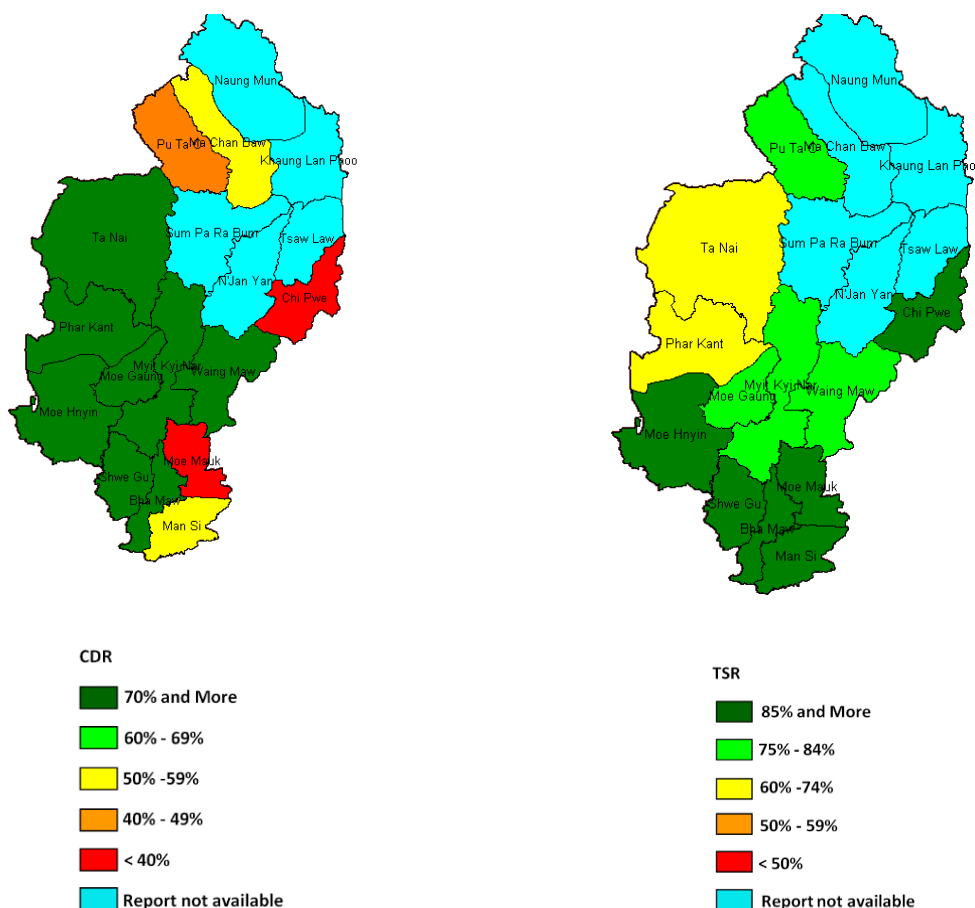
Type of TB patients		Total no. evaluated	Cured	Completed	Deaths	Failure	Defaulter	Transferred out	Total no. evaluated
New (+)	HIV (+)	1953	1200	171	236	125	172	49	1953
	Unknown HIV status	39080	29062	4600	1712	1336	1786	584	39080
	Total	41033	30262	4771	1948	1461	1958	633	41033
Smear (-)	HIV (+)	3092		2251	442	56	241	102	3092
	Unknown HIV status	38237		32738	2083	235	2552	629	38237
	Total	41329		34989	2525	291	2793	731	41329
Relapse	HIV (+)	313	160	42	64	18	12	17	313
	Unknown HIV status	4227	2630	474	407	330	266	120	4227
	Total	4540	2790	516	471	348	278	137	4540

Type of TB patients		Total no. evaluated	Cured	Completed	Deaths	Failure	Defaulter	Transferred out	Total no. evaluated
Other	HIV (+)	946		539	236	16	110	45	946
	Unknown HIV status	3741	297	2609	387	67	297	84	3741
	Total	4687	297	3148	623	83	407	129	4687
PC	HIV (+)	273		191	38		21	23	273
	Unknown HIV status	31092		29814	124	0	947	207	31092
	Total	31365		30005	162		968	230	31365
TBM	HIV (+)	28		21	4		2	1	28
	Unknown HIV status	402	0	324	41	0	30	7	402
	Total	430		345	45		32	8	430
TAD	HIV (+)	57	16	9	17	4	9	2	57
	Unknown HIV status	457	220	92	48	27	54	16	457
	Total	514	236	101	65	31	63	18	514
TAF	HIV (+)	149	78	17	10	16	19	9	149
	Unknown HIV status	1535	736	145	158	286	156	54	1535
	Total	1684	814	162	168	302	175	63	1684
EP	HIV (+)	1604		1157	244	28	121	54	1604
	Unknown HIV status	12239		11161	405	21	487	165	12239
	Total	13843		12318	649	49	608	219	13843
Hilar Lymph Node enlargement	HIV (+)	48		41	3	0	3	1	48
	Unknown HIV status	8857		8493	19	7	246	92	8857
	Total	8905		8534	22	7	249	93	8905
Total	HIV (+)	8463	1454	4439	1294	263	710	303	8463
	Unknown HIV status	139867	32945	90450	5384	2309	6821	1958	139867
	Total	148330	34399	94889	6678	2572	7531	2261	148330

Remark- TB/HIV outcome reports were not received from (4) regions & (5) states (Yangon, Tanintharyi, Sagaing, Bago regions and Kayah, Rakhine, Shan(Lashio, Taunggyi, Kengton) states).

## 11. Evaluation of Regional and State level TB control achievement

### 11.1 Kachin State

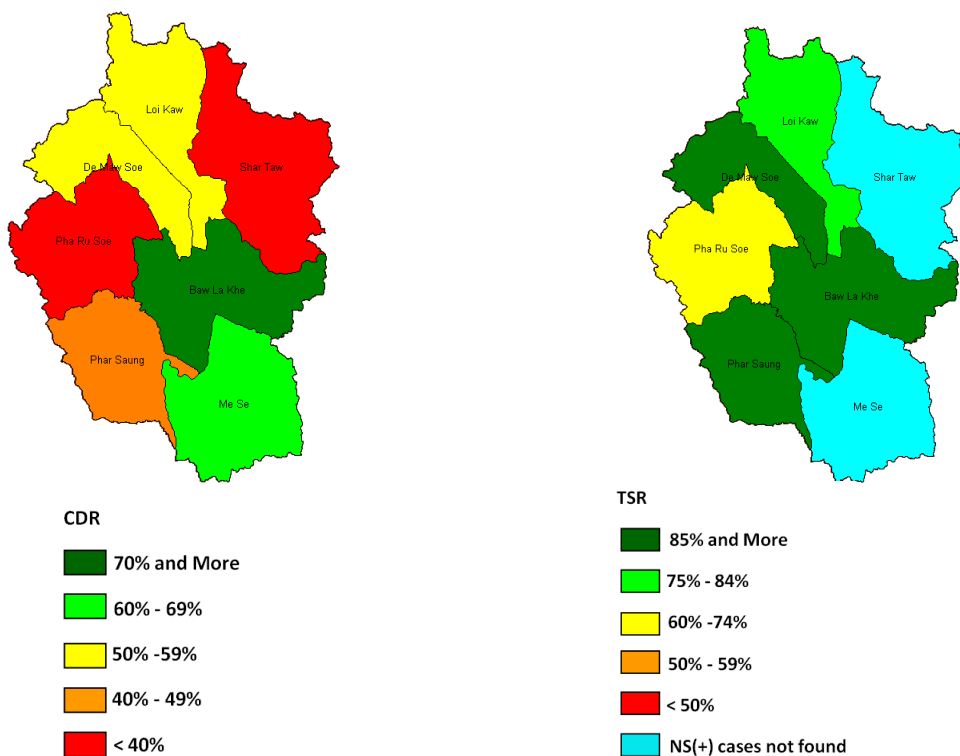


Kachin State has 4 Districts including 18 townships with approximately 1.5 million. There were 1 state TB team, 4 district TB teams (Myitkyina, Bahmaw, Putao, Moenyin) and 1 township TB team (Shwegu). In 2013, Reports were received from 5 townships (Hsawlaw, N Jan Yan, Khaunglanbu, Nongmun and Sumprabum). Reporting efficiency was 72% (13/18). Kachin State achieved CDR of 90% and TSR of 80% in 2013 with the efforts of NTP and partners. The implementing partners conducting TB control activities in Kachin State are MSF H, MDM, AHRN and PSI. Townships that achieve targets of both CDR >70% and TSR >85% include Bahmaw, Shwegu and Moenyin. Presumptive TB examination rate was 599/100,000 population and sputum positivity rate was 14%. The defaulter rate, case fatality rate and failure rate were 7%, 5% and 4% respectively. The defaulter rate higher than 5% was found in (5) townships namely Mansi, Moenyin, Pharkant, Myitkyina and Tanai. The failure rate more than 2% was found in (7) townships – Bahmaw, Moemauk, Pharkant, Moegaung, Tanai, Myitkyina and Putao. Case fatality rate more than 5% was seen in (2) townships; Shwegu and Moenyin.

TB/HIV was also one of the challenges in Kachin State and collaborative activities were implementing in Bahmo and Myitkyina. Total 769 TB patients were diagnosed as HIV positive from these 2 townships and 86.3% (664/769) was taking CPT and 65.4% (503/769) received ART. There were 34 confirmed MDR-TB cases in 2013 and 2 of them were put on treatment for second line anti TB treatment.

Other Challenges in Kachin State included human resource shortage especially laboratory technicians and there was no drug store in Myitkyina TB Centre.

## 11.2 Kayah State

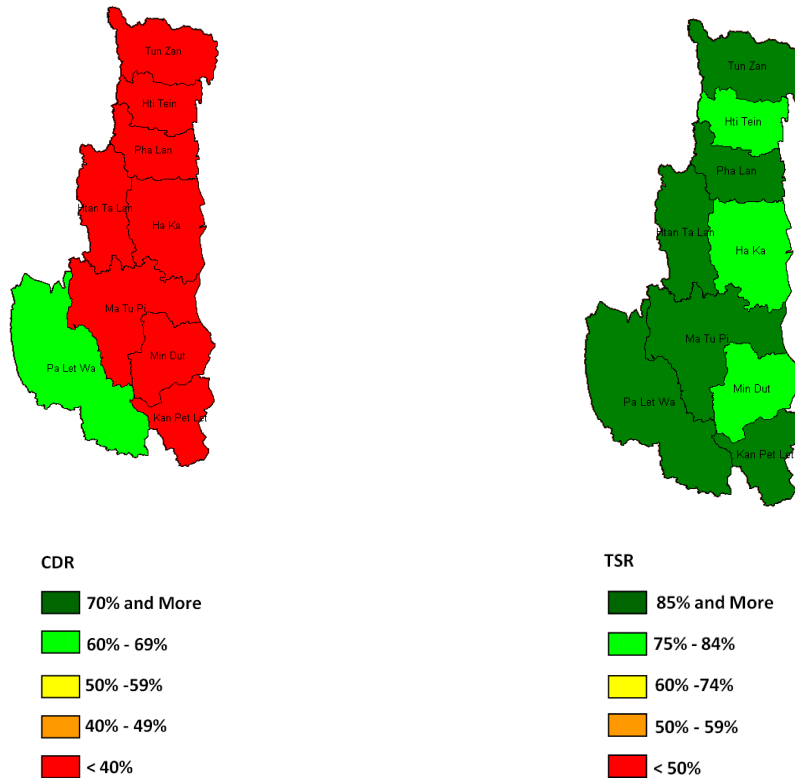


Kayah State has 2 districts with 7 townships and approximately 0.3 million population. Kayah State CDR was only 51% and TSR for 2012 cohort was 84% and CR was 73%. Bawlakhae was the only township which achieved target of CDR >70% and TSR  $\geq$ 85%. Townships with CDR <50% were Phasaung, Phruso and Shadaw. Presumptive TB examination rate was 667 per 100,000 in 2013 with sputum positivity rate 9%.

Defaulter rate, failure rate and case fatality rate were 3%, 4% and 6% respectively for the whole state. Only Phruso Township had highest failure rate and case fatality rate 20%.

Partners in Kayah State were World Vision Myanmar, PSI and MAAF. Partners worked only in Loikaw and Demawso Townships. State TB Officer Post and Team Leader Post are still vacant in 2013. Human resources limitation, communication and transportation difficulties are the main constraints in TB control activities in Kayah State.

### 11.3 Chin State



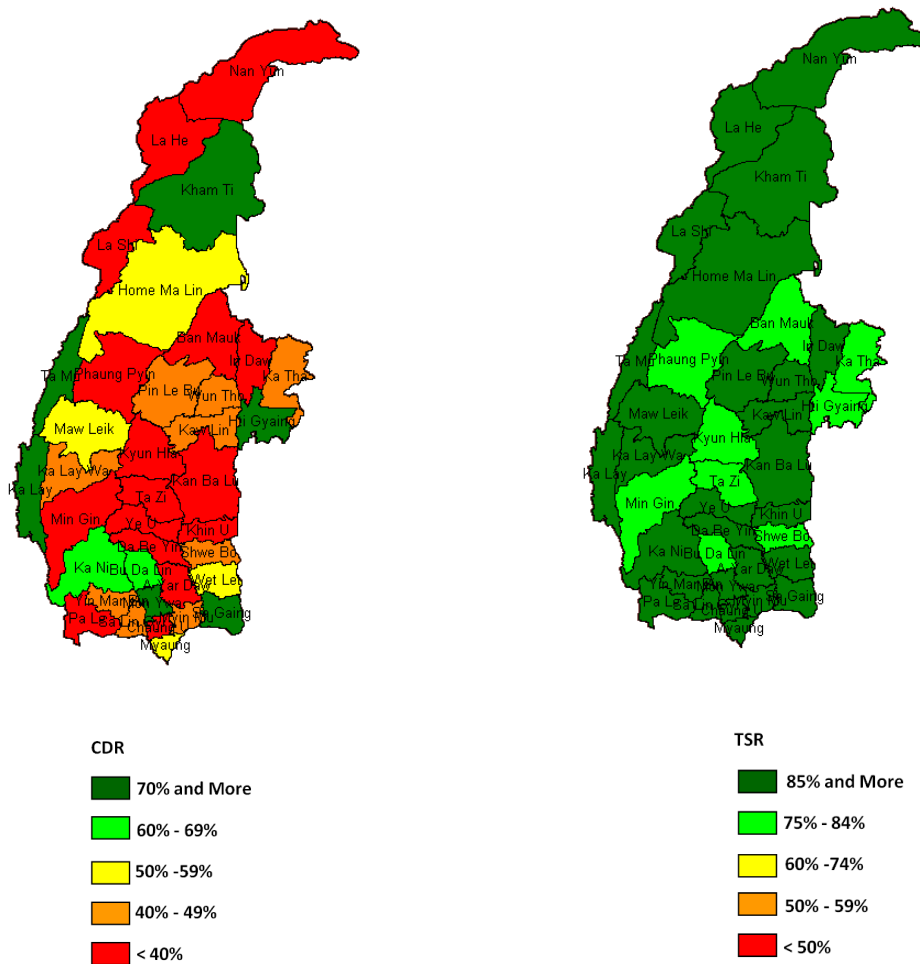
Chin State has 3 districts and 9 townships with 0.48 million population. Five townships (Falam, Hakha, Htantalan, Tiddim, Tunzan) were controlled by Sagaing Regional TB officer, 3 townships (Mindat, Kanpetlet and Matupi) were under Magway Regional TB officer and one township (Palatwa) was covered by Rakhine State TB officer.

CDR was very low; 28% for the whole state and even with partners, CDR was only 31%. CR and TSR was 78% and 88% for the whole state including partners' data. PSI was the only implementing partner at Chin State. There was no township which achieve CDR >70%. 6 townships achieved TSR  $\geq$  85% except Hakha (77%), Tiddim (76%) and Mindat (83%). Defaulter rate was 4 % for the whole state and townships with high defaulter rate were Tiddim -11%, Hakha – 8% and Matupi – 7%.

No State TB officer was assigned and team leader post was vacant in Mindat. There were inaccessible villages and hard to reach areas in Chin State. Moreover, high BHS turnover was challenge for CDR achievement in Chin State TB control activity.



### 11.4 Sagaing Region



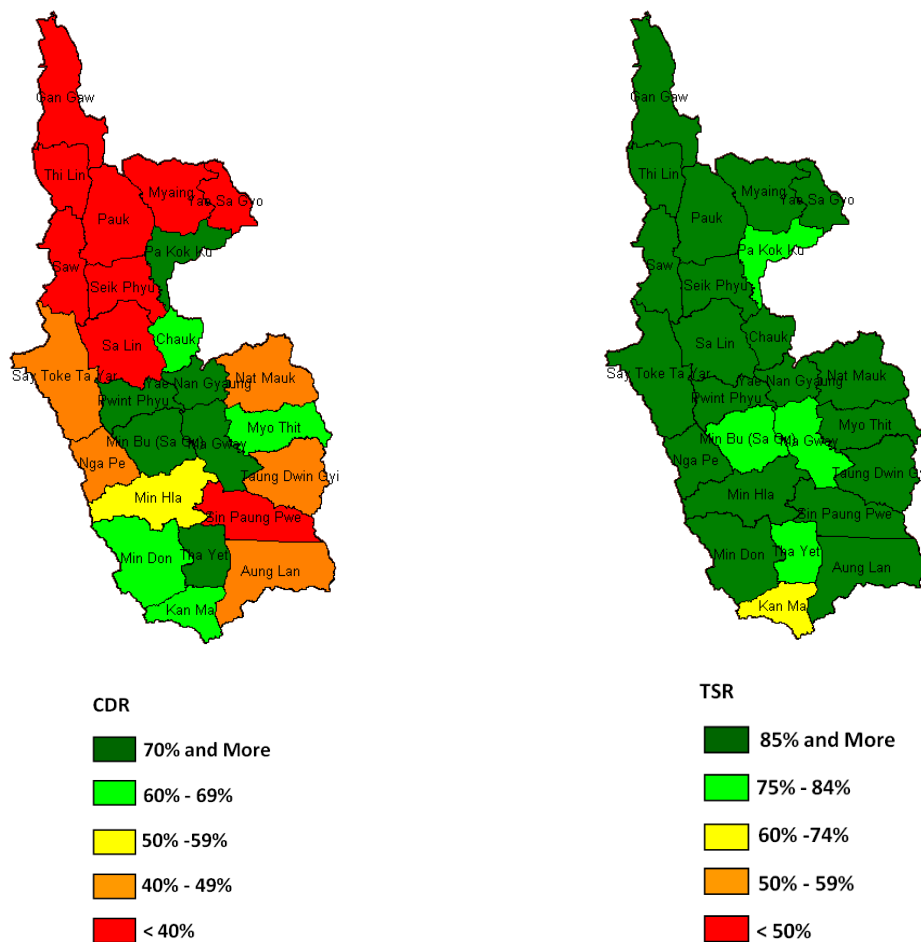
Sagaing Regional TB center covers 9 districts with 37 townships and 5.1 million populations. Nanyun township in northern Sagaing Region is managed by Kachin State TB officer. Sagaing region achieved CDR 43%, CR 81% and TSR 90%. With partners' contribution, CDR was 52% and TSR - 89%. Presumptive TB examination rate was 559/100,000 population and sputum positivity rate was 9%. Case notification rate of new smear positive TB cases was 54/100,000 population and that of all forms was 186/100,000 population. Townships with TSR < 85% included Shwebo, Budalin, Banmauk, Taze, Tigyaing, Katha, Phaungbyi, Minkin and Kyunhla. Implementing partners are PSI, MMA and MRCS. PSI's contribution for case finding was highest and it was 16% for smear positive TB cases and 29% for all forms of TB cases.

Defaulter rate in Sagaing region was 1%. Katha Township had high defaulter rate (8%). Kalay, Mawlaik 4%, Monywa, Kanbalu 3%. Case fatality rate for Sagaing region was 5% and it was high up to 14% in layshi and 12% in Pinlebu, Minkin and Phaungbyin.

In Monywa Township, 349 TB patients had recorded HIV status. Among them, 10.3% (36/349) was HIV positive, 91.7% (33/36) got CPT and 75.0% (27/33) got ART. Approximately 600 patients were tested with GeneXpert and among them 20 patients were Rifampicin resistance. Among 58 notified MDR-TB patients, 22 patients were put on second line anti TB treatment during 2013.

Like other regions and states, human resource requirement was challenges for expansion of activities. There was also low case detection and low community participation.

### 11.5 Magway Region



Magway Region TB center covers 5 districts with 25 townships in Magway Region and approximately 4 million populations. There are 2 district TB teams and 3 township TB teams in Magway. CDR of Magway Region was 49% for NTP and CR was 80% and TSR was 88% and failure rate was 3%. After combining partners' effort, CDR increased to 58% but TSR was the same - 88%.

Defaulter rate was 3% and there are 4 townships (Magway, Chauk, Natmauk, Kanma) with high defaulter rate (>5%). Failure rate was highest in Saytaketaya and Thayet with 10% and 9% in Yesagyao. Region wise failure rate was 3%. Case fatality rate for the

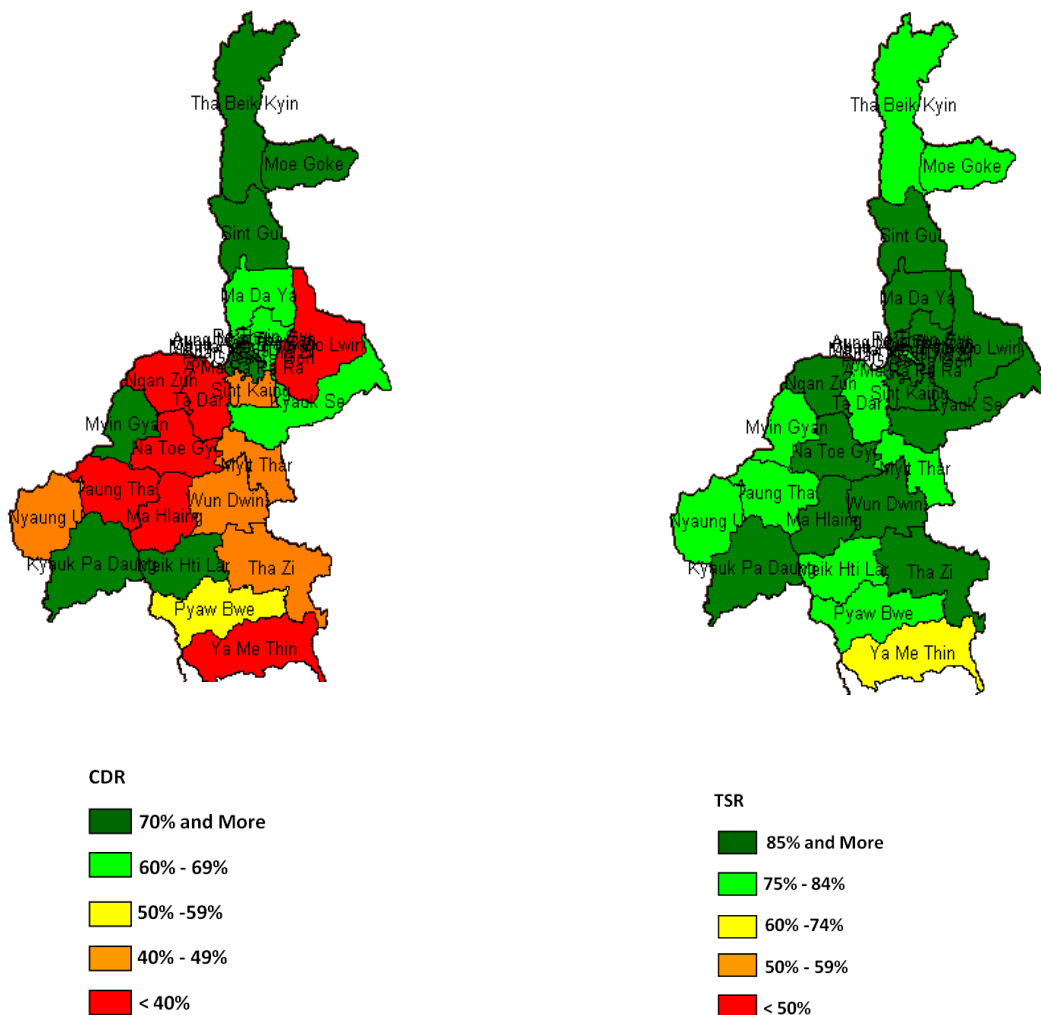
whole region was 5% and it was high in Htilin with 13%, Kanma with 11% and 10% in Thayet, Minbu and Pakokku.

Presumptive TB examination rate was 472/100,000 population and sputum positivity rate was 14%. CNR for new smear positive TB cases was 61 per 100,000 while that for all forms of TB cases was 186 per 100,000 populations.

Total 100 patients were tested with GeneXpert among them 15 patients were detected as Rifampicin resistance. In 2013, there were 24 confirmed MDR-TB cases and 13 patients were put on second line anti TB treatment.

There was increasing TB case load in Magway and Pakokku. Although TB/HIV collaborative activities were implementing, there was low number of TB-HIV patients who received ART. PSI and MMA, MHAA, MRCS are implementing partners in Magway region.

### 11.6 Mandalay Region



Mandalay Regional TB Centre covers 7 districts composed of 28 townships. Its population was about 5.6 millions. Reporting efficacy was 100% in Mandalay Region. CDR of Mandalay region was 50% for NTP alone and became increased to 67% after adding partners' contribution. CR - 76% and TSR – 86%. There are 13 townships with CDR  $\leq$  60%. MMA, PSI, UNION, MHAA, MRCS, MMCWA are implementing partners in Mandalay region.

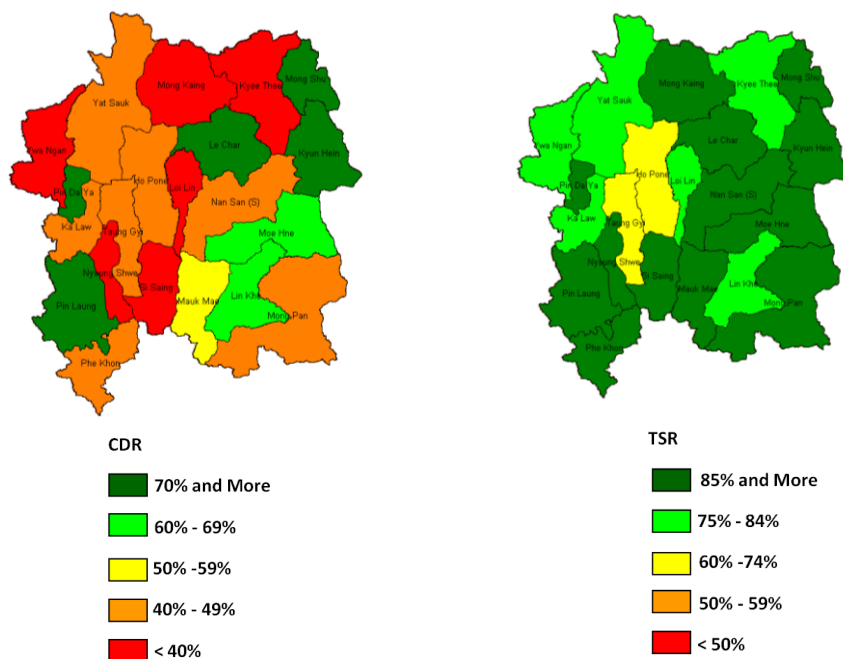
In Mandalay Region, Maharaungmyay, Amarapura, Aungmyaytharzan, Chanayetharzan, Pyigyitagon, Kyaukpadaung and Sintgu townships achieved both CDR of  $\geq$ 70% and TSR of  $\geq$ 85%.

Defaulter rate for the whole region was 2%. Townships with defaulter rate of  $>$ 5% were Taungtha, Sintgu and Yamethin. Failure rate was 4% and case fatality rate was 6%. Mogok Township was highest case fatality rate and failure rate with 15% and 18% respectively. Presumptive TB examination rate for the whole region was 712/100,000 and sputum positivity rate was 9%. Total number of confirmed MDR – TB cases were 120 and 91 cases were being put on treatment.

TB/HIV collaborative activities was implementing in 9 townships. From these townships, 72.2% (3153/4370) cases were documented for HIV testing. HIV status positive cases were 16.0% (505/3153) and 94.7% (478/505) received CPT but only 21.2% (107/505) received ART.

Barriers for target achievement in Mandalay Region were weak initial home visits, low case detection, TB/HIV problems, work burden of MDR-TB providers and TB coordinators, human resource shortage, frequent turn-over of trained staff and inconsistent population data to be used for target setting.

## 11.7 Shan State (Taunggyi)



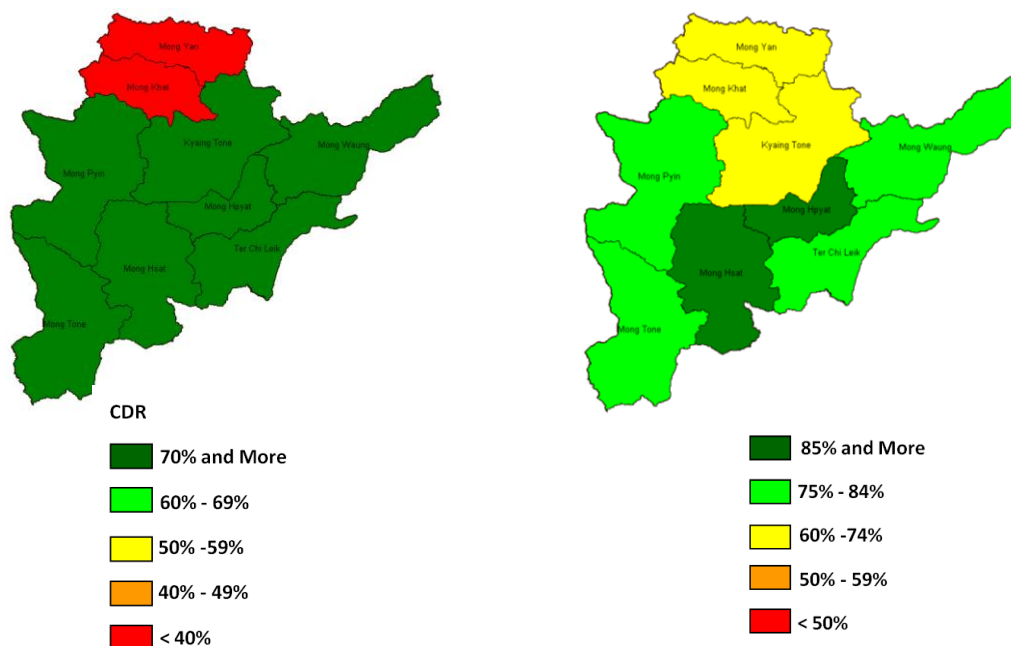
Shan State (Taunggyi) TB team covers 3 districts with 21 townships. There are 2 district teams and 5 township TB teams. Shan State (Taunggyi) did not achieve CDR targets and CDR for 2013 was 50% even with partners' involvement. TSR for the whole State was 85% and thirteen townships could achieve TSR  $\geq$ 85%. Partners in this state are UNION, PSI, MMA and MWAFF. Townships that achieved CDR of  $\geq$ 70% and TSR of  $\geq$ 85% were Laikha, Mongshu, Pinlaung and Kunhein Townships.

Presumptive TB examination rate was 536 per 100,000 populations and sputum positivity rate was 10% since 2011. The defaulter rate was 3%, failure rate was 4% and case fatality rate was 6%. Case fatality rate was as high as 25% in kyeethi, followed by Ywangan with 21% and Linhkay with 12%. Hopone had high unfavorable outcome of failure and case fatality rate with 17% and 10% respectively.

Regarding TB/HIV collaborative activities, it was started in this state since 2005. 67.6% (658/973) cases had documented HIV status and of them 17.2% (113/658) were recorded as HIV positive. A good things is that among them 95.6% (108/113) received CPT and 85.0% (96/113) received HAART for HIV. There were 16 notified MDR-TB cases in 2013 and 11 was already put on second line treatment.

Major problem in Shan State (Taunggyi) was low case detection due to sparsely populated, many hard-to-reached and uncovered areas. In addition, shortage of human resource including frequent transfer of trained person, vacant posts of team leader and laboratory technicians.

## 11.8 Shan State (Kengtong)



Shan (Kengtong) TB center covers 4 districts with 10 townships. There are 2 district TB teams. Total population in this area is more than sixty-two thousands population. Shan State (Kengtong) could achieve CDR of 90% with partners' contribution, although TSR was not changed a lot with or without partners' data, with 82% and 81 % respectively. Presumptive TB examination rate was 473/ 100,000 population and sputum positivity rate was 18%.

Two townships (Mongsat and Monpyak) could achieve both targeted CDR of >70% and TSR of  $\geq$ 85%. Townships that achieved CDR of <40% were Mongkhat, Mongyan and Matman. Although State TSR was 81% only, Mongsat and Monpyak could achieve TSR of 88% and 97% respectively.

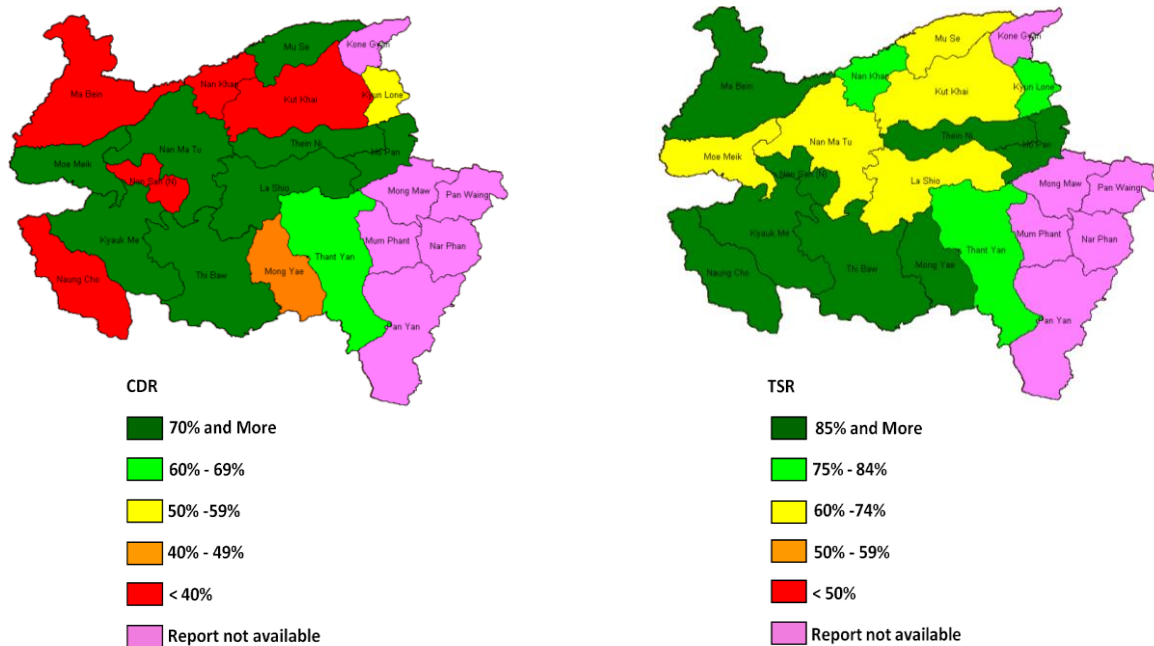
The defaulter rate for the whole state was 8% and as high as 29% in Mongkhat and there was no township less 5%. Failure rate for the whole state was 5% with highest in Kengtong (8%) followed by Mongton with failure rate of 6%.

There was 363 registered TB cases tested for HIV and of which 18% (66/363) was diagnosed as HIV positive. 47 out of 66 HIV positive patients received CPT treatment (71%) and 53% (35/66) was received ART treatment. Total 6 MDR-TB cases were detected in 2013 but treatment was not started yet. PSI and MAAF were working together for TB control.

State TB Officer was vacant and X ray technicians are vacant in 5 townships and 4 vacant posts for lab technicians. There was less collaboration with NGOs for TB control activities and presence of uncovered area and hard to reach area especially in special

region which needs to advocate and conduct awareness raising activities in those population.

### 11.9 Shan State (Lashio)



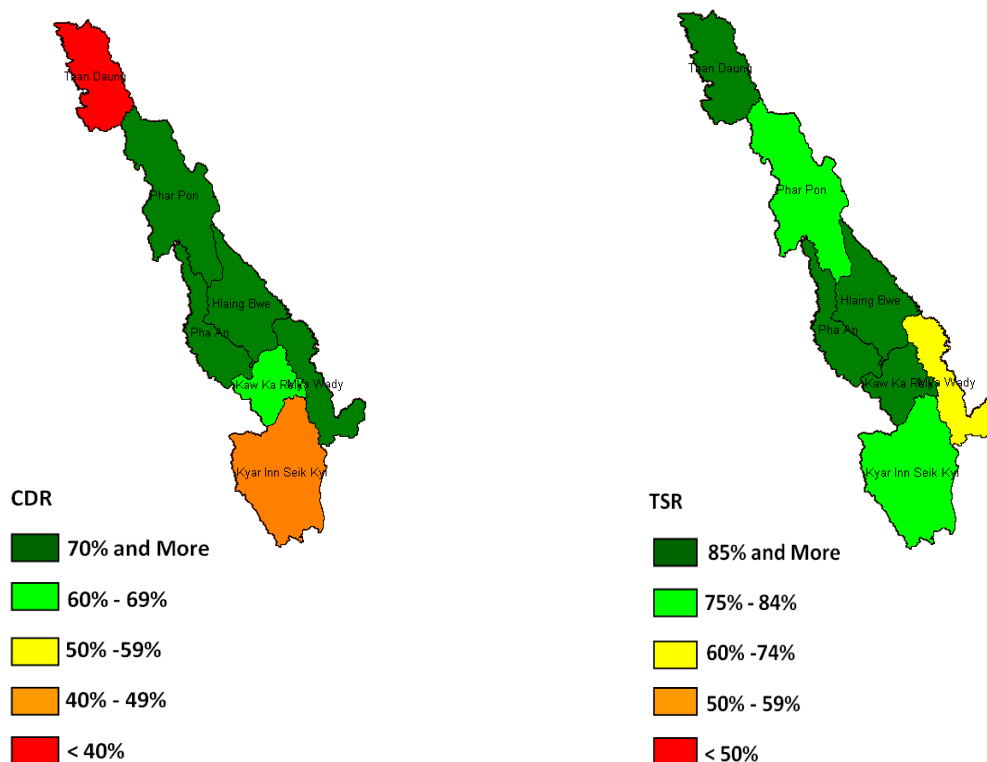
Shan State TB center in Lashio Township covers 6 districts and 24 townships with more than 1.8 million populations. There are 2 district TB teams and 6 townships TB teams. CDR for the whole state was 78% although TSR could not achieve target and it was only 77% with partners. TSR is slightly decreased in 2013 from 80% in 2012 to 77%. Implementing partners were MAAF, MMA, PSI, MSF-H, AHRN & Cesvi.

Presumptive TB examination rate was 501/100,000 population and sputum positivity rate was 14%. Regarding case holding, state wide defaulter rate was 12%, with highest in Laukai 35%, followed by Muse 24%. Case fatality rate and failure rate was 4% and failure rate was more than 2% in 6 townships (Kunlon, Mongmeik, Namtu, Naungcho, Lashio and Kuitai).

TB/HIV collaborative activities were carried out in Lashio. MDR-TB treatment was started with the implementing partner MSF-H. There were 54 confirmed MDR-TB cases notified to NTP and of which 20 patients received second line treatment at Lashio NTP and MSF H.

There was unreported cases in Border area (between Muse, Myanmar & Unan, China) since these area has no TB team & no focal medical officer. Another constraint was poor case holding due to drug abuse, security issue and language barrier.

### 11.10 Kayin State



Kayin State TB Control Activities was under Mon State TB Officer and covered by Mon State TB center located in Mawlamyine. There are 2 district TB teams and 3 townships TB teams. Population in Kayin State was approximately 1.4 million. DOTS was implementing in 17 townships.

In 2013, Kayin State achieved both targeted CDR and TSR with CDR of 78% and TSR of 85% including partners' contribution. However, only two townships (Hpa-an and Hlaingbwe) achieve both CDR and TSR targets. CDR > 40% township was Thandaung township. No township in Kayin State reached TSR < 70%. Partners in Kayin State are MCWA, PSI, MMA and IOM.

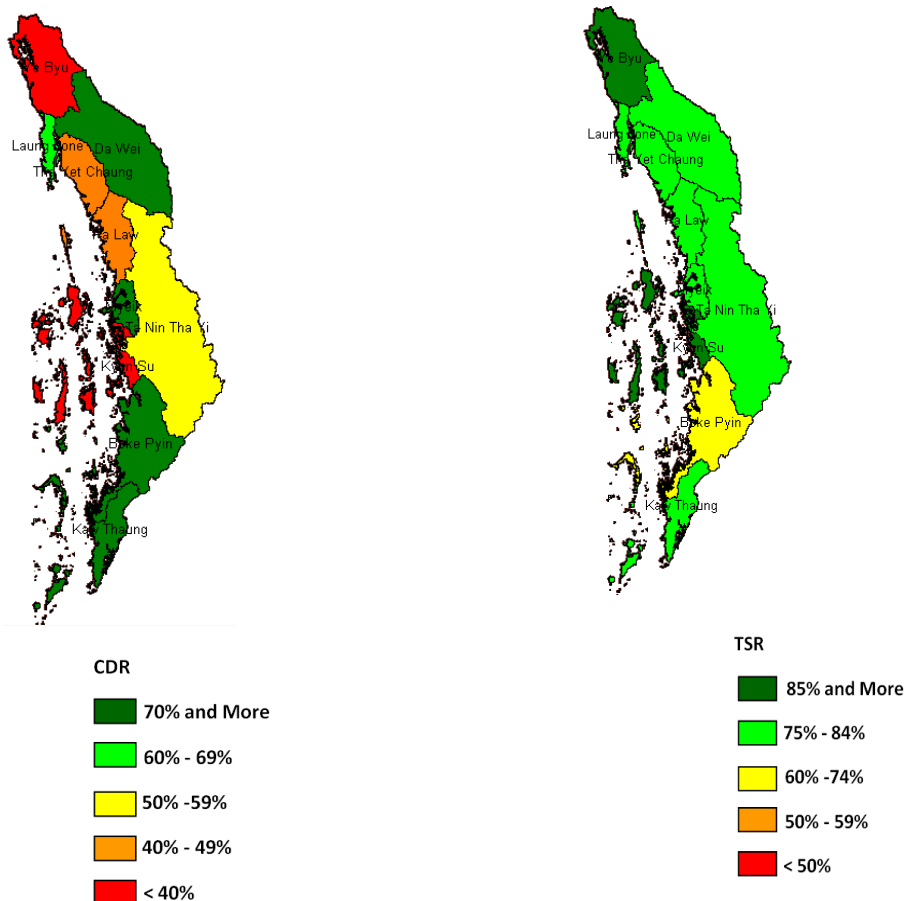
Defaulter rate for the whole state was 6% and it was highest in Kyainseikkyi with 12%, followed by Myawady with 11%. Failure rate was only 1% for state but it was as high as 6% in Myawady. Case fatality rate was highest in Papun (Kamamaung) with 15% and case fatality rate for the Kayin State was 4%. Presumptive TB examination rate was 542/100,000 population in 2013. Sputum positivity rate for the whole state was 16% in 2013.

TB/HIV collaborative activities township, Hpa-an, reported 5.6% (77/1383) of registered TB patients had recorded HIV status and of which 17% (13/77) patients were HIV sero positive and of which 77% (10/13) received CPT. However, no patients received for ART treatment. In Kayin State, there were 18 confirmed MDR-TB patients were detected but treatment had not been started for all patients till the end of 2013.



Regarding human resource issue, there was vacant Grade II lab technician post in Hpa-an District TB Centre. Border township, Myawaddy, was high defaulter rate and low TSR.

### 11.11 Tanintharyi Region

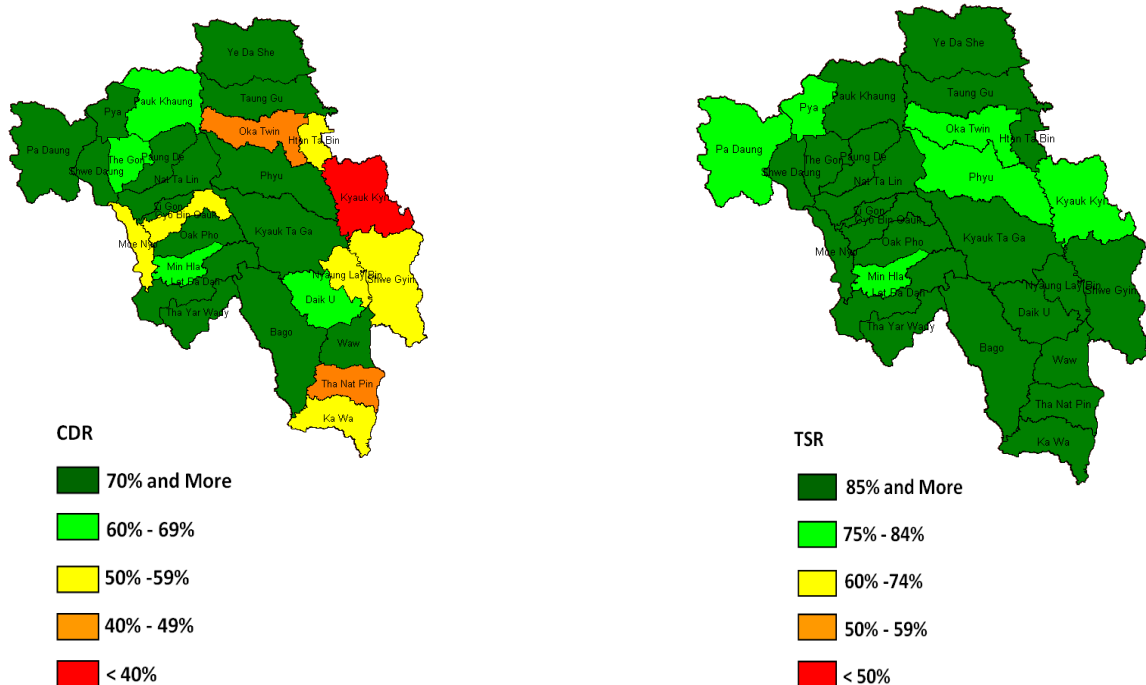


Tanintharyi regional TB center covers 3 districts with 10 townships with population approximately 1.3 million. CDR was 61 % for NTP alone and increased to 72% after including partners' results. No township could achieve targeted CDR and TSR of >70% and ≥85%. However, 4 townships (Dawei with 145%, Myeik with 107%, Kawthaung with 114% and Bokpyin with 91%) were achieve CDR >70%.

There were 4 implementing partners (MWF, PSI, MSF-CH and World Vision) working along with NTP. TSR for whole region was 81% and became 82% after partners' treatment outcome. Defaulter rate & Failure rate for the whole region were 6% & 5% respectively. Defaulter rate was higher than 5% in 6 townships and highest (20%) in Bokpyinn township. Failure rate was higher than 2% in 8 townships. TB/HIV collaborative activities were implementing in Dawei, Myeik and Kawthaung Townships. There were 29 confirmed MDR-TB cases in Tanintharyi Region.

TB team leader (Medical Officer) was needed in Kawthaung. In Myeik, nurse, X-ray technician and clerk were vacant. Problems were migrant population & border area TB Control, scale up TB/HIV and MDR-TB management and collaboration with NGO for TB control in hard to reach area.

### 11.12 Bago Region

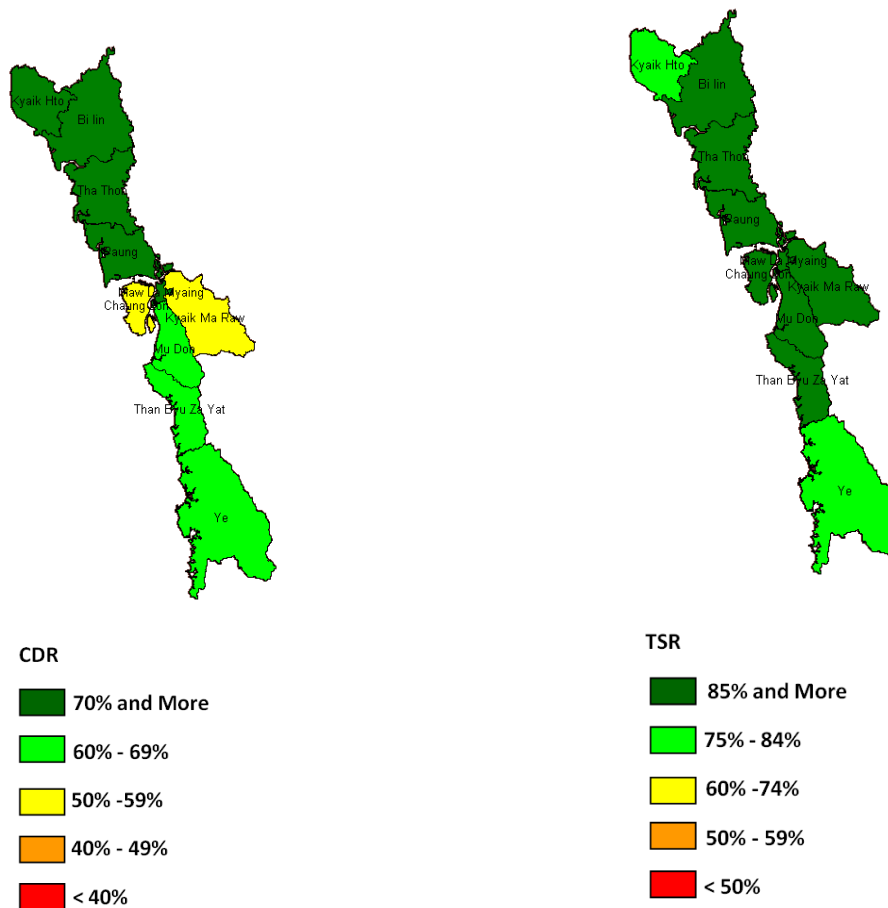


Bago Region TB center located in Bago township. Bago Region has 4 Districts with 28 townships. It has 4 district TB teams and 5 townships TB teams. The population of Bago Region was approximately 4.8 million. CDR was 67% for NTP alone but it increases to 83% after adding partners. Both CR was 74% and TSR was 88% respectively with partners' contribution. Implementing partners (MMCWA, PSI and MMA) working along with NTP.

Twelve townships (Bago, Kyauktaga, Waw, Taungoo, Yedashe, Paungde, Shwedaung, Tharyarwady, Zigon, Okpo, Nattalin and Lapdan) achieved both CDR >70% and TSR ≥85%. Presumptive TB examination rate was 626/100,000 population and sputum positivity rate was 17%. Region wide defaulter rate and failure rate were the same with 3%. TB/HIV collaborative activities were implementing in Bago and Pyay townships. Total 1114 TB patients had HIV test recorded and 16.8% (187/1114) was diagnosed as HIV positive. There were 43 MDR-TB patients waiting to receive second line treatment.

Problems of Bago Region were human resource requirement especially laboratory technicians and difficult waste disposal in Bago and Pyay TB center and incinerator is needed to support. There is inadequate space for GeneXpert installation in Taungoo TB clinic and new building is required.

### 11.13 Mon State



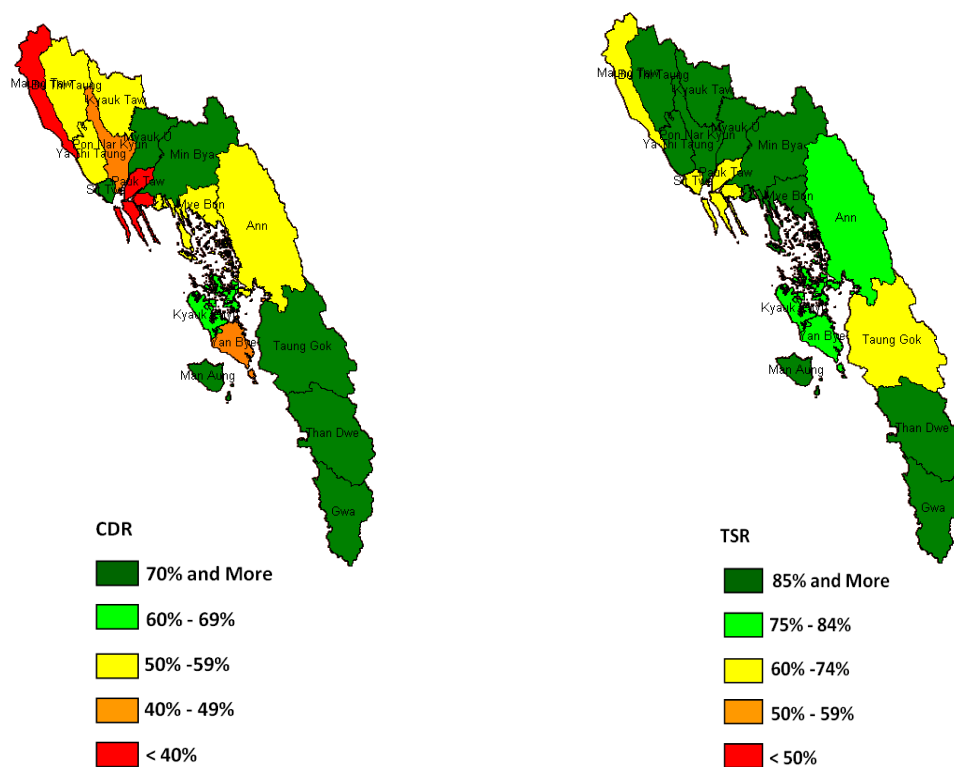
Mon State TB Centre covers both Mon State and Kayin State: 2 districts in Mon State with 10 townships and 3 districts in Kayin State with 7 townships. There are 2 district TB teams and 5 townships TB teams in Mon State. Population in Mon State was approximately 2.2 million. Mon State achieved CDR 89% with partners' involvement in TB control activities. NTP alone TSR was 87% and with partners, TSR was reduced to 86%.

Defaulter rate was 5% and failure rate was 3%. There were 3 townships with defaulter rate  $\geq$  5%; Chaung zone (7%), Thaton (14%) and Kyaikto (6%).. Presumptive TB examination rate was 786 per 100,000 populations. Sputum positivity rate for the whole state was 11%. Implementing partners in Mon State were MMCWA, IOM, World Vision, PSI and MMA.

TB/HIV collaborative activities have been implemented in Mawlamyaing Out of 15 confirmed MDR-TB patients, 12 patients were being received treatment in 2013.

Team leader (medical officer) post was vacant in Mawlayine, team leader (HA) post was vacant in Mudon. Grade II lab technicians were vacant in Mawlamyaing, Chaungzone and Bilin townships, junior TB worker in Thanbyuzayat and Mudon and statistical clerk was vacant in Mawlamyaing and Thaton.

### 11.14 Rakhine State



Rakhine State TB center was situated in Sittwe, covering 17 townships with population approximately 3.2 million. There are 3 district TB teams and 8 townships TB teams. Implementing partners (PSI, MMA and MSF-H) were working along with NTP in TB control activities. CDR was 59% with NTP alone and increased to 65% with partners' contribution. State TSR was 85% with NTP alone, but it decreased to 84% with partners' data. Implementing partners are Malteser International, MMA, MSF-H and PSI. Presumptive TB examination rate for 2013 was 391/100,000 population and positivity rate was 18%.

Although Rakhine State could not reach targeted CDR of >70%, Sittwe Township could achieve CDR of 152%. There were two townships (Pauktaw and Maungdaw) with CDR of <40%. Five townships (Mraukoo, Minbya, Manaung, Thandwe and Taungup) achieved targeted CDR >70% and TSR  $\geq$ 85%. Highest TSR township was Manaung with TSR of 98%, followed by Ponngyun, Kyauktaw with 96% and Buthidaung with 94%.

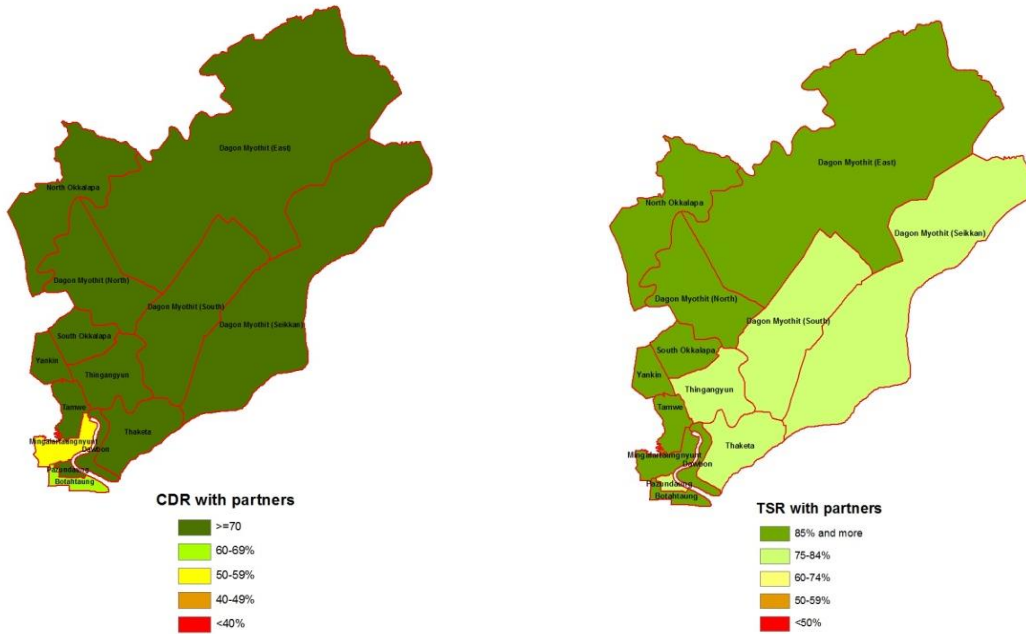
Defaulter rate for the whole state was 6% with highest in Pauktaw (16%) and total 7 townships (Sittwe, Pauktaw, Yatheedaung, Maungdaw, Kyaukphyu, Ann, Taunggoke) were defaulter rate >5%. Failure rate and case fatality rate were 4% and failure rate was as high as 14% in Maungdaw township and case fatality rate was 9% in Myaepon, followed by 8% in Gwa and 6% in Maungdaw.

There were 27 confirmed MDR-TB cases notified to Rakhine State TB centre and of which 2 MDR-TB patients were put on second line treatment at Yangon. Total 25 confirmed MDR-TB cases were waiting for second line treatment.

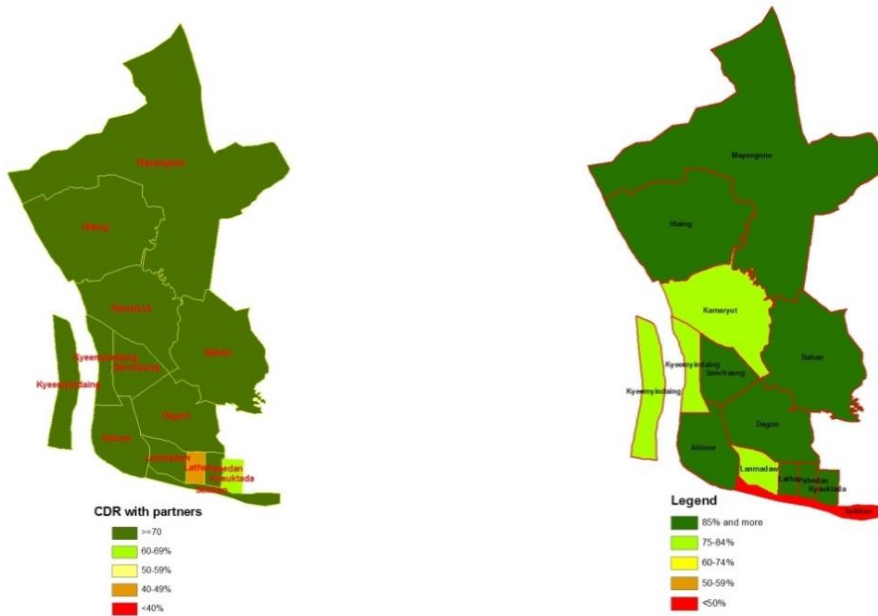
Human resource shortage was challenging for current implementing and scaling up activities and TB-HIV collaborative activity was also weak in Rakhine.

### 11.15 Yangon Region

#### Yangon Region (Eastern District)



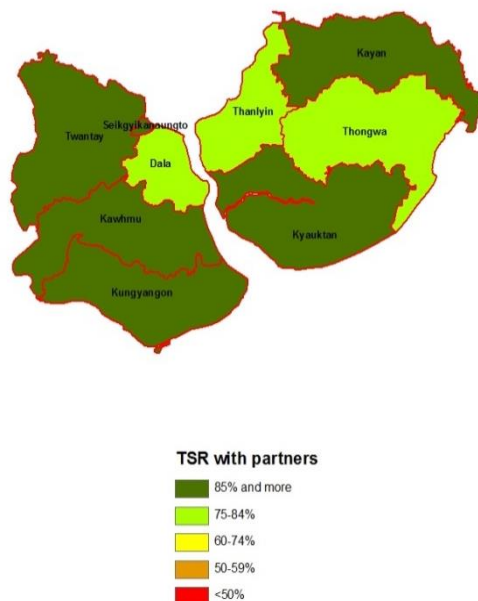
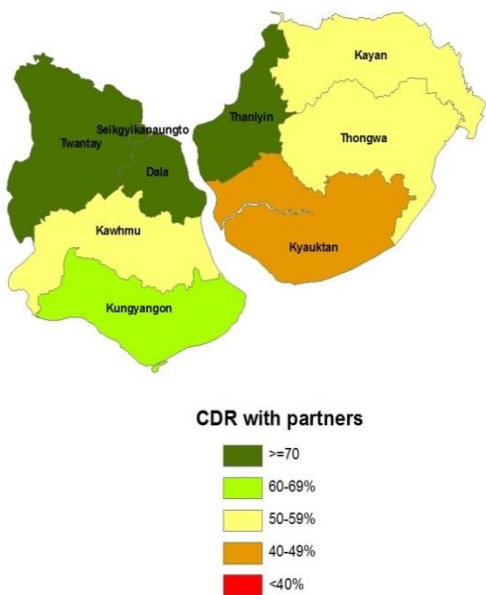
#### Yangon Region (Western District)



Yangon Region (Northern District)



Yangon Region (Southern District)



Yangon Regional TB Centre covers 4 districts with 45 townships. Total population of the Region was more than 6 million. It achieved CDR of 109%, CR and TSR were 77% and 85% including partners' contribution. NTP only could achieve CR of 84% and 88%, but for case finding, NTP only could achieve CDR of only 66%.

33 out of 45 townships achieved targeted CDR >70%, but Cocogyun township was zero case report. Targeted TSR of ≥85% was achieved by 31 townships and TSR < 70% was 3 townships (Dagon Seikkan, Kyimyindine and Dallah). Trend of new smear positive and new smear negative was decreasing and EP TB cases have been decreasing since 2007. Presumptive TB examination rate was 1295/100,000 population and sputum positivity rate was 33% in 2013.

Defaulter rate for the whole region was 3%. It was highest in Kyimyindine with 12% and followed by Dagon (South), Thingangyun and Kamayut with 9% and 8% respectively. Although region wide failure rate was 4%, Pabedan and Pazundaung was failure rate 14% and 11% and Kyauktada, Insein and Taikkyi was 10%. Case fatality rate for the whole region was 4% and as high as 15% in Dallah, 9% in Seikkyikhanaungto, 8% and 7% respectively in Twantay and Kayan.

TB/HIV collaborative activities report was received from 44 townships. Total 1233 Rifampicin resistance cases were detected by GeneXpert. In 2013, total 440 MDR-TB cases were put on MDR-TB treatment.

Partners in Yangon Region are MAAF, MMCWA, MMA, MRCS, PSI, MSF H, MSF CH, MDM, World Vision Myanmar, FHI360 and JICA.

Human resource limitation was still challenge in Yangon region. Medical officers, nurses, Laboratory technicians and counselors are not sufficient and there was also frequent changing of Township TB coordinators. Medical Drug store room and laboratories space was narrow. Other challenges were local drug sellers were not active in some townships and frequent turnover in volunteer trained by partners, and capacity for research.

### **Tuberculosis Diagnostic Centres (Yangon)**

There are two diagnostic and referral centres (Latha and UTI Aungsan) in Yangon Region. The attendants to those centres were recorded and reported in following tables.

**Table 45. Performance of TB Diagnostic Centres (Latha and Aungsan) in Yangon Region in 2013****Latha TB Diagnostic Centre**

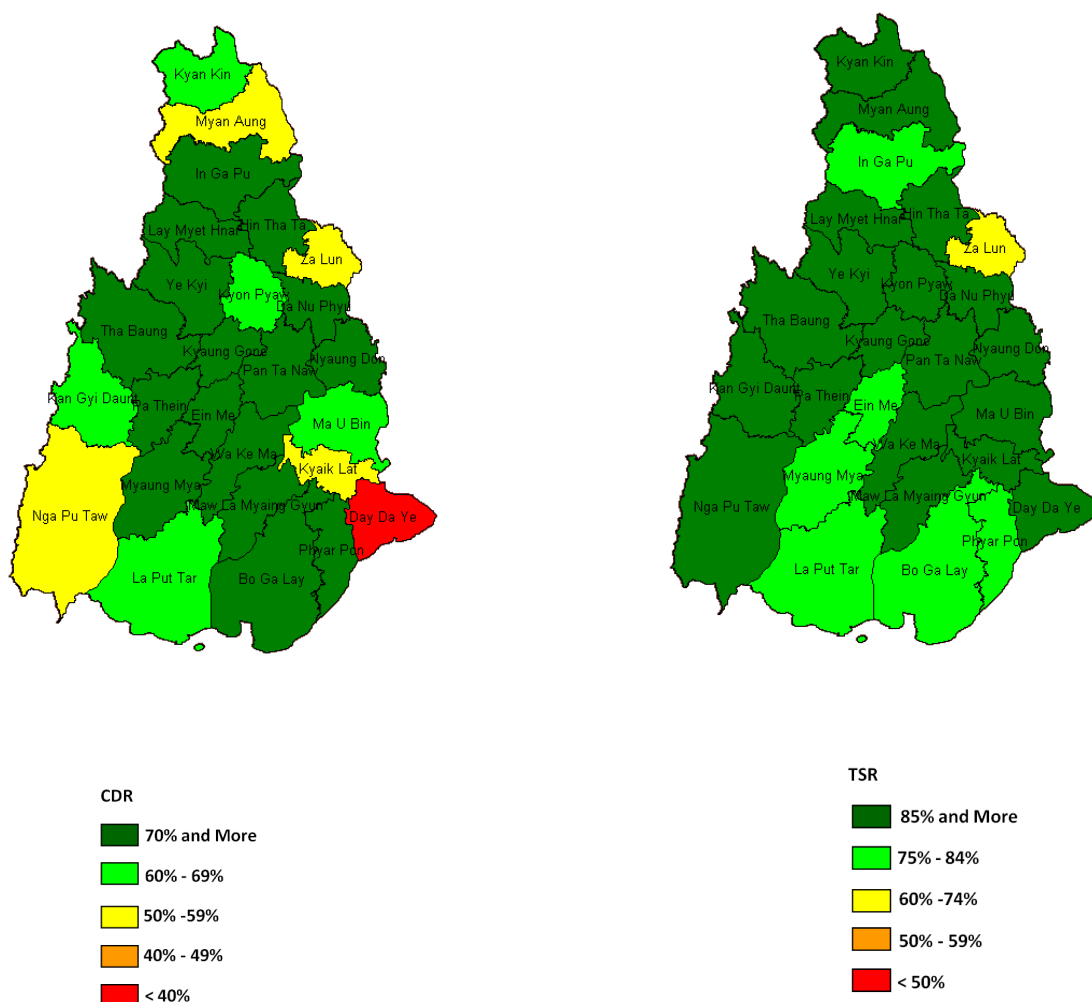
Month	Category 1			Category 2				T/in		Category 3		Follow - up	Non TB	Total
	Pos	Neg	EP	R	D	F	O	P	EP	P	EP			
January	65	85	48	20	1	2	19	2	3	3	0	321	562	1131
February	67	97	46	27	2	7	29	4	2	1	0	219	580	1081
March	60	91	49	16	0	5	14	10	1	4	0	227	592	1069
April	66	78	32	14	2	6	9	0	0	3	0	197	641	1048
May	66	98	67	22	4	9	20	0	0	4	0	280	727	1297
June	43	107	61	24	2	3	25	0	0	3	0	200	595	1063
July	54	125	48	23	2	6	17	0	1	5	0	250	696	1227
August	46	142	61	29	1	0	18	1	0	4	1	249	780	1332
September	66	111	53	31	4	3	26	0	0	4	1	268	820	1387
October	65	151	47	34	6	6	27	3	0	3	0	268	821	1431
November	55	128	51	24	2	2	23	10	0	4	0	317	686	1302
December	66	114	56	25	0	5	23	0	1	5	1	808	303	1407
<b>Total</b>	<b>719</b>	<b>1327</b>	<b>619</b>	<b>289</b>	<b>26</b>	<b>54</b>	<b>250</b>	<b>30</b>	<b>8</b>	<b>43</b>	<b>3</b>	<b>3604</b>	<b>7803</b>	<b>14775</b>



**AungSan TB Diagnostic Centre**

Month	Category 1			Category 2				T/in		Category 3		Follow - up	Non TB	Total
	Pos	Neg	EP	R	D	F	O	P	EP	P	EP			
January	83	82	11	19	3	6	6	10	5	7	1	286	641	1160
February	90	119	5	16	5	13	9	3	2	6	3	229	532	1032
March	79	80	15	24	7	12	14	0	0	5	1	260	663	1160
April	85	91	11	20	3	3	27	0	0	4	2	226	545	1017
May	88	108	11	20	3	2	21	0	0	8	1	243	602	1107
June	89	98	11	19	4	4	20	1	1	5	3	239	476	970
July	98	106	13	19	1	0	21	0	2	8	2	287	758	1315
August	118	107	20	1	2	4	17	0	0	5	1	305	734	1338
September	99	116	13	27	6	5	21	1	0	8	3	340	763	1402
October	104	96	14	39	2	7	12	1	0	5	2	340	836	1458
November	95	10	16	37	4	13	22	0	0	3	1	337	812	1444
December	95	112	20	27	3	7	20	0	1	7	1	411	643	1347
<b>Total</b>	<b>1123</b>	<b>1125</b>	<b>160</b>	<b>268</b>	<b>43</b>	<b>76</b>	<b>210</b>	<b>16</b>	<b>11</b>	<b>71</b>	<b>21</b>	<b>3503</b>	<b>8005</b>	<b>14750</b>

### 11.16 Ayeyarwaddy Region



Ayeyarwaddy Regional TB centre located in Patheingyi covers 5 districts with 26 townships. Total population of the Region was approximately 6.3 million. NTP alone achieved CDR of 68% but with partners' contribution, CDR increases to 79%. Region wide TSR was 87% with or without partners' data. Partners in Ayeyarwaddy region are MAAF, PSI and MMA. Reporting efficacy was 100%. Presumptive TB examination rate was 515 per 100,000 population and sputum positivity rate was 18%.

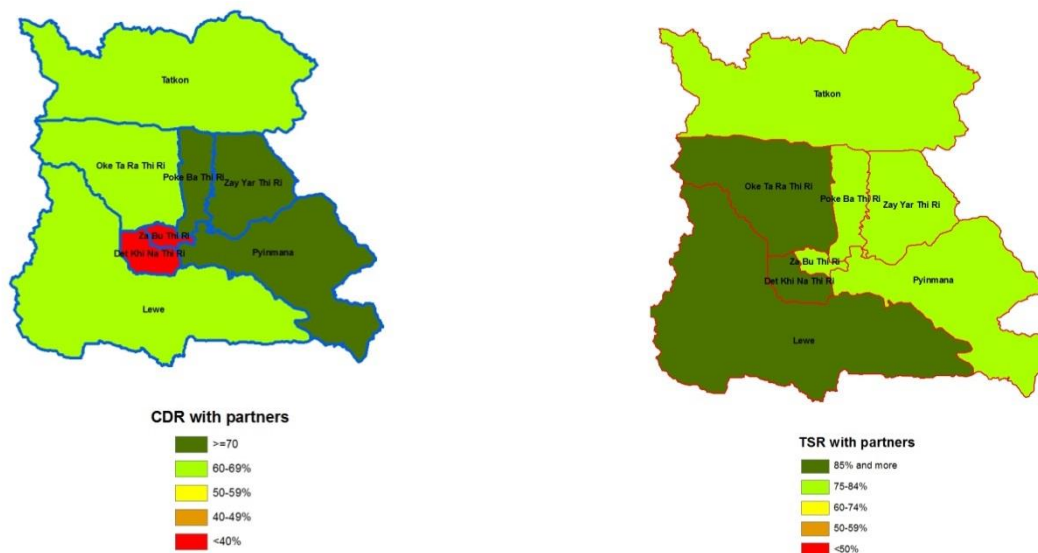
Up to 12 townships (Danuaphyu, Hinthada, Kyaunggon, Laymyethar, Mawgyun, Myanaung, Nyaungdon, Pantanaw, Patheingyi, Thabaung, Wakema and Yekyi) could achieve both targeted CDR and TSR.

Defaulter rate for the whole region was 5%, but it was as high as 21% in Zalun, 14% in Myaungmya and 11% in Pyapon. Region wide failure rate was 2% and the highest was Pyapon with 5% and followed by Pantanaw, Wakema and Laymyethar with 4%. Case fatality rate for this region was 5%, and it was noted as 10% in Mawgyun and 9% in Laputta.

TB/HIV collaborative activities have been implemented in Ayeyarwaddy Region and 11.7% (1,555/13,271) registered TB patients tested for HIV. Among them, 20.5% (318/1555) was recorded as documented HIV positive and 48.4% (154/318) of them received CPT and 8.5% (27/318) received ART treatment. There were 45 confirmed MDR-TB cases in 2013.

Ayeyarwaddy Region faced with human resource limitation and needs to fill lab technician vacant post. Infection control measures were still not satisfactory. There was also needed to strengthen recording and reporting system.

### 11.17 Naypyitaw Council



Naypyitaw Council has 2 districts and 8 townships with approximately 1 million populations. Naypyitaw Council could achieve CDR of 83% and TSR of 85%. Townships achieved CDR >70% were Zayarthiri, Pyinmana and Lewe, and that of <40% were Dekhinathiri and Zabuthiri. There were 5 townships with TSR  $\geq$ 85% and no township was less than TSR 70%.

Presumptive TB examination rate was increasing and it was 365/100,000 population in 2013 and sputum positivity rate was 20%. Pyinmanar Township was high failure rate with 10% and for the whole Naypyitaw Council was 5%.

TB/HIV collaborative activities were implementing in Pyinmana Township since 2009. In 2013, total 298 TB patients had recorded HIV status and 14.8% (44/298) was HIV positive. All of them received CPT, however only 11.4% (5/44) received ART. There were 24 confirmed MDR-TB cases and of which 12 patients were put on treatment. At the end of 2013, there were 8 confirmed MDR-TB patients in waiting list.

There is no Regional TB Officer post in Naypyitaw Council and District TB team leader is covering the whole council. Refresher training for BHS also needed. It will also need to set up TB Laboratory at Pobbathiri, Dakhinathiri and Zabbuthiri Townships.

## **12. Possible actions to be taken for solving 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
- To add partners' contribution when case detection is evaluated

### **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 DOT
- To do regular sputum follow-up examination during the treatment
- To check the township actual population
- To consider HIV co-infection
- To conduct epidemiological surveillance

- To strengthen health education session for TB patients at the time of registration for treatment and during follow-up visits

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

- To ensure that every dose of medication is directly observed i.e. to assign DOT provider for every TB patient put on treatment
- To 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 for BHS
- To consider HIV co- infection and strengthen TB/HIV collaboration
- To use quarterly cohort review meeting for early identification of missed dose patients
- To closely monitor the performance of partners at all level and take timely action especially for partners treating TB/HIV

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

- To maintain CR and raise the CDR as suggestion A.
- To check data quality
- To check laboratory quality
- To identify more TB suspected cases

**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 centres

**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 centres
- To check whether PPs under PPM are using Chest X Ray before sputum examination

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

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

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

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

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

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

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

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

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

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

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

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

**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 important vacant posts
4. To ensure adequacy of resources for TB control
5. To evaluate and scale up the prevention and control activities for TB/HIV co-infection and MDR-TB
6. To enhance accelerated TB case finding especially in hard to reach area and plan for scale up
7. To scale up on Public-Private Mix and strengthen the public-public Mix
8. To cover all public and private laboratories including PPM hospitals and private hospitals under the external quality assurance system of NTP
9. To strengthen coordination mechanism related to TB control at all levels
10. To strengthen monitoring, supervision and evaluation on TB control activities
11. To promote Operational Research
12. To strengthen data quality and verification at all levels

## 14. Conclusion

NTP, Myanmar has covered all the townships since November, 2003. NTP achieved case detection rate 78.8% and treatment success rate 85% in 2013 and has 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.

Case finding activities will also be improved by innovative approaches. NTP has planned to carry out accelerated case finding activities starting from 2014 onwards with the support of 3 MDG fund. These activities will include mobile team activities especially in hard to reach areas and mines; screening of TB among clinically high risk groups in PPM hospitals and screening of TB in Maternal, Newborn and Child Health (MNCH) services. In conclusion, strong political commitment, health system strengthening and partnership are important to maintain the achievement and reaching the MDGs.



## Balance of Anti-TB Drugs at NTP Central Drug Store (2013)

## Annex 1-a

SN	Item Description	Basic Unit	Opening Balance	Received	Issued	Closing balance	Expire Date
	Anti TB 1st line	x					
1	Patient kit ( I & III)	kit	29879	84399	103922	10356	Jun-15
2	4FDC (HRZE) (75/150/400/275)mg	tab	0	4093920	3120192	973728	Apr-16
3	3FDC (HRE) (75/150/275)mg	tab		3476928	3476928	0	
4	2FDC (HR) (75/150)mg	tab	568512	1738464	677376	1629600	Feb-16
5	ETB 100mg	tab	7500	240000	128500	119000	Jan-16
6	ETB 400mg	tab	0	324800	324800	0	
7	INH 100mg	tab	1031500	0	103600	927900	Nov-15
8	INH 300mg	tab	1041600	101472	1143072	0	
9	Paed: HRZ (30/60/150)mg	tab		7378560	4004196	3374364	Feb-15
10	Paed: HR (30/60)mg	tab		0	0	0	
11	Paediatric HR (60/60)mg	tab	1045464	20714400	12946920	8812944	Feb-15
12	PZA 400mg	tab		1344000	290304	1053696	Apr-16
13	Streptomycin 1G inj	vial	98000	828300	781800	144500	Jun-17
	Anti TB 2nd line (SLD)	x		0	0	0	
14	Amikacin 500mg/2ml inj:	vial	55770	115720	148890	22600	Feb-16
15	Capreomycin 1g, inj:	vial		1670	770	900	Mar-15
16	Cycloserine 250mg	tab	479700	1437800	961600	955900	Feb-15
17	Ethionamide 250mg	tab	477000	1350400	946300	881100	Nov-16
18	Kanamycin 1G injection	vial		28908	28100	808	Jan-16
19	Levofloxacin 250mg	tab	350600	1221900	1151100	421400	Feb-15
20	PAS sodium Granules 60% 100g	jar	5351	10863	11794	4420	Jun-16
21	PAS powder / sac	sach		26312	1012	25300	Jun-15
22	PZA 500mg	tab	186000	1768000	1188000	766000	Dec-16
23	Water for injection 5ml	vial	37000	763600	747900	52700	Mar-16
	Consumable items	x		0	0	0	
24	Syrine & Needles	pcs	59700	709000	768700	0	

## Balance of Anti-TB Drugs at NTP Upper Myanmar Drug Store (2013)

## Annex 1-b

SN	Item Description	Basic Unit	Opening Balance	Received	Issued	Closing balance	Expire Date
	Anti TB 1st line	x					
1	Patient kit ( I & III)	kit	10389	39310	41335	8364	Dec-14
2	4FDC (HRZE) (75/150/400/275)mg	tab	216720	1337040	1273584	280176	Feb-16
3	3FDC (HRE) (75/150/275)mg	tab	74592	1174656	751968	497280	May-16
4	2FDC (HR) (75/150)mg	tab	368928	1134672	1433040	70560	Jan-15
5	ETB 100mg	tab	62500	28000	86500	4000	Jan-16
6	ETB 400mg	tab	311808	70558	371366	11000	Feb-16
7	INH 100mg	tab	266500	0	201500	65000	Nov-15
8	INH 300mg	tab		611520	152544	458976	Jul-14
9	Paed: HRZ (30/60/150)mg	tab	0	1294776	839916	454860	Feb-15
10	Paed: HR (30/60)mg	tab		0	0	0	
11	Paediatric HR (60/60)mg	tab	1375920	3765552	3550176	1591296	Feb-15
12	PZA 400mg	tab		221088	15456	205632	Apr-16
13	Streptomycin 1G inj	vial	63900	230500	228200	66200	Jun-17
	Anti TB 2nd line (SLD)	x		0	0	0	
14	Amikacin 500mg/2ml inj:	vial	24200	37400	38500	23100	Feb-16
15	Capreomycin 1g, inj:	vial	100	770	870	0	
16	Cycloserine250mg	tab	85100	220100	143000	162200	Jul-14
17	Ethionamide 250mg	tab	91400	217300	144300	164400	Feb-15
18	Kanamycin 1G injection	vial		10000	3940	6060	Jan-16
19	Levofloxacin 250mg	tab	82900	332200	236400	178700	Nov-14
20	PAS sodium Granules 60% 100g	jar	2000	840	2166	674	Apr-16
21	PAS powder / sac	sach		0	0	0	
22	PZA 500mg	tab	134000	127100	226100	35000	Jun-16
23	Water for injection 5ml	vial	63500	235600	226950	72150	Mar-16
	Consumable items	x		0	0	0	
24	Syrine & Needles	pcs	61900	245700	274500	33100	May-18

## Balance of Anti-TB Drugs at NTP Lower Myanmar Drug Store (2013)

## Annex 1-c

SN	Item Description	Basic Unit	Opening Balance	Received	Issued	Closing balance	Expire Date
	<b>Anti TB 1st line</b>	x					
1	Patient kit ( I & III)	kit	10864	79704	77011	13557	Mar-15
2	4FDC (HRZE) (75/150/400/275)mg	tab	234528	2532096	2099328	667296	Feb-15
3	3FDC (HRE) (75/150/275)mg	tab	32928	2638272	2131584	539616	Dec-15
4	2FDC (HR) (75/150)mg	tab	465696	205632	393120	278208	Jan-15
5	ETB 100mg	tab	66000	100500	121500	45000	Jan-16
6	ETB 400mg	tab	161280	330860	492140	0	
7	INH 100mg	tab	97900	103600	167600	33900	Nov-15
8	INH 300mg	tab	360869	565152	782885	143136	Oct-14
9	Paed: HRZ (30/60/150)mg	tab	51156	2788716	2442216	397656	Jan-15
10	Paed: HR (30/60)mg	tab		0	0	0	
11	Paediatric HR (60/60)mg	tab		7953708	6114024	1839684	Feb-15
12	PZA 400mg	tab	31800	81312	78840	34272	Apr-16
13	Streptomycin 1G inj	vial	77590	570000	498490	149100	Jun-17
	<b>Anti TB 2nd line (SLD)</b>	x		0	0	0	
14	Amikacin 500mg/2ml inj:	vial	17280	204170	168640	52810	Feb-16
15	Capreomycin 1g, inj:	vial		0	0	0	
16	Cycloserine 250mg	tab	54300	642500	521800	175000	Jun-14
17	Ethionamide 250mg	tab	76300	625500	525400	176400	Feb-15
18	Kanamycin 1G injection	vial	320	8200	5080	3440	Jan-16
19	Levofloxacin 250mg	tab	54400	797000	704700	146700	Nov-14
20	PAS sodium Granules 60% 100g	jar	2145	14420	14532	2033	Apr-16
21	PAS powder / sac	sach		25300	5200	20100	Jun-15
22	PZA 500mg	tab	72000	1000900	864900	208000	Feb-16
23	Water for injection 5ml	vial	64800	522271	422471	164600	Sep-15
	<b>Consumable items</b>	x		0	0	0	
24	Syrine & Needles	pcs	61800	440200	451100	50900	May-18

## Laboratory supplies and equipments (2012)

## Annex-2

No.	Items	Opening balance (1-1-2013)	Received 2013	Issued 2013	Closing balance (31-12-2013)
1.	Fuchsin Basic (25 gm)	725	0	638	87
2.	Phenol Crystals (500 gm)	133	96	229	0
3.	Methylated Spirit (Cans)	1	100	78	23
4.	Microscopes (Cx21 Olympus)	3	0	2	1
5.	Binocular Microscope Nikkon E100	2	0	0	2
6.	Microscope Glass Slides 3600/unit	238	0	222	16
7.	Dry Cell	3	0	2	1
8.	Inverter with dry cell battery	3	0	2	1
9.	Xylene (1 Litre)	32	0	29	3
10.	Objective lens (100 $\mu$ )	82	0	6	76
11.	Methylene Blue (25 gm)	670	1200	163	1707
12.	Sulphuric Acid (2.5 Litre)	0	0	0	0
13.	Sulphuric Acid (1 Litre)	1245	1185	925	1505
14.	Sulphuric Acid (500 ml)	0	0	0	0
15.	Sputum Containers (bags of 1000)	120	655	675	100
16.	Immersion Oil (1 Litre)	8	73	12	69
17.	Methanol (1 Litre )	0	0	0	0
18.	Methanol (2.5 Litre)	230	0	208	22
19.	Glycerol (1 Litre)	0	0	0	0
20.	Glycerol (500 ml)	14	6	10	10
21.	Sodium hydroxide (500 gm)	23	0	19	4
22.	Auromine O	317	0	85	232
23.	B.P Phenyl	4443	0	936	3507

## Manpower Situation of National Tuberculosis Programme (2013)

## Annex-3

No.	Designation	Pay	Sanction	Posted	Vacant
1.	Deputy Director (TB)	160000-2000-170000	1	1	0
2.	Medical Superintendent	160000-2000-170000	1	1	0
3.	Lecturer/TB specialist	160000-2000-170000	1	1	0
4.	Assistant Director (TB)	140000-2000-150000	1	1+3*	
5.	Microbiologist	140000-2000-150000	2	2*	2
6.	Regional/State TB Officer	140000-2000-150000	6	6+7*	
7.	Medical Officer	120000-2000-130000	56	46+1*	10
8.	Administrative Officer	120000-2000-130000	1	0	1
9.	Superintendent	85000-1000-90000	1	1	0
10.	District Community Health Nurse	85000-1000-90000	2	2	0
11.	Assistant Statistical Officer	79000-1000-84000	2	2	0
12.	Health Assistant	79000-1000-84000	80	70	10
13.	Sister	79000-1000-84000	1	1	0
14.	Public Health Sister	79000-1000-84000	1	1	0
15.	Medical technician	79000-1000-84000	1	1+2*	0
16.	Radiology technician	79000-1000-84000	9	8	1
17.	Radiographer	79000-1000-84000	2	1+1*	1
18.	BC (Budget/Admin)	79000-1000-84000	4	4	0
19.	BCG supervisor	79000-1000-84000	14	11	3
20.	Blue staff	73000-1000-78000	4	4	0
21.	LHV	73000-1000-78000	12	12	0
22.	Trained nurse	73000-1000-78000	122	100	22
23.	Grade 1 lab: technician	73000-1000-78000	11	11+6*	
24.	Grade 1 X-ray technician	73000-1000-78000	8	7+1*	1
25.	Assistant statistician	73000-1000-78000	5	5	0
26.	BCG technician	73000-1000-78000	60	26	34
27.	UD (Budget/Admin)	73000-1000-78000	11	9+2*	2
28.	Grade 2 lab technician	67000-1000-72000	200	144	56
29.	LD (Budget/Admin)	67000-1000-72000	35	27	8
30.	Compounder	67000-1000-72000	4	3	1
31.	Grade 2 X-ray technician	67000-1000-72000	3	1	2
32.	Steward	67000-1000-72000	1	0	1
33.	Typist	67000-1000-72000	7	5	2
34.	Jr. TB worker	67000-1000-72000	123	60	63
35.	Statistical clerk	67000-1000-72000	100	74	26
36.	Driver	61000-1000-66000	48	7	41
37.	Clinic assistant	61000-1000-66000	2	2	0
38.	Lab. boy and Lab: assistant	55000-1000-60000	7	2	5
39.	Peon	55000-1000-60000	15	6	9
40.	X-ray van assistant	55000-1000-60000	2	0	2
41.	X-ray department assistant	55000-1000-60000	3	1	2
42.	Gardener and Plumber	55000-1000-60000	2	1	1
43.	Night Watch	55000-1000-60000	14	7	7
44.	Sweeper and Manual worker	55000-1000-60000	43	25	18
<b>Total</b>			<b>1028</b>	<b>697+25*</b>	<b>331</b>

**Country Block 1** **CASE FINDING & ACTIVITIES (D.O.T.S - Townships)**

**Annex-4**

**Annual 2013**

Sr.No	S/R & Other unit	Population	Estimated cases	PULMONARY TUBERCULOSIS														Total											
				SMEAR POSITIVE										Smear Negative		Primary Complex		Extra Pulmonary TB		Other									
				New Cases		NCDR		Relapses		Old Cases		Total		M	F	M	F	M	F	M	F	M	F						
				M	F	T	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	TOTAL						
1	Kachin State	1465364	1539	710	349	1059	69%	100	32	14	2	60	26	1293	842	395	782	561	481	364	845	199	83	3188	1812	5000			
2	Kayah State	285341	300	109	40	149	50%	6	1	2	1	7	4	170	108	64	172	108	74	105	50	155	47	17	492	251	743		
3	Chin State	478958	503	84	58	142	28%	9	4	2	0	9	5	171	138	78	216	420	295	72	45	117	6	4	740	489	1229		
4	Sagaing Region	5193199	5453	1626	731	2357	43%	132	34	23	2	53	18	2619	1127	545	1672	837	671	444	324	950	115	45	4357	2370	6727		
5	Magway Region	4059425	4262	1366	736	2102	49%	158	68	14	2	57	22	2423	1099	755	1832	611	463	661	462	1117	122	65	4088	2573	6661		
6	Mandalay Region	5672704	5956	2049	933	2982	50%	257	82	27	2	133	39	3522	1562	830	2392	532	365	1168	924	2092	274	97	6002	3272	9274		
7	Shan State (Taunggy)	2068600	2172	720	336	1056	49%	55	19	10	3	36	16	1195	509	245	754	412	307	328	242	570	49	22	2119	1190	3309		
8	Shan State (Kengton)	636719	669	372	187	559	84%	55	12	4	1	28	4	662	325	173	498	222	145	53	38	89	44	13	1103	573	1676		
9	Shan State (Lashio)	1849708	1942	759	393	1152	59%	116	44	25	7	38	17	1399	846	494	1340	418	302	459	387	846	115	49	2776	1693	4469		
10	Kayin State	1389274	1459	685	369	1054	72%	48	33	14	8	14	10	1181	777	485	1262	403	300	60	49	109	27	8	2028	1262	3290		
11	Tanintharyi Region	1301784	1367	551	282	833	61%	60	33	5	5	46	35	1017	777	590	1367	902	795	351	286	637	81	48	2773	2074	4847		
12	Bago Region	2874449	3018	1223	603	1826	61%	142	51	15	4	28	11	2077	1305	948	2253	1017	806	362	350	712	197	102	4289	2875	7164		
13	Bago Region (Pyaw)	1934427	2031	1050	502	1552	76%	116	49	3	1	41	23	1785	1051	639	1690	966	849	138	147	285	95	52	3460	2262	5722		
14	Mon State	2141928	2249	1097	529	1626	72%	136	48	12	4	40	22	1888	1188	862	2050	1511	1159	183	163	346	42	14	4209	2801	7010		
15	Rakhine State	3213668	3374	1245	745	1990	59%	93	42	10	12	60	25	2232	796	652	1448	413	379	281	273	554	156	102	3054	2230	5284		
16	Yangon Region	6030053	10251	4516	2258	6774	66%	886	353	98	17	179	105	8412	4273	2565	6838	1161	878	873	829	1702	781	335	12767	7340	20107		
17	Ayeyarwady Region	6249174	6562	2855	1580	4435	68%	257	136	35	6	63	35	4967	2317	1621	3938	1448	1020	789	677	1466	222	113	7986	5188	13174		
18	Naypyitaw	951852	999	499	198	697	70%	45	17	13	4	31	10	817	361	142	503	61	51	283	184	467	79	32	1372	638	2010		
19	Other Unit	0	0	6775	3475	10250		807	318	72	23	281	139	11890	7037	4528	11565	3302	2524	2285	1717	4002	821	362	21380	13086	34466		
<b>Total</b>		<b>47796627</b>	<b>54106</b>	<b>28291</b>	<b>##</b>	<b>42595</b>	<b>78.7%</b>	<b>3478</b>	<b>1376</b>	<b>398</b>	<b>104</b>	<b>1204</b>	<b>566</b>	<b>49721</b>	<b>26438</b>	<b>16611</b>	<b>43049</b>	<b>##</b>	<b>##</b>	<b>##</b>	<b>9376</b>	<b>7511</b>	<b>##</b>	<b>##</b>	<b>3472</b>	<b>##</b>	<b>88183</b>	<b>53979</b>	<b>1E+05</b>

Reporting Efficiency Rate = 97% (319/330) tps CDR = 78.7% CR = 74 % TSR 85%

Report had not been received from ( 11 )Townships

- Kachin State (5) Tsps 1. N'ganyan 2. Hsawlaw 3. Khaunglanbu 4. Naungmon, 5. Sumprabom
- Shan (Lashio) State (6)Tsps 1. Kongyan 2. Panwine 3. Mongmaw 4. Manphant 5. Narphant 6. Pangyan

**NATIONAL TUBERCULOSIS PROGRAMME  
CASE FINDING ACTIVITIES (2013)**

Annex 4

Sr.	TOWNSHIP	Population	Estimated New S(+) cases	PULMONARY TUBERCULOSIS												Extra Pulmonary Tuberculosis				TOTAL									
				SMEAR POSITIVE						Previously treated cases						Primary complex		Total			M	F	M	F					
				New Cases	CDR	Relapses		T after Default		T after failure		Smear Negative	Total	M	F	M	F	M	F										
						M	F	M	F	M	F										M	F							
<b>Kachin State</b>																													
1	Bahmo	114270	120	63	23	86	72%	5	3	0	0	2	0	0	96	112	47	159	119	86	163	112	275	13	6	477	277	754	
2	Mansi	74308	78	28	11	39	50%	1	0	0	0	0	0	40	21	36	40	36	40	37	9	6	15	0	2	99	71	170	
3	Mornaik	94098	99	22	13	35	35%	1	1	3	0	2	1	43	27	36	37	9	36	37	20	17	34	1	1	110	62	172	
4	Shwegu	83235	87	41	20	61	70%	3	0	0	0	1	0	65	11	5	16	0	0	0	0	31	18	49	3	0	90	43	133
5	Mohyin	208386	219	72	49	121	55%	13	2	2	0	7	1	146	46	21	67	15	67	15	13	42	24	66	7	0	204	110	314
6	Phakant	163173	171	83	34	117	68%	15	5	1	0	7	3	148	46	22	68	70	68	70	67	26	19	45	5	0	253	150	403
7	Mogaung	148674	156	71	40	111	71%	15	7	0	0	11	2	146	23	13	36	28	36	28	25	12	20	32	11	7	171	114	285
8	Tanai	37977	40	49	19	68	171%	4	1	0	2	2	1	78	43	25	68	3	5	6	14	20	8	1	115	68	183		
9	Myitkyina	237178	249	230	105	335	135%	34	10	8	0	25	17	429	371	176	547	302	198	122	76	198	121	46	1213	628	1841		
10	Chipway	19494	20	1	1	2	10%	0	0	0	0	0	0	2	2	4	4	4	4	5	1	1	2	0	0	8	9	17	
11	Hsawlaw	7183	8 Nr.	0	0	0	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	N Jan Yan	9500	10 Nr.	0	0	0	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	Waingmaw	123276	129	24	20	44	34%	6	1	0	0	1	1	53	122	53	175	149	95	47	53	100	27	17	376	240	616		
14	<b>Putao</b>	93483	98	23	12	35	36%	2	2	0	0	2	0	41	16	7	23	15	10	5	4	9	3	3	66	38	104		
15	Khaunglanbu	15532	16 Nr.	0	0	0	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	Mechanbaw	8245	9	3	2	5	58%	1	0	0	0	0	0	6	2	0	2	0	0	0	0	0	0	0	0	6	2	8	
17	Nogmun	12544	13 Nr.	0	0	0	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	Sumprabum	14808	16 Nr.	0	0	0	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>		<b>1465364</b>	<b>1539</b>	<b>710</b>	<b>349</b>	<b>1059</b>	<b>69%</b>	<b>100</b>	<b>32</b>	<b>14</b>	<b>2</b>	<b>60</b>	<b>26</b>	<b>1293</b>	<b>842</b>	<b>395</b>	<b>1237</b>	<b>782</b>	<b>561</b>	<b>481</b>	<b>364</b>	<b>845</b>	<b>199</b>	<b>83</b>	<b>3188</b>	<b>1812</b>	<b>5000</b>		

\* Note\* (Nr.) Report had not been received from (5) townships

Nr. 5 Tsp; 1.Nganyan. 2. Hsaw law . 3 Khaunglanbu 4.Nogmun. 5. Sumprabum

Sr.	TOWNSHIP	Population	Estimated New S(+) cases	PULMONARY TUBERCULOSIS												Extra Pulmonary Tuberculosis			TOTAL							
				SMEAR POSITIVE				SMEAR NEGATIVE				PRIMARY COMPLEX				Total	M	F	M	F	M	F	M	F	M	F
				New Cases	CDR	Relapses		Previously treated cases		Total	M	F	Total	M	F											
						M	F	M	F							M	F	M	F	M	F					
				M	F	T	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F

**Kayah State**

1	Bawlake	8380	9	9	3	12	136%	0	0	0	0	0	0	14	0	1	1	4	2	1	1	2	1	1	2	2	1	18	8	26	
2	Masai	6033	6	3	1	4	63%	0	0	0	0	0	4	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3	2	5
3	Pasaung	35455	37	14	3	17	46%	1	0	0	0	0	18	19	10	29	12	7	1	2	3	5	0	52	22	74					
4	Loikaw	117966	124	51	14	65	52%	2	0	0	1	3	74	67	43	110	72	55	91	40	131	34	14	320	170	490					
5	Dimawhso	80041	84	28	18	46	55%	2	1	0	0	2	1	52	16	7	23	16	8	7	6	13	4	2	75	43	118				
6	Phruhso	31132	33	3	1	4	12%	1	0	0	0	2	0	7	6	3	9	4	1	5	1	6	2	0	23	6	29				
7	Shataw	6334	7	1	0	1	15%	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1			
	<b>Total</b>	<b>285341</b>	<b>300</b>	<b>109</b>	<b>40</b>	<b>149</b>	<b>50%</b>	<b>6</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>7</b>	<b>4</b>	<b>170</b>	<b>108</b>	<b>64</b>	<b>172</b>	<b>108</b>	<b>74</b>	<b>105</b>	<b>50</b>	<b>155</b>	<b>47</b>	<b>17</b>	<b>492</b>	<b>251</b>	<b>743</b>				

**Annex 4(township list)**

**Chin State**

1	Falam	48383	51	10	4	14	28%	1	0	0	0	0	0	15	5	4	9	26	17	6	5	11	3	2	51	32	83		
2	Hakha	42630	45	4	7	11	25%	0	1	0	0	6	3	21	27	22	49	111	77	14	8	22	0	0	162	118	280		
3	Htantalan	52296	55	7	5	12	22%	2	2	0	0	3	2	21	41	16	57	199	132	3	0	3	0	0	255	157	412		
4	Tiddim	94961	100	1	4	5	5%	0	0	0	0	0	5	7	3	10	18	17	13	7	20	0	0	39	31	70			
5	Tunzan	29400	31	1	6	7	23%	1	1	0	0	0	9	2	3	5	13	9	8	2	10	0	1	25	22	47			
6	Mindat	44095	46	11	5	16	35%	3	0	1	0	0	20	24	10	34	8	6	5	6	11	3	1	55	28	83			
7	Kanpetlet	21309	22	1	0	1	4%	0	0	0	0	0	1	9	1	10	4	4	5	3	8	0	0	19	8	27			
8	Matupi	52491	55	12	4	16	29%	1	0	1	0	0	18	5	9	14	29	22	7	8	15	0	0	55	43	98			
9	Palewa	93393	98	37	23	60	61%	1	0	0	0	0	61	18	10	28	12	11	11	6	17	0	0	79	50	129			
	<b>Total</b>	<b>478958</b>	<b>503</b>	<b>84</b>	<b>58</b>	<b>142</b>	<b>28%</b>	<b>9</b>	<b>4</b>	<b>2</b>	<b>0</b>	<b>9</b>	<b>5</b>	<b>171</b>	<b>138</b>	<b>78</b>	<b>216</b>	<b>420</b>	<b>295</b>	<b>72</b>	<b>45</b>	<b>117</b>	<b>6</b>	<b>4</b>	<b>740</b>	<b>489</b>	<b>1229</b>		



Sr.	TOWNSHIP	Population	Estimated New S(+) cases	PULMONARY TUBERCULOSIS												TOTAL											
				SMEAR POSITIVE				SMEAR NEGATIVE				PRIMARY COMPLEX				EXTRA PULMONARY TUBERCULOSIS		M	F	TOTAL							
				New Cases	CDR	Relapses		Previously treated cases		Total	M	F	Total	M	F	M	F										
						M	F	T	M									F	M	F	M	F					
				M	F	T	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	TOTAL				
<b>Sagaing Region</b>																											
1	Sagaing	294635	309	63	174	56%	4	3	1	0	0	0	182	57	24	81	65	51	33	22	55	13	2	284	165	449	
2	Myeang	111868	117	46	68	58%	4	0	0	0	3	1	76	17	18	35	17	10	2	6	8	0	1	89	58	147	
3	Myimnu	115429	121	39	54	45%	4	0	0	0	0	0	58	40	21	61	13	8	22	18	40	0	0	118	62	180	
4	Shwebo	259855	273	54	21	27%	3	2	1	1	0	2	84	93	36	129	27	25	25	30	55	8	3	211	120	331	
5	Kanbalu	269788	283	41	56	20%	2	0	0	0	6	4	68	33	6	39	36	41	17	16	33	3	1	138	83	221	
6	Khin-U	153083	161	31	44	27%	1	0	0	0	0	0	45	11	3	14	2	5	9	9	18	2	1	56	31	87	
7	Kyunhla	91225	96	14	3	17	18%	2	1	0	0	0	20	17	9	26	7	9	2	3	5	0	1	42	26	68	
8	Tabayin	151469	159	32	19	32%	2	1	0	0	0	0	54	4	4	8	10	15	12	6	18	2	3	62	48	110	
9	Taze	181957	191	47	13	31%	4	0	0	0	1	0	65	18	5	23	12	5	14	6	20	4	4	100	33	133	
10	Weitit	207262	218	41	26	31%	9	4	0	0	2	0	82	42	21	63	84	76	4	8	12	5	1	187	136	323	
11	Ye-U	129486	136	33	12	45	33%	1	0	0	0	0	46	21	11	32	17	21	12	5	17	3	1	87	50	137	
12	Monywa	325761	342	144	47	191	56%	13	4	7	1	2	218	74	27	101	25	21	50	33	83	8	3	323	136	459	
13	Ayadaw	160258	168	34	10	44	26%	2	3	0	0	0	49	56	18	74	11	13	11	5	16	4	0	118	49	167	
14	Budalin	143275	150	68	27	95	63%	1	1	0	0	5	104	33	15	48	51	32	18	13	31	0	0	176	90	266	
15	ChaugU	110579	116	23	6	25%	2	1	0	0	1	1	34	20	4	24	21	20	10	3	13	0	1	77	36	113	
16	Kani	142182	149	54	29	83	56%	1	0	0	0	0	84	21	11	32	16	13	5	2	7	0	0	97	55	152	
17	Pale	150713	158	27	14	41	26%	5	0	0	0	1	47	8	12	20	10	10	10	9	19	1	0	62	45	107	
18	Salingyi	137015	144	32	24	56	39%	4	0	2	0	5	68	21	14	35	14	11	12	4	16	5	0	95	54	149	
19	Yinmabin	147786	155	47	16	63	41%	2	0	0	0	1	66	15	6	21	14	11	13	8	21	0	0	91	42	133	
20	Katha	163107	171	48	23	71	41%	4	0	0	0	0	75	65	38	103	22	20	17	8	25	3	2	159	91	250	
21	Banmauk	95781	101	18	11	29	29%	0	0	0	0	0	29	9	2	11	2	1	1	2	3	0	0	30	16	46	
22	Htigyaing	84466	89	46	23	69	78%	2	1	0	0	5	77	36	28	64	30	13	4	5	9	0	0	123	70	193	
23	Indaw	125852	132	39	5	44	33%	3	1	0	0	0	48	34	12	46	10	12	9	5	14	5	0	100	35	135	
24	Kawlin	144231	151	53	14	67	44%	3	0	0	0	2	73	36	13	49	5	6	6	4	10	4	3	109	41	150	
25	Pinlebu	113468	119	37	19	56	47%	0	0	0	0	0	56	16	6	22	7	4	4	2	6	1	0	65	31	96	
26	Wuntho	72385	76	24	8	32	42%	2	0	0	0	2	36	11	4	15	1	1	6	4	10	1	0	47	17	64	
27	Kalay	315084	331	145	60	205	62%	15	3	9	0	10	244	71	54	125	118	68	43	18	61	10	1	421	206	627	
28	Kalewa	56450	59	19	8	27	46%	1	0	0	0	0	28	8	7	15	0	0	11	12	23	0	0	39	27	66	
29	Minkin	108425	114	19	5	24	21%	1	1	0	0	0	26	25	3	28	9	8	7	2	9	0	0	61	19	80	
30	Tamu	109895	115	60	50	110	95%	13	2	1	0	1	128	41	18	59	55	37	9	7	16	8	5	188	120	308	
31	Mawlaik	53435	56	22	9	31	55%	0	0	0	0	1	32	9	6	15	3	4	5	8	13	0	0	40	27	67	
32	Phaungbyin	117241	123	26	17	43	35%	2	1	0	0	2	48	21	12	33	12	8	22	18	40	2	0	87	56	143	
33	Khamiti	31436	33	53	27	80	242%	5	0	2	0	4	92	32	30	62	37	35	5	8	13	11	9	149	110	259	
34	Homalin	190767	200	67	42	109	54%	7	2	0	0	1	119	100	40	140	60	44	3	8	11	12	3	249	140	389	
35	Layshi	16864	18	3	6	34%	3	0	0	0	0	9	0	2	2	3	6	0	0	0	0	0	0	0	9	11	20
36	Lahei	51824	54	18	2	20	37%	0	1	0	0	0	21	8	3	11	11	5	10	4	14	0	0	47	15	62	
37	Nanyun	58962	62	11	10	21	34%	5	2	0	0	0	28	4	2	6	0	2	1	3	186	0	0	21	19	40	
<b>Total</b>		<b>5193199</b>	<b>5453</b>	<b>1626</b>	<b>731</b>	<b>2357</b>	<b>43%</b>	<b>132</b>	<b>34</b>	<b>23</b>	<b>2</b>	<b>53</b>	<b>18</b>	<b>2619</b>	<b>1127</b>	<b>545</b>	<b>1672</b>	<b>837</b>	<b>671</b>	<b>444</b>	<b>324</b>	<b>950</b>	<b>115</b>	<b>45</b>	<b>4357</b>	<b>2370</b>	<b>6727</b>

Sr.	TOWNSHIP	Population	Estimated New S(+) cases	PULMONARY TUBERCULOSIS														Annex 4(township list)									
				SMIAR POSITIVE				SMEAR NEGATIVE				Primary complex		Extra Pulmonary Tuberculosis		Total	M	F	M	F	TOTAL						
				CDR	Relapses		P previously treated cases		Total	M	F	M	F	M	F							M	F				
					M	F	T	M								F	M	F	M	F							
				M	F	T	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	TOTAL				
<b>Magwe Region</b>																											
1	MAGWE	288319	303	163	96	259	86%	27	15	4	0	5	4	314	152	158	310	54	34	77	48	125	15	9	497	364	861
2	CHAUK	216630	227	64	26	90	40%	8	5	0	0	1	0	104	86	52	138	31	33	23	24	47	13	10	226	150	376
3	TAUNGDWINGYI	260481	274	80	40	120	44%	5	1	2	0	0	0	128	30	14	44	8	10	21	12	33	6	1	152	78	230
4	MYOTHIT	159812	168	65	45	110	66%	7	0	0	0	0	0	117	12	7	19	6	12	16	26	42	3	4	109	94	203
5	NATMAUK	230647	242	66	30	96	40%	4	1	1	0	1	0	103	49	29	78	7	4	25	22	47	13	8	166	94	260
6	YENANGHALUNG	151417	159	63	41	104	65%	16	8	0	0	5	4	137	59	41	78	13	8	17	19	36	5	1	178	122	300
7	PAKOKKU	301866	317	197	134	331	104%	38	23	0	1	12	4	409	97	82	179	60	49	65	34	99	24	9	493	336	829
8	YESAGYO	254176	267	44	16	60	22%	6	1	0	0	3	0	70	48	26	74	21	20	35	24	59	4	3	161	90	251
9	PAUK	178441	187	39	23	62	33%	1	1	0	0	0	0	64	6	6	12	0	0	41	18	59	3	3	90	51	141
10	MYAING	254420	267	53	22	75	28%	2	1	1	1	6	0	86	40	18	58	3	1	43	34	77	3	2	151	79	230
11	SEIKPHYU	105351	111	23	14	37	33%	3	1	0	0	0	0	41	17	13	30	5	1	17	5	22	0	0	65	34	99
12	GANTGAW	131125	138	26	16	42	31%	1	0	0	0	0	1	44	68	33	101	107	60	26	10	36	6	2	234	122	356
13	SAW	69727	73	11	5	16	22%	0	0	1	0	1	0	18	12	8	20	9	6	1	1	2	0	0	35	20	55
14	HTINLIN	50848	53	3	2	5	9%	1	1	0	0	0	0	7	13	5	18	2	3	2	2	4	0	0	21	13	34
15	MINBU	172660	181	75	43	118	65%	7	2	2	0	5	1	135	47	36	83	55	29	29	19	48	7	2	227	132	359
16	NGAPE	49195	52	19	5	24	46%	3	0	0	0	1	0	28	15	12	27	8	7	7	4	11	0	1	53	29	82
17	PWINTPHYU	168625	177	42	25	67	38%	0	1	2	0	3	0	73	24	14	38	13	13	12	7	19	1	1	97	61	158
18	Sayoketaya	43246	45	14	4	18	40%	0	0	0	0	0	0	18	21	8	29	12	6	3	2	5	1	0	51	20	71
19	SALIN	265328	279	56	26	82	29%	0	0	0	0	4	1	87	38	22	60	3	8	11	14	25	3	1	115	72	187
20	THAYET	103601	109	77	30	107	98%	2	1	0	0	8	3	121	40	17	57	20	23	10	7	11	4	1	161	82	243
21	MINHLA	112425	118	39	22	61	52%	8	2	0	0	0	0	71	25	13	38	9	10	35	31	66	4	1	120	79	199
22	KANMA	72036	76	34	13	47	62%	2	2	1	0	1	0	53	46	28	74	54	41	7	2	9	0	0	145	86	231
23	SINPAUNGWAE	125181	131	28	20	48	37%	6	0	0	0	0	2	56	21	17	38	31	16	5	5	10	0	0	91	60	151
24	MINDON	61003	64	35	8	43	67%	4	2	0	0	1	0	50	48	39	87	40	38	7	6	13	2	2	137	95	232
25	AUNGLAN	232865	245	50	30	80	33%	7	0	0	0	0	2	89	85	57	142	40	31	126	86	212	5	4	313	210	523
<b>Total</b>		<b>4059425</b>	<b>4262</b>	<b>1366</b>	<b>736</b>	<b>2102</b>	<b>49%</b>	<b>158</b>	<b>68</b>	<b>14</b>	<b>2</b>	<b>57</b>	<b>22</b>	<b>2423</b>	<b>1099</b>	<b>755</b>	<b>1832</b>	<b>611</b>	<b>463</b>	<b>661</b>	<b>462</b>	<b>1117</b>	<b>122</b>	<b>65</b>	<b>4088</b>	<b>2573</b>	<b>6661</b>

Sr.	TOWNSHIP	Population	Estimated New S(+) cases	SMEAR POSITIVE												PULMONARY TUBERCULOSIS				Extra Pulmonary Tuberculosis				TOTAL																															
				New Cases				CDR				Relapses				Previously treated cases				Smear Negative		Total		Primary complex		Total		other		TOTAL																									
				M	F	T		M	F	T		M	F	T		M	F	T		M	F	T		M	F	T		M	F	T		M	F	T		M	F	T		M	F	T													
				M		F		T				M		F		T				M		F		T				M		F		T				M		F		T															
<b>Mandalay Region</b>																																																							
1	Amarapura	189335	199	104	45	149	16	75%	16	4	1	0	3	1	174	56	27	83	13	14	24	14	38	7	3	224	108	332	199	104	45	149	16	75%	16	4	1	0	3	1	174	56	27	83	13	14	24	14	38	7	3	224	108	332	
2	Aungmyetharza	190665	200	124	49	173	21	86%	21	2	0	0	14	1	213	97	65	162	49	24	79	39	118	28	8	414	188	602	200	124	49	173	21	86%	21	2	0	0	14	1	213	97	65	162	49	24	79	39	118	28	8	414	188	602	
3	Chanayetharzan	140066	147	55	24	79	8	54%	8	1	2	0	0	0	90	94	42	136	26	14	38	43	81	19	6	242	130	372	147	55	24	79	8	54%	8	1	2	0	0	0	90	94	42	136	26	14	38	43	81	19	6	242	130	372	
4	Channayetharzi	198098	208	122	55	177	17	85%	17	5	0	0	13	3	215	99	51	150	32	21	56	64	120	23	11	362	210	572	208	122	55	177	17	85%	17	5	0	0	13	3	215	99	51	150	32	21	56	64	120	23	11	362	210	572	
5	Maharaungmyae	225751	237	101	49	150	16	63%	16	7	2	1	2	1	179	114	57	171	22	18	60	61	121	22	5	339	199	538	237	101	49	150	16	63%	16	7	2	1	2	1	179	114	57	171	22	18	60	61	121	22	5	339	199	538	
6	Pyigyitagonn	153683	161	76	42	118	11	73%	11	5	2	0	4	0	140	85	34	119	37	24	54	51	105	21	9	290	165	455	161	76	42	118	11	73%	11	5	2	0	4	0	140	85	34	119	37	24	54	51	105	21	9	290	165	455	
7	Patheingyi	190278	200	82	37	119	7	60%	7	2	2	0	2	1	133	66	27	93	29	16	61	41	102	18	2	267	126	393	200	82	37	119	7	60%	7	2	2	0	2	1	133	66	27	93	29	16	61	41	102	18	2	267	126	393	
8	Meiktilar	285370	300	132	50	182	13	61%	13	6	1	0	21	4	227	92	56	148	1	0	94	79	173	6	6	360	201	561	300	132	50	182	13	61%	13	6	1	0	21	4	227	92	56	148	1	0	94	79	173	6	6	360	201	561	
9	Mahlaing	158140	166	38	24	62	37%	37%	11	0	0	0	1	1	74	21	12	33	8	4	23	16	39	2	0	103	57	160	166	38	24	62	37%	37%	11	0	0	0	1	1	74	21	12	33	8	4	23	16	39	2	0	103	57	160	
10	Tharzi	209583	220	72	29	101	4	46%	4	3	0	0	0	0	108	41	45	86	26	19	20	22	42	3	2	166	120	286	220	72	29	101	4	46%	4	3	0	0	0	0	0	108	41	45	86	26	19	20	22	42	3	2	166	120	286
11	Wundwin	222668	234	53	28	81	3	35%	3	2	3	0	2	4	95	24	19	43	28	17	7	13	20	4	1	124	84	208	234	53	28	81	3	35%	3	2	3	0	2	4	95	24	19	43	28	17	7	13	20	4	1	124	84	208	
12	Mingyan	276252	290	109	43	152	10	52%	10	5	0	0	1	1	169	105	55	160	17	17	72	53	125	12	3	326	177	503	290	109	43	152	10	52%	10	5	0	0	1	1	169	105	55	160	17	17	72	53	125	12	3	326	177	503	
13	Kyaukpadaung	309476	325	71	46	117	10	36%	10	6	0	0	3	1	137	59	25	84	33	23	15	23	38	12	6	203	130	333	325	71	46	117	10	36%	10	6	0	0	3	1	137	59	25	84	33	23	15	23	38	12	6	203	130	333	
14	Natogyi	186946	196	36	19	55	5	28%	5	2	0	0	1	0	63	39	23	62	13	4	14	13	27	0	1	108	62	170	196	36	19	55	5	28%	5	2	0	0	1	0	63	39	23	62	13	4	14	13	27	0	1	108	62	170	
15	Ngazun	135377	142	33	17	50	1	35%	1	1	0	0	0	0	52	35	31	66	3	2	37	28	65	2	3	111	82	193	142	33	17	50	1	35%	1	1	0	0	0	0	52	35	31	66	3	2	37	28	65	2	3	111	82	193	
16	Taungtha	247862	260	57	27	84	3	32%	3	0	0	1	3	3	94	44	35	79	8	10	34	16	50	3	0	152	92	244	260	57	27	84	3	32%	3	0	0	1	3	3	94	44	35	79	8	10	34	16	50	3	0	152	92	244	
17	NyaungU	276948	291	85	47	132	11	45%	11	9	1	0	10	7	170	79	39	118	43	39	21	18	39	10	6	260	165	425	291	85	47	132	11	45%	11	9	1	0	10	7	170	79	39	118	43	39	21	18	39	10	6	260	165	425	
18	Pyin oo Lwin	177208	186	43	23	66	3	35%	3	2	0	0	1	2	74	37	17	54	45	34	23	20	43	9	1	161	99	260	186	43	23	66	3	35%	3	2	0	0	1	2	74	37	17	54	45	34	23	20	43	9	1	161	99	260	
19	Madaya	245432	258	72	29	101	10	39%	10	4	0	0	7	0	122	46	24	70	4	4	109	82	191	12	2	260	145	405	258	72	29	101	10	39%	10	4	0	0	7	0	122	46	24	70	4	4	109	82	191	12	2	260	145	405	
20	Mogoke	171225	180	76	21	97	12	54%	12	2	0	0	9	0	120	46	16	62	10	8	51	33	84	8	5	212	85	297	180	76	21	97	12	54%	12	2	0	0	9	0	120	46	16	62	10	8	51	33	84	8	5	212	85	297	
21	Sintga	145252	153	102	25	127	24	83%	24	3	0	0	9	1	164	44	19	63	2	1	25	19	44	7	1	213	69	282	153	102	25	127	24	83%	24	3	0	0	9	1	164	44	19	63	2	1	25	19	44	7	1	213	69	282	
22	Thabeikkyin	127943	134	61	19	80	6	60%	6	2	1	0	17	0	106	17	9	26	1	3	18	13	31	6	1	127	47	174	134	61	19	80	6	60%	6	2	1	0	17	0	106	17	9	26	1	3	18	13	31	6	1	127	47	174	
23	Yamethin	246847	259	63	27	90	5	35%	5	3	4	0	0	3	105	61	31	92	13	12	72	39	111	17	5	235	120	355	259	63	27	90	5	35%	5	3	4	0	0	3	105	61	31	92	13	12	72	39	111	17	5	235	120	355	
24	Pyawbwei	268927	282	87	66	153	10	54%	10	4	0	0	3	1	171	19	10	29	12	3	51	35	86	4	4	186	123	309	282	87	66	153	10	54%	10	4	0	0	3	1	171	19	10	29	12	3	51	35	86	4	4	186	123	309	
25	Kyaukse	233901	246	81	38	119	4	48%	4	2	2	0	2	3	132	38	11	49	21	12	29	25	54	1	0	178	91	269	246	81	38	119	4	48%	4	2	2	0	2	3	132	38	11	49	21	12	29	25	54	1	0	178	91	269	
26	Mittha	189669	199	48	19	67	5	34%	5	0	0	0	0	0	72	55	26	81	0	2	37	28	65	5	3	150	78	228	199	48	19	67	5	34%	5	0	0	0	0	0	72	55	26	81	0	2	37	28	65	5	3	150	78	228	
27	Singine	130557	137	39	19	58	6	42%	6	0	2	0	4	1	71	37	9	46	30	19	14	11	25	6	2	138	61	199	137	39	19	58	6	42%	6	0	2	0	4	1	71	37	9	46	30	19	14	11	25	6	2	138	61	199	
28	TadaOo	139945	147	27	16	43	5	29%	5	0	2	0	2	0	52	12	15	27	6	1	30	25	55	7	1	91	58	149	147	27	16	43	5	29%	5	0	2	0	2	0	52	12	15	27	6	1	30	25	55	7	1	91	58	149	
<b>Total</b>		<b>5672704</b>	<b>5956</b>	<b>2049</b>	<b>933</b>	<b>2982</b>	<b>257</b>	<b>50%</b>	<b>257</b>	<b>82</b>	<b>27</b>	<b>2</b>	<b>133</b>	<b>39</b>	<b>3522</b>	<b>1562</b>	<b>830</b>	<b>2392</b>	<b>532</b>	<b>365</b>	<b>1168</b>	<b>924</b>	<b>2092</b>	<b>274</b>	<b>97</b>	<b>6002</b>	<b>3272</b>	<b>9274</b>	<b>5956</b>	<b>2049</b>	<b>933</b>	<b>2982</b>	<b>257</b>	<b>50%</b>	<b>257</b>	<b>82</b>	<b>27</b>	<b>2</b>	<b>133</b>	<b>39</b>	<b>3522</b>	<b>1562</b>	<b>830</b>	<b>2392</b>	<b>532</b>	<b>365</b>	<b>1168</b>	<b>924</b>	<b>2092</b>	<b>274</b>	<b>97</b>				

Sr.	TOWNSHIP	Population	Estimated New S(+) cases	PULMONARY TUBERCULOSIS												Extra Pulmonary Tuberculosis				TOTAL							
				SMEAR POSITIVE				Previously treated cases				Smear Negative		Primary complex		Total		M	F	M	F	TOTAL					
				New Cases	CDR	Relapses		T after Default		T after failure		Total	M	F	M	F	M						F	M	F	M	F
						M	F	M	F	M	F							M	F								
				M	F	T																					
<b>Shan State (Taunggyi)</b>																											
1	Linhkay	37478	39	21	6	27	69%	2	1	0	0	0	1	31	22	7	29	4	4	0	2	1	1	50	22	72	
2	Maukme	27071	28	13	2	15	53%	2	0	0	0	0	1	18	0	0	0	4	1	2	0	2	0	0	21	4	25
3	Monai	24350	26	9	7	16	63%	1	0	0	0	0	1	18	6	5	11	24	11	3	1	4	1	1	45	25	70
4	Mangpang	16815	18	6	2	8	45%	1	0	0	0	0	0	9	5	3	8	3	0	3	2	5	1	0	19	7	26
5	Loilem	112509	118	14	9	23	19%	1	0	0	0	0	1	25	20	14	34	69	50	8	11	19	3	1	115	86	201
6	Kunhein	58132	61	26	20	46	75%	0	3	3	0	0	3	55	16	17	33	17	10	1	4	5	2	0	65	57	122
7	Kyeethi	37013	39	5	3	8	21%	0	0	0	0	0	0	8	24	14	38	0	2	13	16	29	0	0	42	35	77
8	Laikha	45145	47	37	9	46	97%	1	0	0	0	0	0	47	20	10	30	83	56	4	1	5	1	1	146	77	223
9	Mongaking	88264	93	15	7	22	24%	2	0	0	0	2	1	27	7	4	11	3	0	1	1	2	1	0	31	13	44
10	Mongshu	52703	55	32	19	51	92%	0	2	0	0	0	0	53	21	8	29	19	20	16	21	37	0	0	88	70	158
11	Namsan	85092	89	35	9	44	49%	3	3	0	0	0	0	50	49	23	72	55	45	14	6	20	2	3	158	89	247
12	Taunggyi	345305	363	118	57	175	48%	14	2	4	1	15	4	215	139	58	197	35	27	101	79	180	13	6	439	234	673
13	Hopone	97736	103	33	10	43	42%	1	0	1	1	3	1	50	10	6	16	12	3	7	8	15	1	0	68	29	97
14	Hpekon	96546	101	34	13	47	46%	1	1	0	0	1	0	50	4	2	6	13	16	8	3	11	4	0	65	35	100
15	Hsiseng	145785	153	37	22	59	39%	4	4	1	0	1	0	69	31	17	48	11	4	17	11	28	1	0	103	58	161
16	Kalaw	156542	164	55	19	74	45%	7	0	1	0	5	3	90	41	10	51	9	14	38	10	48	10	4	166	60	226
17	Lauksauk	132744	139	39	21	60	43%	8	0	0	0	3	1	72	40	22	62	6	8	41	34	75	4	1	141	87	228
18	Pindaya	79021	83	35	23	58	70%	2	0	0	0	2	0	62	3	2	5	10	6	1	0	1	0	1	53	32	85
19	Pinlaung	170983	180	100	46	146	81%	1	2	0	0	2	0	151	18	3	21	11	7	18	20	38	0	1	150	79	229
20	Nyaungshwe	180290	189	44	26	70	37%	4	1	0	1	1	0	77	21	13	34	18	17	27	12	39	3	1	118	71	189
21	Ywangan	79076	83	12	6	18	22%	0	0	0	0	0	0	18	12	7	19	6	6	5	0	5	1	1	36	20	56
<b>Total</b>		<b>2068600</b>	<b>2172</b>	<b>720</b>	<b>336</b>	<b>1056</b>	<b>49%</b>	<b>55</b>	<b>19</b>	<b>10</b>	<b>3</b>	<b>36</b>	<b>16</b>	<b>1195</b>	<b>509</b>	<b>245</b>	<b>754</b>	<b>412</b>	<b>307</b>	<b>328</b>	<b>242</b>	<b>570</b>	<b>49</b>	<b>22</b>	<b>2119</b>	<b>1190</b>	<b>3309</b>
<b>Shan State (Kengtong)</b>																											
1	Kengtong	161162	169	82	34	116	69%	18	3	1	1	16	1	156	60	29	89	54	31	16	13	29	13	4	260	116	376
2	Mongkhat	26832	28	5	2	7	25%	0	1	0	0	0	0	8	2	2	4	5	2	2	0	2	0	0	14	7	21
3	Mongyan	48032	50	9	2	11	22%	0	0	0	0	1	0	12	7	7	14	2	4	4	1	5	0	0	23	14	37
4	Monghsat	84496	89	62	37	99	112%	14	2	0	0	0	1	116	132	67	199	66	40	0	1	1	10	1	284	149	433
5	Mongping	51532	54	23	22	45	83%	6	2	1	0	0	0	54	21	13	34	14	10	13	9	22	0	1	78	57	135
6	Mongton	32702	34	37	26	63	183%	3	2	1	0	2	1	72	31	9	40	11	3	3	4	7	1	1	89	46	135
7	Monpyak	28496	30	24	9	33	110%	1	0	0	0	0	0	34	9	4	13	7	4	0	2	2	1	0	42	19	61
8	Mongyaung	55417	58	38	7	45	77%	4	1	0	0	2	0	52	6	7	13	3	5	2	3	5	2	3	57	26	83
9	Tachileik	131385	138	90	45	135	98%	8	1	1	0	7	1	153	57	35	92	60	46	11	5	16	17	3	251	136	387
10	Matman	16665	17	2	3	5	29%	1	0	0	0	0	0	6	0	0	0	0	0	2	0	2	0	0	5	3	8
<b>Total</b>		<b>620054</b>	<b>651</b>	<b>372</b>	<b>187</b>	<b>559</b>	<b>86%</b>	<b>55</b>	<b>12</b>	<b>4</b>	<b>1</b>	<b>28</b>	<b>4</b>	<b>663</b>	<b>325</b>	<b>173</b>	<b>498</b>	<b>222</b>	<b>145</b>	<b>53</b>	<b>38</b>	<b>91</b>	<b>44</b>	<b>13</b>	<b>1103</b>	<b>573</b>	<b>1676</b>



Sr.	TOWNSHIP	Population	Estimated New S(+) cases	PULMONARY TUBERCULOSIS												TOTAL											
				SMEAR POSITIVE				SMEAR NEGATIVE				PRIMARY COMPLEX					EXTRA PULMONARY TUBERCULOSIS										
				New Cases		CDR		Relapses		P reviously treated cases		Total		M			F		Total		M		F				
				M	F	T	M	F	M	F	M	F	M	F	M		F	M	F	M	F	M	F				
				M		F		M		F		M		F			M		F		M		F				
<b>Kayin State</b>																											
1	Kawkareik	252061	265	95	46	141	53%	7	4	5	1	2	1	161	69	40	109	79	66	17	8	25	1	2	275	168	443
2	Kyainsaikkyi	178031	187	49	30	79	42%	2	0	2	1	0	0	84	46	29	75	22	23	6	7	13	0	0	127	90	217
3	Mwawady	117269	123	110	75	185	150%	16	7	5	3	9	4	229	86	55	141	41	29	18	18	36	15	4	300	195	495
4	Hpa-an	430180	452	266	119	385	85%	17	13	0	0	1	416	441	254	695	107	86	10	11	21	5	1	846	485	1331	
5	Hlaingbwe	271548	285	128	83	211	74%	5	8	2	2	3	1	232	88	79	167	74	45	4	2	6	5	0	309	220	529
6	Papun(Kamameur)	43936	46	25	11	36	78%	0	0	0	1	0	0	37	35	22	57	27	13	1	0	1	0	1	88	48	136
7	Thandaung	96249	101	12	5	17	17%	1	1	0	0	0	3	22	12	6	18	53	38	4	3	7	1	0	83	56	139
<b>Total</b>		<b>1389274</b>	<b>1459</b>	<b>685</b>	<b>369</b>	<b>1054</b>	<b>72%</b>	<b>48</b>	<b>33</b>	<b>14</b>	<b>8</b>	<b>14</b>	<b>10</b>	<b>1181</b>	<b>777</b>	<b>485</b>	<b>1262</b>	<b>403</b>	<b>300</b>	<b>60</b>	<b>49</b>	<b>109</b>	<b>27</b>	<b>8</b>	<b>2028</b>	<b>1262</b>	<b>3290</b>

<b>Tanintharyi Region</b>																											
1	Dawei	132935	140	88	36	124	89%	9	4	0	0	11	4	152	79	67	146	117	130	20	23	43	17	4	341	268	609
2	Launglon	138021	145	53	33	86	59%	8	3	0	1	7	8	113	43	37	80	77	67	21	15	36	6	7	215	171	386
3	Thayetchaung	119812	126	38	16	54	43%	2	1	0	0	7	4	68	28	25	53	43	31	14	6	20	4	2	136	85	221
4	Yebyu	124951	131	33	13	46	35%	3	1	1	0	1	1	53	44	35	79	38	22	5	3	8	4	2	129	77	206
5	Kawthaung	98293	103	68	36	104	101%	8	5	1	0	2	3	123	147	66	213	137	120	32	23	55	10	5	405	258	663
6	Bokpyin	51554	54	29	14	43	79%	2	3	0	0	0	0	48	32	12	44	22	19	27	18	45	1	0	113	66	179
7	Myeik	252659	265	154	92	246	93%	18	10	1	1	9	7	292	294	224	518	212	171	148	125	273	32	24	868	654	1522
8	Kyunsu	145321	153	11	5	16	10%	3	0	0	0	2	1	22	9	3	12	6	4	0	3	3	0	1	31	17	48
9	Tanintharyi	100497	106	45	12	57	54%	1	0	1	2	3	2	66	14	7	21	8	8	8	4	12	3	1	83	36	119
10	Palaw	137741	145	32	25	57	39%	6	6	1	1	4	5	80	87	114	201	242	223	76	66	142	4	2	452	442	894
<b>Total</b>		<b>1301784</b>	<b>1367</b>	<b>551</b>	<b>282</b>	<b>833</b>	<b>61%</b>	<b>60</b>	<b>33</b>	<b>5</b>	<b>5</b>	<b>46</b>	<b>35</b>	<b>1017</b>	<b>777</b>	<b>590</b>	<b>1367</b>	<b>902</b>	<b>795</b>	<b>351</b>	<b>286</b>	<b>637</b>	<b>81</b>	<b>48</b>	<b>2773</b>	<b>2074</b>	<b>4847</b>



Sr.	TOWNSHIP	Population	Estimated New S(+) cases	PULMONARY TUBERCULOSIS												Annex 4(township list)											
				SMEAR POSITIVE						SMEAR NEGATIVE						Primary complex			Extra Pulmonary Tuberculosis								
				New Cases		Relapses		Previously treated cases		Smear Negative		Total		M		F		M		F		M		F			
				M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	TOTAL			
				M		F		M		F		M		F		M		F		M		F		M		F	
				T		Total		T after failure		Total		Total		M		F		M		F		M		F		TOTAL	
<b>Bago Region</b>																											
1	Bago	428626	450	234	106	340	76%	30	13	7	1	13	2	406	242	185	427	102	94	146	135	281	59	32	833	568	1401
2	Daik-U	201612	212	74	51	125	59%	13	5	1	0	2	1	147	93	62	155	74	69	31	22	53	10	6	298	216	514
3	Kawa	208983	219	65	38	103	47%	10	1	0	0	1	0	115	67	65	132	43	30	13	9	22	19	12	218	155	373
4	Kyauktaga	207761	218	96	41	137	63%	12	6	0	1	1	2	159	107	80	187	69	55	24	23	47	18	6	327	214	541
5	Nyaunglaybin	259856	273	96	40	136	50%	6	3	1	0	4	0	150	107	71	178	58	44	23	22	45	8	6	303	186	489
6	Shwekyin	90845	95	37	18	55	58%	4	1	1	0	0	0	61	41	34	75	40	19	10	8	18	8	2	141	82	223
7	Thanatpin	221487	233	49	31	80	34%	2	2	0	0	0	0	84	108	81	189	40	42	20	13	33	7	6	226	175	401
8	Waw	159274	167	104	57	161	96%	7	2	0	0	0	0	170	66	51	117	42	40	27	25	52	3	4	249	179	428
9	Taunggoo	229239	241	107	48	155	64%	18	3	2	0	3	0	181	85	36	121	102	104	19	20	39	25	15	361	226	587
10	Kyaukkyi	198795	209	45	28	73	35%	5	4	2	1	0	0	85	29	24	53	17	22	4	3	7	1	2	103	84	187
11	Okwin	278684	293	79	33	112	38%	13	2	0	0	1	1	129	69	57	126	108	74	8	10	18	9	6	287	183	470
12	Phyu	159549	168	109	44	153	91%	14	6	0	1	2	3	179	173	110	283	249	137	21	32	53	17	2	585	335	920
13	Htantabin	110162	116	28	26	54	47%	2	3	1	0	0	0	60	40	35	75	28	40	5	9	14	6	1	110	114	224
14	Yedashe	119576	126	100	42	142	113%	6	0	0	0	1	2	151	78	57	135	45	36	11	19	30	7	2	248	158	406
<b>Total</b>		<b>2874449</b>	<b>3018</b>	<b>1223</b>	<b>603</b>	<b>1826</b>	<b>61%</b>	<b>142</b>	<b>51</b>	<b>15</b>	<b>4</b>	<b>28</b>	<b>11</b>	<b>2077</b>	<b>1305</b>	<b>948</b>	<b>2253</b>	<b>1017</b>	<b>806</b>	<b>362</b>	<b>350</b>	<b>712</b>	<b>197</b>	<b>102</b>	<b>4289</b>	<b>2875</b>	<b>7164</b>

<b>Bago Region (Pyay)</b>																											
Sr.	TOWNSHIP	Population	Estimated New S(+) cases	New Cases	Relapses	Previously treated cases	Smear Positive	Smear Negative	Total	Primary complex	Extra Pulmonary Tuberculosis	Total	M	F	M	F	M	F	M	F	M	F	M	F	TOTAL		
1	Pyay	151995	160	125	42	167	105%	11	4	0	0	8	4	194	203	100	303	189	185	20	19	39	12	3	568	357	925
2	Paukkaung	185420	195	75	47	122	63%	10	7	0	0	1	0	140	48	28	76	68	58	18	8	26	4	1	224	149	373
3	Paungde	124401	131	58	45	103	79%	11	2	0	0	1	2	119	52	40	92	97	79	13	6	19	8	6	240	180	420
4	Padaung	115164	121	54	10	64	53%	8	4	0	0	7	3	86	65	52	117	59	42	3	7	10	6	2	202	120	322
5	Shwedaung	126460	133	74	32	106	80%	3	0	0	1	1	1	112	56	33	89	32	40	7	13	20	5	4	178	124	302
6	Thegon	128331	135	53	25	78	58%	6	1	0	0	2	1	88	86	45	131	76	79	5	7	12	2	3	230	161	391
7	Tharyawady	167003	175	102	48	150	86%	13	5	0	0	4	2	174	82	39	121	59	47	10	7	17	10	9	280	157	437
8	Zigon	69251	73	50	21	71	98%	4	0	0	0	0	0	75	53	38	91	48	25	4	4	8	4	1	163	89	252
9	Minhla	217359	228	98	44	142	62%	7	3	2	0	4	2	160	82	64	146	53	57	16	13	29	6	2	268	185	453
10	Moeyo	116715	123	37	31	68	55%	3	4	0	0	0	1	76	46	28	74	42	35	3	5	8	2	3	133	107	240
11	Okpo	139151	146	72	36	108	74%	8	3	1	0	1	3	124	67	39	106	52	52	5	10	15	4	6	210	149	359
12	Gyobingauk	128340	135	39	20	59	44%	3	7	0	0	5	2	76	65	38	103	52	26	10	22	32	8	7	182	122	304
13	Nattalin	129515	136	114	54	168	124%	18	7	0	0	4	0	197	84	58	142	103	94	9	18	27	17	4	349	235	584
14	Lapadan	135322	142	99	47	146	103%	11	2	0	0	3	2	164	62	37	99	36	30	15	8	23	7	1	233	127	360
<b>Total</b>		<b>1934427</b>	<b>2031</b>	<b>1050</b>	<b>502</b>	<b>1552</b>	<b>76%</b>	<b>116</b>	<b>49</b>	<b>3</b>	<b>1</b>	<b>41</b>	<b>23</b>	<b>1785</b>	<b>1051</b>	<b>639</b>	<b>1690</b>	<b>966</b>	<b>849</b>	<b>138</b>	<b>147</b>	<b>285</b>	<b>95</b>	<b>52</b>	<b>3460</b>	<b>2262</b>	<b>5722</b>

Sr.	TOWNSHIP	Population	Estimated New S(+) cases	PULMONARY TUBERCULOSIS																TOTAL							
				SMEAR POSITIVE				SMEAR NEGATIVE				PRIMARY COMPLEX				EXTRA PULMONARY TUBERCULOSIS											
				New Cases		Relapses		CDR		Previously treated cases		Smear Negative		Total		Primary complex		Total			Extra Pulmonary Tuberculosis						
				M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F		M	F					
				T		F		M		F		M		F		M		F			M		F				
<b>Mon State</b>																											
1	Mawlamyaing	273784	287	241	93	334	116%	55	17	5	0	1	2	414	243	137	380	124	103	32	28	60	18	5	719	385	1104
2	Chanungzon	157753	166	62	29	91	55%	3	0	0	0	1	95	43	27	70	88	49	3	8	11	1	0	200	114	314	
3	Kyaikmaraw	216101	227	81	44	125	55%	5	3	1	0	2	137	79	62	141	291	227	12	14	26	3	1	474	352	826	
4	Mudon	215484	226	74	29	103	46%	4	3	1	0	3	115	72	43	115	114	75	74	58	132	3	2	345	211	556	
5	Thanbyuzayat	176653	185	85	35	120	65%	8	3	0	2	5	2	140	67	59	126	267	228	4	13	17	1	1	437	343	780
6	Ye	254253	267	118	65	183	69%	9	2	1	1	15	11	222	126	121	247	244	158	9	9	18	2	1	524	368	892
7	Thaton	253013	266	149	87	236	89%	27	10	2	1	8	3	287	144	88	232	75	71	19	11	30	3	1	427	272	699
8	Belin	180960	190	96	53	149	78%	11	4	0	0	2	1	167	147	148	295	129	120	4	5	9	4	0	393	331	724
9	Kyaikto	168131	177	83	31	114	65%	8	0	2	0	4	0	128	39	26	65	16	11	9	7	16	6	3	167	78	245
10	Paung	245796	258	108	63	171	66%	6	6	0	0	0	0	183	228	151	379	163	117	17	10	27	1	0	523	347	870
<b>Total</b>		<b>2141928</b>	<b>2249</b>	<b>1097</b>	<b>529</b>	<b>1626</b>	<b>72%</b>	<b>136</b>	<b>48</b>	<b>12</b>	<b>4</b>	<b>40</b>	<b>22</b>	<b>1888</b>	<b>1188</b>	<b>862</b>	<b>2050</b>	<b>1511</b>	<b>1159</b>	<b>183</b>	<b>163</b>	<b>346</b>	<b>42</b>	<b>14</b>	<b>4209</b>	<b>2801</b>	<b>7010</b>
<b>Rakhine State</b>																											
1	Sittwe	259437	272	153	84	237	87%	21	4	3	3	12	4	206	67	59	126	65	54	32	36	68	16	4	369	248	617
2	Ponggyun	147448	155	47	29	76	49%	7	6	0	0	2	0	91	87	92	179	33	33	7	6	13	58	52	241	218	459
3	Kyaikta	217512	228	81	42	123	54%	4	5	0	0	0	0	132	70	46	116	40	44	13	10	23	11	6	219	153	372
4	MraukOo	220414	231	104	87	191	83%	12	3	2	1	1	0	210	79	69	148	18	23	14	25	39	7	1	237	209	446
5	Minbya	201781	212	115	81	196	93%	3	2	0	0	5	4	210	32	28	60	9	18	18	13	31	7	2	189	148	337
6	Myaepon	144362	152	45	37	82	54%	2	1	1	1	0	1	88	28	18	46	9	12	11	8	19	3	0	99	78	177
7	Pauktaw	183993	193	21	20	41	21%	3	3	0	0	4	2	53	26	18	44	15	15	6	2	8	2	3	77	63	140
8	Yatheedaung	169352	178	60	45	105	59%	2	2	0	0	2	1	112	36	32	68	21	11	1	1	2	3	1	125	93	218
9	Maungdaw	552993	581	117	49	166	29%	3	1	0	0	16	5	191	38	31	69	49	36	11	8	19	3	0	237	130	367
10	Buthidaung	316750	333	108	66	174	52%	13	4	0	3	0	0	194	88	77	165	40	34	6	13	19	26	22	281	219	500
11	Kyaikphyu	171724	180	83	39	122	68%	3	1	2	2	8	1	139	50	53	103	45	36	27	30	57	4	1	222	163	385
12	Yanbye	114708	120	33	22	55	46%	1	0	0	0	1	2	59	24	13	37	8	12	6	6	12	4	1	77	56	133
13	Manauing	64296	68	41	17	58	86%	2	2	0	0	0	0	62	22	10	32	6	4	3	4	7	1	4	75	41	116
14	Ann	114485	120	53	14	67	56%	3	0	0	0	0	1	71	51	33	84	20	16	26	21	47	6	1	159	86	245
15	Thandwe	124844	131	65	43	108	82%	6	5	0	1	0	0	120	32	23	55	5	6	55	45	100	2	0	165	123	288
16	Taunggoke	146505	154	80	54	134	87%	7	1	2	1	9	4	158	43	31	74	19	20	22	17	39	1	3	183	131	314
17	Gwa	63064	66	39	16	55	83%	1	2	0	0	0	0	58	23	19	42	11	5	23	28	51	2	1	99	71	170
<b>Total</b>		<b>3213668</b>	<b>3374</b>	<b>1245</b>	<b>745</b>	<b>1990</b>	<b>59%</b>	<b>93</b>	<b>42</b>	<b>10</b>	<b>12</b>	<b>60</b>	<b>25</b>	<b>2154</b>	<b>796</b>	<b>652</b>	<b>1448</b>	<b>413</b>	<b>379</b>	<b>281</b>	<b>273</b>	<b>554</b>	<b>156</b>	<b>102</b>	<b>3054</b>	<b>2230</b>	<b>5284</b>



Sr.	TOWNSHIP	Population	Estimated New S(+) cases	PULMONARY TUBERCULOSIS												TOTAL											
				SMEAR POSITIVE				Previously treated cases				Smear Negative					Extra Pulmonary Tuberculosis										
				New Cases		CDR	Relapses	T after Default		T after failure		Total	Primary complex		Total		M	F	M	F	M	F					
				M	F			M	F	M	F		M	F	M								F	M	F		
				M	F	T		M	F	M	F	M	F	M	F		M	F	M	F	M	F	M	F	TOTAL		
<b>Yangon Region</b>																											
<b>East District</b>																											
1	Botataung	40279	68	27	19	46	67%	9	2	0	0	0	0	57	36	20	56	3	2	5	7	12	7	6	87	56	143
2	Dawbon	77985	133	70	40	110	83%	25	4	1	0	0	140	53	31	84	3	12	9	12	9	21	6	5	167	104	271
3	Dagon(N)	180599	307	115	62	177	58%	24	6	2	0	5	219	117	53	170	26	15	17	21	38	28	10	334	172	506	
4	Dagon(S)	281081	478	280	136	416	87%	54	26	5	2	26	540	216	135	351	80	60	45	41	86	48	18	754	429	1183	
5	MngalarTN	128626	219	64	37	101	46%	29	11	1	0	5	149	163	104	267	36	24	18	21	39	36	9	352	208	560	
6	Okkala(N)	273506	465	181	67	248	53%	34	11	10	0	7	320	190	99	289	23	23	34	36	70	53	32	535	275	810	
7	Okkala(S)	156157	265	135	42	177	67%	26	12	0	3	3	221	86	59	145	19	12	18	17	35	10	9	297	154	451	
8	Thaketa	205225	349	168	69	237	68%	34	16	5	2	8	307	94	50	144	35	26	25	29	54	19	6	388	203	591	
9	Thingangyun	192422	327	126	52	178	54%	29	15	5	0	4	237	145	109	254	39	25	27	34	61	41	25	416	266	682	
10	Yankin	98114	167	85	41	126	76%	19	10	0	0	0	155	19	19	38	16	16	12	10	22	6	3	157	99	256	
11	Tarmwe	157797	268	80	45	125	47%	29	9	0	0	5	171	88	61	149	21	18	27	29	56	13	9	263	174	437	
12	Pazundaung	47661	81	40	21	61	75%	9	6	1	0	5	83	30	32	62	8	8	8	9	17	6	3	107	80	187	
13	Dagon(E)	116784	199	137	63	200	101%	27	6	4	0	2	241	118	61	179	28	29	17	12	29	33	18	366	191	557	
14	Dagon Seikkan	112091	191	62	42	104	55%	12	3	0	0	0	119	58	34	92	18	13	16	9	25	26	11	192	112	304	
<b>Total</b>		<b>2068327</b>	<b>3516</b>	<b>1570</b>	<b>736</b>	<b>2306</b>	<b>66%</b>	<b>360</b>	<b>137</b>	<b>34</b>	<b>4</b>	<b>73</b>	<b>2959</b>	<b>1413</b>	<b>867</b>	<b>2280</b>	<b>355</b>	<b>283</b>	<b>278</b>	<b>287</b>	<b>565</b>	<b>332</b>	<b>164</b>	<b>4415</b>	<b>2523</b>	<b>6938</b>	

Sr.	TOWNSHIP	Population	Estimated New S(+) cases	PULMONARY TUBERCULOSIS												TOTAL											
				SMEAR POSITIVE				Previously treated cases				Smear Negative					Extra Pulmonary Tuberculosis										
				New Cases		CDR	Relapses	T after Default		T after failure		Total	Primary complex		Total		M	F	M	F	M	F	M	F	TOTAL		
				M	F			M	F	M	F		M	F	M											F	M
				M	F	T		M	F	M	F	M	F	M	F		M	F	M	F	M	F	M	F	TOTAL		
<b>West District</b>																											
1	KAMAYUT	63654	108	42	40	82	76%	10	6	3	0	2	1	104	55	28	83	7	4	19	19	38	7	3	145	101	246
2	KYAUKTADA	28227	48	20	10	30	63%	6	2	0	0	1	0	39	25	13	38	2	1	5	5	10	3	0	62	31	93
3	KYINMYINDINE	103586	176	101	53	154	87%	19	8	5	1	2	191	68	38	106	16	10	22	21	43	7	6	240	139	379	
4	SANCHUNG	79404	135	62	42	104	77%	15	7	1	1	2	133	58	32	90	5	7	11	12	23	12	3	166	107	273	
5	SEIKKAN	1523	3	4	2	6	232%	0	0	0	0	0	6	3	0	3	0	3	0	0	0	0	0	0	7	2	9
6	DAGON	22516	38	22	5	27	71%	2	0	1	0	0	30	15	4	19	0	2	6	5	11	5	0	51	16	67	
7	PABADAN	30252	51	23	18	41	80%	4	3	0	0	0	48	30	15	45	4	4	5	6	11	1	4	67	50	117	
8	BAHAN	78923	134	55	36	91	68%	11	4	1	1	5	117	47	33	80	9	7	18	13	31	9	3	155	101	256	
9	MAYANGON	156228	266	100	54	154	58%	30	12	3	0	1	203	137	80	217	19	14	36	33	69	19	9	345	205	550	
10	LATHA	27643	47	14	7	21	45%	7	2	0	0	0	30	13	9	22	4	1	7	2	9	6	1	51	22	73	
11	LANMADAW	34450	59	32	11	43	73%	8	1	1	0	1	54	33	16	49	0	0	9	8	17	2	2	86	38	124	
12	HLAING	119969	204	133	86	219	107%	28	14	3	1	4	270	110	67	177	41	22	32	26	58	26	8	377	225	602	
13	AHLONE	51338	87	35	24	59	68%	9	4	1	0	1	75	25	15	40	3	4	13	14	27	4	2	91	64	155	
<b>Total</b>		<b>797713</b>	<b>1356.112</b>	<b>643</b>	<b>388</b>	<b>1031</b>	<b>76%</b>	<b>149</b>	<b>63</b>	<b>19</b>	<b>4</b>	<b>19</b>	<b>1300</b>	<b>619</b>	<b>350</b>	<b>969</b>	<b>110</b>	<b>76</b>	<b>183</b>	<b>164</b>	<b>347</b>	<b>101</b>	<b>41</b>	<b>1843</b>	<b>1101</b>	<b>2944</b>	

Sr.	TOWNSHIP	Population	Estimated New S(+) cases	PULMONARY TUBERCULOSIS												TOTAL											
				SMEAR POSITIVE						SMEAR NEGATIVE							Extra Pulmonary Tuberculosis										
				New Cases		Relapses		P previously treated cases		Smear Negative		Primary complex		Total			Total										
				M	F	M	F	M	F	M	F	M	F	M	F		M	F	M	F							
				T		F		M		F		M		F			M		F								
<b>South District</b>																											
1	SEIKYIKANALUNG T	31811	54	36	8	44	81%	2	2	2	0	2	0	52	16	43	6	6	7	13	2	3	83	42	125		
2	DALLAH	156364	266	89	38	127	48%	10	9	2	0	5	1	154	134	82	21	17	50	37	87	27	6	338	190	528	
3	CoCo Gyun	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4	KAWHMU	123992	211	31	20	51	24%	5	4	1	0	0	1	62	36	20	26	13	7	8	15	6	5	112	71	183	
5	KYAUJKTAN	166068	282	66	43	109	39%	2	4	1	0	1	0	117	67	50	27	29	12	12	24	7	7	183	145	328	
6	KUNGGANGONE	116147	197	68	32	100	51%	9	2	0	0	0	0	111	36	16	52	30	17	8	4	12	3	154	72	226	
7	KAYAN	170290	289	78	44	122	42%	8	7	0	0	1	0	138	37	21	58	40	22	17	11	28	5	4	186	109	295
8	TWANTAY	216388	368	113	47	160	43%	18	10	2	0	7	2	199	64	38	102	52	26	20	46	11	2	293	167	460	
9	THONGWA	161800	275	98	42	140	51%	6	5	2	0	1	0	154	43	17	60	12	6	16	13	29	8	0	186	83	269
10	THANLYIN	192995	328	233	107	340	104%	34	8	4	1	8	2	397	156	88	244	31	19	40	34	74	34	7	540	266	806
<b>Total</b>		<b>1335855</b>	<b>2271</b>	<b>812</b>	<b>381</b>	<b>1193</b>	<b>53%</b>	<b>94</b>	<b>51</b>	<b>14</b>	<b>1</b>	<b>25</b>	<b>6</b>	<b>1384</b>	<b>600</b>	<b>348</b>	<b>948</b>	<b>177</b>	<b>182</b>	<b>146</b>	<b>328</b>	<b>103</b>	<b>35</b>	<b>2075</b>	<b>1145</b>	<b>3220</b>	

<b>North District</b>																												
1	MINGALADON	189968	323	268	114	382	118%	60	18	11	3	24	9	507	286	119	405	40	30	43	34	77	36	14	768	341	1109	
2	SHWEPYITHA	240886	410	162	90	252	62%	40	12	9	0	6	5	324	189	100	289	32	28	24	30	54	19	7	481	272	753	
3	HLANGTHAYA	396124	673	392	214	606	90%	68	26	0	0	4	4	708	424	323	747	124	102	53	59	112	75	31	1140	759	1899	
4	INSEIN	238928	406	241	123	364	90%	46	19	7	3	4	6	449	289	153	442	27	19	51	55	106	54	20	719	398	1117	
5	TAIKKYI	244769	416	153	100	253	61%	31	13	1	0	14	12	324	173	140	313	75	63	13	15	28	27	9	487	352	839	
6	HTANTABIN	126131	214	71	26	97	45%	7	2	0	0	1	0	107	46	23	69	13	12	17	13	30	4	3	159	79	238	
7	HIMAWBI	191920	326	145	50	195	60%	14	7	1	2	7	2	228	104	64	168	68	41	18	15	33	7	6	364	187	551	
8	HILEGU	199432	339	59	36	95	28%	16	5	2	0	2	1	121	126	74	200	72	46	11	10	21	23	5	311	177	488	
	U.T.I	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NTR Diagnostic C	0	0	0	0	0		1	0	0	0	0	0	1	4	4	8	0	1	0	1	1	0	0	0	5	6	11
<b>Total</b>		<b>1828158</b>	<b>3108</b>	<b>1491</b>	<b>753</b>	<b>2244</b>	<b>72%</b>	<b>283</b>	<b>102</b>	<b>31</b>	<b>8</b>	<b>62</b>	<b>39</b>	<b>2769</b>	<b>1641</b>	<b>1000</b>	<b>2641</b>	<b>451</b>	<b>342</b>	<b>230</b>	<b>232</b>	<b>462</b>	<b>245</b>	<b>95</b>	<b>4434</b>	<b>2571</b>	<b>7005</b>	
<b>Grand Total</b>		<b>6030053</b>	<b>10251</b>	<b>4516</b>	<b>2258</b>	<b>6774</b>	<b>66%</b>	<b>886</b>	<b>353</b>	<b>98</b>	<b>17</b>	<b>179</b>	<b>105</b>	<b>8412</b>	<b>4273</b>	<b>2565</b>	<b>6838</b>	<b>1161</b>	<b>878</b>	<b>873</b>	<b>829</b>	<b>1702</b>	<b>781</b>	<b>335</b>	<b>12767</b>	<b>7340</b>	<b>20107</b>	

Sr.	TOWNSHIP	Population	Estimated New S(+) cases	PULMONARY TUBERCULOSIS												Annex 4(township list)												
				SMEAR POSITIVE						SMEAR NEGATIVE						Primary complex		Extra Pulmonary Tuberculosis		M	F	TOTAL						
				New Cases	CDR	Relapses		Previously treated cases		Total	Smear Negative	Total	M	F	M	F	M	F										
						M	F	M	F										M	F	M	F	M	F				
				M	F	T	M	F	T	M	F	M	F	M	F	M	F	M	F	M	F	TOTAL						
<b>Ayeyarwaddy Region</b>																												
1	Patheingyi	298227	313	278	163	441	141%	31	16	6	0	8	4	506	256	196	452	149	117	57	50	107	33	26	818	572	1390	
2	Kanyadaung	170061	179	67	39	106	59%	10	5	2	0	1	1	125	55	36	91	30	26	14	17	31	8	3	187	127	314	
3	Yekyi	196496	206	97	57	154	75%	7	4	1	0	1	1	168	112	84	196	56	32	47	52	99	16	11	337	241	578	
4	Kyaunggon	166406	175	86	51	137	78%	11	5	1	0	1	0	155	36	14	50	32	24	28	19	47	4	2	199	115	314	
5	Kyongpyaw	256056	269	113	55	168	62%	15	5	2	0	6	1	197	69	33	102	14	6	66	45	111	10	3	295	148	443	
6	Ngaputaw	308535	324	108	80	188	58%	12	4	2	0	3	0	209	108	63	171	103	70	17	29	46	7	3	360	249	609	
7	Thabaung	153137	161	84	44	128	80%	9	5	1	0	3	4	150	51	44	95	108	81	17	15	32	10	4	283	197	480	
8	Hinhada	366960	385	248	105	353	92%	24	5	0	0	0	0	382	248	194	442	82	73	44	37	81	5	0	651	414	1065	
9	Kyankin	96729	102	36	23	59	58%	0	0	0	0	1	1	61	50	32	82	53	38	29	19	48	2	2	171	115	286	
10	Myanaung	222740	234	89	41	130	56%	7	4	0	0	0	0	141	136	88	224	113	88	79	65	144	10	6	434	292	726	
11	Ingapu	213652	224	85	63	148	66%	16	3	0	0	2	1	170	82	69	151	44	29	5	7	12	2	0	236	172	408	
12	Zalun	180592	190	60	30	90	47%	6	7	0	0	0	0	103	104	66	170	108	75	5	5	10	7	3	290	186	476	
13	Laymthetha	107852	113	53	28	81	72%	1	1	1	0	2	1	87	30	26	56	12	14	8	3	11	0	0	107	73	180	
14	Myaungmya	281396	295	150	76	226	76%	16	11	2	2	4	3	264	164	122	286	86	53	63	68	131	11	8	496	343	839	
15	Laputta	328446	345	129	74	203	59%	6	9	1	1	5	2	227	89	61	150	62	44	22	26	48	36	11	350	228	578	
16	Mawgyun	310977	327	102	73	175	54%	2	3	1	0	0	2	183	56	24	80	52	38	30	30	18	48	2	3	245	161	406
17	Wakema	295634	310	87	40	127	41%	2	1	7	1	4	0	142	41	23	64	23	17	17	17	11	28	10	1	191	94	285
18	Einme	201407	211	94	67	161	76%	5	2	0	1	0	1	170	65	60	125	44	46	13	12	25	9	5	230	194	424	
19	Pyapon	313642	329	173	86	259	79%	11	13	1	0	4	2	290	139	81	220	93	32	42	42	26	68	10	1	473	241	714
20	Bogalay	341121	358	138	71	209	58%	8	4	3	0	6	7	237	72	41	113	13	9	38	34	72	7	6	285	172	457	
21	Dedaye	214181	225	44	21	65	29%	6	0	0	0	1	0	72	60	42	102	16	12	1	4	5	0	0	128	79	207	
22	Kyaiklatt	207427	218	55	34	89	41%	4	2	0	0	4	0	99	55	60	115	64	40	11	6	17	4	1	197	143	340	
23	Maubin	347196	365	152	72	224	61%	13	12	2	1	3	4	259	122	79	201	2	0	109	80	189	5	4	408	252	660	
24	Nyaungdon	221135	232	92	63	155	67%	7	3	0	0	2	0	167	29	20	49	32	17	16	21	37	7	4	185	128	313	
25	Pantanaw	262339	275	131	74	205	74%	5	3	0	0	2	0	215	58	42	100	23	12	5	6	11	2	5	226	142	368	
26	Danaphyu	186830	196	104	50	154	79%	23	9	2	0	0	0	188	30	21	51	34	27	6	2	8	5	1	204	110	314	
<b>Total</b>		<b>6249174</b>	<b>6562</b>	<b>2855</b>	<b>1580</b>	<b>4435</b>	<b>68%</b>	<b>257</b>	<b>136</b>	<b>35</b>	<b>6</b>	<b>63</b>	<b>35</b>	<b>4967</b>	<b>2317</b>	<b>1621</b>	<b>3938</b>	<b>1448</b>	<b>1020</b>	<b>789</b>	<b>677</b>	<b>1466</b>	<b>222</b>	<b>113</b>	<b>7986</b>	<b>5188</b>	<b>13174</b>	

Sr.	TOWNSHIP	Population	Estimated New S(+) cases	SMEAR POSITIVE												PULMONARY TUBERCULOSIS											
				New Cases			CDR	Relapses			Previously treated cases			Smear Negative			Total	Primary complex			Extra Pulmonary Tuberculosis			Total			
				M	F	T		M	F	T	M	F	T	M	F	T		M	F	T	M	F	T				
				New Cases			CDR	Relapses			Previously treated cases			Smear Negative			Total	Primary complex			Extra Pulmonary Tuberculosis			Total			
				M	F	T		M	F	T	M	F	T	M	F	T		M	F	T	M	F	T				
Nay Pyi Taw Council																											
1	Oaktaratheri	58171	61	27	11	38	62%	1	1	0	0	0	1	41	18	12	30	3	3	10	4	14	2	0	61	32	93
2	Dekhinatheri	28998	30	6	2	8	26%	2	1	1	0	1	0	13	2	1	3	2	3	8	1	9	3	0	25	8	33
3	Poatpathari	80682	85	37	18	55	65%	2	2	0	0	4	1	64	28	9	37	6	4	20	17	37	4	0	101	51	152
4	Zamuthari	73213	77	16	10	26	34%	6	4	0	0	2	1	39	16	5	21	2	1	9	2	11	4	1	55	24	79
5	Zayyartheri	76818	81	100	24	124	154%	7	3	4	2	3	0	143	107	21	128	13	14	73	38	111	20	5	327	107	434
6	Pyinmana	159429	167	113	57	170	102%	13	3	6	1	8	4	205	76	40	116	8	10	59	61	120	18	13	301	189	490
7	Tatkone	204625	215	84	27	111	52%	7	1	1	1	9	2	132	53	24	77	15	4	63	31	94	15	7	247	97	344
8	Lewei	269916	283	116	49	165	58%	7	2	1	0	4	1	180	61	30	91	12	12	41	30	71	13	6	255	130	385
	<b>Total</b>	<b>951852</b>	<b>999</b>	<b>499</b>	<b>198</b>	<b>697</b>	<b>70%</b>	<b>45</b>	<b>17</b>	<b>13</b>	<b>4</b>	<b>31</b>	<b>10</b>	<b>817</b>	<b>361</b>	<b>142</b>	<b>503</b>	<b>61</b>	<b>51</b>	<b>283</b>	<b>184</b>	<b>467</b>	<b>79</b>	<b>32</b>	<b>1372</b>	<b>638</b>	<b>2010</b>

**Block 2**

**AGE AND SEX DISTRIBUTION OF NEW SMEAR POSITIVE TB PATIENTS**

**Annual 2013**

Sr.No	Region/State	AGE GROUP ( YEAR )																		TOTAL		
		0-14		15-24		25 - 34		35 - 44		45 - 54		55 - 64		65 or more		M	F	T				
		M	F	M	F	M	F	M	F	M	F	M	F									
1	Kachin State	6	9	106	74	180	79	187	58	124	57	68	46	39	26	710	349	1059				
2	Kayah State	0	0	20	7	21	9	28	11	24	3	9	6	7	4	109	40	149				
3	Chin State	0	1	5	9	14	5	16	10	16	16	20	9	13	8	84	58	142				
4	Sagaing Region	7	10	131	98	325	137	354	115	349	148	251	116	209	107	1626	731	2357				
5	Magway Region	12	8	108	101	255	130	281	127	266	129	258	124	186	117	1366	736	2102				
6	Mandalay Region	6	7	250	151	478	204	491	195	391	154	251	112	182	110	2049	933	2982				
7	Shan State (Taunggyi)	4	6	77	61	143	84	157	41	147	62	127	39	65	43	720	336	1056				
8	Shan State (Kengtong)	2	4	39	52	87	43	97	43	80	22	45	11	22	12	372	187	559				
9	Shan State (Lashio)	3	9	100	82	174	90	171	77	140	64	111	43	60	28	759	393	1152				
10	Kayin State	0	0	51	40	116	68	145	67	181	77	111	72	81	45	685	369	1054				
11	Tanintharyi Region	3	10	40	51	103	41	126	48	126	47	95	49	58	36	551	282	833				
12	Bago Region	12	13	178	158	434	241	572	206	443	214	369	156	265	117	2273	1105	3378				
13	Mon State	3	5	86	76	184	89	250	96	250	106	189	86	135	71	1097	529	1626				
14	Rakhine State	6	8	124	90	201	156	240	142	300	135	219	109	155	105	1245	745	1990				
15	Yangon Region	11	23	655	455	1022	535	1044	391	910	366	524	288	350	200	4516	2258	6774				
16	Ayeyarwady Region	10	16	231	208	451	301	577	313	677	322	550	252	359	168	2855	1580	4435				
17	Naypyitaw council area	7	2	46	42	150	57	108	39	89	29	66	21	33	8	499	198	697				
18	Other Unit	45	57	794	617	1652	805	1580	651	1346	573	862	435	496	337	6775	3475	10250				
	<b>Country</b>	<b>137</b>	<b>188</b>	<b>3041</b>	<b>2372</b>	<b>5990</b>	<b>3074</b>	<b>6424</b>	<b>2630</b>	<b>5859</b>	<b>2524</b>	<b>4125</b>	<b>1974</b>	<b>2715</b>	<b>1542</b>	<b>28291</b>	<b>14304</b>	<b>42595</b>				

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

Annual 2013

Sr.No	S/R & Other unit	PC and TBM, Hilar cases															
		PC			EP (including TBM & Hilar)			TBM			Hilar Lymphadenopathy						
		0-4	5-14	≥15	0-4	5-14	≥15	0-4	5-14	≥15	0-4	5-14	≥15				
		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total				
1	Kachin State	745	596	2	1343	376	251	218	845	5	8	8	21	367	233	17	617
2	Kayah State	96	86	0	182	60	71	24	155	0	2	2	4	51	66	0	117
3	Chin State	369	309	0	678	56	50	34	140	4	3	1	8	12	11	2	25
4	Sagaing Region	645	799	103	1547	116	166	323	605	5	7	9	21	60	67	34	161
5	Magway Region	478	595	1	1074	225	359	539	1123	16	9	19	44	188	277	25	490
6	Mandalay Region	411	488	0	899	538	657	876	2071	17	16	26	59	437	546	48	1031
7	Shan State (Taunggyi)	288	430	2	720	90	229	242	561	4	7	9	20	57	163	22	242
8	Shan State (Kengtong)	163	199	5	367	20	28	43	91	1	1	1	3	0	2	0	2
9	Shan State (Lashio)	295	428	6	729	254	291	270	815	10	8	2	20	119	135	3	257
10	Kayin State	231	454	0	685	21	33	66	120	6	7	2	15	10	17	1	28
11	Tanintharyi Region	767	919	744	2430	183	264	173	620	2	3	1	6	69	111	11	191
12	Bago Region	795	1026	4	1825	116	196	278	590	9	6	15	30	100	165	1	266
13	Bago Region (Pyaw)	904	922	5	1831	17	48	158	220	8	9	6	23	7	19	4	29
14	Mon State	947	1718	5	2670	53	119	174	346	0	1	11	12	50	107	10	167
15	Rakhine State	317	435	0	752	100	155	231	486	6	6	4	16	75	74	12	161
16	Yangon Region	860	1184	5	2049	65	160	1237	1462	26	15	49	90	19	46	80	145
17	Ayeyarwady Region	1011	1452	11	2474	282	459	723	1464	22	13	17	52	251	388	51	690
18	Naypyitaw council area	52	60	0	112	177	122	218	517	8	4	8	20	109	117	1	227
19	Other Unit	2399	3415	50	5864	1171	622	1998	3791	2	5	108	115	1109	497	93	1699
	<b>Total</b>	#####	#####	943	28231	3920	4280	7825	#####	151	130	298	579	3090	3041	415	6545

## NOTIFIED TB PATIENTS ACCORDING TO CATEGORY OF REGIMENS

Sr.No	S/R & Other Units	Annual 2013										Annex-7 TOTAL			
		CAT-1 (HRZE/HR)					CAT - 2						CAT - 3		
		Sputum Smear Positive	Sputum Negative severe form	Sputum Negative lesssev	EP severe form	EP lesssev	Total	Relapses	Treat-ment after Default	Treat-ment after Failure	Others		Total	(Children) (HRZ/HR)	Total
1	Kachin State	1102	1188	159	193	65	2707	141	17	87	288	533	1871	1871	5111
2	Kayah State	156	142	22	29	8	357	7	3	12	65	87	322	322	766
3	Chin State	148	158	97	41	31	475	14	2	14	11	41	608	608	1124
4	Sagaing Region	2387	877	859	340	370	4833	168	28	72	169	437	1580	1580	6850
5	Magway Region	2162	1297	711	363	326	4859	228	18	80	191	517	1472	1472	6848
6	Mandalay Region	3033	1761	741	534	537	6606	346	33	176	396	951	1932	1932	9489
7	Shan State (Taunggyi)	1067	429	309	114	167	2086	89	13	54	74	230	1055	1055	3371
8	Shan State (Kengtong)	572	501	202	47	23	1345	69	5	32	60	166	203	203	1714
9	Shan State (Lashio)	1194	656	776	251	123	3000	168	38	57	172	435	1194	1194	4629
10	Kayin State	1077	1140	587	84	21	2909	88	23	23	49	183	260	260	3352
11	Tanintharyi Region	740	1121	114	142	55	2172	92	10	71	128	301	1947	1947	4420
12	Bago Region	3440	2114	1929	350	356	8189	367	25	103	453	948	3950	3950	13087
13	Mon State	1654	1541	2611	143	131	6080	191	16	63	67	337	780	780	7197
14	Rakhine State	2019	1213	294	194	196	3916	150	23	85	184	442	964	964	5322
15	Yangon Region	6864	6339	449	1328	204	15184	1261	116	293	1137	2807	2404	2404	20395
16	Ayeyarwady Region	4514	2689	1584	535	441	9763	413	43	99	346	901	2957	2957	13621
17	Naypyitaw	710	458	82	132	115	1497	61	16	42	114	233	324	324	2054
18	Other Unit	10364	5106	7714	1521	959	25664	1144	93	421	1198	2856	6257	6257	34777
	<b>Total</b>	<b>43203</b>	<b>28730</b>	<b>19240</b>	<b>6341</b>	<b>4128</b>	<b>101642</b>	<b>4997</b>	<b>522</b>	<b>1784</b>	<b>5102</b>	<b>12405</b>	<b>30080</b>	<b>30080</b>	<b>144127</b>



## LABORATORY PERFORMANCE (2013)

Sr.No	S/R & Other Units	Annual 2013												Annex-8	
		A			B			C			D				
		Number of suspects (Dx) examined by microscopy for case finding			Number of smear positive patients detected out of suspects (Dx)			Number of patients examined by microscopy for follow-up			Number of smear positive out of follow-up patients				Sputum positivity rate
NTP	MMA	PSI	NTP	MMA	PSI	NTP	MMA	PSI	NTP	MMA	PSI	NTP	MMA	PSI	
1	Kachin State	8772	0	0	1237	0	0	6114	0	0	0	461	0	0	14%
2	Kayah State	1903	0	0	171	0	0	791	0	0	0	74	0	0	9%
3	Chin State	1648	12	0	135	8	0	723	6	0	0	57	6	0	8%
4	Sagaing Region	27088	165	1758	2562	19	190	11183	12	983	654	1	59	1	9%
5	Magway Region	16399	153	2612	2283	16	313	9628	52	1190	558	6	57	6	14%
6	Mandalay Region	33733	1185	5448	3162	262	592	18408	886	2608	1317	83	282	83	9%
7	Shan State (Taunggyi)	11085	0	0	1152	0	0	4452	0	0	341	0	0	0	10%
8	Shan State (Kengtong)	2935	0	0	534	0	0	2495	0	0	277	0	0	0	18%
9	Shan State (Lashio)	9258	0	0	1314	0	0	6038	0	0	432	0	0	0	14%
10	Kayin State	7538	0	0	1194	0	0	6022	0	0	292	0	0	0	16%
11	Tanintharyi Region	7203	0	0	1391	0	0	5308	0	0	524	0	0	0	19%
12	Bago Region	23622	1120	5375	3912	184	547	18698	1093	2557	765	41	159	41	17%
13	Mon State	15889	22	918	1790	7	74	10277	25	778	464	4	11	4	11%
14	Rakhine State	5449	0	7124	993	0	1131	3685	0	4638	714	0	231	0	18%
15	Yangon Region	39434	0	0	13163	0	0	42172	0	0	4163	0	0	0	33%
16	Ayeyarwady Region	26986	1209	4001	4827	329	509	22079	115	2754	1154	16	162	16	18%
17	Naypyitaw	2934	81	464	601	11	56	3533	3	111	282	2	15	2	20%
18	Other Unit	83191	8336	29394	9683	1355	3560	42008	4214	15525	2872	341	1309	341	12%
	<b>Country</b>	<b>325067</b>	<b>12283</b>	<b>57094</b>	<b>50104</b>	<b>2191</b>	<b>6972</b>	<b>213614</b>	<b>6406</b>	<b>31144</b>	<b>15401</b>	<b>500</b>	<b>2285</b>	<b>500</b>	<b>15%</b>



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

Sr.no	Region/State	New smear(+) cases Register in previous Q:	Smear not done at eighter 2or 3 months	Sputum conversion at				Annual 2013		Annex -9	
				2 month		3 month		Remaining positive at 3 month	Remaining positive at 3 month (%)	TOTAL 2+3+4+5	Sputum Conversion Rate
				No	%	No	%				
1	Kachin State	817	83	586	72%	98	12%	50	6%	817	84%
2	Kayah State	109	4	77	71%	13	12%	15	14%	109	83%
3	Chin State	89	1	76	85%	8	9%	4	4%	89	94%
4	Sagaing Region	1853	130	1470	79%	172	9%	81	4%	1853	89%
5	Magway Region	1666	139	1257	75%	169	10%	101	6%	1666	86%
6	Mandalay Region	2321	222	1633	70%	293	13%	173	7%	2321	83%
7	Shan State (Taunggyi)	819	53	661	81%	73	9%	32	4%	819	90%
8	Shan State (Kengtong)	440	79	277	63%	57	13%	27	6%	440	76%
9	Shan State (Lashio)	838	124	572	68%	104	12%	38	5%	838	81%
10	Kayin State	827	77	651	79%	68	8%	31	4%	827	87%
11	Tanintharyi Region	628	61	430	68%	90	14%	47	7%	628	83%
12	Bago Region	1417	153	1190	84%	62	4%	12	1%	1417	88%
13	Bago Region (Pyay)	1177	95	894	76%	145	12%	43	4%	1177	88%
14	Mon State	1199	101	941	78%	116	10%	41	3%	1199	88%
15	Rakhine State	1579	151	988	63%	275	17%	165	10%	1579	80%
16	Yangon Region	4947	225	3996	81%	496	10%	230	5%	4947	91%
17	Ayeyarwady Region	3428	286	2664	78%	367	11%	111	3%	3428	88%
18	Naypyitaw	514	26	355	69%	96	19%	37	7%	514	88%
19	Other Units	7758	1230	5541	71%	616	8%	371	5%	7758	79%
	<b>Country</b>	<b>32426</b>	<b>3240</b>	<b>24259</b>	<b>75%</b>	<b>3318</b>	<b>10%</b>	<b>1609</b>	<b>5%</b>	<b>32426</b>	<b>85%</b>

**NATIONAL TUBERCULOSIS PROGRAMME  
TREATMENT OUTCOMES OF NEW SMEAR POSITIVE TB PATIENTS (2012 COHORT)**

Annex-10

Sr.No	Region/State	TOTAL	NEW SMEAR POSITIVE TB PATIENTS														Total
			Cured		Completed		TSR		Died		Failure		Defaulted		Transfer		
			No.	CR	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	
1	Kachin State	1013	708	70%	123	12%	82%	46	5%	44	4%	66	7%	26	3%	1013	
2	Kayah State	98	72	73%	10	10%	84%	6	6%	4	4%	3	3%	3	3%	98	
3	Chin State	109	89	82%	12	11%	93%	1	1%	2	2%	4	4%	1	1%	109	
4	Sagaing Region	2491	2022	81%	210	8%	90%	128	5%	67	3%	37	1%	27	1%	2491	
5	Magway Region	1952	1557	80%	162	8%	88%	101	5%	62	3%	49	3%	21	1%	1952	
6	Mandalay Region	3093	2385	77%	267	9%	86%	192	6%	135	4%	75	2%	39	1%	3093	
7	Shan State (Taunggyi)	906	666	74%	110	12%	86%	58	6%	36	4%	25	3%	11	1%	906	
8	Shan State (Kengtong)	584	375	64%	105	18%	82%	25	4%	27	5%	47	8%	5	1%	584	
9	Shan State (Lashio)	1229	827	67%	134	11%	78%	54	4%	46	4%	143	12%	25	2%	1229	
10	Kayin State	1168	904	77%	94	8%	85%	49	4%	16	1%	70	6%	35	3%	1168	
11	Tanintharyi Region	895	625	70%	99	11%	81%	43	5%	48	5%	56	6%	24	3%	895	
12	Bago Region	1885	1453	77%	205	11%	88%	101	5%	23	1%	76	4%	27	1%	1885	
13	Bago Region (Pyay)	1592	1163	73%	235	15%	88%	87	5%	67	4%	19	1%	21	1%	1592	
14	Mon State	1543	1172	76%	156	10%	86%	79	5%	46	3%	71	5%	19	1%	1543	
15	Rakhine State	1880	1226	65%	376	20%	85%	68	4%	80	4%	112	6%	18	1%	1880	
16	Yangon Region	5348	4518	84%	200	4%	88%	194	4%	212	4%	161	3%	63	1%	5348	
17	Ayeyarwaddy Region	4338	3182	73%	594	14%	87%	213	5%	84	2%	233	5%	32	1%	4338	
18	Naypyitaw council area	743	564	76%	71	10%	85%	43	6%	36	5%	14	2%	15	2%	743	
19	Other Unit	10166	6754	66%	1608	16%	82%	460	5%	426	4%	697	7%	221	2%	10166	
	<b>Country</b>	<b>41033</b>	<b>30262</b>	<b>74%</b>	<b>4771</b>	<b>12%</b>	<b>85%</b>	<b>1948</b>	<b>5%</b>	<b>1461</b>	<b>4%</b>	<b>1958</b>	<b>5%</b>	<b>633</b>	<b>2%</b>	<b>41033</b>	

**NATIONAL TUBERCULOSIS PROGRAMME  
TREATMENT OUTCOMES OF NEW SMEAR POSITIVE TB PATIENTS (2012 COHORT) NTP Only**

**Annex -10(township list)**

Sr. No.	Townships	Reg. Pts.	Cured		Completed		TSR		Died		Failure		Defaulted		Transferred out	Total	
			No	CR	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate			eva. Pts.
<b>Kachin State</b>																	
1	Bahmo	75	68	91%	0	0%	91%	3	4%	2	3%	0	0%	2	3%	75	
2	Mansi	29	21	72%	6	21%	93%	0	0%	0	0%	2	7%	0	0%	29	
3	Momaik	21	18	86%	1	5%	90%	0	0%	1	5%	1	5%	0	0%	21	
4	Shw egu	62	50	81%	6	10%	90%	5	8%	0	0%	1	2%	0	0%	62	
5	Mohynin	89	55	62%	20	22%	84%	7	8%	1	1%	5	6%	1	1%	89	
6	Phakant	140	79	56%	22	16%	72%	6	4%	5	4%	18	13%	10	7%	140	
7	Mogaung	118	92	78%	5	4%	82%	6	5%	12	10%	1	1%	2	2%	118	
8	Tanai	61	31	51%	12	20%	70%	0	0%	2	3%	12	20%	4	7%	61	
9	Myitkyina	320	226	71%	33	10%	81%	16	5%	16	5%	25	8%	4	1%	320	
10	Chipway	2	2	100%	0	0%	100%	0	0%	0	0%	0	0%	0	0%	2	
11	Hsawlaw	Nr.															
12	N Jan Yan	Nr.															
13	Waingmaw	49	33	67%	13	27%	94%	2	4%	1	2%	0	0%	0	0%	49	
14	Putao	47	33	70%	5	11%	81%	1	2%	4	9%	1	2%	3	6%	47	
15	Khaunglanbu	Nr.															
16	Machanbaw	0															
17	Nogmun	Nr.															
18	Sumprabum	Nr.															
	<b>Total</b>	<b>1013</b>	<b>708</b>	<b>70%</b>	<b>123</b>	<b>12%</b>	<b>82%</b>	<b>46</b>	<b>5%</b>	<b>44</b>	<b>4%</b>	<b>66</b>	<b>7%</b>	<b>26</b>	<b>3%</b>	<b>1013</b>	
<b>Kayah State</b>																	
1	Baw lake	7	7	100%	0	0%	100%	0	0%	0	0%	0	0%	0	0%	7	
2	Masai	0	0													0	
3	Pasaung	9	9	100%	0	0%	100%	0	0%	0	0%	0	0%	0	0%	9	
4	Loikaw	59	40	68%	5	8%	76%	5	8%	3	5%	3	5%	3	5%	59	
5	Dimaw hso	18	13	72%	5	28%	100%	0	0%	0	0%	0	0%	0	0%	18	
6	Phruhso	5	3	60%	0	0%	60%	1	20%	1	20%	0	0%	0	0%	5	
7	Shataw	0	0													0	
	<b>Total</b>	<b>98</b>	<b>72</b>	<b>73%</b>	<b>10</b>	<b>10%</b>	<b>84%</b>	<b>6</b>	<b>6%</b>	<b>4</b>	<b>4%</b>	<b>3</b>	<b>3%</b>	<b>3</b>	<b>3%</b>	<b>98</b>	
<b>Chin State</b>																	
1	Falam	5	5	100%	0	0%	100%	0	0%	0	0%	0	0%	0	0%	5	
2	Hakha	13	9	69%	1	8%	77%	0	0%	1	8%	1	8%	1	8%	13	
3	Htantalan	2	2	100%	0	0%	100%	0	0%	0	0%	0	0%	0	0%	2	
4	Tiddim	9	8	89%	0	0%	89%	0	0%	0	0%	1	11%	0	0%	9	
5	Tunzan	5	5	100%	0	0%	100%	0	0%	0	0%	0	0%	0	0%	5	
6	Mindat	12	9	75%	1	8%	83%	1	8%	1	8%	0	0%	0	0%	12	
7	Kanpetlet	3	3	100%	0	0%	100%	0	0%	0	0%	0	0%	0	0%	3	
8	Matupi	15	4	27%	10	67%	93%	0	0%	0	0%	1	7%	0	0%	15	
9	Paletwa	45	44	98%	0	0%	98%	0	0%	0	0%	1	2%	0	0%	45	
	<b>Total</b>	<b>109</b>	<b>89</b>	<b>82%</b>	<b>12</b>	<b>11%</b>	<b>93%</b>	<b>1</b>	<b>1%</b>	<b>2</b>	<b>2%</b>	<b>4</b>	<b>4%</b>	<b>1</b>	<b>1%</b>	<b>109</b>	

## Annex -10(township list)

Sr. No.	Townships	Reg. Pts.	Cured		Completed		TSR	Died		Failure		Defaulted		Transferred out		Total eva. Pts.
			No	CR	No	Rate		No	Rate	No	Rate	No	Rate	No	Rate	
<b>Sagaing Region</b>																
1	Sagaing	142	132	93%	2	1%	94%	5	4%	0	0%	1	1%	2	1%	142
2	Myaung	52	41	79%	4	8%	87%	2	4%	5	10%	0	0%	0	0%	52
3	Myinmu	43	19	44%	19	44%	88%	2	5%	0	0%	0	0%	3	7%	43
4	Shwabo	84	64	76%	10	12%	88%	9	11%	1	1%	0	0%	0	0%	84
5	Kanbalu	75	51	68%	12	16%	84%	3	4%	7	9%	2	3%	0	0%	75
6	Khin-U	59	56	95%	0	0%	95%	3	5%	0	0%	0	0%	0	0%	59
7	Kyunhla	27	8	30%	14	52%	81%	3	11%	2	7%	0	0%	0	0%	27
8	Tabayin	73	57	78%	10	14%	92%	5	7%	1	1%	0	0%	0	0%	73
9	Taze	47	34	72%	5	11%	83%	2	4%	5	11%	1	2%	0	0%	47
10	Wetlet	100	90	90%	7	7%	97%	2	2%	1	1%	0	0%	0	0%	100
11	Ye-U	55	50	91%	0	0%	91%	3	5%	0	0%	0	0%	2	4%	55
12	Monywa	194	156	80%	12	6%	87%	10	5%	5	3%	6	3%	5	3%	194
13	Ayadaw	45	42	93%	1	2%	96%	2	4%	0	0%	0	0%	0	0%	45
14	Budalin	100	83	83%	0	0%	83%	10	10%	7	7%	0	0%	0	0%	100
15	ChaungU	57	49	86%	1	2%	88%	3	5%	3	5%	1	2%	0	0%	57
16	Kani	49	46	94%	2	4%	98%	1	2%	0	0%	0	0%	0	0%	49
17	Pale	78	75	96%	1	1%	97%	1	1%	0	0%	0	0%	1	1%	78
18	Salingyi	59	48	81%	3	5%	86%	4	7%	3	5%	0	0%	1	2%	59
19	Yinmabin	52	32	62%	12	23%	85%	5	10%	2	4%	1	2%	0	0%	52
20	Katha	73	61	84%	0	0%	84%	3	4%	1	1%	6	8%	2	3%	73
21	Banmauk	16	9	56%	5	31%	88%	2	13%	0	0%	0	0%	0	0%	16
22	Htigyain	58	33	57%	13	22%	79%	6	10%	2	3%	0	0%	4	7%	58
23	Indaw	44	41	93%	0	0%	93%	1	2%	0	0%	0	0%	2	5%	44
24	Kawlin	57	54	95%	0	0%	95%	3	5%	0	0%	0	0%	0	0%	57
25	Pinlebu	42	37	88%	0	0%	88%	5	12%	0	0%	0	0%	0	0%	42
26	Wuntho	36	31	86%	1	3%	89%	0	0%	4	11%	0	0%	0	0%	36
27	Kalay	253	223	88%	1	0%	89%	6	2%	12	5%	10	4%	1	0%	253
28	Kalewa	21	19	90%	1	5%	95%	1	5%	0	0%	0	0%	0	0%	21
29	Minkin	25	21	84%	0	0%	84%	3	12%	0	0%	0	0%	1	4%	25
30	Tamu	120	102	85%	7	6%	91%	5	4%	1	1%	4	3%	1	1%	120
31	Mawlaik	28	15	54%	10	36%	89%	2	7%	0	0%	1	4%	0	0%	28
32	Phaungbyin	86	40	47%	32	37%	84%	10	12%	1	1%	2	2%	1	1%	86
33	Khamti	90	74	82%	7	8%	90%	3	3%	4	4%	2	2%	0	0%	90
34	Hornalin	108	100	93%	5	5%	97%	2	2%	0	0%	0	0%	1	1%	108
35	Layshi	7	3	43%	3	43%	86%	1	14%	0	0%	0	0%	0	0%	7
36	Lahel	29	19	66%	10	34%	100%	0	0%	0	0%	0	0%	0	0%	29
37	Nanyun	7	7	100%	0	0%	100%	0	0%	0	0%	0	0%	0	0%	7
<b>Total</b>		<b>2491</b>	<b>2022</b>	<b>81%</b>	<b>210</b>	<b>8%</b>	<b>90%</b>	<b>128</b>	<b>5%</b>	<b>67</b>	<b>3%</b>	<b>37</b>	<b>1%</b>	<b>27</b>	<b>1%</b>	<b>2491</b>

## Annex -10(township list)

Sr. No.	Townships	Reg. Pts.	Cured		Completed		TSR	Died		Failure		Defaulted		Transferred out		Total
			No	CR	No	Rate		No	Rate	No	Rate	No	Rate	No	Rate	
<b>Magwe Region</b>																
1	Magwe	290	188	65%	51	18%	82%	16	6%	10	3%	19	7%	6	2%	290
2	Chauk	102	71	70%	18	18%	87%	4	4%	1	1%	7	7%	1	1%	102
3	Taundw.ingyi	138	129	93%	0	0%	93%	4	3%	1	1%	0	0%	4	3%	138
4	Myothit	114	107	94%	0	0%	94%	7	6%	0	0%	0	0%	0	0%	114
5	Natmauk	92	70	76%	9	10%	86%	4	4%	2	2%	7	8%	0	0%	92
6	Yenanchaung	131	114	87%	0	0%	87%	5	4%	11	8%	1	1%	0	0%	131
7	Pakokku	125	93	74%	7	6%	80%	12	10%	8	6%	1	1%	4	3%	125
8	Yesagyo	53	46	87%	0	0%	87%	2	4%	5	9%	0	0%	0	0%	53
9	Pauk	64	52	81%	11	17%	98%	1	2%	0	0%	0	0%	0	0%	64
10	Myaing	55	43	78%	4	7%	85%	5	9%	3	5%	0	0%	0	0%	55
11	Seikphyu	46	39	85%	3	7%	91%	3	7%	0	0%	1	2%	0	0%	46
12	Gantgaw	49	31	63%	14	29%	92%	1	2%	1	2%	1	2%	1	2%	49
13	Saw	13	12	92%	0	0%	92%	0	0%	1	8%	0	0%	0	0%	13
14	Htilin	15	12	80%	1	7%	87%	2	13%	0	0%	0	0%	0	0%	15
15	Minbu	94	71	76%	3	3%	79%	9	10%	6	6%	3	3%	2	2%	94
16	Ngape	22	18	82%	2	9%	91%	2	9%	0	0%	0	0%	0	0%	22
17	Pwintphyu	94	91	97%	0	0%	97%	1	1%	1	1%	0	0%	1	1%	94
18	Saytoketaya	10	8	80%	1	10%	90%	0	0%	1	10%	0	0%	0	0%	10
19	Salin	98	67	68%	24	24%	93%	5	5%	1	1%	0	0%	1	1%	98
20	Thayet	81	57	70%	6	7%	78%	8	10%	8	10%	2	2%	0	0%	81
21	Minhla	66	62	94%	0	0%	94%	4	6%	0	0%	0	0%	0	0%	66
22	Kanma	27	18	67%	1	4%	70%	3	11%	1	4%	4	15%	0	0%	27
23	Sinpaukwa e	55	54	98%	0	0%	98%	1	2%	0	0%	0	0%	0	0%	55
24	Mindon	43	42	98%	1	2%	100%	0	0%	0	0%	0	0%	0	0%	43
25	Aunglan	75	62	83%	6	8%	91%	2	3%	1	1%	3	4%	1	1%	75
<b>Total</b>		<b>1952</b>	<b>1557</b>	<b>80%</b>	<b>162</b>	<b>8%</b>	<b>88%</b>	<b>101</b>	<b>5%</b>	<b>62</b>	<b>3%</b>	<b>49</b>	<b>3%</b>	<b>21</b>	<b>1%</b>	<b>1952</b>

## Annex -10(township list)

Sr. No.	Townships	Reg. Pts.		Cured		Completed		Died		Failure		Defaulted		Transferred out		Total eva. Pts.
		No	CR	No	CR	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	
<b>Mandalay Region</b>																
1	Amarapura	78	79%	62	79%	9	12%	5	6%	1	1%	1	1%	0	0%	78
2	Aungmyayathazan	207	85%	175	85%	6	3%	10	5%	15	7%	1	0%	0	0%	207
3	Chanayethazan	125	77%	96	77%	16	13%	6	5%	5	4%	2	2%	0	0%	125
4	Chanmyatharzi	178	77%	137	77%	14	8%	8	4%	12	7%	5	3%	2	1%	178
5	Maharaungmyae	155	92%	143	92%	2	1%	8	5%	0	0%	1	1%	1	1%	155
6	Pyigyitagonn	127	88%	112	88%	3	2%	10	8%	2	2%	0	0%	0	0%	127
7	Patheingyi	140	89%	124	89%	2	1%	6	4%	3	2%	0	0%	5	4%	140
8	Meiktilar	171	77%	132	77%	6	4%	12	7%	11	6%	5	3%	5	3%	171
9	Mahlaing	96	83%	80	83%	5	5%	8	8%	0	0%	1	1%	2	2%	96
10	Tharzi	101	86%	87	86%	2	2%	8	8%	1	1%	3	3%	0	0%	101
11	Wundwin	54	72%	39	72%	9	17%	1	2%	5	9%	0	0%	0	0%	54
12	Myingan	145	74%	108	74%	9	6%	18	12%	3	2%	5	3%	2	1%	145
13	Kyaukpadaung	117	75%	88	75%	18	15%	5	4%	3	3%	0	0%	3	3%	117
14	Natogyi	47	77%	36	77%	6	13%	1	2%	1	2%	2	4%	1	2%	47
15	Ngazun	94	95%	89	95%	1	1%	2	2%	2	2%	0	0%	0	0%	94
16	Taungtha	67	66%	44	66%	9	13%	2	3%	1	1%	9	13%	2	3%	67
17	NyaungU	121	78%	94	78%	6	5%	10	8%	11	9%	0	0%	0	0%	121
18	Pyin oo Lwin	75	83%	62	83%	5	7%	5	7%	2	3%	1	1%	0	0%	75
19	Madaya	136	69%	94	69%	25	18%	9	7%	5	4%	3	2%	0	0%	136
20	Mogok	66	59%	39	59%	4	6%	10	15%	12	18%	0	0%	1	2%	66
21	Sintga	124	66%	82	66%	20	16%	3	2%	7	6%	12	10%	0	0%	124
22	Thabeikkyin	102	48%	49	48%	31	30%	2	2%	15	15%	2	2%	3	3%	102
23	Yamethin	95	52%	49	52%	22	23%	9	9%	3	3%	10	11%	2	2%	95
24	Pyaw bwei	157	75%	118	75%	9	6%	14	9%	6	4%	6	4%	4	3%	157
25	Kyaukse	113	87%	98	87%	1	1%	5	4%	5	4%	1	1%	3	3%	113
26	Myitha	71	72%	51	72%	10	14%	6	8%	1	1%	3	4%	0	0%	71
27	Sintga	52	60%	31	60%	14	27%	3	6%	0	0%	1	2%	3	6%	52
28	TadaOo	79	84%	66	84%	3	4%	6	8%	3	4%	1	1%	0	0%	79
<b>Total</b>		<b>3093</b>	<b>77%</b>	<b>2385</b>	<b>77%</b>	<b>267</b>	<b>9%</b>	<b>192</b>	<b>6%</b>	<b>135</b>	<b>4%</b>	<b>75</b>	<b>2%</b>	<b>39</b>	<b>1%</b>	<b>3093</b>

## Annex -10(township list)

Sr. No.	Townships	Reg. Pts.	Cured		Completed		TSR	Died		Failure		Defaulted		Transferred out		Total
			No	CR	No	Rate		No	Rate	No	Rate	No	Rate	No	Rate	
<b>Shan State (Taunggyi)</b>																
1	Linhkay	17	14	82%	0	0%	82%	2	12%	1	6%	0	0%	0	0%	17
2	Maukme	10	9	90%	1	10%	100%	0	0%	0	0%	0	0%	0	0%	10
3	Monai	19	16	84%	1	5%	89%	2	11%	0	0%	0	0%	0	0%	19
4	Mangpang	11	10	91%	0	0%	91%	1	9%	0	0%	0	0%	0	0%	11
5	Loilem	32	28	88%	2	6%	94%	1	3%	1	3%	0	0%	0	0%	32
6	Kunhein	45	35	78%	6	13%	91%	2	4%	1	2%	1	2%	0	0%	45
7	Kyeethi	8	2	25%	4	50%	75%	2	25%	0	0%	0	0%	0	0%	8
8	Laikha	38	38	100%	0	0%	100%	0	0%	0	0%	0	0%	0	0%	38
9	Mongkaing	13	8	62%	5	38%	100%	0	0%	0	0%	0	0%	0	0%	13
10	Mongshu	57	52	91%	5	9%	100%	0	0%	0	0%	0	0%	0	0%	57
11	Namsan	80	27	34%	48	60%	94%	4	5%	0	0%	1	1%	0	0%	80
12	Taunggyi	146	81	55%	18	12%	68%	15	10%	14	10%	15	10%	3	2%	146
13	Hopone	42	25	60%	3	7%	67%	4	10%	7	17%	2	5%	1	2%	42
14	Hpekon	29	25	86%	3	10%	97%	0	0%	1	3%	0	0%	0	0%	29
15	Hsising	42	33	79%	4	10%	88%	2	5%	0	0%	3	7%	0	0%	42
16	Kalaw	77	61	79%	1	1%	81%	5	6%	4	5%	1	1%	5	6%	77
17	Lauksauk	53	40	75%	1	2%	77%	5	9%	6	11%	0	0%	1	2%	53
18	Pindaya	58	52	90%	0	0%	90%	6	10%	0	0%	0	0%	0	0%	58
19	Pinlaung	75	61	81%	8	11%	92%	4	5%	1	1%	1	1%	0	0%	75
20	Nyaungshwe	40	38	95%	0	0%	95%	0	0%	0	0%	1	3%	1	3%	40
21	Ywangan	14	11	79%	0	0%	79%	3	21%	0	0%	0	0%	0	0%	14
<b>Total</b>		<b>906</b>	<b>666</b>	<b>74%</b>	<b>110</b>	<b>12%</b>	<b>86%</b>	<b>58</b>	<b>6%</b>	<b>36</b>	<b>4%</b>	<b>25</b>	<b>3%</b>	<b>11</b>	<b>1%</b>	<b>906</b>
<b>Shan State (Kengtong)</b>																
1	Kengtong	103	65	63%	12	12%	75%	5	5%	8	8%	13	13%	0	0%	103
2	Mongkhat	7	5	71%	0	0%	71%	0	0%	0	0%	2	29%	0	0%	7
3	Mongyan	21	14	67%	1	5%	71%	1	5%	1	5%	4	19%	0	0%	21
4	Monghsat	120	67	56%	39	33%	88%	8	7%	6	5%	0	0%	0	0%	120
5	Mongping	60	47	78%	1	2%	80%	3	5%	0	0%	9	15%	0	0%	60
6	Mongton	68	27	40%	29	43%	82%	1	1%	4	6%	5	7%	2	3%	68
7	Monpyak	38	32	84%	5	13%	97%	0	0%	1	3%	0	0%	0	0%	38
8	Mongyaung	33	26	79%	1	3%	82%	0	0%	1	3%	5	15%	0	0%	33
9	Tachileik	134	92	69%	17	13%	81%	7	5%	6	4%	9	7%	3	2%	134
10	Matman	0	0													
<b>Total</b>		<b>584</b>	<b>375</b>	<b>64%</b>	<b>105</b>	<b>18%</b>	<b>82%</b>	<b>25</b>	<b>4%</b>	<b>27</b>	<b>5%</b>	<b>47</b>	<b>8%</b>	<b>5</b>	<b>1%</b>	<b>584</b>



## Annex -10(township list)

Sr. No.	Townships	Reg. Pts.	Cured		Completed		TSR	Died		Failure		Defaulted		Transferred out		Total
			No	CR	No	Rate		No	Rate	No	Rate	No	Rate	No	Rate	
<b>Shan State (Lashio)</b>																
1	Kunlon	47	37	79%	0	0%	79%	5	11%	3	6%	2	4%	0	0%	47
2	Hopan	86	78	91%	2	2%	93%	2	2%	0	0%	4	5%	0	0%	86
3	Kyaukme	139	114	82%	7	5%	87%	7	5%	0	0%	8	6%	3	2%	139
4	Hsipaw	168	163	97%	0	0%	97%	4	2%	0	0%	1	1%	0	0%	168
5	Mabein	16	11	69%	3	19%	88%	2	13%	0	0%	0	0%	0	0%	16
6	Manton	0	0													0
7	Mongmeik	63	34	54%	11	17%	71%	6	10%	6	10%	6	10%	0	0%	63
8	Namtu	28	15	54%	6	21%	75%	2	7%	2	7%	3	11%	0	0%	28
9	Nyaungcho	35	30	86%	0	0%	86%	1	3%	2	6%	0	0%	2	6%	35
10	Lashio	236	126	53%	14	6%	59%	10	4%	22	9%	53	22%	11	5%	236
11	Namsam	13	8	62%	5	38%	100%	0	0%	0	0%	0	0%	0	0%	13
12	Mongmaw	Nr.														
13	Theinni	46	40	87%	0	0%	87%	3	7%	1	2%	2	4%	0	0%	46
14	Mongreh	27	13	48%	12	44%	93%	2	7%	0	0%	0	0%	0	0%	27
15	Manphant	Nr.														
16	Pangyan	Nr.														
17	Narphant	Nr.														
18	Panw aing	Nr.														
19	Tanyan	82	39	48%	28	34%	82%	3	4%	2	2%	10	12%	0	0%	82
20	Laukkai	51	23	45%	7	14%	59%	1	2%	0	0%	18	35%	2	4%	51
21	Kongyan	Nr.														
22	Muse	93	44	47%	19	20%	68%	0	0%	2	2%	22	24%	6	6%	93
23	Kutkai	48	18	38%	14	29%	67%	3	6%	6	13%	6	13%	1	2%	48
24	Namkham	51	34	67%	6	12%	78%	3	6%	0	0%	8	16%	0	0%	51
<b>Total</b>		<b>1229</b>	<b>827</b>	<b>67%</b>	<b>134</b>	<b>11%</b>	<b>78%</b>	<b>54</b>	<b>4%</b>	<b>46</b>	<b>4%</b>	<b>143</b>	<b>12%</b>	<b>25</b>	<b>2%</b>	<b>1229</b>



## Annex -10(township list)

Sr. No.	Townships	Reg. Pts.	Cured		Completed		Died		Failure		Defaulted		Transferred out		Total eva. Pts.
			No	CR	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	
<b>Kayin State</b>															
1	Kaw kareik	126	88	70%	23	18%	7	6%	1	1%	6	5%	1	1%	126
2	Kyainseikkyi	74	53	72%	4	5%	8	11%	0	0%	9	12%	0	0%	74
3	Myawady	201	120	60%	19	9%	14	7%	13	6%	22	11%	13	6%	201
4	Hpa-an	529	432	82%	40	8%	11	2%	1	0%	25	5%	20	4%	529
5	Hlaingbwe	198	178	90%	8	4%	5	3%	1	1%	6	3%	0	0%	198
6	Papun(Kamamaung)	26	20	77%	0	0%	4	15%	0	0%	2	8%	0	0%	26
7	Thandaung	14	13	93%	0	0%	0	0%	0	0%	0	0%	1	7%	14
	<b>Total</b>	<b>1168</b>	<b>904</b>	<b>77%</b>	<b>94</b>	<b>8%</b>	<b>49</b>	<b>4%</b>	<b>16</b>	<b>1%</b>	<b>70</b>	<b>6%</b>	<b>35</b>	<b>3%</b>	<b>1168</b>

## Tanintharyi Region

1	Dawei	157	118	75%	8	5%	9	6%	10	6%	9	6%	3	2%	157
2	Launglon	55	44	80%	1	2%	2	4%	7	13%	0	0%	1	2%	55
3	Thayetchaung	36	25	69%	3	8%	2	6%	6	17%	0	0%	0	0%	36
4	Yebyu	40	33	83%	3	8%	1	3%	0	0%	3	8%	0	0%	40
5	Kawthaung	157	86	55%	42	27%	4	3%	9	6%	12	8%	4	3%	157
6	Bokpyin	49	31	63%	1	2%	4	8%	0	0%	10	20%	3	6%	49
7	Myeik	262	189	72%	29	11%	8	3%	8	3%	16	6%	12	5%	262
8	Kyunsu	30	27	90%	0	0%	1	3%	2	7%	0	0%	0	0%	30
9	Tanintharyi	50	39	78%	0	0%	4	8%	3	6%	3	6%	1	2%	50
10	Palaw	59	33	56%	12	20%	8	14%	3	5%	3	5%	0	0%	59

**Annex -10(township list)**

Sr. No.	Townships	Reg. Pts.	Cured		Completed		TSR	Died		Failure		Defaulted		Transferred out		Total eva. Pts.
			No	CR	No	Rate		No	Rate	No	Rate	No	Rate	No	Rate	
<b>Bago Region</b>																
1	Bago	407	307	75%	40	10%	85%	32	8%	8	2%	10	2%	10	2%	407
2	Daik-U	126	71	56%	44	35%	91%	6	5%	1	1%	4	3%	0	0%	126
3	Kaw a	104	88	85%	4	4%	88%	4	4%	1	1%	6	6%	1	1%	104
4	Kyauktaga	139	119	86%	9	6%	92%	6	4%	0	0%	1	1%	4	3%	139
5	Nyaunglaybin	134	104	78%	18	13%	91%	3	2%	0	0%	4	3%	5	4%	134
6	Shw ekyin	65	29	45%	26	40%	85%	2	3%	0	0%	7	11%	1	2%	65
7	Thanatpin	105	84	80%	11	10%	90%	5	5%	1	1%	2	2%	2	2%	105
8	Waw	138	119	86%	10	7%	93%	5	4%	0	0%	4	3%	0	0%	138
9	Taunggoo	147	126	86%	5	3%	89%	8	5%	3	2%	4	3%	1	1%	147
10	Kyaukkyi	50	37	74%	5	10%	84%	3	6%	1	2%	3	6%	1	2%	50
11	Oktw in	113	82	73%	11	10%	82%	5	4%	0	0%	14	12%	1	1%	113
12	Phyu	184	134	73%	17	9%	82%	18	10%	5	3%	10	5%	0	0%	184
13	Htantabin	54	49	91%	1	2%	93%	1	2%	0	0%	3	6%	0	0%	54
14	Yedashe	119	104	87%	4	3%	91%	3	3%	3	3%	4	3%	1	1%	119
<b>Total</b>		<b>1885</b>	<b>1453</b>	<b>77%</b>	<b>205</b>	<b>11%</b>	<b>88%</b>	<b>101</b>	<b>5%</b>	<b>23</b>	<b>1%</b>	<b>76</b>	<b>4%</b>	<b>27</b>	<b>1%</b>	<b>1885</b>
<b>Bago region (Pyay)</b>																
1	Pyay	206	163	79%	3	1%	81%	15	7%	18	9%	2	1%	5	2%	206
2	Paukhaung	115	67	58%	39	34%	92%	5	4%	1	1%	1	1%	2	2%	115
3	Paungde	116	103	89%	2	2%	91%	2	2%	4	3%	3	3%	2	2%	116
4	Padaung	96	49	51%	28	29%	80%	6	6%	5	5%	3	3%	5	5%	96
5	Shw edaung	88	54	61%	18	20%	82%	7	8%	7	8%	1	1%	1	1%	88
6	Thegon	108	75	69%	18	17%	86%	6	6%	7	6%	2	2%	0	0%	108
7	Tharyarw ady	152	131	86%	5	3%	89%	10	7%	4	3%	1	1%	1	1%	152
8	Zigon	67	56	84%	9	13%	97%	1	1%	1	1%	0	0%	0	0%	67
9	Minhla	135	93	69%	21	16%	84%	10	7%	9	7%	0	0%	2	1%	135
10	Moenyoy	85	69	81%	9	11%	92%	1	1%	3	4%	2	2%	1	1%	85
11	Okpo	88	51	58%	26	30%	88%	7	8%	3	3%	0	0%	1	1%	88
12	Gyobingauk	98	74	76%	17	17%	93%	2	2%	3	3%	1	1%	1	1%	98
13	Nattalin	129	97	75%	20	16%	91%	9	7%	0	0%	3	2%	0	0%	129
14	Latpadan	109	81	74%	20	18%	93%	6	6%	2	2%	0	0%	0	0%	109
<b>Total</b>		<b>1592</b>	<b>1163</b>	<b>73%</b>	<b>235</b>	<b>15%</b>	<b>88%</b>	<b>87</b>	<b>5%</b>	<b>67</b>	<b>4%</b>	<b>19</b>	<b>1%</b>	<b>21</b>	<b>1%</b>	<b>1592</b>

**Annex -10(township list)**

Sr. No.	Townships	Reg. Pts.	Cured		Completed		TSR	Died		Failure		Defaulted		Transferred out		Total eva. Pts.
			No	CR	No	Rate		No	Rate	No	Rate	No	Rate	No	Rate	
<b>Mon State</b>																
1	Maw lamyaing	257	181	70%	37	14%	85%	12	5%	4	2%	19	7%	4	2%	257
2	Chanungzon	90	79	88%	2	2%	90%	5	6%	3	3%	1	1%	0	0%	90
3	Kyaikmaraw	129	86	67%	32	25%	91%	8	6%	3	2%	0	0%	0	0%	129
4	Mudon	145	116	80%	11	8%	88%	10	7%	3	2%	4	3%	1	1%	145
5	Thanbyuzayat	117	105	90%	2	2%	91%	1	1%	3	3%	2	2%	4	3%	117
6	Ye	179	117	65%	17	9%	75%	13	7%	21	12%	8	4%	3	2%	179
7	Thaton	202	113	56%	46	23%	79%	11	5%	4	2%	28	14%	0	0%	202
8	Belin	156	142	91%	7	4%	96%	5	3%	1	1%	1	1%	0	0%	156
9	Kyaikto	108	90	83%	0	0%	83%	3	3%	3	3%	7	6%	5	5%	108
10	Paung	160	143	89%	2	1%	91%	11	7%	1	1%	1	1%	2	1%	160
<b>Total</b>		<b>1543</b>	<b>1172</b>	<b>76%</b>	<b>156</b>	<b>10%</b>	<b>86%</b>	<b>79</b>	<b>5%</b>	<b>46</b>	<b>3%</b>	<b>71</b>	<b>5%</b>	<b>19</b>	<b>1%</b>	<b>1543</b>

<b>Rakhine State</b>																
1	Sittw e	200	88	44%	68	34%	78%	5	3%	9	5%	30	15%	0	0%	200
2	Pongyun	79	76	96%	0	0%	96%	0	0%	0	0%	2	3%	1	1%	79
3	Kyauktaw	170	116	68%	48	28%	96%	1	1%	1	1%	4	2%	0	0%	170
4	MraukOo	222	107	48%	95	43%	91%	9	4%	2	1%	9	4%	0	0%	222
5	Minbya	147	113	77%	13	9%	86%	6	4%	10	7%	4	3%	1	1%	147
6	Myaepon	90	46	51%	34	38%	89%	8	9%	1	1%	1	1%	0	0%	90
7	Pauktaw	45	18	40%	15	33%	73%	0	0%	4	9%	7	16%	1	2%	45
8	Yatheedaung	119	102	86%	0	0%	86%	4	3%	1	1%	10	8%	2	2%	119
9	Maungdaw	114	67	59%	7	6%	65%	7	6%	16	14%	17	15%	0	0%	114
10	Buthidaung	137	94	69%	35	26%	94%	4	3%	3	2%	0	0%	1	1%	137
11	Kyaukphyu	136	96	71%	11	8%	79%	5	4%	10	7%	10	7%	4	3%	136
12	Yanbye	41	34	83%	0	0%	83%	2	5%	4	10%	0	0%	1	2%	41
13	Manaung	43	42	98%	0	0%	98%	1	2%	0	0%	0	0%	0	0%	43
14	Ann	63	35	56%	16	25%	81%	2	3%	3	5%	6	10%	1	2%	63
15	Thandw e	97	80	82%	9	9%	92%	3	3%	2	2%	2	2%	1	1%	97
16	Taunggoke	128	69	54%	25	20%	73%	7	5%	13	10%	9	7%	5	4%	128
17	Gw a	49	43	88%	0	0%	88%	4	8%	1	2%	1	2%	0	0%	49
<b>Total</b>		<b>1880</b>	<b>1226</b>	<b>65%</b>	<b>376</b>	<b>20%</b>	<b>85%</b>	<b>68</b>	<b>4%</b>	<b>80</b>	<b>4%</b>	<b>112</b>	<b>6%</b>	<b>18</b>	<b>1%</b>	<b>1880</b>

**Annex -10(township list)**

Sr. No.	Townships	Reg. Pts.	Cured		Completed		TSR	Died		Failure		Defaulted		Transferred out		Total eva. Pts.
			No	CR	No	Rate		No	Rate	No	Rate	No	Rate	No	Rate	
<b>Yangon Region</b>																
<b>East District</b>																
1	Botataung	44	40	91%	0	0%	91%	1	2%	0	0%	2	5%	1	2%	44
2	Daw bon	92	85	92%	0	0%	92%	2	2%	4	4%	0	0%	1	1%	92
3	Dagon(N)	151	117	77%	17	11%	89%	5	3%	4	3%	6	4%	2	1%	151
4	Dagon(S)	364	290	80%	0	0%	80%	15	4%	23	6%	33	9%	3	1%	364
5	MingalarTN	97	94	97%	1	1%	98%	0	0%	2	2%	0	0%	0	0%	97
6	Okkala(N)	221	191	86%	0	0%	86%	7	3%	13	6%	8	4%	2	1%	221
7	Okkala(S)	105	93	89%	2	2%	90%	3	3%	2	2%	1	1%	4	4%	105
8	Tharkata	217	181	83%	0	0%	83%	10	5%	15	7%	8	4%	3	1%	217
9	Thingangyun	113	91	81%	4	4%	84%	6	5%	3	3%	9	8%	0	0%	113
10	Yankin	105	94	90%	0	0%	90%	3	3%	5	5%	0	0%	3	3%	105
11	Tarmw e	103	92	89%	1	1%	90%	3	3%	5	5%	2	2%	0	0%	103
12	Pazundaung	37	29	78%	0	0%	78%	1	3%	5	14%	1	3%	1	3%	37
13	Dagon(E)	165	145	88%	7	4%	92%	3	2%	6	4%	2	1%	2	1%	165
14	Dagon Seikkan	91	76	84%	4	4%	88%	3	3%	1	1%	6	7%	1	1%	91
<b>Total</b>		<b>1905</b>	<b>1618</b>	<b>85%</b>	<b>36</b>	<b>2%</b>	<b>87%</b>	<b>62</b>	<b>3%</b>	<b>88</b>	<b>5%</b>	<b>78</b>	<b>4%</b>	<b>23</b>	<b>1%</b>	<b>1905</b>
<b>West District</b>																
1	Kamayut	62	49	79%	0	0%	79%	3	5%	5	8%	5	8%	0	0%	62
2	Kyauktada	20	18	90%	0	0%	90%	0	0%	2	10%	0	0%	0	0%	20
3	Kyeemyintdaing	132	83	63%	12	9%	72%	6	5%	11	8%	16	12%	4	3%	132
4	Sanchaung	74	60	81%	4	5%	86%	2	3%	2	3%	0	0%	6	8%	74
5	Seikkan	0	0													0
6	Dagon	18	16	89%	0	0%	89%	1	6%	1	6%	0	0%	0	0%	18
7	Pabadan	27	23	85%	0	0%	85%	0	0%	3	11%	0	0%	1	4%	27
8	Bahan	69	64	93%	1	1%	94%	0	0%	4	6%	0	0%	0	0%	69
9	Mayangon	142	127	89%	1	1%	90%	4	3%	6	4%	2	1%	2	1%	142
10	Latha	16	13	81%	2	13%	94%	0	0%	1	6%	0	0%	0	0%	16
11	Lanmadaw	25	20	80%	1	4%	84%	0	0%	2	8%	1	4%	1	4%	25
12	Hlaing	157	153	97%	0	0%	97%	0	0%	2	1%	0	0%	2	1%	157
13	Ahlonge	54	46	85%	0	0%	85%	1	2%	5	9%	1	2%	1	2%	54
<b>Total</b>		<b>796</b>	<b>672</b>	<b>84%</b>	<b>21</b>	<b>3%</b>	<b>87%</b>	<b>17</b>	<b>2%</b>	<b>44</b>	<b>6%</b>	<b>25</b>	<b>3%</b>	<b>17</b>	<b>2%</b>	<b>796</b>

**Annex -10(township list)**

Sr. No.	Townships	Reg. Pts.	Cured		Completed		TSR	Died		Failure		Defaulted		Transferred out		Total eva. Pts.
			No	CR	No	Rate		No	Rate	No	Rate	No	Rate	No	Rate	

**South District**

1	Seikkyikhanaungto	47	26	55%	15	32%	87%	4	9%	1	2%	1	2%	0	0%	47
2	Dallah	123	86	70%	12	10%	80%	18	15%	1	1%	4	3%	2	2%	123
3	Cocogyun	0	0													0
4	Kaw hmu	42	39	93%	0	0%	93%	2	5%	1	2%	0	0%	0	0%	42
5	Kyauktan	111	79	71%	22	20%	91%	3	3%	0	0%	4	4%	3	3%	111
6	Kungyangone	85	69	81%	7	8%	89%	5	6%	2	2%	1	1%	1	1%	85
7	Kayan	100	88	88%	5	5%	93%	7	7%	0	0%	0	0%	0	0%	100
8	Tw antay	146	113	77%	15	10%	88%	11	8%	5	3%	2	1%	0	0%	146
9	Thonegw a	105	92	88%	1	1%	89%	5	5%	2	2%	5	5%	0	0%	105
10	Thanlyin	196	157	80%	14	7%	87%	3	2%	8	4%	8	4%	6	3%	196
<b>Total</b>		<b>955</b>	<b>749</b>	<b>78%</b>	<b>91</b>	<b>10%</b>	<b>88%</b>	<b>58</b>	<b>6%</b>	<b>20</b>	<b>2%</b>	<b>25</b>	<b>3%</b>	<b>12</b>	<b>1%</b>	<b>955</b>

**North District**

1	Mingalardon	294	257	87%	2	1%	88%	9	3%	18	6%	4	1%	4	1%	294
2	Shw epyithar	236	182	77%	20	8%	86%	12	5%	8	3%	14	6%	0	0%	236
3	Hlaingtharyar	434	402	93%	2	0%	93%	12	3%	5	1%	9	2%	4	1%	434
4	Insein	275	245	89%	7	3%	92%	12	4%	7	3%	4	1%	0	0%	275
5	Taikkyi	172	137	80%	11	6%	86%	7	4%	17	10%	0	0%	0	0%	172
6	Htantabin	64	62	97%	0	0%	97%	1	2%	1	2%	0	0%	0	0%	64
7	Hmaw bi	133	112	84%	10	8%	92%	3	2%	4	3%	1	1%	3	2%	133
8	Hlegu	72	70	97%	0	0%	97%	1	1%	0	0%	1	1%	0	0%	72
	U.T.I	7	7	100%	0	0%	100%	0	0%	0	0%	0	0%	0	0%	7
	NTP (Diagnostic)	5	5	100%	0	0%	100%	0	0%	0	0%	0	0%	0	0%	5
<b>Total</b>		<b>1692</b>	<b>1479</b>	<b>87%</b>	<b>52</b>	<b>3%</b>	<b>90%</b>	<b>57</b>	<b>3%</b>	<b>60</b>	<b>4%</b>	<b>33</b>	<b>2%</b>	<b>11</b>	<b>1%</b>	<b>1692</b>
<b>Yangon Region</b>		<b>5348</b>	<b>4518</b>	<b>84%</b>	<b>200</b>	<b>4%</b>	<b>88%</b>	<b>194</b>	<b>4%</b>	<b>212</b>	<b>4%</b>	<b>161</b>	<b>3%</b>	<b>63</b>	<b>1%</b>	<b>5348</b>

## Annex -10(township list)

Sr. No.	Townships	Reg. Pts.	Cured		Completed		TSR	Died		Failure		Defaulted		Transferred out		Total eva. Pts.
			No	CR	No	Rate		No	Rate	No	Rate	No	Rate	No	Rate	
<b>Ayeyarwaddy Region</b>																
1	Pathein	352	238	68%	67	19%	87%	9	3%	7	2%	22	6%	9	3%	352
2	Kanyidaung	70	58	83%	7	10%	93%	2	3%	0	0%	3	4%	0	0%	70
3	Yekyi	154	95	62%	48	31%	93%	1	1%	0	0%	10	6%	0	0%	154
4	Kyaunggon	176	137	78%	24	14%	91%	7	4%	2	1%	5	3%	1	1%	176
5	Kyonpyaw	128	83	65%	40	31%	96%	4	3%	1	1%	0	0%	0	0%	128
6	Ngaputaw	200	148	74%	31	16%	90%	11	6%	4	2%	6	3%	0	0%	200
7	Thabaung	97	68	70%	14	14%	85%	6	6%	3	3%	6	6%	0	0%	97
8	Hinhada	395	346	88%	18	5%	92%	11	3%	3	1%	9	2%	8	2%	395
9	Kyankin	88	74	84%	5	6%	90%	4	5%	1	1%	4	5%	0	0%	88
10	Myanaung	108	76	70%	19	18%	88%	4	4%	0	0%	9	8%	0	0%	108
11	Ingapu	178	134	75%	15	8%	84%	10	6%	6	3%	8	4%	5	3%	178
12	Zalun	82	38	46%	20	24%	71%	5	6%	2	2%	17	21%	0	0%	82
13	Laymthethna	90	71	79%	9	10%	89%	5	6%	4	4%	1	1%	0	0%	90
14	Myaungmya	242	170	70%	21	9%	79%	9	4%	8	3%	33	14%	1	0%	242
15	Laputta	249	174	70%	33	13%	83%	22	9%	6	2%	14	6%	0	0%	249
16	Mawgyun	157	134	85%	2	1%	87%	15	10%	1	1%	3	2%	2	1%	157
17	Wakema	129	83	64%	33	26%	90%	2	2%	5	4%	6	5%	0	0%	129
18	Einme	156	114	73%	16	10%	83%	10	6%	2	1%	13	8%	1	1%	156
19	Pyapon	198	155	78%	5	3%	81%	13	7%	1	1%	21	11%	3	2%	198
20	Bogalay	247	186	75%	16	6%	82%	18	7%	12	5%	13	5%	2	1%	247
21	Dedaye	56	26	46%	23	41%	88%	4	7%	1	2%	2	4%	0	0%	56
22	Kyaiklatt	106	62	58%	34	32%	91%	3	3%	3	3%	4	4%	0	0%	106
23	Maubin	241	158	66%	49	20%	86%	14	6%	6	2%	14	6%	0	0%	241
24	Nyaungdon	159	149	94%	0	0%	94%	9	6%	0	0%	1	1%	0	0%	159
25	Pantanaw	161	96	60%	43	27%	86%	9	6%	6	4%	7	4%	0	0%	161
26	Danuphyu	119	109	92%	2	2%	93%	6	5%	0	0%	2	2%	0	0%	119
<b>Total</b>		<b>4338</b>	<b>3182</b>	<b>73%</b>	<b>594</b>	<b>14%</b>	<b>87%</b>	<b>213</b>	<b>5%</b>	<b>84</b>	<b>2%</b>	<b>233</b>	<b>5%</b>	<b>32</b>	<b>1%</b>	<b>4338</b>
<b>Naypyitaw council</b>																
1	Oaktaratheri	34	25	74%	6	18%	91%	3	9%	0	0%	0	0%	0	0%	34
2	Dekhinatheri	16	12	75%	2	13%	88%	1	6%	0	0%	1	6%	0	0%	16
3	Poatpatheri	54	37	69%	7	13%	81%	3	6%	1	2%	3	6%	3	6%	54
4	Zamutheri	42	27	64%	7	17%	81%	1	2%	2	5%	2	5%	3	7%	42
5	Zayyartheri	124	84	68%	13	10%	78%	9	7%	7	6%	4	3%	7	6%	124
6	Pyinmana	176	139	79%	7	4%	83%	9	5%	18	10%	3	2%	0	0%	176
7	Tatkone	129	102	79%	10	8%	87%	9	7%	7	5%	1	1%	0	0%	129
8	Lew ei	168	138	82%	19	11%	93%	8	5%	1	1%	0	0%	2	1%	168
<b>Total</b>		<b>743</b>	<b>564</b>	<b>76%</b>	<b>71</b>	<b>10%</b>	<b>85%</b>	<b>43</b>	<b>6%</b>	<b>36</b>	<b>5%</b>	<b>14</b>	<b>2%</b>	<b>15</b>	<b>2%</b>	<b>743</b>

**NATIONAL TUBERCULOSIS PROGRAMME  
TREATMENT OUTCOME OF SMEAR NEGATIVE TB PATIENTS (2012 COHORT)**

2013 Annual

Annex- 11

Sr.No.	Region/State & Other Units	SMEAR NEGATIVE TB PATIENTS											
		Total No.	Completed		Died		Failure		Defaulted		Transfer		Total
		Reg. pts.	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	
1	Kachin State	1300	1089	84%	83	6%	22	2%	84	6%	22	2%	
2	Kayah State	191	155	81%	17	9%	1	1%	12	6%	6	3%	1300
3	Chin State	247	207	84%	17	7%	0	0%	19	8%	4	2%	191
4	Sagaing Region	1681	1415	84%	169	10%	7	0%	81	5%	9	1%	247
5	Magway Region	1818	1570	86%	146	8%	11	1%	78	4%	13	1%	1681
6	Mandalay Region	2408	1968	82%	271	11%	23	1%	113	5%	33	1%	1818
7	Shan State (Taunggyi)	661	550	83%	54	8%	6	1%	42	6%	9	1%	2408
8	Shan State (Kengtong)	469	417	89%	22	5%	1	0%	29	6%	0	0%	661
9	Shan State (Lashio)	1113	858	77%	62	6%	7	1%	163	15%	23	2%	469
10	Kayin State	1356	1128	83%	50	4%	0	0%	130	10%	48	4%	1113
11	Tanintharyi Region	1410	1150	82%	69	5%	5	0%	170	12%	16	1%	1356
12	Bago Region	3481	3023	87%	201	6%	16	0%	203	6%	38	1%	1410
13	Mon State	2117	1862	88%	109	5%	6	0%	116	5%	24	1%	3481
14	Rakhine State	1296	1116	86%	69	5%	6	0%	95	7%	10	1%	2117
15	Yangon Region	7203	6493	90%	270	4%	52	1%	287	4%	101	1%	1296
16	Ayeyarwaddy Region	4198	3483	83%	259	6%	8	0%	369	9%	79	2%	7203
17	Naypyitaw council area	408	317	78%	46	11%	6	1%	26	6%	13	3%	4198
18	Other Units	9972	8188	82%	611	6%	114	1%	776	8%	283	3%	408
	Country	41329	34989	85%	2525	6%	291	1%	2793	7%	731	2%	9972

**NATIONAL TUBERCULOSIS PROGRAMME  
TREATMENT OUTCOME OF RELAPSES (2012 COHORT)**

Annual 2013

Annex - 12

Sr.No.	Region/State & Other 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	Kachin State	106	65	61%	13	12%	9	8%	11	10%	5	5%	3	3%	106
2	Kayah State	5	2	40%	0	0%	1	20%	0	0%	0	0%	2	40%	5
3	Chin State	6	5	83%	0	0%	0	0%	0	0%	0	0%	1	17%	6
4	Sagaing Region	196	130	66%	22	11%	16	8%	18	9%	6	3%	4	2%	196
5	Magway Region	139	93	67%	17	12%	13	9%	7	5%	9	6%	0	0%	139
6	Mandalay Region	317	210	0%	30	0%	32	0%	28	0%	10	0%	7	0%	317
7	Shan State (Taunggyi)	61	40	66%	12	20%	6	10%	1	2%	2	3%	0	0%	61
8	Shan State (Kengtong)	61	36	59%	12	20%	2	3%	3	5%	6	10%	2	3%	61
9	Shan State (Lashio)	115	68	59%	21	18%	8	7%	6	5%	12	10%	0	0%	115
10	Kayin State	83	52	63%	6	7%	10	12%	1	1%	9	11%	5	6%	83
11	Tanintharyi Region	79	38	48%	13	16%	10	13%	3	4%	12	15%	3	4%	79
12	Bago Region	340	205	60%	48	14%	43	13%	20	6%	17	5%	7	2%	340
13	Mon State	150	92	61%	18	12%	17	11%	13	9%	6	4%	4	3%	150
14	Rakhine State	115	59	51%	25	22%	8	7%	2	2%	17	15%	4	3%	115
15	Yangon Region	1230	804	65%	73	6%	138	11%	119	10%	72	6%	24	2%	1230
16	Ayeyarwaddy Region	317	187	59%	48	15%	37	12%	18	6%	24	8%	3	1%	317
17	Naypyitaw council area	51	36	71%	4	8%	4	8%	3	6%	1	2%	3	6%	51
18	Other Units	1169	668	57%	154	13%	117	10%	95	8%	70	6%	65	6%	1169
	<b>Country</b>	<b>4540</b>	<b>2790</b>	<b>61%</b>	<b>516</b>	<b>11%</b>	<b>471</b>	<b>10%</b>	<b>348</b>	<b>8%</b>	<b>278</b>	<b>6%</b>	<b>137</b>	<b>3%</b>	<b>4540</b>



**NATIONAL TUBERCULOSIS PROGRAMME  
TREATMENT OUTCOME OF TREATMENT AFTER DEFAULT (2012 COHORT)**

Annual 2013

Annex- 13

Sr.No.	Region/State & Other Units	TOTAL	TREATMENT AFTER DEFAULT														
			Cured		Completed		Died		Failure		Defaulted		Transfer		Total		
			No.	CR	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate			
1	Kachin State	20	11	55%	0	0%	2	10%	3	15%	4	20%	0	0%	0	0%	20
2	Kayah State	5	2	40%	2	40%	0	0%	0	0%	1	20%	0	0%	0	0%	5
3	Chin State	0	0														0
4	Sagaing Region	20	6	30%	7	35%	4	20%	1	5%	2	10%	0	0%	0	0%	20
5	Magway Region	20	9	45%	4	20%	3	15%	2	10%	2	10%	0	0%	0	0%	20
6	Mandalay Region	29	15	52%	4	14%	3	10%	2	7%	3	10%	2	7%	2	7%	29
7	Shan State (Taunggyi)	20	9	45%	5	25%	3	15%	2	10%	1	5%	0	0%	0	0%	20
8	Shan State (Kengtong)	14	5	36%	4	29%	2	14%	0	0%	3	21%	0	0%	0	0%	14
9	Shan State (Lashio)	24	7	29%	9	38%	3	13%	0	0%	5	21%	0	0%	0	0%	24
10	Kayin State	8	4	50%	2	25%	1	13%	0	0%	0	0%	1	13%	0	0%	8
11	Tanintharyi Region	23	9	39%	7	30%	3	13%	0	0%	4	17%	0	0%	0	0%	23
12	Bago Region	39	21	54%	10	26%	5	13%	0	0%	2	5%	1	3%	1	3%	39
13	Mon State	7	5	71%	1	14%	0	0%	0	0%	1	14%	0	0%	0	0%	7
14	Rakhine State	16	3	19%	4	25%	3	19%	0	0%	6	38%	0	0%	0	0%	16
15	Yangon Region	120	70	58%	13	11%	10	8%	11	9%	11	9%	5	4%	5	4%	120
16	Ayeyarwaddy Region	35	18	51%	10	29%	3	9%	0	0%	4	11%	0	0%	0	0%	35
17	Naypyitaw council area	10	6	60%	1	10%	2	20%	0	0%	0	0%	1	10%	1	10%	10
18	Other Unit	104	36	35%	18	17%	18	17%	10	10%	14	13%	8	8%	8	8%	104
	<b>country</b>	<b>514</b>	<b>236</b>	<b>46%</b>	<b>101</b>	<b>20%</b>	<b>65</b>	<b>13%</b>	<b>31</b>	<b>6%</b>	<b>63</b>	<b>12%</b>	<b>18</b>	<b>4%</b>	<b>18</b>	<b>4%</b>	<b>514</b>

**NATIONAL TUBERCULOSIS PROGRAMME  
TREATMENT OUTCOME OF TREATMENT AFTER FAILURE (2012 COHORT)**

Annual 2013

Annex - 14

Sr.No.	Region/State & Other Units	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	56	28	50%	4	7%	5	9%	10	18%	7	13%	2	4%	56
2	Kayah State	1	1	100%	0	0%	0	0%	0	0%	0	0%	0	0%	1
3	Chin State	5	3	60%	1	20%	0	0%	1	20%	0	0%	0	0%	5
4	Sagaing Region	70	35	50%	7	10%	11	16%	9	13%	7	10%	1	1%	70
5	Magway Region	71	46	65%	3	4%	4	6%	11	15%	6	8%	1	1%	71
6	Mandalay Region	159	98	62%	11	7%	9	6%	27	17%	13	8%	1	1%	159
7	Shan State (Taunggyi)	39	23	59%	5	13%	3	8%	4	10%	2	5%	2	5%	39
8	Shan State (Kyengtong)	33	11	33%	7	21%	2	6%	4	12%	9	27%	0	0%	33
9	Shan State (Lashio)	44	27	61%	3	7%	3	7%	3	7%	8	18%	0	0%	44
10	Kayin State	20	6	30%	4	20%	4	20%	0	0%	5	25%	1	5%	20
11	Tanintharyi Region	40	17	43%	5	13%	1	3%	10	25%	6	15%	1	3%	40
12	Bago Region	97	50	52%	6	6%	14	14%	10	10%	7	7%	10	10%	97
13	Mon State	71	40	56%	7	10%	4	6%	11	15%	9	13%	0	0%	71
14	Rakhine State	70	37	53%	12	17%	2	3%	12	17%	7	10%	0	0%	70
15	Yangon Region	313	120	38%	21	7%	39	12%	101	32%	21	7%	11	4%	313
16	Ayeyarwaddy Region	79	41	52%	6	8%	7	9%	11	14%	10	13%	4	5%	79
17	Naypyitaw council area	44	29	66%	0	0%	5	11%	7	16%	1	2%	2	5%	44
18	Other Units	472	202	43%	60	13%	55	12%	71	15%	57	12%	27	6%	472
	<b>Country</b>	<b>1684</b>	<b>814</b>	<b>48%</b>	<b>162</b>	<b>10%</b>	<b>168</b>	<b>10%</b>	<b>302</b>	<b>18%</b>	<b>175</b>	<b>10%</b>	<b>63</b>	<b>4%</b>	<b>1684</b>

**NATIONAL TUBERCULOSIS PROGRAMME  
TREATMENT OUTCOME OF OTHER CASES (2012 COHORT)**

Annual 2013

Sr.No.	Region/State & Other Units	Total	OTHER CASES											
			Cured		Died		Failure		Defaulted		Transfer out		Total	
			No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate		
1	Kachin State	270	52	19%	22	8%	7	3%	19	7%	5	2%	270	
2	Kayah State	59	10	17%	5	8%	0	0%	3	5%	4	7%	59	
3	Chin State	19	0	0%	3	16%	1	5%	1	5%	0	0%	19	
4	Sagaing Region	175	18	10%	23	13%	0	0%	9	5%	1	1%	175	
5	Magway Region	208	9	4%	39	19%	4	2%	8	4%	1	0%	208	
6	Mandalay Region	407	12	3%	50	12%	1	0%	23	6%	3	1%	407	
7	Shan State (Taunggyi)	80	3	4%	7	9%	3	4%	8	10%	6	8%	80	
8	Shan State (Kengtong)	54	35	65%	3	6%	5	9%	1	2%	0	0%	54	
9	Shan State (Lashio)	136	30	22%	9	7%	1	1%	21	15%	5	4%	136	
10	Kayin State	23	1	4%	3	13%	0	0%	3	13%	1	4%	23	
11	Tanintharyi Region	85	9	11%	8	9%	0	0%	15	18%	2	2%	85	
12	Bago Region	343	33	10%	47	14%	4	1%	23	7%	4	1%	343	
13	Mon State	38	0	0%	6	16%	0	0%	3	8%	0	0%	38	
14	Rakhine State	123	11	9%	10	8%	0	0%	7	6%	0	0%	123	
15	Yangon Region	1092	54	5%	97	9%	20	2%	81	7%	28	3%	1092	
16	Ayeyarwaddy Region	301	3	1%	28	9%	0	0%	35	12%	2	1%	301	
17	Naypyitaw council area	68	9	13%	8	12%	1	1%	2	3%	3	4%	68	
18	Other	1206	8	1%	255	21%	36	3%	145	12%	64	5%	1206	
	<b>Country</b>	<b>4687</b>	<b>297</b>	<b>6%</b>	<b>623</b>	<b>13%</b>	<b>83</b>	<b>2%</b>	<b>407</b>	<b>9%</b>	<b>129</b>	<b>3%</b>	<b>4687</b>	

**NATIONAL TUBERCULOSIS PROGRAMME  
TREATMENT OUTCOME OF PRIMARY COMPLEX AND TB MENINGITIS (2012 COHORT)**

Annual 2013

Sr.No.	Region/State & Other units	PRIMARY COMPLEX										TB MENINGITIS					
		Total No. Reg. pts.	Completed		Died	Defaulted		Transfer out	Total	Total No. Reg. pts.	Completed	Died	Defaulted	Transfer	Total		
			No	Rate		No	Rate									No	Completed
1	Kachin State	1178	1123	95%	1	37	3%	17	1178	13	10	1	1	13			
2	Kayah State	305	301	99%	0	1	0%	3	305	0	0	0	0	0			
3	Chin State	385	373	97%	2	6	2%	4	385	2	2	0	0	2			
4	Sagaing Region	2660	2617	98%	14	27	1%	2	2660	22	17	3	0	22			
5	Magway Region	1047	1004	96%	9	32	3%	2	1047	33	30	2	0	33			
6	Mandalay Region	992	952	96%	10	26	3%	4	992	43	32	8	3	43			
7	Shan State (Taunggyi)	626	602	96%	3	18	3%	3	626	12	7	2	3	12			
8	Shan State (Kengtong)	542	510	94%	2	29	5%	1	542	8	8	0	0	8			
9	Shan State (Lashio)	657	579	88%	3	63	10%	12	657	30	23	3	4	30			
10	Kayn State	1003	907	90%	5	59	6%	32	1003	11	5	4	1	11			
11	Tanintharyi Region	1975	1837	93%	6	128	6%	4	1975	10	8	0	2	10			
12	Bago Region	3854	3720	97%	25	98	3%	11	3854	57	47	5	5	57			
13	Mon State	2173	2091	96%	6	74	3%	2	2173	9	7	1	1	9			
14	Rakhine State	750	682	91%	7	47	6%	14	750	12	9	1	2	12			
15	Yangon Region	2472	2409	97%	9	39	2%	15	2472	114	98	8	6	114			
16	Ayeyarwaddy Region	2669	2562	96%	13	79	3%	15	2669	15	9	4	1	15			
17	Naypyitaw council area	122	112	92%	0	8	7%	2	122	7	5	2	0	7			
18	Other Units	7955	7624	96%	47	197	2%	87	7955	32	28	1	3	32			
	<b>Country</b>	<b>31365</b>	<b>30005</b>	<b>96%</b>	<b>162</b>	<b>968</b>	<b>3%</b>	<b>230</b>	<b>31365</b>	<b>430</b>	<b>345</b>	<b>45</b>	<b>32</b>	<b>430</b>			

**NATIONAL TUBERCULOSIS PROGRAMME  
TREATMENT OUTCOME OF HILAR LYMPHADENOPATHY TB PATIENTS (2012 COHORT)**

Annual 2013

Sr.No.	Region/State & Other Units	HILAR LYMPHADENOPATHY TB PATIENTS												
		Total No Reg. pts.	Completed		Died		Failure		Defaulted		Transfer		Total	
		No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	
1	Kachin State	1054	97%	2	0%	0	0%	24	2%	9	1%	1054		
2	Kayah State	6	100%	0	0%	0	0%	0	0%	0	0%	6		
3	Chin State	34	88%	2	6%	0	0%	2	6%	0	0%	34		
4	Sagaing Region	310	98%	0	0%	0	0%	4	1%	1	0%	310		
5	Magway Region	689	97%	1	0%	0	0%	16	2%	4	1%	689		
6	Mandalay Retion	1285	97%	4	0%	0	0%	21	2%	12	1%	1285		
7	Shan State (Taunggyi)	304	95%	0	0%	2	1%	9	3%	3	1%	304		
8	Shan State (Kengtong)	16	100%	0	0%	0	0%	0	0%	0	0%	16		
9	Shan State (Lashio)	217	89%	2	1%	0	0%	20	9%	1	0%	217		
10	Kayh State	49	94%	0	0%	0	0%	2	4%	1	2%	49		
11	Tanintharyi Region	341	92%	0	0%	0	0%	26	8%	1	0%	341		
12	Bago Region	209	93%	3	1%	0	0%	9	4%	3	1%	209		
14	Mon State	253	95%	0	0%	0	0%	11	4%	2	1%	253		
15	Rakhine State	242	96%	0	0%	0	0%	10	4%	0	0%	242		
16	Yangon Region	238	98%	1	0%	0	0%	3	1%	0	0%	238		
17	Ayeyarwaddy Region	965	92%	5	1%	5	1%	24	2%	40	4%	965		
18	Naypyitaw council area	157	95%	0	0%	0	0%	4	3%	4	3%	157		
19	Other Units	2536	97%	2	0%	0	0%	64	3%	12	0%	2536		
	<b>Country</b>	<b>8905</b>	<b>96%</b>	<b>22</b>	<b>0%</b>	<b>7</b>	<b>0%</b>	<b>249</b>	<b>3%</b>	<b>93</b>	<b>1%</b>	<b>8905</b>		

**NATIONAL TUBERCULOSIS PROGRAMME  
TREATMENT OUTCOME OF EP<15 TB PATIENTS (2012 COHORT)**

Annual 2013

Sr.No.	Region/State & Other Units	EP < 15													
		Total No. Reg. pts.		Completed		Died		Failure		Defaulted		Transfer		Total	
		No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
1	Kachin State	1092	96%	1052	0%	3	0%	0	0%	26	2%	11	1%	1092	
2	Kayah State	29	83%	24	14%	4	0%	0	0%	0	0%	1	3%	29	
3	Chin State	146	95%	138	1%	2	0%	0	0%	1	1%	5	3%	146	
4	Sagaing Region	230	94%	217	2%	4	0%	0	0%	8	3%	1	0%	230	
5	Magway Region	240	95%	229	2%	5	0%	0	0%	5	2%	1	0%	240	
6	Mandalay Region	1895	96%	1826	1%	16	0%	0	0%	28	1%	25	1%	1895	
7	Shan State (Taunggyi)	220	95%	209	0%	1	0%	0	0%	9	4%	1	0%	220	
8	Shan State (Kengtung)	81	81%	66	6%	5	0%	0	0%	8	10%	2	2%	81	
9	Shan State (Lashio)	621	90%	561	1%	6	0%	1	0%	48	8%	5	1%	621	
10	Kayin State	12	92%	11	0%	0	0%	1	8%	0	0%	0	0%	12	
11	Tanintharyi Region	576	89%	512	2%	14	0%	0	0%	45	8%	5	1%	576	
12	Bago Region	157	95%	149	3%	4	0%	0	0%	3	2%	1	1%	157	
13	Mon State	15	93%	14	0%	0	0%	0	0%	0	0%	1	7%	15	
14	Rakhine State	117	87%	102	3%	3	0%	0	0%	11	9%	1	1%	117	
15	Yangon Region	373	94%	351	1%	5	0%	0	0%	14	4%	3	1%	373	
16	Ayeyarwaddy Region	142	91%	129	4%	5	0%	0	0%	8	6%	0	0%	142	
17	Naypyitaw council area	181	96%	173	2%	4	0%	0	0%	1	0%	3	0%	181	
18	Other Units	418	76%	319	9%	39	0%	2	0%	28	7%	30	7%	418	
	<b>Country</b>	<b>6545</b>	<b>93%</b>	<b>6082</b>	<b>2%</b>	<b>120</b>	<b>0%</b>	<b>4</b>	<b>0%</b>	<b>243</b>	<b>4%</b>	<b>96</b>	<b>1%</b>	<b>6545</b>	

**NATIONAL TUBERCULOSIS PROGRAMME  
TREATMENT OUTCOME OF EP>15 TB PATIENTS (2012 COHORT)**

Annual 2013

Sr.No.	Region/State & Other Units	Total No.		Completed		Died		Failure		Defaulted		Transfer		Total
		Reg. pts.		No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	
EP > 15														
1	Kachin State	199		166	83%	17	9%	0	0%	14	7%	2	1%	199
2	Kayah State	21		16	76%	1	5%	0	0%	3	14%	1	5%	21
3	Chin State	25		22	88%	2	8%	0	0%	0	0%	1	4%	25
4	Sagaing Region	424		377	89%	35	8%	0	0%	10	2%	2	0%	424
5	Magway Region	593		525	89%	44	7%	0	0%	23	4%	1	0%	593
6	Mandalay Region	948		826	87%	84	9%	4	0%	21	2%	13	1%	948
7	Shan State (Taunggyi)	257		226	88%	16	6%	0	0%	11	4%	4	2%	257
8	Shan State (Kengtong)	0		0		0		0		0		0		0
9	Shan State (Lashio)	0		0		0		0		0		0		0
10	Kayin State	72		61	85%	4	6%	0	0%	6	8%	1	1%	72
11	Tanintharyi Region	0		0		0		0		0		0		0
12	Bago Region	447		413	92%	15	3%	0	0%	13	3%	6	1%	447
13	Mon State	187		167	89%	6	3%	0	0%	11	6%	3	2%	187
14	Rakhine State	233		190	82%	18	8%	0	0%	24	10%	1	0%	233
15	Yangon Region	1253		1174	94%	25	2%	4	0%	28	2%	22	2%	1253
16	Ayeyarwaddy Region	696		590	85%	45	6%	3	0%	43	6%	15	2%	696
17	Naypyitaw council area	158		137	87%	13	8%	1	1%	5	3%	2	1%	158
18	Other Units	1785		1346	75%	204	11%	33	2%	153	9%	49	3%	1785
	<b>Country</b>	<b>7298</b>		<b>6236</b>	<b>85%</b>	<b>529</b>	<b>7%</b>	<b>45</b>	<b>1%</b>	<b>365</b>	<b>5%</b>	<b>123</b>	<b>2%</b>	<b>7298</b>

Case Finding Activities

Block 1

Annual 2013

Annex-20

Sr.No	Other Units	PULMONARY TUBERCULOSIS																Total	Smear Negative		Total	Primary complex		Extra Pulmonary TB		Other		Total	
		SMEAR POSITIVE						Old Cases				Total		Relapses		T after Default			T after failu			M	F	TOTAL					
		New Cases		M		F		M		F		M		F		M			F						M	F	TOTAL		
		M	F	T	M	F	M	F	M	F	M	F	M	F	M	F	M		F	M		F	M	F				TOTAL	
1	Aung San Hbs.	29	16	45	34	28	9	0	34	23	173	21	17	38	0	1	3	6	9	10	139	98	237						
2	Patheingyi Hos.	12	1	13	8	3	0	0	0	0	24	6	1	7	2	0	3	0	3	0	31	6	37						
3	East YGH	10	3	13	4	0	0	0	1	0	18	9	5	14	30	38	12	8	20	1	67	54	121						
4	Mingalarlon Hbs.	89	53	142	27	7	1	1	0	2	180	220	115	335	57	47	262	188	450	162	818	472	1290						
5	No.1MBH (Pyin Oo Lwin)	37	0	37	12	0	0	0	0	0	49	96	10	106	18	12	36	13	49	16	3	215	38	253					
6	No.1000 bedded hospital (Naypyitaw)	61	16	77	3	1	2	0	1	1	85	54	39	93	55	37	14	16	30	1	2	191	112	303					
7	MSF-H (Ygn)	490	278	768	40	25	13	1	43	19	909	512	314	826	57	35	250	133	383	150	73	1555	878	2433					
8	MSF-H (Kachin)	147	62	209	22	3	4	1	22	8	269	384	196	580	2	3	87	62	149	91	33	759	368	1127					
9	PSI	4693	2441	7134	504	199	10	4	121	58	8030	4323	3079	7402	2485	1955	905	865	1770	114	68	13155	8669	21824					
10	MSF-H (Shan-north)	64	24	88	10	1	3	1	7	3	113	87	28	115	1	1	15	7	22	15	8	202	73	275					
11	MSF-H (Rakthine)	35	18	53	0	2	2	3	0	1	61	16	13	29	0	4	6	5	11	14	6	73	52	125					
12	MSF-CH (Dawei)	47	21	68	10	1	4	0	3	0	86	26	19	45	1	1	34	20	54	10	4	135	66	201					
13	MMA	682	377	1059	55	27	8	2	12	13	1176	549	353	902	359	231	147	115	262	27	18	1839	1136	2975					
14	AHRN (Shan North) Laukkai, Lashio	80	26	106	9	3	6	0	24	8	156	44	24	68	3	0	15	7	22	13	7	194	75	269					
15	Thingangyun Sanpya Hos.	4	3	7	2	0	0	0	0	0	12	17	10	27	0	1	14	9	23	11	6	48	32	80					
16	Central Jail Mandalay	36	6	42	10	1	0	0	0	1	54	52	3	55	0	0	15	2	17	12	2	126	14	140					
17	Medecins du monde	4	0	4	1	0	0	0	0	0	5	27	10	37	0	0	43	6	49	15	1	90	17	107					
18	New YGH	21	8	29	1	1	0	0	0	0	31	15	19	34	0	0	16	16	32	4	0	57	44	101					
19	West YGH	12	6	18	8	2	4	1	0	0	33	13	19	32	11	7	4	9	13	0	0	52	44	96					
20	Tharketa HV hospital	30	15	45	12	4	4	5	7	0	77	113	65	178	6	10	172	83	255	91	41	435	223	658					
21	Insein general hospital	1	1	2	2	0	0	1	0	0	5	11	8	19	1	1	3	4	7	1	0	19	15	34					
22	Hamiabin TB hospital	2	9	11	10	4	0	1	0	0	26	14	20	34	0	0	2	12	14	6	0	34	46	80					
23	Patheingyi General Hospital	24	20	44	1	1	1	1	1	0	49	52	32	84	48	20	40	44	84	6	5	173	123	296					
24	No(1) MBH (Mendalay Nantw'in)	3	0	3	0	0	0	0	0	0	3	23	5	28	6	6	3	1	4	0	0	35	12	47					
25	300 bedded teaching hospital (Mby)	23	9	32	1	0	0	0	0	0	33	17	9	26	0	1	59	36	95	0	1	100	56	156					
26	North Okkalapa General Hospital	20	8	28	4	2	0	0	0	0	34	71	36	107	8	15	8	23	17	1	135	63	198						
27	MSF-CH (Insein Phislon)	22	4	26	5	1	0	0	0	0	32	90	7	97	0	8	5	5	10	9	2	131	27	158					
28	AHRN (Kachin state) WM, PK, BM	34	9	43	5	2	1	1	4	0	56	68	8	76	0	1	56	8	64	14	1	182	30	212					
29	550 bedded child hospital (Mby)	0	0	0	0	0	0	0	0	0	0	0	0	0	7	3	5	4	9	0	0	12	7	19					
30	Hpa-an general hospital	34	32	66	0	0	0	0	0	0	66	60	26	86	133	78	27	19	46	0	0	254	155	409					
31	Myeik general hospital	17	3	20	4	0	0	0	0	0	24	32	22	54	0	4	0	4	0	4	5	62	28	90					
32	Maw lam yone general hospital	8	4	12	3	0	0	0	0	0	15	8	4	12	0	2	7	1	8	0	0	26	11	37					
33	Yangon Children Hospital	0	1	1	0	0	0	0	0	0	1	5	11	16	12	13	4	6	10	7	7	28	38	66					
34	Latha Dx Center	4	1	5	0	0	0	0	0	0	5	2	1	3	0	0	2	2	4	0	0	8	4	12					
<b>Total</b>		<b>6775</b>	<b>3475</b>	<b>10250</b>	<b>807</b>	<b>318</b>	<b>72</b>	<b>23</b>	<b>281</b>	<b>139</b>	<b>11890</b>	<b>7037</b>	<b>4528</b>	<b>11565</b>	<b>3302</b>	<b>2524</b>	<b>2285</b>	<b>1717</b>	<b>4002</b>	<b>821</b>	<b>362</b>	<b>21380</b>	<b>13086</b>	<b>34466</b>					



AGE DISTRIBUTION OF NEW SMEAR POSITIVE CASES

Block 2

Annual 2013

Sr.No	Other Unit	AGE GROUP ( YEAR )																		TOTAL		
		0-14		15-24		25-34		35-44		45-54		55-64		65 or more		M	F	T				
		M	F	M	F	M	F	M	F	M	F	M	F									
1	Aung San Hos:	0	0	2	4	10	4	4	1	1	1	5	5	7	1	29	16	45				
2	Patheingyi Hos:	0	0	2	0	4	0	0	0	0	1	3	0	3	0	12	1	13				
3	East YGH	0	0	2	2	3	0	3	1	2	0	0	0	0	10	3	13					
4	Mingalardon Hos:	0	0	3	7	33	24	34	18	15	4	3	0	1	0	89	53	142				
5	No.1MBH (FyinOolw in)	0	0	2	0	13	0	11	0	8	0	2	0	1	0	37	0	37				
6	1000 bedded hospital (Naypyitaw)	1	0	4	2	23	8	16	4	8	1	8	1	1	0	61	16	77				
7	MSF-H (Ygn)	2	4	43	35	175	100	160	74	72	35	29	22	9	8	490	278	768				
8	MSF-H (Kachin)	1	1	21	7	48	20	47	11	23	16	7	5	0	2	147	62	209				
9	PSI	35	44	572	446	1040	510	1028	424	972	423	661	333	385	261	4693	2441	7134				
10	MSF-H (Shan-north)	0	0	2	1	15	10	20	9	7	2	0	0	0	0	44	22	66				
11	MSF-H (Rakhine)	1	0	6	3	10	2	11	5	9	4	5	0	5	1	47	15	62				
12	MSF-CH (Dawei)	1	1	3	0	18	5	13	7	11	7	1	1	0	0	47	21	68				
13	MWA	2	3	89	87	146	74	139	62	149	55	101	48	56	48	682	377	1059				
14	A-HRN (Shan North) Laukkai, Lashio	0	1	14	10	31	3	21	5	17	5	13	2	4	2	100	28	128				
15	Thingangyun Sanpya Hos:	0	0	0	0	2	3	0	0	1	0	1	0	0	0	4	3	7				
16	Central Jail Mandalay	0	0	3	0	14	5	8	1	8	0	0	0	3	0	36	6	42				
17	Medecins du monde	0	0	1	0	2	0	1	0	0	0	0	0	0	0	4	0	4				
18	New YGH	0	0	1	2	7	2	6	0	3	1	1	2	3	1	21	8	29				
19	West YGH	0	0	3	1	0	2	3	1	4	2	0	0	1	1	11	7	18				
20	Tharketa HIV hospital	0	0	0	0	14	7	11	6	3	1	2	1	0	0	30	15	45				
21	Insein general hospital	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	2				
22	Htantabin TB hospital	0	0	0	0	1	6	0	0	1	2	0	1	0	0	2	9	11				
23	Patheingyi General Hospital	0	0	1	3	4	6	10	3	4	4	2	2	3	2	24	20	44				
24	No(1) MBH (Mandalay Nantwin)	0	0	0	0	1	0	2	0	0	0	0	0	0	0	3	0	3				
25	300 bedded teaching hospital (Mdy)	0	0	3	0	5	4	7	3	4	1	3	0	1	1	23	9	32				
26	North Okkalapa General Hospital	0	0	2	1	5	1	1	3	4	1	6	1	2	1	20	8	28				
27	MSF-CH (Insein Prison)	0	0	4	1	8	1	6	1	3	0	1	1	0	0	22	4	26				
28	A-HRN (Kachin state) WM, PK, BM	0	0	2	2	7	1	5	2	7	1	2	0	0	0	23	6	29				
29	550 bedded child hospital (Mdy)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
30	Hpa-an general hospital	0	2	5	1	4	3	8	9	4	4	3	7	10	6	34	32	66				
31	Myeik general hospital	2	0	1	0	6	0	3	0	2	1	2	1	1	1	17	3	20				
32	Mawlamyine general hospital	0	0	2	1	1	2	1	0	4	0	1	1	0	0	9	4	13				
33	Yangon Children Hospital	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1				
34	Latha Dx Center	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
	<b>Total</b>	<b>45</b>	<b>57</b>	<b>793</b>	<b>616</b>	<b>1651</b>	<b>804</b>	<b>1579</b>	<b>650</b>	<b>1346</b>	<b>572</b>	<b>862</b>	<b>434</b>	<b>496</b>	<b>336</b>	<b>6772</b>	<b>3469</b>	<b>10241</b>				

## Primary complex cases, Hilar and TB meningitis cases by age group Annual 2013

Sr.No	Other Units	PC and TBM & Hilar cases																							
		PC				All EP (including TBM & Hilar)				TBM				Hilar Lymphadenopathy											
		0-4		5-14		≥15		Total		0-4		5-14		≥15		Total		0-4		5-14		≥15		Total	
1	Aung San Hos:	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2	Pathreingyi Hos:	0	2	0	0	2	0	2	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	
3	East YGH	45	23	0	68	7	6	6	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4	Mingalardon Hos:	27	77	0	104	0	0	340	0	0	0	0	37	37	0	0	0	0	0	0	0	0	0	0	
5	No.1MBH (PyinOoLw in)	20	10	0	30	0	0	37	49	0	0	2	2	2	2	2	0	0	0	0	0	0	0	0	
6	1000 bedded hospital (Naypyitaw)	57	35	0	92	0	1	29	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7	MSF-H (Ygn)	31	50	11	92	15	18	350	383	0	1	15	16	16	0	0	0	0	0	0	0	0	0	0	
8	MSF-H (Kachin)	1	2	2	5	22	6	123	151	0	0	9	9	9	0	0	0	0	0	0	0	0	0	0	
9	PSI	1746	2685	9	4440	988	400	382	1770	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10	MSF-H (Shan-north)	0	1	1	2	1	1	20	22	0	0	2	2	2	0	0	0	0	0	0	0	0	0	0	
11	MSF-H (Rakhine)	0	0	0	0	2	3	11	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12	MSF-CH (Dawei)	1	1	0	2	1	1	59	61	0	0	2	2	2	0	0	0	0	0	0	0	0	0	0	
13	MMA	245	344	1	590	69	92	101	262	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	
14	AHRN (Shan North) Laukkai, Lashio	0	3	0	3	0	0	14	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
15	Thingangyun Sempya Hos:	1	0	0	1	1	0	22	23	1	0	3	4	4	0	0	0	0	0	0	0	0	0	0	
16	Central Jail Mandalay	0	0	0	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
17	Medecins du monde	0	0	0	0	0	0	1	44	45	0	0	1	1	1	0	0	0	0	0	0	0	0	0	
18	New YGH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
19	West YGH	11	7	0	18	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
20	Tharketa HIV hospital	9	7	0	16	2	4	249	255	0	0	24	24	24	0	0	0	0	0	0	0	0	0	0	
21	Insein general hospital	1	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
22	Htantabin TB hospital	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
23	Pathreingyi General Hospital	52	16	0	68	1	1	82	84	1	0	4	5	5	0	0	0	0	0	0	0	0	0	0	
24	No(1) MBH (Mandalay Nantw in)	6	6	0	12	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
25	300 bedded teaching hospital (Mdy)	0	1	0	1	44	23	28	95	0	2	3	5	5	0	0	0	0	0	0	0	0	0	0	
26	North Okkalapa General Hospital	8	8	0	16	0	1	22	23	0	0	4	4	4	0	0	0	0	0	0	0	0	0	0	
27	MSF-CH (Insein Pison)	8	0	0	8	0	0	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
28	AHRN (Kachin state) WM, PK, BM	1	0	0	1	1	6	36	43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
29	550 bedded child hospital (Mdy)	6	4	0	10	8	1	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
30	Hpa-an general hospital	122	90	0	212	8	20	7	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
31	Myeik general hospital	0	0	23	23	0	0	3	3	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	
32	Mawlamyine general hospital	0	2	3	5	0	0	8	8	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	
33	Yangon Children Hospital	1	41	0	42	0	24	0	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
34	Latha Dx Center	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	<b>Total</b>	<b>2399</b>	<b>3415</b>	<b>50</b>	<b>5864</b>	<b>1171</b>	<b>622</b>	<b>1998</b>	<b>3791</b>	<b>2</b>	<b>5</b>	<b>108</b>	<b>115</b>	<b>1109</b>	<b>497</b>	<b>93</b>	<b>1699</b>								

Sr.No	Other Units	Other Unit										Annual 2013					TOTAL
		CAT - 1					CAT - 2					CAT 3					
		Sputum Smear Positive	Smear severe form	Smear negative less severe form	severe form	EP less severe form	Total	Relapses	Treatment after Default	Treatment after Failure	Others	Total	(children) HRZ/HR	Total			
1	Aung San Hos:	45	29	10	6	0	90	62	9	57	19	147	0	0	237		
2	Patheingyi Hos:	13	6	0	1	3	23	11	0	0	1	12	2	2	37		
3	East YGH	13	5	48	4	16	86	6	0	1	1	8	27	27	121		
4	Mingalardon Hos:	142	382	50	450	0	1024	34	2	2	221	259	7	7	1290		
5	No.1MBH (PynOoLw in)	37	0	108	0	43	188	12	0	0	20	32	36	36	256		
6	1000 bedded hospital (Naypyitaw)	77	55	36	15	8	191	4	2	2	3	11	102	102	304		
7	MSF-H (Ygn)	768	614	225	263	106	1976	65	14	62	223	364	93	93	2433		
8	MSF-H (Kachin)	223	611	0	154	0	988	25	5	30	132	192	1	1	1181		
9	PSI	7195	1591	6624	90	405	15905	714	14	180	187	1095	5060	5060	22060		
10	MSF-H (Shan-north)	67	164	0	25	0	256	11	4	8	35	58	0	0	314		
11	MSF-H (Rakhine)	87	53	2	13	0	155	3	2	2	28	35	8	8	198		
12	MSF-CH (Daw ei)	68	10	37	16	38	169	11	4	3	14	32	0	0	201		
13	MWA	1061	786	140	48	77	2112	83	10	25	45	163	710	710	2985		
14	AHRN (Shan North) Laukkai, Lashio	128	20	12	8	13	181	12	6	34	8	60	0	0	241		
15	Thingangyun Sanpya Hos:	7	23	4	18	5	57	2	0	3	17	22	1	1	80		
16	Central Jail Mandalay	48	60	2	11	7	128	13	0	1	14	28	0	0	156		
17	Medecins du monde	5	38	0	49	0	92	1	0	0	15	16	0	0	108		
18	New YGH	29	25	9	22	10	95	2	0	0	4	6	0	0	101		
19	West YGH	18	28	20	11	2	79	10	5	0	0	15	11	11	105		
20	Tharketa HIV hospital	60	175	47	184	85	551	19	9	7	139	174	5	5	730		
21	Insein general hospital	2	18	1	6	1	28	2	0	0	1	4	2	2	34		
22	Htantabin TB hospital	11	32	1	11	1	56	14	1	0	6	21	3	3	80		
23	Patheingyi General Hospital	44	52	18	43	37	194	3	2	1	11	17	49	49	260		
24	No(1) MBH (Mandalay Nantw in)	3	19	10	2	0	34	0	0	0	0	0	14	14	48		
25	300 bedded teaching hospital (Mdy)	32	10	17	16	23	98	1	0	0	1	2	43	43	143		
26	North Okkalapa General Hospital	28	78	40	18	5	169	6	0	0	18	24	5	5	198		
27	MSF-CH (Insein Prison)	26	91	5	7	1	130	6	0	0	11	17	11	11	158		
28	AHRN (Kachin state) WM, PK, BM	31	16	47	7	40	141	5	2	3	12	22	0	0	163		
29	550 bedded child hospital (Mdy)	0	0	0	2	0	2	0	0	0	0	0	17	17	19		
30	Hpar-an general hospital	65	51	198	9	33	356	0	0	0	3	3	50	50	409		
31	Myeik general hospital	19	52	3	4	0	78	4	0	0	8	12	0	0	90		
32	Maw lam yone general hospital	12	12	0	8	0	32	3	1	0	1	5	0	0	37		
33	Yangon Children Hospital	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
34	Latha Dx Center	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
<b>Total</b>		<b>10364</b>	<b>5106</b>	<b>7714</b>	<b>1521</b>	<b>959</b>	<b>25664</b>	<b>1144</b>	<b>93</b>	<b>421</b>	<b>1198</b>	<b>2856</b>	<b>6257</b>	<b>6257</b>	<b>34777</b>		

Block \_ 4

Annual 2013

Sr.No	Other Unit	A				B				C				D		
		Number of suspects(Dx) examined by microscopy for case finding				Number of smear positive pts detected out of suspects (Dx)				Number of patients examined by microscopy for follow-up				Number of smear positive out of follow-up patients		
		NTP	MMA	PSI	PSI	NTP	MMA	PSI	PSI	NTP	MMA	PSI	PSI	NTP	MMA	PSI
1	Aung San Hos:	908	0	0	0	488	0	0	0	4103	0	0	0	425	0	0
2	Patheingyi Hos:	1133	1735	0	0	230	362	0	0	273	401	0	0	51	80	0
3	East YGH	999	0	0	0	138	0	0	0	102	0	0	0	9	0	0
4	Mingalardon Hos:	867	0	0	0	142	0	0	0	966	0	0	0	29	0	0
5	No.1MBH (PyinOoLw in)	811	0	0	0	79	0	0	0	82	0	0	0	23	0	0
6	1000 bedded hospital (Naypyitaw)	2256	0	0	0	315	0	0	0	663	0	0	0	38	0	0
7	MSF-H (Ygn)	11557	0	0	0	1578	0	0	0	6410	0	0	0	515	0	0
8	MSF-H (Kachin)	2684	0	0	0	203	0	0	0	2176	0	0	0	105	0	0
9	PSI	43785	0	29394	0	4352	0	3560	0	20483	0	15525	0	1137	0	1309
10	MSF-H (Shan-north)	1610	0	0	0	193	0	0	0	859	0	0	0	107	0	0
11	MSF-H (Rakhine)	2089	0	0	0	179	0	0	0	359	0	0	0	63	0	0
12	MSF-CH (Daw ei)	836	0	0	0	95	0	0	0	524	0	0	0	17	0	0
13	MMA	1267	4580	0	0	396	794	0	0	1423	3260	0	0	87	223	0
14	AHRN (Shan North) Laukkai, Lashio	1111	0	0	0	151	0	0	0	611	0	0	0	124	0	0
15	Thingangyun Sanpya Hos:	804	0	0	0	103	0	0	0	119	0	0	0	10	0	0
16	Central Jail Mandalay	574	0	0	0	54	0	0	0	284	0	0	0	13	0	0
17	Medecins du monde	211	0	0	0	19	0	0	0	52	0	0	0	1	0	0
18	New YGH	745	0	0	0	69	0	0	0	257	0	0	0	10	0	0
19	West YGH	652	0	0	0	76	0	0	0	148	0	0	0	15	0	0
20	Tharketa HIV hospital	675	0	0	0	4	0	0	0	282	0	0	0	2	0	0
21	Insein general hospital	1876	0	0	0	201	0	0	0	27	0	0	0	1	0	0
22	Hiantabin TB hospital	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	Pathein General Hospital	1224	753	0	0	156	93	0	0	438	201	0	0	20	10	0
24	No(1) MBH (Mandalay Nantw in)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	300 bedded teaching hospital (Mdy)	789	1268	0	0	76	106	0	0	246	352	0	0	16	28	0
26	North Okkalapa General Hospital	1378	0	0	0	151	0	0	0	311	0	0	0	14	0	0
27	MSF-CH (Insein Prison)	357	0	0	0	24	0	0	0	145	0	0	0	3	0	0
28	AHRN (Kachin state) WM, PK, BM	756	0	0	0	35	0	0	0	361	0	0	0	13	0	0
29	550 bedded child hospital (Mdy)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	Hpa-an general hospital	459	0	0	0	86	0	0	0	211	0	0	0	18	0	0
31	Myeik general hospital	212	0	0	0	19	0	0	0	45	0	0	0	5	0	0
32	Mawlamyine general hospital	554	0	0	0	70	0	0	0	48	0	0	0	1	0	0
33	Yangon Children Hospital	12	0	0	0	1	0	0	0	0	0	0	0	0	0	0
34	Latha Dx Center	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>		<b>83191</b>	<b>8336</b>	<b>29394</b>	<b>3560</b>	<b>9683</b>	<b>1355</b>	<b>3560</b>	<b>42008</b>	<b>4214</b>	<b>15525</b>	<b>2872</b>	<b>341</b>	<b>1309</b>		

NATIONAL TUBERCULOSIS PROGRAMME  
TREATMENT OUTCOME OF NEW SMEAR POSITIVE in (2012 cohort)

SN	Other Unit	TOTAL		Cured		Completed		TSR %		Died		Failure		Defaulted		Transfer		Total
		No	CR	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	
1	Aung San Hos:	52	33%	1	2%	35%	23%	8	15%	5	10%	9	17%	52				
2	Patheingyi Hos:	24	67%	3	13%	79%	4%	2	8%	2	8%	0	0%	24				
3	East YGH	12	75%	2	17%	92%	8%	0	0%	0	0%	0	0%	12				
4	Mingalardon Hos:	127	51%	4	3%	54%	32%	6	5%	2	2%	9	7%	127				
5	No.1MBH (PynOoLwin)	45	62%	2	4%	67%	4%	7	16%	1	2%	5	11%	45				
6	1000 bedded hospital (Naypyitaw)	75	83%	7	9%	92%	1%	1	1%	4	5%	0	0%	75				
7	MSF-H (Ygn)	644	62%	70	11%	73%	42	7%	43	7%	80	12%	10	2%	644			
8	MSF-H (Kachin)	266	57%	35	13%	70%	32	12%	19	7%	22	8%	6	2%	266			
9	PSI	7232	66%	1365	19%	84%	234	3%	259	4%	489	7%	145	2%	7232			
10	MSF-H (Shan-north)	72	58%	4	6%	64%	14	19%	5	7%	6	8%	1	1%	72			
11	MSF-H (Rakhine)	24	17%	6	25%	42%	0	0%	0	0%	14	58%	0	0%	24			
12	MSF-CH (Dawei)	273	81%	5	2%	83%	21	8%	14	5%	8	3%	4	1%	273			
13	MWA	864	707	82%	56	6%	37	4%	26	3%	30	3%	8	1%	864			
14	AHRN (Shan North) Laukkai, Lash	137	71	52%	12	9%	3	2%	29	21%	16	12%	6	4%	137			
15	Thingangyun Sanpya Hos:	13	9	69%	0	0%	1	8%	3	23%	0	0%	0	0%	13			
16	Central Jail Mandalay	33	27	82%	3	9%	0	0%	0	0%	0	0%	3	9%	33			
17	Medecins du monde	10	7	70%	3	30%	0	0%	0	0%	0	0%	0	0%	10			
18	New YGH	31	27	87%	0	0%	3	10%	0	0%	0	0%	1	3%	31			
19	West YGH	17	9	53%	5	29%	0	0%	1	6%	2	12%	0	0%	17			
20	Tharketa HIV hospital	40	24	60%	1	3%	5	13%	2	5%	6	15%	2	5%	40			
21	Insein general hospital	5	4	80%	0	0%	1	20%	0	0%	0	0%	0	0%	5			
22	Htantabin TB hospital	24	20	83%	2	8%	0	0%	0	0%	0	0%	2	8%	24			
23	Pathain General Hospital	46	27	59%	4	9%	6	13%	0	0%	9	20%	0	0%	46			
24	No(1) MBH (Mandalay Nantwin)	14	12	86%	2	14%	0	0%	0	0%	0	0%	0	0%	14			
25	300 bedded teaching hospital (Mdy)	30	20	67%	6	20%	2	7%	0	0%	1	3%	1	3%	30			
26	North Okkalapa General Hospital	37	22	59%	9	24%	0	0%	1	3%	0	0%	5	14%	37			
27	MSF-CH (Insein Prison)	15	10	67%	1	7%	1	7%	0	0%	0	0%	3	20%	15			
28	AHRN (Kachin state) WMI, FK, BM																	
29	550 bedded child hospital (Mdy)																	
30	Hpa-an general hospital																	
31	Myeik general hospital																	
32	Maw lamyne general hospital																	
33	Yangon Children Hospital																	
34	Latha Dx Center	4	3	75%	0	0%	0	0%	0	0%	0	0%	1	25%	4			
	<b>Total</b>	<b>10166</b>	<b>6754</b>	<b>66%</b>	<b>1608</b>	<b>16%</b>	<b>460</b>	<b>5%</b>	<b>426</b>	<b>4%</b>	<b>697</b>	<b>7%</b>	<b>221</b>	<b>2%</b>	<b>10166</b>			

TREATMENT OUTCOME OF SMEAR NEGATIVE in 2012 (2012 cohort)  
Annual 2013

Other Unit

Sr.	Other Unit	SMEAR NEGATIVE											
		Total No		Completed		Died		Failure		Defaulted		Transfer out	
		Reg. pts	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	
1	Aung San Hos:	27	19	70%	3	11%	0	0%	1	4%	4	15%	27
2	Patheingyi Hos:	20	17	85%	1	5%	1	5%	1	5%	0	0%	20
3	East YGH	9	9	100%	0	0%	0	0%	0	0%	0	0%	9
4	Mingalardon Hos:	327	216	66%	58	18%	1	0%	22	7%	30	9%	327
5	No.1MBH (PyinOoLw in)	123	91	74%	8	7%	0	0%	3	2%	21	17%	123
6	1000 bedded hospital (Naypyitaw )	51	48	94%	0	0%	0	0%	2	4%	1	2%	51
7	MSF-H (Ygn)	720	556	77%	71	10%	24	3%	62	9%	7	1%	720
8	MSF-H (Kachin)	497	370	74%	57	11%	9	2%	46	9%	15	3%	497
9	PSI	6301	5322	84%	266	4%	55	1%	507	8%	151	2%	6301
10	MSF-H (Shan-north)	226	151	67%	30	13%	9	4%	32	14%	4	2%	226
11	MSF-H (Rakhine)	2	0	0%	1	50%	0	0%	1	50%	0	0%	2
12	MSF-CH (Daw ei)	65	52	80%	11	17%	1	2%	0	0%	1	2%	65
13	MMA	891	784	88%	48	5%	9	1%	39	4%	11	1%	891
14	AHRN (Shan North) Laukkai, Lashio	73	59	81%	3	4%	3	4%	7	10%	1	1%	73
15	Thingangyun Sanpya Hos:	34	31	91%	3	9%	0	0%	0	0%	0	0%	34
16	Central Jail Mandalay	23	21	91%	2	9%	0	0%	0	0%	0	0%	23
17	Medecins du monde	31	26	84%	3	10%	0	0%	1	3%	1	3%	31
18	New YGH	58	53	91%	1	2%	0	0%	1	2%	3	5%	58
19	West YGH	16	12	75%	1	6%	0	0%	2	13%	1	6%	16
20	Tharketa HIV hospital	179	115	64%	31	17%	1	1%	26	15%	6	3%	179
21	Insein general hospital	7	5	71%	1	14%	0	0%	1	14%	0	0%	7
22	Htantabin TB hospital	35	33	94%	2	6%	0	0%	0	0%	0	0%	35
23	Patheingyi General Hospital	60	43	72%	1	2%	1	2%	15	25%	0	0%	60
24	No(1) MBH (Mandalay Nantw in)	23	23	100%	0	0%	0	0%	0	0%	0	0%	23
25	300 bedded teaching hospital (Mdy)	38	24	63%	10	26%	0	0%	3	8%	1	3%	38
26	North Okkalapa General Hospital	92	75	82%	1	1%	0	0%	4	4%	12	13%	92
27	MSF-CH (Insein Prison)	61	47	77%	1	2%	0	0%	0	0%	13	21%	61
28	AHRN (Kachin state) WM, PK, BM	0											0
29	550 bedded child hospital (Mdy)	0											0
30	Hpa-an general hospital	0											0
	<b>Total</b>	<b>9989</b>	<b>8202</b>	<b>82%</b>	<b>614</b>	<b>6%</b>	<b>114</b>	<b>1%</b>	<b>776</b>	<b>8%</b>	<b>283</b>	<b>3%</b>	<b>9989</b>

NATIONAL TUBERCULOSIS PROGRAMME  
TREATMENT OUTCOME OF PC and TBM in 2012 (2012 cohort)

Sr.	Other Unit	PRIMARY COMPLEX					TB MENINGITIS								
		Total No Reg pts	Completed No	Rate	Died No	Defaulted No	Transfer out	Total	Total No Reg pts	Completed	Died	Defaulted	Transfer out	Total	
1	Aung San Hos:	0													
2	Patheingyi Hos:	2	2	100%	0	0	0%	0	0	0	0	0	0	0	0
3	East YGH	57	54	95%	0	3	5%	0	0	0	0	0	0	0	0
4	Mingalardon Hos:	130	71	55%	25	16	12%	18	130	7	1	2	0	10	10
5	No.1MBH (PyinOoLwin)	33	33	100%	0	0	0%	0	0	0	0	0	0	0	0
6	1000 bedded hospital (Naypyitaw)	87	86	99%	0	1	1%	0	87	3	3	0	0	0	3
7	MSF-H (Ygn)	24	23	96%	0	1	4%	0	24	6	6	0	0	0	6
8	MSF-H (Kachin)	14	10	71%	3	0	0%	1	14	0	0	0	0	0	0
9	PSI	6556	6381	97%	10	131	2%	34	6556	1	1	0	0	0	1
10	MSF-H (Shan-north)	0							0	0	0	0	0	0	0
11	MSF-H (Rakhine)	0							0	0	0	0	0	0	0
12	MSF-CH (Dawei)	10	9	90%	0	0	0%	1	10	0	0	0	0	0	0
13	MMA	858	800	93%	4	23	3%	31	858	1	1	0	0	0	1
14	AHRN (Shan North) Laukkai, Lashio	5	2	40%	0	3	60%	0	5	0	0	0	0	0	0
15	Thingangyun Sanpya Hos:	12	12	100%	0	0	0%	0	12	2	2	0	0	0	2
16	Central Jail Mandalay	0							0	0	0	0	0	0	0
17	Medecins du monde	0							0	0	0	0	0	0	0
18	New YGH	1	0	0%	0	1	100%	0	1	0	0	0	0	0	0
19	West YGH	20	20	100%	0	0	0%	0	20	0	0	0	0	0	0
20	Tharketa HIV hospital	23	20	87%	2	1	4%	0	23	0	0	0	0	0	0
21	Insein general hospital	2	1	50%	1	0	0%	0	2	0	0	0	0	0	0
22	Htantabin TB hospital	1	1	100%	0	0	0%	0	1	0	0	0	0	0	0
23	Patheingyi General Hospital	52	43	83%	1	8	15%	0	52	2	1	0	1	0	2
24	No(1) MBH (Mandalay Nantwin)	9	9	100%	0	0	0%	0	9	3	3	0	0	0	3
25	300 bedded teaching hospital (Mdy)	30	25	83%	1	4	13%	0	30	0	0	0	0	0	0
26	North Okkalapa General Hospital	28	23	82%	0	5	18%	0	28	2	2	0	0	0	2
27	MSF-CH (Insein Prison)	6	4	67%	0	0	0%	2	6	2	2	0	0	0	2
28	AHRN (Kachin state) WM, PK, BM														
29	550 bedded child hospital (Mdy)														
30	Hpa-an general hospital														
31	Myeik general hospital														
32	Mawlamyine general hospital														
33	Yangon Children Hospital														
34	Latha Dx Center														
	<b>Total</b>	<b>7960</b>	<b>7629</b>	<b>96%</b>	<b>47</b>	<b>197</b>	<b>2%</b>	<b>87</b>	<b>7960</b>	<b>32</b>	<b>28</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>32</b>

Other Unit

Annual 2013

Annex-20

TREATMENT OUTCOME OF HILAR LYMPHADENOPATHY in 2012 (2012 cohort)  
Annual 2013

Sr.	Other Unit	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	
3	East YGH	0											0	
4	Mingalardon Hos:	0											0	
5	No.1MBH (FyinOoLw in)	15	15	100%	0	0%	0	0%	0	0%	0	0	15	
6	1000 bedded hospital (Naypyitaw)	1	1	100%	0	0%	0	0%	0	0%	0	0	1	
7	MSF-H (Ygn)	3	3	100%	0	0%	0	0%	0	0%	0	0	3	
8	MSF-H (Kachin)	7	7	100%	0	0%	0	0%	0	0%	0	0	7	
9	PSI	2234	2166	97%	1	0%	0	0%	57	3%	10	0%	2234	
10	MSF-H (Shan-north)	0											0	
11	MSF-H (Rakhine)	0											0	
12	MSF-CH (Dawei)	4	4	100%	0	0%	0	0%	0	0%	0	0	4	
13	MMA	194	194	100%	0	0%	0	0%	0	0%	0	0	194	
14	AHRN (Shan North) Laukkai, Lashio	24	20	83%	0	0%	0	0%	3	13%	1	4%	24	
15	Thingangyun Sanpya Hos:	3	3	100%	0	0%	0	0%	0	0%	0	0%	3	
16	Central Jail Mandalay	0											0	
17	Medecins du monde	0											0	
18	New Y GH	0											0	
19	West YGH	0											0	
20	Tharketa HIV hospital	9	7	78%	2	22%	0	0%	0	0%	0	0%	9	
21	Insein general hospital	0											0	
22	Htantabin TB hospital	0											0	
23	Patheingyi General Hospital	27	25	93%	0	0%	0	0%	2	7%	0	0%	27	
24	No(1) MBH (Mandalay Nantw in)	0											0	
25	300 bedded teaching hospital (Mdy)	15	12	80%	0	0%	0	0%	2	13%	1	7%	15	
26	North Okkalapa General Hospital	3	3	100%	0	0%	0	0%	0	0%	0	0%	3	
27	MSF-CH (Insein Prison)	0											0	
28	AHRN (Kachin state) WM, PK, BM	0											0	
29	550 bedded child hospital (Mdy)	0											0	
30	Hpa-an general hospital	0											0	
31	Myeik general hospital	0											0	
32	Maw lamya general hospital	0											0	
33	Yangon Children Hospital	0											0	
34	Latha Dx Center	0											0	
	<b>Total</b>	<b>2539</b>	<b>2460</b>	<b>97%</b>	<b>3</b>	<b>0%</b>	<b>0</b>	<b>0%</b>	<b>64</b>	<b>3%</b>	<b>12</b>	<b>0%</b>	<b>2539</b>	



TREATMENT OUTCOME OF EXTRA-PULMONARY TB in 2012 (2012 cohort)  
Annual 2013

Sr.	Other Unit	EP<15											
		Total N Reg: pts	Completed		Died		Failure		Defaulted		Transfer out		Total
		No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate
1	Aung San Hos:	0											
2	Patheingyi Hos:	5	80%	0	0%	0	0%	1	20%	0	0%	0	0%
3	East YGH	11	100%	0	0%	0	0%	0	0%	0	0%	0	0%
4	Mingalardon Hos:	152	59%	27	18%	0	0%	14	9%	21	14%	0	0%
5	No.1MBH (PyinOoLw in)	20	100%	0	0%	0	0%	0	0%	0	0%	0	0%
6	1000 bedded hospital (Naypyitaw)	2	100%	0	0%	0	0%	0	0%	0	0%	0	0%
7	MSF-H (Ygn)	14	100%	0	0%	0	0%	0	0%	0	0%	0	0%
8	MSF-H (Kachin)	15	87%	1	7%	0	0%	1	7%	0	0%	0	0%
9	PSI	36	89%	0	0%	0	0%	3	8%	1	3%	0	0%
10	MSF-H (Shan-north)	16	81%	0	0%	1	6%	2	13%	0	0%	0	0%
11	MSF-H (Rakhine)	0											
12	MSF-CH (Daw ei)	33	79%	6	18%	1	3%	0	0%	0	0%	0	0%
13	MMA	32	97%	0	0%	0	0%	0	0%	1	3%	0	0%
14	AHRN (Shan North) Laukkai, Lashio	65	74%	6	9%	0	0%	4	6%	7	11%	0	0%
15	Thingangyun Sanyya Hos:	0											
16	Central Jail Mandalay	0											
17	Medecins du monde	1	100%	0	0%	0	0%	0	0%	0	0%	0	0%
18	New YGH	0											
19	West YGH	0											
20	Tharketa HIV hospital	3	100%	0	0%	0	0%	0	0%	0	0%	0	0%
21	Insein general hospital	2	100%	0	0%	0	0%	0	0%	0	0%	0	0%
22	Htantabin TB hospital	0											
23	Pathein General Hospital	4	25%	1	25%	0	0%	2	50%	0	0%	0	0%
24	No(1) MBH (Mandalay Nantw in)	9	100%	0	0%	0	0%	0	0%	0	0%	0	0%
25	300 bedded teaching hospital (Mdy)	7	71%	1	14%	0	0%	1	14%	0	0%	0	0%
26	North Okkalapa General Hospital	3	100%	0	0%	0	0%	0	0%	0	0%	0	0%
27	MSF-CH (Insein Prison)	0											
28	AHRN (Kachin state) WM, PK, BM	0											
29	550 bedded child hospital (Mdy)	0											
30	Hpa-an general hospital	0											
31	Myeik general hospital	0	0	0	0	0	0	0	0	0	0	0	0
32	Maw laryine general hospital	0	0	0	0	0	0	0	0	0	0	0	0
33	Yangon Children Hospital	0	0	0	0	0	0	0	0	0	0	0	0
34	Latha Dx Center	0	0	0	0	0	0	0	0	0	0	0	0
	<b>Total</b>	<b>430</b>	<b>76%</b>	<b>42</b>	<b>10%</b>	<b>2</b>	<b>0%</b>	<b>28</b>	<b>7%</b>	<b>30</b>	<b>7%</b>	<b>30</b>	<b>7%</b>

TREATMENT OUTCOME OF EXTRA-PULMONARY TB in 2012 (2012 cohort)  
Annual 2013

Sr.	Other Unit	EP>15												
		Total No. Reg: pts:		Completed		Died		Failure		Defaulted		Transfer out		Total
		No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	
1	Aung San Hos:	13	62%	8	23%	3	0%	0	0%	1	8%	1	8%	13
2	Pathingyi Hos:	13	92%	12	0%	0	0%	0	0%	1	8%	0	0%	13
3	East YGH	12	92%	11	0%	0	0%	0	0%	1	8%	0	0%	12
4	Mingalardon Hos:	213	61%	129	23%	50	0%	0	0%	28	13%	6	3%	213
5	No.1MBH (PyinOoLw in)	24	100%	24	0%	0	0%	0	0%	0	0%	0	0%	24
6	1000 bedded hospital (Naypyitaw )	29	93%	27	0%	0	0%	0	0%	1	3%	1	3%	29
7	MSF-H (Ygn)	348	79%	275	10%	35	6	2%	9%	28	8%	4	1%	348
8	MSF-H (Kachin)	146	71%	103	16%	24	13	9%	9%	3	2%	3	2%	146
9	PSI	411	83%	342	4%	18	2	0%	0%	29	7%	20	5%	411
10	MSF-H (Shan-north)	0												0
11	MSF-H (Rakhine)	4	75%	3	25%	1	0	0%	0%	0	0%	0	0%	4
12	MSF-CH (Daw ei)	0												0
13	MMA	101	92%	93	5%	5	1	1%	1%	2	2%	0	0%	101
14	AHRN (Shan North) Laukkai, Lashio	0												0
15	Thingangyun Sampya Hos:	20	95%	19	5%	1	0	0%	0%	0	0%	0	0%	20
16	Central Jail Mandalay	9	89%	8	11%	1	0	0%	0%	0	0%	0	0%	9
17	Medecins du monde	34	71%	24	9%	3	5	15%	1	3%	1	3%	34	
18	New YGH	14	79%	11	0%	0	0	0%	0	3	21%	0	0%	14
19	West YGH	4	100%	4	0%	0	0	0%	0	0	0%	0	0%	4
20	Tharketa HIV hospital	260	66%	171	18%	47	1	0%	0%	34	13%	7	3%	260
21	Insein general hospital	3	100%	3	0%	0	0	0%	0%	0	0%	0	0%	3
22	Htantabin TB hospital	11	100%	11	0%	0	0	0%	0%	0	0%	0	0%	11
23	Patheingyi General Hospital	72	57%	41	13%	9	5	7%	16	22%	1	1%	72	
24	No(1) MBH (Mandalay Nantwin)	2	100%	2	0%	0	0	0%	0	0%	0	0%	2	
25	300 bedded teaching hospital (Mdy)	24	58%	14	21%	5	0	0%	4	17%	1	4%	24	
26	North Okkalapa General Hospital	18	61%	11	11%	2	0	0%	1	6%	4	22%	18	
27	MSF-CH (Insein Prison)	0												0
28	AHRN (Kachin state) WM, PK, BM	0												0
29	550 bedded child hospital (Mdy)	0												0
30	Hpa-an general hospital	0												0
31	Myeik general hospital	0												0
32	Maw lamyine general hospital	0												0
33	Yangon Children Hospital	0												0
34	Latha Dx Center	0												0
	<b>Total</b>	<b>1785</b>	<b>75%</b>	<b>1346</b>	<b>11%</b>	<b>204</b>	<b>33</b>	<b>2%</b>	<b>153</b>	<b>9%</b>	<b>49</b>	<b>3%</b>	<b>1785</b>	

TREATMENT OUTCOME OF RELAPSES in 2012 (2012 cohort)

Sr. No	Other Unit	Relapses												Total
		Cured		Completed		Died		Failure		Defaulted		Transfer out		
		No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	
1	Aung San Hos:	9	23%	1	3%	14	36%	8	21%	4	10%	3	8%	39
2	Patheingyi Hos:	2	29%	1	14%	1	14%	2	29%	1	14%	0	0%	7
3	East YGH	0	0%	1	100%	0	0%	0	0%	0	0%	0	0%	1
4	Mingalardon Hos:	16	39%	2	5%	17	41%	0	0%	2	5%	4	10%	41
5	No.1MBH (PyinOoLw in)	9	56%	0	0%	3	19%	3	19%	0	0%	1	6%	16
6	1000 bedded hospital (Naypyitaw)	1	20%	3	60%	0	0%	1	20%	0	0%	0	0%	5
7	MSF-H (Ygn)	33	34%	28	29%	17	18%	4	4%	5	5%	9	9%	96
8	MSF-H (Kachin)	21	72%	0	0%	3	10%	3	10%	1	3%	1	3%	29
9	PSI	443	61%	106	15%	43	6%	53	7%	49	7%	32	4%	726
10	MSF-H (Shan-north)	5	50%	0	0%	3	30%	1	10%	1	10%	0	0%	10
11	MSF-H (Rakhine)	1	100%	0	0%	0	0%	0	0%	0	0%	0	0%	1
12	MSF-CH (Daw ei)	40	77%	6	12%	4	8%	2	4%	0	0%	0	0%	52
13	MWA	49	74%	3	5%	3	5%	9	14%	2	3%	0	0%	66
14	AHRN (Shan North) Laukkai, Lashio	5	42%	0	0%	1	8%	5	42%	0	0%	1	8%	12
15	Thingangyun Sanyya Hos:	8	89%	0	0%	0	0%	1	11%	0	0%	0	0%	9
16	Central Jail Mandalay	3	100%	0	0%	0	0%	0	0%	0	0%	0	0%	3
17	Medecins du monde	1	50%	0	0%	1	50%	0	0%	0	0%	0	0%	2
18	New YGH	3	75%	0	0%	0	0%	0	0%	0	0%	1	25%	4
19	West YGH	7	0%	1	14%	1	14%	1	14%	3	43%	1	14%	7
20	Tharketa HIV hospital	8	57%	1	7%	4	29%	1	7%	0	0%	0	0%	14
21	Insein general hospital	0												0
22	Htantabin TB hospital	4	44%	1	11%	0	0%	2	22%	0	0%	2	22%	9
23	Patheingyi General Hospital	1	17%	1	17%	2	33%	0	0%	1	17%	1	17%	6
24	No(1) MBH (Mandalay Nantw in)	3	75%	1	25%	0	0%	0	0%	0	0%	0	0%	4
25	300 bedded teaching hospital (Mdy)	2	50%	0	0%	1	25%	0	0%	1	25%	0	0%	4
26	North Okkalapa General Hospital	8	38%	2	10%	0	0%	1	5%	1	5%	9	43%	21
27	MSF-CH (Insein Prison)	1	100%	0	0%	0	0%	0	0%	0	0%	0	0%	1
28	AHRN (Kachin state) WM, PK, BM	0												0
29	550 bedded child hospital (Mdy)	0												0
30	Hpa-an general hospital	0												0
31	Myeik general hospital	0												0
32	Maw lamwine general hospital	0												0
33	Yangon Children Hospital	0												0
34	Latha Dx Center	0												0
<b>Total</b>		<b>1185</b>	<b>57%</b>	<b>158</b>	<b>13%</b>	<b>118</b>	<b>10%</b>	<b>0</b>	<b>0%</b>	<b>71</b>	<b>6%</b>	<b>65</b>	<b>5%</b>	<b>1185</b>

NATIONAL TUBERCULOSIS PROGRAMME  
TREATMENT OUTCOME OF TREATMENT AFTER DEFAULT in (2012 cohort)

## Other Unit

Annual 2013

SN	Other Unit	TOTAL		Cured		Completed		Died		Failure		Defaulted		Transfer		Total
		No	CR	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	
1	Aung San Hos:	9	11%	0	0%	2	22%	4	44%	2	22%	0	0%	0	0%	9
2	Patheingyi Hos:	0														0
3	East YGH	0														0
4	Mingalardon Hos:	8	0%	0	0%	6	86%	1	14%	0	0%	1	14%			8
5	No.1MBH (PyinOoLw in)	0														0
6	1000 bedded hospital (Naypyitaw)	3	67%	1	33%	0	0%	0	0%	0	0%	0	0%	0	0%	3
7	MSF-H (Ygn)	8	25%	1	13%	4	50%	0	0%	1	13%	0	0%	0	0%	8
8	MSF-H (Kachin)	16	31%	3	19%	1	6%	1	6%	5	31%	1	6%	1	6%	16
9	PSI	32	47%	7	22%	1	3%	2	6%	2	6%	2	6%	5	16%	32
10	MSF-H (Shan-north)	1	0%	0	0%	1	100%	0	0%	0	0%	0	0%	0	0%	1
11	MSF-H (Rakhine)	1	100%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	1
12	MSF-CH (Daw ei)	3	33%	0	0%	1	33%	0	0%	1	33%	0	0%	0	0%	3
13	MWA	3	100%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	3
14	AHRN (Shan North) Laukkai, Lashic	8	63%	0	0%	1	13%	1	13%	1	13%	0	0%	0	0%	8
15	Thingangyun Sanpya Hos:	0														0
16	Central Jail Mandalay	0														0
17	Medecins du monde	0														0
18	New YGH	0														0
19	West YGH	0														0
20	Tharketa HIV hospital	8	0%	5	63%	2	25%	0	0%	1	13%	0	0%	0	0%	8
21	Insein general hospital	0														0
22	Htantabin TB hospital	0														0
23	Pathein General Hospital	4	0%	0	0%	1	25%	1	25%	1	25%	1	25%	1	25%	4
24	No(1) MBH (Mandalay Nantw in)	1	100%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	1
25	300 bedded teaching hospital (Mdy)	0														0
26	North Okkalapa General Hospital	1	0%	1	100%	0	0%	0	0%	0	0%	0	0%	0	0%	1
27	MSF-CH (Insein Prision)	0														0
28	AHRN (Kachin state) WM, PK, BM	0														0
29	550 bedded child hospital (Mdy)	0														0
30	Hpa-an general hospital	0														0
31	Myeik general hospital	0														0
32	Maw lary/ine general hospital	0														0
33	Y angon Children Hospital	0														0
34	Latha Dx Center	0														0
<b>Total</b>		<b>106</b>	<b>34%</b>	<b>36</b>	<b>17%</b>	<b>20</b>	<b>19%</b>	<b>10</b>	<b>10%</b>	<b>14</b>	<b>13%</b>	<b>8</b>	<b>8%</b>	<b>8</b>	<b>8%</b>	<b>106</b>

## TREATMENT OUTCOME OF TREATMENT AFTER FAILURE in 2012 (Cohort)

Annual 2013

Other Unit

SN	Other Unit	TOTAL		Cured		Completed		Died		Failure		Defaulted		Transfer		Total
		No	CR	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	
1	Aung San Hos:	34	9%	0	0%	9	26%	16	47%	4	12%	2	6%	34		
2	Patheingyi Hos:	0												0		
3	East YGH	0												0		
4	Mingalardon Hos:	6	50%	0	0%	2	33%	1	17%	0	0%	0	0%	6		
5	No.1MBH (PyinOolwin)	0												0		
6	1000 bedded hospital (Naypyita)	4	0%	2	50%	0	0%	0	0%	2	50%	0	0%	4		
7	MSF-H (Ygn)	59	44%	11	19%	6	10%	1	2%	10	17%	5	8%	59		
8	MSF-H (Kachin)	27	63%	0	0%	1	4%	3	11%	5	19%	1	4%	27		
9	PSI	222	52%	28	13%	17	8%	30	14%	19	9%	13	6%	222		
10	MSF-H (Shan-north)	6	83%	0	0%	0	0%	0	0%	1	17%	0	0%	6		
11	MSF-H (Rakhine)	0												0		
12	MSF-CH (Dawei)	22	77%	2	9%	0	0%	3	14%	0	0%	0	0%	22		
13	MMA	30	43%	3	10%	1	3%	11	37%	2	7%	0	0%	30		
14	A HRN (Shan North) Laukai, Lat	21	38%	1	5%	0	0%	7	33%	3	14%	2	10%	21		
15	Thingangyun Sanpya Hos:	1	0%	0	0%	1	100%	0	0%	0	0%	0	0%	1		
16	Central Jail Mandalay	0												0		
17	Medecins du monde	0												0		
18	New YGH	2	0%	0	0%	0	0%	0	0%	1	50%	1	50%	2		
19	West YGH	0												0		
20	Tharketa HIV hospital	1	0%	0	0%	1	100%	0	0%	0	0%	0	0%	1		
21	Insein general hospital	0												0		
22	Htantabin TB hospital	0												0		
23	Pathain General Hospital	1	0%	0	0%	1	100%	0	0%	0	0%	0	0%	1		
24	No(1) MBH (Mandalay Nantwin)	1	0%	1	100%	0	0%	0	0%	0	0%	0	0%	1		
25	300 bedded teaching hospital (N)	1	0%	0	0%	0	0%	0	0%	0	0%	1	100%	1		
26	North Okkalapa General Hospital	0												0		
27	MSF-CH (Insein Prison)	0												0		
28	A HRN (Kachin state) WM, PK, B	0												0		
29	550 bedded child hospital (Mdy)	0												0		
30	Hpa-an general hospital	0												0		
31	Myeik general hospital	0												0		
32	Mawlamyine general hospital	0												0		
33	Yangon Children Hospital	0												0		
34	Latha Dx Center	0												0		
	<b>Total</b>	<b>438</b>	<b>47%</b>	<b>207</b>	<b>11%</b>	<b>39</b>	<b>9%</b>	<b>72</b>	<b>16%</b>	<b>47</b>	<b>11%</b>	<b>25</b>	<b>6%</b>	<b>438</b>		

## TREATMENT OUTCOME OF OTHER CASES in 2012 (2012 cohort)

Sr.	Other Unit	OTHER CASES																	
		Total		Cured		Completed		Died		Failure		Defaulted		Transfer out		Total			
		No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate	No	Rate				
1	Aung San Hos:	102	7%	11	11%	34	33%	18	18%	20	20%	12	12%	102					
2	Patheingyi Hos:	2	0%	1	50%	0	0%	0	0%	1	50%	0	0%	2					
3	East YGH	1	0%	1	100%	0	0%	0	0%	0	0%	0	0%	1					
4	Mingalardon Hos:	291	0%	141	48%	87	30%	1	0%	44	15%	18	6%	291					
5	No. 1MBH (PyinOoLw.in)	15	0%	12	80%	1	7%	0	0%	1	7%	1	7%	15					
6	1000 bedded hospital (Naypyitaw)	5	0%	4	80%	0	0%	0	0%	1	20%	0	0%	5					
7	MSF-H (Ygn)	200	0%	135	68%	33	17%	1	1%	23	12%	8	4%	200					
8	MSF-H (Kachin)	126	0%	82	65%	23	18%	0	0%	15	12%	6	5%	126					
9	PSI	139	0%	109	78%	10	7%	2	1%	14	10%	4	3%	139					
10	MSF-H (Shan-north)	48	0%	20	42%	20	42%	3	6%	3	6%	2	4%	48					
11	MSF-H (Rakhine)	21	0%	17	81%	0	0%	2	10%	2	10%	0	0%	21					
12	MSF-CH (Daw ei)	12	0%	9	75%	1	8%	0	0%	2	17%	0	0%	12					
13	MMA	41	0%	34	83%	2	5%	0	0%	5	12%	0	0%	41					
14	AHRN (Shan North) Laukkai, Lashio	19	0%	15	79%	0	0%	0	0%	3	16%	1	5%	19					
15	Thingangyun Sanpya Hos:	6	0%	6	100%	0	0%	0	0%	0	0%	0	0%	6					
16	Central Jail Mandalay	5	0%	4	80%	0	0%	0	0%	0	0%	1	20%	5					
17	Medecins du monde	15	0%	7	47%	8	53%	0	0%	0	0%	0	0%	15					
18	New YGH	8	1%	7	88%	0	0%	0	0%	0	0%	0	0%	8					
19	West YGH	0												0					
20	Tharketa HIV hospital	137	0%	61	45%	43	31%	9	7%	17	12%	7	5%	137					
21	Insein general hospital	0												0					
22	Htantabin TB hospital	5	0%	5	100%	0	0%	0	0%	0	0%	0	0%	5					
23	Patheingyi General Hospital	20	0%	12	60%	6	30%	0	0%	2	10%	0	0%	20					
24	No(1) MBH (Mandalay Nantw.in)	10	0%	9	90%	1	10%	0	0%	0	0%	0	0%	10					
25	300 bedded teaching hospital (Mdy)	6	0%	3	50%	1	17%	0	0%	0	0%	2	33%	6					
26	North Okkalapa General Hospital	12	0%	7	58%	0	0%	0	0%	2	17%	3	25%	12					
27	MSF-CH (Insein Prison)	2	0%	0	0%	1	50%	0	0%	0	0%	1	50%	2					
28	AHRN (Kachin state) WM, PK, BM	0												0					
29	550 bedded child hospital (Mdy)	0												0					
30	Hpa-an general hospital	0												0					
31	Myeik general hospital																		
32	Maw lamyine general hospital																		
33	Yangon Children Hospital																		
34	Latha Dx Center																		
	<b>Total</b>	<b>1248</b>	<b>1%</b>	<b>712</b>	<b>57%</b>	<b>271</b>	<b>22%</b>	<b>36</b>	<b>3%</b>	<b>155</b>	<b>12%</b>	<b>66</b>	<b>5%</b>	<b>1248</b>					

**NATIONAL TUBERCULOSIS PROGRAMME**  
**Reporting Status from Regions & States (2013)**

Regions & States	Townships	1st Quarter 2013			2nd Quarter 2013			3rd Quarter 2013			4th Quarter 2013			Annual 2013		
		Received	%	not received	Received	%	not received	Received	%	not received	Received	%	not received	Received	%	not received
Kachin State	18	14	78%	4	14	78%	4	14	78%	4	12	67%	4	13	72%	5
Kayah State	7	7	100%	0	7	100%	0	7	100%	0	7	100%	0	7	100%	0
Chin State	9	9	100%	0	9	100%	0	9	100%	0	9	100%	0	9	100%	0
Sagaing Region	37	37	100%	0	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	28	28	100%	0	28	100%	0	28	100%	0	28	100%	0	28	100%	0
Shan State (Taunggyi)	21	21	100%	0	21	100%	0	21	100%	0	21	100%	0	21	100%	0
Shan State (Kengtong)	10	10	100%	0	10	100%	0	10	100%	0	10	100%	0	10	100%	0
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	28	28	100%	0	28	100%	0	28	100%	0	28	100%	0	28	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
Naypyitaw	8	8	100%	0	8	100%	0	8	100%	0	8	100%	0	8	100%	0
<b>Total townships</b>	<b>330</b>	<b>320</b>	<b>97%</b>	<b>10</b>	<b>320</b>	<b>97%</b>	<b>10</b>	<b>320</b>	<b>97%</b>	<b>10</b>	<b>318</b>	<b>96%</b>	<b>10</b>	<b>319</b>	<b>97%</b>	<b>11</b>
				<b>3%</b>			<b>3%</b>			<b>3%</b>			<b>3%</b>			<b>3%</b>

Annual report had not been received from (11) Townships

Kachin State (5) Tsps 1. Nganyan, 2. Hsawlaw, 3. Khaunglanbu, 4. Naun, 5. Sumprabom

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

**NATIONAL TUBERCULOSIS PROGRAMME (Myanmar)**  
**EVALUATION OF TB CONTROL ACTIVITIES IN REGIONS & STATES (2012-2013)**

**Annex-22**

No. of Reported Tsp. & other unit	No. of total Tsp. & other unit	Regions/States	Population	Estimated New S(+) cases	Total New S(+) cases	Total notified TB cases	CDR (NTP only)	CDR (NTP+ Other)	Prop. of SS(+) pul: TB cases out of All Pul: cases	Ratio of NSS+ to NSS(-) cases and EP cases	Ratio of NSS+ to NSS(-) cases	Sputum positivity rate	sputum conversion rate	CR (NTP only)	CR (NTP+ Other)	TSR (NTP only)	TSR (NTP+ Other)
13	18	Kachin State	1465364	1539	1059	5000	69%	90%	33%	0.51:1	0.9:1	14%	84%	70%	66%	82%	80%
7	7	Kayah State	285341	300	149	743	50%	51%	32%	0.46:1	0.9:1	9%	83%	73%	73%	84%	84%
9	9	Chin State	478958	503	142	1229	28%	31%	16%	0.43:1	0.7:1	1%	94%	82%	78%	93%	88%
37	37	Sagaing Region	5193199	5453	2357	6727	43%	52%	45%	0.9:1	1.4:1	9%	89%	81%	79%	90%	89%
25	25	Magway Region	4059425	4262	2102	6661	49%	58%	45%	0.71:1	1.1:1	14%	86%	80%	78%	88%	88%
28	28	Mandalay Region	5672704	5956	2982	9274	50%	65%	52%	0.67:1	1.2:1	9%	83%	77%	74%	86%	85%
21	21	Shan State (Taunggyi)	2068600	2172	1056	3309	49%	50%	45%	0.8:1	1.4:1	10%	90%	74%	72%	86%	85%
10	10	Shan State (Kengtong)	620054	669	559	1676	84%	90%	43%	0.95:1	1.1:1	18%	76%	64%	63%	82%	81%
18	24	Shan State (Lashio)	1849708	1942	1152	4469	59%	78%	40%	0.53:1	0.9:1	14%	81%	67%	66%	78%	77%
7	7	Kayin State	1389274	1459	1054	3290	72%	78%	38%	0.77:1	0.8:1	16%	88%	77%	77%	85%	85%
10	10	Tanintharyi Region	1301784	1367	833	4847	61%	72%	25%	0.42:1	0.6:1	19%	83%	70%	72%	81%	82%
28	28	Bago Region	4808876	5049	3378	12886	67%	83%	34%	0.68:1	0.9:1	17%	88%	75%	74%	88%	88%
10	10	Mon State	2141928	2249	1626	7010	72%	89%	29%	0.68:1	0.8:1	11%	89%	76%	75%	86%	87%
17	17	Rakhine State	3213668	3374	1990	5284	59%	65%	49%	0.99:1	1.4:1	18%	80%	65%	64%	85%	84%
45	45	Yangon Region	6030053	10251	6774	20107	66%	109%	49%	0.79:1	1:1	33%	91%	84%	77%	88%	85%
26	26	Ayeyarwaddy Region	6249174	6562	4435	13174	68%	79%	44%	0.82:1	1.1:1	18%	88%	73%	73%	87%	87%
8	8	Naypyitaw	951852	999	697	2010	70%	83%	57%	0.72:1	1.4:1	20%	88%	76%	74%	85%	85%
319	330	<b>Regions and States</b>	<b>47779962</b>	<b>54106</b>	<b>32345</b>	<b>107696</b>	<b>60%</b>	<b>78.7%</b>	<b>42%</b>	<b>0.73:2</b>	<b>1:1</b>	<b>17%</b>	<b>87%</b>	<b>76%</b>	<b>74%</b>	<b>86%</b>	<b>85%</b>
34	34	<b>Other Units</b>	<b>not available</b>	<b>not available</b>	<b>10250</b>	<b>34466</b>	<b>not available</b>	<b>not available</b>	<b>41%</b>	<b>0.66:1</b>	<b>0.9:1</b>	<b>12%</b>	<b>79%</b>	<b>CR =66%(other units only)</b>	<b>TSR= 82%(other units only)</b>		
353	364	<b>Country</b>	<b>47796627</b>	<b>54106</b>	<b>42595</b>	<b>142162</b>	<b>60%</b>	<b>78.7%</b>	<b>41%</b>	<b>0.71:1</b>	<b>1:1</b>	<b>15%</b>	<b>85%</b>	<b>76%</b>	<b>74%</b>	<b>86%</b>	<b>85%</b>



NATIONAL TUBERCULOSIS PROGRAMME (MYANMAR)  
EVALUATION OF TB CONTROL ACTIVITIES IN TOWNSHIPS (2012-2013)  
Annex-22(Detail township data)

Sr.No	Township	Population	estimated New S(+) cases	Total New S(+)	Total notified TB cases	CDR (NTP only)	CDR (NTP + Other)	Prop: of SS(+)+ pul: TB cases out of All Pul:	Ratio of NSS(-) cases and EP cases	Ratio of NSS(+)+ to NSS(-) cases	Sputum positivity rate	sputum conversion rate	CR (NTP only)	CR (NTP+Other)	TSR (NTP only)	TSR (NTP+Other)	
<b>Kachin State</b>																	
1	Bahmo	114270	120	86	754	72%	103%	21%	0.20:1	0.5:1	13%	97%	91%	76%	91%	86%	
2	Mansai	74308	78	39	170	50%	50%	26%	0.76:1	1.1:1	17%	85%	72%	72%	93%	93%	
3	Momaik	94098	99	35	172	35%	35%	32%	0.50:1	1:1	24%	86%	86%	83%	90%	91%	
4	Shwegu	83235	87	61	133	70%	71%	80%	0.94:1	3.8:1	11%	94%	81%	78%	90%	90%	
5	Mehyint	208386	219	121	314	55%	82%	61%	0.91:1	1.8:1	20%	78%	62%	58%	84%	85%	
6	Phaktant	163173	171	117	403	68%	116%	42%	1.04:1	1.7:1	16%	67%	56%	58%	72%	70%	
7	Mogaung	148674	156	111	285	71%	83%	62%	1.63:1	3.1:1	13%	83%	78%	77%	82%	82%	
8	Tanai	37977	40	68	183	171%	171%	51%	0.77:1	1:1	14%	77%	51%	51%	70%	70%	
9	Myitkyina	237178	249	335	1841	135%	163%	29%	0.45:1	0.6:1	14%	85%	71%	68%	81%	79%	
10	Chipway	19494	20	2	17	10%	10%	13%	0.33:1	0.5:1	6%	100%	100%	100%	100%	100%	
11	Hsawlaw	7183	8	Nr.	Nr.												
12	N Jan Yan	9500	10	Nr.	Nr.												
13	Waingmaw	123276	129	44	616	34%	114%	11%	0.16:1	0.3:1	6%	97%	67%	53%	94%	82%	
14	Putao	93483	98	35	104	36%	40%	46%	1.09:1	1.5:1	13%	96%	70%	65%	81%	82%	
15	Khaunglanbu	15532	16	Nr.	Nr.												
16	Machanbaw	8245	9	5	8	58%	55%	75%			23%	75%					
17	Nogmun	12544	13	Nr.	Nr.												
18	Sumprabum	14808	16	Nr.	Nr.												
<b>Total</b>		<b>1465364</b>	<b>1539</b>	<b>1059</b>	<b>5000</b>	<b>69%</b>	<b>90%</b>	<b>33%</b>	<b>0.51:1</b>	<b>0.9:1</b>	<b>14%</b>	<b>84%</b>	<b>70%</b>	<b>66%</b>	<b>82%</b>	<b>80%</b>	

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

<b>Kayah State</b>																	
1	Bawlake	8380	9	12	26	136%	136%	67%	4:1	12:1	14%	100%	100%	100%	100%	100%	
2	Mesai	6033	6	4	5	63%	63%	80%	0:1	0:1	13%						
3	Pasaung	35455	37	17	74	46%	46%	27%	0.53:1	0.6:1	23%	94%	100%	100%	100%	100%	
4	Loikaw	117966	124	65	490	52%	55%	24%	0.27:1	0.6:1	9%	79%	68%	68%	76%	76%	
5	Dimawhso	80041	84	46	118	55%	55%	53%	1.28:1	2:1	8%	76%	72%	72%	100%	100%	
6	Phruho	31132	33	4	29	12%	12%	33%	0.27:1	0.4:1	2%	100%	60%	60%	60%	60%	
7	Shataw	6334	7	1	1	15%	15%	100%	0:1	Nil	4%	100%					
<b>Total</b>		<b>285341</b>	<b>300</b>	<b>149</b>	<b>743</b>	<b>50%</b>	<b>51%</b>	<b>32%</b>	<b>0.46:1</b>	<b>0.9:1</b>	<b>9%</b>	<b>83%</b>	<b>73%</b>	<b>73%</b>	<b>84%</b>	<b>84%</b>	

<b>CHIN STATE</b>																	
1	Falam	48383	51	14	83	28%	30%	22%	0.70:1	1.6:1	7%	100%	100%	100%	100%	100%	
2	Hakha	42630	45	11	280	25%	25%	8%	0.15:1	0.2:1	2%	67%	69%	69%	77%	77%	
3	Htantalan	52296	55	12	412	22%	22%	5%	0.20:1	0.2:1	1%	100%	100%	100%	100%	100%	
4	Tiddim	94961	100	5	70	5%	17%	10%	0.17:1	0.5:1	0%	100%	89%	68%	89%	76%	
5	Tunzan	29400	31	7	47	23%	23%	25%	0.47:1	1.4:1	2%	100%	100%	100%	100%	100%	
6	Mindat	44095	46	16	83	35%	35%	29%	0.36:1	0.5:1	1%	91%	75%	75%	83%	83%	
7	Kanpetlet	21309	22	1	27	4%	4%	5%	0.06:1	0.1:1	1%	100%	100%	100%	100%	100%	
8	Matupi	52491	55	16	98	29%	29%	22%	0.55:1	1.1:1	2%	92%	27%	27%	93%	93%	
9	Paletwa	93393	98	60	129	61%	61%	54%	1.33:1	2.1:1	1%	100%	98%	98%	98%	98%	
<b>Total</b>		<b>478958</b>	<b>503</b>	<b>142</b>	<b>1229</b>	<b>28%</b>	<b>31%</b>	<b>16%</b>	<b>0.43:1</b>	<b>0.7:1</b>	<b>1%</b>	<b>94%</b>	<b>82%</b>	<b>78%</b>	<b>93%</b>	<b>88%</b>	

**EVALUATION OF TB CONTROL ACTIVITIES IN TOWNSHIPS (2012-2013)**  
**Annex-22(Detail township data)**

Sr.No	Township	Population	estimated New S(+) cases	Total New S(+)	Total notified TB cases	CDR (NTP only)	CDR (NTP + Other)	Prop. of SS(+)/ Pul: TB cases out of All Pul:	Ratio of NSS(+)/ cases and EP cases	Ratio of NSS(+)/ to NSS(-) cases	Sputum positivity rate	sputum conversion rate	CR (NTP only)	CR (NTP+ Other)	TSR (NTP only)	TSR (NTP+ Other)
<b>Sagaing Region</b>																
1	Sagaing	294635	309	174	449	56%	79%	48%	1.28:1	2.1:1	16%	93%	93%	84%	94%	90%
2	Myaung	111868	117	68	147	58%	58%	55%	1.58:1	1.9:1	7%	96%	79%	79%	87%	87%
3	Minmu	115429	121	54	180	45%	45%	41%	0.53:1	0.9:1	9%	93%	44%	45%	88%	89%
4	Shwebo	259855	273	75	331	27%	41%	32%	0.41:1	0.6:1	5%	92%	76%	73%	88%	84%
5	Kanbalu	269788	283	56	221	20%	32%	37%	0.78:1	1.4:1	5%	94%	68%	68%	84%	86%
6	Khin-U	153083	161	44	87	27%	35%	68%	1.38:1	3.1:1	5%	100%	95%	89%	95%	93%
7	Kyunhla	91225	96	17	68	18%	22%	32%	0.55:1	0.7:1	6%	30%	27%	81%	81%	77%
8	Tabayin	151469	159	51	110	32%	33%	62%	1.96:1	6.4:1	7%	95%	78%	78%	92%	92%
9	Taze	181957	191	60	133	31%	32%	62%	1.40:1	2.6:1	18%	82%	72%	71%	83%	81%
10	Wetlet	207262	218	67	323	31%	51%	27%	0.89:1	1.1:1	11%	98%	90%	80%	97%	91%
11	Ye-U	129486	136	45	137	33%	38%	40%	0.92:1	1.4:1	13%	86%	80%	86%	91%	90%
12	Monywa	325761	342	191	459	56%	82%	60%	1.04:1	1.9:1	13%	86%	80%	76%	87%	87%
13	Avadaw	160258	168	44	167	26%	27%	33%	0.49:1	0.6:1	7%	100%	93%	90%	96%	92%
14	Budalin	143275	150	95	266	63%	64%	44%	1.20:1	2.1:1	13%	85%	83%	83%	83%	83%
15	ChaungU	110579	116	29	113	25%	33%	34%	0.78:1	1.2:1	3%	94%	86%	86%	88%	89%
16	Kani	142182	149	83	152	56%	60%	58%	2.13:1	2.6:1	7%	95%	94%	90%	98%	96%
17	Pale	150713	158	41	107	26%	26%	54%	1.05:1	2.1:1	6%	85%	96%	96%	97%	97%
18	Saingyi	137015	144	56	149	39%	41%	53%	1.1:1	1.6:1	5%	93%	81%	79%	86%	85%
19	Yimabin	147786	155	63	133	41%	43%	59%	1.5:1	3:1	9%	96%	62%	62%	85%	85%
20	Katha	163107	171	71	250	41%	42%	34%	0.55:1	0.7:1	14%	91%	84%	83%	84%	84%
21	Banmauk	95781	101	29	46	29%	32%	67%	2.07:1	2.6:1	20%	100%	56%	53%	88%	82%
22	Higyaying	84466	89	69	193	78%	78%	42%	0.95:1	1.1:1	11%	78%	57%	57%	79%	79%
23	Indaw	125852	132	44	135	33%	35%	41%	0.73:1	1.1:1	12%	93%	93%	88%	93%	94%
24	Kawlin	144231	151	67	150	44%	48%	55%	1.14:1	1.4:1	6%	79%	95%	94%	95%	95%
25	Pinlebu	113468	119	56	96	47%	49%	63%	2:1	2.5:1	10%	93%	88%	84%	88%	89%
26	Wuntho	72385	76	32	64	42%	47%	68%	1.28:1	2.1:1	4%	96%	86%	83%	89%	90%
27	Kalay	315084	331	205	627	62%	90%	44%	1.10:1	1.6:1	14%	79%	88%	86%	89%	87%
28	Kalewa	56450	59	27	66	46%	46%	65%	0.71:1	1.8:1	10%	95%	90%	90%	95%	95%
29	Minkin	108425	114	24	80	21%	23%	37%	0.65:1	0.9:1	73%	95%	84%	84%	84%	84%
30	Tamu	109895	115	110	308	95%	111%	46%	1.47:1	1.9:1	12%	90%	85%	84%	91%	89%
31	Mawlaik	53435	56	31	67	55%	55%	59%	1.1:1	2.1:1	19%	93%	54%	54%	89%	89%
32	Phaungbyin	117241	123	43	143	35%	35%	48%	0.59:1	1.3:1	12%	84%	47%	47%	84%	84%
33	Khamti	31436	33	80	259	242%	242%	41%	1.07:1	1.3:1	19%	83%	82%	82%	90%	90%
34	Homalin	190767	200	109	389	54%	54%	33%	0.72:1	0.8:1	7%	91%	93%	93%	97%	97%
35	Layshi	16864	18	6	20	34%	34%	45%	0.8:1	3:1	13%	100%	43%	43%	86%	86%
36	Lahel	51824	54	20	62	37%	37%	44%	0.8:1	1.8:1	8%	88%	66%	66%	100%	100%
37	Nanyun	58862	62	21	40	34%	34%	78%	0.11:1	3.5:1	23%	100%	100%	100%	100%	100%
<b>Total</b>		<b>5193199</b>	<b>5453</b>	<b>2357</b>	<b>6727</b>	<b>43%</b>	<b>52%</b>	<b>45%</b>	<b>0.9:1</b>	<b>1.4:1</b>	<b>9%</b>	<b>89%</b>	<b>81%</b>	<b>79%</b>	<b>90%</b>	<b>89%</b>

## EVALUATION OF TB CONTROL ACTIVITIES IN TOWNSHIPS (2012-2013)

## Annex-22(Detail township data)

Sr.No	Township	Population	estimated New S(+) cases	Total New S(+)	Total notified TB cases	CDR (NTP only)	CDR (NTP + Other)	Prop. of SS(+): pul: TB cases out of All Pul:	Ratio of NSS(+) to NSS(-) cases and EP cases	Ratio of NSS(+) to NSS(-) cases	Sputum positivity rate	sputum conversion rate	CR (NTP only)	CR (NTP+ther)	TSR (NTP only)	TSR (NTP+ Other)
<b>Magway Region</b>																
1	MAGWE	288319	303	259	861	86%	102%	44%	0.6:1	0.8:1	15%	84%	65%	68%	82%	84%
2	CHAIK	216630	227	90	376	40%	64%	34%	0.49:1	0.7:1	16%	86%	70%	71%	87%	87%
3	TAUNGDWINGYI	260481	274	120	230	44%	49%	67%	1.56:1	2.7:1	12%	96%	93%	90%	93%	93%
4	MYOTHIT	159812	168	110	203	66%	66%	76%	1.8:1	5.8:1	31%	97%	94%	94%	94%	94%
5	NATMAUK	230647	242	96	260	40%	42%	54%	0.77:1	1.2:1	19%	89%	76%	75%	86%	86%
6	YENANCHALUNG	151417	159	104	300	65%	86%	53%	0.91:1	1.3:1	15%	84%	87%	81%	87%	86%
7	PAKOKKU	301866	317	331	829	104%	116%	59%	1.19:1	1.8:1	19%	83%	74%	74%	80%	81%
8	YESAGYO	254176	267	60	251	22%	24%	38%	0.45:1	0.8:1	6%	87%	87%	80%	87%	87%
9	PAUK	178441	187	62	141	33%	33%	84%	0.87:1	5.2:1	14%	100%	81%	81%	98%	98%
10	MYAING	254420	267	75	230	28%	28%	58%	0.56:1	1.3:1	9%	88%	78%	78%	85%	85%
11	SEIKPHYU	105351	111	37	99	33%	37%	53%	0.71:1	1.2:1	7%	93%	85%	82%	91%	93%
12	GANTGAW	131125	138	42	356	31%	31%	14%	0.31:1	0.4:1	13%	74%	63%	64%	92%	92%
13	SAW	69727	73	16	55	22%	22%	34%	0.73:1	0.8:1	10%	92%	92%	92%	92%	92%
14	HTINLIN	50848	53	5	34	9%	9%	23%	0.23:1	0.3:1	2%	100%	80%	80%	87%	87%
15	MINBU	172660	181	118	359	65%	73%	45%	0.9:1	1.4:1	13%	90%	76%	69%	79%	80%
16	NGAPE	49195	52	24	82	46%	46%	40%	0.63:1	0.9:1	4%	74%	82%	82%	91%	91%
17	PWINTPHYU	168625	177	67	158	38%	103%	53%	1.18:1	1.8:1	17%	86%	97%	81%	97%	99%
18	Sayoketaya	43246	45	18	71	40%	42%	28%	0.53:1	0.6:1	8%	79%	80%	88%	90%	94%
19	SALIN	265328	279	82	187	29%	39%	55%	0.96:1	1.4:1	11%	79%	68%	66%	93%	92%
20	THAYET	103601	109	107	243	98%	98%	55%	1.57:1	1.9:1	16%	60%	70%	71%	78%	78%
21	MINHLA	112425	118	61	199	52%	55%	55%	0.59:1	1.6:1	13%	91%	94%	93%	94%	94%
22	KANMA	72036	76	47	231	62%	65%	24%	0.57:1	0.6:1	22%	89%	67%	67%	70%	70%
23	SINPAUNGWAE	125181	131	48	151	37%	37%	40%	1:1	1.3:1	24%	81%	98%	96%	98%	98%
24	MINDON	61003	64	43	232	67%	67%	23%	0.43:1	0.5:1	19%	100%	98%	98%	100%	100%
25	AUNGLAN	232865	245	80	523	33%	41%	29%	0.23:1	0.6:1	11%	85%	83%	78%	91%	90%
	<b>Total</b>	<b>4059425</b>	<b>4262</b>	<b>2102</b>	<b>6661</b>	<b>49%</b>	<b>58%</b>	<b>45%</b>	<b>0.71:1</b>	<b>1.1:1</b>	<b>14%</b>	<b>86%</b>	<b>80%</b>	<b>78%</b>	<b>88%</b>	<b>88%</b>

## EVALUATION OF TB CONTROL ACTIVITIES IN TOWNSHIPS (2012-2013)

## Annex-22(Detail township data)

Sl.No	Township	Population	estimated New S(+) cases	Total New S(+)	Total notified TB cases	CDR (NTP only)	CDR (NTP + Other)	Prop. of SS(+): Pul: TB cases out of All Pul:	Ratio of NSS(+) to NSS(-) cases and EP cases	Ratio of NSS(+) to NSS(-) cases	Sputum positivity rate	sputum conversion rate	CR (NTP only)	CR (NTP+Other)	TSR (NTP only)	TSR (NTP+Other)
<b>Mandalay Region</b>																
1	Amarapura	189335	199	149	332	75%	91%	61%	1.23:1	1.8:1	10%	84%	79%	70%	91%	85%
2	Aungmyayathazan	190665	200	173	602	86%	107%	48%	0.62:1	1.1:1	10%	85%	85%	77%	87%	86%
3	Chanayetharzan	140066	147	79	372	54%	70%	34%	0.36:1	0.6:1	6%	94%	77%	71%	90%	86%
4	Chanmyathazi	198098	208	177	572	85%	127%	51%	0.66:1	1.2:1	11%	83%	77%	72%	85%	84%
5	Maharaungmye	225751	237	150	538	63%	87%	46%	0.51:1	0.9:1	5%	97%	92%	87%	94%	91%
6	Pyigyitagonn	153683	161	118	455	73%	98%	44%	0.53:1	1.1:1	7%	91%	88%	80%	91%	91%
7	Pathingyi	190278	200	119	393	60%	61%	49%	0.61:1	1.3:1	7%	85%	89%	83%	90%	89%
8	Meiktilar	285370	300	182	561	61%	70%	60%	0.57:1	1.2:1	18%	77%	77%	72%	81%	80%
9	Mahlaing	158140	166	62	160	37%	39%	62%	0.86:1	1.9:1	9%	87%	83%	83%	89%	89%
10	Tharzi	209583	220	101	286	46%	48%	45%	0.79:1	1.2:1	14%	93%	86%	84%	88%	89%
11	Wundwin	222668	234	81	208	35%	44%	52%	1.29:1	1.9:1	6%	80%	72%	58%	89%	86%
12	Myingon	276252	290	152	503	52%	72%	47%	0.53:1	1.1:1	11%	79%	74%	74%	81%	84%
13	Kyaukpadaung	309476	325	117	333	36%	75%	49%	0.96:1	1.4:1	17%	86%	75%	77%	91%	90%
14	Natogyi	186946	196	55	170	28%	29%	44%	0.62:1	0.9:1	4%	83%	77%	71%	89%	86%
15	Ngazun	135377	142	50	193	35%	37%	42%	0.38:1	0.8:1	5%	85%	95%	94%	96%	95%
16	Taungtha	247862	260	84	244	32%	34%	49%	0.65:1	1.1:1	8%	75%	66%	61%	79%	80%
17	NyaungU	276848	291	132	425	45%	49%	46%	0.84:1	1.1:1	12%	86%	78%	76%	83%	83%
18	Pyin oo Lwin	177208	186	66	260	35%	38%	36%	0.68:1	1.2:1	3%	82%	83%	83%	89%	90%
19	Madayar	245432	258	101	405	39%	62%	61%	0.39:1	1.4:1	18%	69%	69%	68%	88%	86%
20	Mogok	171225	180	97	297	54%	101%	60%	0.66:1	1.6:1	17%	65%	59%	64%	65%	77%
21	Sintga	145252	153	127	282	83%	120%	71%	1.19:1	2.1:1	17%	90%	66%	73%	82%	85%
22	Thabeikkyin	127343	134	80	174	60%	121%	78%	1.4:1	3.1:1	22%	66%	48%	54%	78%	79%
23	Yamethin	246847	259	90	355	35%	35%	47%	0.44:1	1.1:1	16%	82%	52%	51%	75%	74%
24	Pyawbwei	268927	282	153	309	54%	55%	80%	1.33:1	5.3:1	22%	77%	75%	75%	81%	81%
25	Kyaukse	233901	246	119	269	48%	62%	62%	1.16:1	2.4:1	12%	80%	87%	86%	88%	87%
26	Myitha	189669	199	67	228	34%	42%	46%	0.46:1	0.8:1	11%	85%	72%	59%	86%	84%
27	Sintgaing	130557	137	58	199	42%	42%	43%	0.82:1	1.3:1	11%	82%	60%	60%	87%	87%
28	TadaOo	139945	147	43	149	29%	39%	60%	0.52:1	1.6:1	2%	88%	84%	78%	87%	82%
	<b>Total</b>	<b>5672704</b>	<b>5956</b>	<b>2982</b>	<b>9274</b>	<b>50%</b>	<b>65%</b>	<b>52%</b>	<b>0.67:1</b>	<b>1.2:1</b>	<b>9%</b>	<b>83%</b>	<b>77%</b>	<b>74%</b>	<b>86%</b>	<b>85%</b>

EVALUATION OF TB CONTROL ACTIVITIES IN TOWNSHIPS (2012-2013)  
Annex-22(Detail township data)

Sr.No	Township	Population	estimated New S(+) cases	Total New S(+)	Total notified TB cases	CDR (NTP only)	CDR (NTP + Other)	Prop. of SS(+): pul: TB cases out of All Pul:	Ratio of NSS(+) to NSS(-) cases and EP cases	Ratio of NSS(+) to NSS(-) cases	Sputum positivity rate	sputum conversion rate	CR (NTP only)	CR (NTP+ Other)	TSR (NTP only)	TSR (NTP+ Other)
<b>Shan State (Taunggyi)</b>																
1	Linkkay	37478	39	27	72	69%	69%	46%	0.87:1	0.9:1	9%	100%	82%	82%	82%	82%
2	Maukme	27071	28	15	25	53%	53%	78%	7.5:1	15:1	41%	91%	90%	100%	100%	100%
3	Monai	24350	26	16	70	63%	63%	28%	1.07:1	1.5:1	10%	100%	84%	84%	89%	89%
4	Mangpang	16815	18	8	26	45%	45%	45%	0.62:1	1:1	6%	100%	91%	91%	91%	91%
5	Lollem	112509	118	23	201	19%	30%	14%	0.43:1	0.7:1	5%	100%	88%	67%	94%	83%
6	Kunhein	58132	61	46	122	75%	75%	48%	1.21:1	1.4:1	15%	97%	78%	78%	91%	91%
7	Kyeethi	37013	39	8	77	21%	21%	17%	0.12:1	0.2:1	33%	60%	25%	25%	75%	75%
8	Laikha	45145	47	46	223	97%	97%	22%	1.31:1	1.5:1	12%	91%	100%	100%	100%	100%
9	Mongaking	88264	93	22	44	24%	25%	66%	1.69:1	2:1	21%	56%	62%	62%	100%	100%
10	Mongshu	52703	55	51	158	92%	92%	44%	0.77:1	1.8:1	38%	100%	91%	91%	100%	100%
11	Namsan	85092	89	44	247	49%	49%	23%	0.48:1	0.6:1	19%	91%	34%	34%	94%	94%
12	Taunggyi	345305	363	175	673	48%	48%	45%	0.46:1	0.9:1	12%	85%	55%	55%	68%	68%
13	Hopone	97736	103	43	97	42%	42%	62%	1.39:1	2.7:1	8%	81%	60%	60%	67%	67%
14	Hpekon	96546	101	47	100	46%	46%	59%	2.76:1	7.8:1	8%	91%	86%	86%	97%	97%
15	Hisiseng	145785	153	59	161	39%	39%	52%	0.78:1	1.2:1	12%	93%	79%	79%	88%	88%
16	Kalaw	156542	164	74	226	45%	45%	55%	0.75:1	1.5:1	7%	75%	79%	79%	81%	81%
17	Lauksauk	132744	139	60	228	43%	43%	49%	0.44:1	1:1	7%	90%	75%	75%	77%	77%
18	Pindaya	79021	83	58	85	70%	70%	75%	9.67:1	11.6:1	10%	92%	90%	90%	90%	90%
19	Pindaung	170983	180	146	229	81%	81%	79%	2.47:1	7:1	14%	97%	81%	81%	92%	92%
20	Nyaungshwe	180290	189	70	189	37%	39%	53%	0.96:1	2.1:1	10%	87%	95%	89%	95%	89%
21	Ywangan	79076	83	18	56	22%	22%	37%	0.75:1	0.9:1	5%	92%	79%	79%	79%	79%
<b>Total</b>		<b>2068600</b>	<b>2172</b>	<b>1056</b>	<b>3309</b>	<b>49%</b>	<b>50%</b>	<b>45%</b>	<b>0.8:1</b>	<b>1.4:1</b>	<b>10%</b>	<b>90%</b>	<b>74%</b>	<b>72%</b>	<b>86%</b>	<b>85%</b>
<b>Shan State (Kengtong)</b>																
1	Kengtong	161162	169	116	376	69%	69%	47%	0.98:1	1.3:1	17%	74%	63%	59%	75%	74%
2	Mongkhat	26832	28	7	21	25%	25%	42%	1.17:1	1.8:1	9%	67%	71%	71%	71%	71%
3	Mongyan	48032	50	11	37	22%	22%	38%	0.58:1	0.8:1	11%	100%	67%	67%	71%	71%
4	Monghsat	84496	89	99	433	112%	113%	28%	0.50:1	0.5:1	16%	66%	56%	56%	88%	88%
5	Mongping	51532	54	45	135	83%	87%	48%	0.8:1	1.3:1	19%	94%	78%	77%	80%	79%
6	Mongton	32702	34	63	135	183%	183%	57%	1.34:1	1.6:1	29%	54%	40%	40%	82%	82%
7	Mongyak	28496	30	33	61	110%	110%	59%	2.2:1	2.5:1	21%	76%	84%	84%	97%	97%
8	Mongyaung	55417	58	45	83	77%	77%	71%	2.5:1	3.5:1	22%	80%	79%	79%	82%	82%
9	Tachiteik	131385	138	135	387	98%	100%	44%	1.25:1	1.5:1	18%	87%	69%	68%	81%	81%
10	Matman	16665	17	5	8	29%	29%	29%			8%	80%				
<b>Total</b>		<b>620054</b>	<b>669</b>	<b>559</b>	<b>1676</b>	<b>84%</b>	<b>90%</b>	<b>43%</b>	<b>0.95:1</b>	<b>1.1:1</b>	<b>18%</b>	<b>76%</b>	<b>64%</b>	<b>63%</b>	<b>82%</b>	<b>81%</b>

## EVALUATION OF TB CONTROL ACTIVITIES IN TOWNSHIPS (2012-2013)

## Annex-22(Detail township data)

Sr.No	Township	Population	estimated New S(+) cases	Total New S(+)	Total notified TB cases	CDR (NTP only)	CDR (NTP + Other)	Prop: of SS(+)/pul: TB cases out of All Pul:	Ratio of NSS(+) to NSS(-) cases and EP cases	Ratio of NSS(+) to NSS(-) cases	Sputum positivity rate	sputum conversion rate	CR (NTP only)	CR (NTP+Other)	TSR (NTP only)	TSR (NTP+Other)	
<b>Shan State (Lashio)</b>																	
1	Kunlon	61814	65	32	126	49%	51%	36%	0.65:1	0.7:1	11%	94%	79%	79%	79%	79%	
2	Hopan	25374	27	60	210	225%	229%	40%	1.33:1	3.2:1	24%	91%	91%	91%	93%	93%	
3	Kyaukme	171355	180	196	430	109%	131%	70%	1:1	2.2:1	27%	82%	82%	83%	87%	89%	
4	Hsipaw	165143	173	120	381	69%	91%	62%	0.59:1	2.2:1	10%	85%	97%	94%	97%	95%	
5	Mabein	36058	38	11	57	29%	29%	27%	0.31:1	0.4:1	24%	100%	69%	69%	88%	88%	
6	Manton	43438	46	7	14	15%	15%	62%	7:1	7:1							
7	Mongmeik	59384	62	71	105	114%	119%	88%	3.55:1	6.5:1	21%	79%	54%	54%	71%	73%	
8	Namtu	49147	52	37	187	72%	74%	27%	0.39:1	0.5:1	23%	68%	54%	52%	75%	72%	
9	Nyaungcho	129853	136	38	114	28%	29%	46%	0.9:1	1.5:1	6%	82%	86%	80%	86%	85%	
10	Lashio	285706	300	203	1108	68%	135%	29%	0.42:1	0.5:1	15%	78%	53%	57%	59%	65%	
11	Namsam	75830	80	10	32	13%	14%	38%	0.63:1	0.8:1	6%	67%	62%	62%	100%	100%	
12	Mongmaw	Nr.															
13	Theinni	52647	55	54	203	98%	101%	30%	0.6:1	0.7:1	17%	93%	87%	85%	87%	85%	
14	Mongreh	49084	52	22	96	43%	47%	25%	0.61:1	0.6:1	8%	94%	48%	48%	93%	93%	
15	Manphant	Nr.															
16	Pangyan	Nr.															
17	Narphant	Nr.															
18	Panwaing	Nr.															
19	Tanyan	127576	134	61	215	46%	68%	52%	0.53:1	1.1:1	7%	82%	48%	47%	82%	79%	
20	Laukkai	79084	83	41	328	49%	177%	19%	0.17:1	0.2:1	15%	69%	45%	50%	59%	60%	
21	Kongyan	Nr.															
22	Muse	148388	156	93	264	60%	85%	62%	0.75:1	1.8:1	12%	71%	47%	59%	68%	74%	
23	Kuitai	182021	191	56	403	29%	32%	40%	0.18:1	0.5:1	16%	73%	38%	37%	67%	65%	
24	Namkham	107806	113	40	196	35%	36%	26%	0.49:1	0.5:1	9%	86%	67%	67%	78%	78%	
	<b>Total</b>	<b>1849708</b>	<b>1942</b>	<b>1152</b>	<b>4469</b>	<b>59%</b>	<b>78%</b>	<b>40%</b>	<b>0.53:1</b>	<b>0.9:1</b>	<b>14%</b>	<b>81%</b>	<b>67%</b>	<b>66%</b>	<b>78%</b>	<b>77%</b>	

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



## EVALUATION OF TB CONTROL ACTIVITIES IN TOWNSHIPS (2012-2013)

## Annex-22(Detail township data)

Sr.No	Township	Population	estimated New S(+) cases	Total New S(+)	Total notified TB cases	CDR (NTP only)	CDR (NTP + Other)	Prop. of SS(+): Pul: out of All TB cases	Ratio of NSS(+) to NSS(-) cases and EP cases	Ratio of NSS(+) to NSS(-) cases	Sputum positivity rate	sputum conversion rate	CR (NTP only)	CR (NTP+Other)	TSR (NTP only)	TSR (NTP+Other)
<b>Kayin State</b>																
1	<b>Kawkareik</b>	252061	265	141	443	53%	60%	39%	1.05:1	1.3:1	21%	78%	70%	70%	88%	88%
2	Kyainseikkyi	178031	187	79	217	42%	42%	41%	0.9:1	1.1:1	31%	90%	72%	71%	77%	76%
3	Myawady	117269	123	185	495	150%	175%	52%	1.05:1	1.3:1	19%	71%	60%	60%	69%	70%
4	Hpa-an	430180	452	385	1331	85%	86%	32%	0.54:1	0.6:1	15%	94%	82%	81%	89%	89%
5	<b>Hlaingbwe</b>	271548	285	211	529	74%	79%	45%	1.22:1	1.3:1	11%	95%	90%	88%	94%	94%
6	Papuri(Kamamaung)	43936	46	36	136	78%	102%	28%	0.62:1	0.6:1	24%	97%	77%	75%	77%	78%
7	<b>Thandaung</b>	96249	101	17	139	17%	19%	17%	0.68:1	0.9:1	15%	70%	93%	79%	93%	95%
	<b>Total</b>	<b>1389274</b>	<b>1459</b>	<b>1054</b>	<b>3290</b>	<b>72%</b>	<b>78%</b>	<b>38%</b>	<b>0.77:1</b>	<b>0.8:1</b>	<b>16%</b>	<b>88%</b>	<b>77%</b>	<b>77%</b>	<b>85%</b>	<b>85%</b>
<b>Tanintharyi Region</b>																
1	<b>Dawei</b>	132935	140	124	609	89%	145%	28%	0.66:1	0.8:1	12%	79%	75%	79%	80%	82%
2	Launglon	138021	145	86	386	59%	62%	34%	0.74:1	1.1:1	4%	83%	80%	80%	82%	82%
3	Thayetchaung	119812	126	54	221	43%	47%	35%	0.74:1	1:1	10%	78%	69%	70%	78%	80%
4	Yebyu	124951	131	46	206	35%	36%	28%	0.53:1	0.6:1	7%	97%	83%	83%	90%	90%
5	<b>Kawthaung</b>	98293	103	104	663	101%	114%	21%	0.39:1	0.5:1	14%	82%	55%	58%	82%	81%
6	Bokpin	51554	54	43	179	79%	91%	36%	0.48:1	1:1	25%	75%	63%	65%	65%	70%
7	Myeik	252659	265	246	1522	93%	107%	24%	0.31:1	0.5:1	50%	84%	72%	71%	83%	84%
8	Kyunsu	145321	153	16	48	10%	11%	50%	1.07:1	1.3:1	2%	100%	90%	88%	90%	91%
9	Tanintharyi	100497	106	57	119	54%	54%	64%	1.73:1	2.7:1	24%	80%	78%	76%	78%	76%
10	Palaw	137741	145	57	894	39%	41%	11%	0.17:1	0.3:1	11%	88%	56%	55%	76%	75%
	<b>Total</b>	<b>1301784</b>	<b>1367</b>	<b>833</b>	<b>4847</b>	<b>61%</b>	<b>72%</b>	<b>25%</b>	<b>0.42:1</b>	<b>0.6:1</b>	<b>19%</b>	<b>83%</b>	<b>70%</b>	<b>72%</b>	<b>81%</b>	<b>82%</b>

**EVALUATION OF TB CONTROL ACTIVITIES IN TOWNSHIPS (2012-2013)**  
Annex-22(Detail township data)

Sr.No	Township	Population	estimated New S(+) cases	Total New S(+)	Total notified TB cases	CDR (NTP only)	CDR (NTP + Other)	Prop. of SS(+)/pul. TB cases out of All Pul.	Ratio of NSS(+) to NSS(-) cases and EP cases	Ratio of NSS(+) to NSS(-) cases	Sputum positivity rate	sputum conversion rate	CR (NTP only)	CR (NTP+Other)	TSR (NTP only)	TSR (NTP+Other)
<b>Bago Region</b>																
1	Bago	428626	450	340	1401	76%	127%	39%	0.48:1	0.8:1	12%	89%	75%	74%	85%	87%
2	Daik-U	201612	212	125	514	59%	68%	33%	0.6:1	0.8:1	18%	77%	56%	55%	91%	92%
3	Kawa	208983	219	103	373	47%	57%	36%	0.67:1	0.8:1	31%	85%	85%	83%	88%	90%
4	Kyauktaga	207761	218	137	541	63%	73%	34%	0.59:1	0.7:1	16%	92%	86%	86%	92%	91%
5	Nyaunglaybin	259856	273	136	489	50%	54%	35%	0.61:1	0.8:1	17%	88%	78%	75%	91%	91%
6	Shwekyin	90845	95	55	223	58%	58%	31%	0.59:1	0.7:1	15%	80%	45%	45%	85%	85%
7	Thanatpin	221487	233	80	401	34%	40%	24%	0.36:1	0.4:1	9%	86%	80%	80%	90%	92%
8	Waw	159274	167	161	428	96%	107%	46%	0.95:1	1.4:1	18%	97%	86%	83%	93%	94%
9	Taunggoo	229239	241	155	587	64%	121%	36%	0.92:1	1.3:1	32%	89%	86%	76%	89%	86%
10	Kyaukkyi	198795	209	73	187	35%	35%	48%	1.27:1	1.4:1	25%	92%	74%	74%	84%	84%
11	Okwin	278684	293	112	470	38%	46%	30%	0.78:1	0.9:1	21%	93%	73%	71%	82%	82%
12	Phyu	159549	168	153	920	91%	96%	21%	0.46:1	0.5:1	15%	81%	73%	70%	82%	82%
13	Htantabin	110162	116	54	224	47%	54%	30%	0.61:1	0.7:1	23%	93%	91%	78%	93%	92%
14	Yedashe	119576	126	142	406	113%	132%	41%	0.86:1	1.1:1	24%	92%	87%	81%	91%	91%
15	Pyay	151995	160	167	925	105%	149%	22%	0.49:1	0.6:1	15%	78%	79%	78%	81%	83%
16	Paukhaung	185420	195	122	373	63%	63%	41%	1.2:1	1.6:1	9%	99%	58%	58%	92%	92%
17	Paungde	124401	131	103	420	79%	96%	31%	0.93:1	1.1:1	16%	80%	89%	86%	91%	88%
18	Paduang	115164	121	64	322	53%	104%	28%	0.5:1	0.5:1	15%	83%	51%	53%	80%	78%
19	Shwedaung	126460	133	106	302	80%	96%	41%	0.97:1	1.2:1	16%	96%	61%	67%	82%	85%
20	Thegon	128331	135	78	391	58%	65%	24%	0.55:1	0.6:1	13%	93%	69%	71%	86%	87%
21	Tharyawady	167003	175	150	437	86%	101%	43%	1.09:1	1.2:1	19%	90%	86%	85%	89%	90%
22	Zigon	69251	73	71	252	98%	98%	31%	0.72:1	0.8:1	18%	94%	84%	84%	97%	97%
23	Minhla	217359	228	142	453	62%	62%	38%	0.81:1	1:1	16%	76%	69%	69%	84%	84%
24	Moonyo	116715	123	68	240	55%	55%	33%	0.83:1	0.9:1	13%	90%	81%	81%	92%	92%
25	Okpo	139151	146	108	359	74%	81%	37%	0.89:1	1:1	17%	91%	58%	55%	88%	88%
26	Gyobingauk	128340	135	59	304	44%	54%	30%	0.44:1	0.6:1	11%	92%	76%	76%	93%	92%
27	Nattalin	129515	136	168	584	124%	124%	37%	0.99:1	1.2:1	20%	91%	75%	75%	91%	90%
28	Latpadan	135322	142	146	360	103%	120%	50%	1.2:1	1.5:1	15%	89%	74%	70%	93%	89%
<b>Total</b>		<b>4808876</b>	<b>5049</b>	<b>3378</b>	<b>12886</b>	<b>67%</b>	<b>83%</b>	<b>34%</b>	<b>0.68:1</b>	<b>0.9:1</b>	<b>17%</b>	<b>88%</b>	<b>75%</b>	<b>74%</b>	<b>88%</b>	<b>88%</b>



**EVALUATION OF TB CONTROL ACTIVITIES IN TOWNSHIPS (2012-2013)**  
**Annex-22(Detail township data)**

Sr.No	Township	Population	estimated New S(+) cases	Total New S(+)	Total notified TB cases	CDR (NTP only)	CDR (NTP + Other)	Prop. of SS(+)/pul. TB cases out of All Pul.	Ratio of NSS(+) to NSS(-) cases and EP cases	Ratio of NSS(+) to NSS(-) cases	Sputum positivity rate	sputum conversion rate	CR (NTP only)	CR (NTP+Other)	TSR (NTP only)	TSR (NTP+ Other)	
<b>Mon State</b>																	
1	Mawlamyaing	273784	287	334	1104	116%	133%	41%	0.76:1	0.9:1	16%	93%	70%	70%	85%	85%	
2	Chanungzon	157753	166	91	314	55%	57%	31%	1.12:1	1.3:1	6%	93%	88%	85%	90%	91%	
3	Kyaikmaraw	216101	227	125	826	55%	56%	17%	0.75:1	0.9:1	7%	91%	67%	66%	91%	92%	
4	Mudon	215484	226	103	556	46%	66%	27%	0.42:1	0.9:1	10%	89%	80%	70%	88%	86%	
5	Thanbyuzayat	176653	185	120	780	65%	68%	18%	0.84:1	1:1	8%	85%	90%	87%	91%	89%	
6	Ye	254253	267	183	892	69%	69%	25%	0.69:1	0.7:1	13%	78%	65%	65%	75%	75%	
7	Thaon	253013	266	236	699	89%	138%	43%	0.9:1	1:1	16%	85%	56%	64%	79%	85%	
8	Belin	180960	190	149	724	78%	99%	23%	0.49:1	0.5:1	8%	95%	91%	88%	96%	95%	
9	Kyaikto	168131	177	114	245	65%	108%	58%	1.41:1	1.8:1	19%	90%	83%	80%	83%	84%	
10	Paung	245796	258	171	870	66%	72%	22%	0.42:1	0.5:1	11%	88%	89%	89%	91%	91%	
	<b>Total</b>	<b>2141928</b>	<b>2249</b>	<b>1626</b>	<b>7010</b>	<b>72%</b>	<b>89%</b>	<b>29%</b>	<b>0.68:1</b>	<b>0.8:1</b>	<b>11%</b>	<b>89%</b>	<b>76%</b>	<b>75%</b>	<b>86%</b>	<b>87%</b>	
<b>Rakhine State</b>																	
1	Sittwe	259437	272	237	617	87%	152%	46%	1.22:1	1.9:1	17%	70%	44%	44%	78%	74%	
2	Ponngyun	147448	155	76	459	49%	49%	27%	0.4:1	0.4:1	25%	83%	96%	96%	96%	96%	
3	Kyauktaw	217512	228	123	372	54%	54%	40%	0.88:1	1.1:1	11%	94%	68%	68%	96%	96%	
4	MraukOo	220414	231	191	446	83%	83%	53%	1.02:1	1.3:1	24%	86%	48%	48%	91%	91%	
5	Minbya	201781	212	196	337	93%	93%	71%	2.15:1	3.3:1	28%	79%	77%	77%	86%	86%	
6	Myaepoon	144362	152	82	177	54%	54%	57%	1.26:1	1.8:1	22%	94%	51%	51%	89%	89%	
7	Pauktaw	183993	193	41	140	21%	21%	42%	0.79:1	0.9:1		73%	40%	40%	73%	73%	
8	Yatheedaung	169352	178	105	218	59%	59%	53%	1.5:1	1.5:1	26%	90%	86%	86%	86%	86%	
9	Maungdaw	552993	581	166	367	29%	32%	55%	1.89:1	2.4:1	38%	70%	59%	58%	65%	66%	
10	Buthidaung	316750	333	174	500	52%	52%	45%	0.95:1	1.1:1	17%	67%	69%	68%	94%	94%	
11	Kyaukphyu	171724	180	122	385	68%	68%	43%	0.76:1	1.2:1	13%	85%	71%	71%	79%	79%	
12	Yanbye	114708	120	55	133	46%	46%	51%	1.12:1	1.5:1	17%	93%	83%	83%	83%	83%	
13	Manauing	64296	68	58	116	86%	86%	60%	1.49:1	1.8:1	21%	98%	98%	98%	98%	98%	
14	Ann	114485	120	67	245	56%	56%	37%	0.51:1	0.8:1	17%	75%	56%	56%	81%	81%	
15	Thandwe	124844	131	108	288	82%	83%	65%	0.7:1	2:1	11%	89%	82%	82%	92%	92%	
16	Taunggoke	146505	154	134	314	87%	88%	58%	1.19:1	1.8:1	14%	80%	54%	54%	73%	73%	
17	Gwa	63064	66	55	170	83%	83%	50%	0.59:1	1.3:1	17%	87%	88%	88%	88%	88%	
	<b>Total</b>	<b>3213668</b>	<b>3374</b>	<b>1990</b>	<b>5284</b>	<b>59%</b>	<b>65%</b>	<b>49%</b>	<b>0.99:1</b>	<b>1.4:1</b>	<b>18%</b>	<b>80%</b>	<b>65%</b>	<b>64%</b>	<b>85%</b>	<b>84%</b>	

## EVALUATION OF TB CONTROL ACTIVITIES IN TOWNSHIPS (2012-2013)

## Annex-22(Detail township data)

Sr.No	Township	Population	estimated New S(+) cases	Total New S(+)	Total notified TB cases	CDR (NTP only)	CDR (NTP + Other)	Prop. of SS(+)/pul: TB cases out of All Pul:	Ratio of NSS(+/-) cases and EP cases	Ratio of NSS(+/-) to NSS(-) cases	Sputum positivity rate	sputum conversion rate	CR (NTP only)	CR (NTP+Other)	TSR (NTP only)	TSR (NTP+Other)
<b>Yangon Region</b>																
<b>East District</b>																
1	Botataung	40279	68	46	143	67%	69%	48%	0.68:1	0.8:1	78%	100%	91%	85%	91%	88%
2	Dawbon	77985	133	110	271	83%	165%	59%	1.05:1	1.3:1	99%	98%	92%	79%	92%	86%
3	Dagon(N)	180599	307	177	506	58%	124%	51%	0.85:1	1:1	85%	88%	77%	77%	89%	92%
4	Dagon(S)	281081	478	416	1183	87%	156%	52%	0.95:1	1.2:1	69%	84%	80%	73%	80%	80%
5	MingalarTN	128626	219	101	560	46%	50%	31%	0.33:1	0.4:1	69%	95%	97%	94%	86%	95%
6	Okkala(N)	273506	465	248	810	53%	129%	49%	0.69:1	0.9:1	59%	90%	86%	80%	86%	86%
7	Okkala(S)	156157	265	177	451	67%	120%	56%	0.98:1	1.2:1	96%	82%	89%	84%	90%	88%
8	Thaketa	205225	349	237	591	68%	159%	60%	1.2:1	1.6:1	31%	88%	83%	71%	83%	81%
9	Thingangyun	192422	327	178	682	54%	111%	43%	0.57:1	0.7:1	84%	98%	81%	71%	84%	80%
10	Yankin	98114	167	126	256	76%	78%	69%	2.1:1	3.3:1	106%	93%	90%	84%	90%	88%
11	Tarmwe	157797	268	125	437	47%	71%	48%	0.61:1	0.8:1	36%	100%	89%	83%	90%	89%
12	Pazundaung	47661	81	61	187	75%	77%	52%	0.77:1	1:1		93%	78%	74%	78%	74%
13	Dagon(E)	116784	199	200	557	101%	132%	51%	0.96:1	1.1:1	21%	93%	88%	84%	92%	94%
14	Dagon Seikkan	112091	191	104	304	55%	87%	49%	0.89:1	1.1:1	60%	98%	84%	65%	88%	83%
<b>Total</b>		<b>2068327</b>	<b>3516</b>	<b>2306</b>	<b>6938</b>	<b>66%</b>	<b>118%</b>	<b>50%</b>	<b>0.81:1</b>	<b>1:1</b>	<b>65%</b>	<b>91%</b>	<b>85%</b>	<b>77%</b>	<b>87%</b>	<b>85%</b>
<b>West District</b>																
1	KAWAYUT	63654	108	82	246	76%	90%	53%	0.68:1	1:1		83%	79%	77%	79%	79%
2	KYAUKTADA	28227	48	30	93	63%	63%	49%	0.63:1	0.8:1		96%	90%	90%	90%	90%
3	KYINMYINDINE	103586	176	154	379	87%	118%	59%	1.03:1	1.5:1	26%	79%	63%	64%	72%	76%
4	SANCHUNG	79404	135	104	273	77%	91%	57%	0.92:1	1.2:1		93%	81%	80%	86%	88%
5	SEIKKAN	1523	3	6	9	232%	232%	67%	2:1	2:1		40%				
6	DAGON	22516	38	27	67	71%	71%	59%	0.9:1	1.4:1		86%	89%	89%	89%	89%
7	PABADAN	30252	51	41	117	80%	80%	48%	0.73:1	0.9:1		93%	85%	86%	85%	86%
8	BAHAN	78923	134	91	256	68%	86%	55%	0.82:1	1.1:1	17%	95%	93%	81%	94%	90%
9	MAYANGON	156228	266	154	550	58%	91%	45%	0.54:1	0.7:1	20%	90%	89%	83%	90%	86%
10	LATHA	27643	47	21	73	45%	45%	53%	0.68:1	1:1		82%	81%	82%	94%	94%
11	LANMADAW	34450	59	43	124	73%	86%	52%	0.65:1	0.9:1		94%	80%	76%	84%	79%
12	HLAING	119969	204	219	602	107%	135%	53%	0.93:1	1.2:1	20%	97%	97%	90%	97%	95%
13	AHLONE	51338	87	59	155	68%	99%	61%	0.88:1	1.5:1		76%	85%	83%	85%	87%
<b>Total</b>		<b>797713</b>	<b>1356</b>	<b>1031</b>	<b>2944</b>	<b>76%</b>	<b>97%</b>	<b>53%</b>	<b>0.78:1</b>	<b>1:1</b>	<b>22%</b>	<b>89%</b>	<b>84%</b>	<b>80%</b>	<b>87%</b>	<b>86%</b>

## EVALUATION OF TB CONTROL ACTIVITIES IN TOWNSHIPS (2012-2013)

Annex-22(Detail township data)

Sr.No	Township	Population	estimated New S(+) cases	Total New S(+)	Total notified TB cases	CDR (NTP only)	CDR (NTP + Other)	Prop. of SS(+): Pul: out of All TB cases	Ratio of NSS(+) to NSS(-) and EP cases	Ratio of NSS(+) to NSS(-) cases	Sputum positivity rate	sputum conversion rate	CR (NTP only)	CR (NTP+ Other)	TSR (NTP only)	TSR (NTP+ Other)
<b>South District</b>																
1	SEIKKYIKANAJUNG T	31811	54	44	125	81%	82%	49%	0.79:1	1:1		91%	55%	55%	87%	87%
2	DALLAH	156364	266	127	528	48%	98%	38%	0.42:1	0.6:1	15%	92%	70%	62%	80%	75%
3	CoCo Gyun	0	0	0	0		0%									
4	KAWHIMU	123992	211	51	183	24%	54%	39%	0.72:1	0.9:1	5%	97%	93%	81%	93%	89%
5	KYAUKTAN	166068	282	109	328	39%	44%	40%	0.77:1	0.9:1	10%	88%	71%	75%	91%	92%
6	KUNGGANGONE	116147	197	100	226	51%	63%	53%	1.56:1	1.9:1	10%	91%	81%	82%	89%	91%
7	KAYAN	170290	289	122	295	42%	54%	53%	1.42:1	2.1:1	23%	99%	88%	84%	93%	91%
8	TWANTAY	216388	368	160	460	43%	74%	50%	1.08:1	1.6:1	9%	92%	77%	75%	88%	86%
9	THONGWA	161800	275	140	269	51%	57%	66%	1.57:1	2.4:1	13%	89%	88%	80%	89%	82%
10	THANLYIN	192995	328	340	806	104%	150%	57%	1.07:1	1.4:1	24%	91%	80%	75%	87%	84%
	<b>Total</b>	<b>1335855</b>	<b>2271</b>	<b>1193</b>	<b>3220</b>	<b>53%</b>	<b>77%</b>	<b>50%</b>	<b>0.93:1</b>	<b>1.3:1</b>	<b>13%</b>	<b>92%</b>	<b>78%</b>	<b>74%</b>	<b>88%</b>	<b>85%</b>
<b>North District</b>																
1	MINGALADON	189968	323	382	1109	118%	179%	52%	0.79:1	0.9:1	19%	83%	87%	83%	88%	86%
2	SHWEPYITHA	240886	410	252	753	62%	124%	48%	0.73:1	0.9:1	19%	88%	77%	75%	86%	87%
3	HLAINGTHAYAR	396124	673	606	1899	90%	190%	42%	0.71:1	0.8:1	18%	97%	93%	73%	93%	78%
4	INSEIN	238928	406	364	1117	90%	149%	48%	0.66:1	0.8:1	20%	94%	89%	81%	92%	88%
5	TAIKKYI	244769	416	253	839	61%	101%	42%	0.74:1	0.8:1	19%	85%	80%	73%	86%	88%
6	HTANTABIN	126131	214	97	238	45%	49%	53%	0.98:1	1.4:1	33%	100%	97%	97%	97%	97%
7	HMAWBI	191920	326	195	551	60%	90%	45%	0.97:1	1.2:1	15%	87%	84%	71%	92%	85%
8	HLEGU	199432	339	95	488	28%	56%	28%	0.43:1	0.5:1	7%	100%	97%	81%	97%	89%
	U.T.I	0	0	0	0						18%					
	NTP (Diagnostic C)	0	0	0	11			10%	0:1	0:1	13%					
	<b>Total</b>	<b>1828158</b>	<b>3108</b>	<b>2244</b>	<b>7005</b>	<b>72%</b>	<b>128%</b>	<b>45%</b>	<b>0.72:1</b>	<b>0.8:1</b>	<b>16%</b>	<b>91%</b>	<b>87%</b>	<b>77%</b>	<b>90%</b>	<b>84%</b>
	<b>Yangon Region</b>	<b>6030053</b>	<b>10251</b>	<b>6774</b>	<b>20107</b>	<b>66%</b>	<b>109%</b>	<b>49%</b>	<b>0.79:1</b>	<b>1:1</b>	<b>33%</b>	<b>91%</b>	<b>84%</b>	<b>77%</b>	<b>88%</b>	<b>85%</b>

## EVALUATION OF TB CONTROL ACTIVITIES IN TOWNSHIPS (2012-2013)

## Annex-22(Detail township data)

Sr.No	Township	Population	estimated New S(+) cases	Total New S(+)	Total notified TB cases	CDR (NTP only)	CDR (NTP + Other)	Prop. of SS(+)/pul: TB cases out of All Pul:	Ratio of NSS(+) to NSS(-) cases and EP cases	Ratio of NSS(+) to NSS(-) cases	Sputum positivity rate	sputum conversion rate	CR (NTP only)	CR (NTP+Other)	TSR (NTP only)	TSR (NTP+Other)
<b>Ayeyarwaddy Region</b>																
1	<b>Patheingyi</b>	298227	313	441	1390	141%	173%	41%	0.79:1	1:1	20%	84%	68%	69%	87%	86%
2	Kangyidaung	170061	179	106	314	59%	65%	46%	0.87:1	1.2:1	16%	96%	83%	79%	93%	91%
3	Yekyi	196496	206	154	578	75%	76%	37%	0.52:1	0.8:1	17%	90%	62%	62%	93%	93%
4	Kyaunggon	166406	175	137	314	78%	81%	59%	1.41:1	2.7:1	17%	94%	78%	78%	91%	92%
5	Kyongyaw	256056	269	168	443	62%	68%	62%	0.79:1	1.6:1	19%	92%	65%	65%	96%	96%
6	Ngaputaw	308535	324	188	609	58%	59%	38%	0.87:1	1.1:1	20%	93%	74%	74%	90%	89%
7	Thabaung	153137	161	128	480	80%	81%	35%	1.01:1	1.3:1	15%	86%	70%	69%	85%	85%
8	<b>Hinhada</b>	366960	385	353	1065	92%	107%	39%	0.67:1	0.8:1	20%	91%	88%	84%	92%	92%
9	Kyankin	96729	102	59	286	58%	62%	26%	0.45:1	0.7:1	10%	96%	84%	84%	90%	90%
10	Myanaung	222740	234	130	726	56%	57%	25%	0.35:1	0.6:1	20%	89%	70%	72%	88%	89%
11	Ingapu	213652	224	148	408	66%	81%	43%	0.91:1	1:1	16%	90%	75%	72%	84%	84%
12	Zalun	180592	190	90	476	47%	51%	23%	0.5:1	0.5:1	15%	89%	46%	46%	71%	71%
13	Laymethna	107852	113	81	180	72%	72%	51%	1.21:1	1.4:1	18%	81%	79%	79%	89%	89%
14	<b>Myaungmya</b>	281396	295	226	839	76%	87%	38%	0.54:1	0.8:1	15%	88%	70%	69%	79%	80%
15	Laputta	328446	345	203	578	59%	60%	47%	1.03:1	1.4:1	17%	88%	70%	70%	83%	84%
16	Mawgyun	310977	327	175	406	54%	70%	52%	1.37:1	2.2:1	16%	81%	85%	82%	87%	87%
17	Wakema	295634	310	127	285	41%	76%	58%	1.38:1	2:1	12%	90%	64%	67%	90%	88%
18	Einme	201407	211	161	424	76%	79%	44%	1.07:1	1.3:1	13%	87%	73%	73%	83%	83%
19	<b>Pyapon</b>	313642	329	259	714	79%	94%	46%	0.9:1	1.2:1	18%	91%	78%	79%	81%	82%
20	Bogalay	341121	358	209	457	58%	75%	64%	1.13:1	1.8:1	18%	87%	75%	73%	82%	81%
21	Dedaye	214181	225	65	207	29%	38%	36%	0.61:1	0.6:1	13%	79%	46%	51%	88%	89%
22	Kyaikkatt	207427	218	89	340	41%	51%	31%	0.67:1	0.8:1	18%	89%	58%	60%	91%	90%
23	<b>Maubin</b>	347196	365	224	660	61%	61%	56%	0.57:1	1.1:1	24%	90%	66%	65%	86%	86%
24	Nyaungdon	221135	232	155	313	67%	84%	63%	1.8:1	3.2:1	29%	92%	94%	93%	94%	94%
25	Pantanaw	262339	275	205	368	74%	93%	61%	1.85:1	2.1:1	25%	78%	60%	65%	86%	87%
26	Danuphyu	186830	196	154	314	79%	90%	63%	2.61:1	3:1	29%	96%	92%	90%	93%	93%
<b>Total</b>		<b>6249174</b>	<b>6562</b>	<b>4435</b>	<b>13174</b>	<b>68%</b>	<b>79%</b>	<b>44%</b>	<b>0.82:1</b>	<b>1.1:1</b>	<b>18%</b>	<b>88%</b>	<b>73%</b>	<b>73%</b>	<b>87%</b>	<b>87%</b>

## EVALUATION OF TB CONTROL ACTIVITIES IN TOWNSHIPS (2012-2013)

## Annex-22(Detail township data)

Sr.No	Township	Population	estimated New S(+) cases	Total New S(+)	Total notified TB cases	CDR (NTP only)	CDR (NTP + Other)	Prop: of SS(+): Pul: TB cases out of All Pul:	Ratio of NSS(+) to NSS(-) cases and EP cases	Ratio of NSS(+) to NSS(-) cases	Sputum positivity rate	sputum conversion rate	CR (NTP only)	CR (NTP+Other)	TSR (NTP only)	TSR (NTP+Other)
<b>Naypyitaw</b>																
1	Oaktaratheri	58171	61	38	93	62%	69%	53%	0.86:1	1.3:1		94%	74%	72%	91%	92%
2	Dekhinatheri	28998	30	8	33	26%	36%	62%	0.67:1	2.7:1		78%	75%	75%	88%	88%
3	Poapatheri	80682	85	55	152	65%	74%	58%	0.74:1	1.5:1	25%	85%	69%	69%	81%	81%
4	Zan utheri	73213	77	26	77	34%	36%	62%	0.81:1	1.2:1		96%	64%	63%	81%	81%
5	Zayartheri	76818	81	124	434	154%	160%	48%	0.52:1	1:1	21%	93%	68%	68%	78%	78%
6	Pynmana	159429	167	170	490	102%	130%	60%	0.72:1	1.5:1	19%	90%	79%	75%	83%	83%
7	Tatkone	204625	215	111	344	52%	65%	58%	0.65:1	1.4:1	24%	80%	79%	73%	87%	83%
8	Lewei	269916	283	165	385	58%	69%	61%	1.02:1	1.8:1	23%	89%	82%	80%	93%	93%
	<b>Total</b>	<b>951852</b>	<b>999</b>	<b>697</b>	<b>2010</b>	<b>70%</b>	<b>83%</b>	<b>57%</b>	<b>0.72:1</b>	<b>1.4:1</b>	<b>20%</b>	<b>88%</b>	<b>76%</b>	<b>74%</b>	<b>85%</b>	<b>85%</b>
<b>Other units</b>		not available	not available	10250	34466	not available	not available	41%	0.66:1	0.9:1	12%	79%	CR=66%(other units only)	TSR= 82%(other units only)		
<b>Country</b>		47796627	54106	42595	142162	60%	78.7%	41%	0.71:1	1:1	15%	85%	76%	74%	86%	85%

## CDR &lt;70% and TSR&lt;85% (56)townships including partners units in 2013

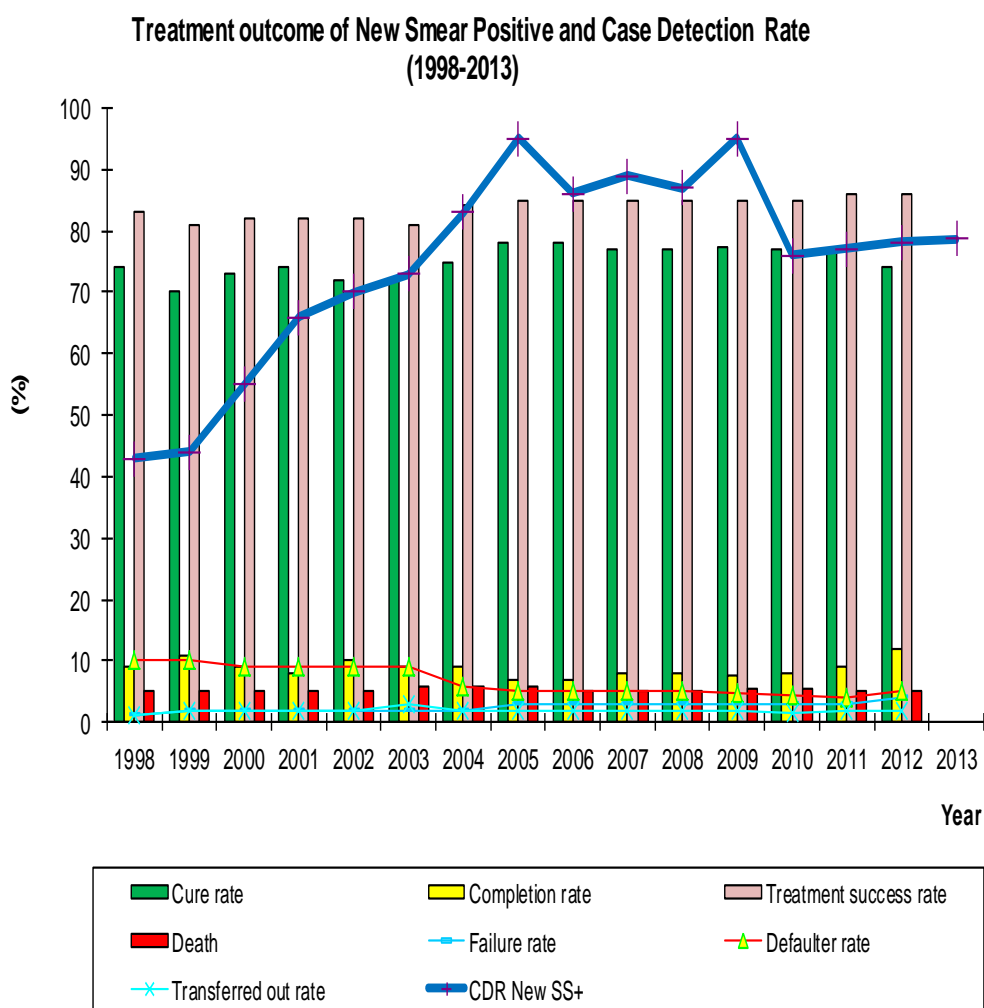
Sr.No	Region & State	Sr. No	Townships	CDR<70%	TSR<85%
1	Rakhine	1	Pauktaw	21%	73%
		2	Ann	56%	81%
		3	Kyaukphyu	68%	79%
		4	Yanbye	46%	83%
		5	Maungdaw	32%	66%
2	Sagaing	6	Shwebo	41%	84%
		7	Budalin	64%	83%
		8	Minkin	23%	84%
		9	Taze	32%	81%
		10	Kyunhla	22%	77%
		11	Katha	42%	84%
		12	Phaungbyin	35%	84%
		13	Banmauk	32%	82%
		15	Mindat	35%	83%
		16	Tiddim	17%	76%
		17	Taunggyi	48%	68%
4	Shan(Taunggyi)	18	Hopone	44%	67%
		19	Kalaw	46%	81%
		20	Ywangan	22%	79%
		21	Yauksauk	43%	77%
		22	Loilem	30%	83%
		23	Linhkay	69%	82%
		24	Kyeethi	21%	75%
		5	Magway	25	Minbu
26	Kanma			65%	70%
6	Shan(Lashio)	27	Kuitkai	32%	65%
		28	Tanyan	68%	79%
		29	Namkham	36%	78%
		30	Kunlon	51%	79%
7	Kayin	31	Kyainseikkyi	42%	76%
8	Bago	32	Oktwin	46%	82%
		33	Minhla	62%	84%
		34	Kyaukkyi	35%	84%
9	Ayeyarwaddy	35	Zalun	51%	71%
		36	Laputta	60%	84%
10	Tanintharyi	37	Launglon	62%	82%
		38	Thayetchaung	47%	80%
		39	Palaw	41%	75%
		40	Tanintharyi	54%	76%
11	Kayah	41	Loikaw	55%	76%
		42	Phruhso	12%	60%
12	Mandalay	43	Yamethin	35%	74%
		44	Pyawbwei	55%	81%
		45	Meiktilar	70%	80%
		46	NyaungU	49%	83%
		47	TadaOo	39%	82%
		48	Myittha	42%	84%
		49	Taungtha	34%	80%
13	Shan (kengtong)	50	Mongkhat	25%	71%
		51	Mongyan	22%	71%
14	Kachin	52	Putao	40%	82%
15	Naypyitaw	53	Zabuthiri	36%	81%
		54	Tatkone	65%	83%
16	Yangon	55	Thonegwa	57%	82%
17	Mon	56	Ye	69%	75%

**Progress of NTP (1995-2013)**

Annual 2013

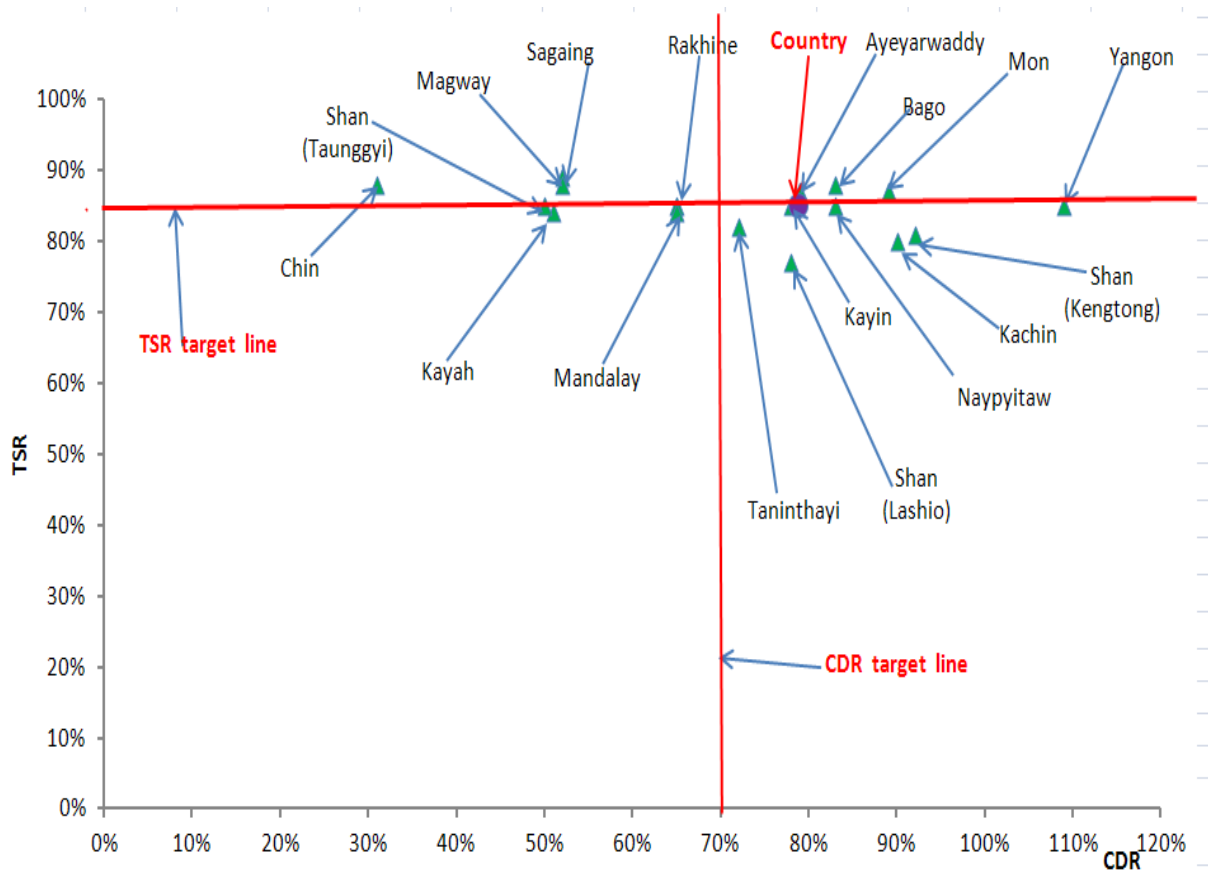
Annex 23

Indicator\Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
<b>CDR (New SS+)</b>	35%	39%	39%	43%	44%	55%	66%	70%	73%	83%	95%	86%	89%	87%	95%	76%	77%	<b>78.2%</b>	<b>78.7%</b>
<b>CR</b>	54%	75%	73%	74%	70%	73%	74%	72%	72%	75%	78%	78%	77%	78%	77%	77%	77%	<b>74%</b>	
<b>TSR</b>	66%	82%	82%	83%	81%	82%	82%	82%	81%	84%	85%	85%	85%	85%	85%	85.5%	86%	<b>85%</b>	



Annex 24

### Target achievement according to Regions/States/Naypyitaw and Country (2012-2013)





## Annual 2013

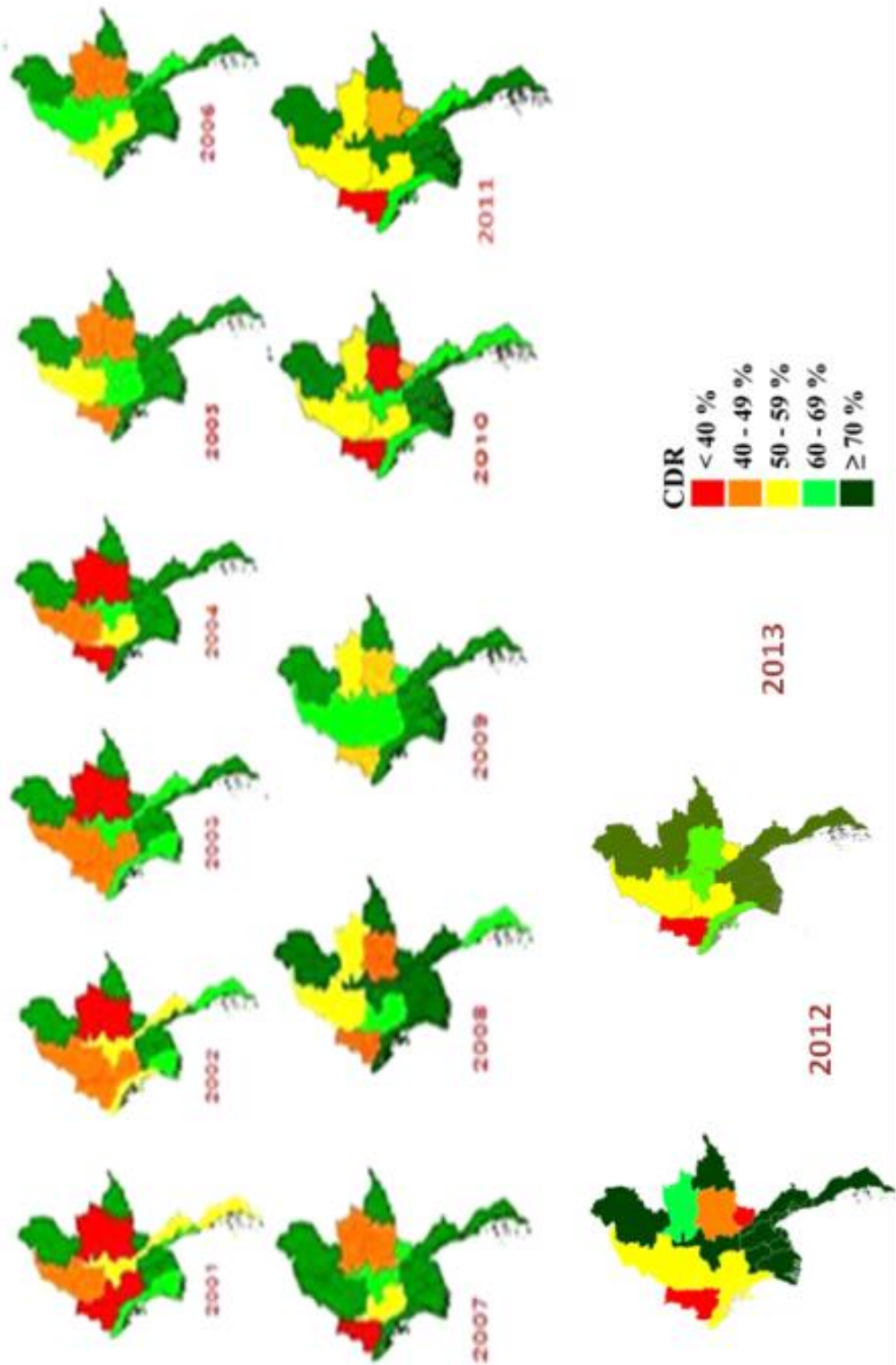
## Annex 25

Region/ State	CDR (NTP only)									
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Kachin	90	116	131	129	109	122	79	70	66	<b>69</b>
Kayah	70	83	79	69	70	60	41	41	31	<b>50</b>
Chin	38	42	52	39	41	40	23	21	23	<b>28</b>
Sagaing	45	53	60	79	59	61	50	51	46	<b>43</b>
Magway	57	65	55	56	68	67	47	45	45	<b>49</b>
Mandalay	65	67	65	69	70	64	52	54	51	<b>50</b>
Shan State (Taunggyi)	38	40	43	48	46	49	37	43	42	<b>49</b>
Shan State (Kengtong)	99	103	102	102	106	90	75	68	80	<b>84</b>
Shan State (Lashio)	34	42	46	49	55	56	45	48	54	<b>59</b>
Kayin	72	86	65	79	81	92	63	55	77	<b>72</b>
Tanintharyi	76	75	71	72	69	72	50	61	64	<b>61</b>
Bago Region	73	87	82	83	79	82	58	57	68	<b>67</b>
Bago Region (Pyay)	87	77	91	101	101	105	69	70		
Mon	95	108	93	89	94	114	75	70	69	<b>72</b>
Rakhine	84	83	81	75	90	87	64	60	56	<b>59</b>
Yangon	156	158	70	81	76	85	83	76	71	<b>66</b>
Ayeyarwady	78	86	96	92	84	92	71	71	65	<b>68</b>
Naypyitaw								31	75	<b>70</b>
Country(NTP & Other)	<b>83</b>	<b>95</b>	<b>86</b>	<b>89</b>	<b>87</b>	<b>95</b>	<b>76</b>	<b>77</b>	<b>78.2</b>	<b>78.7</b>

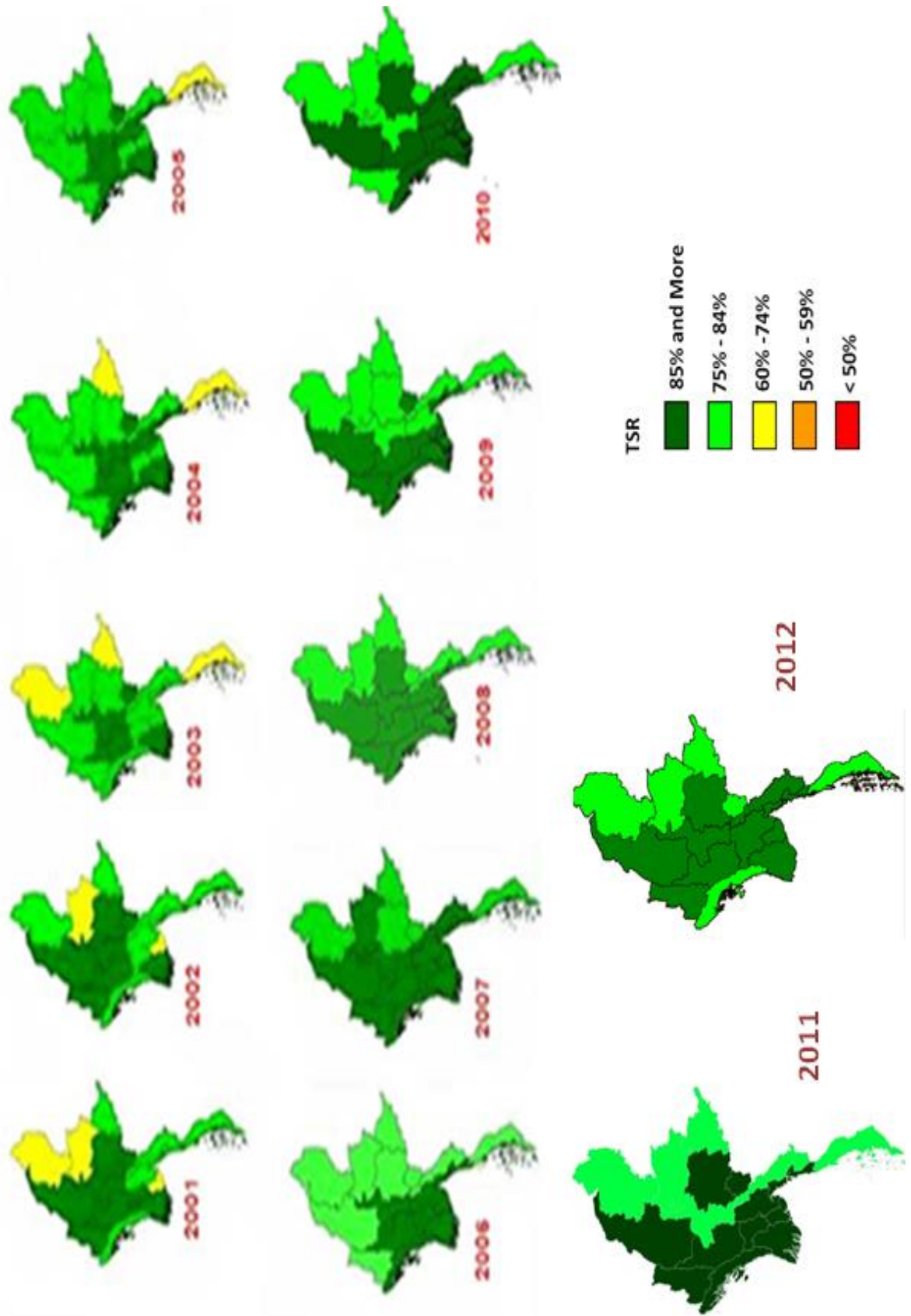
### Treatment outcomes of New smear positive in Regions & States (2004-2012)

Region/State	CR & TSR (NTP only)																	
	2004		2005		2006		2007		2008		2009		2010		2011		2012	
	CR	TSR	CR	TSR	CR	TSR	CR	TSR	CR	TSR	CR	TSR	CR	TSR	CR	TSR	CR	TSR
Kachin	74	78	75	78	73	81	67	77	73	78	71	79	71	80	72	82	70	82
Kayah	93	94	83	88	76	83	66	78	63	82	83	85	77	81	80	87	73	84
Chin	68	84	73	84	65	78	72	87	71	90	73	85	74	82	84	87	82	93
Sagaing	72	80	74	82	74	82	77	86	78	85	81	87	82	88	81	89	81	90
Magway	77	90	80	89	81	89	77	88	76	86	79	86	78	87	77	86	80	88
Mandalay	77	87	75	86	79	86	77	86	81	87	70	84	74	83	76	84	77	86
Shan State (Taunggyi)	79	83	72	83	73	79	74	81	80	86	79	84	78	85	79	86	74	86
Shan State (Kyaingtong)	64	74	64	78	62	80	64	85	70	84	64	80	71	84	73	81	64	82
Shan State (Lashio)	69	79	68	81	65	81	68	82	69	80	70	79	68	79	72	82	67	78
Kayin	68	83	74	83	75	82	78	86	76	83	75	82	80	85	75	83	77	85
Tanintharyi	56	73	64	73	67	76	71	76	74	79	73	80	70	78	69	83	70	81
Bago Region	86	88	89	91	84	90	79	87	78	87	76	84	75	86	77	88	75	88
Bago Region (Pyay)	74	81	74	84	82	86	79	85	80	85	81	87	80	87				
Mon	77	87	80	88	79	87	79	87	81	85	80	86	78	86	78	87	76	86
Rakhine	74	87	81	87	85	91	77	88	74	86	76	86	77	89	77	90	64	84
Yangon	73	82	78	84	78	85	81	87	82	88	83	88	84	87	85	88	84	88
Ayeyarwady	83	87	82	88	82	91	83	90	81	88	82	89	81	89	77	88	73	87
Naypyitaw															74	83	76	85
Country (NTP & Other)	75	84	78	85	78	85	77	85	78	85	77	85	77	85.4	77	86	74	85

Category of Regions & States According to Case Detection Rate of NSS(+)  
(2001 - 2013)



Categories of Regions & State According to Treatment Success Rate (TSR) (2001-2013)





**National Tuberculosis Programme  
Case finding activities (1994 - 2013)**

Annual 2013

Annex 29

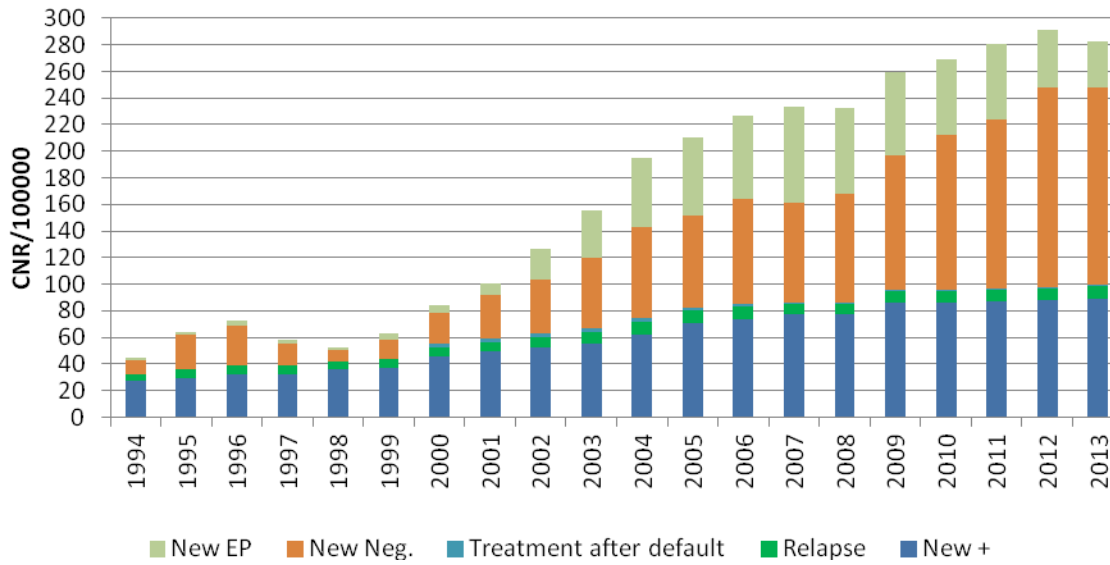
YEAR	DOTS Population	No. of Estimate S(+) cases	CNR All S(+) per 100,000 population	CDR NS(+) (%)	PULMONARY TUBERCULOSIS												EXTRA PULMONARY TB		Total						
					NEW CASES				RELAPSES				OLD CASES				SMEAR POSITIVE		SMEAR NEGATIVE		Primary Complex	Other	M	F	T
					M	F	T	total	M	F	T	total	M	F	T	total	M	F	M	F					
					M	F	T	total	M	F	T	total	M	F	T	total	M	F	M	F					
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)	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)	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)	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)	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)	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)	37,621,000	37,621	55	56	11,196	6,068	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)	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)	46,044,000	46,044	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)	49,667,413	49,667	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)	50,274,570	50,274	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)	51,412,552	51,412	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)	54,286,877	54,286	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	47,068	123,593						
2007(325Tsp)	55,753,816	55,753	88	89	27,927	14,661	42,588	3,307	1,358	588	160	48,228	24,979	16,847	22,572	17,430	81,926	51,621	133,547						
2008(325Tsp)	53,752,810	53,752	88	90	27,099	14,149	41,248	3,063	1,245	470	149	47,633	26,243	17,791	19,322	15,125	98,914	49,825	128,739						
2009(325Tsp)	50,907,881	50,907	94	95	27,386	14,003	41,389	3,255	1,315	460	127	47,877	30,372	20,840	17,860	13,821	82,530	51,493	134,023						
2010(325Tsp)	49,197,091	49,197	99	76	27,962	14,356	42,318	3,146	1,310	418	96	48,783	33,924	22,916	15,722	12,254	84,801	25,602	137,403						
2011(330Tsp)	48,668,785	48,668	101	77	27,689	14,646	42,335	3,279	1,331	423	119	49,012	36,573	25,470	15,466	12,306	98,470	55,723	143,164						
2012(330Tsp)	48,531,478	48,531	102	78.2	28,184	14,726	42,910	3,198	1,360	401	120	49,659	26,436	17,366	11,384	9,277	10,413	57,736	148,149						
2013(330Tsp)	47,796,627	47,796	104	78.7	28,291	14,304	42,595	3,478	1,376	398	104	49,721	26,438	16,611	9,376	7,511	3,472	15,633	53,979	142,162					

TAD = Treatment after Default

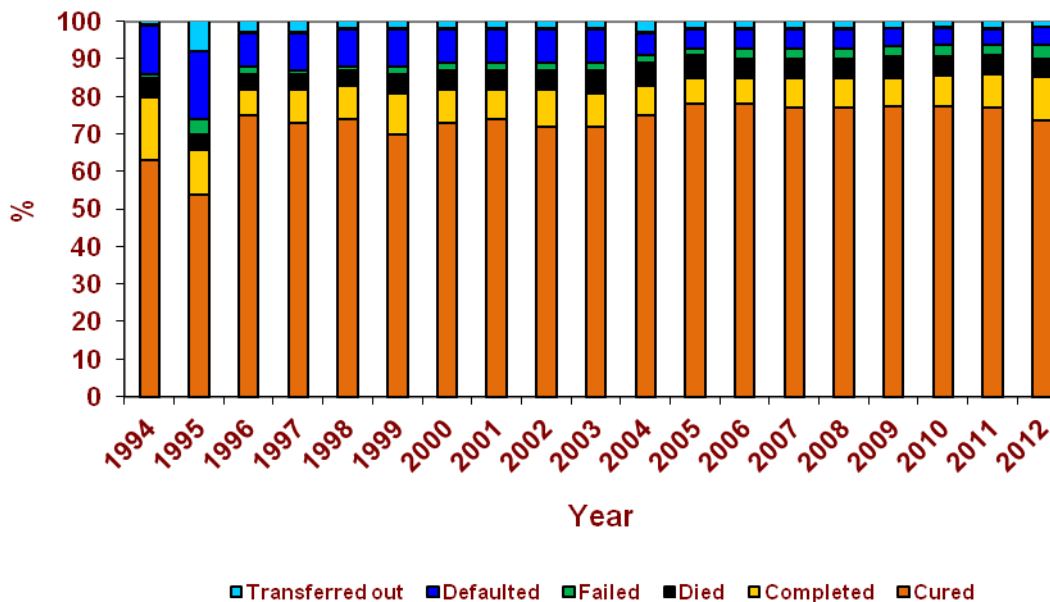
TAF = Treatment after Failure

Annex 30

Case Notification Rate by type of TB patients (1994-2013)



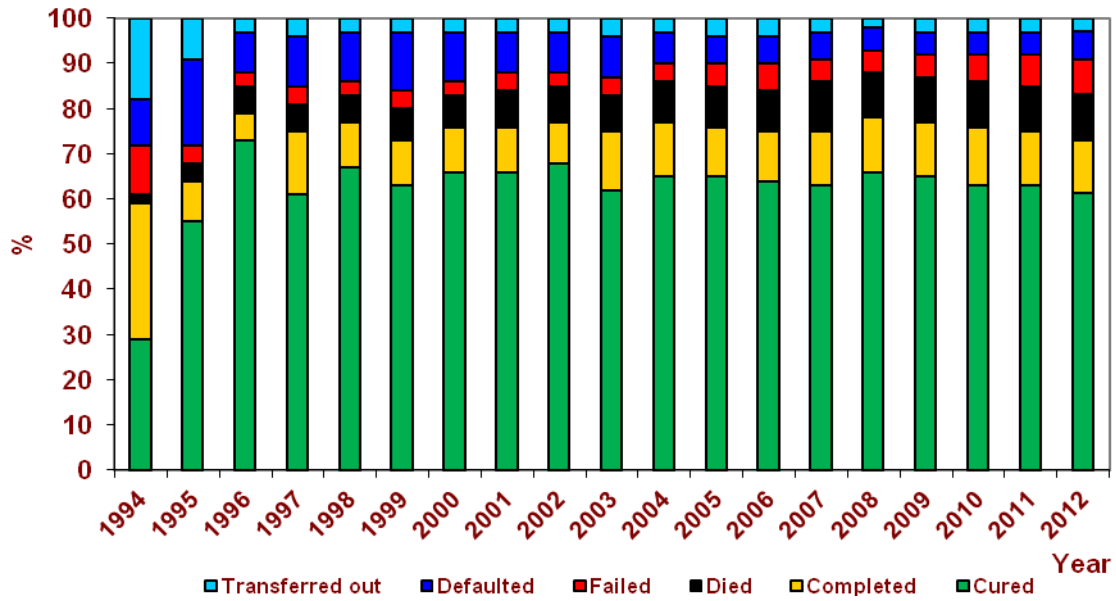
Treatment outcomes of new smear positive TB patients by percentage (1994 to 2012 cohorts)



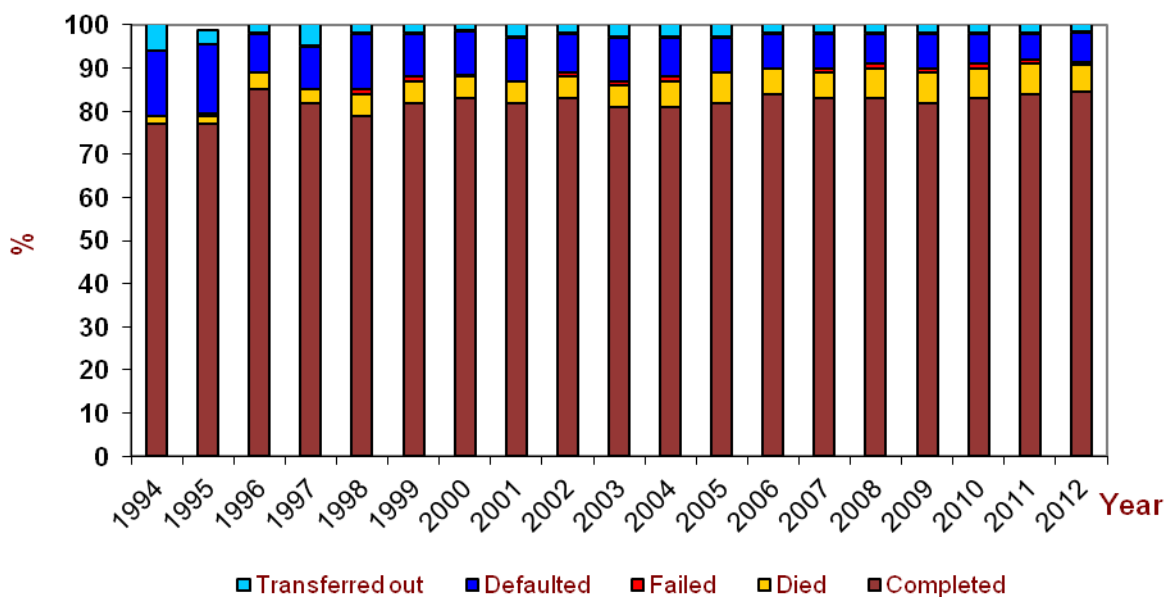


Annex 30

Treatment outcomes of relapse cases  
(1994 to 2012 cohorts)

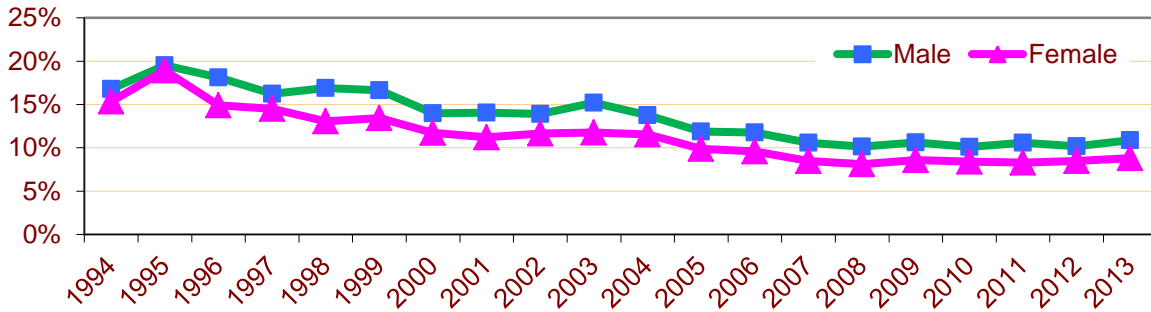


Treatment outcomes of new smear negative TB patients  
(1994-2012 cohorts)

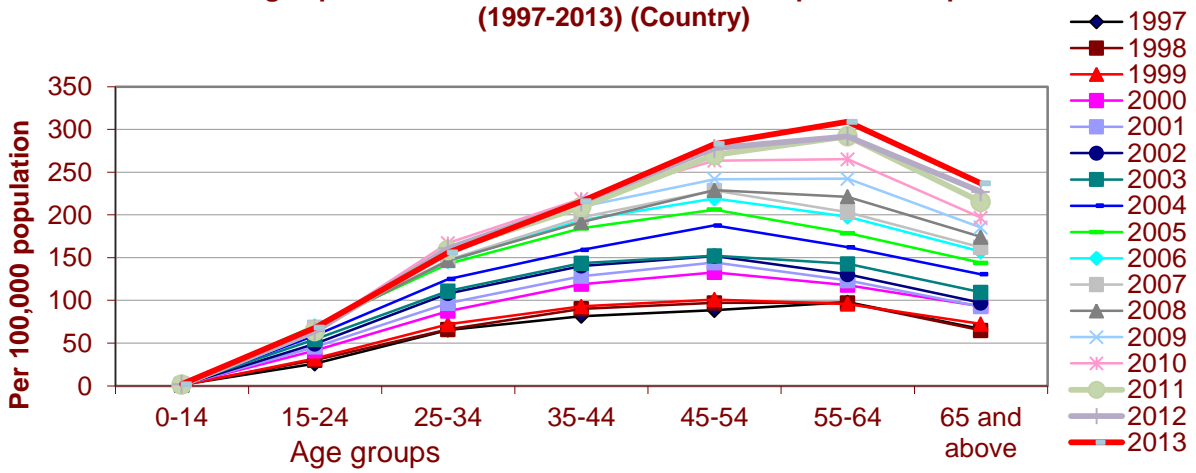




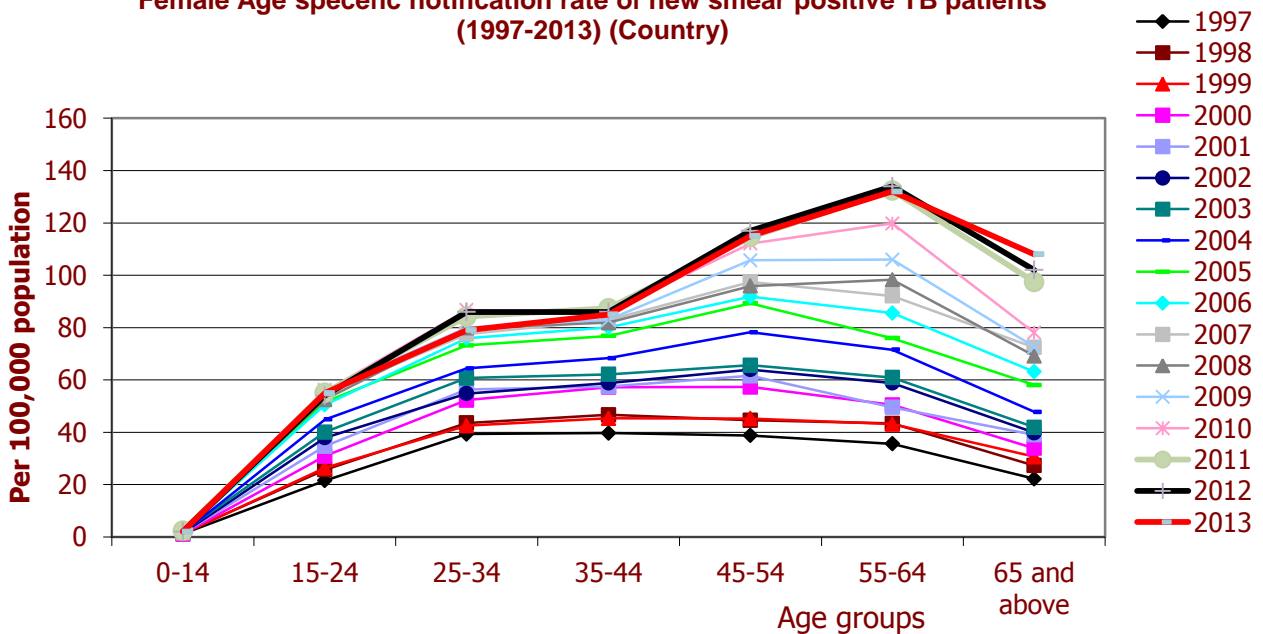
**Proportion of Relapses by Male and Female among New Smear Positive cases Plus Relapse cases of Male & Female (1994-2013)**



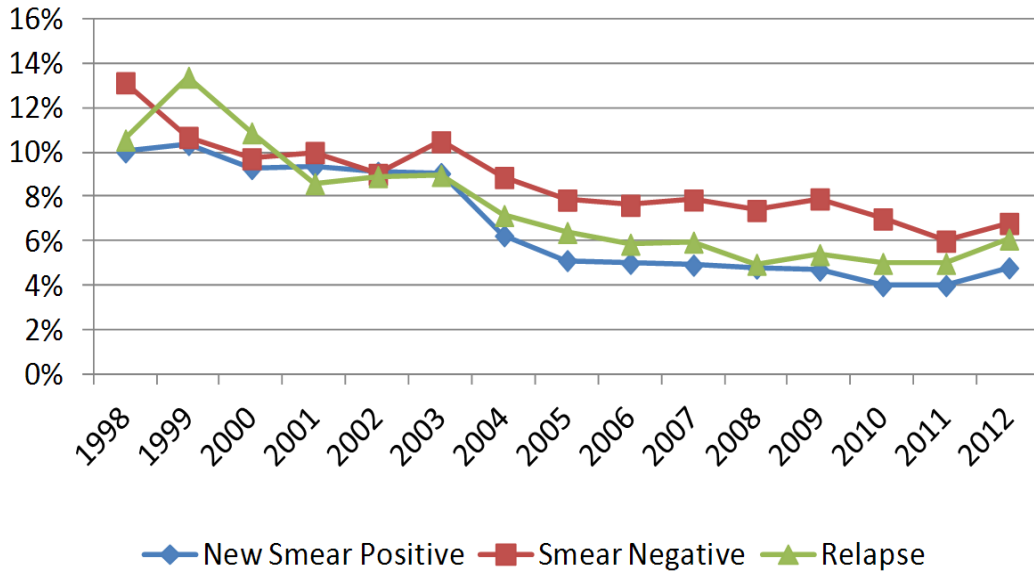
**Male Age specific notification rate of new smear positive TB patients (1997-2013) (Country)**



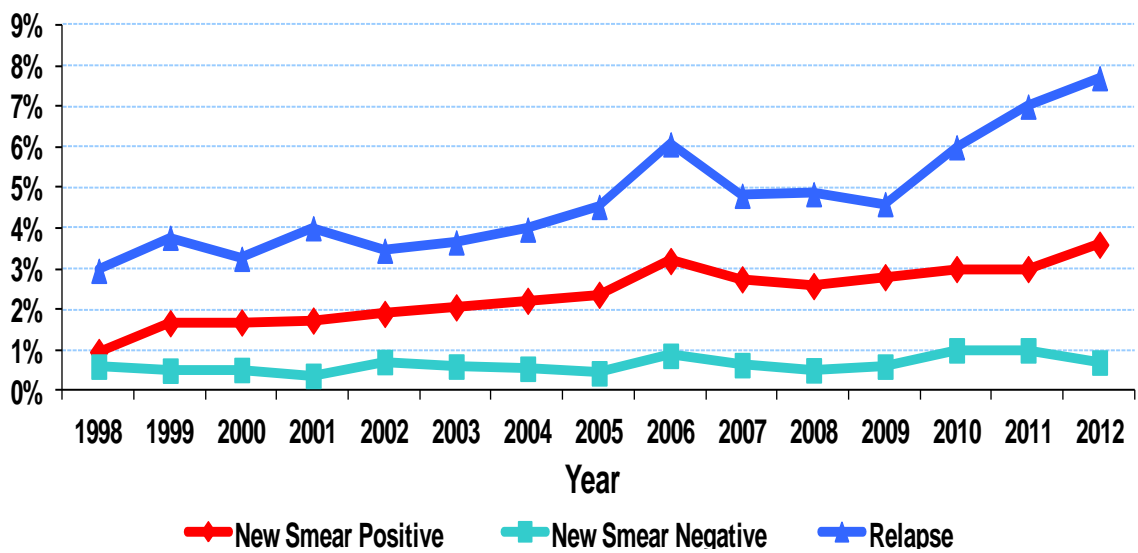
**Female Age specific notification rate of new smear positive TB patients (1997-2013) (Country)**



**Treatment outcome of Defaulting in New Smear Positive, Smear Negative & Relapse cases in country (1998-2012) cohort**

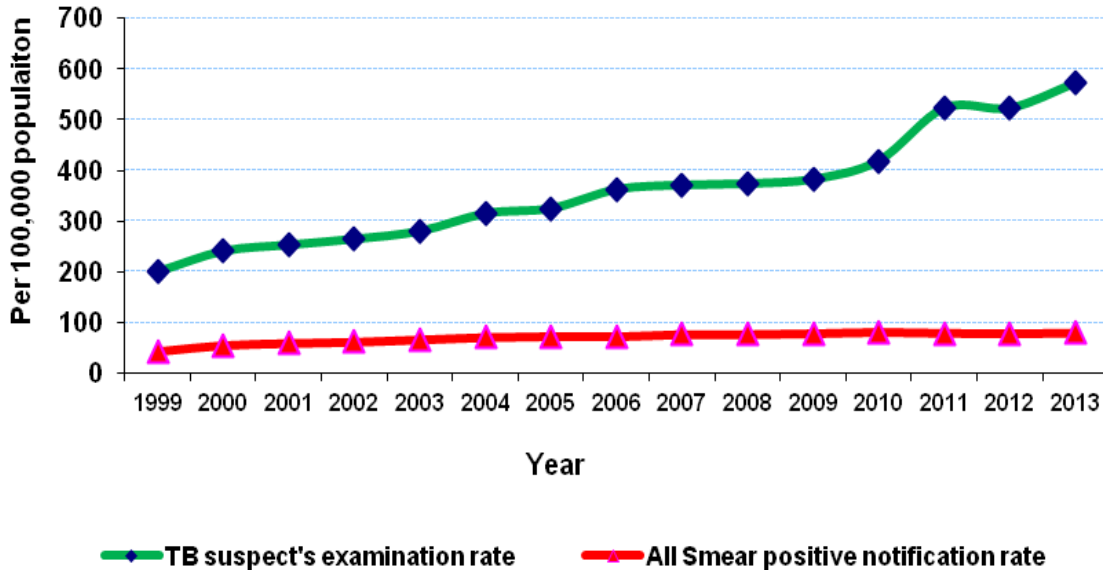


**Treatment outcome of Failure Rate in New Smear Positive, Smear Negative and Relapse cases in country (1998-2012) cohort**

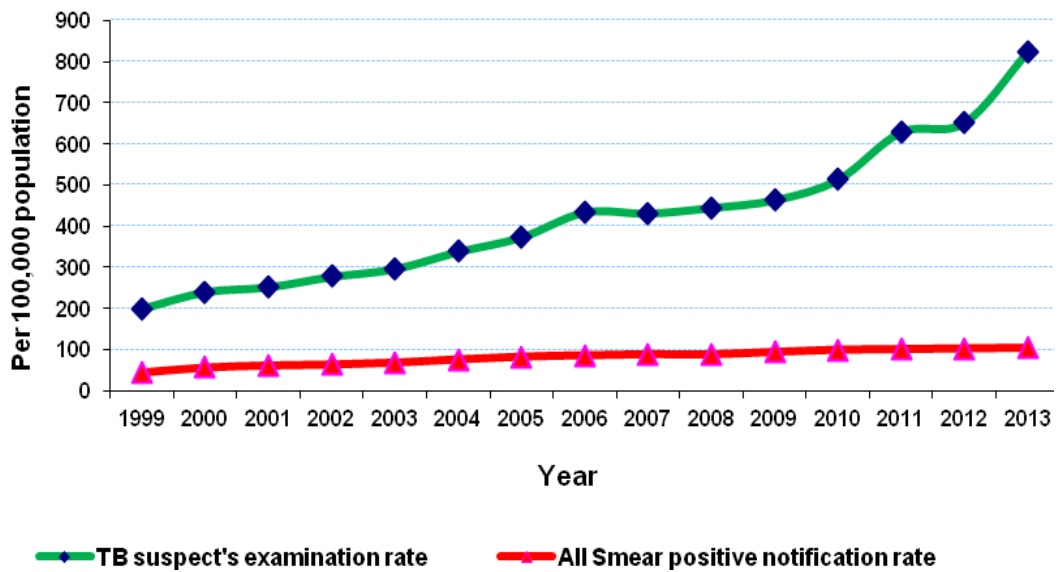


Annex 33

**TB suspect' examination rate & All S (+) notification rate  
(NTP only) (1999 - 2013)**



**TB suspect' examination rate & All S (+) notification rate  
(NTP+ Other units)(1999-2013)**



**Trend on New SS+, New Smear negative, Extra Pulmonary & All TB cases load of NTP  
(1994 to 2013)**

