ព្រះរាជាណាចក្រកម្ពុជា

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KINGDOM OF CAMBODIA
NATION RELIGION KING

ក្រសួងសុខាភិបាល

Ministry of Health

អត្ថបទជាភាសាអង់គ្លេស
ENGLISH VERSION

របាយការណ៍ស្តីពីជំងឺរបេងឆ្នាំ២០១០

TUBERCULOSIS REPORT 2010

រៀបរៀងដោយ មជ្ឈមណ្ឌលជាតិកំចាត់រោគរបេង

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I. Introduction

Cambodia is one of the 22 countries in the world with a high burden of tuberculosis. During the last 10 years, cases of TB notified under the National TB Control Program (NTP) have been increased more then two folds, up to 41,628 cases of all forms in 2010. The impact of HIV/AIDS on TB is still a great concern for the country with high burden of TB / AIDS.

TB control has been given high priority by the Ministry of Health. Encouraged by the strong commitment of the Royal Government of the Kingdom of Cambodia with the Prime Minister, HE Samdech Hun Sen, as the Honorable Chairman of the National Tuberculosis Committee, it is hoped that a combined effort focused on socio-economic development and poverty alleviation will benefit the vast majority of the population affected by tuberculosis.

In line with the Global Plan and strategy of TB control (2006-2015), the National Tuberculosis Control Program (NTP) aims at achieving the objectives set in The 5 years Strategic plan 2006-2010. The medium terms objectives are:

- to ensure equity access to quality TB services
- to maintain the high cure rate of more than 85%.
- to attain the case detection rate of over 70%

The longer aims are to ensure universal access to quality TB services, to maintain the high cure rate of more than 85%, to reduce the prevalence and
death rate of TB (all forms) by half, contributing to attaining MDG goals by 2015, compared with the figures of 1990 .

In order for the NTP to meet its objectives, participation from all parties, including health workers, concerned institutions, partners, local authorities and communities is critically required.

The DOTS expansion to Health centers is believed to help improve the accessibility of the population to TB services which are provided free of charge. It have helped to attain the case detection rate of 66% in 2010. It also has been maintaining the cure rate over 85%, meeting the target.

At the same time, the NTP will focus on improving the management structure, service provision, health information system (HIS), information, education and communication (IEC), research, investment, drugs, financing and partnership with other NGOs, IOs. Staff have been trained locally and also sent abroad for training in various fields in order to upgrade their skills to provide quality health care for the patients.

In 2010, with strong support from the Royal Government of Cambodia as well as the Ministry of Health, the impressive achievement were obtained in the field of TB Control in Cambodia. These achievements are due to the efforts made by all stakeholders within and outside the government. This document provides the summarized activities in TB control conducted in the year 2010.

II. Epidemiology of Tuberculosis

1. TB in the world :

Currently nearly one-third of the global population, i.e. two billion people, is infected with Mycobacterium tuberculosis and at risk of developing the disease. Every year, more than nine million people develop active tuberculosis (TB), and nearly two million die.[1]

More people are dying of TB today than ever before. TB is the biggest curable infectious killer of young people and adults in the world today [2].

More than 90 % of global TB cases and deaths occur in the developing world, where 75 % of cases are in the most economically productive age group (15-54 years). In general, an adult with TB loses on average three to four months of work time. This results in the loss of 20-30 % of annual household income and, if the patient dies of TB, an average of 15 years of income loss.

In addition to the devastating economic costs, TB imposes indirect negative consequences such as children leave school because of their parents

[1] WHO, Guidelines for National Tuberculosis Programmes
[2] Fight AIDS, Fight TB, Fight Now: WHO

‘ tuberculosis, and women are abandoned by their families as a result of their disease.

TB/HIV co-infection significantly increases the risk of developing TB. Hence the number of TB cases will be increased particularly for Countries with a high prevalence of both diseases. Multi-drug resistance, which is caused by poorly managed TB treatment, is a growing problem of serious concern in many counties around the world.
The main reasons for the increasing burden of TB globally are:

- poverty and the widening gap between rich and poor
- neglect of controlling the disease (inadequate case detection, diagnosis and treatment)
- collapse of the health infrastructure in countries experiencing severe economic crisis or civil unrest
- impact of the HIV pandemic
- increasing population

2. TB in Cambodia :

Cambodia has been classified by the World Health Organization (WHO)
as one of the 22 high burden countries with tuberculosis in the world. In 1997, the WHO experts estimated that 64 % of Cambodian population more infected with Mycobacterium tuberculosis. During the past two decades, the morbidity and mortality rate due to tuberculosis have decreased remarkably in Cambodia. Based on the 2010 WHO report, the estimated incidence rate of tuberculosis was 442/100,000 population, prevalence ence rate of tuberculosis was 693/100,000 population and the death rate of tuberculosis was 71/100,000 population. Based on the above figure, Cambodia will probably reach the MDG TB target by 2015.

Before 1994, the result of case detection and treatment of tuberculosis were not satisfactory. For instance in 1993, the case detection rate of smear positive pulmonary tuberculosis nationwide was only about 44 % and the cure rate was 69%. So, the priority problem needed to be solved at that time was changing the treatment strategy by applying the Short Course

Chemotherapy with Direct Observation, called " DOTS " ; and then, the solution to the problem of low case detection.

Since 1994, the application of method for treating tuberculosis through Short Course Chemotherapy with Direct Observation (DOT), has made the NTP to achieve the cure rate result of more than 85 % as target plan.

3. TB/HIV:

Many people infected with HIV in developing countries developed TB as the first manifestation of AIDS. The two diseases represent a deadly combination, since they are more destructive each together than either disease alone.

-TB is harder to diagnose in HIV/AIDS patient.
-TB develops faster in HIV-infected people
-TB in HIV-positive people is almost certain to be fatal if undiagnosed or left untreated
-TB occurs earlier in the course of HIV infection than many other opportunistic infections.

Worldwide, 14 million people are co-infected with TB and HIV. 70 % of them are concentrated in Africa[3].

TB is the leading killer of AIDS patients. Up to 50 % of people with HIV or AIDS develop TB.

TB can be successfully treated even if someone is HIV-infected. Treatment of TB can prolong and improve the quality of life for HIV-positive people but cannot alone prevent people from dying of AIDS.

Cambodia is also among the countries with high burden of TB and HIV/AIDS. The surveys showed the increase of HIV sero-prevalence among TB patients as follows :

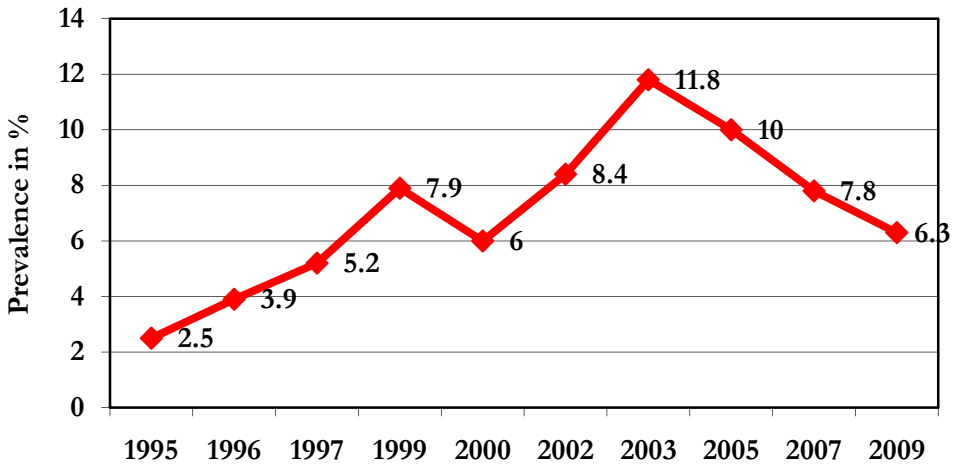
- 1995 : 2.50%
- 1996 : 3.90%

[3] Fight AIDS, Fight TB, Fight Now: WHO

- 1997 : 5.20%
- 1999 : 7.90%
- 2000 : 6.70%
- 2002 : 8.40%
- 2003 : 11.8%
- 2005 : 10%
- 2007 : 7.8%
- 2009 : 6.3%

The National Tuberculosis Control Programme in collaboration with JICA TB Control Project conducted the National HIV Seroprevalence Survey among TB patients in 2003 for the 1st round, in 2005 for the 2nd round, in 2007 for 3rd round and more recently with USAID support through TBCAP in 2009 for the 4th round. The result showed that 11.8 %, 10 %, 7.8%, and 6.3% of TB patients respectively were HIV positive.

Trend in HIV Sero-prevalence among TB patients



III. Policies, Strategy and Guidelines

In 2010, in addition to the number of documents that already developed, the National Tuberculosis Control Programme developed a number of documents such as :

- Annual Operational Plan for TB control for 2010/2011
- National Policies and strategies for TB control 2011-2015
- National strategic plan for TB control 2011-2015
- National Monitoring and Evaluation plan for TB control 2011-2015
- Clinical TB/HIV Operational Guideline
- PPM-DOTS guideline
- MRD-TB guideline

IV. Capacity Building and Human Resources Development

1. *Training activities and workshop* :

The National Tuberculosis Control Programme (NTP) has organized the trainings and workshops activities in 2010 as follows :

a). Training:

- 08 TB / HIV Training course
- 02 TB / HIV Training courses by using “ 3 Is ” strategy .
- 10 Training courses on sputum collection and smear making
- 04 Refresher the Quality of slide Cross-Checking
- 02 TB liquids-culture training courses
- 02 Core trainers of TB prevention training course
- 07 Diagnostic on X-ray reading training course
- 01 Fluorescent smear microscopy training course
- 01 Planning and budgeting tools training course
- 01 Data entry PPM into system Electronics training course
- 17 DOTS strategies training and refresher training course
- 02 X-ray prevalence survey training course
- 01 Laboratory Prevalence survey training course
- 01 Practice prevalence survey training course
- 01 TB diagnostic training course
- 01 Basic TB training course to prison’s staffs

- 05 MDR-TB training courses
- 04 TB awareness sessions training courses in Factory.
- 01 training course on assessment of TB/ HIV service in prison.

b). Workshops :

- 01 Annual TB Conference for TB control
- 03 TB Quarterly workshops.
- 01 Workshop on TB evaluation and planning for TB
- 01 Workshop on preparation of National Strategic Plan for TB Control 2011-2015
- 03 Workshop on National TB prevalence survey
- Annual Workshop on TB/HIV activities.
- 01 Workshop on Standard Operating Procedure in prison.
- 01 Workshop on TB control in prison.
- 01 Workshop on second line-drug Management
- 01 Workshop on TB infection control
- 03 Workshops on EQA TB laboratory
- 01 Workshop on Drug Management and Health product.
- 3 Workshops on **C-DOTS** activities and documentation
- 01 Workshop on TB cases finding among children.
- 01 World TB day

* NTP also sent the TB staff to attend the international training courses, study tours and meeting/conferences in 2010 as follows:

- Philippine : 3 persons
- Thailand : 2 person
- Japan : 3 person
- Viet Nam : 8 persons

- China : 5 persons
- Indonesia : 6 persons
- Germany : 11 persons
- Austria : 2 persons
- Switzerland : 1 person
- Turkey : 1 persons
- Lao : 4 persons
- Singapore : 1 person
- Netherlands : 1 person
- India : 1 persons
- Ethiopia : 1 person

2. Supervision :

To strengthen the TB control activities and improve the capacity of staff at peripheral level, in 2010 NTP conducted the 429 TB supervisory visits throughout the country.

V. Financing

NTP formulated 5-year expenditure framework in accordance with the strategic plan with active consultation with major donors and clear indication of funding gaps. Also, budget plan for 2010 was developed based on annual activity plan. NTP negotiated with potential partners for financing the program. These indicate the improved ability of CENAT in terms of financial mobilization for TB control activities.

Since April 2009, CENAT was charged additionally which new responsibility as Principal Recipients (PR) for GFATM- TB Round 7 managing the financing of 11 sub-recipients (SRs).

VI. Drugs and Lab. Reagents

National Tuberculosis Program (NTP) monitors closely the situation of TB drug consumption, laboratory reagents, estimate future drug requirement and laboratory reagents as well as budget estimation.

TB Drug Management (TBDM) is the one core element of the five elements of DOTS strategy because TB drug is the essential weapons for TB control. If each element has not well function, it will affect the greater part of the performance of TB Program.

In order to improve TB Drug Management, NTP in collaboration with Department of Drug and Food, Central Medical Store (CMS) of ministry of health (MoH), and other partners have done the following activities on TBDM:

- NTP monitors closely the stock situation, distribution and the use of TB drug through monthly report of Central Medical Store, Ministry of Health.

In September 2010, NTP Cambodia also applied childhood TB drugs for grant again to GDF for second term and already got approval in principal from the Technical Review Committee (TRC).

- Discussed and arranged the need of TB drugs as well as facilitating and following up TB drugs arrival under the support of TB GFATM Round 7 through direct procurement.

-In 2010, NTP was supplied with TB drugs by GFATM Round 7 through direct procurement process consisting of 8, 197 056 tablets of Rifampicin/Isoniazid/Pyrazinamide/Ethambutol (150/75/400/275 mg), 15 934 464 tablets of Rifampicin/Isoniazid (150/75mg), 550 368 tablets of Ethambutol (400mg), 114 650 vials of Streptomycin (750mg) and 114 650 vials of water for injection. In addition, NTP also received TB children drugs from Global Drug Facility in the fourth times consisting of 1, 030 320 tablets of RHZ
(60/30/150mg), 2, 035 710 tablets of RH (60/30mg) and 172 500 tablets of Ethambutol (100mg).

- NTP has made forecasting and quantification of TB drug needs for 3 years and submitted in the Global Fund proposal for Round 7, Phase 2.

-NTP always sends its officers to attend regular drug management meetings organized by MOH to report NTP TBDM activities and obtain information on the current national drug management issues.

- Requested to MOH for installing National Drug Inventory Data Base (NatDID) system through internet website in order to facilitate in managing the stock of TB drugs at all levels.

VII. Service provision

The diagnosis and treatment of tuberculosis are free of charge in all TB services throughout the country. Currently, there are more than 1,000 health facilities including 75 Referral Hospital and 960 Health Centers, providing DOTS.

1. Case Detection Activity :

TB case detection nationwide in 2010 are as follows:

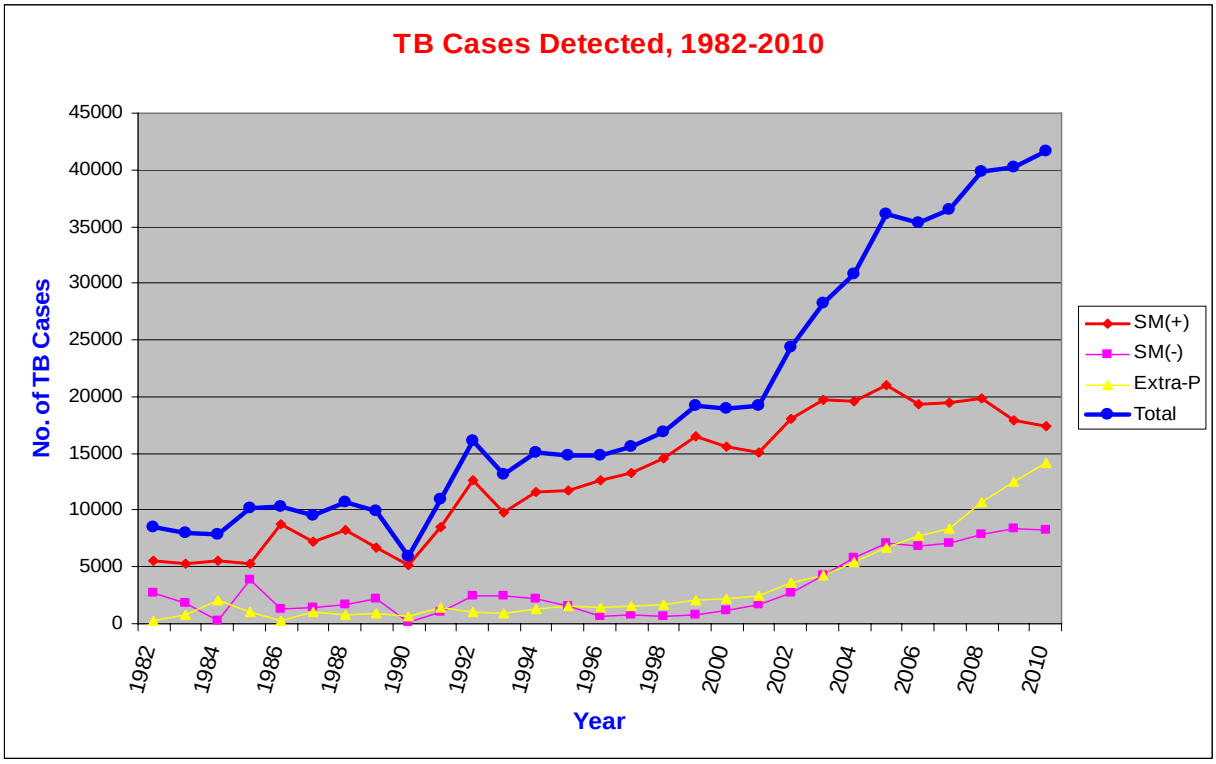
Case Detection in 2010	Number of TB cases
New smear positive pulmonary TB	17454
Relapse	466
Failure cases	59
Return After Default	19
New smear negative pulmonary TB	8301
New extra pulmonary TB	14239
Other Cases	1090
Total (all form of Tuberculosis)	41628

According to the above TB case notification, the case detection rate of new smear positive pulmonary TB in 2010 was 66 %.

The table below shows the age and sex distribution of the new smear positive pulmonary TB case detected in 2010.

Age	0-14	15-24	25-34	35-44	45-54	55-64	> 64	Total	%
M	39	750	1564	1760	2105	1531	1599	9348	54%
F	60	752	1321	1303	1732	1607	1331	8106	46%
Total	99	1502	2885	3063	3837	3138	2930	17454	100%
%	1%	8%	17%	18%	22%	18%	17%	100%	

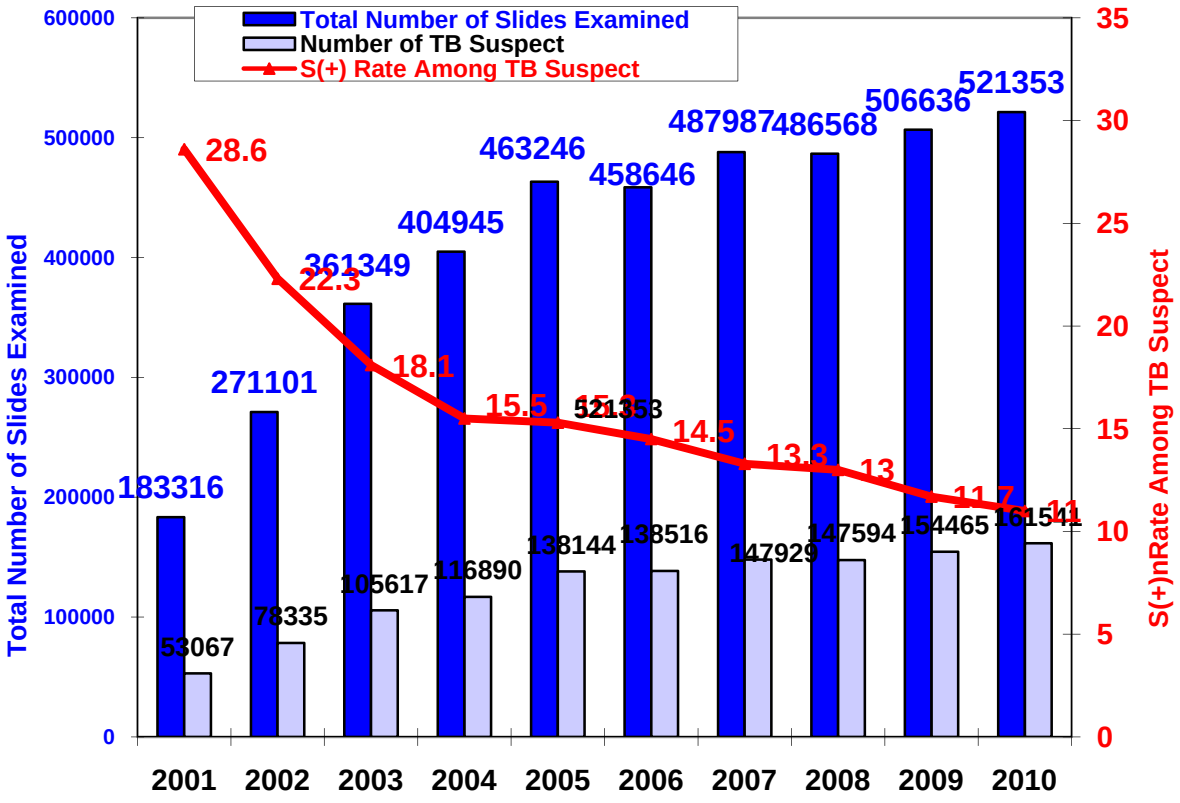
TB Cases Notification, 1982-2010



2. Diagnosis by bacteriological examination:

The total slide number that National Tuberculosis Program used for TB smear examination in 2010 was 521353 (detection and control) of which 473026 slides were detection. The positive rate among smear detection is 11.7%.

To strengthen the quality of sputum examination, NTP has examined slides again. This is one of the laboratory quality assurance activities. Results showed that false positive rate was 1.2%, false negative 2.6%, and agreement rate 97.5% for the first 3 quarters in 2010.



3. Sputum Conversion rate at month 2:

The Conversion rate at month 2 from sputum positive to negative ìs 95 % is in 2010.

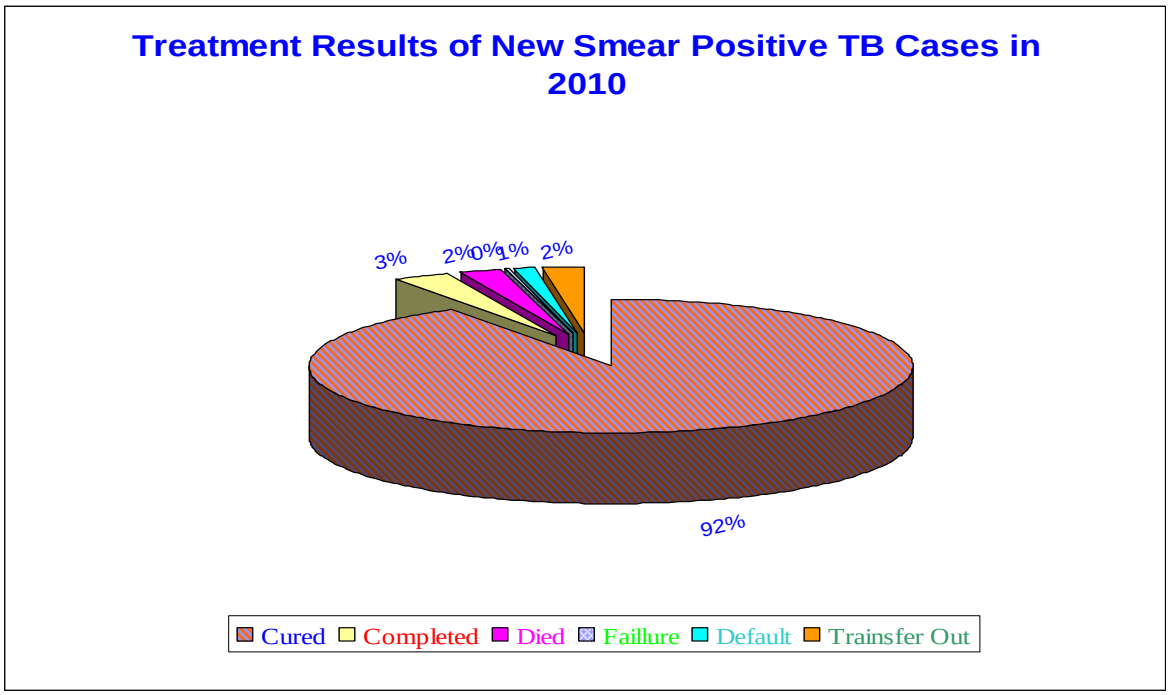
4. Treatment Results :

Due to the existence of good recording and reporting system, the National Tuberculosis Control Program can evaluate the treatment results through Cohort

Analysis for TB patients registered under treatment in previous 12 months (2009).

For 18,012 new smear-positive TB patients that received Cat-1 (2RHEZ/4RH) treatment regimen, the treatment results in 2010 were as follows (see table5 in the annex for the details by province).

- Cured : 92 %
- Treatment completed : 3%
- Died : 2 %
- Failure : 0 %
- Defaulted : 1 %
- Transferred out : 2 %



5. DOTS provided by CENAT Home Care DOTS in Phnom Penh :

CENAT provided Home Care DOTS to 245 TB patients in Phnom Penh in 2010. Of those, 141 were smear-positive pulmonary TB, 37 were smear-negative pulmonary TB, and 67 were Extra-pulmonary TB.

6. Other Activities :

In 2010, National TB Control Pragram has conducted active case finding of tuberculosis among children in 5 provinces (Kg chhnang, Kg Speur, Takeo Svay Rieng and Kg cham provinces).

In summary, 3,265 children has been examined and tested by tuberculin skin test. Of those 3,265 children, 576 children were diagnosed as active TB cases and put on treatment.

This achievement was due to close collaboration between health worker at provinces, district and health centers together with VHSG.

VIII. DOTS Expansion

To obtain the objective of 70 % case detection rate of new smear-positive pulmonary TB, DOTS expansion to HCs level is one of the main activities of the program.

1).The steps in DOTS Expansion are the followings :

1- Pre-Assessment Visit (Situational Analysis)
2- Sensitizing Workshop for all stake holders
3- Training
4- Workshop before implementation
5- Supervision
6- Follow-up Workshop
7- Evaluation Workshop on DOTS implementation.
8- Monitoring and evaluation

2). Pilot Phase of DOTS Expansion :

in September 1999, 9 health centers were piloted in Ambulatory DOT.

3). Phase of Expanding DOTS to Health Centers :

- By 2000, 59 health centers were expanded in DOTS.
- By 2001, 268 health centers were expanded in DOTS.

- By 2002, 392 health centers were expanded in DOTS.
- By 2003, 704 health centers were expanded in DOTS.
- By the end of 2004, the National TB Control Programme expanded DOTS to all health centers nationwide.
- In summary, in 2010, there are more than 1,000 health facilities provide TB treatment with DOT nation-wide.

IX. Community DOTS

1. The Overall Goal of Community DOT implementation

The Overall Goal of Community DOTS implementation is to improve case finding through referral of TB suspects by communities and to provide TB drug to patients who are unable to take TB drug everyday at Health Center and only less severe patients, and to ensure that TB patients take TB drug correctly, completely and to support the implementation of the new 6 month treatment regimen, 4 FDCs especially in the continuous phase etc.

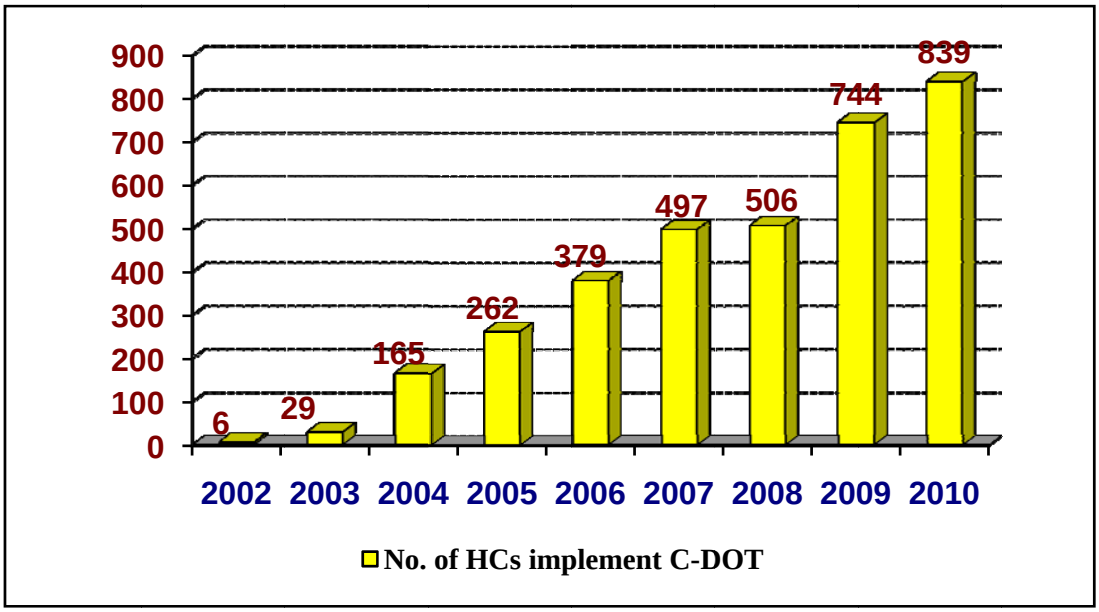
2. Background of Community DOTS

In 2002, in cooperation with CENAT, three ODs began piloting a Community DOTS (C-DOTS) programme – Bakan OD (Pursat Province), O'Chrouv and Preah Net Preah ODs (Banteay Meanchey Province), which were supported by CARE. In 2003, further pilot projects were established in Angkor Chey OD (Kampot province) under support from RACHA, in Svay Rieng and Chipou ODs (Svay Rieng Province) under support from CHC, and Mongkol Borei OD (Banteay Meanchey province) under support from CARE. In 2004, there were further pilot projects, in kratie OD, Kratie Province (in collaboration with PFHD),Cheung Prey, Memot, Dambe-Ponheakrek ODs in Kampong Cham Province(in collaboration with SCA), Sangke and Thmarkol ODs in Battambang Province (in collaboration with

RHAC) and Kampong Tralach OD, Kampot Province (in collaboration with CHC). In 2004, communty DOTS were started in kratie, Battambang and Kg.Cham by PFHAD , RHAC and SCA respectively.

In 2010, The total Health Centers implementing Community DOTS was 839 HCs.

3- Expansion of CDOTS Health Center



Through this Chart :

- By 2002, 6 health centers were implemented C-DOTS
- By 2003, 29 health centers were implemented C-DOTS
- By 2004, 165 health centers were implemented C-DOTS
- By 2005, 262 health centers were implemented C-DOTS
- By 2006, 379 health centers were implemented C-DOTS
- By 2007, 497 health centers were implemented C-DOTS
- By 2008, 506 health centers were implemented C-DOTS
- By 2009, 744 health centers were implemented C-DOTS

In summary, 839 HCs cumulatively have been implementing Community DOT (C-DOT) in 68 ODs by the end of 2010.

4. Achievement of CENAT related to CDOTS

- **GUIDELINES** on **COMMUNITY DOTS IMPLEMENTATION** have been distributed.
- **GUIDELINES** for supporting TB treatment " DOTS Supporter " have been distributed.

5- Contribution of Community DOTS implementation

In addition to the availability of good quality of DOTS services at public health facilities, community DOTS contributes to improving access to information (place where to receive TB diagnosis and treatment), increasing awareness of tuberculosis and its signs and symptoms, decreasing levels of stigma in the communities, and maintaining good compliance to treatment leading to excellent treatment outcome more than 85% countrywide.

6- Health Centers implement C- DOT in 2010 support by NGOs

In 2010, There are 13 implementers operating C-DOTS in 839 HCs as shown in the table below:

Name of C-DOTS implementers	No of HC
CATA	14
CHC	165
CRS	30
FHI	52
HEAD	90
HU	8
P-FHAD	82
PK	10
RHAC	193

RACHA	**122**
SCA	**60**
SHCH	**5**
VORORT	**8**
Total	**839**

7- Constaints and Challenges

- Limited Quality of Community DOTS: HC staff's capacity is still limited to arrange C-DOT, to do supervisory visits to the communities, to provide health education to patients and DOT Supporters, and to do completely and accurately recording and reporting relating to C-DOTS.
- Movement of population: TB patients or sometime DOT watcher move seasonally to earn their living, without communicating with HC staff.
- Motivation the HC's staff and OD TB supervisors is limited
- The co-infection of TB / HIV.

X. Collaborative TB/HIV activities:

1. **Training:**

In collaboration with National Center for HIV/AIDS, Dermatology and STD (NCHADS), National Center for TB and Leprosy Control conducted TB/HIV training to 3 Operational Districts more in 2010. Total number of trained TB/HIV ODs is 77 as follow:

- 2004: 9 ODs in 4 provinces has piloted the TB/HIV collaborative activities with support from FHI, CDC, WHO and JICA
- 2005: 10 ODs, Smach Meanchey, Seam Reap, Sotnikum, Sampov Meas, Daunkeo, Svay Rieng, Kampong Cham-Kampong Siem, Neak Loeung, Kampong Trach, and Takmao ODs.
- 2006: 9 ODs, Kampong Chhnang, Kampong Speu, Kampot, Prey Veng, Kampong Thom, Kirivong, Memot, Tbaung Khmom and Cheung Prey ODs.

- 2007: 24 ODs, Angroka, Prey Chhor, Srey Santhor, Ponhea Krek, Chamkaleu, Chipou, Romeas Hek, Sre Ambil, Kralanh, Koh Thom, Kien Svay, Kampong Trabek, Messang, Baray Santok, Kmpong Tralach, Boribo, Kratie, Chhlong, Stung Treng, Pailin, Thmorkol, Sampov Loun, and Sangke ODs.
- 2008: 16 ODs, Preah Net Preah, Kang Pisey, Staung, Sen Monorom (Modulkiry), Banlong (Ratanakiry), Angkorchey, Bakan, Preah Sdach, Pear Raing, Angsnoul, Mouk Kampoul, Oraing Ov, Krauchma, Prey Kabas and Bati ODs.
- 2009, 6 ODs, Angkor Chum, Saang, Kamchay Mear, Chhouk, Tbeng Mean Chey (Preah Vihear), and Kep ODs.
- 2010, 3 ODs, Oudong, Ponhea Leu, and Thmor Pourk

2. Standard Operating Procedures (SOP) for Implementing the Three I's in Continuum of Care (CoC) Setting and training

In good collaboration with developing partners, FHI, US-CDC, WHO, and other partners, CENAT and NCHADS have developed Standard Operating Procedures for implementing the 3Is Strategy and conduct training.

On 29th April 2010, the orientation of the Three I's SOP is conducted at Cambodiana Hotel. The participants for this important meeting are PHD director or vice director, provincial TB supervisor and PAO and concerning partners from 24 provinces and towns.

20 sites of OI/ART are trained and implemented the strategy. The 20 sites are Kg Cham provincial RH, Tbaung Khmom RH, Battambang Provinical RH, Sampov Meas RH, Mongkul Borey RH, Serei Sophorn RH, Thmor Kol RH, Sampov Loun RH, Poipet Hospital, Maung Russey RH, Memot RH, Cheung Prey RH, Prey Veng Provincial RH, Neak Loeung RH, Kg Speu Provincial RH, Svay Rieng Provincial RH, Kandal Provicial RH, Kirivong RH and Ang Roka RH.

The three following key elements of the strategy, called the Three I's, were derived from the revised framework:

- Intensified TB case finding (ICF) among PLHIV and their household contacts,
- Isoniazid Preventive Therapy (IPT) for PLHIV unlikely to have active TB,
- Improved TB infection control (IC).

1/Intensified TB case finding among PLHIV

Patients co-infected with both TB and HIV have a high risk of death. Accurately diagnosing and treating TB in PLHIVs increases the safety of ART initiation, while excluding TB identifies patients who are eligible for IPT. The emphasis of intensified case finding should be not only on the diagnosis of smear-positive disease, but also on the early detection of all forms of TB, since all forms of TB in PLHIV result in increased case-fatality rates. Patients with active TB should receive TB treatment, not IPT.

What screening and diagnostic workup should be performed?

Based on the findings of an evidence-based study performed in three countries including Cambodia, health care providers should use a two step algorithm:

1. a verbal **TB symptom screening** for a combination of 3 symptoms:

Counselors, nurses or doctors should ask PLHIV about the following 3 symptoms for TB screening:

In the last 4 weeks:

- fever, anytime of any duration
- cough, anytime of any duration
- Two weeks or more of drenching night sweats

If patients have none of the three symptoms, they are considered unlikely to have active TB (without the need of further examination) and are eligible for IPT if they have no contraindications

2. A **TB diagnostic workup** for those whose symptom screening is positive.

PLHIV who have **any of the above three symptoms** require further diagnostic workup in addition to potential diagnosis workup for other opportunistic infections (OI). The diagnostic evaluation for TB will be performed by TB clinicians.

- Any PLHIV diagnosed with active tuberculosis should immediately be registered for TB treatment and placed on appropriate therapy according to the National TB Guidelines.
- **All** patients co-infected with TB and HIV should begin ART immediately 2 weeks after TB treatment initiation **regardless of CD4 count**.

- In addition, for **ALL** patients co-infected with both TB and HIV **regardless of CD4 count**, OI/ART staff will supply Cotrimoxazole Preventive Therapy (CPT) (Trimethoprim 160mg/Sulfamethoxazole 800mg = Cotrimoxazole 960mg) once daily until the end of TB treatment and then continue until the patient's CD4 count is maintained above 350 for at least 6 months. CPT has been shown to significantly reduce mortality from TB in co-infected patients. OI/ART staff will write the prescription of cotrimoxazole prophylaxis (CTX) in the patient's booklet.
- Patients will be reminded to bring their booklet to the TB Directly Observed Treatment (DOT) staff to appropriately fill the TB register.

2/ Isoniazid Preventive Therapy (IPT) for PLHIV

PLHIV with none of the three TB screening symptoms are considered unlikely to have active TB and are eligible for IPT, which should be started as soon as possible. However, IPT should not be started in case of the following contraindications:

- AST or ALT > 3 times the Upper Limit of Normal (ULN), or a single elevation > 250, or lower elevations of AST or ALT with symptoms (nausea, vomiting, abdominal pain, anorexia or jaundice). Patients with evidence of active liver disease with baseline ALT or AST > 3x ULN should not be started on IPT until their enzymes have dropped well below this level. A positive hepatitis serology is not itself a contraindication to IPT, but warrants monthly monitoring of liver function tests (LFTs) until it is clear that the drug is well tolerated.
- Active alcohol abuse.
- Past history of severe adverse side effects to Isoniazid.

IPT will be prescribed by the OI/ ART clinician:

- For at least a 6 month duration.
- Pyridoxine is given to prevent peripheral neuropathy.
- The patient should be provided a one month drug supply at the OI/ART clinic visit.
- The patient should be closely monitored.

  Isoniazid 5 mg/ kg (standard adult dose of **300 mg***) once daily for at least 6 months total duration, * *Patient weighing < 40 kg should be given 200 mg/ day*

Pyridoxine (vitamin B6) 50 mg once daily for 6 months total duration

3/ TB Infection Control

TB infection control (IC) measures are essential to prevent the spread of M. tuberculosis to vulnerable patients, health care workers, the community and those living in congregated settings. Fundamentally, TB IC is about safety: people receiving or offering HIV care should not have to worry about being exposed to and infected with TB.

The present SOPs for TB IC are in line with the National IC Policy and aim to help OD health care providers to implement it as soon as possible.

At National and Provincial levels

At the National and provincial levels, the management and coordination of TB IC in CoC settings will follow the National IC Policy recently disseminated on the 12th December 2009.

At OD level

- The OD IC Committee will have the following tasks:
  - Appoint an OI/ART nurse counselor/PLHIV volunteer to be responsible for IC at the CoC settings.
  - Conduct the TB IC in CoC settings assessment and design the TB IC in CoC settings plan at the facility level with the support of OD committee.
  - Coordinate implementation of the TB IC in CoC settings plan at the OD level
  - Responsible for the implementation of TB IC in CoC settings activities at health center (HC), VCCT sites, TB laboratory, as well as in the community through HBC, DOTS in the communities and MMM.
  - Responsible for the implementation of the surveillance of active TB among health care workers.

At the Referral Hospital (RH) level

- Assign a focal point of TB IC in CoC settings. This person will be working in collaboration with both the OI/ART team and chief of the TB ward.
- Structure of the RH TB IC in CoC settings team: OI/ART team leader, chief of the TB ward, OI/ART team members and chief of TB lab
- The RH team has the following tasks:
  - Implement the TB IC in CoC settings plan at the facility level

- Monitor of TB IC in CoC settings plan activities on routine everyday basis
- Report on TB IC in CoC settings activities.

3. **National TB/HIV Workshop:** The two national programs in good collaboration with the Development Partners conducted the fourth National Workshop on Collaborative TB/HIV activities from 27th -28th October 2010. With the presence of WHO TB/HIV Consultant from Geneva, Dr William Wells, we take opportunity to request to attend the workshop to present the finding of TB/HIV collaboration during his field visit in a week before workshop being conducted. The main TOR of the consultant is for documentation of TB/HIV collaborative activity success story. The workshop is play an important forum where the stakeholders, partners and health workers working for TB control and HIV/AIDS control to meet and discuss how to improve the TB/HIV collaboration by looking at refer TB patients to VCCT for HIV testing and refer PLHA for TB screening and recording and reporting. The main objectives of the conference are as follow:

-to present the new revised TB/HIV framework including 3Is: Intensified TB case finding, INH preventive Therapy, Infection Control

-to introduce the roadmap for implementation of IPT and IC

-to strengthen the Recording and reporting for TB/HIV activities:

1. TB screening/IPT among PHA from NCHADS
2. HIV screening among TB patients from CENAT
3. Infection Control from both sites
4. Presentation of current TB/HIV activities in selected provinces

-to introduce the revised TB monthly and quarterly recording and reporting

Participants to be invited are PHD directors, OD directors, Provincial TB Supervisors, PAOs, OD TB supervisor and NGOs and partners working in the field of TB/HIV with the total number of around 316.

The Technical Working Group members are agreed that the participants will be divided into 6 groups based on geographic, epidemiological situation and their experiences. These groups will discus on the whole afternoon session with the topics as follow:

1/- Intensified TB case finding among PLHIV for 2 different groups

2/- INH Preventive therapy for 1 group

3/- Screening HIV among TB patients for 1 group

4/- Infection Control for 1 group

5/- The coordination and harmonization of TB/HIV activities at the field levels for 1 group

4. Supervision

Jointly supervision and coaching of CENAT and NCHADS, US-CDC and FHI have been conducting to the sites where 3Is strategy is implementing. The challenges found to be addressed in the field are 1/work is quite new for them, 2/workload for the staff at the field and 3/shortage of staff who are working at OI/ART and TB as well.

5. Operational Research for Option 2

With the technical and financial support of TBCAP/WHO and collaboration with CENAT, the operational research to see whether Option 2 is conducted. During the field visit of collect information, the reasons for improved and high referral and testing are as follow:

- There is the onset of option 2 as written document in joint statement for prompt HIV testing and care
- Existence of incentives for referral
- Incentives based on per test associated with higher rates of testing than per time

- Strong management/leadership on part of OD TB manager
- Improved community understanding of HIV through VHV, DOTS Watchers, etc.
- PITC practice from staff - although many successful techniques contrary to guidelines

6. TB/HIV Data :

HIV / AIDS Among TB Patients 2010									
Quarter	Number of TB cases registered for treatment (including HIV+)	Number of TB Cases Registered for treatment (excluding HIV+)	Number of TB Cases Referred to VCT for HIV testing	Number of TB Cases tested for HIV at VCT	**HIV+**	**HIV -**	**CPT**	**OI / HBC**	**ARV**
1	10,390	9,881	7,566	7,296	84	7,212	235	198	119
2	10,057	9,565	7,218	6,934	79	6,855	355	332	210
3	10,989	10,569	8,675	8,462	88	8,374	420	370	315
4	10,193	9,808	8,114	7,739	56	7,683	373	362	300
Total	41,629	39,823	31,573	30,431	307	30,124	1,383	1,262	944

Based on the above table, 79.28% (31,573/39,823) of unknown HIV TB patients were referred for HIV testing, then out of them around 96.38% (30,431/31,573) tested for HIV at VCCT. The positive rate of HIV in unknown TB patients who were referred and tested at VCCT is around 1% (307/30,431).

Since National TB control program get budget supports (from TBCAP, GFATM, CHC, and other NGOs) for refer TB patients or refer TB patient blood to VCCT for HIV testing, number of TB patients is increasing from 54% in 2008 to 70.59% in 2009 and 79.28% in 2010. Cotrimoxazole preventive therapy is given to all HIV positive TB patients and also anti-retroviral treatment during TB treatment is undertaken to all eligible HIV positive TB patients who are met the criteria set. However, the data of CPT and ART need to recheck and strengthen the recording and reporting as well.

TB Among PLHIV 2010								
Quarter	Number of HIV + clients registered at VCCT	Number of HIV+ clients at VCCT referred to OI/ART service for TB screening	Number of HIV+ clients screened TB at OI/ART	BK+	**BK-**	**EPTB**	**Total**	**Number of HIV+ received IPT**
1	1,031	598	859	126	70	86	207	0
2	1,045	656	925	61	133	157	351	0
3	1,433	768	925	63	100	117	280	0
4	221	161	225	17	28	28	73	172
Total	3,730	2,183	2,934	267	331	388	911	172

XI. Multi drug resistant TB (MDR-TB)

NTP collaborate with their partners, especially Cambodian Health Committee (CHC), Médecin Sans Frontière France (MSF/F), CDC/GAP, to initiate the MDR diagnosis, treatment resulting in development of MDR TB guideline.

By the end of 2010, there are 9 MDR-TB treatment sites with 52 isolations rooms (see table below).

N^0	Treatment sites	Number of isolation rooms
1	CENAT	7
2	Mittapheap Khmer-Soviet Hospital	20
3	Battambang	6
4	Takeo	4
5	Siemreap	2
6	Svay Rieng	2
7	Koh Kong	2
8	Kampong Cham	6
9	Kampong Chhnaing	3
	Total: 9 treatment sites	52 isolation rooms

Case finding strategies:

Our project has selected 3 case finding strategies:

1- All smear-positive pulmonary tuberculosis treated with category II treatment regimen.
2- New smear-positive pulmonary tuberculosis living in close contact with known MDR-TB case.
3- Non converter at month 3 for smear-positive pulmonary tuberculosis treated with category I treatment regimen.

Diagnosis:

All MDR-TB suspects are requested to submit 3 sputum samples which are sent to the laboratory to perform:

1- Smear microscopy
2- Culture
3- Identification
4- Drug susceptibility testing.

Treatment:

All confirmed MDR-TB cases will received the standardized category IV treatment regimen as follow:

6 Z E* Km (or Cm) Lfx (or Mfx) Eto Cs (or PAS) /
18 Z E* Lfx (or Mfx) Eto Cs (or PAS)

* If still susceptible by drug susceptibility testing.

Achievement:

In 2010, NTP has screened 515 MDR-TB suspects. Among them, 31 cases are MDR-TB. (See below)

Screened	515 suspects
- MTB	100 cases
o MDR-TB	31 cases
- NTM	125 cases

In 2010, 41 patients treated for DR-TB, and 30 patients treated for NTM. Among 41 DR-TB cases treated, 34 patients are MDR-TB cases and 7 patients are treated on empirical treatment (not yet confirmed as MDR-TB). The treatment success rates are 70% and 68% in 2007 and 2008 respectively. By the end of 2010, 136 patients are registered and treated as DR-TB, among them 63 are still on treatment (see below):

Cohort analysis	2007	2008	2009	2010	Total
Cured/Completed	9(70%)	28 (68%)	1	0	38
Died	2 (15%)	6 (15%)	6	10	24
Defaulted	2 (15%)	6 (15%)	2	0	10
Failure	0	1 (2%)	0	0	1
Still on treatment	0	0	32	31	63
Total	13	41	41	41	136

Challenges:

- Staff's capacity is still limited in MDR-TB management
- Management on side-effect for MDR-TB patients is still limited
- Incentives for health staff working with MDR-TB patients is not appropriate
- Isolation room is not enough
- Defaulter and death rates are high (15%)
- Low case finding
- MDR-TB suspect identification is limited
- Budget for MDR-TB Control Project is limited.

XII. Public-Private Mix DOTS (PPM-DOTS)

Public-Private Mix DOTS is an intervention of DOTS Expansion of the National Tuberculosis Program (NTP). Since 2005 the (NTP) in collaboration with JICA, USAID (URC, PATH) and other institutions such as Cambodia Pharmacy Association, Cambodia Medical association, has been establishing the PPM-DOTS model in which private sectors involve are individual private physicians, private hospital, pharmacist, drug seller and private lab technicians.

In year 2010 PPM-DOTS activities have implemented in 37 ODs in 10 provinces namely Phnom Penh, Battambang, Sihanuk ville, Kampong Cham, Siem Reap, Pursat, Takeo, Kampong Speu, Banthey Meanchey and Kandal.

Private providers, in implementing this PPM-DOTS, have the main roles in identifying the TB suspects, guide /explain about TB, and refer TB suspects with referral slips to the government HCs or RH for diagnosis and treatment.

The PPM-DOTS has been contributed to TB Control as follows :

- enhance the quality of TB diagnosis and treatment as well as patient support providing the knowledge an skills through workshop, training which reduce the malpractice and misunderstanding and also limits the unnecessary and often costly treatments.
- increase the case detection rate and reduce the delay in diagnosing TB through private practitioner participation in referring timely all TB suspects to do diagnose and treat at TB network. These prevent emerging the multi-drug resistant
- improve the equitable access to high quality of DOTS by involving private practitioners from whom the poor vulnerable people seek care.
- protect the poor and vulnerable people from inappropriate expense through send them to do diagnosis and receive the free of charge treatment.
- contribute towards completeness of epidemiological surveillance on TB when both private and public sectors who diagnose and treat TB follow proper TB recording and reporting system of the National Tuberculosis Program
- improve the management capacity of both the public and the private sectors and can contribute to health system strengthening.

There are some challenges despite the PPM-DOTS has been in progress,:

- drop out of referring TB suspects from private provider
- motivation to service providers in both sectors.
- limitation of confidence on public facilities
- limitation of resources in recording and reporting

In summary, the achievement related to case finding and treatment of tuberculosis in 2010 under PPM-DOTS activities are shown in the table below:

Year	Province	OD	No. of Private implementing PPM-DOTS	No. of TB suspects referred from private	No. of TB suspects received by public	No. of Smear Positive TB Cases	Total TB Cases Treated
2005	2	3	287	314	242	29	46
2006	8	15	755	1989	1154	130	244
2007	11	38	980	5562	2763	379	533
2008	11	38	1690	4212	1882	220	301
2009	10	38	1735	9781	5540	564	769
2010	10	37	1735	7612	4280	485	851

XIII. TB in prison

In year 2005, NTP collaboration with Prison Department has conducted training on TB knowledge to all prison health staff in country .

In mid of year 2008, with high commitment of Ministry of Interior and Ministry of Health and strong technical and financial support from partners, this TB in prison activities has reorganized and the achievement as bellow :

- Accreditation more 21 prisons have Health Post
- SOP TB in prison has developed
- Developed TB in prison Technical working group
- 8/26 prisons has implemented for new TB program.

- Quideline TB in Prison(WHO),translated in Khmer
- Cases detection until August 2010 :

# prisons	# TB patients	# TB-HIV patients
11	315	26

XIV. IEC and Advocacy

In 2010, the activities and achievements related to IEC and Advocacy conducted by NTP are as follows:

-Capacity building for TB staff:

.All course training and refresher also of all Programs or Projects of Job activities TB included strategies ACSM are as Project TB - TB_HIV-

C DOTs - PPM DOTs - MDR- Infection Prevention and Control Health Care Facilities for example.

.This course initiation and collaborate formal Support between CENAT and from GFTM-WHO- USAID-CDC- PATH-FHI...

-Produce IEC materials and disseminate messages to the general population through various means such as:

.General System Media: Radio, TV, Newspapers, Magazine

.Face to Face: Posters and leaflets.

It has also cooperated with other NGOs such as WHO, USAID, FHI, PATH and JICA in providing technical skill, producing and disseminating the IEC materials to population.

-In addition, the program provided the updated information on TB situation to MoH and other organizations so as to make them aware of the TB situation as well as the program activities in Cambodia and sought for support to the program. Similarly, for advocacy purpose, NTP promote the World TB Day from central to peripheral level throughout the country.

XV. Information System

NTP has developed the standardized recording and reporting system for the program monitoring and evaluation. Through this system, the program can analyze and evaluate the TB situation in Cambodia. TB Bulletin, Quarterly TB Report and Annual TB Magazine are regularly published and disseminated to all related agencies.

XVI. Research

The National Tuberculosis Program (NTP) in collaboration with JICA TB Control Project with financial from WHO/TBCAP and Global Fund Round 5, have conducted the 4rd round of National HIV sero-prevalence Survey among TB patients in July 2009. The results showed that the prevalence rate of HIV among TB patients nationwide is 6.3 %. In late 2010, the NTP has conducted the second National TB Prevalence Survey nationwide, which will be finished the field operation by October 2011 .

XVII. Partnership

Mechanism of coordination with other partners in TB control was established with the set-up of a committee called Inter-agency Coordination Committee for TB Control (ICC) in 2001. This committee is now called the Sub-Technical Working Group (Sub-TWG) for TB Control. The main terms of reference of the committee are to technically advice on the program management and to assist the program in coordination as well as resources mobilization. So far the ICC has been functioning very well with especially its regular and ad hoc meeting.

NTP also collaborate with organizations, and research institutes abroad. Through this mechanism, we can identify areas of cooperation and funding for the program.

The National Program has also cooperated with the World Food Program through this, the World Food Program provided the support to the TB patients nationwide.

In addition, the National TB Control Programme (NTP) has a number of partners/organizations involving in the fight against tuberculosis. Those partners are listed as below:

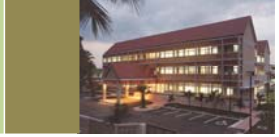
1. World Health Organization (WHO)
2. United Sates Agency for International Development (USAID)
3. United Sates Centers for Disease Control and Prevention (US CDC)
4. Japan International Cooperation Agency (JICA)
5. Research Institute of Tuberculosis, Japan (RIT)
6. TBCAP
7. World Food Programme (WFP)
8. Medecin Sans Frontier-French (MSF-F)
9. Medecin Sans Frontier-Belgique (MSF-B)

10. Pasteur Institute
11. Cambodia Anti-tuberculosis Association (CATA)
12. Cambodia Health Committee (CHC)
13. Catholic Relief Service (CRS)
14. Family Health International (FHI)
15. Health Alliance Development (HEAD)
16. Health Unlimited (HU)
17. Partner for Health and Development (P-FHAD)
18. Ponleu Komar (PK)
19. Reproductive Health Association of Cambodia (RHAC)
20. Reproductive and Child Health Alliance (RACHA)
21. Save the Children Australia (SCA)
22. Sihanouk Hospital Center of HOPE (SHCH)
23. VOR ORT

Cure rate by Provinces , year 2010

Table 1

Nº	Province	Cure Rate
1	Kandal	94%
2	Svay Rieng	94%
3	Phom Penh	92%
4	Pursat	95%
5	Battambang	90%
6	Pailin	76%
7	BMC	91%
8	Siem Reap	88%
9	Oddar MC	93%
10	Kg Thom	94%
11	Takeo	91%
12	Kg Speu	94%
13	Kampot	98%
14	Kep	89%
15	Kg Som	87%
16	Koh Kong	74%
17	Prey Veng	94%
18	Kg Chhnang	96%
19	Kratie	89%
20	Kg Cham	87%
21	Stung Treng	91%
22	Preah Vihear	93%
23	Modulkiri	74%
24	Rattanakiri	65%
Total		**91%**



ANTI-TUBERCULOSIS ACTIVITIES BY PROVINCES, 2010 (NTP)

Table 2

PROVINCES	CASES FINDING ACTIVITIES													DETECTION RATE				
	NC									BK+(%)	(%)	(%)	(%)	New S(+)	S(+)	Smear(-)	EP/	TOTAL
	BK+	Relap	Fail	RAD	ReTt	BK-	EP	OTER	Total	New	ReTt	BK-	EP	100,000 habitants				
KANDAL, 8 (OD)	1,463	24	5	3	32	632	1,187	27	3,341	44%	1%	19%	36%	116	118	50	94	264
SVAY RIENG, 3 (OD)	875	35	0	0	35	788	1,036	267	3,001	29%	1%	26%	35%	181	188	163	215	622
PHNOM PENH 4 OD and National Hospital	1,119	75	20	3	98	750	1,002	122	3,091	36%	3%	24%	32%	84	90	56	75	233
PURSAT, 2 (OD)	535	14	0	0	14	197	603	39	1,388	39%	1%	14%	43%	135	138	50	152	349
BATTAMBANG, 5 (OD)	938	36	10	0	46	343	747	42	2,116	44%	2%	16%	35%	91	95	33	73	206
PAILIN, 1 (OD)	74	2	0	1	3	24	101	4	206	36%	1%	12%	49%	105	108	34	143	292
BANTEAY MEANC. 4 (OD)	828	23	1	2	26	532	350	99	1,835	45%	1%	29%	19%	122	126	78	52	271
SIEM REAP, 4 (OD)	1,468	37	7	1	45	1,121	1,030	97	3,761	39%	1%	30%	27%	164	168	125	115	420
ODORMEANCHEY,1 (OD)	358	4	0	0	4	53	119	23	557	64%	1%	10%	21%	193	195	29	64	300
KOMPONG THOM, 3 (OD)	1,074	11	0	0	11	170	261	19	1,535	70%	1%	11%	17%	170	172	27	41	243
TAKEO, 5 (OD)	1,191	29	0	0	29	526	692	122	2,560	47%	1%	21%	27%	141	144	62	82	303
KOMPONG SPEU, 3 (OD)	1,186	36	3	1	40	284	582	22	2,114	56%	2%	13%	28%	165	170	40	81	295
KAMPOT, 4 (OD)	659	18	1	0	19	298	321	59	1,356	49%	1%	22%	24%	112	116	51	55	231
KEP, 1 (OD)	18	0	0	0	0	21	19	0	58	31%	0%	36%	33%	50	50	59	53	162
KOMPONG SOM, 1 (OD)	197	5	2	0	7	57	175	5	441	45%	2%	13%	40%	89	91	26	79	199
KOH KONG, 2 (OD)	113	3	1	0	4	37	40	6	200	57%	2%	19%	20%	96	99	31	34	170
PREY VENG, 7 (OD)	1,719	37	1	0	38	1,093	2,704	45	5,599	31%	1%	20%	48%	181	185	115	285	591
KOMPONG CHHNANG, 3 (OD)	690	18	0	0	18	204	478	2	1,392	50%	1%	15%	34%	146	150	43	101	295
KRATIE, 2 (OD)	303	6	0	0	6	64	195	3	571	53%	1%	11%	34%	95	97	20	61	179
KOMPONG CHAM, 10 (OD)	2,128	49	8	8	65	1,038	2,423	84	5,738	37%	1%	18%	42%	127	130	62	144	342
STUNG TRENG, 1 (OD)	173	0	0	0	0	19	88	0	280	62%	0%	7%	31%	155	155	17	79	251
PREAH VIHEAR, 1 (OD)	223	4	0	0	4	39	59	3	328	68%	1%	12%	18%	130	133	23	34	192
MODULKIRI,1 (OD)	38	0	0	0	0	2	9	0	49	78%	0%	4%	18%	62	62	3	15	80
RATANAKIRI, 1 (OD)	84	0	0	0	0	9	18	0	111	76%	0%	8%	16%	56	56	6	12	74
24 PROVINCES	17,454	466	59	19	544	8,301	14,239	1,090	41,628	42%	1%	20%	34%	130	134	62	106	311

ANTI-TUBERCULOSIS ACTIVITIES BY PROVINCES, 2010 (NTP)

Table 3

PROVINCES	NEW CASE ACTIVITIES OF BK+ BY AGE																
	0-14Y		15-24Y		25-34Y		35-44Y		45-54Y		55-64Y		>=65Y		TOTAL		
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	TOTAL
KANDAL, 8 (OD)	0	1	50	63	119	116	122	118	149	139	122	140	160	164	722	741	1,463
SVAY RIENG, 3 (OD)	1	14	32	39	57	64	83	81	97	100	66	81	80	80	416	459	875
NATIONAL HOSPITAL	2	0	41	34	63	39	61	27	59	30	23	22	37	25	286	177	463
PHNOM PENH, 4 (OD)	1	1	67	43	122	69	77	28	85	31	36	37	26	33	414	242	656
PURSAT, 2 (OD)	1	2	21	19	36	35	46	38	64	63	54	58	44	54	266	269	535
BATTAMBANG, 5 (OD)	3	3	35	43	88	65	98	65	134	77	87	90	96	54	541	397	938
PAILIN, 1(OD)	0	0	6	2	10	8	9	7	9	7	6	2	3	5	43	31	74
BANTEAY MEANCHEY. 4 (OD)	1	4	42	31	79	67	87	49	129	79	106	60	53	41	497	331	828
SIEM REAP, 4 (OD)	2	6	54	49	134	112	186	104	216	172	133	134	81	85	806	662	1,468
ODORMEANCHEY 1 (OD)	0	0	16	12	30	20	33	28	74	56	33	26	20	10	206	152	358
KOMPONG THOM, 3 (OD)	2	3	47	59	115	88	108	97	113	92	71	93	114	72	570	504	1,074
TAKEO, 5 (OD)	0	4	34	38	97	60	114	88	121	112	122	131	130	140	618	573	1,191
KOMPONG SPEU, 3 (OD)	1	2	49	69	98	104	112	93	115	101	112	115	105	110	592	594	1,186
KAMPOT, 4 (OD)	0	0	23	16	57	35	71	48	99	60	59	60	68	63	377	282	659
KEP, 1 (OD)	0	0	3	0	2	1	1	2	1	0	1	2	4	1	12	6	18
KOMPONG SOM, 1 (OD)	0	0	13	11	23	26	21	11	25	19	16	17	10	5	108	89	197
KOH KONG, 2 (OD)	0	0	5	6	17	2	18	8	16	9	9	10	9	4	74	39	113
PREY VENG, 7 (OD)	8	9	62	56	109	130	146	129	187	219	129	208	185	142	826	893	1,719
KOMPONG CHHNANG, 3 (OD)	3	2	21	36	57	46	52	56	88	82	63	77	56	51	340	350	690
KRATIE, 2 (OD)	0	0	11	12	26	25	31	23	39	21	32	22	37	24	176	127	303
KOMPONG CHAM, 10 (OD)	11	8	107	100	179	171	229	163	213	203	196	180	228	140	1163	965	2,128
STUNG TRENG, 1 (OD)	0	1	4	5	14	12	17	15	23	22	15	16	20	9	93	80	173
PREAH VIHEAR, 1 (OD)	2	0	7	4	17	16	25	17	28	27	24	17	26	13	129	94	223
MODULKIRI,1(OD)	1	0	0	2	3	2	8	3	6	2	4	3	1	3	23	15	38
RATANAKIRI, 1 (OD)	0	0	0	3	12	8	5	5	15	9	12	6	6	3	50	34	84
24 PROVINCES	39	60	750	752	1,564	1,321	1,760	1,303	2,105	1,732	1,531	1,607	1,599	1,331	9,348	8,106	17,454

Table 4

TB Cases Notified by Operational District in 2010

Operational District (OD) of Province	AFB pos					AFB neg	EP	OTHER	
	New	Re	Fail.	RAD	ReTt				TOTAL
KANDAL :									
TAKMOV (OD)	262	2	0	1	3	271	238	7	781
SAANG(OD)	253	5	5	1	11	32	63	1	360
KOH THOM(OD)	205	2	0	0	2	181	27	7	422
KIEN SVAY(OD)	268	1	0	0	1	73	463	3	808
KHSACH KANDAL(OD)	104	0	0	0	0	13	160	4	281
MOUK KAMPOL(OD)	77	2	0	1	3	20	122	1	223
PONHEA LEU(OD)	138	6	0	0	6	21	51	0	216
ANG SNOUL(OD)	156	6	0	0	6	21	63	4	250
subtotal	**1,463**	**24**	**5**	**3**	**32**	**632**	**1,187**	**27**	**3,341**
SVAY RIENG									
SVAY RIENG (OD)	492	23	0	0	23	391	668	152	1,726
ROMEAS HEK(OD)	165	6	0	0	6	104	124	38	437
CHIPOU (OD)	218	6	0	0	6	293	244	77	838
subtotal	**875**	**35**	**0**	**0**	**35**	**788**	**1,036**	**267**	**3,001**
NATIONAL HOSPITAL									
CENAT	340	42	19	2	63	216	330	54	1,003
IOM	14	0	0	0	0	0	0	0	14
HOPE HOSPITAL	51	8	0	0	8	34	72	35	200
NORODOM SIAHNOUK	42	9	1	0	10	54	97	10	213
PREAH KET MELEAH	7	0	0	0	0	17	69	0	93
NATIONAL PEDIATRIQUE	1	0	0	0	0	33	43	0	77
subtotal	**455**	**59**	**20**	**2**	**81**	**354**	**611**	**99**	**1,600**
PHNOM PENH									
CENTER (OD)	100	1	0	0	1	41	66	1	209
NORTH(OD)	154	5	0	0	5	89	100	9	357
SOUTH(OD)	216	7	0	1	8	194	119	10	547
WEST(OD)	186	3	0	0	3	66	90	3	348
subtotal	**656**	**16**	**0**	**1**	**17**	**390**	**375**	**23**	**1,461**
PURSAT									
SAMPOVMEAS (OD)	373	12	0	0	12	138	422	23	968
BAKAN (OD)	162	2	0	0	2	59	181	16	420
subtotal	**535**	**14**	**0**	**0**	**14**	**197**	**603**	**39**	**1,388**
BATTAMBANG									
BATTAMBANG (OD)	340	16	6	0	22	119	361	18	860
THMAR KOUL (OD)	211	9	2	0	11	55	57	7	341
MAUNG RUSSEY (OD)	162	5	2	0	7	82	217	17	485
SAMPOEV LONE (OD)	124	4	0	0	4	44	66	0	238
SANG KE (OD)	101	2	0	0	2	43	46	0	192
subtotal	**938**	**36**	**10**	**0**	**46**	**343**	**747**	**42**	**2,116**
PAILIN CITY									
PAILIN (OD)	**74**	**2**	**0**	**1**	**3**	**24**	**101**	**4**	**206**

Table 4 (continued)

TB Cases Notified by Operational District in 2010

Operational District (OD) of Province	AFB pos					AFB neg	EP	OTHER	
	New	Re	Fail.	RAD	ReTt				TOTAL
BANTEAY MEANCHEY:									
MONGKOL BOREI (OD)	241	3	0	0	3	235	204	39	722
PREANEATPREAS (OD)	164	4	1	1	6	97	52	41	360
OCHROV (OD)	274	15	0	1	16	119	51	19	479
TMORPOUK(OD)	149	1	0	0	1	81	43	0	274
subtotal	**828**	**23**	**1**	**2**	**26**	**532**	**350**	**99**	**1,835**
SIEM REAP									
SIEM REAP (OD)	536	2	4	0	6	288	365	24	1,219
SOTNIKUM(OD)	385	18	0	1	19	126	193	31	754
ANGKOR CHUM	318	8	2	0	10	433	241	26	1,028
ANGKOR CHILD HOSPITAL (OD)	4	0	1	0	1	9	28	0	42
KRALANH (OD)	225	9	0	0	9	265	203	16	718
subtotal	**1,468**	**37**	**7**	**1**	**45**	**1,121**	**1,030**	**97**	**3,761**
ODOR MEANCHEY									
SAMRONG (OD)	**358**	**4**	**0**	**0**	**4**	**53**	**119**	**23**	**557**
KOMPONG THOM									
KG THOM (OD)	485	5	0	0	5	126	162	9	787
BARAY (OD)	368	3	0	0	3	29	65	3	468
STUNG(OD)	221	3	0	0	3	15	34	7	280
subtotal	**1,074**	**11**	**0**	**0**	**11**	**170**	**261**	**19**	**1,535**
TAKEO									
DAUNKEOV (OD)	252	0	0	0	0	99	194	0	545
BATI (OD)	198	9	0	0	9	119	196	38	560
PREY KABAS (OD)	404	10	0	0	10	149	104	84	751
ANGROKA (OD)	96	1	0	0	1	106	114	0	317
KIRIVONG (OD)	241	9	0	0	9	53	84	0	387
subtotal	**1,191**	**29**	**0**	**0**	**29**	**526**	**692**	**122**	**2,560**
KOMPONG SPEU									
KOMPONG SPEU (OD)	679	28	2	0	30	124	277	13	1,123
KARNG PISEY(OD)	320	6	1	1	8	92	220	9	649
OUDONG(OD)	187	2	0	0	2	68	85	0	342
subtotal	**1,186**	**36**	**3**	**1**	**40**	**284**	**582**	**22**	**2,114**
KAMPOT									
KAMPOT (OD)	184	0	0	0	0	57	75	0	316
ANGKOR CHEY(OD)	151	4	0	0	4	53	53	4	265
KOMPONG TRACH(OD)	152	6	0	0	6	88	68	9	323
CHHOUK(OD)	172	8	1	0	9	100	125	46	452
subtotal	**659**	**18**	**1**	**0**	**19**	**298**	**321**	**59**	**1,356**
KEP									
KRONG KEP (OD)	**18**	**0**	**0**	**0**	**0**	**21**	**19**	**0**	**58**
KOMPONG SOM									
PREASIHANOUK(OD)	**197**	**5**	**2**	**0**	**7**	**57**	**175**	**5**	**441**

Table 4 (continued)

TB Cases Notified by Operational District in 2010

Operational District (OD) of Province	AFB pos					AFB neg	EP	OTHER	
	New	Re	Fail.	RAD	ReTt				TOTAL
KOH KONG									
SMUCH MEANCHEY(OD)	76	2	1	0	3	31	27	0	137
SRE AMBIL(OD)	37	1	0	0	1	6	13	6	63
subtotal	**113**	**3**	**1**	**0**	**4**	**37**	**40**	**6**	**200**
PREY VENG									
PREY VENG (OD)	352	27	0	0	27	180	332	1	892
KAMCHEY MEAR(OD)	148	1	0	0	1	127	230	0	506
PEARING(OD)	313	3	0	0	3	204	213	5	738
KG TRABECK(OD)	105	0	1	0	1	79	86	10	281
MESANG(OD)	236	2	0	0	2	129	537	0	904
PREAH SDACH(OD)	294	0	0	0	0	27	407	0	728
NEAK LOEUNG (OD)	271	4	0	0	4	347	899	29	1,550
subtotal	**1,719**	**37**	**1**	**0**	**38**	**1,093**	**2,704**	**45**	**5,599**
KOMPONG CHHNANG									
KG. CHHNANG (OD)	303	13	0	0	13	31	92	2	441
KG TRALACH (OD)	209	1	0	0	1	142	166	0	518
Bar Bo (OD)	178	4	0	0	4	31	220	0	433
subtotal	**690**	**18**	**0**	**0**	**18**	**204**	**478**	**2**	**1,392**
KRATIE									
KRATIE (OD)	187	2	0	0	2	48	170	0	407
CHHLAUNG(OD)	116	4	0	0	4	16	25	3	164
subtotal	**303**	**6**	**0**	**0**	**6**	**64**	**195**	**3**	**571**
KOMPONG CHAM									
KG CHAM (OD)	298	31	7	6	44	164	252	38	796
KRAUCH CHMAR (OD)	93	0	0	0	0	58	54	0	205
TBONG KHMUM(OD)	197	5	0	2	7	165	122	0	491
CHOEUNG PREY(OD)	302	2	0	0	2	330	943	18	1,595
SREY SANTHOR(OD)	137	5	1	0	6	94	52	12	301
CHAMCAR LEU(OD)	480	0	0	0	0	65	536	0	1,081
PREY CHHOR (OD)	214	2	0	0	2	24	73	2	315
PONHEA KREK(OD)	205	2	0	0	2	82	258	1	548
ORAING OV(OD)	86	2	0	0	2	42	100	12	242
MEMOT(OD)	116	0	0	0	0	14	33	1	164
subtotal	**2,128**	**49**	**8**	**8**	**65**	**1,038**	**2,423**	**84**	**5,738**
STUNG TRENG									
STUNG TRENG (OD)	**173**	**0**	**0**	**0**	**0**	**19**	**88**	**0**	**280**
PREAH VIHEAR									
TBENG MEAN CHEY(OD)	**223**	**4**	**0**	**0**	**4**	**39**	**59**	**3**	**328**
MONDOLKIRI									
SEN MONORUM(OD)	**38**	**0**	**0**	**0**	**0**	**2**	**9**	**0**	**49**
RATTANAKIRI									
BANLUNG (OD)	**84**	**0**	**0**	**0**	**0**	**9**	**18**	**0**	**111**
TOTAL	**17,454**	**466**	**59**	**19**	**544**	**8,301**	**14,239**	**1,090**	**41,628**

Table 5

Treatment Outcomes of New Smear Positive TB Cases by Operational District in 2010

Operational District (OD) of Province	patients	Cure	%	Complete	%	Death	%	Failure	%	default	%	Trans	%
KANDAL :													
TAKMOV (OD)	212	197	93%	1	0%	1	0%	1	0%	1	0%	11	5%
SAANG(OD)	262	254	97%	0	0%	2	1%	1	0%	3	1%	2	1%
KOH THOM(OD)	215	209	97%	3	1%	3	1%	0	0%	0	0%	0	0%
KIEN SVAY(OD)	239	220	92%	8	3%	8	3%	1	0%	2	1%	0	0%
KHSACH KANDAL(OD)	95	88	93%	4	4%	3	3%	0	0%	0	0%	0	0%
MOUK KAMPOL(OD)	76	69	91%	0	0%	3	4%	0	0%	3	4%	1	1%
PONHEA LEU(OD)	127	116	91%	6	5%	2	2%	0	0%	2	2%	1	1%
ANG SNOUL(OD)	252	241	96%	5	2%	4	2%	0	0%	1	0%	1	0%
subtotal	**1,478**	**1,394**	**94%**	**27**	**2%**	**26**	**2%**	**3**	**0%**	**12**	**1%**	**16**	**1%**
SVAY RIENG													
SVAY RIENG (OD)	619	580	94%	12	2%	8	1%	0	0%	3	0%	16	3%
ROMEAS HEK(OD)	152	146	96%	1	1%	5	3%	0	0%	0	0%	0	0%
CHIPOU (OD)	222	210	95%	6	3%	5	2%	0	0%	0	0%	1	0%
subtotal	**993**	**936**	**94%**	**19**	**2%**	**18**	**2%**	**0**	**0%**	**3**	**0%**	**17**	**2%**
NATIONAL HOSPITAL													
CENAT	295	230	78%	17	6%	7	2%	8	3%	10	3%	23	8%
HOPE HOSPITAL	48	23	48%	2	4%	5	10%	1	2%	7	15%	10	21%
NORODOM SIAHNOUK	56	23	41%	14	25%	8	14%	2	4%	1	2%	8	14%
PREAH KET MELEAH	19	19	100%	0	0%	0	0%	0	0%	0	0%	0	0%
NATIONA PEDIATRIQUE	2	1	50%	0	0%	1	50%	0	0%	0	0%	0	0%
subtotal	**420**	**296**	**70%**	**33**	**8%**	**21**	**5%**	**11**	**3%**	**18**	**4%**	**41**	**10%**
PHNOM PENH													
CENTER (OD)	68	65	96%	0	0%	0	0%	0	0%	1	1%	2	3%
NORTH(OD)	151	137	91%	4	3%	1	1%	1	1%	1	1%	7	5%
SOUTH(OD)	185	167	90%	4	2%	4	2%	0	0%	2	1%	8	4%
WEST(OD)	190	175	92%	2	1%	2	1%	2	1%	3	2%	6	3%
subtotal	**594**	**544**	**92%**	**10**	**2%**	**7**	**1%**	**3**	**1%**	**7**	**1%**	**23**	**4%**
PURSAT													
SAMPOVMEAS (OD)	398	375	94%	6	2%	5	1%	1	0%	2	1%	9	2%
BAKAN (OD)	160	154	96%	0	0%	4	3%	0	0%	0	0%	2	1%
subtotal	**558**	**529**	**95%**	**6**	**1%**	**9**	**2%**	**1**	**0%**	**2**	**0%**	**11**	**2%**
BATTAMBANG													
BATTAMBANG (OD)	329	287	87%	8	2%	11	3%	3	1%	6	2%	14	4%
THMAR KOUL (OD)	157	142	90%	1	1%	9	6%	0	0%	3	2%	2	1%
MAUNG RUSSEY (OD)	165	148	90%	1	1%	3	2%	5	3%	3	2%	5	3%
SANG KE (OD)	110	104	95%	0	0%	4	4%	1	1%	1	1%	0	0%
SAMPOVLOUN (OD)	128	121	95%	1	1%	2	2%	0	0%	0	0%	4	3%
subtotal	**889**	**802**	**90%**	**11**	**1%**	**29**	**3%**	**9**	**1%**	**13**	**1%**	**25**	**3%**
PAILIN CITY													
PAILIN (OD)	**54**	**41**	**76%**	**2**	**4%**	**1**	**2%**	**0**	**0%**	**5**	**9%**	**5**	**9%**

Table 5 (continued)

Treatment Outcomes of New Smear Positive TB Cases by Operational District in 2010

Operational District (OD) of Province	patients	Cure	%	Complete	%	Death	%	Failure	%	default	%	Trans	%
BANTEAY MEANCHEY													
MONGKOL BOREI (OD)	252	225	89%	5	2%	9	4%	1	0%	3	1%	9	4%
PREANEATPREAS (OD)	217	207	95%	7	3%	0	0%	0	0%	1	0%	2	1%
OCHROV (OD)	280	250	89%	5	2%	7	3%	0	0%	6	2%	12	4%
TMORPOUK(OD)	210	190	90%	6	3%	5	2%	2	1%	4	2%	3	1%
subtotal	**959**	**872**	**91%**	**23**	**2%**	**21**	**2%**	**3**	**0%**	**14**	**1%**	**26**	**3%**
SIEM REAP													
SIEM REAP (OD)	514	433	84%	6	1%	20	4%	3	1%	5	1%	47	9%
ANGKOR CHUM (OD)	309	269	87%	24	8%	7	2%	0	0%	8	3%	1	0%
ANGKOR CHILD HOSPITAL(OD)	4	4	100%	0	0%	0	0%	0	0%	0	0%	0	0%
SOTNIKUM(OD)	368	319	87%	39	11%	7	2%	0	0%	2	1%	1	0%
KRALANH (OD)	302	290	96%	5	2%	5	2%	1	0%	0	0%	1	0%
subtotal	**1,497**	**1,315**	**88%**	**74**	**5%**	**39**	**3%**	**4**	**0%**	**15**	**1%**	**50**	**3%**
ODOR MEANCHEY													
SAMRONG (OD)	**328**	**305**	**93%**	**7**	**2%**	**5**	**2%**	**0**	**0%**	**4**	**1%**	**7**	**2%**
KOMPONG THOM													
KG THOM (OD)	447	421	94%	0	0%	15	3%	0	0%	4	1%	7	2%
BARAY (OD)	401	372	93%	21	5%	5	1%	0	0%	1	0%	2	0%
STUNG(OD)	216	209	97%	2	1%	4	2%	0	0%	1	0%	0	0%
subtotal	**1,064**	**1,002**	**94%**	**23**	**2%**	**24**	**2%**	**0**	**0%**	**6**	**1%**	**9**	**1%**
TAKEO													
DAUNKEOV (OD)	367	317	86%	13	4%	9	2%	0	0%	2	1%	26	7%
BATI (OD)	242	206	85%	31	13%	3	1%	1	0%	0	0%	1	0%
PREY KABAS (OD)	472	460	97%	6	1%	3	1%	0	0%	0	0%	3	1%
ANGROKA (OD)	108	105	97%	0	0%	2	2%	0	0%	0	0%	1	1%
KIRIVONG (OD)	231	209	90%	9	4%	5	2%	0	0%	7	3%	1	0%
subtotal	**1,420**	**1,297**	**91%**	**59**	**4%**	**22**	**2%**	**1**	**0%**	**9**	**1%**	**32**	**2%**
KOMPONG SPEU													
KOMPONG SPEU (OD)	638	590	92%	12	2%	10	2%	1	0%	6	1%	19	3%
KARNG PISEY(OD)	377	360	95%	5	1%	8	2%	0	0%	4	1%	0	0%
OUDONG(OD)	181	174	96%	2	1%	0	0%	0	0%	2	1%	3	2%
subtotal	**1,196**	**1,124**	**94%**	**19**	**2%**	**18**	**2%**	**1**	**0%**	**12**	**1%**	**22**	**2%**
KAMPOT													
KAMPOT (OD)	216	210	1	0	0	5	0	0	0	0	0	1	0
ANGKOR CHEY(OD)	175	173	99%	0	0%	1	1%	0	0%	0	0%	1	1%
KOMPONG TRACH(OD)	198	193	97%	0	0%	4	2%	0	0%	0	0%	1	1%
CHHOUK(OD)	213	206	97%	0	0%	3	1%	0	0%	4	2%	0	0%
subtotal	**802**	**782**	**98%**	**0**	**0%**	**13**	**2%**	**0**	**0%**	**4**	**0%**	**3**	**0%**
KEP													
KRONG KEP (OD)	**28**	**25**	**89%**	**3**	**11%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**
KOMPONG SOM													
PREASIHANOUK(OD)	**161**	**140**	**87%**	**9**	**6%**	**9**	**6%**	**0**	**0%**	**0**	**0%**	**3**	**2%**

Table 5 (continued)

Treatment Outcomes of New Smear Positive TB Cases by Operational District in 2010

Operational District (OD) of Province	patients	Cure	%	Complete	%	Death	%	Failure	%	default	%	Trans	%
KOH KONG													
SMUCH MEANCHEY(OD)	59	42	71%	0	0%	1	2%	1	2%	6	10%	9	15%
SRE AMBIL(OD)	39	31	79%	5	13%	0	0%	0	0%	0	0%	3	8%
subtotal	**98**	**73**	**74%**	**5**	**5%**	**1**	**1%**	**1**	**1%**	**6**	**6%**	**12**	**12%**
PREY VENG													
PREY VENG (OD)	427	381	89%	13	3%	20	5%	0	0%	7	2%	6	1%
KAMCHEY MEAR(OD)	194	181	93%	4	2%	5	3%	0	0%	2	1%	2	1%
PEARING(OD)	239	226	95%	3	1%	5	2%	1	0%	3	1%	1	0%
KG TRABECK(OD)	135	132	98%	0	0%	2	1%	0	0%	1	1%	0	0%
MESANG(OD)	270	247	91%	18	7%	4	1%	0	0%	0	0%	1	0%
PREAH SDACH(OD)	268	260	97%	3	1%	3	1%	0	0%	0	0%	2	1%
NEAK LOEUNG (OD)	287	277	97%	2	1%	1	0%	1	0%	0	0%	6	2%
subtotal	**1,820**	**1,704**	**94%**	**43**	**2%**	**40**	**2%**	**2**	**0%**	**13**	**1%**	**18**	**1%**
KOMPONG CHHNANG													
KG. CHHNANG (OD)	346	322	93%	4	1%	13	4%	0	0%	4	1%	3	1%
BARBO (OD)	174	172	99%	0	0%	2	1%	0	0%	0	0%	0	0%
KG TRALACH (OD)	268	263	98%	0	0%	2	1%	0	0%	2	1%	1	0%
subtotal	**788**	**757**	**96%**	**4**	**0**	**17**	**0**	**0**	**0**	**6**	**0**	**4**	**0**
KRATIE													
KRATIE (OD)	170	145	85%	21	12%	2	1%	0	0%	1	1%	1	1%
CHHLAUNG(OD)	68	67	99%	0	0%	1	1%	0	0%	0	0%	0	0%
subtotal	**238**	**212**	**89%**	**21**	**9%**	**3**	**1%**	**0**	**0%**	**1**	**0%**	**1**	**0%**
KOMPONG CHAM													
KG CHAM (OD)	335	242	72%	36	11%	15	4%	7	2%	14	4%	21	6%
KRAUCH CHMAR (OD)	117	110	94%	2	2%	4	3%	0	0%	1	1%	0	0%
TBONG KHMUM(OD)	187	111	59%	48	26%	6	3%	0	0%	3	2%	19	10%
CHOEUNG PREY(OD)	346	330	95%	3	1%	5	1%	0	0%	5	1%	3	1%
SREY SANTHOR(OD)	167	148	89%	8	5%	4	2%	1	1%	4	2%	2	1%
CHAMCAR LEU(OD)	424	418	99%	4	1%	1	0%	0	0%	1	0%	0	0%
PREY CHHOR (OD)	158	149	94%	0	0%	7	4%	0	0%	0	0%	2	1%
PONHEA KREK(OD)	195	168	86%	12	6%	0	0%	0	0%	5	3%	10	5%
ORAING OV(OD)	121	103	85%	8	7%	4	3%	1	1%	2	2%	3	2%
MEMOT(OD)	115	96	84%	0	0%	4	5%	1	1%	9	4%	5	6%
subtotal	**2,165**	**1,875**	**87%**	**121**	**6%**	**50**	**2%**	**10**	**0%**	**44**	**2%**	**65**	**3%**
STUNG TRENG													
STUNG TRENG (OD)	**163**	**148**	**91%**	**8**	**5%**	**3**	**2%**	**0**	**0%**	**2**	**1%**	**2**	**1%**
PREAH VIHEAR													
TBENG MEAN CHEY(OD)	**182**	**170**	**93%**	**9**	**5%**	**1**	**1%**	**1**	**1%**	**0**	**0%**	**1**	**1%**
MONDOLKIRI													
SEN MONORUM(OD)	**19**	**14**	**74%**	**4**	**21%**	**0**	**0%**	**0**	**0%**	**1**	**5%**	**0**	**0%**
RATTANAKIRI													
BANLUNG (OD)	**102**	**66**	**65%**	**11**	**11%**	**5**	**5%**	**4**	**4%**	**8**	**8%**	**8**	**8%**
TOTAL	**18,012**	**16,419**	**91%**	**551**	**3%**	**382**	**2%**	**54**	**0%**	**205**	**1%**	**401**	**2%**

XIX. Acknowledgement

Impressive achievements obtained by the National TB Program, regarding especially maintaining the high cure rate of tuberculosis of more than 85 %, 100 % DOTS coverage as planned, and the case detection rate of new smear positive has been reached 66% in 2010, have been associated with the support from the Royal Government of Cambodia as well as the Ministry of Health who have given high priority to TB Control. These achievements have also related to active participation of all health workers throughout the country together with the support and collaboration from various other partners including local authorities, community and financial and technical partners encompassing International and Non Governmental Organizations.

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- All health workers in particular TB related people across the country for their active participation,
- International and Non Governmental Organizations for technical and financial assistance to the TB program,
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